Environmental Statement Addendum
Volume 2: Technical Appendices

Moneystone Park
Moneystone Quarry, Staffordshire

On behalf of Laver Leisure (Oakamoor) Limited
August 2024

Appendix 1.1: Regulation 25 Request for Further Information

The Planning Inspectorate

Environmental Services
Operations Group 3
Temple Quay House
2 The Square
Bristol, BS1 6PN

Customer Services: 0303 444 5000
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Ms Liz McFadyean
Asteer Planning
Mynshulls House
14 Cateaton Street
Manchester
M3 1SQ

Sent by email:
liz.mcfadyean@asteerplanning.com

Your Ref:

Our Ref: APP/B3438/W/24/3344014

Date: 17 July 2024

Dear Ms McFadyean

TOWN AND COUNTRY PLANNING (ENVIRONMENTAL IMPACT ASSESSMENT) REGULATIONS 2017 ('THE EIA REGULATIONS')

Appeal by: Laver Leisure (Oakamoor) Limited

Site Address: Moneystone Quarry, Eaves Lane, Oakamoor

We refer to the above appeal which commenced on 30 May 2024.

The development proposed consists of a Reserved matters application proposing details for the appearance, scale, layout and landscaping for phase 1 of the leisure development comprising 190 lodges; erection of a new central hub building (providing farm shop, gym, swimming pool, spa, restaurant, cafe, games room, visitor centre, hub management and plant areas): reuse and external alterations to the existing office building to provide housekeeping and maintenance accommodation (including meeting rooms, offices, storage, staff areas and workshop); children's play areas; multi use games area; quarry park; car parking; refuse and lighting arrangements; and managed footpaths, cycleways and bridleways set in hard and soft landscaping. By virtue of Regulation 5 of the EIA Regulations the development proposed is EIA development.

The content of the Environmental Statement (ES) accompanying the planning application that is the subject of the above appeal has been considered, having regard to Regulation 2(1) and Schedule 4 of the EIA Regulations.

Following examination of the ES, the Secretary of State notifies you by this letter, pursuant to Regulation 25 of the EIA Regulations, that, to comply with Schedule 4 of those regulations (Information for inclusion in environmental statements) the appellant is required to supply the following further information:

- In view of the time that has elapsed since the preparation of the 2016 Environmental Statement it is considered that the supporting EIA topic chapters

within the Environmental Statement should be updated to take account of any changes in the baseline. Additional information to the ES should be provided as an addendum to the ES setting out any changes affecting the conclusions of the ES. Where there is no change then this should be fully justified with a statement to that effect.

- Subject to the outcomes above and where appropriate a revised non-technical summary (NTS) incorporating all of the elements referred to above.

We would draw your attention to court cases which have stressed the need for all the relevant environmental information in an ES to be comprehensive and easily accessible.

You can access Regulation 25 of the EIA Regulations at the following direct link: http://www.legislation.gov.uk/uksi/2017/571/regulation/25/made

The information is required for the purposes of the inquiry. Although it is not a statutory requirement, in the interests of transparency and openness the appellant may wish to publicise the availability of the further information in accordance with Regulations 25(3), 25(4) and 25(8) of the EIA Regulations. Please can you advise the local planning authority if the further information is publicised.

We would be grateful if you could inform us, **within 2 weeks** of the date of this letter, how long you anticipate it will take to prepare this further information, so that an expected submission date can be identified. Please send your response for the attention of the Environmental Services Team using the contact details at the head of this letter.

In order to support the smooth facilitation of our service we strongly advise that you correspond via the email address at the head of this letter rather than by post.

A copy of this letter has been sent by email to Staffordshire Moorlands District Council.

Yours sincerely

Andrew Luke

Andrew Luke
Operations Lead – Environmental Services
(Signed with the authority of the Secretary of State)

Cc: Staffordshire Moorlands District Council
The Rule 6 parties – Mr David Walters and Kingsley Parish Council and

Where applicable, you can use the internet to submit documents, to see information and to check the progress of cases through the Planning Portal. The address of our search page is:
https://acp.planninginspectorate.gov.uk/

Appendix 1.2: Statement of Competence

ES Addendum Appendix 1.2 – Statement of Competence

Project:	Moneystone Park, Whiston
Date:	August 2024
Subject:	Details of Competent Experts

1 REQUIREMENTS

1.1 The Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (SI 571) require that an Environmental Statement (ES) be prepared by 'competent experts'.

1.2 Section 18, paragraph 5 of the 2017 EIA Regulations states that;

"*In order to ensure the completeness and quality of the environmental statement-*

a) The developer must ensure that the environmental statement is prepared by competent experts; and

b) The environmental statement must be accompanied by a statement from the developer outlining the relevant expertise or qualifications of such experts."

1.3 Table 1 below, includes details and competencies of the technical personnel contributing to the EIA.

Discipline	Company	Personal Profile
Landscape and Visual	Planit	**John Willerton (Principal Urban Designer), BA(Hons), Chartered Member of the Landscape Institute CMLI** John has over 25 years of consultancy experience working as a Landscape Architect and Urban Designer, and over 15 years' experience authoring Landscape and Visual Impact Assessments, John has extensive experience of delivering robust GLVIA compliant assessments for both public sector and private clients, at a range of scales from individual tall buildings within urban contexts through to large, complex residential development in suburban/ rural areas.
Ecology	Bowland Ecology	**Jeremy James BSc (Hons), MSc, Full Member of the Chartered Institute of Ecology and Environmental Management (MCIEEM), Chartered Ecologist (CEcol) and Chartered Environmentalist (CEnv)** Jeremy is the Director of Bowland Ecology a practice that he established in 2005 to provide ecological planning and design advice to the public and private sectors. He has more than 30 years of applied ecological experience in both the public and private sector. Jeremy is an experienced botanist and protected species ecologist.
Built Heritage and Archaeology	Orion Heritage Ltd	**Rob Smith BA(Hons), MSc, PhD, Member of the Chartered Institute for Archaeologists** Rob is a Company Director and co-founder of Orion Heritage. He has dealt with a broad spectrum of work, providing archaeological and heritage planning related advice and support to NSIP schemes, large-scale mixed-use urban extensions, renewable energy projects, leisure parks and villages, retail developments and residential schemes, through to small-scale sensitive developments. Rob has an in depth understanding of historic environment planning policy and guidance across all parts of the UK, and acts as an expert witness at planning inquiries and hearings.
Transport	Stantec	**Brian Laird (Technical Director), BSc, MCIHT, CMILT** Brian is a Technical Director, leading the Transport Section of the Manchester and Leeds offices. He has over 25 years' experience in traffic, highway and transportation planning. Undertaking a full range of activities, Brian initially advises on potential issues associated with development schemes and the likelihood of obtaining transportation and highways agreements

		at the Feasibility Stage, through to overseeing the preparation of transport inputs to EIAs, Transport Assessments and Travel Plans in support of planning applications. He subsequently negotiates with Local Highway Authorities and National Highways further to the submission of the planning applications. Brian has also acted as Expert Witness at Public Inquiries, Local Hearings and Lands Tribunals. Brian has gained a wide range of experience, working on projects within both the private and public sectors including education, residential, retail, leisure, energy, commercial, mixed-use developments, ports and public realm.
Ground Conditions Flood Risk	Abbeydale	Rick Saville (Managing Director), BSc, CGeol, FGS Rick is the owner of Abbeydale Geoscience and a chartered geologist (CGeol) with the Geological Society of London, with over 17 years experience in the geoscience industry. Rick has a variety of experience working on geotechnical and geo-environmental projects within the residential, commercial and Local Authority sectors, on a range of different projects into multi-disciplinary ground investigations and construction projects. Rick is experienced in delivery of ground investigations and geotechnical projects on redeveloping brownfield sites, greenfield development and major highway and engineering projects, having previously worked at Leeds City Council Geotechnical Section before returning to Abbeydale as a director in 2018, and progressing to becoming owner and Managing Director in 2024. Peter Lloyd (Geotechnical Consultant), BSc, MSc, CGeol, FGS Having founded Abbeydale Building Environment Consultants (recently rebranded to Abbeydale Geoscience) in 1993, Peter was managing director of Abbeydale until March 2024 and is now a geotechnical consultant at Abbeydale Geoscience. Peter became a chartered geologist (CGeol) with the Geological Society of London in 1985 and has worked on a vast array of geotechnical and geo-environmental ground investigations, including slope stability analysis and geotechnical assessments of various residential, commercial, insurance, highway infrastructure and Local Authority projects. Peter has been involved with the Moneystone Park project since just prior to cessation of quarrying in 2010.
Air Quality	BWB	Hannah Lillis (Consultant), MSc, BSc (Hons), AMIAQM, AMIEnvSc

		Hannah has two years of consultancy experience undertaking air quality assessments. She is an associate member of the Institute of Environmental Sciences and the Institute of Air Quality Management. She has undertaken Air Quality Assessments for numerous projects for both residential and commercial developments. Amy Van de Sande (Associate) – MSc, BSc (Hons), MIEnvSc, MIAQM Amy is an Associate Consultant at BWB Consulting Limited with over 9 years' experience working in environmental consultancy. She specialises in air quality assessments, dust and odour assessments for a variety of sectors, including residential, mixed use, commercial and industrial. Her experience includes the provision of standalone reports and input to Environmental Impact Assessments. Amy is a Full Member of both the Institute of Air Quality Management (IAQM) and Institute of Environmental Sciences (IES)and holds an MSc from the University of Birmingham in Air Pollution Management and Control and a BSc (Hons) from the University of York in Chemistry.
Noise and Vibration	BWB	Sam Ellwood (Senior Acoustics Consultant) BSc(Hons) MIOA Sam has over 6 years of consultancy experience undertaking acoustic assessments. He is a member of the Institute of Acoustics and has completed the IOA Diploma in Acoustics and Noise Control. He has undertaken Acoustic assessments for numerous projects throughout the country in a range of sectors, such as residential, commercial, energy and transport. Mike Barrett (Associate Director | Acoustics Lead) - BSc (Hons), PG Dip, MIOA Mike Barrett has over 18 years' experience in the modelling, monitoring and assessment of noise and vibration. He has been involved with a wide range of environmental, architectural and building services projects, and regularly provides specialist advice to developers, architects, industry and local authorities. During his time in consultancy experience has been gained across a number of different sectors including aviation, surface transport, residential, industrial, commercial, leisure and retail. He delivers full Environmental Statement chapters and detailed design advice, as well as strategic noise management support for assets and noise control engineering advice.
Socio-economics	Wisher Consulting	Darren Wisher (Owner & Director), BA, MA (Econ) Darren has 25 years-experience of preparing socio-economic impact assessments. His experience covers major infrastructure projects, leisure/cultural and commercial development

		and residential schemes. He was previously Managing Director of Regeneris Consulting, a specialist socio-economics consultancy, and led the UK economics consulting arm of Hatch Ltd with a team of 40 staff.
Climate Change	Buro Happold	**Patrick Little (Technical Director), PIEMA** Patrick is a Technical Director at Buro Happold with over 13 years' experience in the environmental consultancy sector, specialising in EIA, environmental planning, and climate change impact assessment. He developed and led the EIA climate change impact assessment service line at his previous company prior to joining Buro Happold in November 2023 and now leads the service line at Buro Happold. Patrick has led the preparation of numerous EIA climate change impact assessments for urban development projects across a variety of sectors across the UK, including greenhouse gas emissions impact assessments and climate change resilience and adaptation assessments. **Charlotte Ainsworth (Environmental Consultant), BSc, MSc, GradIEMA** Charlotte is an Environmental Consultant with 2.5 years' experience of preparing Climate Change ES Chapters. She holds Graduate Membership of the institute of Environmental Management and Assessment (IEMA), and has a Geography BSc and a Climate Change MSc.
Waste EIA Coordination	Asteer Planning	**Liz McFadyean (Director), BSc, MA (EIA), MRTPI, PIEMA** Liz is an Associate Partner at Asteer Planning where she heads up the EIA team. Liz has over 15 years' experience of EIA project management and is also a Chartered Town Planner. Liz has a wealth of experience in the preparation, co-ordination and management of EIA and is fully conversant with the latest Regulations and best practice guidance. She has experience of working within a range of sectors including residential, commercial, infrastructure and renewable energy. **Josh Thomas (Associate Environmental Planner), BSc, MSc (EIA), AIEMA** Josh is an Associate Environmental Planner with seven years' experience as an EIA coordinator. He has experience in all aspects of the EIA process, including preparation of screening opinion requests, carrying out scoping exercises and preparing detailed scoping reports, coordinating EIA specialists including in-house and external specialists and subconsultants, reviewing

		technical reports, advising clients on environmental planning risks, report writing and providing post-planning advice. Josh has worked on a wide range of projects across a variety of sectors including residential, commercial and infrastructure. Mike Fisher (Environmental Planner), BSc, MSc (EIA), GradIEMA Mike is an Environmental Planner within Asteer's EIA team. Mike has 3 years' experience in EIA which includes EIA co-ordination for a range of sectors including residential, commercial, energy and highways. Mike's experience on projects has spanned UK local planning consenting routes through to Nationally Significant Infrastructure Project (NSIP) Development Consent Order (DCO) applications.

Appendix 2.1: June 2016 ES Non Technical Summary

MONEYSTONE PARK

Environmental Statement
Volume 1: Non-Technical Summary

June 2016

PROPOSED LEISURE DEVELOPMENT
AT MONEYSTONE PARK, WHISTON
ON BEHALF OF LAVER LEISURE
(OAKAMOOR) LIMITED

ENVIRONMENTAL IMPACT ASSESSMENT

VOLUME 1: NON TECHNICAL SUMMARY

MONEYSTONE PARK, WHISTON

ON BEHALF OF LAVER LEISURE (OAKAMOOR) LIMITED

JUNE 2016

HOW Planning LLP, 40 Peter Street, Manchester, M2 5GP
Contact Partner: Jon Suckley. Telephone: 0161 835 1333

CONTENTS

1. Introduction

Laver Leisure (Oakamoor) Limited (the applicant) are seeking to obtain planning permission for a leisure led mixed use development, which will provide a high quality and accessible development at Moneystone Quarry, Staffordshire. The site is located 4km north east of Cheadle, and is located between the villages of Whiston and Oakamoor. The planning application includes the provision of up to 250 lodges, Hub building with restaurants and leisure facilities, an equestrian, water sports and visitors centres.

On behalf of Laver Leisure, HOW Planning submitted an outline planning application for a high quality leisure development at the above site to SMDC on 20 October 2014. Despite the Council's Planning Officers recommending the application for approval, the Planning Committee resolved to refuse the planning application at its meeting on 26 November 2015. The application was formally refused by the Council on 2 December 2015. There were four reasons for refusal which relate to:

- Landscape – relating to the height of the hub building and the principle of the proposed lodges at Black Plantation;
- Highways – relating to an increase in the amount of traffic using Carr Bank and also the reliance of visitors staying at Black Plantation to use private cars to access all facilities within the hub area;
- Heritage – relating to the adverse impact the multi-activity hub area would have on the setting of Little Eaves Farm, a Grade II listed building; and
- Planning Balance – stating that the benefits of the leisure scheme when considered together would not be sufficient to significantly and demonstrably outweigh the harm identified above.

Paul Tucker QC advised Laver Leisure throughout the preparation of the original planning application. Leading Counsel undertook a detailed review of the application prior to its submission as well as a review of the Planning Committee report following its publication. Laver Leisure has sought further advice from Leading Counsel following the refusal of the original planning application and an appeal was lodged to the Planning Inspectorate on 18 February 2016. It is the position of Laver Leisure, as supported by Counsel, that the original proposals are in accordance with the development plan and therefore represent sustainable development. In light of this, and the recommendation by the Council's Planning Officers, Laver Leisure has been advised that is has a strong case for the planning appeal.

Nevertheless, Laver Leisure have sought to accommodate the concerns of the Planning Committee. Accordingly, without prejudice to the ongoing appeal by Laver Leisure, HOW Planning has been instructed to submit this revised planning application which directly addresses all the issues raised within the reasons for refusal. The planning application is re-submitted in outline with all matters reserved except for means of access and proposes:

> *"The erection of a high quality leisure development comprising holiday lodges; a new central hub building (providing swimming pool, restaurant, bowling alley, spa, gym, informal screen/cinema room, children's soft play area, café, shop and sports hall); café; visitor centre with farm shop; administration building; maintenance building; archery centre; watersports centre; equipped play and adventure play areas; multi-sports area; ropewalks; car parking; and managed footpaths, cycleways and bridleways set in attractive landscaping and ecological enhancements (re-submission of Planning Application SMD/2014/0682)".*

The Proposed Changes to the Leisure Scheme

The planning application re-submission has made the following changes to the proposed development:

- The height of the proposed hub building has been reduced from 12 metres to 6 metres and the proposed climbing wall has been removed and does not form part of this planning application;

- The Parameter Plan provides more certainty on the future location of the hub buildings. The area in which the hub buildings can be located at the detailed design stage have been significantly reduced as shown on the Parameter Plan which accompanies this application re-submission;

- Additional landscaping is proposed within the hub area which further screens the hub development from the listed building and the surrounding footpaths. The additional landscaping is shown on the Illustrative Landscape Detailed Plan for The Hub which also accompanies this application re-submission;

- The 14 lodges proposed at Black Plantation and the proposed vehicular access from Blackley Lane have been removed as part of this application re-submission. Whilst both the land at Black Plantation and Blakeley Lane remain within the site edged red, permission for this work is not sought as part of the re-submitted application. Black Plantation is shown as "retained existing woodland" on the Parameter Plan;

- The total number of lodges for which planning permission is sought as part of this application re-submission remains at up to 250 lodges. The 14 lodges removed from Black Plantation have been re-distributed within Quarry 2 – The Upper Lakes. The re-distributed lodges are within the existing development areas as shown on the Parameter Plan and the Illustrative Masterplan for the Upper Lakes;

- A "no right turn" vehicular access arrangement is proposed onto Eaves Lane. The revised vehicular access design is shown on the Eaves Lane Access Plan which accompanies this application re-submission;

- A Tunnel Stability Report has been prepared and submitted with this application resubmission. The report demonstrates that in its current state the overall stability of the tunnel is considered acceptable with no significant failures or displacements observed; and

- Further detail has been provided to clarify the alignment of the proposed footpaths, cycleways and bridleways at the site. This detail is provided on the Detailed Footpath Connection Plans and the Overall Footpath Connection Plan which accompany the application re-submission.

HOW Planning LLP was commissioned to undertake an Environmental Impact Assessment (EIA) for the proposed development re-submission. Specialist consultants were appointed to investigate the environmental effects of the proposals and an Environmental Statement (ES), which summarises the findings of the EIA, has been prepared to accompany the

planning application. The ES provides the Local Planning Authority, Staffordshire Moorlands District Council (SMDC) with detailed information on the environmental effects of the proposed development.

This document is the Non Technical Summary and is a mandatory component of the ES. It has been prepared by HOW Planning LLP in accordance with the EIA Regulations.

The EIA Regulations [Town and Country Planning (Environmental Impact Assessment) (England) Regulations 2011 (SI 2011/1824)] require that planning applications for proposed developments that have the potential to have significant effects on the environment are accompanied by an ES. The primary purpose of the ES is to inform the decision making process by reporting the results of the EIA. This is a recognised process for identifying the likely significant environmental effects of a proposed development and is a fundamental part of the UK's planning process. Amongst other things, the ES identifies the predicted beneficial and adverse environmental effects of the scheme. The Non Technical Summary presents a synopsis of the following;

- The EIA approach and how the EIA has been carried out.
- A description of the site.
- A description of the proposed development and the scheme's objectives.
- The proposed construction strategy.
- The main alternatives that have been considered.
- The planning and regulatory context for the scheme.
- The predicted significant environmental effects, both beneficial and adverse and summarises the balance of effects of the proposed development.

2. EIA Approach

At the start of the EIA process and once the need for an EIA was established, a 'Scoping' study was undertaken. This established the range of possible environmental effects that needed to be looked at further during the assessment process. This study involved a site walkover, initial desk based work and consultation with SMDC. The environmental topics that were identified as requiring further assessment as part of the EIA were as follows:

- Socioeconomics;
- Landscape and Visual;
- Ecology;
- Archaeology and Heritage;
- Ground Conditions;
- Drainage and Flood Risk;
- Transport & Access;
- Air Quality;
- Noise;
- Waste; and
- Cumulative Impacts.

The scope of the EIA was agreed with SMDC ahead of the submission of the 2014 application through a formal Scoping Opinion issued by the Council on 9 October 2014. The amendments as part of the re-submission are not consider to be significant nor has the sensitivity of the site changed as to require a revised scoping opinion from SMDC.

In order to ensure consistency, the technical chapters of the ES which assess each environmental topic, establish the baseline conditions on the site before predicting the potential effects during both the construction phase and the operational phases of development. In doing so, it has identified the 'significance' of environmental effects

relating to the topics listed above. The assessment of significance has been undertaken for all identified effects to determine their relative importance.

The following criteria have been used to determine the significance of effects:

- Magnitude (size of effect);
- Spatial extent (size of the area affected);
- Duration (short, medium or long term);
- Nature of the effect (direct or indirect, reversible or irreversible);
- Sensitivity of the surrounding environment and receptors;
- Inter-relationship between effects;
- International, national or local standards; and
- Relevant planning policy (such as the National Planning Policy Framework and the Council's adopted Local Development Framework development plan documents).

The significance of effect may be negligible, beneficial or adverse. A brief description is provided below:

- **Adverse** – a negative effect on a sensitive receptor or the existing environment;
- **Negligible** – no discernible effect on a sensitive receptor or the existing environment; and
- **Beneficial** – a positive effect on a sensitive receptor or the existing environment.

In addition, the degree of significance of the effect can be minor, moderate or major; and a brief description is provided below:

- **Minor** – slight, short-term, or localised effect on a sensitive receptor or the existing environment;
- **Moderate** – a noticeable effect on a sensitive receptor or the existing environment; and
- **Major** – a substantial effect on a sensitive receptor or the existing environment.

When a significant adverse effect has been identified as a result of the assessment process, then mitigation measures to reduce, offset and if possible, remove the significant adverse environmental effects associated with the proposal are outlined within the assessment.

Identifying and implementing mitigation measures is a key part of the EIA process. Given the nature of the scheme and the extensive work that has been undertaken in preparing the proposals, many mitigation measures have already been integrated into the design. Such mitigation, which is therefore inherent in the proposals, is accordingly assessed as part of the EIA. Any additional mitigation measures required to reduce or remove identified effects have been identified and are subsequently reported in the ES and an assessment of any residual effects has been undertaken. The residual effects are those which remain after mitigation has been identified and their significance stated.

3. Site Description

The site is a former sandstone quarry site, measuring approximately 51.58 hectares in area. The site location and planning application area plan is presented at **Figure 1**.

The site has been quarried for silica sand for over a century. Active large scale quarrying started in the late 1950s in Quarry 1 and continued until the early 1970s. Small scale quarrying is noted in 1879 in the northeastern corner of Quarry 2. This was most likely for local building stone. Large scale quarrying recommenced in the late 1950s, with the south-eastern part of Quarry 2 completed by the late 1970s. Excavation of the northern half was

largely finished by the late 1990s. Excavation stated in 2001 on Quarry 3. By 2008 Quarry 3 had deepened below the water table, in 2012 Quarry 3 ceased operations.

For the purposes of the EIA, the site is described as comprising three separate but related quarries.

Quarry 1

Directly to the south of Eaves Lane the ground dramatically drops away to the base of Quarry 1. There are some areas of woodland planting around the edge of the quarry and an existing lake to the south. A second basin in Quarry 1 is slightly higher in elevation with a small embankment leading up to another pool of water.

An existing road from Eaves Lane provides access into this part of the site. The road leads to an area which was previously a cluster of processing buildings and associated machinery. Currently there is an area of hardstanding here, along with rubble from the demolished buildings.

Quarry 2

Quarry 2 is accessed via a track leading under Eaves Lane from Quarry 1. Quarry 2 consists of a large tailings lagoon to the south, leading to an embankment of firmer ground to the north. The land gradually climbs up until it reaches the sharp incline of the quarry walls. North of this area is an existing woodland plantation. This area sits much higher than the rest of Quarry 2 on a distinct plateau above the rest of the quarry. The northern pocket of the site north of Quarry 2 comprises plantation conifer woodland accessed off Blakely Lane.

Quarry 3

A track leads down into the historic quarry from the existing access road in the east of Quarry 3. The quarry walls drop at a steep gradient and a lake now fills the base of the quarry. Vegetation has started to take around the quarry walls and there is an existing landscape bund which runs the majority of the length of the top of the quarry adjacent to Eaves Lane.

The Approved Restoration Plan

The Approved Restoration Plan sets out the requirements for the restoration of the site following the cessation of quarrying activities. The approved restoration plan is largely based upon agricultural restoration and nature conservation of the quarries and the surrounding areas within the site. The restoration plan components forms the baseline for the assessment of environmental impacts on the site. The Restoration Plan is shown in **Figure 2**.

4. Alternatives

The proposed development has evolved through the EIA and design process with extensive stakeholder and community consultation. Environmental constraints and potential beneficial and adverse effects have been identified. Where adverse effects have been identified, mitigation measures have been incorporated into the overall proposals through a robust iterative design process. A number of mitigation measures are therefore inherent in the design of the proposed development.

As part of the assessment of Alternatives, consideration has been given to assessment of the 'no development' option, which describes the likely conditions at the site in the absence

of implementing the proposed development. Furthermore, the applicant and the design team have undertaken a continuous review process to improve the proposed design, taking into account the views of key consultees and the community. As such, as a result of the design evolution process, a number of changes to the proposed development have continually been made. This is discussed in more detail below.

No Development Alternative

As part of the assessment of Alternatives, consideration has been given to assessment of the 'no development' option, which describes the likely conditions at the site in the absence of implementing the proposed development.

Condition 35 of the quarry permission requires the restoration of the site once quarrying has ceased. Therefore, in the absence of the proposed leisure development the site would remain as restored under the requirements of this Restoration Plan, and would be managed in accordance with the ongoing requirements for 5 years.

Without the proposed leisure development progressing, the socioeconomic benefits of the proposals would not be realised and the identified shortage in overnight accommodation in the District that restricts the tourism industry would not be addressed. Furthermore, the proposed development proposes new community facilities and footpaths which will help sustain local villages and businesses through the promotion of local services, goods and attractions, which will be open to all members of the public. In the absence of the development the socioeconomic benefits, which correspond with Local Policy Objectives, would not be realised.

Alternative Sites

The proposed development has been specifically designed for the site to provide a long term sustainable and viable use following the end of quarrying activity. The Churnet Valley Masterplan SPD (March, 2014) identifies Moneystone as a character area suitable for development due to significant pressure for change. The SPD recognises the site's potential to enhance the countryside, create recreational and leisure opportunities, ensure management of the areas biodiversity, and increase the accommodation available in the valley through a new scheme of restoration and introduction of new activities. As the applicant has focused on the proposals for this site and there is policy support for the development, no alternative sites were considered for the proposed development.

Alternative Layouts and Designs

Several variations in design were proposed for the site, which incorporated variations in site arrangements to assess the site's flexibility in terms of layout and form. These designs were influenced by the results of consultation with SMDC and other consultees as well as through the identification of site constraints.

The emerging proposals were presented at a public consultation event in 2011 to inform and engage the local community on the development. At this point in the Masterplan development, the proposals included around 640 lodges, a hotel, housing, and a caravan site, along with a holiday leisure complex and associated facilities.

The Masterplan has been tested by the EIA throughout its development to assess the impact of the proposals. In 2013 the landscape and visual assessment influenced significant changes in the Masterplan including a reduction in the quantum of development in Quarry 3 to reduce visual impact; removal of the hotel, housing and caravan site from the proposals; a reduction in the number of lodges provided; and removal of development south of Crows Trees Farm. Furthermore, preliminary results of the ecological assessment

led to the removal of development from protected sites including the SSSI and SBI to the west.

Following these revisions a Development Strategy was outlined in the 2014 Churnet Valley Masterplan SPD to guide the development proposals. The Masterplan, as submitted as part of the 2014 planning application was designed to respond to this detailed design guide, and it is the position of Laver Leisure, as supported by Counsel, that the original proposals are in accordance with the development plan and therefore represent sustainable development.

As detailed above, despite the Council's Planning Officers recommending the application for approval, the Planning Committee resolved to refuse the planning application at its meeting on 26 November 2015. The application was formally refused by the Council on 2 December 2015.

Without prejudice to the ongoing appeal by Laver Leisure, HOW Planning has been instructed to submit this revised planning application which directly addresses all the issues raised within the reasons for refusal.Accordingly, no alternative designs that fall outside of the Churnet Valley Masterplan brief have been considered by Laver Leisure.

5. Description of the Development

The application seeks planning approval for a leisure-led mixed-use development to be located between the villages of Oakamoor and Whiston, Staffordshire. The overall aim of the proposed development is to create a high quality development in Staffordshire, whilst ensuring the maintenance and enhancement of the existing landscape and character features associated with Moneystone Quarry and the surrounding area. It is recognised that the development proposals are essential in delivering a sustainable landmark development.

In summary, the key elements of the development which are included in the study area are as follows:

- Up to 250 lodges;
- Central Hub building providing a swimming pool, restaurant, bowling alley, spa, gym, informal screen/cinema room, children's soft play area, café, sports hall and shop;
- Farm shop;
- Visitor centre;
- Administration building;
- Maintenance building;
- Archery centre;
- Water sports centre;
- Equipped play and adventure play areas;
- Multi-sports area; and
- Car parking and managed footpaths cycleways and bridleways.

An illustrative masterplan of the proposed development has been prepared to demonstrate how the proposed development could be accommodated on the site. This is presented at **Figure 3**.

The construction works are anticipated to last from 3-5 years, starting in 2017. Works will commence in Quarry 1 around the hub area along with the earthworks in Quarries 2 and 3. Development will then proceed in Quarries 2 and 3.

The lodges will be pre-fabricated and brought to site in complete form for installation on concrete bases. The hub buildings will be constructed on site.

A Construction Environmental Management Plan (CEMP) will be prepared and implemented to ensure that any impacts associated with construction activities will be mitigated as far as possible. This will include measures aimed at reducing dust and noise nuisance and minimising waste production.

6. Planning Policy Context

The ES identifies and sets out the relevant planning policy context against which the development proposals should be considered. All of the relevant planning policies which form part of the statutory Development Plan for the area have been identified in addition to relevant Planning Policy Guidance.

The proposed development is supported within SMDC's Core Strategy. This document sets the spatial vision, objectives, development strategy and outlines a series of over-arching strategic policies that guide the scale, location and type of development in the District. The proposals are being brought forward in accordance with adopted planning policy.

7. Socio Economics

A socio-economic assessment has been undertaken to evaluate the impact the development would have on employment and the local economy both during the construction and operational stages of the development.

Over the last year (2015) in Staffordshire Moorlands there were around 15 unemployed people per month seeking construction related employment and around 180 per month across the county, total employment within the construction sector in the district has fallen by around 20% since 2009. The construction activity associated with the proposed development will lead to the creation of approximately 230 construction jobs in the early stages of the construction process, reducing to 12-25 construction jobs during the remaining years of construction. This job creation would help to alleviate unemployment in the construction sector, offering significant benefits to the local economy in the short term.

When compared with other areas of the country, Staffordshire Moorlands has far fewer jobs in the district compared with the resident population. This points towards a relative shortage of jobs in the area, and as a result, there are significant levels of out-commuting. However, the number of people receiving out of work benefits was relatively low in 2013 compared to the typical proportion of working age residents claiming these benefits in the wider geographical area.

Once fully operational, it is estimated that Moneystone Park would attract 55,400 staying visitors per annum. Off-site visitor expenditure in the district for staying visitors has been estimated at over £1m per year. On-site employment associated with lodge housekeeping and the wider proposed development has the potential to create around 375 jobs. Of these 125 are expected to be full time and a further 250 part time. It is estimated there will be 78 additional jobs created off-site elsewhere in Staffordshire Moorlands and in the wider area. The creation of these jobs and the spending capacity of visitors will combine to generate a significant boost to the local economy.

No mitigation measures are proposed in relation to socioeconomic impacts as they have all been identified as being of significant benefit to the local economy.

8. Landscape and Visual Assessment

A landscape and visual assessment has been undertaken to evaluate the impact of the development on the landscape character and its visual effects, both assessments examined construction and operational phase impacts.

The site and its wider surroundings are surrounded by a network of public footpaths, bridleways and cycle routes. The majority of the 3 quarries are currently well screened by the landscape, tree cover and favourable topography - the nature of the quarrying activities has resulted in the quarries having a lower ground level when compared with the immediate surrounding landscape.

There are several short term impacts which are likely to have limited significance on the landscape and visual value of the site, such as the visual impact of construction vehicles, the effect of remodelling ground levels within the quarries, and the impacts of temporary parking, on-site accommodation and work areas. In order to minimise the potential for negative effects, a CEMP will be produced which provides specific mitigation measures to reduce construction related effects. These are simple and effective measures, such as the installation of site hoarding/screening, advanced planting and strategically locating site compounds close to access points and/or away from existing developed areas.

In terms of operation the proposed development working in conjunction with the approved restoration plan will have a positive impact on the landscape character and the visual amenity associated with the site. The development will retain, enhance and manage woodland areas, further supplementing these with new planting when required. This additional planting and ecological development across the site will create a strong landscape setting and effectively screen and merge the built elements of the development into the landscape. In addition, the development will create a comprehensive network of recreational routes providing safe access to the public to exploit dramatic views of the site and the surrounding area.

In the long term it is expected that the proposed development will have a negligible impact on the value of Moneystone Park's landscape character and visual amenity.

9. Ecology and Nature Conservation

An ecological and nature conservation assessment has been undertaken to assess the baseline ecological conditions currently at the site, the potential direct and indirect effects of the development, and outline any avoidance and mitigation measures which may be needed to address ecological effects.

The site is located in a predominantly rural area dominated by pastoral agriculture. There are three statutory nature conservation designations within 2km of the site including the following:

- Whiston Eaves Site of Special Scientific Interest (SSSI) is located adjacent to the site.
- Bath Pastures SSSI and Churnet Valley SSSI are located to the east and north west of the site respectively. However, due to the distances involved it is not considered that these will be affected by the proposed development.

A number of species have been found to be present on-site, including great crested newts, several species of bats, and breeding bird species.

The construction of lodges, access roads, footpaths and buildings has the potential to result in the loss or disturbance of habitats, and impact the flora currently present within the site.

In order to mitigate construction phase impacts, protective fencing will be erected to shield any sensitive retained areas from the construction works. Where grassland habitats or areas of woodland are to be removed, management schemes will be outlined in the Ecological Management Plan and the CEMP. This will ensure that the loss of any habitat will be mitigated through the provision of the same habitat which will be of an equal or greater value in ecological terms. It is expected that these impacts will be temporary in nature and be of limited significance.

Construction works have the potential to kill, injure and disturb, reptile, amphibian, bird and bat populations found on the site. The highest risk of this occurring is likely to be the removal of each respective species habitat(s). Therefore, a range of mitigation measures have been outlined in detail in the Environmental Statement and within the Ecological Management Plan. All survey and relocation works will be carefully timed to minimise the likelihood of trapping species in construction areas. The Wildlife and Countryside Act 1981 has formed the guidance for breeding bird and reptile mitigation measures. No breeding bird will be disturbed while it is nest building, or at a nest containing young, or disturb the dependant young, whilst works to known and potential reptile habitat will avoid the hibernation period of October to March. No potential bat roosting trees will be impacted by the proposed development, artificial roost sites will also be installed to supplement the number of available habitats. These will be installed into selected new structures, as well as Key Wood.

The increased number of visitors on the site may affect ground flora species and habitat, as a result of trampling and subsequent erosion. However, significant woodland and grassland planting is included within the landscaping scheme both on site and in the surrounding area, and as such is likely to have a significant beneficial impact on the amount and quality of habitat provided. In terms of wildlife, the main potential effect is related to the increase in visitor numbers. However, the Ecological Management Plan will manage and monitor the notable species found at the site, and will also ensure additional compensation and enhancement measures are implemented in order to off-set impacts associated with the operation of the proposed development.

The majority of the above measures implemented both during the construction and operational phases of the development will have a long term positive impact on the ecology and nature located within the site and the wider surrounding area.

10. Archaeology and Heritage

The archaeology and heritage study considered the effect on the historic environment and on any potential unknown archaeological remains which may be found on the site.

There are no designated assets (World Heritage Sites, Scheduled Monuments, Listed Buildings, Conservation Areas, Registered Parks and Gardens or Registered Battlefields) within the site boundary. There are two Grade II Listed Buildings which are recorded within the site boundary (Whiston Eaves Farmhouse [and Stable at Whiston Eaves. However, neither of these buildings exist. Listed Building consent was obtained in 1998 (planning permission reference number: SMD/1998/0448) for the dismantling of the Farmhouse and demolition of the Stable. There is very little direct evidence for below ground archaeological deposits within the proposed development. Most of the site was quarried during the late 20th century which will have destroyed any archaeological remains which may have existed.

No direct impacts are identified from the proposed development on designated heritage assets (e.g. World Heritage Sites, Scheduled Monuments, Listed Buildings, Conservation Areas, Registered Parks and Gardens, and Registered Battlefields). The majority of potential effects to heritage assets normally occur prior to or during construction. Due to

the previous quarrying activities and nature of works for the proposed development, it is considered there will be no impacts during the operation phase on heritage assets. As such, the proposed development is considered to have no impact on heritage assets or below ground archaeology.

11. Ground Conditions

The assessment of ground conditions evaluated the suitability of the site for the proposed development based on risks of contamination, the quality of the agricultural land and the likelihood of mineral reserves being present based on a review of historic records of the site and its surrounds which were used to evaluate the risks involved with the development of the site.

Following the closure of the Quarry, SMDC required a Revised Restoration Plan to be implemented, this would form the baseline for the EIA. Several components of the plan included management and restoration of grassland, thinning of aquatic vegetation to encourage fauna development around lagoons and plantation of native trees and vegetation to increase habitat provision across site.

The assessment considered the potential impacts that the construction phase could have on contamination of the site. It was identified that accidental spillages or leaks, damage to soils, potential contamination of ground and surface waters and potential impacts on health of site workers were all of negligible significance when mitigation measures were considered. These mitigation measures will be set out in the CEMP and will include secure storage of materials, washing wheels of site vehicles, the use of filters to stop contaminated liquids entering watercourses and the use of personal health and safety equipment. The capping of former tailing lagoons and improvements in slope stability are likely to result in a significant beneficial impact, limiting the potential for pollution incidents and the risk of landslips.

The assessment also concluded that the ongoing control of water entering the river to the south west from Quarry 3 during operation of the leisure park will reduce the impact of uncontrolled flows from Quarry 3 through the SSSI, resulting in a beneficial impact. The control and monitoring of slopes across the site is expected to have no potential effects.

Overall, the Revised Restoration Plan will improve the habitats and flora across the site, and this will be retained and enhanced via the CEMP. Beneficial effects are foreseen through the management of lagoons and slope stability, protecting public health and ecological assets in the SSSI.

12. Drainage and Flood Risk

The water resources and flood risk assessment has been undertaken to determine the impact of the proposed development on surface water resources and the potential for on-site flooding as well as the potential for flooding to occur off site.

The entire site is situated in areas at the lowest risk of flooding. There are streams to the south west and north east, and the River Churnet runs east to west further south of the site boundary. There are lagoons and waterbodies located on site associated with the former quarrying activities.

The assessment of potential impacts upon flood risk has identified that during the construction stage the development could increase surface run-off and increase the potential for pollution of local waterbodies. These potential impacts would be avoided through the phased removal of vegetation across the site, the implementation of a

management plan and in compliance with the Environment Agency's Pollution Prevention Guidance.

The long term aim of the completed development is to reduce run-off peaks by at least 20%, by increasing vegetation, keeping hardstanding areas to a minimum, and implementing a drainage strategy that reduces the gradient of streams and makes use of the existing ponds and lakes to slow the flow of water and remove sediments. The combination of these measures will result in a significant beneficial impact to water resources on and surrounding the site.

The acidic materials that are currently present at the surface of Lagoons 4 and 7 will be replaced with clean soils. As such, the surface water that previously crossed these areas will be neutralised and have a significantly beneficial impact on the water that flows through this part of the site.

Overall, the proposals are expected to have a beneficial impact on drainage and flood risk across the site.

13. Transport and Access

A Transport Assessment has been undertaken which considers the impact of the development on transport and access. More specifically, the assessment has analysed the impact of the development on the local and wider highway network.

A set of baseline traffic data was agreed with the Local Highway Authority to determine the existing level of traffic on the highway network. This allows predictions on the scale of impact of the proposals to be made.

The construction activities at Moneystone Park are likely to take place over a period of 3 to 5 years and will generate a relatively small number of vehicle movements. The likely number of Heavy Goods Vehicles and construction staff movements associated with the overall construction phase of the development will be confirmed once a contractor has been appointed. However, an early estimate was produced which found that Moneystone Park would generate 24 two-way total vehicle movements per day, based on 3 years of construction activity. This is considered not significant. Nonetheless, mitigation measures to manage construction traffic will be outlined in a Construction Traffic Management Plan, these will ensure best practice measures, such as following only approved routes, are adhered to throughout the construction phase of the development.

During operation the potential impact upon driver delay, severance, hazardous loads, and accidents is not considered to be significant. . Whilst there are no significant impacts on the highways network due to the transport and access associated with the development, a Travel Plan Framework will be developed to encourage sustainable travel and reduce traffic flows. This provides a number of measures that will encourage travel by non-car modes. In addition, a detailed Car Park Management Plan will be operated to encourage car-sharing and offer incentives for staff not to drive to work.

Overall, the increase in traffic flow and other potential impacts of the proposed development on the highways network are not significant.

14. Air Quality and Dust

An assessment has been carried out to determine the likely effects on air quality as a result of the proposed development. The air quality assessment examines existing air quality and considers the likely effects arising from the construction and operational phases of the proposed development.

SMDC has not declared any Air Quality Management Areas within their administrative area. The proposed development site is located in an area where there are few local emission sources in the immediate vicinity of the site. None of the roads in the immediate vicinity have a significant impact on local air quality due to the relatively low traffic flows using them.

Construction activities have the potential to generate and/or re-suspend dust. Three potential effects (dust soiling, generation of PM_{10} and ecological) are associated with three different stages of the construction phase: earthworks, construction and trackout. Based on these potential effects a bespoke CEMP has been compiled in accordance with the Institute of Air Quality Management. Some measures included regular site inspections to monitor compliance, preparing and maintaining the site to minimise dust producing activities in the vicinity of sensitive receptors, and a series of specific measures for earthworks, construction and trackout.

In addition, construction vehicles will produce exhaust emissions that will have an effect on local air quality both on the site and adjacent to the routes used by vehicles to access the site. To minimise any effect of exhaust emissions associated with construction and plant, a series of plans will be produced, including a Travel Plan to promote sustainable transport for construction workers, a Construction Logistics Plan to manage the sustainable delivery of goods and materials, and a Construction Traffic Management Plan. The combination of the mitigation measures for both construction vehicles and the construction processes has resulted in this phase of the development having no significant impacts on local air quality.

During operation of the proposed development, the only potential effect on air quality would be from road traffic exhaust emissions. To gauge the magnitude of impacts, 18 receptors were identified to measure current emission levels, for both PM_{10} and NO_2 the impacts on these receptors are not considered to be significant. As a result no specific mitigation is considered necessary given the negligible effect of the completed development on local air quality.

15. Noise and Vibration

The noise impacts that could arise as a result of the proposed development have been assessed. The study evaluated the potential noise impacts during the construction phase, the suitability of the noise environment for the proposed development and the potential impacts of traffic noise associated with the proposed development.

The noise environment present within the vicinity of the site predominantly consists of distant road traffic noise from the A52, intermittent road traffic noise from Eaves Lane and Blakely Lane, natural noise sources such as bird song, and noise from onsite short-term crushing activity.

During the construction phase, the assessment notes that for nearby residential uses some short term noise and vibration disturbance is likely to occur in relation to specific activities such as earthworks and foundation works. In order to address this, a range of mitigation measures have been proposed that will form part of the CEMP. This will include locating any noisy plant further from local residents, the erection of site hoarding, setting of acceptable working hours and other quiet working methods. In terms of vibration, it is recommended that methods which cause less vibration are used and that the works are monitored and stopped should vibration levels become unacceptable.

The noise assessment also evaluated the effect of the potential change in traffic patterns on the noise environment. This identified that there would be an increase in the amount of

traffic noise as a result of the proposed development against the existing conditions but that this would be of such a small scale that it would be of negligible significance with one receptor experiencing moderate adverse effect at worst.

16. Waste

An assessment has been carried out to determine the impact of the proposed development on waste. In particular it considers the potential effects of earthworks, construction materials and household and commercial waste generated by future residents/users of the development.

Current waste arisings at the site are anticipated to comprise minor volumes of agricultural waste associated with the existing land uses and management regime. In terms of the baseline for Staffordshire Moorlands, according to the data in 2008-09 and 2009-10, Staffordshire Moorlands was at the top of the national league table of councils for recycling and composting.

At the construction phase it is expected that large volumes of waste will be produced on site, despite lodges being of pre-fabricated construction, and that which cannot be re-used or recycled on site will be removed. In order to estimate construction waste a series of Environmental Performance Indicators have been developed by the Building Research Establishment. These indicators estimate that approximately 1,100 tonnes of construction waste will be generated from the proposed development. This equates to an average of approximately 367 tonnes per year. Implementation of best practice measures and recommendations for the minimisation and management of waste will be incorporated into a CEMP, as well as a Site Waste Management Plan. These measures along with a low sensitivity of waste management infrastructure has resulted in a low to no negative impacts on waste infrastructure.

The average household waste generation for Staffordshire Moorlands was used as a starting point to provide an estimate of the waste produced during operation of the proposed development. This found that, on average, waste generation per household per annum totalled 0.91 tonnes. Therefore, the maximum floorspace of the proposed development has the potential to produce 210 tonnes of commercial waste per annum (approximately 4.1 tonnes per week). In terms of mitigation, design measures will ensure patrons and visitors have access to both internal and external refuse and recycling facilities; non-residential areas will have facilities segregating recyclable materials; waste storage areas will be clearly labelled, minimising cross contamination; and retailers and commercial tenants will be encouraged to undertake a 'waste audit' and create a Waste Action Plan. The results of these measures will maximise recycling opportunities and reduce the waste sent to landfill. Therefore, the effect of commercial waste on local waste infrastructure will not result in a significant negative effect.

17. Cumulative Effects

The assessment of cumulative impacts includes an evaluation of the potential combined effects of the proposed development in conjunction with the consented solar farm proposed on the adjacent site, within the same quarry and the Bolton Copperworks proposed mixed-use site at Froghall.

The potential for cumulative effects alongside the consented solar farm is limited due to the benign nature of the solar farm, the limited employment offered by the proposal and the secluded nature of both sites. This lead to the majority of assessments identifying no potential for cumulative impacts. However, there would be some additional tree removal associated with the solar farm application that could lead to a minor adverse effect.

The majority of assessments identify no potential for cumulative impacts with the proposed Bolton Copperworks site. There are considered to be **minor** adverse effects in respect of noise and waste generation and **moderate/major** beneficial effects in respect of socio economic impacts.

The combined/synergistic assessment of effects has focused on whether potential construction effects would combine to generate a significant adverse impact on sensitive receptors. The accumulation of aspects such as traffic, air quality, noise generation and visual intrusion caused by the construction and operational phase of development has been considered together.

The assessment demonstrates that the potential for negative effect interaction during the construction phase, all of which are short term and reversible, is very limited due to the very limited number of potential receptors. Furthermore, these impacts will largely be addressed and managed through the operation of a traffic management plan, a CEMP and good site practices.

18. Summary and Conclusions

On behalf of Laver Leisure, HOW Planning on behalf of Laver Leisure (Oakamoor) Ltd submitted an outline planning application (ref SMD/2014/0682) for a high quality leisure development at the above site to Staffordshire District Moorlands Council (SMDC) on 20 October 2014.

The proposed development was designed in accordance with the Council's aspirations for the site, the objectives of the Churnet Valley Masterplan and the findings and recommendations of the EIA. Any adverse effects identified through the assessment have been minimised as far as possible through the design process or the application of appropriate mitigation measures.

In developing the proposals, a thorough iterative design process has been undertaken in conjunction with the EIA process to ensure that mitigation measures have been identified early and become inherent in the design of the development. This also provides a robust benchmark for developing the proposals at later detailed design stages as key design principles have already been established. In addition, through the EIA process, a number of additional mitigation measures have been identified in order to further reduce adverse effects where these have been identified. Such measures can be secured through suitably worded planning conditions and enforced as appropriate by the local planning authority.

Despite the planning application being in full accordance with the Development Plan and the Councils Professional Officers recommending the application for approval, SMDC's Planning Committee resolved to refuse the planning application at its meeting on 26 November 2015.

Without prejudice to the ongoing appeal by Laver Leisure, HOW Planning has been instructed to submit this revised planning application which directly addresses all the issues raised within the reasons for refusal. The EIA has been updated to assess the re-submission application.

Overall, the proposed development constitutes a high quality leisure development, which will importantly deliver tourist accommodation to satisfy an identified need. It will provide an important source of employment and investment in the area and the environmental impacts of the development have been shown to be of minimal significance once mitigation measures have been taken into account.

19. ES Availability and Comments

The Non Technical Summary, Environmental Statement and Appendices are available for viewing at the offices of SMDC.

Further copies of the ES are available on CD-ROM at a cost of £25 from HOW Planning LLP. Paper copies of the Non-Technical Summary are available free of charge.

All documents are available from:

HOW Planning LLP
40 Peter Street
Manchester
M2 5GP

Contact: Hilary Brett
Tel: 0161 835 1333

Staffordshire Moorlands District Council
Moorlands House
Stockwell Street
Leek
Staffordshire
ST13 6HQ

Contact: Jane Curley
Tel: 0345 605 3010

Appendix 2.2: May 2020 EIA Statement of Conformity

Environmental Impact Assessment - Statement of Conformity Report

Phase 1 Reserved Matters

Moneystone Quarry, Staffordshire

Laver Leisure (Oakamoor) Limited

May 2020

Contents

Appendices

Prepared By: Jamie Lynch
Reviewed By: Richard Kevan
Status: Final
Draft Date: April 2020

For and on behalf of Avison Young

1. Introduction

1.1 Avison Young has been appointed by Laver Leisure (Oakamoor) Limited ('the Applicant') to prepare an Environmental Impact Assessment ("EIA") Statement of Conformity ("SoC") Report in respect of the Phase 1 reserved matters planning application (as amended) (ref. SMD/2019/0646) (hereafter referred to as the '2019 reserved matters application') at Moneystone Quarry, Staffordshire (hereafter referred to as 'the site'). The 2019 reserved matters application is submitted pursuant to the approved outline application (ref. SMD/2016/0378) (hereafter referred to as the '2016 outline application [or permission]'). The Site Location Plans for the 2016 outline permission and 2019 reserved matters application are included at **Appendix I and II** respectively.

1.2 The 2016 outline planning application was accompanied by an Environmental Statement ("ES") (hereafter referred to as the 'June 2016 ES') prepared by HOW Planning (now part of Avison Young) on behalf of the Applicant.

1.3 The ES provided with the 2016 outline permission can be accessed using the reference 'SMD/2016/0378' at the following link:

- https://www.staffsmoorlands.gov.uk/article/564/Comment-on-an-application

1.4 The June 2016 ES is also available for viewing at SMDC's offices: Moorlands House, Stockwell Street, Leek, Staffordshire, ST13 6HQ. Further copies of the ES are available on CD at a cost of £35 from Avison Young. Hard copies of the ES can be prepared upon request, a quote for reasonable printing and distribution charges will be sourced upon any request.

1.5 When considering the 2019 reserved matters application it is necessary to consider how the EIA Regulations[1] apply to *"subsequent application(s)"* which are defined as:

"...an application for approval of a matter where the approval:

(a) Is required by or under a condition to which a planning permission is subject; and

(b) Must be obtained before all or part of the development permitted by the planning permission may be begun."[2]

1.6 The EIA Regulations contain a prohibition on a development consent for EIA development, including subsequent applications, being granted unless there has been an assessment of the likely significant effects of the development. As such, the EIA Regulations seek to ensure the determining authority for the development consent is able to make its decision in the full knowledge of any likely significant environmental effects.

1.7 This Report reviews the proposed details for approval via the 2019 reserved matters application in the context of the ES prepared for the 2016 outline planning application. This report aims to assess whether the

[1] The Town and Country Planning (Environmental Impact Assessment) Regulations (England) (SI571/ 2017), DCLG, London

[2] Defined within the 2017 EIA Regulations, Section 2 "Interpretation"

EIA prepared to support the 2016 outline planning application remains adequate to assess the significant effects of the development on the environment, including those matters which should be taken into consideration when determining the 2019 reserved matters application.

1.8 If, however, Staffordshire Moorlands District Council ("SMDC") determine that the environmental information is not considered adequate to assess the significant environmental effects of the development, within the provisions of Regulations 9(3), then SMDC would need to make a direction for further environmental information under Regulation 25 requesting the provision of specific further environmental information.

1.9 Provision for subsequent applications where environmental information has been previously provided is set out within Regulation 9 of the 2017 EIA Regulations, which states:

9.—(1) This regulation applies where it appears to the relevant planning authority that—

(a) an application which is before them for determination—

(i) is a subsequent application in relation to Schedule 1 or Schedule 2 development;

(ii) has not itself been the subject of a screening opinion or screening direction; and

(iii) is not accompanied by a statement referred to by the applicant as an environmental statement for the purposes of these Regulations; and

(b) either—

(i) the application for planning permission to which the subsequent application relates was accompanied by a statement referred to by the applicant as an environmental statement for the purposes of these Regulations; or

(ii) the application is for the approval of a matter where the approval is required by or under a condition to which planning permission deemed by section 10(1) of the Crossrail Act 2008(a) (Planning) or section 20(1) or 50(5)(a) of the High Speed Rail (London - West Midlands) Act 2017(b) (Deemed planning permission) and (Enforcement of environmental covenants) is subject.

(2) Where it appears to the relevant planning authority that the environmental information already before them is adequate to assess the significant effects of the development on the environment, they must take that information into consideration in their decision for subsequent consent.

(3) Where it appears to the relevant planning authority that the environmental information already before them is not adequate to assess the significant effects of the development on the environment, they must serve a notice seeking further information in accordance with regulation 25.

Report Structure

1.10 This Reports contains an EIA SoC for the technical disciplines which formed part of the 2016 ES. This Report has been prepared and coordinated by Avison Young, with input from technical consultants where necessary.

1.11 The structure of this Report is presented in Table 1.1, corresponding to each chapter of the June 2016 ES. Alongside each chapter heading is an indication of the approach i.e. SoC and/or review of environmental information.

Table 1.1: Structure and Content of this Report

No.	Title	Content of the Chapter
1.	Introduction	Overview of the document's purpose, context and content.
2.	Approach and EIA Methodology	Review of the approach to the June 2016 ES.
3.	Site Context and Background	Overview of the site and background to the development.
4.	Alternatives	Statement of Conformity.
5.	The Proposed Development	Details of the 2016 outline and 2019 reserved matters applications.
6.	Planning Policy Context	Review of any amendments to planning policy.
7.	Socioeconomics	Statement of Conformity.
8.	Landscape and Visual	Statement of Conformity.
9.	Ecology	Statement of Conformity and Review of the Environmental Effects.
10.	Archaeology and Heritage	Statement of Conformity.
11.	Ground Conditions	Statement of Conformity.
12.	Drainage and Flood Risk	Statement of Conformity.
13.	Transport and Access	Statement of Conformity.
14.	Air Quality and Dust	Statement of Conformity and Review of the Environmental Effects.
15.	Noise and Vibration	Statement of Conformity.
16.	Waste	Statement of Conformity.
17.	Cumulative Effects	Statement of Conformity.
18.	Summary and Conclusions	Statement of Conformity.

1.12 This Report has also been subject to legal review by Leading Counsel Paul G Tucker QC, Kings Chambers. Advice from Counsel has informed the approach to the assessment to ensure the Report is legally robust.

2. Approach and EIA Methodology

2.1 Consideration has been given to the validity of the original studies reported within each of the technical chapters of the June 2016 ES. The significance of effects within each technical chapter has been reviewed against the details of the 2019 reserved matters application to ensure that the significance of residual effects previously reported in the June 2016 ES remain valid. For the majority of the technical areas, the requirement for supporting information is limited; however, in some cases more detailed analysis is required alongside additional evaluation. Where this is the case, this is presented within each relevant technical chapter.

EIA Regulatory Compliance

2.2 The 2016 ES was prepared in accordance with the 2011 EIA Regulations. The amended EIA Directive (2014/52/EU) entered into force in May 2014. The amended EIA Directive was transposed into legislation in England on 16 May 2017. There is a period of transition following the publication of the 2017 EIA Regulations and the existing 2011 EIA Regulations still applied for any project that has already commenced by way of a request for a Screening or Scoping Opinion or through the submission of an ES.

2.3 Notwithstanding the transitional arrangements in place, the 2016 ES has been reviewed in light of the 2017 EIA Regulations to ensure conformity with the latest set of Regulations governing EIA process in England. It is not considered that the scope and approach of the 2016 ES would require amendment following implementation of the 2017 EIA Regulations.

2.4 This EIA SoC Report has therefore been prepared in accordance with the 2017 EIA Regulations, and the predecessor secondary legislation.

EIA Assessment Parameters

2.5 The assessment criteria, magnitude of change, sensitivity of receptors and assessment of effect significance remains as set out within **Chapter 2: Approach** of the submitted June 2016 ES.

2.6 The parameters which formed the basis of the assessment within the June 2016 ES are presented within Table 2.1 below.

Table 2.1: June 2016 ES Assessment Parameters

EIA Parameter	Purpose	Appendix Reference
Outline Planning Application Boundary	Defines the extent of the site and the proposed development.	**Appendix I**
Parameters Plan	Defines the type of development, maximum building heights and open space within identified zones.	**Appendix III**
Means of Access Plan	Defines the means of access to the site, which have been applied for in detail.	**Appendix IV**

EIA Parameter	Purpose	Appendix Reference
Restoration Plan	The approved restoration plan for the quarry represents the baseline for the assessments in the EIA.	**Appendix V**

Cumulative Effects

2.7 The June 2016 ES included a cumulative effects assessment which considered the potential environmental effects of the proposed development in conjunction with any other committed developments. The June 2016 ES identified potential cumulative effects associated with two schemes:

- Moneystone Solar farm (ref. SMD/2015/022); and
- Bolton Copperworks, Froghall (ref. SMD/2014/0668).

2.8 Following its approval, the Moneystone Solar Farm has now been constructed and is operational. There wasn't a subsequent planning application following the submission of the EIA Scoping Report for Bolton Copperworks. There were however two additional planning applications (ref. SMD/2016/0246 and SMD/2016/0567) on or adjacent to the Bolton Copperworks site for the change of use of the existing industrial units from manufacturing to storage and distribution. These are however both minor planning applications which have since been approved.

2.9 SMDC have also identified two residential developments (ref. SMD/2019/0723 and SMD/2018/0180) located within the town of Cheadle approximately 3km southwest of the proposed development. Following a review of these additional sites, it is not anticipated there would be additional significant cumulative effects associated with the proposed development in combination with these developments. Whilst there would be additional vehicles on the local highways network, it is not considered this would result in significant cumulative effects such that this requires a supplemental EIA to be prepared.

2.10 Two full planning applications have also been submitted at the Moneystone site. These include a Change of Use ("CoU") application (ref. SMD/2019/0716) and a surface water outfall application (ref. SMD/2019/0725). With regard to the CoU and outfall applications, the principal cumulative effects relate to construction phase effects which would be effectively managed with the measures which were set out and assessed in the June 2016 ES and conditioned on the decision notices. These include preparation of a Construction Environmental Management Plan ("CEMP") and Construction Ecological Management Plan ("CEcMP") amongst other commonplace measures. It is not considered that the CoU and outfall proposals, in combination with the approved development at Moneystone Quarry, or any other development, will result in significant construction phase cumulative effects such that they requirement assessment in an EIA.

2.11 In the long term, there are not anticipated to be any further significant cumulative effects above those identified in the June 2016 ES. The majority of the uses sought for approval via the CoU application formed part of the proposals in the 2016 outline application and therefore it is not considered there would be any additional cumulative effects during the operational phase which would result in a significant effect.

2.12 On this basis, it is not considered that a revised cumulative effects assessment needs to be undertaken by the Applicant.

3. Site Context and Background

Site History and Planning Background

3.1 The application site was granted outline planning permission on 26 October 2016 (ref. SMDC/2016/0378). The approved description of development is as follows:

> *"Outline application with some matters reserved for the erection of a high quality leisure development comprising holiday lodges; a new central hub building (providing swimming pool, restaurant, bowling alley, spa, gym, informal screen/cinema room, children's soft play area, cafe, shop and sports hall); cafe; visitor centre with farm shop; administration building; maintenance building; archery centre; watersports centre; equipped play areas; multi-sports area; ropewalks; car parking; and managed footpaths, cycleways and bridleways set in attractive landscaping and ecological enhancements (re-submission of Planning Application SMD/2014/0682)."*

3.2 The extent of the 2016 outline permission is identified on the location plan at **Appendix I**. The planning application set a series of development parameters by identifying land use and height parameters which were used to inform the assessment presented within the ES and provided at **Appendix III to V**. As required by condition 4 on the 2016 outline planning permission, the development should be carried out in accordance with the following plans and documents:

- Red Line Location Plan PL1088.M.106 rev 3;
- Parameters Plan PL1088.M.110 rev 6;
- Character Areas Plan PL1088.M.113 rev 3;
- Eaves Lane Access Plan PB5196-0100 rev C;
- Proposed Layout of A52/Whiston Eaves Lane Junction PB1608/SK001 rev C;
- Existing and Restored Landscape Plan (drawing ref. PL1088.M116 Rev 1); and
- Environmental Statement (Moneystone Park) – June 2016.

3.3 The 2019 reserved matters application, as amended, reflects the approved plans and documents set out above and the proposals are within the parameters assessed in the June 2016 ES.

Current Site Conditions

3.4 With the exception of the ongoing restoration works on site, there haven't been any further demolition or construction activities since planning permission was granted for the 2016 outline application.

4. Alternatives

4.1 A robust alternatives assessment was undertaken as part of the June 2016 ES in accordance with the EIA Regulations. This assessment would satisfy the requirements of the 2017 EIA Regulations and therefore no further information is considered necessary or appropriate as part of the reserved matters application. Furthermore, the development secured outline planning approval in 2016, therefore no alternatives sites to the proposed development have been considered as part of the 2019 reserved matters application.

4.2 As part of the 2019 reserved matters application extensive detailed design analysis was undertaken to inform the proposals and therefore a range of design solutions were tested to inform the final scheme. Further detail can be found within the Design and Access Statement (NBDA Architects, October 2019) which is submitted with the 2019 reserved matters application.

5. The Proposed Development

5.1 The quantum of development approved as part of the 2016 outline permission is set out in Table 5.1 below.

Table 5.1: Schedule of Approved Development

Development Zone	Uses	Quantum
Lodges	Lodges	Up to 250
Main Hub Building and Visitor Centre	Swimming pool and toddler pool	Up to 415 sqm
	Restaurant/ Bar and outside terrace	Up to 500 sqm
	Bowling alley	Up to 140 sqm
	Spa	Up to 150 sqm
	Gym with studio	Up to 100 sqm
	Informal screen room	Up to 80 sqm
	Children's soft play area	Up to 145 sqm
	Café	Up to 70 sqm
	Sports hall	Up to 320 sqm
	Reception area	Up to 145 sqm
	Shop	Up to 50 sqm
	Visitor centre with farm shop	Up to 490 sqm
Archery Centre and Lakeside Café	Lake café	Up to 130 sqm
	Archery centre	Up to 260 sqm
Administration Block and Maintenance Depot	Administration building	Up to 525 sqm
	Maintenance depot	Up to 500 sqm
Additional uses – Multi Activity Hub Area	Substation	Up to 600 sqm
	Multi-Sports area	Up to 1,400 sqm
	Equipped play area	Up to 500 sqm
	Adventure play area	Up to 500 sqm
	Ropewalks	Up to 5,000 sqm

5.2 The submitted 2016 ES clearly outlined that the assessment of effects was based on the parameters for the assessments and the proposed development presented within Chapter 5: The Proposed Development. The development submitted for approval via the 2019 reserved matters application, as amended, fully accords with the land use and height parameters set by the 2016 outline permission which were assessed as part of the 2016 EIA.

Reserved Matters Proposals

5.3 The 2019 reserved matters application was submitted on 21 October 2019 and the description of development is as follows:

> *"Reserved matters application proposing details for the appearance, scale, layout and landscaping for phase 1 of the leisure development comprising 190 lodges; erection of a new central hub building (providing farm shop, gym, swimming pool, spa, restaurant, cafe, games room, visitor centre, hub management and plant areas): reuse and external alterations to the existing office building to provide housekeeping and maintenance accommodation (including meeting rooms, offices, storage, staff areas and workshop); children's play areas; multi use games area; quarry park; car parking; refuse and lighting arrangements; and managed footpaths, cycleways and bridleways set in attractive hard and soft landscaping."*

5.4 The reserved matters proposals accord with the development thresholds and quantum's set by the 2016 outline planning permission. The proposals are broken down into three areas:

- Hub Area;
- Quarry 1; and
- Quarry 3.

5.5 The Site Masterplan for the 2019 reserved matters application is provided at **Appendix VI.**

Hub Area

5.6 The Hub Area will consist of the following:

- A Hub Building, which will include the following facilities: swimming pool, restaurant/bar, gym, spa and treatment rooms, café, external terrace / seating areas, farm shop, visitor centre and games area. The Hub Building will also accommodate a reception area with associated hub management area, toilets, plant rooms and service area;
- A 106-space car park and 24-space check in car park;
- A Multi Use Games Area ("MUGA");
- A Children's Play Area and Adventure Play Area;
- Retention of and external alterations to existing administration building for maintenance and housekeeping facilities. The administration building will include offices, staff meeting rooms, laundry and housekeeping rooms and storage facilities;
- Roads, footpaths and cycleways; and
- Landscaping.

Quarry 1

5.7 Quarry 1 (encompassing the eastern and western lagoon) will consist of:

- 122 lodges;
- A Quarry Park;
- 4 no. natural areas of play;
- Roads, car parking with each lodge, footpaths and cycleways; and
- Landscaping, including extensive enhanced planting to the eastern boundary of the site.

Quarry 3

5.8 Quarry 3 will consist of:

- 68 lodges;
- Roads, car parking with each lodge, footpaths and cycleways;
- A bridge to the south-western corner of the lagoon; and
- Landscaping.

5.9 There have been minor amendments to the reserved matters proposals following comments provided by SMDC during determination. These have been taken into account when preparing this Report and principally relate to updates to the landscaping and relocation of LPG Storage Tanks.

Reserved Matters Planning Conditions

5.10 The 2016 outline planning permission has been subject to a series of conditions attached to the decision notice and Section 106 Agreement. Relevant conditions associated with the 2019 reserved matters application are provided in Table 5.2 below.

5.11 As part of the consented development, there are a series of conditions set out in the decision notice to provide further environmental management measures or information to SMDC to effectively manage any environmental impacts during the construction and operational phases of development. These conditions are discussed in further detail within the relevant technical sections of this Report.

Table 5.2: Reserved Matters Planning Conditions Compliance

No.	Condition Requirements
1	Provision of reserved matters information for each relevant phase.
4	Delivery of the development in accordance with the approved plans and documents.

No.	Condition Requirements
6	Restrictions on the quantum of deliverable development.
9	Provision of ecological and arboriculture assessments.
11	Details in respect of levels and engineering information.
14	Design principles delivered in accordance with LVIA mitigation measures and DAS principles.
27	Foul and surface water drainage information.
41	Provision of an Arboriculture Impact Assessment
44	Details in respect of a Structural Landscape Strategy.

Summary

5.12 In summary, the 2019 reserved matters proposals fully accord with the proposed development which was secured as part of the 2016 outline planning permission, and which were assessed as part of the 2016 EIA. A suite of conditions are being discharged as part of the 2019 reserved matters application, and the environmental management conditions are discussed further within the technical sections of this Report.

6. Planning Policy Context

6.1 Since the planning application was approved in October 2016, there have been updates to national planning policy. A review of these updated documents is provided below.

National Planning Policy

National Planning Policy Framework

6.2 The revised National Planning Policy Framework ("NPPF"), published in June 2019, contains the Government's most up-to-date planning guidance. The NPPF sets out the Government's planning policies for England and how these are expected to be applied. The NPPF is a material consideration in the determination of the planning application. The 2019 reserved matters application has been prepared to accord with the most recent version of the Government's policy framework.

Planning Practice Guidance

6.3 On 6 March 2014 the Department for Communities and Local Government launched the online Planning Practice Guidance ("PPG") as a web-based resource to further simplify and bring together planning practice guidance for England in an accessible and usable way. The PPG is intended to assist practitioners and provide further guidance on the interpretation of national planning policy within the NPPF. It is therefore a significant material consideration in the determination of the application.

6.4 The PPG is regularly revised and updated in line with any amendments to policy and best practice. The 2019 reserved matters application has taken into account any additional relevant guidance presented within this resource.

Local Planning Policy

6.5 There have been no amendments to local planning policy since the submission of the 2016 outline application. A new Staffordshire Moorlands Local Plan has been prepared which will cover the period 2016 to 2031. The new Local Plan is at an advanced stage of preparation following examination and a main modifications consultation but has not yet been adopted.

Technical Guidance and Legislation

6.6 There have been updates to technical guidance and legislation since preparation of the June 2016 ES; however, it is not considered this would require an Addendum to update assessments on this basis. A number of the planning conditions included on the decision notice and mitigation measures presented in the June 2016 ES will ensure that any further or supplementary information provided as part of reserved matters, prior to construction or upon occupation, will meet the latest guidance and required environmental standards.

Summary

6.7 In summary, the Supporting Planning Statement ("SPS") (Avison Young, October 2019,) which has been submitted with the 2019 reserved matters application, provides a robust assessment of the planning application against up-to-date planning policy and guidance. Nonetheless none of the above changes are considered to warrant additional environmental information.

7. Socioeconomics

7.1 The purpose of this Chapter is to outline the implications, if any, that the details of the reserved matters will have on the submitted June 2016 ES. The Chapter provides a SoC with regard to the potential socioeconomic impacts arising from the 2019 reserved matters application. The SoC is provided pursuant to the June 2016 ES to confirm the overall findings with respect to the socioeconomics assessment.

7.2 There have been updates to the demographic data used in the 2016 assessment. However, it is not considered the baseline will have shifted significantly to alter the significance of the socio-economic benefits previously identified. There have been no amendments to the proposed development which were assessed and approved as part of the 2016 outline planning permission.

7.3 Due to the nature of the proposals the residual effects are less reliant on the socioeconomic baseline, as the effects are primarily derived by the capital expenditure and investment, as a result of the proposals, in the local economy, services and businesses. The investment into the local community and economy remains as presented in the June 2016 ES.

7.4 Overall, it is considered that the June 2016 ES remains valid and is adequate to assess the socioeconomic effects of the development.

8. Landscape and Visual

8.1 The purpose of this Chapter is to outline the implications, if any, that the details of the reserved matters will have on the submitted June 2016 ES. The Chapter provides a SoC with regard to the potential landscape and visual impacts arising from the 2019 reserved matters application. The SoC is provided pursuant to the June 2016 ES to confirm the overall findings with respect to the Landscape and Visual Impact Assessment ("LVIA").

8.2 To ensure a worst-case assessment was undertaken as part of the LVIA, the baseline conditions assumed the full implementation of the Revised Restoration Plan which was approved by Staffordshire County Council ("SCC") (**Appendix V**). This approach ensured that all vegetation and habitat loss as a result of the proposals would be accurately identified and mitigated as part of the EIA.

8.3 With regards to the current baseline on site, there have been ongoing restoration works in line with the agreed restoration plan. These have been overseen by Bowland Ecology as part of their ongoing ecological input and advice at the site.

8.4 Therefore, a robust baseline assessment was undertaken to inform the EIA. In addition an application has been made to retain the former lab building on site, this has been considered under the cumulative effects section and is not considered to give rise to any change in the baseline for assessing significant environmental effects given that a 'worst case' approach of a restored site has been assumed for the assessment.

8.5 Due to the outline nature of the proposals, additional information was required once detailed designs were ready to progress. There are a series of conditions attached to the 2016 outline planning permission which will require discharging as part of the reserved matters or prior to commencing works on site, including:

- Condition 12 – The proposed bridleways shall be informed by a construction methodology which takes account of landscape and visual construction and operation management measures.
- Condition 14 – The reserved matters should be delivered in accordance with the design principles within the DAS and the mitigation measures presented within Table 8,9, Chapter 8 LVIA of the June 2016 ES.
- Condition 17 – A Construction Environmental Management Plan ("CEMP") should be prepared which incorporates the mitigation measures presented within Table 8,10, Chapter 8 LVIA of the June 2016 ES.
- Condition 44 – Delivery of a comprehensive Structural Landscape Strategy ("SLS") which builds upon the mitigation and enhancement principles presented within Chapter 8 LVIA of the June 2016 ES.

8.6 To supplement the reserved matters application, photomontages have been prepared to illustrate the detailed designs when looking onto the site from the direction of the Listed Buildings at Little Eaves Farm. The location of these viewpoints were agreed with SMDC. The photomontages are provided at **Appendix VII** Due to the robust approach for the LVIA it is not considered there would be any new effects nor a change

to the significance of previously identified effects. The proposals accord with the parameters set by the 2016 outline permission and therefore the residual effects remain as presented in the June 2016 ES.

8.7 Overall, it is considered that the June 2016 ES remains valid and is adequate to assess the landscape and visual effects of the development.

9. Ecology

9.1 The purpose of this Chapter is to outline the implications, if any, that the details of the reserved matters will have on the submitted June 2016 ES. The Chapter provides a SoC with regard to the potential ecological impacts arising from the 2019 reserved matters application. The SoC is provided pursuant to the June 2016 ES to confirm the overall findings with respect to the ecology assessment.

9.2 There has been a wealth of ecological surveys undertaken at the site over a period of ten years which are set out in Table 9.1.

Table 9.1: Schedule of Ecological Surveys, Moneystone Quarry

Time Period	Surveys Undertaken
2010 - 2012	• Extended Phase 1 Habitat Survey; • Hedgerow survey; • National Vegetation Classification; • Reptile Survey; • Amphibian Survey; • Breeding Bird Survey; • Badger Survey Plan; • Riverine Species Survey – otter, water vole, crayfish; and • Bat Surveys – emergence/activity.
2014	• Extended Phase 1 Habitat Survey; • National Vegetation Classification; • Reptile Survey; • Amphibian Survey; • Breeding Bird Survey; • Badger Survey Plan; • Riverine Species Survey – otter, water vole, crayfish; • Bat Surveys (including Crow Trees Farm); and • Monitoring for management plan including walkover survey.
2015	• Monitoring for management plan including walkover survey.
2016	• Habitat survey (Phase 1); • Breeding birds; • Bat surveys; • Reptiles; • Amphibians; and • Monitoring for management plan including walkover survey.
2017	• Update walkover survey.
2018	• Update walkover survey.
2019	• Update walkover survey.
2020	• Bat Inspection – Sibelco lab buildings.

9.3 To ensure a robust assessment was undertaken, the baseline conditions assessed included the existing baseline at the time the June 2016 ES was prepared, and that of a future baseline once the approved restoration had been implemented.

9.4 In addition, Bowland Ecology have reviewed the evidence base and confirmed this provides an accurate and clear understanding of the ecological conditions at the site. Given the wealth of data gathered over the last 10 years, it is not considered necessary to undertake any further ecological surveys. The review and analysis undertaken by Bowland Ecology is presented at **Appendix VIII**.

9.5 There are a series of conditions attached to the 2016 outline planning permission which will require discharging as part of the reserved matters or prior to commencing works on site, including:

- Condition 9 – Provision of an Ecological and Arboricultural assessment if any works are proposed within the area of retained landscape defined by the approved parameters plan.
- Condition 12 – The proposed bridleways shall be informed by a construction methodology which takes account of ecological management measures.
- Condition 18 – Provision of a Construction Ecological Management Plan which has been informed by the principles of the outline CEMP provided at Appendix 9.3 of the June 2016 ES.
- Condition 19 – Provision of a Habitat Management Plan which has been informed by the principles of the outline Habitat Management Plan provided at Appendix 9.4 of the June 2016 ES.
- Condition 20 – Provision of a sensitive lighting strategy to minimise the impacts on bats.
- Condition 44 – Delivery of a comprehensive SLS which builds upon the mitigation and enhancement principles presented within Chapter 9 Ecology of the June 2016 ES.

9.6 Taking all the above information into account, it is not considered that further baseline information needs to be gathered nor will there be any new effects or change in the significance of effects previously identified. The conditions set out on the decision notice in respect of ecology, combined with the mitigation presented in the June 2016 ES, provide sufficient environmental management and mitigation measures for the long-term protection of ecological receptors during the construction and operational phases of development.

9.7 Overall, it is considered that the June 2016 ES remains valid and is adequate to assess the ecological effects of the development.

10. Archaeology and Heritage

10.1 The purpose of this Chapter is to outline the implications, if any, that the details of the reserved matters will have on the submitted June 2016 ES. The Chapter provides a SoC with regard to the potential archaeology and heritage impacts arising from the 2019 reserved matters application. The SoC is provided pursuant to the June 2016 ES to confirm the overall findings with respect to the archaeology and heritage assessment.

10.2 Due to the nature of archaeological and heritage receptors, it is not considered the baseline will have changed since the June 2016 ES was prepared. Any archaeological resources would have remained in-situ and no new heritage assets have been designated which have the potential to be affected by the proposals.

10.3 There are a series of conditions attached to the 2016 outline planning permission which will require discharging as part of the reserved matters or prior to commencing works on site, including:

- Condition 47 – Undertaking an archaeological watching brief, walkover and earthwork survey.
- Condition 48 – Erection of an interpretation board on the former site of Whiston Eaves Farmhouse and stable block on Whiston Eaves Lane.

10.4 The effects on the setting of listed buildings was a principal consideration of the Council and has been carefully reassessed. Accordingly, as set out above, there have been additional photomontages prepared to illustrate views from the Listed Buildings at Little Eaves Farmhouse. However, as the proposals are within the parameters previously assessed it is not considered there would be any new effects as a result of the reserved matters. Overall, it is considered that the June 2016 ES remains valid and is adequate to assess the archaeological and heritage effects of the development.

11. Ground Conditions

11.1 The purpose of this Chapter is to outline the implications, if any, that the details of the reserved matters will have on the submitted June 2016 ES. The Chapter provides a SoC with regard to the potential ground conditions impacts arising from the 2019 reserved matters application. The SoC is provided pursuant to the June 2016 ES to confirm the overall findings with respect to the ground conditions assessment.

11.2 There is a wealth of geo-environmental and geotechnical surveys which have been undertaken at the site during and since quarrying operations ceased. These surveys are further supplemented by the quarterly monitoring reports and summarised in Biannual reports which are undertaken by Abbeydale and provided to SCC. These surveys have provided an accurate picture of the geo-environmental and geotechnical conditions which informed the June 2016 ES. It is therefore considered that an accurate and representative understanding of the site's baseline conditions has been prepared which informed the assessment.

11.3 Furthermore, there are a series of conditions attached to the 2016 outline planning permission which will require discharging as part of the reserved matters or prior to commencing works on site, including:

- Condition 36 – Undertaking a risk assessment associated with contamination.
- Condition 37 – Preparing a remediation strategy and validation plan.
- Condition 38 – Preparing a validation report upon completion of the remediation strategy and implementation of the validation plan.
- Condition 39 – Requirement to cease any site operations if unidentified contamination is identified.
- Condition 40 – Restricting the importation of material unless it has been suitably tested for contamination and assessed for its suitability for the proposed development.

11.4 Taking the June 2016 ES into consideration, the quarterly monitoring of the geo-environmental and geotechnical conditions at the site, and the conditions on the 2016 decision notice, it is not considered any further updates to the Ground Conditions assessment is considered necessary. The conditions provide sufficient environmental management and mitigation measures for the long-term protection of on and off-site receptors during the construction and operational phases of development.

11.5 Overall, it is considered that the June 2016 ES remains valid and is adequate to assess the ground condition effects of the development.

12. Drainage and Flood Risk

12.1 The purpose of this Chapter is to outline the implications, if any, that the details of the reserved matters will have on the submitted June 2016 ES. The Chapter provides a SoC with regard to the potential drainage and flood risk impacts arising from the 2019 reserved matters application. The SoC is provided pursuant to the June 2016 ES to confirm the overall findings with respect to the drainage and flood risk assessment.

12.2 The June 2016 ES was informed by an FRA, as well as groundwater monitoring data which had been gathered since 2011. Therefore, a robust baseline assessment was undertaken to inform the EIA. Due to the outline nature of the proposals, additional information was required once detailed designs were ready to progress. A detailed drainage strategy has been prepared by JPG and is submitted with the 2019 reserved matters application. This report intends to discharge the requirements of Condition 27 set out below. There are a series of conditions attached to the 2016 outline planning permission which will require discharging as part of the reserved matters or prior to commencing works on site, including:

- Condition 27 – Provision of a foul and surface water drainage scheme informed by the detailed designs.
- Condition 28 – Assessment of surface water flow routes and necessary mitigation measures.
- Condition 29 – Restriction on works within the vicinity of open watercourses to ensure the maintenance and protection of watercourses and river habitat.
- Condition 30 – Restriction on the finished floor levels to protect development from overland flow.

12.3 Taking the June 2016 ES into consideration, the quarterly monitoring of the groundwater at the site, and the conditions on the 2016 decision notice, it is not considered any further updates to the drainage and flood risk assessment is considered necessary. The conditions provide sufficient environmental management and mitigation measures for the long-term protection of on and off-site receptors during the construction and operational phases of development.

12.4 Overall, it is considered that the June 2016 ES remains valid and is adequate to assess the drainage and flood risk effects of the development.

13. Transport and Access

13.1 The purpose of this Chapter is to outline the implications, if any, that the details of the reserved matters will have on the submitted June 2016 ES. The Chapter provides a SoC with regard to the potential highways impacts arising from the 2019 reserved matters application. The SoC is provided pursuant to the June 2016 ES to confirm the overall findings with respect to the highways assessment.

13.2 The June 2016 ES was informed by a robust transport assessment with the scope of traffic surveys and information prior agreed with SMDC. Therefore, a robust baseline assessment was undertaken to inform the EIA. It is not considered the baseline has increased materially such that the significance of effects would require reassessment, nor have the proposals been amended to warrant an updated assessment.

13.3 Due to the outline nature of the proposals, additional information was required once detailed designs were ready to progress. Therefore, a series of conditions are attached to the 2016 outline planning permission which require discharging as part of the reserved matters or prior to commencing works on site, including:

- Condition 16 – Provision of pedestrian and cycling route information.
- Condition 21 – Detailed designs for highways infrastructure within the site.
- Condition 22 – Provision of the details for off-site highways improvements at the junction of Whiston Eaves Lane and the A52.
- Condition 23 – Detailed designs for the principal site access of Eaves Lane.
- Condition 24 – Provision of a traffic management scheme to reduce speed levels at the junction of Whiston Eaves Lane and the A52.
- Condition 25 – Preparation of a signage scheme for all traffic entering and exiting the site.
- Condition 26 – Preparation of a Construction Traffic Management Plan which implements and expands on the mitigation measures set out within Chapter 13 of the June 2016 ES.

13.4 Taking the June 2016 ES into consideration and the conditions on the 2016 decision notice, it is not considered any further updates to the highways assessment is considered necessary. The detailed designs will also allow a Travel Plan to be prepared and agreed with SMDC. The conditions and measures set out in the June 2016 ES provide sufficient environmental management and mitigation measures for the long-term protection of on and off-site receptors during the construction and operational phases of development.

13.5 Overall, it is considered that the June 2016 ES remains valid and is adequate to assess the traffic and transportation effects of the development.

14. Air Quality

14.1 The purpose of this Chapter is to outline the implications, if any, that the details of the reserved matters will have on the submitted June 2016 ES. The Chapter provides a SoC with regard to the potential air quality impacts arising from the 2019 reserved matters application. The SoC is provided pursuant to the June 2016 ES to confirm the overall findings with respect to the air quality assessment.

14.2 It has not been considered necessary to update the traffic figures within the highways assessment and therefore it is not considered necessary to revisit the air quality assessment submitted with the June 2016 ES. The assessment and mitigation measures presented within the June 2016 ES is considered to remain valid.

14.3 Due to the outline nature of the proposals, additional information was required once detailed designs were ready to progress. There are a series of conditions attached to the 2016 outline planning permission which will require discharging as part of the reserved matters or prior to commencing works on site, including:

- Condition 17 – Preparation of a CEMP.
- Condition 46 – Preparation of a Dust Management Plan.

14.4 Taking the June 2016 ES into consideration and the conditions on the 2016 decision notice, it is not considered any further updates to the air quality assessment is considered necessary. The detailed designs will also allow a Travel Plan to be prepared and agreed with SMDC. The conditions and measures set out in the June 2016 ES provide sufficient environmental management and mitigation measures for the long-term protection of on and off-site receptors during the construction and operational phases of development.

14.5 Overall, it is considered that the June 2016 ES remains valid and is adequate to assess the air quality effects of the development.

Cellarhead Junction

14.6 Since the 2016 outline application was approved an ("AQMA") has been designated at the Cellarhead Junction which is located approximately 8km west of the site. The AQMA was designated in July 2019 based upon the potential exceedance of the annual mean nitrogen dioxide ("NO_2") air quality objective. The Cellarhead Junction is the crossroads of the A520 Leek Road (north and south) and A52 Kingsley Road and A52 Cellarhead Road (east and west respectively).

14.7 The AQMA was not designated at the time the June 2016 ES was prepared and therefore did not form part of the air quality assessment. As a result, BWB have been commissioned to undertake an air quality assessment at the Cellarhead Junction to determine the likely effects as a result of the proposed development. The assessment is presented at **Appendix IX** and considered the operational phase road traffic emissions at identified receptor locations within the designated AQMA.

14.8 The scope and approach to the assessment has been agreed with officers at SMDC.

14.9 Four scenarios were considered in the air dispersion modelling:

- Scenario 1: 2018 Verification Year;
- Scenario 2: 2020 Base Year;
- Scenario 3: 2022 Opening Year without development; and
- Scenario 4: 2022 Opening Year with development.

14.10 The baseline assessment for Scenario 2: 2020 Base Year and Scenario 3: 2022 Opening Year Without Development, indicates that predicted concentrations of NO_2, PM_{10} and $PM_{2.5}$ are below the respective annual mean air quality objectives at all receptors, with the exception of R4 and R11 in Scenario 2: 2020 Base Year. These receptors are located at the closest point to the Cellarhead Junction, where queuing traffic occurs.

14.11 Concentrations of NO_2, PM_{10} and $PM_{2.5}$ were predicted at identified existing receptor locations for Scenario 4: 2022 Opening Year with development, to consider the impact of development-generated vehicles on local air quality within the Cellarhead Junction AQMA.

14.12 The predicted NO_2, PM_{10} and $PM_{2.5}$ concentrations for Scenario 3: 2022 Opening Year without development and Scenario 4: 2022 Opening Year with development are below the relevant annual mean air quality objectives for all receptors. The proposed development does not lead to any additional exceedances of the annual mean air quality objectives.

14.13 Predicted changes in NO_2, PM_{10} and $PM_{2.5}$ concentrations are all less than 1% of the relevant annual mean air quality objectives and concentration changes are less than 94% of the relevant annual mean objectives. The impact of development-generated traffic within the Cellarhead AQMA is therefore predicted to be negligible in accordance with IAQM and EPUK guidance.

14.14 In addition, for robustness, a sensitivity analysis was undertaken which assumed the NOx concentrations did not decrease in line with projected emission factors. The findings of the sensitivity analysis predicted that the impact of development-generated road traffic on local air quality as negligible to slight adverse in accordance with IAQM and EPUK guidance. Therefore, no significant air quality impacts are anticipated as a result of the sensitivity analysis.

Summary

14.15 In summary, an air quality assessment has been undertaken at the Cellarhead Junction. The findings of which confirm that there are no significant effects as a result of the proposed development at this junction and the effects are considered to be negligible. A sensitivity analysis exercise has been undertaken which confirms that potential effects would be negligible to slight adverse, if NOx emissions were not to decrease in line with projected emission factors. Overall, no significant air quality effects are anticipated at the Cellarhead AQMA and the June 2016 ES remains valid and is adequate to assess the air quality effects of the development.

15. Noise and Vibration

15.1 The purpose of this Chapter is to outline the implications, if any, that the details of the reserved matters will have on the submitted June 2016 ES. The Chapter provides a SoC with regard to the potential noise and vibration impacts arising from the 2019 reserved matters application. The SoC is provided pursuant to the June 2016 ES to confirm the overall findings with respect to the noise and vibration assessment.

15.2 It has not been considered necessary to update the traffic figures within the highways assessment and therefore it is not considered necessary to revisit the noise and vibration assessment submitted with the June 2016 ES. The assessment and mitigation measures presented within the June 2016 ES is considered to remain valid.

15.3 Due to the outline nature of the proposals, additional information was required once detailed designs were progressed. There are a series of conditions attached to the 2016 outline planning permission which will require discharging as part of the reserved matters or prior to commencing works on site, including:

- Condition 31 – Preparation of a scheme for the containment of operational noise at the site.
- Condition 32 – Noise insulation requirements for the lodges.
- Condition 33 – Restrictions on the amplification of music.
- Condition 34 – Preparation of a scheme setting out the plant to be installed at the site and any associated noise levels at sensitive receptors.
- Condition 35 – Preparation of a Construction Environmental Method Statement which includes noise and vibration mitigation measures set out within Chapter 15: Noise and Vibration of the June 2016 ES.

15.4 Taking the June 2016 ES into consideration and the conditions on the 2016 decision notice, it is not considered any further updates to the noise and vibration assessment is considered necessary. The conditions and measures set out in the June 2016 ES provide sufficient environmental management and mitigation measures for the long-term protection of on and off-site receptors during the construction and operational phases of development.

15.5 Overall, it is considered that the June 2016 ES remains valid and is adequate to assess the noise and vibration effects of the development.

16. Waste

16.1 The purpose of this Chapter is to outline the implications, if any, that the details of the reserved matters will have on the submitted June 2016 ES. The Chapter provides a SoC with regard to the potential waste impacts arising from the 2019 reserved matters application. The SoC is provided pursuant to the June 2016 ES to confirm the overall findings with respect to the waste assessment.

16.2 It has not been considered necessary to update the waste assessment and the mitigation measures presented within the June 2016 ES are considered to remain valid. Due to the outline nature of the proposals, additional information was required once detailed designs were ready to progress. Due to the nature of waste management this needs to be specifically informed by a detailed Site Waste Management Plan which comprises condition 45 of the 2016 decision notice.

16.3 Taking the June 2016 ES into consideration and the condition 25 on the 2016 decision notice, it is not considered any further updates to the waste assessment is considered necessary. The conditions and measures set out in the June 2016 ES provide sufficient environmental management and mitigation measures for the long-term protection of on and off-site receptors during the construction and operational phases of development.

16.4 Overall, it is considered that the June 2016 ES remains valid and is adequate to assess the waste effects of the development.

17. Summary and Conclusions

17.1 Avison Young has been appointed by Laver Leisure (Oakamoor) Limited to prepare an EIA SoC Report to support the 2019 reserved matters application at Moneystone Quarry, Staffordshire.

17.2 The 2016 outline application was supported by the June 2016 ES which comprised a comprehensive suite of technical assessments to establish the environmental impacts of the proposed development. The June 2016 ES identified a series of robust environmental management and mitigation measures which informed a series of conditions to provide additional information once the reserved matters applications have progressed or prior to commencing works on site.

17.3 The 2019 reserved matters application, as amended, comprises proposals which are wholly within the defined assessment parameters which formed the assessments within the June 2016 ES. Therefore, it is considered that the June 2016 ES remains valid for the purposes of decision making.

17.4 Bowland Ecology have undertaken a review of the evidence base prepared to date and confirmed that, due to the wealth of data available, this is robust and reflective of the site conditions. There are not anticipated to be any new effects nor is the significance of previously identified effects anticipated to change.

17.5 BWB have undertaken a review of the traffic related air quality impacts at the newly designated AQMA for the Cellarhead Junction. The conclusions of this assessment confirm the proposals are not anticipated to result in significant air quality impacts as a result of the proposed development.

17.6 In summary, the June 2016 ES is considered to be valid for the purposes of decision making in respect of the 2019 reserved matters application, and no new significant environmental impacts have been identified which would warrant the provision of a direction under regulation 25. Appropriate information has been provided to the Council (and appended) to confirm these findings. Therefore, it is considered that Regulation 9(2) of the 2017 EIA Regulations is satisfied as the environmental information before SMDC is adequate to assess the significant effects of the development on the environment, and further environmental information is therefore not warranted.

Appendix 2.3: December 2021 ES Addendum NTS Surface Water Outfall

Non-Technical Summary

Avison Young has been appointed by Laver Leisure (Oakamoor) Limited ('the Applicant') to prepare an Environmental Statement Addendum ("ESA") in respect of a planning application to deliver an outfall from Quarry 3 of Moneystone Quarry. The outfall is required to deliver the hydrological regime at the quarry now that quarrying has ceased, and the leisure development is coming forward (ref. SMD/2016/0378).

An outfall was always envisaged as part of the approved leisure development. The outline drainage strategy demonstrated that an outfall from Quarry 3 was required to deliver a suitable long term hydrological regime on and off-site. Therefore, the principal of the outfall has been previously established.

However, as the detailed designs have progressed this has demonstrated a requirement for minor works to construct and connect the outfall to a nearby stream. These works are outside of the approved leisure development planning application boundary, and therefore a standalone full application has been prepared, which this ESA has been prepared in support of.

A suite of updated technical assessments have been undertaken, including:

- **Landscape and Visual** – A review has been undertaken which confirms the outfall does not change the significance of LVIA effects previously identified.
- **Ecology** – An updated walkover ecology survey has been undertaken and extensive consultation undertaken with Natural England. The proposed mitigation measures will ensure the development will not lead to significant effects on the Site of Special Scientific interest ("SSSI"), and the new hydrological regime will restore water flows to the SSSI closer to pre-quarrying levels than current site conditions
- **Trees** – The proposals will lead to the loss of a section of two separate tree groups. These effects are not considered significant and the designs have aimed to retain as many trees on site as possible through root protection measures and appropriate layout / design of the outfall.
- **Hydrology and Ecohydrology** – The proposed hydrological solution for the quarry will allow flows to be restored at the top of the SSSI and, as set out above, improve the hydrological regime for the ecological designation.

The assessment information presented within this ES Addendum has confirmed that the proposed outfall has not changed the significance of effects identified in the 2016 ES, nor identified any new significant effects as a result of the proposals.

Appendix 2.4: October 2023 EIA Statement of Conformity

Environmental Impact Assessment: Statement of Conformity

Phase 2 Reserved Matters
Moneystone Quarry, Staffordshire

On behalf of Laver Leisure (Oakamoor) Limited
October 2023

CONTENTS

APPENDICES

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Version: Final

Date: October 2023

1 INTRODUCTION

1.1 Asteer Planning has been appointed by Laver Leisure (Oakamoor) Limited ('the Applicant') to prepare an Environmental Impact Assessment ("EIA") Statement of Conformity ("SoC") Report in respect of a reserved matters planning application (hereafter referred to as the 'Phase 2 reserved matters application') at Moneystone Quarry, Staffordshire (hereafter referred to as 'the site'). The Phase 2 reserved matters application is submitted pursuant to the 2016 outline permission (ref. SMD/2016/0378) (hereafter referred to as the '2016 outline application [or permission]') submitted to the Staffordshire Moorlands District Council ("SMDC"). A reserved matters application (ref. SMD/2019/0646) was submitted to the SMDC in 2019 and is awaiting determination (referred to as the Phase 1 reserved matters application). The Site Location Plan for the Phase 2 reserved matters application is included at Appendix 1.

1.2 The 2016 outline planning application was accompanied by an Environmental Statement ("ES") (hereafter referred to as the 'June 2016 ES') prepared by HOW Planning (now part of Avison Young) on behalf of the Applicant.

1.3 The ES submitted with the 2016 outline permission can be accessed using the planning reference 'SMD/2016/0378' at the following link:

https://www.staffsmoorlands.gov.uk/article/564/Comment-on-an-application

1.4 The June 2016 ES is also available for viewing at Staffordshire Moorlands District Council's offices: Moorlands House, Stockwell Street, Leek, Staffordshire, ST13 6HQ. Further copies of the ES can be requested direct from Avison Young[1].

1.5 Since the original application was an outline application, the details of the proposed development are being brought forward through reserved matters applications split into two phases. The Phase 1 reserved matters application was submitted in October 2019 and is pending determination. The Phase 1 reserved matters application (see Appendix 1 for site layout plan) was supported by an EIA SoC and sought planning permission for the following development:

"Reserved matters application proposing details for the appearance, scale, layout and landscaping for phase 1 of the leisure development comprising 190 lodges; erection of

[1] **A charge of £35 may apply.**

a new central hub building (providing farm shop, gym, swimming pool, spa, restaurant, cafe, games room, visitor centre, hub management and plant areas): reuse and external alterations to the existing office building to provide housekeeping and maintenance accommodation (including meeting rooms, offices, storage, staff areas and workshop); children's play areas; multi use games area; quarry park; car parking; refuse and lighting arrangements; and managed footpaths, cycleways and bridleways set in attractive hard and soft landscaping."

1.6 The Phase 1 reserved matters SoC determined that the June 2016 ES remained valid in terms of the assessment of likely significant effects.

1.7 The Phase 2 reserved matters application aims to bring forward the remaining 60 lodges as per Condition 8 attached to the outline planning permission which permits no more than 250 lodges. In addition, the Phase 2 reserved matters application will include details for, the watersports centre and archery centre components. Therefore, this EIA SoC has been prepared to support the Phase 2 reserved matters application in accordance with the EIA regulations discussed below.

1.8 The 2016 ES was prepared in accordance with the 2011 EIA Regulations. The amended EIA Directive (2014/52/EU) entered into force in May 2014. The amended EIA Directive was transposed into legislation in England on 16 May 2017. There is a period of transition following the publication of the 2017 EIA Regulations[2] and the existing 2011 EIA Regulations still apply for any project that has already commenced by way of a request for a Screening or Scoping Opinion or through the submission of an ES, in accordance with Regulation 76 of the 2017 EIA Regulations. As outlined in Regulation 76, the 2011 Regulations continue to apply in connection with a principle decision where an Environmental Statement has been submitted.

1.9 Notwithstanding the transitional arrangements in place, the 2016 ES has been reviewed in light of the 2017 EIA Regulations to ensure conformity with the latest set of Regulations governing EIA process in England. It is not considered that the scope and approach of the 2016 ES would require amendment following implementation of the 2017 EIA Regulations.

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[2] **The Town and Country Planning (Environmental Impact Assessment) Regulations (England) (SI571/ 2017), DCLG, London**

1.10 When considering the Phase 2 reserved matters application it is necessary to consider how the EIA Regulations apply to "*subsequent application(s)*" which are defined as:

"*...an application for approval of a matter where the approval:*

(a) Is required by or under a condition to which a planning permission is subject; and

(b) Must be obtained before all or part of the development permitted by the planning permission may be begun."

1.11 The EIA Regulations contain a prohibition on a development consent for EIA development, including subsequent applications, being granted unless there has been an assessment of the likely significant effects of the development. As such, the EIA Regulations seek to ensure the determining authority for the development consent is able to make its decision in the full knowledge of any likely significant environmental effects.

1.12 This SoC reviews the proposed details for approval via the Phase 2 reserved matters application in the context of the ES prepared for the 2016 outline planning application. This report aims to assess whether the EIA prepared to support the 2016 outline planning application remains adequate to assess the significant effects of the development on the environment, including those matters which should be taken into consideration when determining the Phase 2 reserved matters application.

1.13 If, however, SMDC determine that the environmental information before them is not considered adequate to assess the significant environmental effects of the development, within the provisions of Regulations 9(3), then SMDC would need to serve notice for further environmental information under the provision of Regulation 25 of the EIA regulations requesting the provision of specific further environmental information.

1.14 Provision for subsequent applications where environmental information has been previously provided is set out within Regulation 9 of the 2017 EIA Regulations, which states:

"*9.—(1) This regulation applies where it appears to the relevant planning authority that—*

(a) an application which is before them for determination—

(i) is a subsequent application in relation to Schedule 1 or Schedule 2 development;

(ii) has not itself been the subject of a screening opinion or screening direction; and

(iii) is not accompanied by a statement referred to by the applicant as an environmental statement for the purposes of these Regulations; and

(b) either—

(i) the application for planning permission to which the subsequent application relates was accompanied by a statement referred to by the applicant as an environmental statement for the purposes of these Regulations; or

(ii) the application is for the approval of a matter where the approval is required by or under a condition to which planning permission deemed by section 10(1) of the Crossrail Act 2008(a) (Planning) or section 20(1) or 50(5)(a) of the High Speed Rail (London - West Midlands) Act 2017(b) (Deemed planning permission) and (Enforcement of environmental covenants) is subject.

(2) Where it appears to the relevant planning authority that the environmental information already before them is adequate to assess the significant effects of the development on the environment, they must take that information into consideration in their decision for subsequent consent.

(3) Where it appears to the relevant planning authority that the environmental information already before them is not adequate to assess the significant effects of the development on the environment, they must serve a notice seeking further information in accordance with regulation 25."

Report Structure

1.15 This Reports contains an EIA SoC for the technical disciplines which formed part of the 2016 ES. This Report has been prepared and coordinated by Asteer Planning.

1.16 The structure of this Report is presented in Table 1, corresponding to each chapter of the June 2016 ES. Alongside each chapter heading is an indication of the approach i.e. SoC and/or review of environmental information.

Table 1: Structure and Content of this Report

No.	Title	Content of the Chapter
1.	Introduction	Overview of the document's purpose, context and content.
2.	Approach and EIA Methodology	Review of the approach to the June 2016 ES.
3.	Site Context and Background	Overview of the site and background to the development.
4.	Alternatives	Statement of Conformity.
5.	The Proposed Development	Details of the 2016 outline and 2019 reserved matters application.
6.	Planning Policy Context	Review of any amendments to planning policy.
7.	Socioeconomics	Statement of Conformity.
8.	Landscape and Visual	Statement of Conformity.
9.	Ecology	Statement of Conformity and Review of the Environmental Effects.
10.	Archaeology and Heritage	Statement of Conformity.
11.	Ground Conditions	Statement of Conformity.
12.	Drainage and Flood Risk	Statement of Conformity.
13.	Transport and Access	Statement of Conformity.
14.	Air Quality and Dust	Statement of Conformity and Review of the Environmental Effects.
15.	Noise and Vibration	Statement of Conformity.
16.	Waste	Statement of Conformity.
17.	Summary and Conclusions	Statement of Conformity.

2 APPROACH AND EIA METHODOLOGY

2.1 Consideration has been given to the validity of the original studies reported within each of the technical chapters of the June 2016 ES. The significance of effects within each technical chapter has been reviewed against the details of the Phase 2 reserved matters application to ensure that the significance of residual effects previously reported in the June 2016 ES remain valid. For the majority of the technical areas, the requirement for supporting information is limited; however, in some cases more detailed analysis is required alongside additional evaluation. Where this is the case, this is presented within each relevant technical chapter.

EIA Assessment Parameters

2.2 The assessment criteria, magnitude of change, sensitivity of receptors and assessment of effect significance remains as set out within Chapter 2: Approach of the submitted June 2016 ES.

2.3 The parameters which formed the basis of the assessment within the June 2016 ES are presented within Table 2 below.

Table 2: 2016 ES plans

EIA Parameter	Purpose
Outline Planning Application Boundary	Defines the extent of the site and the proposed development.
Parameters Plan	Defines the type of development, maximum building heights and open space within identified zones.
Means of Access Plan	Defines the means of access to the site, which have been applied for in detail.
Restoration Plan	The approved restoration plan for the quarry represents the baseline for the assessments in the EIA.

Cumulative Effects

2.4 The June 2016 ES included a cumulative effects assessment which considered the potential environmental effects of the proposed development in conjunction with any other committed developments. The June 2016 ES identified potential cumulative effects associated with two schemes:

Moneystone Solar farm (ref. SMD/2015/022); and,

Bolton Copperworks, Froghall (ref. SMD/2014/0668 – request for Scoping Opinion only).

2.5 Following its approval, the Moneystone Solar Farm has now been constructed and is operational. In terms of Bolton Copperworks, no further planning application was made and therefore this is scoped-out of the cumulative assessment. There were however two additional planning applications (ref. SMD/2016/0246 and SMD/2016/0567) on or adjacent to the Bolton Copperworks site for the change of use of the existing industrial units from manufacturing to storage and distribution. These are however both minor planning applications which have since been approved and are not likely to result in significant environmental effects given the scale of each development.

2.6 Through consultation with SMDC, two residential developments were identified for consideration (ref. SMD/2019/0723 and SMD/2018/0180) located within the town of Cheadle approximately 3km southwest of the proposed development. Following a review of these developments, it is not anticipated there would be additional significant cumulative effects associated with the proposed development in combination with these developments.

2.7 In addition to the 2019 reserved matters application, three full planning applications were also submitted at the Moneystone site which are detailed below.

2.8 An application for a Change of Use (CoU) of the former laboratory building to house a number of leisure facilities associated with Moneystone Park was submitted to SMDC on 27 November 2019 and is pending determination (Ref: SMD/2019/0716). To confirm, leisure uses were considered and consented within the outline permission.

2.9 A full planning application (Ref: SMD/2019/0725) was submitted to SMDC on 29 November 2019 for the construction of a surface water outfall. Following the submission of this planning application, there was extensive dialogue involving Natural England, the Environment Agency, Laver Leisure and their advisors JBA, Abbeydale BEC and Bowland Ecology to discuss the technical requirements, design, and location of the surface water outfall. This resulted in the location of the outfall being moved further east when compared to the principle for the outfall location proposed as part of the original application. Application ref: SMD/2019/0725 was subsequently withdrawn and a revised application for the surface water outfall (Ref: SMD/2022/0014) was submitted on 11 January 2022 and is pending determination.

2.10 It is noted that the CoU application is supported by an EIA Screening Report which has determined that the development is not EIA development which confirmed by

SMDC through the issue of a Screening Opinion. The EIA Screening process considered the likely significant cumulative effects and identified that there were no significant cumulative effects to warrant EIA when considered in-combination with the wider Moneystone Park proposals. This assessment remains a valid assessment when considering the Phase 2 reserved matters application.

2.11 With regard to the outfall application, it is noted that this application is supported by a EIA SoC report which determines that the principal cumulative effects of the application with the wider Moneystone Park proposals relate to construction phase effects would be effectively managed with the measures set out and assessed in the June 2016 ES and as secured through the outline permission. These included the preparation of a Construction Environmental Management Plan ("CEMP") and Construction Ecological Management Plan ("CEcMP") amongst other commonplace measures. In considering the Phase 2 reserved matters proposals, it is noted that the Phase 2 site will not directly or indirectly impact on the outfall. As such, significant cumulative effects are unlikely.

2.12 An updated cumulative site search has been undertaken to support this SoC report, in accordance with the methodology set out in the 2016 ES. No other cumulative schemes have been identified which require consideration within an assessment of likely cumulative effects

2.13 On this basis, it is considered that a revised cumulative effects assessment is not required and the 2016 ES remains valid in its assessment of cumulative effects.

3 SITE CONTEXT AND BACKGROUND

Site History and Planning Background

3.1 The outline planning permission was granted on 26 October 2016 (ref. SMDC/2016/0378). The approved description of development is as follows:

"*Outline application with some matters reserved for the erection of a high quality leisure development comprising holiday lodges; a new central hub building (providing swimming pool, restaurant, bowling alley, spa, gym, informal screen/cinema room, children's soft play area, cafe, shop and sports hall); cafe; visitor centre with farm shop; administration building; maintenance building; archery centre; watersports centre; equipped play areas; multi-sports area; ropewalks; car parking; and managed footpaths, cycleways and bridleways set in attractive landscaping and ecological enhancements (re-submission of Planning Application SMD/2014/0682).*"

3.2 The extent of the 2016 outline permission is identified on the location plan at **Appendix I.** The planning application set a series of development parameters by identifying land use and height parameters which were used to inform the assessment of likely significant environmental effects presented within the 2016 ES. The parameter plans are provided at Appendix 3.

3.3 Condition 4 of the outline planning permission requires the reserved matters proposals for the site to generally accord with the following:

Red Line Location Plan PL1088.M.106 rev 3 (see Appendix 1);

Parameters Plan PL1088.M.110 rev 6 (see Appendix 3);

Character Areas Plan PL1088.M.113 rev 3 (see Appendix 4);

Eaves Lane Access Plan PB5196-0100 rev C (see Appendix 5);

Proposed Layout of A52/Whiston Eaves Lane Junction PB1608/SK001 rev C (Appendix 6);

Existing and Restored Landscape Plan (drawing ref. PL1088.M116 Rev 1) (see Appendix 2); and

Environmental Statement (Moneystone Park) – June 2016 (see Appendix 7).

3.4 A reserved matters application for Phase 1 of development at the site was submitted to SMDC on 21st October 2019 for the following proposal:

"Reserved matters application proposing details for the appearance, scale, layout and landscaping for phase 1 of the leisure development comprising 190 lodges; erection of a new central hub building (providing farm shop, gym, swimming pool, spa, restaurant, cafe, games room, vistor centre, hub management and plant areas): reuse and external alterations to the existing office building to provide housekeeping and maintenance accommodation (including meeting rooms, offices, storage, staff areas and workshop); children's play areas; multi use games area; quarry park; car parking; refuse and lighting arrangements; and managed footpaths, cycleways and bridleways set in attractive hard and soft landscaping."

3.5 This application is currently pending determination by SMDC.

Current Site Conditions

3.6 With the exception of the ongoing restoration works on site and the Moneystone Solar Farm, which has been constructed and is now operational, there have been no further site development related activities undertaken at the site since planning permission was granted in 2016.

3.7 Overall, there have been no material changes to the site description chapter presented in the 2016 ES.

4 ALTERNATIVES

4.1 A robust alternatives assessment was undertaken as part of the June 2016 ES in accordance with the EIA Regulations. This assessment would satisfy the requirements of the 2017 EIA Regulations and therefore no further information is considered necessary.

4.2 As part of the Phase 2 reserved matters application detailed design analysis was undertaken to inform the proposals and therefore a range of design solutions were tested to inform the final reserved matters proposals. In addition, the proposals accord with the approved parameter plans secured to the 2016 outline permission. Further detail can be found within the Design and Access Statement which is submitted with the Phase 2 reserved matters application.

5 THE PROPOSED DEVELOPMENT

5.1 The quantum of development approved as part of the 2016 outline permission is set out in Table 3 below.

Table 3: 2016 outline permission quantum of development

Development Zone	Uses	Quantum
Lodges	Lodges	Up to 250
Main Hub Building and Visitor Centre	Swimming pool and toddler pool	Up to 415 sqm
	Restaurant/ Bar and outside terrace	Up to 500 sqm
	Bowling alley	Up to 140 sqm
	Spa	Up to 150 sqm
	Gym with studio	Up to 100 sqm
	Informal screen room	Up to 80 sqm
	Children's soft play area	Up to 145 sqm
	Café	Up to 70 sqm
	Sports hall	Up to 320 sqm
	Reception area	Up to 145 sqm
	Shop	Up to 50 sqm
	Visitor centre with farm shop	Up to 490 sqm
	Lake café	Up to 130 sqm

Archery Centre and Lakeside Café	Archery Centre	Up to 260 sqm
Administration Block and Maintenance Depot	Administration building	Up to 525 sqm
	Maintenance depot	Up to 500 sqm
Additional uses – Multi Activity Hub Area	Substation	Up to 600 sqm
	Multi-Sports area	Up to 1,400 sqm
	Equipped play area	Up to 500 sqm
	Adventure play area	Up to 500 sqm
	Ropewalks	Up to 5,000 sqm

5.2 The submitted 2016 ES clearly outlined that the assessment of likely significant effects was based on the parameters for the assessments and the development description as presented within Chapter 5: The Proposed Development. The development submitted for approval as part of the Phase 2 reserved matters application fully accords with the land use and height parameters set by the 2016 outline permission as assessed as part of the 2016 EIA.

Reserved Matters Proposal

5.3 The Phase 2 reserved matters application relates to second phase of the consented leisure development and proposes:

"Reserved matters application proposing details for the appearance, layout, scale and landscaping for Phase 2 of the leisure development comprising 60 lodges, archery centre and watersports centre, internal roads and car parking and hard and soft landscaping."

Summary

5.4 In summary, the Phase 2 reserved matters proposals fully accord with the approved parameters which were assessed as part of the 2016 EIA.

6 PLANNING POLICY CONTEXT

6.1 Since the planning application was approved in October 2016, there have been updates to local and national planning policy. A review of these updated documents is provided below.

National Planning Policy

National Planning Policy Framework

6.2 The revised National Planning Policy Framework ("NPPF"), published in September 2023, contains the Government's most up-to-date planning guidance. The NPPF sets out the Government's planning policies for England and how these are expected to be applied. The NPPF is a material consideration in the determination of the planning application. The Phase 2 reserved matters application has been prepared to accord with the most recent version of the Government's policy framework.

Planning Practice Guidance

6.3 On 6 March 2014 the Department for Communities and Local Government launched the online Planning Practice Guidance ("PPG") as a web-based resource to further simplify and bring together planning practice guidance for England in an accessible and usable way. The PPG is intended to assist practitioners and provide further guidance on the interpretation of national planning policy within the NPPF. It is therefore a significant material consideration in the determination of the application.

6.4 The PPG is regularly revised and updated in line with any amendments to policy and best practice. The Phase 2 reserved matters application has taken into account any additional relevant guidance presented within this resource.

Local Planning Policy

6.5 A new Staffordshire Moorlands Local Plan has been prepared which covers the period 2014 to 2033 which was adopted in September 2020. The Phase 2 reserved matters application has taken the adopted Local Plan into consideration through the application, further details of which are contained within the submitted Supporting Planning Statement.

6.6 There have been updates to technical guidance and legislation since preparation of the June 2016 ES; however, it is not considered this would require an Addendum to update assessments on this basis. A number of the planning conditions included on the decision notice and mitigation measures presented in the June 2016 ES will

ensure that any further or supplementary information provided as part of reserved matters, prior to construction or upon occupation, will meet the latest guidance and required environmental standards.

Summary

6.7 In summary, the Supporting Planning Statement prepared by Asteer Planning, which has been submitted with the Phase 2 reserved matters application, provides a robust assessment of the planning application against up-to-date planning policy and guidance. Nonetheless, none of the above changes are considered to warrant the submission of additional environmental information pertinent to the 2016 ES.

7 SOCIO ECONOMIC

7.1 This Chapter provides a SoC with regard to the likely significant socioeconomic effects with respect to the Phase 2 reserved matters application. The SoC is provided pursuant to the June 2016 ES to confirm the findings with respect to the socioeconomics assessment, which remain valid.

7.2 There have been updates to the demographic data used in the 2016 assessment. However, it is not considered the baseline will have shifted significantly to alter the significance of the socio-economic benefits previously identified. There have been no amendments to the proposed development which were assessed and approved as part of the 2016 outline planning permission.

7.3 There are no proposed changes to the description of development or to the approved parameters. Therefore, the assessment of likely significant environmental effects remains as presented in the 2016 ES remains valid.

7.4 Overall, it is considered that the June 2016 ES remains valid and is adequate to assess the socioeconomic effects of the development.

8 LANDSCAPE AND VISUAL ASSESSMENT

8.1 This Chapter provides a SoC with regard to the likely significant landscape and visual effects with respect to the Phase 2 reserved matters application. The SoC is provided pursuant to the June 2016 ES to confirm the overall findings with respect to the Landscape and Visual Impact Assessment ("LVIA"), which remain valid.

8.2 To ensure a worst-case assessment was undertaken as part of the LVIA, the baseline conditions assumed the full implementation of the Revised Restoration Plan which was approved by Staffordshire County Council ("SCC"). This approach ensured that all vegetation and habitat loss as a result of the proposals would be accurately identified and mitigated as part of the EIA.

8.3 With regards to the current baseline on site, there have been ongoing restoration works in line with the agreed restoration plan. These have been overseen by Bowland Ecology as part of their ongoing ecological management obligations at the site. Therefore, a robust future baseline assessment was undertaken to inform the EIA.

8.4 There are a series of conditions attached to the 2016 outline planning permission which will require discharging as part of the reserved matters or prior to commencing works on site, including:

> Condition 12 – The proposed bridleways shall be informed by a construction methodology which takes account of landscape and visual construction and operation management measures.
>
> Condition 14 – The reserved matters should be delivered in accordance with the design principles within the DAS and the mitigation measures presented within Table 8,9, Chapter 8 LVIA of the June 2016 ES (see Appendix 7).
>
> Condition 17 – A Construction Environmental Management Plan ("CEMP") should be prepared which incorporates the mitigation measures presented within Table 8,10, Chapter 8 LVIA of the June 2016 ES (see Appendix 7)
>
> Condition 44 – Delivery of a comprehensive Structural Landscape Strategy ("SLS") which builds upon the mitigation and enhancement principles presented within Chapter 8 LVIA of the June 2016 ES (see Appendix 7)

8.5 There have been no material changes to the baseline conditions such that an update to this assessment is required. In addition, there have been no material changes to the baseline environment that was not predicted in the 2016 ES that would change

the conclusions of the assessment of likely significant effects. There have been no amendments to the assessment parameters such that an update to this assessment is required and no additional environmental information is required with regards to the landscape and visual assessment. There is also no change to the recommended mitigation measures. The Reserved Matters application will not alter the conclusions set out within the 2016 ES. As such, the assessment of likely significant effects as set out in the 2016 ES remain valid. No further assessment is required. Overall, it is considered that the June 2016 ES remains valid and is adequate to assess the landscape and visual effects of the development.

9 ECOLOGY AND NATURE CONSERVATION

9.1 This Chapter provides a SoC with regard to the potential likely significant ecological effects with respect to the Phase 2 reserved matters application. The SoC is provided pursuant to the June 2016 ES to confirm the overall findings with respect to the ecology assessment, which remain valid.

9.2 There has been a wealth of ecological surveys undertaken at the site over a period of eleven years between 2010-2021, which are set out in Table 4.

Table 4: Completed ecological surveys

Time Period	Surveys Undertaken
2010 - 2012	• Extended Phase 1 Habitat Survey; • Hedgerow survey; • National Vegetation Classification; • Reptile Survey; • Amphibian Survey; • Breeding Bird Survey; • Badger Survey Plan; • Riverine Species Survey – otter, water vole, crayfish; and • Bat Surveys – emergence/activity.
2014	• Extended Phase 1 Habitat Survey; • National Vegetation Classification; • Reptile Survey; • Amphibian Survey; • Breeding Bird Survey; • Badger Survey Plan; • Riverine Species Survey – otter, water vole, crayfish; • Bat Surveys (including Crow Trees Farm); and • Monitoring for management plan including walkover survey.
2015	• Monitoring for management plan including walkover survey.
2016	• Habitat survey (Phase 1); • Breeding birds; • Bat surveys; • Reptiles; • Amphibians; and • Monitoring for management plan including walkover survey.
2017	• Update walkover survey.
2018	• Update walkover survey.

2019	• Update walkover survey.
2020	• Bat Inspection – Sibelco lab buildings.
2021	• Update walkover survey.

9.3 To ensure a robust assessment was undertaken, the baseline conditions assessed as part of the 2016 ES included the existing baseline condition of the site in 2016 when the surveys were undertaken , and that of a future baseline once the approved restoration had been implemented.

9.4 In addition, as part of the 2019 reserved matters application, Bowland Ecology reviewed the evidence base and confirmed it provides an accurate and clear understanding of the ecological conditions at the site. Bowland Ecology has confirmed the same position in regards to the Phase 2 reserved matters application given the wealth of data gathered over the years.

9.5 There are a series of conditions attached to the 2016 outline planning permission which will require discharging as part of the reserved matters or prior to commencing works on site, including:

Condition 9 – Provision of an Ecological and Arboricultural assessment if any works are proposed within the area of retained landscape defined by the approved parameters plan.

Condition 12 – The proposed bridleways shall be informed by a construction methodology which takes account of ecological management measures.

Condition 18 – Provision of a Construction Ecological Management Plan which has been informed by the principles of the outline CEMP provided at Appendix 9.3 of the June 2016 ES.

Condition 19 – Provision of a Habitat Management Plan which has been informed by the principles of the outline Habitat Management Plan provided at Appendix 9.4 of the June 2016 ES.

Condition 20 – Provision of a sensitive lighting strategy to minimise the impacts on bats.

Condition 44 – Delivery of a comprehensive SLS which builds upon the mitigation and enhancement principles presented within Chapter 9 Ecology of the June 2016 ES.

9.6 Taking all the above information into account, together with the ongoing monitoring undertaken by Bowland Ecology confirms that there is no material change to the baseline to warrant further assessment. The conditions set out on the decision notice in respect of ecology, provide sufficient environmental management and mitigation measures for the long-term protection of ecological receptors during the construction and operational phases of development.

9.7 There have been no material changes to the baseline conditions such that an update to this assessment is required. In addition, there have been no material changes to the baseline environment that was not predicted in the 2016 ES that would change the conclusions of the assessment of likely significant effects.

9.8 There have been no amendments to the assessment parameters such that an update to this assessment is required and no additional environmental information is required with regards to the ecological assessment. There is also no change to the recommended mitigation measures.

9.9 The Reserved Matters application will not alter the conclusions set out within the 2016 ES. As such, the assessment of likely significant effects as set out in the ES remain valid.

9.10 Overall, it is considered that the June 2016 ES remains valid and is adequate to assess the ecological effects of the development.

10 ARCHAEOLOGY AND HERITAGE

10.1 This Chapter provides a SoC with regard to the potential likely significant archaeology and heritage effects with respect to the Phase 2 reserved matters application. The SoC is provided pursuant to the June 2016 ES to confirm the overall findings with respect to the archaeology and heritage assessment, which remain valid.

10.2 Due to the nature of archaeological and heritage receptors, the baseline, as presented in the 2016 ES, has not materially changed. Any archaeological resources would have remained in-situ and no new heritage assets have been designated which have the potential to be affected by the proposals.

10.3 There are a series of conditions attached to the 2016 outline planning permission which will require discharging as part of the reserved matters or prior to commencing works on site, including:

> Condition 47 – Undertaking an archaeological watching brief, walkover and earthwork survey.
>
> Condition 48 – Erection of an interpretation board on the former site of Whiston Eaves Farmhouse and stable block on Whiston Eaves Lane.

10.4 The effects on the setting of listed buildings was a principal consideration of the Council and was reassessed as part of the Phase 1 reserved matters application. Accordingly, as set out above, there have been additional photomontages prepared to illustrate views from the Listed Buildings at Little Eaves Farmhouse. However, as the proposals are within the parameters previously assessed, it is not considered there would be any new or altered effects as a result of the Phase 2 reserved matters application. The Listed Buildings at Little Eaves Farmhouse are approximately 550m south east of the Phase 2 area boundary (excluding the archery and watersports centres). The vegetation surrounding the site also restricts views of the Listed Buildings. Therefore, there is no intervisibility between the Phase 2 site (excluding he archery and watersports centres) and the Listed Buildings due to the distance and visual screening.

10.5 There are no proposed changes to the description of development or to the approved parameters. Therefore, the assessment of likely significant environmental effects remains as presented in the 2016 ES remains valid.

10.6 Overall, it is considered that the June 2016 ES remains valid and is adequate to assess the archaeological and heritage effects of the development.

11 GROUND CONDITIONS

11.1 This Chapter provides a SoC with regard to the potential likely significant ground conditions effects with respect to the Phase 2 reserved matters application. The SoC is provided pursuant to the June 2016 ES to confirm the overall findings with respect to the ground conditions assessment.

11.2 There is a wealth of geo-environmental and geotechnical surveys which have been undertaken at the site during and since quarrying operations ceased. These surveys are further supplemented by the quarterly monitoring reports and summarised in Biannual reports which are undertaken by Abbeydale and provided to Staffordshire County Council (SCC). These surveys have provided an accurate picture of the geo-environmental and geotechnical conditions which informed the June 2016 ES. It is therefore considered that an accurate and representative understanding of the site's baseline conditions has been prepared which informed the assessment of likely significant environmental effects as set out in the 2016 ES.

11.3 Furthermore, there are a series of conditions attached to the 2016 outline planning permission which will require discharging as part of the reserved matters or prior to commencing works on site, including:

Condition 36 – Undertaking a risk assessment associated with contamination.

Condition 37 – Preparing a remediation strategy and validation plan.

Condition 38 – Preparing a validation report upon completion of the remediation strategy and implementation of the validation plan.

Condition 39 – Requirement to cease any site operations if unidentified contamination is identified.

Condition 40 – Restricting the importation of material unless it has been suitably tested for contamination and assessed for its suitability for the proposed development.

11.4 It is not considered any further updates to the Ground Conditions assessment is considered necessary. The planning conditions secured as part of the outline permission provide sufficient environmental management and mitigation measures for the long-term protection of on and off-site receptors during the construction and operational phases of development.

11.5 There are no proposed changes to the description of development or to the approved parameters. Therefore, the assessment of likely significant environmental effects remains as presented in the 2016 ES remains valid.

11.6 Overall, it is considered that the June 2016 ES remains valid and is adequate to assess the ground condition effects of the development.

12 WATER RESOURCES AND FLOOD RISK

12.1 This Chapter provides a SoC with regard to the potential likely significant drainage and flood risk effects with respect to the Phase 2 reserved matters application. The SoC is provided pursuant to the June 2016 ES to confirm the overall findings with respect to the drainage and flood risk assessment (FRA), which remain valid.

12.2 The June 2016 ES was informed by an FRA, as well as groundwater monitoring data which had been gathered since 2011. Therefore, a robust baseline assessment was undertaken to inform the EIA. Due to the outline nature of the proposals, additional information is required to be submitted prior to commencement of development. In accordance with Condition 27, attached to the outline permission, detailed drainage plans for the disposal of surface water and foul sewage will be submitted to and approved through the discharge of Condition 27 at a later date.

12.3 There are a series of conditions attached to the 2016 outline planning permission which will require discharging as part of the reserved matters or prior to commencing works on site, including:

Condition 27 – Provision of a foul and surface water drainage scheme informed by the detailed designs.

Condition 28 – Assessment of surface water flow routes and necessary mitigation measures.

Condition 29 – Restriction on works within the vicinity of open watercourses to ensure the maintenance and protection of watercourses and river habitat.

Condition 30 – Restriction on the finished floor levels to protect development from overland flow.

12.4 It is not considered that further updates to the drainage and flood risk assessment is considered necessary. The conditions provide sufficient environmental management and mitigation measures for the long-term protection of on and off-site receptors during the construction and operational phases of development.

12.5 There are no proposed changes to the description of development or to the approved parameters. Therefore, the assessment of likely significant environmental effects remains as presented in the 2016 ES remains valid.

12.6 Overall, it is considered that the June 2016 ES remains valid and is adequate to assess the drainage and flood risk effects of the development.

13 TRANSPORT AND ACCESS

13.1 This Chapter provides a SoC with regard to the potential likely significant highways effects with respect to the Phase 2 reserved matters application. The SoC is provided pursuant to the June 2016 ES to confirm the overall findings with respect to the highways assessment, which remain valid.

13.2 The June 2016 ES was informed by a robust transport assessment with the scope of traffic surveys and information prior agreed with SMDC. Therefore, a robust baseline assessment was undertaken to inform the EIA. It is not considered the baseline has changed materially such that the significance of effects would require reassessment, nor have the proposals been amended to warrant an updated assessment.

13.3 The Transport Assessment, appended to the June 2016 ES at Appendix 13.1, assessed car parking provision for the development within the maximum provision parameters outlined below.

13.4 The Transport Assessment states:

"The proposals would provide a total provision of 418 parking spaces, as shown on Plan 4, split as follows:

P1 – Short stay parking for day visitors and visitors to lodges – 170 car parking spaces;

P2 – Staff car park – 67 car parking spaces;

P3 – Secure long stay parking for holiday makers staying in lodges/lodge owners. Vehicular access to rental lodges restricted to drop off only to promote rural, unspoilt character 150 car parking spaces;

P4 – Water sports car park on quarry ridge – 26 car parking spaces; and

P5 – Coach drop off – 5 coach bays.

In addition a parking provision of 1 space per lodge would be provided, although rental lodges would only park at the lodge to unload and load, and then they would park for the duration of their stay in the secure long stay car park (P3)".

13.5 A series of conditions are attached to the 2016 outline planning permission which require discharging as part of the reserved matters or prior to commencing works on site, including:

Condition 16 – Provision of pedestrian and cycling route information.

Condition 21 – Detailed designs for highways infrastructure within the site.

Condition 22 – Provision of the details for off-site highways improvements at the junction of Whiston Eaves Lane and the A52.

Condition 23 – Detailed designs for the principal site access of Eaves Lane.

Condition 24 – Provision of a traffic management scheme to reduce speed levels at the junction of Whiston Eaves Lane and the A52.

Condition 25 – Preparation of a signage scheme for all traffic entering and exiting the site.

Condition 26 – Preparation of a Construction Traffic Management Plan which implements and expands on the mitigation measures set out within Chapter 13 of the June 2016 ES.

13.6 The conditions and measures set out in the June 2016 ES provide sufficient environmental management and mitigation measures for the long-term protection of on and off-site receptors during the construction and operational phases of development.

13.7 There are no proposed changes to the description of development or to the approved parameters. Therefore, the assessment of likely significant environmental effects remains as presented in the 2016 ES remains valid.

13.8 Overall, it is considered that the June 2016 ES remains valid and is adequate to assess the traffic and transportation effects of the development.

14 AIR QUALITY AND DUST

14.1 This Chapter provides a SoC with regard to the potential likely significant air quality effects arising from the Phase 2 reserved matters application. The SoC is provided pursuant to the June 2016 ES to confirm the overall findings with respect to the air quality assessment, which remain valid.

14.2 It has not been considered necessary to update the traffic figures within the highways assessment and therefore it is not considered necessary to revisit the air quality assessment submitted with the June 2016 ES. The assessment and mitigation measures presented within the June 2016 ES is considered to remain valid.

14.3 A series of conditions are attached to the 2016 outline planning permission which will require discharging as part of the reserved matters or prior to commencing works on site, including:

Condition 17 – Preparation of a CEMP.

Condition 46 – Preparation of a Dust Management Plan.

14.4 Taking the June 2016 ES into consideration and the conditions on the 2016 decision notice, it is not considered any further updates to the air quality assessment is considered necessary. The detailed designs will also allow a Travel Plan to be prepared and agreed with SMDC. The conditions and measures set out in the June 2016 ES provide sufficient environmental management and mitigation measures for the long-term protection of on and off-site receptors during the construction and operational phases of development.

14.5 There are no proposed changes to the description of development or to the approved parameters. Therefore, the assessment of likely significant environmental effects remains as presented in the 2016 ES remains valid.

14.6 Overall, it is considered that the June 2016 ES remains valid and is adequate to assess the air quality effects of the development.

Cellarhead Junction

14.7 Since the 2016 outline application was approved an Air Quality Management Area ("AQMA") has been designated at the Cellarhead Junction which is located approximately 8km west of the site. The AQMA was designated in July 2019 based upon the potential exceedance of the annual mean nitrogen dioxide ("NO_2") air quality objective. The Cellarhead Junction is the crossroads of the A520 Leek Road (north

and south) and A52 Kingsley Road and A52 Cellarhead Road (east and west respectively).

14.8 The AQMA was not designated at the time the June 2016 ES was prepared and therefore did not form part of the air quality assessment. As a result, BWB were commissioned to undertake an air quality assessment at the Cellarhead Junction to determine the likely effects as a result of the proposed development within the Phase 1 reserved matters application.

14.9 The findings of the air quality assessment confirmed that there were no significant effects as a result of the proposed development at this junction and the effects were considered to be negligible. A sensitivity analysis exercise was undertaken which confirmed that potential effects would be negligible to slight adverse, if NOx emissions were not to decrease in line with projected emission factors.

14.10 It is considered that the traffic flows associated with the Phase 2 reserved matters application will not result in material change in pollutant levels within the AQMA to require further air dispersion to be undertaken.

14.11 Overall, no significant air quality effects are anticipated at the Cellarhead AQMA and the June 2016 ES remains valid and is adequate to assess the air quality effects of the development.

15 NOISE AND VIBRATION

15.1 This Chapter provides a SoC with regard to the potential likely significant noise and vibration effects with respect to the Phase 2 reserved matters application. The SoC is provided pursuant to the June 2016 ES to confirm the overall findings with respect to the noise and vibration assessment, which remains valid.

15.2 It has not been considered necessary to update the traffic figures within the highways assessment and therefore it is not considered necessary to revisit the noise and vibration assessment submitted with the June 2016 ES. The assessment and mitigation measures presented within the June 2016 ES is considered to remain valid.

15.3 A series of conditions are attached to the 2016 outline planning permission which will require discharging as part of the reserved matters or prior to commencing works on site, including:

Condition 31 – Preparation of a scheme for the containment of operational noise at the site.

Condition 32 – Noise insulation requirements for the lodges.

Condition 33 – Restrictions on the amplification of music.

Condition 34 – Preparation of a scheme setting out the plant to be installed at the site and any associated noise levels at sensitive receptors.

Condition 35 – Preparation of a Construction Environmental Method Statement which includes noise and vibration mitigation measures set out within Chapter 15: Noise and Vibration of the June 2016 ES.

15.4 Taking the June 2016 ES into consideration and the conditions on the 2016 decision notice, it is not considered any further updates to the noise and vibration assessment is considered necessary. The conditions and measures set out in the June 2016 ES provide sufficient environmental management and mitigation measures for the long-term protection of on and off-site receptors during the construction and operational phases of development.

15.5 There are no proposed changes to the description of development or to the approved parameters. Therefore, the assessment of likely significant environmental effects remains as presented in the 2016 ES remains valid.

15.6 Overall, it is considered that the June 2016 ES remains valid and is adequate to assess the noise and vibration effects of the development.

16 WASTE

16.1 This Chapter provides a SoC with regard to the potential likely significant waste effects with respect to the Phase 2 reserved matters application. The SoC is provided pursuant to the June 2016 ES to confirm the overall findings with respect to the waste assessment, which remains valid.

16.2 It has not been considered necessary to update the waste assessment and the mitigation measures presented within the June 2016 ES are considered to remain valid. A detailed Site Waste Management Plan which will be addressed through the discharge of Condition 45 prior to commencement.

16.3 The conditions and measures set out in the June 2016 ES provide sufficient environmental management and mitigation measures for the long-term protection of on and off-site receptors during the construction and operational phases of development.

16.4 There are no proposed changes to the description of development or to the approved parameters. Therefore, the assessment of likely significant environmental effects remains as presented in the 2016 ES remains valid.

16.5 Overall, it is considered that the June 2016 ES remains valid and is adequate to assess the waste effects of the development.

17 SUMMARY

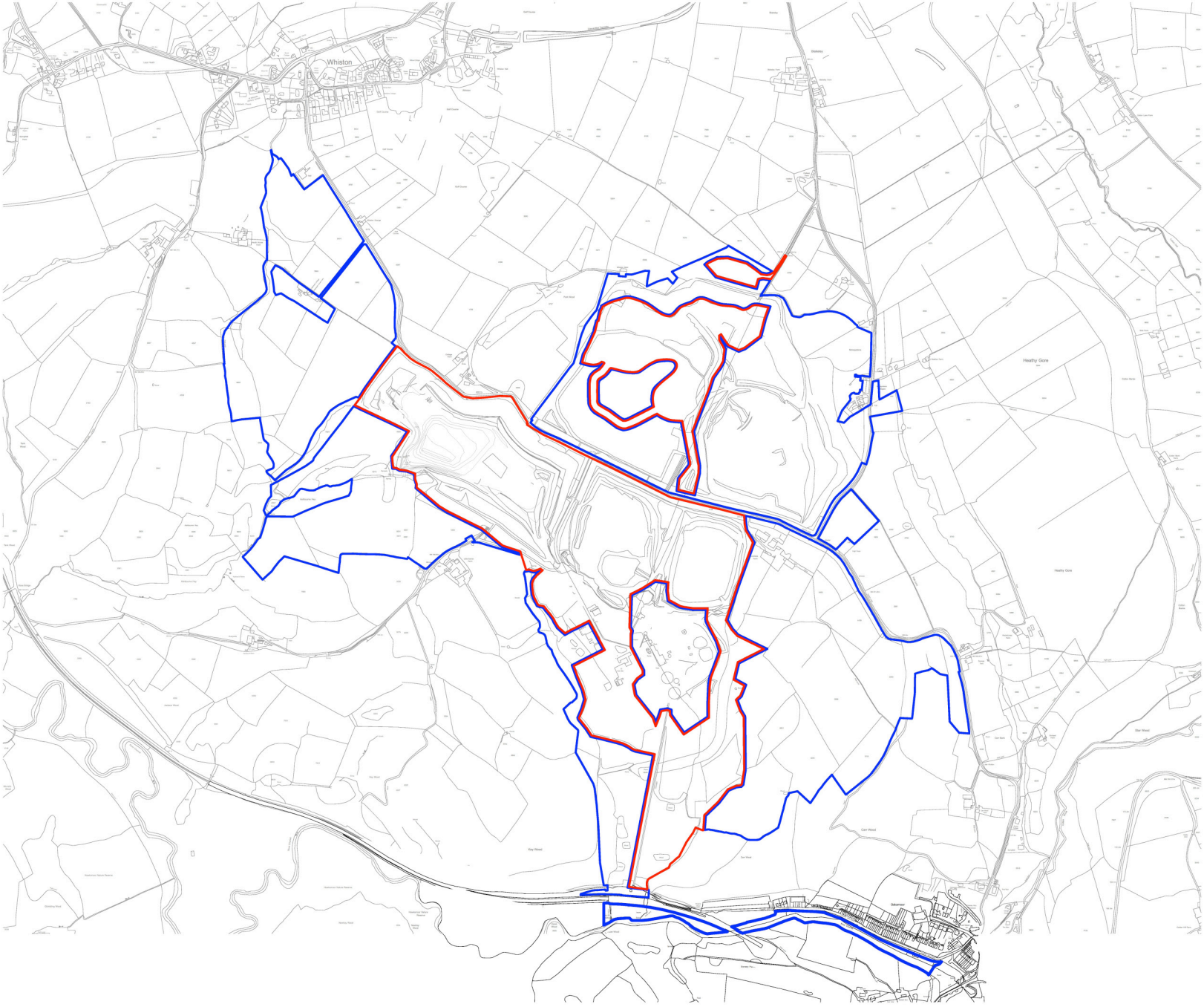
17.1 Asteer Planning has been appointed by Laver Leisure (Oakamoor) Limited to prepare an EIA SoC Report to support the Phase 2 reserved matters application at Moneystone Quarry, Staffordshire.

17.2 The 2016 outline application was supported by the June 2016 ES which comprised a comprehensive suite of technical assessments to establish the environmental impacts of the proposed development. The June 2016 ES identified a series of robust environmental management and mitigation measures which informed a series of conditions to provide additional information once the reserved matters applications have progressed or prior to commencing works on site.

17.3 The Phase 2 reserved matters application comprise a proposal which is wholly within the defined assessment parameters which formed the assessment of likely significant environmental effects as presented within the June 2016 ES. The SoC confirms that there have been no material changes to the baseline environment which would require an updated assessment to be undertaken. The SoC confirms that there are no new or altered effects as a result of the Phase 2 reserved matters and that all proposed mitigation measures as secured in the outline consent remain valid. Therefore, it is considered that the June 2016 ES remains valid for the purposes of decision making for the Phase 2 reserved matters application.

17.4 In summary, the June 2016 ES is considered to be valid for the purposes of decision making in respect of the Phase 2 reserved matters application, and no new significant environmental effects have been identified which would warrant the provision of a direction under Regulation 25 of the EIA Regulations. Appropriate information has been provided to the Council (and appended) to confirm these findings. Therefore, it is considered that Regulation 9(2) of the 2017 EIA Regulations is satisfied as the environmental information before SMDC is adequate to assess the significant effects of the development on the environment, and further environmental information is therefore not required.

Appendix 3.1: Site Location Plan



KEY

Application boundary

Land also in ownership

rev	date	issue	drawn	check
3	27.04.15	Black Plantation revision	-	JW
2	14.10.14	Blakeley Lane Revision	-	JW
1	05.09.14	draft issue for planning	HE	JW

NOTE:
1. Do not scale from this drawing
2. All setting out, levels and dimensions to be agreed on site.
3. The dimensions of all materials must be checked on site before being laid out.
4. This drawing must be read with the relevant specification clauses and detail drawings
5. Order of construction and setting out to be agreed on site.
6. This drawing is copyright protected and may not be reproduced in whole or part without written authority.
7. All Dimensions are in millimetres unless Otherwise Stated

Planit - IE LLP
2 Back Grafton St Altrincham WA14 1DY
0161 928 9281

18 Bowling Green Lane London EC1R 0BW
020 7253 5678

Project	Moneystone Park
Client	Laver Leisure
Drg title	Red Line Plan
Drg nr	PL1088.M106
Scale	1:5000@A1
Date:	21.07.2014
Drawn	HE
Status	PLANNING
Revision	3
Checked	JW

Appendix 5.1: Thursday 26th October 2023 Planning Application Committee Report

SMD/2016/0378 OUTLINE PLANNING PERMISSION WITH ALL MATTERS RESERVED EXCEPT ACCESS FOR THE ERECTION OF A HIGH QUALITY LEISURE DEVELOPMENT COMPRISING HOLIDAY LODGES; A NEW CENTRAL HUB BUILDING; (PROVIDING SWIMMING POOL, RESTAURANT, BOWLING ALLEY, SPA, GYM, INFORMAL SCREEN/CINEMA ROOM, CHILDREN'S SOFT PLAY AREA, CAFÉ, SHOP AND SPORTS HALL); CAFÉ; VISITOR CENTRE WITH FARM SHOP; ADMINISTRATION BUILDING; MAINTENANCE BUILDING; ARCHERY CENTRE; WATER SPORTS CENTRE; EQUIPPED PLAY AREAS; MULTI-SPORTS AREA; ROPE WALKS, CAR PARKING; AND MANAGED FOOTPATHS AND CYCLEWAYS AND BRIDLEWAYS SET IN ATTRACTIVE LANDSCAPING AND ECOLOGICAL ENHANCEMENTS AT MONEYSTONE QUARRY, WHISTON EAVES LANE, WHISTON for LAVER LEISURE (OAKAMOOR) LIMITED.

Parish: Kingsley Registration: 17/06/2016
Case Officer: Mrs Jane Curley Grid Reference:E404555/ N345692

THE APPLICATION

This is an outline planning application with all matters reserved for future consideration apart from the means of access to the site. Access into the site will be via the existing main quarry entrance on Whiston Eaves Lane. The application is a resubmission of a similar application which was refused in November 2015 under reference SMD/2014/0682. It seeks to address Members concerns. The proposal is to create a new leisure development with ancillary facilities. The development proposes the following elements:

- Holiday lodge/chalets
- A hub building including an indoor swimming pool, restaurant, bowling alley, a spa, a gymnasium, a cinema room, a cafe, a children's play area, a shop, reception area and a sports hall
- A second café by the lake
- A visitor centre with farm shop
- An administration building
- A Maintenance building
- An archery centre
- Equipped play area
- Multi sport area
- A water sports centre
- car parking for staff and visitors
- creation of footpaths, cycleways and bridleways

In accordance with the Environmental Impact Regulations 2011, the application is EIA development and is accompanied by an Environmental Statement which evaluates the potential environmental effects associated with the development. It covers the following topics
Socio economic
Landscape and Visual Assessment
Ecology
Archaeology and Heritage
Ground Conditions
Drainage and Flood Risk
Transport and Access
Air Quality

Noise and Vibration
Waste

The application also incudes Supporting planning statement, Design and Access statement, Feasibility Study, Sustainability Statement, Tunnel Stability report, Statement of Community Involvement and Energy Strategy, an overall Illustrative Masterplan which shows 250 lodges on the site, an indicative schedule of accommodation, Parameters plan setting out broad development areas and height limits across the development areas, footpath connection plans, character areas plan, illustrative site sections, illustrative detail plans of the various areas and illustrative proposed landscaping.

Members are strongly advised, given the very extensive documentation submitted with this application that they peruse these documents ahead of the Committee meeting.

The main changes between this application and the previous submission, SMD/2014/0682 are as follows:-

1. The Parameter Plan now identifies within the Multi Activity Hub Area various zones within which buildings will be sited and gives maximum heights for these buildings. Reference to buildings within this area having a height of up to 12m has been removed. The zone for the Main hub building and Visitor centre refers to a maximum height for buildings of up to 6m above finished floor level (FFL).

2. The area in which the Main hub building and visitor centre can be located has been reduced (see Parameters Plan)

3. Additional landscaping is shown illustratively within the Hub area (see Illustrative Landscape Detailed Plan - The Hub)

4. The 14 lodges proposed at Black Plantation and the proposed vehicular access from Blackley Lane have been removed. Whilst both the land at Black Plantation and Blakeley Lane remain within the site edged red, Black Plantation is shown as "Existing Woodland to be Retained" on the Parameter Plan;

5. The total number of lodges for which planning permission is sought as part of this application re-submission remains at up to 250 lodges. The 14 lodges removed from Black Plantation have been re-distributed within Quarry 2, The Upper Lakes (see Parameter Plan and the Illustrative Detail Plan – Upper Lakes)

6. A "no right turn" vehicular access arrangement is proposed onto Eaves Lane.
The revised vehicular access design is shown on the Eaves Lane Access Plan

7. A Tunnel Stability Report is provided

8. Further detail has been provided to clarify the alignment of the proposed footpaths, cycleways and bridleways at the site. This detail is provided on the Detailed Footpath Connection Plans and the Overall Footpath Connection Plan.

During the processing of this application the following amended plans were received
a)Parameters Plan (Drawing PL1088.M110 rev 6) – requested by Officers to remove the ambiguity from the heights in the key. All maximum heights are now shown relative to finished floor level

b)Illustrative Landscape Detail Plan – The Hub (PL1088.M115 Rev 3) – to indicate and describe an additional area of planting to the eastern side of the power lines comprising an 8m wide tree belt in response to the Conservation Officers comments.

c) Illustrative Detail plan – The Hub (Drawing No PL 1088.M101-04 Rev 4) – to indicate the 'gap' in planting created by the power lines and additional planting as described above.

SITE LOCATION / DESCRIPTION

The application site extends to approx. 52 hectares and forms part of a former sand extraction quarry located in the open countryside between the villages of Oakamoor and Whiston. All mineral extraction in the quarry has now ceased. The former quarry machinery, plant and structures have been largely removed and the land cleared and levelled with the exception of a range of buildings which are retained by Sibelco Ltd as research and development laboratories. These will remain and do not form part of the application. Access to these buildings will be from the main access. There is an Restoration scheme in place for the site, approved by the County in 2014.

The site is located in a rural area dominated and bound on all sides by pastoral agriculture fields and woodland. The site is broadly tiered with Quarry 2 to the north of Eaves lane at the highest level (including Black Plantation which is the most elevated part of the site) with Quarries 1 and 3 and the main processing area at a lower level to the south of the road. From here land then falls steeply southwards to the River Churnet and the eastern spur of the Churnet Valley Railway through established woodland.

A tunnel underneath Whiston Eaves Lane links the northern and southern parts of the site. To the northwest of Black Plantation is a narrow lane that links into Blakely Lane. This has become overgrown and for most of its length would currently prevent vehicular access to the site.

The nearest properties to the application site are Crow Trees Farm and Cotton Farm on Eaves Lane, both of which sit adjacent to the site, Little Eaves Farm which lies to the south west but shares access with the site and those in the hamlet of Moneystone. The villages of Oakamoor and Whiston are respectively about 1 and 1.5 kilometres from the application site.

There is a network of public footpaths (PROW's) surrounding the site, one of which runs through the site following the main access road and then heading in a south westerly direction towards Little Eaves Farm. The site also lies close to one of the Staffordshire Moorlands Walks, Route 11.

Little Eaves farmhouse and barn are both Grade II Listed building. A former Listed farm complex, known as Whiston Eaves Farm (farmhouse and stable block) stood on Whiston Eaves Lane close to the site entrance. However Whiston Eaves Farm and stable block were both dismantled (with consent) some years ago. Part of the Whiston Eaves Farm was rebuilt in Whiston. The stable block is stored in the quarry and has a permission to reconstruct on Ross Road. This is discussed further in the report.

The applicants have described the rationale behind the design of the scheme in the Design and Access Statement and in their Planning Statement. The proposals have been separated into a number of different character areas as follows. Key points that are set out in the applicant's DAS include the following:-

Character Area One: The Hub

This area will be located at the heart of the site at the end of the access road in Quarry 1. It will be the primary destination point where visitors first arrive and register at the site. It will contain the administrative centre and principal attractions including the archery centre, visitor centre, café, car and coach parks and play and sports areas. The hub building will be up to 6m in height. Potential construction materials are likely to reflect the rural context of the site and could include a mix of stone, agricultural metal cladding and timber. The various buildings within this area will utilise a common architectural language to establish unity across the site. The use of green roofs to increase the environmental and ecological performance of the buildings could also be incorporated. These are details that would be clarified in more depth at the reserved matters stage.

Character Area Two: Quarry 1 Lodges

The two existing water features within Quarry 1 will be retained and managed for their visual and biodiversity interests. The westernmost pond is located to the north of the hub area and its bank sides will largely be kept clear of development. There will be a circular walkway around the pond and its margins will be planted and managed as a wildlife habitat. The pond further to the east will have groups of lodges located closer to the waterside. Most of the lodges in this area will be set close to the base of the former quarry rock faces along the northern and western edges. This part of the site proposes a mix of single and two storey lodges, the latter where significant screening is available. A matrix of habitat types are proposed across this area including reeds and marginal planting around the ponds, retention of areas of immature woodland scrub and grassland as well as the central hedge that follows the central access road. The existing native scrub woodland to the bases of the rock faces will also be retained.

Character Area Three: Quarry 2 Lodges

Quarry 2 lies to the north of Whiston Eaves Lane and will be accessed via the existing tunnel linking Quarries 1 and 2. The tunnel will provide both pedestrian and vehicular access from the administration and leisure hub to the proposed lodges located within Quarry 2. The majority of the southern part of the Quarry 2 site is not included within the development site and remains subject to the Approved Restoration Plan. There is a pathway proposed through part of the excluded area which is shown potentially as a timber board walk. Lodges are indicated at the base of the embankment to be single storey. Elsewhere lodges are shown to use the sloping topography by forming a series of terraces. Lodges are shown set within grassland environment. New woodland will form a visual buffer to the Solar farm to the east. This zone also includes the area known as ‘Black Plantation’, which is the highest part of the entire site. Black Plantation contains a copse of mature coniferous trees which forms part of a wider woodland and is to be retained.

Character Area 4: Quarry 3 Lake and Lodges

The area is the westernmost part of the development site and comprises the largest of the water bodies. The lake feature is proposed to be the centre for water sports and a jetty, beach and boathouse/water sports/cafe building are shown on the indicative plan. The lakesides are amongst the steepest features in the entire site and a line of lodges is shown along the northern and western edges of the lake. These will require engineering ‘cut and fill’ operations to create level platforms upon which they will sit. Some of the lodges will project outwards over the edge of the bank requiring supporting stilts. To the rear of the lodges a new 3.5m-6m wide access track will be created running around the lake on the northern, eastern and western side. The engineering required will create a new rock face feature below the existing landscaped bund that runs along the northern boundary fronting Whiston Eaves

Lane. The lodges will be set at a level approximately 10m below that of the lane. Within Quarry 3 the Parameters Plan indicates single storey lodges with two storey restricted to two small areas on the west and eastern edges. A new footpath is proposed around the waters edge to form a circular walk around the lake.
The southern side of the lake is more exposed to views from the northwest and contains an area of maturing woodland at the top of the bank. The illustrative plan shows two clusters of lodges. Additional tree planting will extend the woodland edge to provide a green buffer to the new lodges. Three additional rows of lodges are shown lower down the bank sides close to the water's edge in the western and eastern ends of the lake.

Character Area 5: Areas of retained landscaping
Within areas noted on the Parameters plan the recreational value of these areas is to be realised whilst also ensuring that the viability of the woodlands is retained and managed to ensure longevity and to protect habitat value. Potential uses include walking, cycling, rope walks and adventure play. The applicant says that this would entail minimal impact on the landscape as a result of sensitive location of pathways and facilities and utilising 'no dig' construction methods.

PLANNING HISTORY

SMD/2014/0682 - Outline with all matters reserved except access for the erection of a leisure development of up to 250 lodges. Refused. Four reasons for refusal were given as follows:-

1. Notwithstanding the fact that this site is identified in the Churnet Valley Masterplan as an Opportunity Site for a high quality leisure venue with a maximum of 250 lodges , the Masterplan is clear in the Concept Statement for the Moneystone Quarry Opportunity Site at paragraph 7.6.5 that development needs to be of a scale which does not undermine the tranquillity and character of this sensitive part of the Churnet Valley. Policy DC 3 of the Adopted Core Strategy Development Plan Document requires the Council to protect and, where possible, enhance the local landscape. Policy SS7 refers specifically to development within the Churnet Valley and, whilst it provides support for visitor accommodation and the provision of new tourist attractions and facilities, it requires them to be both compatible with the area and to be of a scale and nature which conserves and enhances the landscape. It further confirms that consideration of landscape protection will be paramount in all development proposals. It is considered that within the area identified as Multi Activity Hub area on the submitted Parameters Plan the intensity of activity, the extent of built development (see indicative Schedule of Accommodation) and height of buildings (up to 12m in parts) would result in a development that was visually intrusive, particularly from the public footpath which runs directly to the west of this part of the site and in wider views from Eaves Lane to the north and from public footpaths to the west and east. It would fail to respond to and respect this small scale landscape which the Churnet Valley Landscape Character Assessment confirms to be particularly sensitive to change. Similarly the area identified as Black Plantation occupies an elevated location, visually and physically isolated from the remainder of the proposed development . In this location and notwithstanding the submitted Woodland Approach Notes setting out a proposed phasing approach to development within this woodland, it is considered that there is potential for development to be readily visible near the skyline in near and more distant views to the south. As such the proposal is in conflict with Polices DC3 and SS7 of the Adopted Core Strategy Development Plan Document , the Adopted Churnet Valley Masterplan SPD and the National Planning Policy Framework which seeks to protect and enhance valued landscapes.

2. The traffic generated from the proposed leisure development comprising up to 250 holiday lodges together with traffic generated from day visitors to the proposed leisure facilities would result in a significant increase in the amount of traffic accessing the surrounding rural road network and particularly Eaves Lane/ Carr Bank to the east of the site access which would

provide a direct route from the development to Alton Towers and Farley Lane which links Oakamoor and Farley. It is considered that the increase in traffic would lead to unacceptable congestion on these narrow country roads. Carr Bank, for example is largely single track with limited passing places and a steep gradient as the road enters the village of Oakamoor. Although there is an offer to agree a signage scheme, an intention to run a shuttle bus to Alton Towers as part of a Travel Plan to be secured by way of planning obligation and improve the A52/Whiston Eaves junction, these measures would not prevent guests using the aforementioned rural routes. Furthermore guests from Black Plantation will be heavily reliant upon the car to access all facilities within the Hub area via the wider rural highway network given that it is physically detached and remote from the main venue with no pedestrian connectivity provided due to the change in levels in this area. It is for these reasons that it is considered that traffic from the proposal will not be satisfactorily accommodated on the highway network and that the proposal fails to provide and /or encourage satisfactorily the use of sustainable travel modes contrary to Policy T1 of the Adopted Core Strategy Development Plan Document.

3.The proposed development will have an adverse impact on the setting of Little Eaves Farm, a Grade II Listed building which lies to the west of the site. There will be direct views from this heritage asset to the south/south east into the Multi Activity Hub Area owing to gaps in existing planting. Although it may be possible to provide landscaping within this area to filter views, the exact siting of the buildings, their form, mass and design is unknown. The existence of overhead power lines crossing into the site will compromise the ability to provide effective screening and in any event planting will take many years to establish. In the wider landscape there would be views of the heritage asset particularly from Whiston Eaves Lane,from the public footpath which runs through the site and from the site itself. In these views the asset would be read in conjunction with the proposed development which would erode the agricultural hinterland in which the asset is experienced. The close proximity of the asset to the central Multi Activity Hub Area would also result in loss of tranquillity and seclusion, elements which also make a positive contribution to the significance of the asset.Considerable weight has been given to the harm that would be caused to the heritage asset as required by section 66 of the Planning (Listed Buildings and Conservation Areas) Act 1990 when carrying out that exercise. The harm is judged to be less than substantial in terms of paragraph 134 of the National Planning Policy Framework but it is not considered that the public benefits arising from the proposal outweigh the harm. As such there is conflict with Policy DC 2 of the Adopted Core Strategy Development Plan Document which seeks to safeguard and where possible enhance the historic environment.

4. Overall, the benefits of this leisure scheme when considered together would not be sufficient in this case to significantly and demonstrably outweigh the harm identified above contrary to Policies DC2, DC3, SS7 and T1 of the Adopted Core Strategy Development Plan Document; the Adopted Churnet Valley Masterplan SPD and the NPPF (National Planning Policy Framework)

On 5th September 2013 the Council issued its screening opinion on an Environmental Impact Assessment (EIA) in connection with this proposed development. The Council concluded that given the scale and nature of the development an EIA was required.

CONSULTATIONS

Kingsley Parish Council: Object to the application

- The size and scope (250 lodges) of the proposed development is totally out of keeping with the mid Churnet Valley area which comprises relatively small local villages.

- The rural lanes providing access to the site are wholly inadequate to cater for the anticipated volume of vehicular traffic which would be generated by visitors and staff.
- The proposed arrangements for traffic entering and leaving the site would place an intolerable burden upon the residents of Whiston in general and Whiston Eaves Lane in particular.
- Notwithstanding the traffic management arrangements proposed at the junction of Whiston Eaves Lane and the A 52, Kingsley Parish Council still considers a serious road safety risk would ensue in consideration of the likely volume of traffic which would use this junction.

Oakamoor Parish Council (OPC): Strongly oppose without reservation:
1. Traffic - is a major concern for the parishioners of Oakamoor and in the view of OPC, for good reasons:
● Safety of Drivers: Access to, and egress from, Moneystone Quarry is via a narrow lane, and from the Oakamoor Village, negotiation of a 1 in 5 hill (one of the steepest in the country) and blind bends is necessary. The road was clearly not designed to accommodate more than light use. The large increase in vehicle numbers and the change of *dynamic* of the type of driver, the majority of drivers being unfamiliar with the route who will be challenged with negotiating the existing road width, the steep incline, and the acute bends, (exacerbated in severe winter weather, when the road can remain un gritted and snow un cleared for days), will seriously compromise the safety for vehicle occupants. Additionally, the proximity of the site to Alton Towers which may have informed the applicant's decision to progress the development in this location will generate further traffic on Carr Bank.
Whilst the applicant is endeavouring to address this issue through planning application SMD/2016/0388 , in reality, the signage proposed within this application, will serve only to exacerbate the danger, as drivers wishing to take the shortest route to their destination south / east from the site will in reality, (if the signage is not ignored), turn left, and subsequently perform three point turn manoeuvres on Whiston Eaves Lane to gain access to Carr Bank, and Farley Road (already an RTA hotspot) creating a new hazard. OPC are unaware of any provision for road widening, straightening or levelling, and therefore believe that as a result of the above, the development continues to pose unacceptable dangers to motorists using this stretch of road.
● Safety of Cyclists and Pedestrians: The terrain of the Churnet Valley and particularly the Oakamoor area attracts high (and growing) numbers of both visiting and local cyclists and walkers. Given the aforementioned access road features, OPC believe that the proposal will seriously compromise the safety of these groups.
● Safety of Horse Riders: We understand that the site neither contains, nor connects with any bridleways. Riders would therefore be forced to utilise the same public highways i.e. Whiston Eaves Lane and Carr Bank. Again, given the features of this road, OPC believe that this will create significant dangers to persons on horseback.
● Traffic impact on parishioner's quality of life: With the continuing exponential growth of Alton Towers, Whiston Eaves Lane / Carr Bank is being increasingly used by visitors (who typically are unfamiliar with the terrain) and workers (who are often racing against the clock) as a rat run to this attraction. This is creating justified anxiety for parishioners who reside on this road. The development of another large attraction, to which access / egress can only be via Whiston Eaves Lane / Carr Bank will obviously increase numbers of vehicles being driven by those unfamiliar with the challenging road conditions both during construction and on completion of the

development. This will only further diminish the quality of life for the occupants of dwellings sited on these roads.

2. Conformance to the Churnet Valley Masterplan Principles:

● *Principle 1: 'Ensure that communities are at the heart of the Churnet Valley'*

OPC held an open day for Parishioners to better understand the application. A questionnaire prepared by the Parish Council was completed by 90% of attendees. Of those who completed the questionnaire, 90% were NOT in favour of the development. If SMDC are to truly conform to the principles of the Churnet Valley Masterplan, then the Parishioners overwhelming view; that the development is inappropriate, should carry sizable weight in the decision making process.

● *Principle 2: Respect, enhance and protect the positive aspects of the Churnet Valley* :

"by sustaining and enhancing the existing qualities and assets of the Churnet Valley which make the area unique"

"by ensuring that future development responds to and is sympathetic with the environmental, ecological and landscape limits and makes appropriate provision for the management of land and features for nature conservation and heritage and the enjoyment of areas of wildlife and geological interest"

"by ensuring the nature and scale of development is appropriate to its locality this may mean limited or no development is appropriate for parts of the Valley".

○ The most positive aspects of the Churnet Valley are: its natural beauty, its tranquillity, its flora & fauna, its physical and geological assets, and its pretty small villages / settlements which intersperse the natural landscape. To sustain and enhance the natural assets obviously requires careful management of visitor numbers. The proposed development will in one fell swoop double the human habitation of the Southern end of the valley from (and including) Oakamoor to Whiston villages. This will, undoubtedly, dramatically reduce the tranquillity of the surrounding countryside, diminish its natural beauty and potentially negatively impact its flora and fauna. It neither responds to, nor is it sympathetic to the environmental, ecological or landscape limits of its surroundings.

○ As previously outlined, many of the roads in and around Moneystone and Oakamoor suffer from very high traffic levels as a result of Alton Towers. Carr Bank & Whiston Eaves Lane remain relatively peaceful, and as a result, form part of the quiet countryside which is seen as such a positive aspect by residents, and the very reason visitors are attracted to this area. It is the view of Oakamoor Parish Council, that the positive aspects of the Churnet Valley must be respected and protected, and that this development runs counter to the aims of this principle. Given that in the Churnet Valley, the "Family Fun" offer already (in terms of visitor numbers) completely overwhelms the "Countrysiders" segment, and that recorded in the CV Masterplan, the Countrysiders are considered to be the predominant target visitor group, it stands to reason, that no further development of this sector is appropriate for this part of the valley.

● *Principle 3: 'Support local enterprise and create local employment opportunities'*

○ Interpreting the CV Masterplan as it is intended, the proposed development is clearly not 'local enterprise'.

○ The unemployment rate in 2013.14 in the Staffordshire Moorlands was 4.1% , compared with a national average of 7.5%. The number of persons out of work in the Churnet ward in 2011 (latest available figures) was 24.

○ The type of jobs created will broadly mirror those at Alton Towers.

○ The 2012/13 Annual Monitoring Report identifies the need for higher skilled jobs in the Staffordshire Moorlands.

OPC believes that the real employment benefits for "local" people are negligible.

● *Principle 4: 'Improve accessibility and connectivity' : "by addressing traffic hotspots"*
As previously outlined in (1), Oakamoor is already suffering substantially increased levels of traffic due to the continuous expansion of Alton Towers. This development will undoubtedly create a "traffic hotspot" in Oakamoor, (as the proposal contained in SMD/2016/0388 will be largely ineffectual) for which the applicant is unable to proffer any truly workable solutions..
● *Principle 5: 'Deliver Quality & Sustainable Tourism'*
" *by facilitating the development of the Churnet Valley as a visitor destination whilst respecting the environment"*
"by promoting increased tourism and economic prosperity without causing harm to essential qualities of landscape, ecology, heritage and remoteness that the Churnet Valley is recognised for"
"by promoting a year round visitor offer and dispersing visitors to increase benefit to the local economy by focusing on quality rather than quantity"
"by giving preference to incremental improvements which support existing businesses"
OPC asserts that the proposed development is inconsistent with all of the above requirements of Principle 5.
3. Meeting the needs of the Tourism offer in the Churnet Valley
● The Churnet Valley Masterplan SPD (Sustainable Tourism and the Masterplan Principles section
5.1.18) highlights the importance of the visitor group
'Countrysiders' ..... ' *In summary, the focus of the Masterplan should be around attracting 'Countrysiders', with or without children, who best fit the offer and are most likely to be attracted by a rural destination, with a distinctive and quality offer……..*
● The Churnet Valley Masterplan SPD (Glossary section
11.0.1) defines the term
'Countrysiders': *Visitors primarily coming for a combination of experiences –activities, discovery / sightseeing, and rest and relaxation . Outdoor activities will be the predominant activity, but the natural environment / scenery will be a key underpinning appeal, [they] will however undertake a range of activities while staying in the area including heritage and natural history and will have a propensity to travel around / explore. They will be staying for an additional holiday / short break – typically in independent accommodation (B&B, self catering) – typical length of stay will be 2 to 3 nights or 6 to 7 nights.Demographically they will primarily be middleaged couples – travelling from a wide area. The Countrysiders are the main backbone of staying visitors to the Moorlands and most closely aligned with the visitor profile of the wider Peak District.*
It is the view of OPC that the offer contained in this application, does not fulfill this criteria. Moreover and more disconcerting the development would have a negative impact on the numbers of 'Countrysiders' wishing to visit the area, due to the impact whether by traffic, site noise, or sheer numbers of people concentrated in the Southern end of the valley (saturation) on the 'rest and relaxation' of the targeted visitor group. If Countrysiders are seen in the Churnet Valley Masterplan as "the main backbone of staying visitors" then the impact of any development which potentially obstructs or negates achievement of this aim should be given very, very careful consideration.
4. Site:
● The NPPF clearly states that *"land that has been developed for minerals is not "Previously Developed Land"* , therefore, the Quarry is not a brownfield site, it is a 'previously worked greenfield site'.... and was worked for very specific reasons.
The quarry being located due to the presence of silica. No other large scale industry would have been granted permission to operate in this location. Similarly, now economically removable reserves of silica have been exhausted, we believe that

Moneystone Quarry should be viewed no differently than an unsullied countryside location.

● There remains an extant restoration plan which we understand is still not complete. It is the view of OPC, that before any site development proposal is considered by SMDC the restoration plan should be completed.

5. Conformance to the Adopted 'Staffordshire Moorlands Core Strategy':

The Churnet Valley is identified as an area for sustainable tourism and rural regeneration, and SS7 clearly outlines fundamental principles within this aim:

● *"Any development should be of a scale and nature and of a high standard of design which conserves and enhances the heritage, landscape and biodiversity of the area and demonstrate strong sustainable development and environmental management principles. The consideration of landscape character will be paramount in all development proposals in order to protect and conserve locally distinctive qualities and sense of place and to maximize opportunities for restoring, strengthening and enhancing distinctive landscape features. "*

OPC assert that not only, does the proposed development does not support any of these principles, it is in fact contradictory to the underlying tenet contained within this statement.

● The Spatial Strategy for the Staffordshire Moorlands states: " *In the smaller villages there will be limited development only, principally for local housing needs and rural diversification, whilst the countryside areas outside market towns and villages, including hamlets and other small settlements, will be subject to strict control over development with an emphasis on meeting essential rural needs, promoting environmental enhancement including landscape and biodiversity, and on encouraging appropriate economic diversification and tourism. In order to facilitate development 'Infill Boundaries' will be defined for the smaller villages within which appropriate development would be allowed. Major developed areas in the countryside will also be identified where an appropriate range of uses would be permitted to support rural needs*."

Given that Oakamoor and Whiston are categorised as 'Small Villages' OPC would encourage SMDC to view the proposed development within the context of the above

6. NPPF Sustainability

● Staffordshire Moorlands Core Strategy SS7 states: " Sustainable tourism is tourism which takes account of its current and future economic, social and environmental impacts, balancing the needs of visitors, the economy, the environment and host communities. Tourism development must not be at the expense of the special qualities of the Churnet Valley which draw so many people to the area. A very sensitive approach to the provision and expansion of facilities and accommodation will therefore be required to ensure that it is of an appropriate scale and design and compatible with the nature of the local area and enhances the heritage, landscape and ecology of the Churnet Valley"

OPC believe that SMDC should be commended in recognising the special qualities of the Churnet Valley within the Core Strategy and CV Masterplan documents. The challenge now for SMDC regarding this planning application, is to support the rhetoric with appropriate complementary actions. OPC believe that the proposed development, would be best described as " Of in appropriate scale and design and in compatible with the nature of the local area and diminishes the heritage,landscape and ecology of the Churnet Valley"

● In reviewing the Operation of the National Planning Policy Framework, the Communities and Local Government Committee recently highlighted the following: [A recurring concern in our evidence was that greater emphasis was being given to the economic dimension of sustainable development than to the environmental and

social ones.] It is the view of OPC, that SMDC have tacitly supported the outline proposals created by the applicant from its inception, whilst maintaining an outward impression of a balanced, open minded, and impartial approach. OPC assert that SMDC have actually been influenced too heavily by the economic dimension, without due consideration being given to the environmental and social impact of such an outsized development. OPC request that SMDC review their approach to this application, with a greater emphasis on an equitable and consistent balance between the three facets of sustainable development as outlined in the NPPF. On completion of this we would postulate that the negative impact on the social and environmental facets would far outweigh the perceived economic benefits.

7. Development and Management Principles

The Churnet Valley Masterplan SPD 8.5 Economic Development states:

"New employment uses should preferably use existing rural buildings in locations which are well served from the main road network or be located in specific employment areas which are capable of serving businesses. Alternative uses for for existing employment areas will only be supported where the premises or site is unsuitable or unviable for continued employment use".

It is the view of OPC that the proposed development does not meet any of the criteria set out in this principle

8. Summary

It is the view of Oakamoor Parish Council that the minor modifications (relocation of of 14 of the proposed 250 lodges, some additional screening, ineffectual roadsignage, and a reduced 'hub' height) made to previous application SMD/2014/0682 do not give justification for any change to their fundamental opposition to this application. The proposed development continues to fail to fulfill so many of the fundamental principles contained within the Churnet Valley Masterplan SPD, the appropriate elements of the Core Strategy, and the NPPF.

Cotton Parish Council: Have no particular views on the application. Raise no objections provided that any outstanding highways issues are addressed.

Ipstones Parish Council: Object on traffic grounds. The rural roads including those that go through the Parish of Ipstones already suffer from Alton Towers traffic. This proposal will exacerbate the problem. Parishioners have had accidents as a result of speeding Alton Towers visitors. The roads in the Parish are steeply graded with bends. Strangers will not necessarily take the necessary precautions to drive safely and the Parish Council is concrened that the safety of holiday makers and residents will be jeopardised as a result.

Local Highway Authority: No objection subject to conditions relating to details of the precise layout, off-site junction improvements at Whiston Eaves Lane/A52, implementation of a Travel Plan, off-site traffic management incorporating directional signage, a scheme showing pedestrian and cycle connections and submission of a Construction Management Plan.

County Minerals Planning Authority (MPA): No objection subject to the following comments on mineral safeguarding , restoration and waste management.

Mineral safeguarding: Advise that the applicant has considered the extent of mineral working undertaken by previous landowners and the evidence provided in the ES to demonstrate ground conditions indicates the extent of mineral working and the disposal of mine wastes within the quarry. In the context of saved policy 5 of the adopted Minerals Local Plan and policy 3.2 of the emerging Plan, the ES indicates

that the proposal would not sterilise a mineral deposit of economic value within the application site.

The proposed development could constrain potential mineral development on adjoining land due to the need to safeguard the amenity of residents in the lodges proposed within the application area. In this case, consideration is given to the potential for the proposed development to sterilise silica sand deposits within an adjoining area of search allocated in the adopted Plan (refer to saved proposal 7) and also within a mineral safeguarding area in the emerging Minerals Local Plan.

An application to extract mineral within the area of search (22.4 hectares) as an extension to Moneystone Quarry was refused in 2007 on the grounds of unacceptable adverse impacts on local residents and Whiston village (ref: SM.06/10/122 M). Since the planning decision made in 2007, there has been no further interest in pursuing the development of the silica sand resources in the Whiston area. Remaining permitted reserves have been exhausted, the processing plant removed and there is no proposal to retain the area of search in the emerging Minerals Local Plan.

With the removal of the processing plant at Moneystone, a relevant issue is whether investment in new plant to process the remaining resource is likely given the extent of remaining resources.

The processing of silica sand from Carboniferous Millstone Grit deposits requires that an iron oxide coating of the sand grains is removed with hot acid leaching. Such processing requires high capital investment as well as on-going costs and as such would require a significant reserve to be available for working. In announcing the closure of Moneystone Quarry, the quarry operator stated that "without guaranteed, long term sand reserves it is impossible to commit the necessary funds to the quarry's future".

Furthermore, in response to comments made against the proposed extension of the quarry, the quarry operator stated that "should the identified mineral resource not be worked and the processing plant removed when the current consented reserve is worked out, it is extremely unlikely that the remaining mineral resource will ever be worked…"

Having regard to the national and local planning policies and these material considerations advise that it is reasonable to conclude that there is considerable doubt as to whether the resource is likely to be developed as industrial sand capable of meeting national markets in the foreseeable future. Therefore, the impact of the proposed development in terms of potentially constraining the winning and working of mineral resources on adjoining land is assessed of low significance. Furthermore, given the doubt about the prospect of working the mineral, it is reasonable to conclude that there is no need to safeguard land that could accommodate infrastructure necessary for the processing and transportation of the mineral resource.

Restoration and aftercare requirements of the former quarry: Advise that there is an approved restoration and aftercare scheme for the quarry (ref. SM.96/935/122 M D4 dated 13 March 2014). The County Council's comments as the Minerals Planning Authority relate to the implications of the proposals on those parts of the quarry that remain outwith the application site. As previously stated in the County Council's response to the scoping opinion, the approach of drawing a tight application site boundary around the proposal, excluding areas of the former quarry is a concern (ref. SCO.65/Moneystone Quarry dated 3 October 2014). It is important that the leisure development proposals are satisfactorily integrated with those parts of the site that remain subject to the requirements of the approved quarry restoration scheme.

County are keen to see those areas of the site that would remain subject to the approved restoration and aftercare scheme restored at the earliest opportunity and to high environmental standards (ref. the National Planning Policy Framework

(paragraph 144)). It is our opinion that the application may have implications for the land outwith the application site and if that is the case then they should form a part of the proposals being considered by yourselves.
In the event that planning permission is not granted or the planning permission is not implemented then the County Council would take appropriate measures to ensure that the approved restoration and aftercare scheme is completed.

Waste management; Advise that sufficient provision should be made for the management of wastes within the site and it will be necessary to ensure good design of waste management facilities to secure the integration of those facilities with the rest of the proposed development and local landscape.

Natural England: Considers that the application does not pose any likely or significant risk to those features of the natural environment including SSSi's and large populations of a protected species.

Policy Officer: The two key issues remain the same as the previous application, the principle of a tourism development in this location and the impact of the proposal on the landscape, heritage, biodiversity and local connectivity. Advises that the policy status remains unchanged from the previous application and the proposal accords with the Core Strategy and Churnet Valley Masterplan SPD in respect of the proposed uses on site and it is in a location where tourism and leisure development is supported. The key consideration remains the impact of this specific proposal on the heritage, landscape and biodiversity of the area and its connectivity with the surrounding area.
The site is located within the Churnet Valley area where there is in principle planning policy support for sustainable tourism development (Core Strategy Policy SS7) including short and long stay visitor accommodation and the provision of compatible new tourist attractions and facilities. Moneystone Quarry is also specifically identified in the Churnet Valley Masterplan SPD as a key opportunity site for new leisure development based around restoration of the quarry which includes a concept statement and concept plan identifying a maximum of 250 holiday lodges in total and the provision of supporting facilities. The Masterplan is an SPD and therefore a material planning consideration when considering planning applications in the Churnet Valley area. As the site is identified in the Churnet Valley Masterplan as a key opportunity site for leisure development it is not considered necessary to go through an impact assessment as required by para 26 of the NPPF nor a sequential approach with regards to site selection as required by Core Strategy Policy SD1. It is also considered that the proposal accords with policy E3 in terms of supporting the local economy and promoting the distinctive character and quality of the District and enhancing the role of Staffordshire Moorlands as a tourism and leisure destination.
The Churnet Valley Masterplan SPD identifies the Minerals Local Plan within the constraints in the Concept Statement for Moneystone Quarry Opportunity Site.
Core Strategy Policy SS7 requires that "Any development should be of a scale and nature and of a high standard of design which conserves and enhances the heritage, landscape and biodiversity of the area and demonstrates strong sustainable development and management principles." It states that the consideration of landscape character will be paramount in all development proposals. Core Strategy Policy E3 also requires that the development is capable of offering, good connectivity with other tourist destinations and amenities, particularly by public transport, walking and cycling. These are all considered to be significant matters which need to be carefully assessed having regard to any proposed mitigation measures. Core Strategy Policy E3 requires that new build development away from any settlement, should be of a scale and design which can be easily assimilated into the local area in a sustainable manner and preference should be given to buildings of a non-

permanent nature. The proposal appears to generally accord with the guidance in the Churnet Valley Masterplan SPD which includes a development strategy, concept statement and concept plan for the site. Although it is recognised that this is an outline planning application with all matters reserved except access, there is concern over the issue of detail particularly regarding the intensity of use at the hub building including issues of scale, design, sustainability and how it is to be used and potential traffic impacts from day visitors.

Housing Strategy Officer: Previously advised, no objection.

Ecology Officer: No objection. Previously advised that he is broadly satisfied that good provision is made to integrate the broad aims of the approved quarry restoration plan into this proposal with compensation for where this is not possible by additional measures outside the site to be secured by condition.

Advises that the submitted information is based on surveys for the following : reptiles; amphibians; breeding birds; badger; otter; water vole, bats and white-clawed crayfish. The locations and significance of occurrence of these species and species groupings (if found) has been recorded, mapped and assessed. For example there were at the time of survey no badger setts within the site but there is evidence of badgers using parts of the site as foraging and living habitat. Certain trees (seven in total) have been identified as having potential to support bats. Four ponds within the site are found to hold medium sized Great Crested Newt populations and due to their proximity to one another these should be regarded as representing a single larger population. The site as a whole has significance as supporting habitat for a wide range of breeding birds including a Schedule 1 species (highest protection) red and amber listed species (a national index of population decline) and Biodiversity Action Plan Species. For this Outline stage it is considered that appropriate necessary safeguards can be obtained through the Construction Ecological Management Plan and the Habitat Management Plan, both to be required by way of conditions.

In the event of an approval, the wording of the conditions will be crucial to securing the successful continuation of the ecological requirements in the development.

Environment Agency; No objections, in principle, to the proposed development subject to contamination conditions and a series of informatives.

Trees and Woodlands Officer: Advises that the submitted Arboriculture Report, confirms that most tree groups and woodland areas are generally situated around the peripheries of the three excavated quarry pits. In view of this, there is unlikely to be significant direct adverse impact on existing trees arising from the proposed development. Notwithstanding he comments that this Report is not an Arboricultural Impact Assessment and nor could it reasonably be expected to be so in view of the outline-only nature of the application. However such an assessment must accompany any subsequent reserved matters/full application if outline planning permission is granted.

In terms of visual impact, confirms that he is reasonably happy with the visual impact issues relating to Quarry 1 and Quarry 2. Following concerns about the extent of loss of tree cover to the south of Quarry 3, the indicative layout of lodges now shows 2 distinct clusters of lodges along the track, separated by a stretch of retained young woodland abutting either side of the track. In addition, the north-westerly of these 2 clusters would be situated in what is presently an open area overlooking the lake beyond the existing young woodland, and the indicative layout shows space for the

establishment of additional woodland planting to provide an enclosed woodland character to this cluster and screen/filter potential view of it from across the lake.
Advises that the production, approval and implementation of a fully detailed landscape and habitat management and development plan for the whole site should be a conditional requirement if planning permission is granted.

Severn Trent Water No objections subject to a condition requiring submission and approval of drainage details for the disposal of surface water and foul sewage.

Conservation Officer: Advises that Little Eaves farmhouse is a 2-storey 18th century building (with 19th century modifications) constructed in coursed and dressed sandstone under a tiled roof. The main aspect of the farmhouse is south-east, facing into the farmyard, with public views limited by farm buildings and mature trees. The rear elevation looks north-west out across the farm lane to open pasture, although high hedges on the lane limit its visibility. The barn is similarly detailed to the farmhouse and is a small, single storey building. The farmhouse and barn sit within an orchard setting beyond which are further agricultural buildings of mixed age. Both buildings are included on the statutory list (Grade II) – the barn was added in 1967 and the farmhouse in 1986. For the purpose of this assessment, the farmhouse and barn will be treated as one and referred to as Little Eaves Farm.
Associated with the farmstead is a barn immediately facing the farm track (on the far side). This is a prominent and attractive historic structure of similar date to the farmhouse and could be classed as a curtilage structure to the farmhouse and therefore covered by the Listing.
Considers that the scheme as a whole will still represent 'less than substantial harm' to the setting of the Listed Buildings and under the 1990 Act considerable weight must be given to the preservation of the Listed Building and their setting, even where the harm is slight. However, in assessing the acceptability of the harm one has to be aware of the fact that the Listed farmstead will retain its immediate, open agricultural setting and more distant, rural views. Also mindful that the Listed Buildings were Listed when the quarry was in operation.
With regard to increased traffic disturbance in Oakamoor which has recently been designated as a Conservation Area advises that she is aware that the proposed scheme indicates a left only turn upon exiting the site to minimise through-traffic passing through Oakamoor and assumes that County Highways has commented on any highway risks proposed to Oakamoor Conservation Area.

Conservation Liaison Panel No objection subject to confirmation that planting can mask/filter views of the central Hub area.

Historic England: Recommend that the application be determined in accordance with national and local policy guidance and on the basis of the Councils specialist conservation advice

Environmental Health Officer: No objection subject to conditions to control noise, contamination, dust and lighting

Economic Development Officer Strongly supports the application. From an economic regeneration perspective, the above application represents a strong opportunity to create employment, supply chain opportunities and improve the economic wellbeing of the District. The development is closely aligned to the adopted Churnet Valley Master plan including "deliver(ing) quality and sustainable tourism" through the provision of:

- increasing overnight stays - which will lead to greater support to wider economy- through the conversation of day to staying visitors;
- Extend the season of visitors to Staffordshire Moorlands
- Improve accommodation offer in terms of range of accommodation on offer

Advises that the Destination Staffordshire Tourism Review, Strategy and Action Plan 2015-2018 evidences that in Staffordshire and Stoke-on-Trent LEP area there are 16, 500 bed spaces, contrasted with 39,000 in Derbyshire and 23,000 in Shropshire & Telford. The study concludes "There is still a lack of accommodation and limited range of choice and quality in some locations. Theme park hotels have high occupancy levels but elsewhere the levels are average and a continued focus on increasing bed nights is urged."

This application will help deliver an increased supply of bed spaces in keeping with the tourism strategy, and as the location is close to both a major theme park and the Peak District National Park, it represents a clear opportunity to increase supply in an area which will attract visitors and enable the area to benefit from increased tourism spend. Furthermore Staffordshire Tourism Review, Strategy and Action Plan 2015-18 and recent STRAM reports (2014/15) all show that less than 12% of visitors to both the Moorlands and Staffordshire actually stay overnight. The latest figures show that there were 5.084m visitors to the Moorlands in 2015 numbers of which only 0.594m were staying visitors. Whilst this represents a growing trend (an increase from 7% in 2009 to 11.7%) there is very significant potential customer base and we would not have any concerns about any displacement issues in relation to existing accommodation providers as the market can support both. In addition there is likely to be no/minimal displacement as:

- in part, it will be a different audience from those attracted to B&B accommodation providers or those wanting a 'farm' experience
- it will encourage longer stays in the area (3/4 nights or 7 night stays)

In addition, the majority of the accommodation in SMDC is either a 'hotel/B&B' type (serviced) with other 'bed spaces' predominately made up from seasonal 'camping. There is an thus an overall lack of quality self-catering accommodation, which is seen as a growth market as people will stay longer in pre-booked self catering accommodation compared to hotels/B&B and yet have a similar daily spend pattern. Self catering visitors are not as effected by poor weather as campers.

The Visit Peak District destination report 2015, identified a number of weaknesses in the tourism offer in the wider Peak District which included:

- High Level weakness: Easily accessible for those with impairments (e.g. those with mobility, visual or hearing impairments)
- Low level weakness: Variety of accommodation to choose from that suits my needs; Accommodation that offers value for money; Opportunities to eat/drink local food and produce; Wide range of attractions and things to do

This application, will help address these weaknesses of the area; including addressing the high level weakness through the provision of accommodation for people with disabilities.

Staffordshire Moorlands District Council has adopted an Employment and Skills Charter which asks developers who will be creating more than twenty jobs to explore steps that they will take to enable opportunities for local people and local businesses to be maximised. The applicants have signed a Employment and Skills charter. Based on this, the EDO would very strongly support this application as not only do the proposals fully co-ordinate with the Churnet valley master plan objectives of

increasing overnight stays, but the additional benefits to the local economy look to be substantial. The developers have agreed in particular to have committed to

- maximising supply chain opportunities both during the construction and once completed through the establishment of 'job/trade fairs' and 'meet the buyer' events and have set a target of 40% of goods and services on site to be provided by local firms;
- host pre-recruitment training for new positions in partnership with Jobcentre Plus which would guarantee job interviews for long term unemployed Staffordshire moorlands residents who completed the training and are not looking to appoint any employees on less than 12 hour contacts;
- Work to maximise job opportunities for people with disabilities including learning disabilities and facilitate apprentice opportunities and graduate placements
- provide work experience placements for local schools including placements for young people with learning disabilities
- work with SMDC to provide a range of fixed information panels to encourage off-site visits to local town centres and other attractions as well as provide tourist information to help stimulate benefits to the wider economy and showcase local food and products in retail and on-site catering provision

Finally advises that Staffordshire Moorlands District Council is in the process of developing a transparent and comparable measurement tool for measuring the economic benefit of any development including any income that would come directly to the Council in terms of increased business rates, council tax income or new homes bonus as well as savings to the exchequer from job growth. While this tool is still currently underdevelopment, the size of the development and number of jobs generated means that there is this is likely to be significant if this application were supported.

Woodland Trust Object due to loss and damage to Frame Wood

REPRESENTATIONS

Three Site Notices have been displayed around the site and the application advertised in the local press. 381 neighbours notified by letter.

Total number of letters of support received: 16
Total number of letters of objection received: 89
Total number of letters raising comments which are neither in support or object:3

Matters raised in the representations in support:

- It will be good for the local economy, bring prosperity to the area and offer much needed employment opportunities for local people.
- Most of the objectors concerns are centred around the access via Whiston Eaves Lane, these people seem to have forgotten that 44 tonne articulated vehicles were using the road until the quarry shut. This development would create far less traffic than the quarry produced and the nature of the vehicles would be far lighter.
- Site needs developing before it turns into rough scrubland.
- The new comers in the village are mostly old people who don't want to see any change.

- The area has a large number of young people who would benefit from year round employment directly and the local businesses which would supply the site would also provide secondary employment
- This site has for many years provided jobs for local people of working age and should be allowed to continue to do so. To turn the site over to nature with public access or not would be a missed opportunity. The site can be developed in this way in conjunction with a thriving tourist business
- The steep rise in construction and industrial traffic associated with the quarry was compensated by the knowledge of not only employment but also a symbiotic relationship with locals as they kept the roads clear in winter using their own man power and equipment, they contributed towards the community and surely this relationship could be encouraged to bring the village back to a beautiful vibrant community rather than the tatty and unloved look it has now.
- The proposals will enhance a beautiful area which cannot be allowed to grow wild as many parts are a danger to the public and an eyesore.
- The development would help bring a well shielded but disused part of the valley back to life.
- Let's use this opportunity to make something fantastic in its place for our future generations. The objection from the local community is purely down to hesitance to change.
- The revised application seems to have addressed everyone's needs .
- Rejection of this proposal would be simply stupid.
- The increased traffic in the area will surely be no worse that when Churnet Valley was at the height of its industrial past? The added traffic is a small price to pay for such a fantastic facility.
- This development will really put Staffordshire moorlands on the tourist map which will be advantageous in every way for both the area and it's residents, house prices will rise in the surrounding area as well as the reputation of the area.
- This development would bring in more money to support local attractions, pubs, attractions such as the railway stations, Alton towers, local village organisational events.
- There are enough potential visitors to fill the holiday units without affecting the surrounding villages businesses.
- The current state of the area is depressing and gloomy, this project would enhance the appearance far better than what we look at today.
- Development would be beneficial as there are no areas for mountain Biking.
- Development will assist in regenerating towns like Cheadle by increasing visitors to the area this is an opportunity that should be taken in the interests of the Staffordshire Moorlands as the pros out way the negatives.

Matters raised in the representations against:

Other

- The number of lodges remains the same in total and their effect will be exactly the same as for the previous application (SMD/2014/0682) which the council justly and rightly refused.
- Unlike the previous application insufficient time has been given by the Council for people to make representations.
- The 250,000 visitors per annum planned for the development represent a scale of journeys denied as acceptable by the CS. In addition 100 of the lodges would be for sale so we can expect many of them to be acquired by people likely to be in

residence for most, if not all of the year, this represents a “village” created by default which appears nowhere in the CS or the CVMP.

- Judgement of application must be made in relation to the quarry having been fully restored to pasture not the post exploitation condition existing at the time of the application.
- The community favour little or no development.
- The applicant has tinkered with a limited number of issues which do not change the fundamental issues of road safety and the completely inappropriate scale of the development.
- Additional changes proposed provide benefits but do little to address the underlying reasons why the previous application was refused.
- Contrary to original agreement that the quarry should be restored.
- Unfair to keep submitting slightly modified plans in an attempt to confuse or wear down local opposition.
- The applicants have demonstrated an intention to cram a greater density if buildings and visitor numbers onto a smaller acreage of the site
- Application should be considered on the principle of "cumulative impacts".
- The extensive use of timber represents a significant and real fire hazard.
- Application contains no current and up to date EIA which takes into account the proposed changes to the refused application or the natural changes to the landscape since the submission of the previous scheme in 2014.
- Health and safety issues in respect of lodges next to deep water.
- Expansion of lodges to a much greater number is certain.
- Application is a waste of time for Council and Planning Inspector given that an appeal has been lodged against the previous refusal.
- SMDC should take into account hundreds of objections which were received against the previous application.
- This application would take away the only amenities local residents have left.
- No assessment of the cumulative effects of the development in Quarry 1 & 3 as now proposed.
- Impending closure of Ipstones and Hanley's Fire Stations will increase call out response times with increased risks to life and property.
- Current application has not addressed planning impacts identified by local communities and does not therefore have their backing. Approval would therefore be contrary to House of Commons Written Statement HCWS dated 15th June 2015.
- People have paid a premium for houses in this location and don't want to be sandwiched between two theme parks
- Definition of brownfield land in NPPF specifically excludes land that has been developed for minerals extraction.
- The quarry would have closed for the night whereas the holiday camp and its traffic will continue until the small hours of the morning.
- Support for project is not strong with responses on SMDC's website equating to just 2.5% of all representations received.

- Proposal will ultimately fail as a business and will become home to yet another large ruin open to vandalism and misuse such as Cotton College
- Feasibility study and majority of documents put forward in support of application are out of date. Recent changes in circumstances necessitate that certain arguments put forward for the scheme should be reviewed.
- Residents concerns have not been properly addressed.
- Feasibility study by Christie & Co was never submitted as part of the previous application. As it is now specifically quoted in the new application it should be made available. The extract in the previous application has not been supplied with the current application and contains inaccuracies. The application should be withdrawn until such time as their documents have been made available to the public for their comments.
- Right of way for Little Eaves Farm through the quarry would be restricted.
- Number of lodge dwellers would greatly outnumber local residents.
- Approval of the application signals that important conditions that local residents would have expected to be enforced and complied with can simply be disregarded later.
- Only building on the site should be a visitor centre.
- The place should be a place for quiet enjoyment of the area.
- SMDC should be liaising with SCC regarding a country park at Moneystone not encouraging over development.

Policy

- The application contravenes policies DC3, T1, DC2 & SS7 of the Adopted Core Strategy Development Plan Document, the Adopted Churnet Valley Masterplan SPD which set in place measures to avoid excessive development as well as policies in the National Planning Policy Framework which seeks to protect and enhance valued landscapes.
- Policy SS7 requires development to bring enhancements. This development fails in this objective.

Environmental Harm

- The environmental harm in this application is as great and the same as that in SMD/2014/0682 and therefore is overriding and significantly outweighs the benefits when assessed against the policies in the NPPF taken as a whole.
- The proposed development would adversely affect the tranquillity of the area.

Impact on listed building

- Location of the hub building has not sufficiently addressed the impact upon the listed building.
- The proposal would have an adverse effect on Little Eaves Farm which is a Grade II listed building .

- Additional planting would do little to mitigate views of the development from Little Eaves Farm due to topography of site and fact that areas have to remain open for power lines.

Landscape Impact

- If approved it would be the largest blot on the landscape ever granted permission for development in the area.
- The development is an assault on nature and a perversion of the landscape.
- Proposal would adversely affect the heritage and beauty of the Churnet Valley.
- The submitted visual impact assessment underestimates the visual impact of the proposed development.
- Designation of Churnet Valley as an Area of Natural Beauty would be jeopardized.
- Visually intrusive for residents in surrounding villages and users of public footpaths
- Unacceptable incongruous development in an area of high environmental and ecological sensitivity.
- Impact on environment will spread well beyond Moneystone itself and help to mar if not destroy that which most people come to enjoy in the Staffordshire Moorlands.
- Will erode the agricultural landscape.
- Change the peaceful nature of the valley forever.

Economy

- The current type of tourism, which feeds the local economy, would suffer were the development to go ahead.
- Any profits generated would be returned to the parent company as opposed to the local area. Own contractors would do work, visitors encouraged to remain on site and employment opportunities limited to poorly paid, seasonal and zero hours contracts.
- Will be harmful to small businesses and local area with no benefit.
- Applicant dependent on Alton Towers to bolster their financial position.

Size and Scale

- The size and scale of the proposed development is at odds with the low impact development described in the outline strategy. The sloping nature of the site means that many if not all of the lodges will be considerably higher. The height of the hub building is completely out of keeping with the valley landscape.
- Size of the proposed development is inappropriate for a landscape characterised by small villages.
- Proposal represents a massive intrusion and threat to the Churnet Valley. Scheme is larger than any of the nearby villages.
- Intrusive scale will intrude upon the open nature of the landscape

Traffic/Highways

- The volume of traffic generated would overwhelm the local roads giving rise to danger, congestion, noise and pollution in this rural area. Local residents will be obstructed in the going about of their daily business, as is already the case at Alton

- Independent traffic reports have used the wrong criteria for the consideration of the junction of Whiston Eaves Lane with the A52
- The cumulative impact of traffic generated by all the proposals and current developments in the area should be considered . The expansions at Alton Towers and the developments at Froghall will all add vehicle movements to the same road.
- Visitors likely to ignore new direction signs and will follow satellite navigation systems instead.
- The idea that the railway in the valley will be developed to reduce road use is sheer fantasy.
- Site is in an unsustainable location which is not served by public transport
- Local access to the site is poor and dangerous. Vehicular movements are significantly constrained by local road width, condition, design (e.g. blind corners), and the opportunity for high vehicular speed (i.e. derestricted limits). The local highways simply cannot sustain any significant increase in traffic volumes without a profound increase in road safety dangers.
- Oakamoor will become a rat run for visitors returning from Alton Towers and aside from the dangers (particularly to the parents and children who use The Valley School, which intersects with Carr Bank at School Drive) the quality of life for a large number of Oakamoor residents will be enormously diminished.
- The proposal will impose a higher level of CO2 emissions in the surrounding area which is already higher than the national average.
- The tunnel which links the two sites is narrow and unstable and incapable of carrying emergency vehicles. Access to the site including the junction is very narrow and incapable of taking increased traffic. Road already burdened by Alton Towers traffic.
- Junction very narrow and not capable of taking traffic.
- Proposal to alter junction with A52 same as that previously refused.
- Studies of Carr Bank and Farley Road have shown inadequate width for 2 way traffic for many areas along their depth and numerous bad bends and steep gradients.
- School buses are banned from using Carr Bank.
- Transport assessment obviously underestimates the volume of proposed traffic.
- Use of public transport unsustainable and unlikely.
- Reduction in local bus services has already increased traffic on the road network,
- Alternative access road Blakely Lane is also inadequate with narrow width with bends that have poor visibility.
- Health and safety issue regarding response times of emergency vehicles and response times.
- Pedestrian safety will be endangered.
- Idea of a ghost island crazy.
- Congestion
- The parking along the road across from the post office in Oakamoor will be unavailable to the community. Is the little hump back bride in Oakamoor capable of carrying 750-1200 cars per day.

- The latest minutes of the Alton Towers Resort Transport Liaison Group Meeting confirmed that there is little to no appetite on the part of Alton Towers to run a shuttle bus service between the two sites.
- Whole scheme is still based upon too many cars.
- Car sharing schemes in rural area are particularly difficult to set up and maintain.
- Travel Plan and entire application is flawed.
- HGV's using quarry are slow moving. Application now proposes fast mowing cars between two theme parks on some of the narrowest lanes in the Staffordshire Moorlands.
- In the evening when residents return to work the highway goes down into single track width within 200m opposite the old Sneyd Arms PH which will be the main access point to the quarry site.
- An independent traffic study is needed.
- Visibility at the junction in heart of Oakamoor village by the Lord Nelson pub and village hall where School Drive, Churnet Road and Carr Bank meet is poor especially when accessing Starwood Terrace .
- School drive is very busy with cars and pedestrians.
- Oakamoor is a traditional village with narrow or no pavements
- Unfamiliarity of drivers reduces highway safety.
- Highway officer at last meeting produced a substandard performance which failed to impress.
- What assurance has SMDC got from Alton Towers that enables Laver to assert that it has agreed to a shuttle bus system that will accommodate large number of visitors from Moneystone who wish to get to Alton Towers.
- Statistically lanes like the ones serving the site are the most dangerous nationally in terms of fatalities and road accidents.
- Submitted travel plan shows a complete lack of understanding of the area with its steep gradients and unlit roads.

Need

- All activities and accommodation proposed already exist in local area.
- Largest theme park in Europe (Alton Towers) which has just had a further phase of accommodation approved is located only 3 miles away. There is no requirement for similar development so close.
- There are many small and independent camp site which means that there are already plenty of places for people to stay.
- Other large wooden lodge focused holiday developments are proposed locally including the former Birchall open cast coal mine near Chesterfield and 44 lodges at Delamere Forest, Cheshire as well as Centre Parks and a newly established Peak Resort within 30 miles.
- The feasibility study and the economics contained within is flawed.

Other impacts

- Increase in litter
- Noise, light and air pollution will ruin what remains of one of the most tranquil and beautiful valleys in the country.
- Statement that any archaeological evidence within former quarry workings have been destroyed by quarry workings is incorrect.

Ecological

- The range and quantity of wildlife will be compromised by the proposed development and its associated traffic from visitors, staff and services.
- Lack of up to date evidence on the likely environmental impacts of the revised proposals. Similarly the application contains no updated report on the ecological issues or flora or fauna.
- Quarry 2 and Black plantation connected by a tunnel which will give rise to potential for serious environmental and ecological harm.
- The application has increased the density of development within quarries 1 and 3 and therefore made worse the actual and perceived damage to the ecological and environmental impacts.
- Annual migratory toads mating on the road outside Moneystone quarry are regularly squashed.
- Environmental harm is as great in this application as that previously refused.

Conservation Area

- Quarry is now a pathway linking the newly appointed Conservation Area of Oakamoor with the rest of the Churnet Valley. It's ridiculous to have key qualities SMDC wish to protect and regulate in order to maintain the special character of this village disturbed by large volumes of passing traffic

Impact on Ancient Woodland

- Frame Wood is a rare wood that needs to be protected from damage of any sort. You cannot simply replace ancient woodland with new planting. Most ancient woodlands have emerged simply because of natural topography and ideal conditions they are not man made.
- Proposal is a further erosion of the landscape and a threat not an improvement to its unique historical landscape character.
- Disquieting to find that SMDC's Trees Officer has not ventured any views on the application or its predecessor. Also lack of comments from experts at SCC.
- Woodland Trust should be given opportunity to respond to HOW planning's challenge to their objections.
- To make any sort of leisure use of such a vulnerable area will not enhance it but severely degrade it.
- The idea set out in the woodland notes would cause natural uprooting of screening and drainage problems.

Matters raised neither in support or against.

- As the above applications are so interrelated they should be dealt with together, due to the major size of the proposed development overall.
- Concern that the date for representations to be considered does not adequately allow people time to consider the thousands of pages of documents accompanying the application which is being forced through. Suggest that a full highways study is implemented

PLANNING POLICIES

Core Strategy:

SS1 Development Principles
SS1a Presumption in Favour of Sustainable Development
SS6c Other Rural Areas Strategy
SS7 Churnet Valley Area Strategy
SD1 Sustainable Use of Resources
SD2 Renewable/Low Carbon Energy
SD4 Pollution and Flood Risk
DC1 Design Considerations
DC2 The Historic Environment
DC3 Landscape and Settlement Setting
C3 Green Infrastructure.
R1 Rural Diversification
NE1 Biodiversity and Geological Resources

Churnet Valley Master Plan - Supplementary Planning Document

Moneystone Quarry Opportunity Site: Paragraph 7.6.5
Natural Environment: Paragraph 8.1
Green Infrastructure: Paragraph 8.6

Staffordshire and Stoke-on-Trent Mineral Local Plan

Saved Policy 5: Development within Mineral Consultation Areas.

Staffordshire Minerals Local Plan (Emerging Document):

Policy 3 - Minerals Safeguarding Areas

National Planning Policy Framework (NPPF)

Paragraphs 1 - 17
Section 3 Supporting a prosperous rural economy
Section 7 Requiring good design
Section 10 Meeting the challenge of climate change, flooding and coastal change
Section 11 Conserving and enhancing the natural environment
Section 12 Conserving and enhancing the historic environment
Section 13 Facilitating the sustainable use of minerals
Paragraphs 186 - 219

National Planning Practice Guidance

Other Relevant Policy Documents
Staffordshire Moorlands Tourism Study 2011
Landscape and Settlement Character Assessment (2008)
The Staffordshire County Council Landscape Assessment: Planning for Landscape Change (2001)
Churnet Valley Transport Study (Atkins 2013)

OFFICER COMMENT

1. The main planning issues to be considered in respect of this development proposal are as follows:

- Principle of the proposed development;
- Traffic and access
- Landscape and visual impact
- Ecology
- Archaeology and built heritage;
- Flooding/flood risk
- Ground conditions/contamination/air quality
- Mineral safeguarding
- Waste Management
- Residential amenity
- Public rights of way

Principle of the Proposed Development
2. Planning law requires that this application be determined in accordance with the development plan, unless material circumstances indicate otherwise. The Development Plan consists of the adopted Staffordshire Moorlands Core Strategy. The Churnet Valley Master Plan (CVMP) a recently adopted Supplementary Planning Document and the National Planning Policy Framework (the Framework) are material considerations of significant weight in the determination of this application. The CVMP identifies the application site as a key opportunity site for new leisure development based around the restoration of the quarry. The Framework has running throughout it, the golden thread of the presumption in favour of sustainable growth and development. In terms of decision making, this means approving developments that accord with the Development Plan without delay and, where the Development Plan contains either no relevant policies or where those policies are out of date, granting planning permission unless 'any adverse impacts of doing so would significantly and demonstrably outweigh the benefits, when assessed against the policies in the Framework taken as a whole or where specific policies in this Framework indicate development should be restricted. It is against this policy background that the application is considered and assessed below.

3. The application site is located within the Churnet Valley where Policy SS7 provides in principle support for sustainable tourism development including short and long stay visitor accommodation and the provision of compatible new tourist attractions and facilities. The adopted CVMP supplements this policy. It includes a Concept Statement for the Moneystone site and a Development Strategy (para 7.6.5).It specifically refers to the opportunity to develop the site for a high quality leisure venue to complement other recreational and leisure attractions and enhance the area provided it is of a scale that does not undermine the tranquillity and character of this sensitive part of the Churnet Valley and other businesses.
Appropriate uses are summarised in the CVMP are as follows:

- Holiday accommodation consisting of low impact holiday lodges in Zones 1 and 2 and limited development in Zones 4 and 5 with a maximum total of 250 lodges
- Outdoor recreation facilities including walking, cycling, horse riding and climbing
- The Hub building to be located within Zone 1
- The recreational lake to include non-motorised water based activities in Zone 3

The general development principles that apply to the site's development include:

- Ensuring that any future development accords with the overall strategic approach to development within the Churnet Valley
- Ensuring appropriate restoration of the quarry
- Adopting a comprehensive approach to development
- Delivering economic, social and environmental benefits for the area
- Restoration of the quarry unless a more beneficial alternative can be justified

4. Whilst the application concerns a greenfield site within open countryside and outside of a defined settlement boundary, the use for a leisure scheme promoted within the application is generally in accordance with the recently adopted CVMP which supplements Policy SS7 of the Core Strategy. Furthermore as the site is identified in the CVMP as a key opportunity site for leisure development, the Policy Officer has confirmed that it is not considered necessary to go through an impact assessment that would otherwise be required by para 26 of the NPPF nor a sequential approach with regards to site selection as would otherwise be required by Policy SD1. The Policy Officer further confirms that the proposal accords with the Core Strategy and CVMP in respect of the proposed uses on site and it is in a location where tourism and leisure development is supported. For these reasons the proposed use for a leisure development can be regarded as acceptable in principle.

5. Although in outline, the application is accompanied by an Indicative schedule of accommodation, a Parameter plan showing the broad extent and heights of development (including lodges, access and landscaping) and an illustrative Masterplan which shows how 250 lodges and other proposed buildings could be accommodated on the site. It is therefore necessary for Members to consider the quantum of development indicated in the application and on which the Environmental Statement and impact assessments has been based and to assess the compatibility of the proposal against the Development Plan policies as a whole, including the development principles of the CVMP to reach a view as to whether or not the proposal constitutes sustainable development that should be granted planning permission. These matters are now analysed under the various sub headings below.

Traffic and access

6. Approval of access is sought at this stage. The proposed site access would be from Whiston Eaves Lane, the main access into the former quarry. Chapter 13 of the ES considers Transport and Access. A full Transport Assessment (TA) is provided within Appendix 13 of the ES together with a Travel Plan.

7. In the previous application, Members raised significant concern about the amount of traffic that would be generated by the development and accessing the surrounding road network. Particular concern was raised with regard to Eaves Lane/ Carr Bank to the east of the site access which would provide a direct route from the development to Alton Towers and Farley Lane. It formed one of the reasons for refusal of that application. The applicants have sought to address this concern in this revised application by providing for a 'no right turn' out of the site. This would be achieved by

the introduction of a traffic island on the site access road which would physically prevent visitors and staff from turning right out of the site towards Carr Bank and Alton Towers. (see Drawing PB5196-0100A) These works are the subject of a separate planning application (SMD/2016/ 0388) which is considered elsewhere on the Agenda. Off-site improvements to the Whiston Eaves Lane/A52 junction are also proposed. Visibility at this junction is currently substandard. Works involve the provision of a ghost right turn facility into Whiston Eaves Lane when travelling from the west, increased visibility to the west and traffic calming measures. The works associated with the right turn and improved visibility are shown on drawing PB 1608-SK001C.

8. The TA notes that Whiston Eaves Lane is a single carriageway road with a typical width of 7m to 8m and is subject to a 30mph speed limit from the junction with the A52 for the first 300m through Whiston village to a point just south of the village hall. The remainder of Whiston Eaves Lane through to the Moneystone Quarry site is subject to the National speed limit.

9. Eaves Lane commences at the existing Moneystone Quarry site entrance and leads south to Oakamoor village via Carr Bank. The existing junction to the quarry is a wide simple priority layout. The TA notes that this has clearly been designed to accommodate the significant number of Heavy Goods Vehicles (HGVs) that have historically used this access. Carr Bank forms the continuation of Eaves Lane through to Oakamoor village. The TA notes it to be relatively steep in gradient (warning signs notify drivers of gradients of up to 1 in 5) and narrow in width at circa little more than 4.5m wide. The total width of highway land along this link varies it says, being up to circa 10m in width and is lined with trees/hedges. Eaves Lane and Carr Bank are subject to the National speed limit, with a weight restriction of 'no more than 7.5 tonnes except for access' applicable (i.e. heavy commercial vehicles are restricted from travelling through to Eaves Lane via this route). The last 200m of Carr Bank through Oakamoor is subject to a 30mph speed limit. The junction of Carr Bank with the A5417 in Oakamoor is a simple priority junction with adequate lateral visibility splays for the 30mph speed limit in force.

10. The TA identifies and considers two key junctions namely the A52/Whiston Eaves Lane (Whiston) and B5417/Carr Bank (Oakamoor). It considers the impact of traffic from the development on the highway network during construction and once the development is operational. It is based on an anticipated 3 year construction period, 2017-2019 with an opening date of 2020. The TA analyses existing traffic flows (Vol 1 section5). Existing baseline data is based on updated surveys carried out in May 2016 but increased by a factor of 1.5 to provide a robust assessment taking into account the increased traffic from Alton Towers during the summer months. During the processing of the application a Note to Staffordshire County Council from Royal Haskoning dated 19th August was received. This provides details of further traffic surveys commissioned in August 2016 by the applicant to establish if the weighting factor of 1.5 applied in the TA was sufficiently robust. The Note concludes that applying a factor of 1.5 to the May surveys did provide a robust assessment.

11. Background growth rates have been applied to the year of opening 2020 and 5 years hence 2025 and have factored in the Bolton Copperworks Opportunity site. The TA then applies traffic from the proposed development. In order to provide a robust assessment, using data from Christie and Co it combines the busiest forecast weekday flows for lodges, which occurs in May, with the busiest daily weekday flow for day visitors which is August. For weekends, peak flows are in August for all users. A 20% contingency is also applied. Using this worst case scenario and at the time the development becomes fully operational the TA predicts there would be 432 daily

two way flows on the busiest weekday and 812 daily two way flows for the busiest weekend (Table 12 of the TA). This is an increase from the 2014 TA and is said to be attributed to the increase in staff parking provision from 36 to 67 spaces.

12.The TA goes on to consider and assess the scale of this traffic impact on the most affected junction, the A52/Whiston Eaves Lane junction and the Car Bank/ B5417 It predicts that the arms of the junction would experience the following scale of traffic impact in 2020.

Junction 1 A52/Whiston Eaves Lane
Whiston Eaves Lane 97% increase (High impact)
A52 West of Whiston Eaves Lane 11% increase (high impact)
A52 East of Whiston eaves Lane 6% increase (medium impact)

Junction 2 B5417/Carr Bank Junction
Carr Bank - 7% increase (medium impact)
B5417 West of Carr Bank - 0%.(negligible impact)
B5417 East of Carr Bank- 2% (negligible impact)

13. In summary and not surprisingly, the TA concludes that traffic is expected to increase on the local roads around the site. The percentage increases set out above are all noted in the TA to be from relatively low baseline traffic flows. These increases have been considered against a set of traffic capacity significance criteria in the TA. The operational capacity assessment (which includes consideration of driver delay) of both of these junctions using the significance criteria concludes that the application is expected to have low operational impact on these junctions. To help mitigate the impact of trips caused by the development a Travel Plan Framework (TPF) and Travel Plan (TP) accompany the TA and include a number of measures that will encourage travel by non car modes (staff car share, cycle storage, Alton Towers bus for example). With these measures, the residual impact is predicted to be Minor Adverse in respect of the impact on traffic flows and a Negligible impact on driver delay. In respect of pedestrian delay and amenity, pedestrian severance, accidents and safety the residual impact is predicted to range form negligible to minor beneficial. The TA notes that although the existing A52/Whiston Eaves Lane junction could cater for the additional traffic demand in capacity terms, highway works are proposed at the junction to accommodate a right turn facility and increase the visibility splay to the west. The highway works are aimed at improving the existing sub-standard layout in highway safety terms (para 7.5.4).

14. In terms of construction traffic, the TA estimates that during construction there will be 24 two way total vehicle traffic movements per day. To mitigate this impact a Construction Traffic Management Plan is offered which can be secured by condition to ensure best practice measures are adhered to throughout the construction phase of development. With this in place the ES expects a minor adverse residual impact. However this is relatively short term and no objection is raised. The issue of noise during construction is considered elsewhere in this report.

15. Many of the letters of representation received relate to highway concerns. These include concerns raised by Paul Mew Associates, Traffic Consultants acting on behalf the local action group, WAG. The Local Highway Authority has carefully considered the application and the TA. It accepts the conclusions reached and raises no objection to the application. It says that the TA has dealt in detail with the access to the site from the A52 as well as from the B5417 at Oakamoor. The LHA notes that all relevant details such as highway safety and impact on the surrounding highway network and sustainability have been considered and that a TPF is provided

which outlines proposals for traffic impact mitigation through the implementation of sustainable transport measures. The TA has updated traffic flow and forecast figures from the 2014 TA. The LHA advise that although no objection was raised to the previous application on highway grounds, this application has sort to introduce additional measures which may impact on the highway, including improvements to the existing site access to prohibit the right turn out of the site onto Eaves Lane and removal of Blakeley Lane to service part of the development. The vehicular traffic previously assigned to Blakeley Lane has now been assigned to Eaves lane. The LHA conclude by saying that the modelling in the TA of the access junctions and surrounding network shows that they will operate within their practical capacity. The existing access to the development from the A52 will be upgraded and different proposals for this improvement have been considered. It is also considered that transport mitigation measures can be secured through the TPF. It is for these reasons that the LHA raise no objection subject to conditions and a Section 106 Agreement to secure a contribution of £11 000 towards the monitoring of the Travel Plan and £5 000 in the event that a Traffic regulation Order is pursued for speed reduction on the A52.

16. It is concluded that with the mitigation measures proposed in the Travel Plan Framework and Travel Plan and with the highway works proposed at the site entrance and at the Whiston Eaves Lane/A52 junction and in the absence of any objection from the LHA, that the development can be satisfactorily accommodated on the local highway network. Measures to reduce reliance on the car and reduce the need to travel are included and for these reasons the proposal is considered to comply with Policy T1 of the Core Strategy and the NPPF particularly given that the residual cumulative impacts are not considered to be severe. It is because of this that the highway issues are deemed to be acceptable.

Landscape and Visual impact

17. In the previous application Members expressed concern about the landscape and visual impact of parts of the development focusing on two areas. Firstly the area identified as the Multi Activity Hub area on the submitted Parameters Plan and in particular the extent of development within this area and the height of the buildings which had been given to be up to 12m in part. Secondly to the area identified as Black Plantation which Members felt was visually and physically isolated from the remainder of the proposed development and that its elevated position would lead to adverse visual impact. This application has sought to address these concerns. In respect of the Multi Activity Hub Area, the area within which the hub buildings can be located has been defined and reduced in area and within this area buildings will be limited to a maximum of 6m in height. Additional landscaping is also included in the Multi Activity Hub area. The area identified as Black Plantation is now annotated as 'Existing woodland to be retained'. Development is no longer proposed here.

18. Introducing a leisure complex into a rural location such as this will inevitably have some impact on the character and appearance of the area, be that visual impact, landscape impact or impact on tranquillity. However as noted above the principle of a leisure venue has been established through the Masterplan. The analysis below is made against this in principle support.

19. The site lies outside of a settlement boundary and within the open countryside. In the Churnet Valley Landscape Assessment which was commissioned by the Council to inform the CVMP, the site lies within two landscape character types, Dissected Sandstone Cloughs and Valleys and Dissected sandstone Highland Fringe. Characteristics of these landscape types include deeply incised wooded valleys with narrow winding watercourse, narrow sunken lanes, deciduous woodland, stone

buildings, livestock farming dominating, fields bound by dry stone walls or hedges and wide and distant views. In both character types, the Opportunity site at Moneystone Quarry is noted to be generally well screened from view. However it comments that redevelopment proposals should take into account the sensitive nature of the small scale landscape in terms of its protection and that particular regard should be taken of woodland planting that may result in the infill of this small scale landscape and which can create an adverse impact on the landscape character. It further states that formal planting should be discouraged as out of character and hedgerows should be reinforced and managed and that lodges/static caravans in open and visible locations should be discouraged. It says that small scale landscapes such as this are particularly sensitive to change.

20. Policy DC 3 seeks to protect and, where possible, enhance the local landscape by resisting harmful development, supporting development which respects and enhances local landscape character and supporting opportunities to positively manage the landscape and use sustainable building techniques and sympathetic materials (similar reference in Polices E3 and SS6). Whilst Policy SS7 promotes sustainable tourism development in the Churnet Valley it is also clear that this must not be at the expense of landscape quality which it says will be paramount in all development proposals. The Framework similarly gives weight to the protection and enhancement of valued landscapes.

21. The application is accompanied by an assessment of landscape and visual impact (LIVIA) Chapter 8 of the ES, which considers the potential effects of the proposed development both in terms of character and appearance. A series of View points are assessed at Appendix 8.2.

22. The Churnet Valley Landscape Assessment specifically refers to the Moneystone site and describes the whole site are being largely screened from views outside of the site. It is certainly true that Quarries 1 and 2 are more contained benefitting as they do from the lowered ground levels of the former quarry and enclosed by steep cliff faces and embankments and existing mature tree cover. Quarry 1 for example sits approximately 20m below Eaves Lane. The applicant's visual assessment shows that from the East (Viewpoints 1 and 2 Crowtrees public footpath /Staffordshire Moorlands walk) and in summer months views of the development would largely be screened by intervening woodland and vegetation. However during the winter months there is potential for some limited, glimpsed views of the Multi Activity Hub area from this direction. From the site entrance on Eaves Lane, (VP 3) views of the development are restricted as a result of development being on much lower ground and existing screening from trees. From Eaves Lane looking south over Quarry 1 significantly lower ground levels and existing tree cover will restrict and filter but not contain views into the site. The applicant's assessment refers to 'a sequence of glimpsed transient views' (VP4 and 5). From Eaves Lane looking north into Quarry 2, development will not be completely hidden. Development here will be set well back into the site (see Parameters Plan) and views will be filtered by the existing woodland planting and shrub understorey along Eaves Lane. There is potential to supplement and enhance this as part of the landscaping strategy for the site.

23. Unlike Quarries 1 and 2, Quarry 3 is less contained and has a more open character. The CVMP recognises this and refers to 'limited sensitive development' in this part of the site to be informed by a Landscape and Visual Impact Assessment. Development on the southern side of Quarry 3 is illustratively shown in two clusters of lodges. The applicant has submitted with the application, Woodland Approach Notes (June 2016 prepared by Planit) which sets out the outline of a methodology for progressing the detailed design of development on the southern side of Quarry 3

within new and retained woodland. In this way tree loss is minimised and with new woodland planting, better assimilated into this more sensitive part of the site. The Trees and Woodland Officer has considered this and notes that there is potential to provide an enclosed woodland character to this cluster and screen/filter potential views of it from across the lake. The applicants Viewpoint 6 looks east and south east towards Quarry 3 from Whiston Eaves Lane. It shows that the existing bunding and proposed additional woodland planting on this bund will assist in containing development in these views.

24. Officers have previously expressed concern about the density of development proposed to the north of Quarry 3. On the illustrative plan it is indicated to take the form of a continuous and rather regimented line of lodges which would sit on a new shelf which it is said would be cut mid-way on the embankment at approximately 171 AOD around the north, west and eastern sides of Quarry 3. The illustrative site section shows an overhang, 3m from the lip of the plateau and a 5m wide access road behind. Significant engineering works will be needed to create this platform and the mid slope will need to be substantially steepened forming a cliff (see Section BB on the illustrative site sections). As indicated it will leave limited space for any meaningful landscaping to ensure that development in this area is in fact 'sensitive' as envisaged in the CVMP. However it is recognised that this is an outline application and the Masterplan is illustrative and not for approval at this stage. Thus matters of actual layout and detailed design are reserved for later assessment and approval. Approval is being sought for the Parameters plan, but this shows broad areas for chalets and landscaping. The Illustrative Landscape Plan indicates planting around the western end of Quarry 3 and the Trees and Woodland Officer notes that this would be very relevant to establishing additional screening of lodges around the north west corner of the lake with reference to longer distance views particularly from Hawksmoor Wood to the south (VP 16). Any lodges displaced from Quarry 3 could be accommodated within Quarries 1 or 2 particularly bearing in mind that the illustrative plan shows all lodges at 12m by 6m, presumably a 'worst case scenario'. The Agent confirms that there is no particular reason why the lodges must be this size, confirmed in the Feasibility Study which refers to providing a mix of lodge type in each zone. Thus at the reserved matters stage a range of different sizes could be incorporated across the whole site to include some smaller lodges. Notwithstanding therefore reservations about the illustrative plans for the north side of Quarry 3, it is reasonable to conclude that the ceiling of up to 250 lodges promoted in the application and referenced in the Churnet Valley Masterplan could be accommodated within the balance of the site.

25. The LIVIA considers a series of potential more distant views from, for example, Whiston Hall, Ross Lane, Lockwood Road, A521 Kingsley Holt (see Viewpoints 7-14) but on all concludes that as a result of distance between the viewpoint and the site, a negligible impact would result.

26. In terms of the impact on landscape character, as noted above introducing a large leisure complex will inevitably have an impact on landscape character. Any assessment has to be made against the background that the site is promoted in an adopted Masterplan for a leisure development including up to 250 lodges. As the applicant's assessment notes, given the topographical impact of the quarry operations, significant volumes of fill would need to be imported to get the site back to its pre-quarried landscape character. The principles established as part of the restoration proposals have been integrated into the Masterplan for the proposed development wherever possible (see Ecology section also). By adopting the mitigation measures in the LIVIA (Chapter 8 Table 8.9) and working with the existing topography thus minimising the need for further regrading and with a comprehensive

landscaping scheme including new woodland edge planting, the residual landscape impact is considered to be acceptable.

27. In terms of landscape and visual impact during construction, potential impacts are identified in the ES during construction for example from the presence of HGV's, remodelling of ground levels, lighting from construction areas, protective fencing and on site accommodation and work areas. In order to minimise the potential for such negative effects, a Construction Environmental Management Plan if offered and can be secured by condition. Lighting and light pollution during hours of darkness has the potential to adversely impact on the character and appearance of this rural area and to impact on ecology and will need to be carefully considered at the reserved matters stage. A condition to secure a lighting scheme is recommended.

28. In conclusion the ES makes the relevant point that there is no viewpoint where combined visibility of all of the quarry components is available. In those limited instances where distant views are available they do not dominate the landscape. The ES considers detailed mitigation to reduce or avoid landscape and visual impact. It includes limiting heights, use of appropriate materials and optimising the favourable topography of the site. The reserved matters process will determine the actual detailed layout, scale, appearance of the buildings and landscaping of the site. Having regard however to the conclusions of the Landscape and Visual Impact Assessment and the above analysis and with the mitigation proposed, it is considered that the proposal is acceptable in terms of Policies DC3, SS6, SS7 and DC3 which seek to protect and, where possible, enhance the local landscape by resisting harmful development and to national policy in the Framework which similarly requires the planning system to protect and enhance valued landscapes.

Ecology

29. Policy NE1 of the Core Strategy advises that proposals should not cause unacceptable harm to features of identified nature conservation value, unless there is suitable mitigation and adequate compensation, management and enhancement of the nature conservation resource. The Framework also places high importance on protection of biodiversity interests. Development works that would contravene the protection afforded to European Protected Species, such as bats and Great Crested Newts, require a Habitats Directive Licence and these applications are considered by Natural England on behalf of the Secretary of State. Before such a licence can be granted, several tests must be satisfied. Local planning authorities must also consider these tests prior to determination of the application. Authorities would risk breaching the requirements of the Directive and Regulation 9 (5) if the three tests were not considered during the determination of the application. The three tests are as follows:

i. Test 1 – that there is no satisfactory alternative to the development on this site;

ii. Test 2 – the action authorized will not be detrimental to the maintenance of the species concerned at a favourable conservation status in their natural range; and

iii. Test 3 – preserving public health or public safety or other imperative reasons of over-riding public interest including those of social or economic nature and beneficial consequences of primary importance for the environment.

30. In terms of environmental sensitivity, the Whiston Eaves SSSI lies adjacent to the application site to the west. Two Sites of Biological Interest, Little Eaves Farm and Ashbourne Hey are also in close proximity to the application site and in addition several areas listed on Natural England's Ancient Woodland Inventory are within 2km of the site including Key Wood, Frame Wood, Carr Wood and Light Oaks wood.

Natural England has raised no objection to the application. They previously advised that they were satisfied that the proposed development, if carried out in accordance with the application details, would not destroy the interest features for which the SSSI has been notified and confirmed that it did not represent a constraint to determining the application. It commented that the SSSI is not publicly accessible and should remain so.

31. As noted elsewhere in this report, there is an Approved Restoration Plan for the quarry, granted by the County Council in 2014. It has always been clearly understood between the parties involved in pre application discussions, that in assessing the ecological/biodiversity issues raised by this proposed development, the Approved Restoration Plan provides the baseline for the assessment with the aim being to achieve an overall net increase in biodiversity.

32. A full Ecological Assessment including surveys is provided with the application, contained within Chapter 9 and associated appendices of the ES. It confirms that surveys supporting the 2014 ES were updated during April and June 2016 to re check the baseline conditions previously recorded and provide information to support the application. The potential impacts of the development on habitats, fauna and the Approved Restoration Plan (ARP) from the development range generally from negligible to minor adverse. However moderate adverse impact is noted to Ancient Woodland (Frame Wood) due to the significance of this woodland and the impact from the provision of shared pedestrian/cycle paths (damage to root systems etc). The impact to the remaining areas of Frame Wood not designated as Ancient woodland is also given to be moderate adverse impact. Again this is because of the significance of the habitat and impacts from the proposed network of pedestrian/cycle routes. Moderate adverse impact is also noted in respect of the ARP due to the loss of habitat to lodges, car parks, associated hardstanding which it says will fragment the ARP and introduce disturbance to the site which will also negatively affect the function of the proposed Approved Restoration Habitats. In respect of other species, moderate adverse impact is noted for amphibians.

33. To mitigate the impacts identified various mitigation and enhancement measures are put forward, the key elements of which are the enhancement/restoration of lowland grassland, new woodland planting, the management and enhancement of existing woodlands and planting of new hedgerow. The applicants also offer of a Construction Ecological Management Plan (CEcMP) an outline of which is provided at Appendix 9.3 of the ES (Dated June 2016 and prepared by Bowland Ecology) and sets out a series of key elements which will be addressed prior to and during construction to avoid and minimise any potential ecological impacts. A condition can secure such a plan.

34. In response to concerns that an integrated approach needed to be taken for the future management of habitats across the whole of the quarry site, in other words taking in not only the current application site but also the adjacent solar farm application site and remaining commitments of the Approved Restoration Plan, an Outline Habitat Management Plan is provided at Appendix 9.4 of the ES (dated June 2016 and prepared by Bowland Ecology). This approach was developed in consultation with Staffordshire County Council's Ecology Officer. Its purpose is to ensure that areas identified for mitigation and compensation are provided, restored, enhanced and managed across the whole site to ensure long term benefits for wildlife. Natural England has welcomed the production of such a plan. A condition can secure this.

35. More generally and as noted by the Ecology Officer, standard mitigation techniques will be implemented to avoid potential effects to species during construction and to avoid other potential impacts such as run off and lighting. Species interests will also be incorporated into the long term management objectives for the site.

36. The ES tries to quantify the compensation and enhancement. It states that approx. 29 hectares of habitats will be brought into positive long term management as a result of this development which will help to compensate for the 20.57 ha of the ARP which the Ecology report accepts will be significantly affected by the proposed development. . The 29 ha includes:-

12.58 ha - woodland management
14.93 ha - grassland management and restoration
1.35 ha - habitat mosaic and pond enhancement

Total = 28.86 ha

In addition the application will secure 1080m of species rich hedgerow planting in fields to the north west of the site. The ES asserts that although the 20.57 ha of the ARP significantly affected by the development, it will still be possible to retain elements of the plan and create attractive habitats for wildlife such as bare ground, low fertility grassland and the retention of developing scrub and grassland habitats.

37. The Ecology report refers to 63.23ha of habitats being brought into positive long term management for wildlife at completion of the development, however of course 34.03 ha of this is already secured under the ARP. 20.57 ha of the ARP is recognised to be significantly affected. Of the 12.58 ha of woodland management, the Ecology Officer advises that circa 5 ha of this is already within the APR thus the balance of woodland management to come forward as part of this application is circa 7.5 ha. The actual net gain in area is therefore approximately 3 ha together with 1080m of species rich hedgerow planting. The fact that Black Plantation is now to be retained as woodland and not developed is a further redeeming feature.

38. With these measures in place the conclusion of the ES in respect of Ecology/biodiversity is that the residual impact will range from negligible to moderate beneficial. The County Ecologist and Council's Ecology Officer have carefully considered the application. They are satisfied that, with appropriate conditions the application is acceptable in terms of its impact on matters of biodiversity. Natural England has likewise considered the ES and provided appropriate advice. They raise no objection to the application. The County Council in commenting on the application state that they are keen to see those areas of the site that would remain subject to the ARP scheme restored at the earliest opportunity and to high environmental standards. However they go on to say that in the event that planning permission is not granted or the planning permission is not implemented then the County Council would take appropriate measures to ensure that the ARP is completed.

39. It is for these reasons that the tests in the Habitat Regs are considered to be met and subject to appropriate conditions that the application will overall achieve a small net gain in biodiversity, will not affect the adjacent SSSI, and will provide appropriate mitigation and protection of protected species that the application is considered to be in accordance with Policies NC1, R1 and SS6C of the Core Strategy and advise in the Framework.

Archaeology and Built Heritage

40. Section66(1) of the Planning (Listed Buildings and Conservation Areas Act) 1990 requires decision makers to have special regard to the desirability of preserving Listed buildings and their settings or any features of special architectural or historic interest which they possess. Recent case law clarifies that in fulfilling this obligation decision makers must accord considerable importance and weight to the desirability of preserving the setting of these listed buildings. The glossary to the Framework defines the setting of a heritage asset.

41. Aside from the statutory obligation, Policy DC2 of the Core Strategy says that the Council will safeguard and where possible enhance the historic environment including the setting of designated heritage assets. The Framework as a matter of national policy also seeks to avoid harm to the significance of heritage assets. It says that LPA's should require applicants to describe the significance of any heritage assets affected, including any contributions made by their setting. It states that great weight must be given to a heritage asset's conservation; the more important the asset, the greater the weight should be (para 132). Where a proposal would lead to substantial harm to the significance of the asset, it says planning permission should be refused. Where that harm is judged to be less than substantial, this harm should be weighed against the public benefits of the proposal, including securing its optimum viable use.

42. Chapter 10 of the ES provides an Archaeology and Heritage study and incorporates the results of an Archaeological Desk Assessment and a Heritage Desk Based Assessment. It confirms that there were two Listed buildings within the site boundary, namely Whiston Eaves farmhouse and Stable. This complex historically stood on Eaves Lane close to the entrance of Moneystone Quarry on Whiston Eaves Lane. Both the farmhouse and stable block were Grade II Listed. In 1998 Listed Building consent was granted for the demolition of both buildings because the land was required for mineral extraction which was considered at the time to be of national importance (98/0282 LB). The buildings were duly dismantled in 2006 and recorded under the terms of this permission. They are no longer Listed. The ES assumes them to be non designated heritage assets, being in part constructed of the remnants of a formally listed complex. The farmhouse was subsequently re constructed in Whiston whilst materials from the stable block have been stored within Moneystone Quarry awaiting a suitable site for its reconstruction. Planning Permission was granted in 2012 for the reconstruction of the stable and conversion into a dwelling at Heath House Farm, Ross Lane, Whiston and this permission now been implemented. As the ES notes, there is no inter visibility between the Farmhouse building and the proposed site and thus no impact. The same applies to the Stable building under reconstruction. A small section of the complex does remain in situ as part of the boundary wall. It provides an appropriate historic reference of this former complex and the applicants have agreed to provide an Interpretation Board detailing the history of the Farmhouse and stable. A condition can secure this.

43. The ES assesses the impact of the development on Little Eaves farmhouse and barn, both Grade II Listed together with the curtilage listed barn which lies outside of the application site but close to the south western boundary. It says that the core of the setting of these buildings is the garden and farm complex and that the surrounding agricultural fields, which comprise the wider setting of the buildings have a positive contribution to their significance and place them in a rural context with which they have a functional relationship. It goes on to say that the Farmhouse and Barn will be visible from the proposed Multi Activity Hub area located to the south-east prior to any mitigation. However, it says that views are restricted by dense vegetation and trees which run along the western perimeter of the proposed

development site, and mature trees located around the eastern perimeter of the farm complex. Therefore, the core setting, and the majority of the wider setting of these buildings, will be unaffected by the development. It concludes that a negligible/neutral effect is considered from the proposed development on the contribution that the wider setting provides to the significance of Little Eaves Farmsted in limited views to and from them. It goes on to say that any negligible/neutral effect on the contribution that the wider setting provides to the significance of these designated assets can be reduced further by additional tree planting along the western perimeter of the proposed development site, and through the reduction in height and careful siting of the Multi Activity Hub buildings.

44. There will be intervisibility between the Multi Activity Hub area (MAH area) and the historic farmstead, Little Eaves Farm. Views from and towards this heritage asset will alter and it is considered will result in some harm as a result of this proposal, particularly bearing in mind that the baseline assessment is that of a restored quarry. As the Conservation Officer notes, setting is not limited to views. Heritage England's guidance on setting confirms that it is the surroundings in which a heritage asset is experienced. In addition to views, the seclusion of the historic asset and its tranquil location are also considered to be factors that contribute to significance in this case Views towards the MAH area from the asset are limited to a south/south easterly direction. In all other views from the historic farmstead, the development will not be seen. It is unfortunate that when looking east/south east, there is a gap in the belt of trees immediately beyond the application boundary where two sets of overhead powerlines (which themselves impact to some degree on setting) cross, which will enable full views into the Hub area at this point. A second gap provides a more limited view. For many years the buildings and plant of a working quarry have framed these views. Indeed when the barn and farmhouse were listed (1967 and 1986 respectively) this would have been in the knowledge that a mineral extraction quarry and processing plant was in operation on the site of Quarry 1. The Conservation Officer has always maintained that the key to mitigating the harm identified above is by plugging this gap.

45. The applicant has sought to address concerns about the impact on the setting of Little Eaves Farm in this application in several ways. Firstly by providing a reduced and defined area within which the hub buildings and visitor centre can be sited within the Multi Activity hub area. Secondly by limiting the height of buildings within this defined area to 6m; it was previously 12m and thirdly by showing increased space for landscaping within the MAH area. During the processing of the application two further amendments were secured. Firstly all reference to heights on the Parameters Plan is now shown relative to finished floor levels rather than reference to storeys and secondly a further area of landscaping has been indicatively shown immediately to the eastern side of the power lines comprising an 8m wide tree belt. It is considered that together these revisions provide much more certainty and whilst accepting that the Landscape Detail plan is illustrative, it does demonstrate that there is sufficient space to achieve landscaping that will filter views.

46. The Conservation Officer has considered the application and the amendments. She is of the view that the indicative planting plan will to some extent filter views of the main hub building. The angled planting belt running along the margin of the archery area, to the east of the powerlines is, she says, a significant improvement and will assist in plugging views between Little Eaves Farm and the hub buildings, and views of the hub buildings will diminish over time as the trees mature. She concludes that the scheme as a whole will represent 'less than substantial harm' to the setting of the Listed Buildings in terms of applying para 133 of the NPPF. Under the 1990 Act considerable weight must be given to the preservation of Listed

Buildings and their setting, even where the harm is slight. However, in assessing the acceptability of the harm the Conservation Officer comments that in this case the Listed farmstead will retain its immediate, open agricultural setting and more distant, rural views. She is also mindful that the Listed Buildings were Listed when the quarry was in operation. Although this latterly became a finite use, a leisure development on the site has been endorsed in the recently adopted Churnet Valley Masterplan. It is also noteworthy that the farmstead benefits from existing mature tree planting along its eastern perimeter. Furthermore in wider views, for example from the east, (see Viewpoints 1 and 2 of the LIVIA) the farmstead is visible in the distance, but owing to its elevated location on a crest of higher ground there are no clear views of the application site/proposed development in these views due to tree cover around the farm and falling ground levels beyond the farm. Thus the historic asset is seen and will continue to be seen within the context of the adjoining agricultural land, its historic agricultural hinterland. The Conservation Liaison Panel raises no objection subject to views of the hub being masked/filtered.

47. The conclusion is that the limited harm identified is considered to be less than substantial and in terms of the Framework should therefore be weighed against the public benefits of the proposal. The Planning Practice Guidance confirms that this could be anything that delivers economic, social or environmental progress in line with the Framework. It is discussed in the planning balance below.

48. Finally in terms of archaeological interests the County Archaeologist has considered the ES. He notes that the majority of this site lies largely within the previously quarried area of the site. However he advises that there are areas which lie outside previously impacted areas. One such area raised previously by residents concerns the potential for pre historic remains to be present beneath the floor of the barn of the now dismantled Whiston Farm complex. He advises that this is unlikely as the area suggests low general potential for the presence of such remains and the later construction of the barn is likely to have removed any earlier features. However he advises that there does remain the potential for archaeological remains to survive here and within unimpacted areas elsewhere within the application site As such he advises that an archaeological watching brief be maintained during ground works within identified areas. This can be secured by condition. Subject to the imposition of such a condition, the County Archaeologist raises no objection to the application. As such the proposal is considered to comply with Policy DC2 and national policy in the Framework.

Flooding/Flood Risk

49. The application is supported by a Flood Risk Assessment (FRA) contained within Chapter 12 of the ES. The site lies within Flood Zone 1 which is land with the lowest probability of flooding. The proposals include many ways in which surface water run off will be stored and /or attenuated on site, such as ponds connected by streams and swales, the main activity lake in Quarry 3 and permeable hardstanding. This will reduce peak flows, attenuate and clean surface water before it enters the river network. The end point for the majority of the surface water will be the lake in Quarry 3 which will then discharge into a network of streams and ultimately into the River Churnet. Residual impacts range from negligible to moderate beneficial. The Environment Agency and the Lead Local Flood Authority have both considered the application and FRA and raise no objection to the application. Conditions are recommended including one to secure full details of the surface water drainage scheme to include sustainable drainage techniques and details for the long term maintenance of such scheme.

50. The ES confirms that all foul drainage will be treated on site via new system prior to discharge to the River Churnet. The ES states that existing ground slopes will allow most areas to be fed by gravity feeds to a proposed private sewage plant on the lower ground south of the hub area. The Environment Agency raise no objection in principle although highlight that given the volumes involved, an Environment Permit will be required from the EA and that the granting of permission does not guarantee the granting of a Permit. A condition to secure full details of the scheme is recommended.

51. Policies DC1 and SD4 of the Core Strategy requires new development to ensure that existing drainage, waste water and sewage infrastructure capacity is available to enable development to proceed and to minimise flood risk. The Framework is also concerned with climate change and its effects. It is particularly concerned about locating new development in areas that are at low risk of flooding and are capable of being developed without contributing to flood risk elsewhere. A key element of this is ensuring the development can be drained effectively. For the reasons given above the conclusion is that, subject to appropriate conditions, there is compliance with both national and local planning policy with regard to flood risk.

Ground Conditions/contamination/air quality

52.The site is a former sand quarry / processing plant operated by WBB minerals and as such Pollution Officer advises may contain several sources of contamination relating to this use (acidic tailings etc). A provisional Contamination Risk Assessment has been submitted as Part of the ES (Chapter 11). The Pollution Ofifcer has considered this and advises that it is a thorough assessment of all the possible risks associated with the site and that tentative remediation proposals are proposed. He agrees with the conclusions of the Assessment that it is unlikely that any identified contamination would ultimately be prohibitive to development, but that full and detailed Intrusive ground investigations will be required to investigate (and remediate) the identified possible pollution linkages. This further work can be appropriately secured by condition.

53. The Pollution Officer also advises that there may well be redundant structures on site that have asbestos containing materials in their fabric (e.g. asbestos roof). To ensure no future asbestos contamination, as a result of demolition a survey and risk assessment should be carried out prior to the demolition of these buildings. The enforcing authority for this type of work is the Health and Safety Executive and it is recommended that the developer contact them directly to discuss their requirements. An informative is recommended to draw the applicant's attention to this.

54. In terms of air quality, the primary air quality issue for the site is considered to be emissions from increased vehicle movements and dust, notably during construction because of the sandy nature of the site. The ES includes a Dust and Air Quality section (chapter 14) essentially encompassing an Air Quality Assessment and Dust Management plan/assessment. The reports were produced by WSP and had involved consultation/liaison with the Councils Environmental Health department. The Air Quality Assessment concluded that there will be negligible impacts as a result of increases in cars and HGVs at sensitive receptors. These conclusions reached are accepted by the Pollution Officer. The report also undertook a Dust Assessment and indicated that there is potential for some impact from dust emissions, though at this stage it notes that not all construction activities are known. Some mitigation measures are discussed and proposed, which could form the basis for a Dust Management plan. The Pollution Officer confirms that in general these recommendations for the DMP are agreed. The requirement to produce a DMP can be secured by condition.

55. Policy SD4 requires all development proposals to take proper account of potential pollution hazards and to undertake necessary remedial measures. The Framework also places significant emphasis on minimising pollution and land instability issues. For the reasons above and subject to the imposition of appropriate conditions there is considered to be compliance with these policies and no objection is raised.

Mineral Safeguarding

56. The issue of minerals safeguarding is addressed in the application (Chapter 11 of the ES). Reference is made to geological data, historical quarrying activity (paragraphs 11.28 to 11.36 of the ES) indicating the extent of mineral extraction and the disposal of mine waste within worked out areas. The statement concludes that the remaining sandstone within the former quarry has been left to support side slopes and Eaves Lane. The applicant also considers the remaining resources between the quarry and Whiston village and refers to the refusal of an application to quarry this area in August 2007 and notes that no other mineral development proposals for this area are being proposed. The ES concludes that a negligible impact to mineral sterilisation will result from the leisure development proposals.

57. The County Minerals Officer has considered the submitted material in respect of mineral sterilization and raises no objection to the application. He concludes that, having regard to national and local planning policies and other material considerations it is reasonable to conclude that there is considerable doubt as to whether the resource is likely to be developed as industrial sand capable of meeting national markets in the foreseeable future. Therefore he agrees that the impact of the proposed development in terms of potentially constraining the winning and working of mineral resources on adjoining land to be of low significance. Furthermore he comments that, given the doubt about the prospect of working the mineral, it is reasonable to conclude that there is no need to safeguard land that could accommodate infrastructure necessary for the processing and transportation of the mineral resource.

Waste management

58. The County Waste Officer and Environemntal health Officer raise no objection to the application. Sufficient provision will need to be made for the management of wastes within the site and it will be necessary to ensure good design of waste management facilities to secure the integration of those facilities with the rest of the proposed development and local landscape. This matter can be condiitoned.

Residential Amenity/Noise

59. The amenity of local residents is a material consideration. Policies DC1 and SD 4 seek to protect amenity. Similarly the Framework requires that planning should always seek to to secure a good standard of amenity for all existing and future occupants of land and buildings. In respect of noise it advises that planning decisions should aim to avoid noise from giving rise to significant adverse impacts on health and quality of life as a result of new development (para 123). It states that where possible mitigation measures should be applied to minimise adverse impacts via suitable planning conditions and recognition that new development will inevitably generate some noise in any case. In this particular case there are several residential properties close to application the site. These include Crow trees farm, Little Eaves Farm, Dusty Stile, Cotton farm and the small hamlet at Moneystone.

60. A Noise and Vibration Assessment is provided with the application Chapter 15 of the ES. It assesses the impacts of construction and operational phases of the

development upon the amenity of the local area but specifically on the nearest noise sensitive receptors. Established baseline (prevailing) noise levels were, not surprisingly, found to be quiet, especially at night time in this rural location.

61. The Environmental Health Officer (EHO) has considered the issues raised by the Noise and Vibration Assessment (NVA). He advises that there will inevitably be major disruption to the local area during the construction phase due to low ambient noise levels but that these noise impacts can be managed and controlled through good site management and by adopting good practice noise control measures for open construction sites. Such measures can be controlled by appropriate conditions to ensure that any adverse impacts are minimised. In raising no objection on noise grounds (subject to conditions) the EHO also notes that noise during construction will be temporary, albeit that it is likely to continue over several years. As such the disturbance will not be a permanent issue for this area.

62. The NVA also addresses post operational noise and concludes that impacts will have negligible significance. The applicant has proposed summary mitigation in which the EHO accepts and advises that a condition requiring details of plant and machinery is attached if permission is granted. He advises that the development will inevitably increase noise levels in the area but the developer is of the opinion that the development will be low key and that noise limits (rating) at 35 LaTr could be applied through condition and be adequate to protect amenity levels of the residents in these nearest properties (Table 15.17). The EHO advises that the predicted noise levels are within the amenity levels as set out BS8233:2014 and World Health Organisation noise guideline levels. Subject therefore to conditions to mitigate and control noise levels both during construction and operation the EHO is satisfied that the proposal is acceptable in terms of noise and amenity and raises no objection to the application.

.63. In terms of Vibration the NVA sets out the worse case scenario; that being where piling will take place close to Cottage Farm, but no closer than 90m. The predicted vibration impacts are set out in the ES and the EHO notes that there is clearly the potential for short to medium term disruption / annoyance to nearby residential properties. Although property damage is not predicted in the report, mitigation measures are required in order to ensure that the impacts on residents are restricted to minor to negligible inconvenience. Appropriate conditions can achieve this.

64.In view of the foregoing and subject to conditions, the proposal is considered to comply with Policy DC1 of the Core Strategy and national advice in the Framework relating to the protection of residential amenity and no objection is raised,

Public Rights of Way

65. The PROW network is an essential recreational asset. Indeed the site is surrounded by a comprehensive network of public footpaths and bridleways. The site itself will have a number of pedestrian and cycle routes which will facilitate movement between the different parts of the site. The application is accompanied by an Overall Footpath Connection Plan and a series of detailed plans which show how the site can connect to the existing footpath network contributing not only to the visitor experience but also to a sustainable development. The plans also indicate the routes for proposed new bridleways on land within the applicant's ownership but outside of the application site. Conditions can secure the detail and delivery of these routes.

66. The Framework and Polices T1 and T2 in the Core Strategy seek to protect and enhance such recreational assets and to facilitate walking, cycling and horse-riding by supporting and developing a network of routes. It is concluded that the proposal

has the potential to enhance the local network and increase the connectivity and accessibility of the site for pedestrians, cyclists and horse riders. No objection is raised on this issue.

Other issues

67. The letter of objection from the Woodland Trust has been carefully considered. The Trust is quite right that Ancient Woodlands should be considered irreplaceable natural assets (Para 18 NPPF). The first issue to take into account therefore is whether any loss or deterioration would occur from the development. Superimposing the extent of the registered Ancient Woodland (AW) site on the Parameters Plan shows that there could potentially be a very small area identified as 'Area of Retained Landscape' within the actual AW designation. The Parameters Plan refers to possible footpaths and cycle paths in this area. The Trees and Woodland Officer is of the view that with such minimal intrusion within the AW, it is reasonable to conclude that this element of the application would not lead to the loss of Ancient Woodland.

68. In terms of potential deterioration, as opposed to loss, arising from the construction and subsequent use of footpath and cycle paths traversing a small part of the Ancient Woodland designation, the following points are relevant a) it represents a very small extent of the overall AW designation b) the requirement for prior ecological and arboricultural assessments and controls to influence specific route design, construction specification and working methods secured in conditions noting that the Trees and Woodland Officer considers it likely that specific route design could readily avoid the need for removal of trees c) Potential/requirement for construction specifications and methods to have minimal harmful impact on trees/understorey and ground flora/soils eg using as appropriate no-dig methods, geotextile membranes, cellular confinement load support systems, maybe "boardwalk" construction supported only on intermittent posts, maybe no actual "construction" required at all in places d)obligations for beneficial woodland management designed to improve the quality/habitat value of the AW in the medium to longer term.

69. All of these matters would be controlled by further detail required under subsequent reserved matters application, combined with imposition of suitable conditions on this outline application. The Trees and Woodand Officer also points out that it is not at all unusual for low key footpaths, light vehicle maintenance routes etc to be created in nature reserves, including AW sites, with negligible harm and positive overall linked benefits to site use/interpretation/habitat management. In their response to the Woodland Trust's comments, the applicant's agent makes a valid point about the Trust's objection appearing to relate only to the initial moderate adverse impact and not acknowledging the residual moderate beneficial impact following implementation of mitigation measures and associated site management.

70. In conclusion, The Trees and Woodland Officer advises that the provision of some limited shared footpath and cycle paths within the AW designation in Frame Wood would not lead to loss of irreplaceable habitat, would be unlikely to lead to deterioration of irreplaceable habitat, and would have good potential to help secure beneficial management to improve the quality and value of the AW , given suitable controls and conditions as outlined above. He agrees that residual impact would be moderate beneficial assuming imposition and compliance with appropriate conditions, implementation of mitigation measures and new planting, and implementation of longer term woodland habitat management.

71. During the processing of the application the applicant;s submitted their own analysis of the representations submitted up to and including 1st September 2016

(Resolve Public affairs). At that Item they say 123 letters had been submitted by 74 individuals. Of these, 16 people had written a letter supporting the proposals. The remaining 107 representations, submitted by 58 people from 50 households, are in objection to the application. Therefore, they conclude that 58 people object to the planning application and 16 people support the application**.** Their analysis also refers to 4.3% of residents in Oakamoor and Moneystone submitting an objection and 2.7% of residents in the village of Whiston.

Overall Balance and Conclusions

72. The Framework says at paragraph 14 that proposals that accord with the Development plan should be approved without delay. It says that there are three elements to sustainable development, an economic, social and environmental role. Sustainable tourism is tourism which takes account of the current and future economic, social and environmental impacts balancing the needs of visitors, the economy, the environment and host communities. Tourism development must not be at the expense of the special qualities of the countryside, in this case the Churnet Valley which draw so many people to the area.

Economic

73. There will undoubtedly be substantial economic benefits arising from this proposal. The Vision for the Staffordshire Moorlands set out in the Core Strategy states that tourism will be a key element in the diversification of the Districts economy. The applicants have provided an Economic Benefits Summary which confirms that during the construction phase 230 full time equivalent (fte) construction jobs will be created in year 1 followed by a further 25 fte jobs in Years 2 and 3. Construction costs are estimated to be £18m of which 25% is said will benefit local contractors. When built out, the proposal will create approximately 250 fte operational on site jobs. Given the nature of the roles available at the resort and working hours required (i.e. flexible shift patterns) it is anticipated that the number of actual on-site jobs could increase to approximately 375 jobs; 125 full time and 250 part time posts. It is also estimated that there will be 78 fte jobs off site as a result of the proposed development operational impacts. In part these will be created via a) corporate supply chain expenditure – goods and services purchased by the operator and b) the additional expenditure of direct and indirect workers locally on convenience, comparison and leisure goods. The applicants also point to official guidance from the Government on the multiplier effect of development projects which suggest that a combined indirect multiplier of 0.25 would be reasonable for an area such as Staffordshire Moorlands and adjoining areas, meaning that for every 4 FTE jobs created on site a further 1 will be created off site. This would support an additional 63 FTE posts off-site. The applicant's also say that the development will generate off site expenditure in the District from staying visitors of approximately £1.03m pa. . This injection of off-site expenditure is, they say, relatively modest and based on an average off-site spend per booked lodge. The benefit to the performance of the local economy is judged to be moderate/major beneficial in the long term and to the performance of the Staffordshire Moorlands visitor economy, major beneficial

74. The Councils Economic Development Officer strongly supports the application. She comments that from an economic regeneration perspective, it represents a strong opportunity to create employment, create supply chain opportunities and improve the economic wellbeing of the District. She advises that the development is closely aligned to the adopted Churnet Valley Master plan including "deliver(ing) quality and sustainable tourism" through increasing overnight stays which will lead to greater support to wider economy (by the conversation of day to staying visitors), by extending the season of visitors to Staffordshire Moorlands thus increasing tourism expenditure which in turn supports jobs and the wider economy. She points to

evidence that shows that currently less than 12% of visitors to both the Moorlands and Staffordshire actually stay overnight.

75.The applicants have signed up to the Staffordshire Moorlands Employment and Skills Charter .The developers have agreed in particular to:-

- maximising supply chain opportunities both during the construction and once completed through the establishment of 'job/trade fairs' and 'meet the buyer' events and have set a target of 40% of goods and services on site to be provided by local firms;
- host pre-recruitment training for new positions in partnership with Jobcentre Plus which would guarantee job interviews for long term unemployed Staffordshire moorlands residents who completed the training and are not looking to appoint any employees on less than 12 hour contacts;
- Work to maximise job opportunities for people with disabilities including learning disabilities and facilitate apprentice opportunities and graduate placements
- provide work experience placements for local schools including placements for young people with learning disabilities
- work with SMDC to provide a range of fixed information panels to encourage off-site visits to local town centres and other attractions as well as provide tourist information to help stimulate benefits to the wider economy and showcase local food and products in retail and on-site catering provision

Social

76. In terms of social benefits the development will help to meet an identified need for overnight accommodation in the District. The Economic Development Officer comments that there is a recognised shortage of tourism accommodation in the area and that she is not concerned about any displacement issues in relation to existing accommodation providers as the market can clearly support both. In any event she comments that there is likely to be no or minimal displacement as this proposal provides a different offer from existing bed and breakfast accommodation, hotel accommodation or those wanting a 'farm' experience. It will thus increase the range of accommodation on offer and provide a quality leisure environment. The proposal also provides facilities for use by the community within the central Hub area and improves connectivity within the area through the creation of a network of cycle ways and footpath throughout the site and there is in addition an offer of an off- site bridleway. The creation of jobs and benefit to other local businesses discussed above has a dual role, both economic and social.

Environmental

77. In terms of the environmental role of sustainability, it is recognised in the preceding analysis that introducing a large leisure complex into this rural location will inevitably have some visual and landscape impact. After analysing the submitted evidence and impact studies in the Environmental Statement the conclusion is that areas proposed for development (the Character Areas and Parameters Plan) are largely in line with the Concept plan of the adopted Churnet Valley Masterplan. It is considered that by adopting the mitigation measures set out in the ES and working with the favourable topography and existing tree cover there will be an acceptable impact on the character and appearance of the area. The proposal will deliver a net gain in biodiversity and there will be no adverse impact on the adjacent SSI. Development within Black Plantation which was of concern to Members and formed a reason for refusal of the previous application has been deleted from the scheme. This application has also sought to provide more certainty within the Multi Activity Hub Area, again an area previously of concern for Members, by indicating zones within which buildings may be sited and limiting the height of the main hub building

and visitor centre to no more than 6m. Concern has been expressed about development within the north face of Quarry 3 however the principle of some limited development here has been accepted through the Masterplan. Through careful siting, design and landscaping at the reserved matters stage it is considered that it will be possible to secure sensitive development in this area. Subject to mitigation the application is considered to be acceptable in terms of highways, amenity, flooding, contamination and minerals. Some limited harm is identified to the setting of Little Eaves Farm, a Grade II Listed building. The harm is 'less than substantial 'in terms of para 133 of the NPPF and it is considered that the harm will diminish over time as proposed planting matures. The harm, however slight must be given considerable importance and weight. Having regard to the impact assessments in the ES and the analysis above, the conclusion is that the public benefits of this proposal and particularly the very significant economic and social benefits that would be delivered together with the environmental benefits are over riding. The balance falls in favour of a grant of planning permission.

OFFICER RECOMMENDATION

That planning permission be granted subject to the prior completion of a 106 legal agreement to secure £11,000 towards the Travel Plan Monitoring fee and £5,000 to procure the required Traffic Regulation Order and subject to the following conditions:-

1. No phase of the development (as approved under Condition 5) except for works of site clearance and demolition hereby permitted shall be commenced until full details of the:
a) Layout;
b) Scale;
c) Appearance, and,
d) Landscaping;
(hereinafter called "the reserved matters") for that phase have been submitted to and approved in writing by the Local Planning Authority. The development shall not be carried out otherwise than in accordance with the approved details.
Reason:- The application is an outline application under the provisions of the Town and Country Planning (General Development Procedure) Order 2015 and no particulars have been submitted with respect to the matters reserved in this permission (excepting access).

2. Application for approval of the first reserved matters (as identified in Condition 1 above) shall be made to the Local Planning Authority no later than the expiration of 3 years from the date of this permission and the last application for reserved matters approval shall be made no later than 5 years beginning on the date of this permission.
Reason:- To comply with the provisions of Section 91 of the Town and Country Planning Act 1990.

3. Each phase of the development hereby permitted (pursuant to the details to be provided for condition 06) shall be begun not later than two years from the date of approval of the last of the reserved matters to be approved for that phase.
Reason:- To comply with the provisions of Section 91 of the Town and Country Planning Act 1990.

4. The development hereby permitted shall be carried out in accordance with the following documents and approved plans:

Red Line Location Plan PL1088.M.106 rev 3
Parameters Plan PL1088.M.110 rev 6

Character Areas Plan PL1088.M.113 rev 3
Eaves Lane Access Plan PB5196-0100 rev C
Proposed Layout of A52/Whiston Eaves Lane Junction PB1608/SK001 rev C
Detailed Footpath Connection Plan (Plan 1) (drawing ref. PL1088.M005 Rev 1);
Detailed Footpath Connection Plan (Plan 2) (drawing ref. PL1088.M006 Rev 1);
Detailed Footpath Connection Plan (Plan 3) (drawing ref. PL1088.M007 Rev 1);
Detailed Footpath Connection Plan (Plan 4) (drawing ref. PL1088.M008 Rev 1);
Detailed Footpath Connection Plan (Plan 5) (drawing ref. PL1088.M009 Rev 1);
Detailed Footpath Connection Plan (Plan 6) (drawing ref. PL1088.M010 Rev 1);
Overall Footpath Connection Plan (drawing ref. PL1088.M004 Rev 2);
Existing and Restored Landscape Plan (drawing ref. PL1088.M016 Rev 1);

Environmental Statement (Moneystone Park) – June 2016

Reason:- For the avoidance of doubt and in the interests of proper planning.

5. No development, with the exception of site clearance and demolition, shall be commenced until a Phasing Programme has been submitted to and approved in writing by the Local Planning Authority. The Programme shall provide details of the phasing of the development including the extent and composition of the phases and the overall programme for development. The development shall thereafter be carried out in accordance with the approved Programme, unless previously agreed in writing to a variation of the agreed details.
Reason:- To ensure that the development is carried out in accordance with the approved plans, for clarity and the avoidance of doubt.

6, The total gross floorspace of the uses proposed within the buildings and maximum area of other uses to be located within the area identified as Multi Activity Hub Area on the Parameters Plan as defined by the Town and Country Planning (Use Classes) Order 1987 (as amended) where relevant shall be limited as follows:-

a)Uses within the Zone for the Main hub building and Visitor centre
25m Pool and toddler pool and plant - Up to 415m2
Restaurant/ Bar and outside terrace - Up to 500m2
Bowling alley - Up to 140m2
Spa - Up to 150m2
Gym with studio - Up to 100m
Informal screen room - Up to 80m2
Children's soft play area - Up to 145m2
Café - Up to 70m2
Sports hall – up to 320 m2
Reception area - Up to 145m2
Shop - Up to 50m2

Visitor Centre with farm shop - Up to 490m2 (including up to
Maximum 400m2 retail use)

b) Uses within Zone for Archery centre and lakeside cafe

Lake Café Up to 130m2

Archery Centre Archery Centre Up to 260m2

c)Uses within Zone for Administration block and Maintenance depot

Administration Building 525m2 (as existing)

Maintenance Depot - Up to 500m2

d) Uses outside of the above Zones as defined on the Parameters Plan but within the Multi Activity Hub Area as defined on the Parameters Plan

Substation 600m2 (existing compound)

Multi-Sports Area up to 1,400m2

Equipped Play Area Up to 500m2

Adventure play area 500 m2

Ropewalks 5000m2

Reason:- To define the permission and ensure that the proposal is carried out in accordance with the approved plans, for clarity and the avoidance of doubt.

7.The total gross floorspace of the uses proposed within the buildings to be located within the area identified as Water Sport Hub Area on the Parameters Plan as defined by the Town and Country Planning (Use Classes) Order 1987 (as amended) shall be limited as follows:-

Watersport centre – up to 500 m2

Reason: To define the permission and ensure that the proposal is carried out in accordance with the approved plans, for clarity and the avoidance of doubt.

8. No more than 250 lodges shall be developed on the site within the broad areas identified for Holiday Lodges on the Parameters Plan hereby approved
Reason: To define the permission and ensure that the proposal is carried out in accordance with the approved
plans, for clarity and the avoidance of doubt.

9. The holiday lodges shall not be occupied other than by persons having a primary residence elsewhere and in any event for periods of no more than 4 consecutive weeks as short term holiday lets in association with the main use of the site as a leisure venue. There shall be no other form of residential occupancy at any time. The owner and/or site operator shall maintain an up to date a register of all occupiers of individual chalets on the site, (including names, addresses and dates of stay) for each calendar year which shall be made available for inspection by the District Council on request.
Reason: To define the permission and to prevent permanent residential use, which would be inappropriate in this relatively unsustainable location and contrary to spatial polices for new development in the Staffordshire Moorlands Core Strategy, in particular Policy SS6C.

10.Notwithstanding the approved Parameters Plan no permission is hereby granted or implied for any development including any footpaths, cycleways, bridleways and outdoor activities within the areas noted as 'Area of retained Landscape' on this plan. Any development proposed in this area must be informed by an ecological and arboricultural assessment submitted as part of any future reserved matters application for this part of the site

Reason:- In the interests of the character and appearance of the area, ecology and tree protection in accordance with Policies NC1, DC1 DC3 and the National Planning Polciy Framework

11. Nothwithstanding the provisions of the Town and Country Planning (Permited Development Order 2015 (or any Order revoking and re-enacting that Order with or without modification) no motorised watersport shall take place on any of the water bodies within the application site.
Reason:- To safeguraded the amenities of nearby residents, users of the area in general and in the interests of the character and appearance of the area in accordance with Polcies DC1, DC3 of the Staffordshire Moorlands Core Strategy and the National Planning Policy Framework

12. At the time of first submission of a reserved matters application for any phase agreed under Condition 5 full details of the following shall be submitted to and approved in writing by the Local Planning Authority for that phase:-
a) Detailed plans and sections showing existing site ground levels and proposed ground levels and finished floor and ridge levels of all buildings
b) All engineering works, mounding and changes to existing ground levels within that phase including details of cut and fill
c) Volumes of material to be disposed of off site
Development of that phase shall thereafter be carried out strictly in accordance with the approved details.
Reason:- In order to protect the character and appearance of the area in accordance with Polices DC 1, DC3 and SS7 of the Core Strategy and the NPPF.

13. No development shall commence until a Feasibility and Construction Methodology informed by an Ecological, Landscape, Visual and Arboricultural Assessment has been submitted to and approved in writing by the Local Planning Authority demonstrating the feasibility and method of constructing the footpaths and bridleways shown on Drawing PL 1088.M004 Rev 02 to include details on levels, widths, surface materials and measures to ensure future maintenance and public use in perpetuity. The footpaths and bridleways shall thereafter be completed in accordance with the approved details and open for public use before first occupation of any the lodges hereby approved.
Reason:- To ensure that the proposal is carried out in accordance with the approved plans, for clarity and the avoidance of doubt.

14. No development of any phase agreed under condition 5 shall commence until full details of boundary and other means of enclosures for that phase have been submitted to and approved in writing by the Local Planning Authority. The agreed details shall be implemented prior to the development of that phase first coming into use.
Reason:- In the interests of the character and appearance of the area in accordance with Polices DC 1, DC3 and SS7 of the Core Strategy and the NPPF.

15. All future reserved matters applications for any phase agreed under Condition 5 and particularly those relating to layout, scale and appearance shall by informed by the principles contained within the submitted Design and Access Statement and incorporate the Mitigation Measures set out in Table 8.9 of Chapter 8, Landscape and Visual of the Environmental Statement
Reason:- To define the permission, to protect the character and appearance of the area and to secure a sustainable development

16. No facilites or buildings on the site, including recreational, entertainment and retail facilities shall be used for any purpose other than for, or ancillary to, the primary use of the development as a leisure complex
Reason;- To restrict the use in accordance with the spatial polices of the Core Strategy and in particular Polices SS6C, SS7 and the National Planning Policy Framework

17. No development shall commence until a detailed site layout plan (the 'Plan') has been submitted to and approved in writing by the Local Planning Authority showing pedestrain and cycle routes throughout the site. The Plan shall also include the following:-

-full specification for the construction of the routes
-full details of connections through the site and onto the public highway for pedestrians and cyclists
-phasing of works

No phase of the development, as agreed under condition 5, shall subsequently be brought into use until the pedestrian and cycle routes agreed under this condition for that phase have been laid out and constructed in accordance with the details approved.
Reason:- To comply with the policies contained within the National Planning Policy Framework, the principles contained within Manual for Streets and Policies contained within the Staffordshire Moorlands Core Strategy Development Plan 2014 all of which seek to increase connectivity and accessibility and encourage walking and cycling

18. No development, including demolition, site stripping and other preparatory work shall take place until a Construction Environmental Management Plan has been submitted to and approved in writing by the Local Planning Authority. This should be based on the Mitigation Measures set out in Table 8.10 of Chapter 8, Landscape and Visual of the Environmental Statement. The development shall thereafter be carried out strictly in accordance with the approved Plan.
Reason:- In the interests of the character and appearance of the area in accordance with Polices DC 1, DC3 and SS7 of the Core Strategy and the NPPF.

Ecology
19. No development including demolition, site stripping and any other preparatory work shall be commenced until a Construction Ecological Management Plan has been submitted to and approved in writing by the Local Planning Authority. The plan shall have regard to the prevailing British standard for 'Biodiversity – Code of Practice for Planning and Development and shall be based on the amended Outline Construction Ecological Management dated June 2016 prepared by Bowland Ecology and included at Appendix 9.3 of the Environmental Statement. The development shall thereafter be carried out in full accordance with the approved plan
Reason:- To ensure appropriate safeguard for protected species and habitats during the course of the development in accordance with Policies NC1 of the Core Strategy and the National Planning Policy Framework

20. No development including demolition, site stripping and any other preparatory work shall be commenced until a Habitat Management Plan, relating to the area edged blue on the Integrated Wildlife Habitat Plan attached at Appendix 1 of the Outline Habitat Management Plan dated June 2016 prepared by Bowland Ecology and attached at Appendix 9.4 of the Environmental Statement has been submitted to and approved in writing by the Local Planning Authority. The plan shall be based on the design and management principles set out in the submitted Outline Habitat

Management Plan and include phasing, mechanisms, roles and responsibilities for implementation of the plan, its review and monitoring. The development shall thereafter be carried out strictly in accordance with the approved plan.
Reason:- To secure a long term integrated biodiversity enhancement plan in accordance with Policies NC1 of the Core Strategy and the National Planning Policy Framework

Lighting
21. No phase of development agreed under condition 5 shall be brought into use until full details of the proposed lighting scheme (including floodlighting, street lighting and security lighting) has been first submitted to and approved in writing by the Local Planning Authority. Such details shall be based on guidance set out in the Institute of lighting Engineers (Reduction of Light Pollution) and be accompanied by evidence that it is approved by a qualified ecologist in relation to its impact on bats.
Reason:- In the interests of residential amenity, the character and appearance of the area and protected species in accordance with Policies NC1, DC1, DC3 of the Core Strategy and the National Planning Policy Framework

Traffic and Access
22. The development hereby permitted shall not be brought into use until full details of the following have been submitted to and approved in writing by the Local Planning Authority:

• Provision of parking, turning and servicing within the site curtilage;
• parking provision for staff parking.
• Means of surface water drainage from all areas intended to remain in private ownership;
• full road construction including longitudinal sections and a satisfactory means of draining roads to an acceptable drainage outfall.
Reason:- To comply with the policies contained within the National Planning Policy Framework, the principles contained within Manual for Streets and Policies contained within the Staffordshire Moorlands Core Strategy Development Plan 2014.

23. The development hereby permitted shall not be commenced until details of the off site highway works at the junction of Whiston Eaves Lane and the A52 indicated on drawing PB1608/SK001 rev C have been submitted to, and approved in writing by, the Local Planning Authority and be constructed prior to the first occupation of any of the development hereby approved in full accordance with the agreed details.
Reason:- To comply with the policies contained within the National Planning Policy Framework, the principles contained within Manual for Streets and Policies contained within the Staffordshire Moorlands Core Strategy Development Plan 2014.

24. The development hereby permitted shall not be brought into use until such time that works to realign the main site access on Eaves Lane so as to prohibit vehicles from turning right out of the site into Carr Bank Lane as shown on drawing no. PL1088.M100 rev 3 has been fully completed.
Reason:- To comply with the policies contained within the National Planning Policy Framework, the principles contained within Manual for Streets and Policies contained within the Staffordshire Moorlands Core Strategy Development Plan 2014.

25. No development shall commence until details of a traffic management scheme to reduce speed levels on the A52 at the junction with the C0165 Whiston Eaves Lane have been submitted to and approved in writing by the Local Planning Authority. The approved traffic management scheme shall thereafter be implemented prior to first use of any of the development hereby approved.

Reason:- To comply with the policies contained within the National Planning Policy Framework, the principles contained within Manual for Streets and Policies contained within the Staffordshire Moorlands Core Strategy Development Plan 2014.

26. The development hereby permitted shall not be commenced until a signage scheme detailing the permitted routeing for all traffic accessing and leaving the site has been submitted to and approved in writing by the Local Planning Authority. The approved signage scheme shall thereafter be fully implemented prior to first use of any of the development hereby approved.
Reason:- To comply with the policies contained within the National Planning Policy Framework, the principles contained within Manual for Streets and Policies contained within the Staffordshire Moorlands Core Strategy Development Plan 2014.

27. The development hereby permitted shall not be commenced until a Construction Traffic Management Plan has been submitted to and approved in writing by the Local Planning Authority. This shall be based on the mitigation measures set out in paragraphs 13.71 – 13.73 of Chapter 13 of the Environmental Statement.. The approved Construction Traffic Management plan shall be implemented on the commencement of construction and thereafter be adhered to for the full period of construction.
Reason:- To comply with the policies contained within the National Planning Policy Framework, the principles contained within Manual for Streets and Policies contained within the Staffordshire Moorlands Core Strategy Development Plan 2014.

Drainage and Flood Risk

28. The development hereby permitted shall not be commenced until drainage plans for the disposal of surface water and foul sewage have been submitted to and approved in writing by the Local Planning Authority.
The surface water drainage scheme shall include the utilisation of holding sustainable drainage techniques with the incorporation of two treatment trains to help improve water quality; the limitation of surface water run-off, less 20% upon existing rates, the ability to accommodate surface water run-off on-site up to the critical 1 in 100 year event plus an appropriate allowance for climate change, based upon the submission of drainage calculations; and the responsibility for the future maintenance of drainage features.

The foul and surface water schemes shall be implemented in accordance with the approved details(including the agreed timing / phasing/maintenance arrangements) before the development is first brought into use.
Reason:- To ensure that the development is provided with a satisfactory means of drainage as well as to reduce the risk of creating or exacerbating a flooding problem, to minimise the risk of pollution and improve water quality

29. No development shall commence until an assessment of surface water flow paths and mitigation measures together with timescale for implementation of such measures has been submitted to and approved in writing by the Local Planning Authority. The development shall thereafter be carried out in strict accordance with the approved details and timetable.
Reason:- To provide adequate mitigation for overland flow and thereby not increasing flood risk.

30.There shall be no development within 5 metres of any open watercourse crossing or adjacent to the site.

Reason:-To allow maintenance of the watercourse, to protect the river habitat, to prevent destabilisation of the river banks and to allow for natural processes of erosion and deposition

31. No floor level shall be less than 150mm above ground level.
Reason:- To protect the development from overland flow.

Noise during construction and operation

32. The design and construction criteria for development of the relevant buildings/premises shall have regard BS 8233:2014 (British Standard 8233:2014 Sound insulation and noise reduction for buildings). The design criteria shall achieve sufficient noise reduction to ensure that the noise from the activities generated inside the fabric of the relevant buildings/premises shall not increase the background noise levels during day time expressed as LA90 [1hour] (day time 07:00-23:00 hours) and/or (b) LA90 [15 mins] during night time (night time 23:00-07:00 hours) at any adjoining noise sensitive locations or premises in separate occupation. Noise measurements for the purpose of this condition shall be pursuant to BS 4142:2014.
Reason: To protect the nearby properties from noise.

33. The proposed residential accommodation including lodges should be constructed and sound insulated so as to achieve internal noise levels for daytime Laeq16hr at 40dB and night time Laeq8hr 35dB. All measurements should be pursuant to BS8233:2014.

Reason: To protect occupiers from noise and safeguard their residential amenities

34. No amplified music or speech shall be played outside any of the buildings hereby permitted
Reason: To protect occupiers from noise and safeguard their residential amenities

35. The noise generated by the plant and machinery being operated under this permission shall not exceed the following levels at the following locations:

(a) 35 dB (A) at Little Eaves Farm
(b) 35 dB (A) at Cottage Farm
(c) 35 dB(A) at Crowtrees Farm
(d) 35 dB (A) any other noise sensitive residential property outside the curtilage of the development that formally reports intrusive noise to the Local Planning Authority.

For the purposes of a) to d) above and subsequent measurement/comparisons, all daytime noise levels are to be expressed as LA90 [1 hour] with daytime hours being from 07.00 to 23.00. For night time noise levels, these shall be expressed as LA90 [15 mins] with night time hours being from 23.00 to 07.00.
All noise measurements taken to assess compliance with this condition shall be pursuant to the methodology of BS4142:2014. A Noise Monitoring report to determine the compliance status with parts a) to c) of this condition (i.e. as above) within six months of the development first coming into use shall be submitted to and approved in writing by the Local Planning Authority
Reason: To protect occupiers from noise and safeguard their residential amenities

36. No development shall commence until full details and location of any plant and machinery to be installed in the development together with any mitigation measures have been submitted to and approved in writing by the Local Planning Authority. The development shall be carried out in strict accordance with the approved details and agreed mitigation measures.

Reason:- To ensure that the reasonable residential amenities of adjoining properties are adequately protected from noise pollution.

37. No phase of the development hereby permitted under Condition 5 shall take place except for works of site clearance and demolition until a Construction and Environmental Method Statement for that phase of the site has been submitted to and approved in writing by the Local Planning Authority, which shall include the following details:-

I. the method and duration of any pile driving operations (expected starting date and completion date)
II. details of vibration mitigation based on the measures advised and discussed in sections 15.113 to 15.115 of Chapter 15 of the Environmental Statement check and having regard to BS 5228:2009 Code of Practice for Noise and Vibration Control on Construction and Open Sites.
III. the hours of work, which shall not exceed the following: construction and associated deliveries to the site shall not take place outside 08:00 to 18:00 hours Mondays to Fridays, and 08:00 to 13:00 hours on Saturdays, nor at any time on Sundays or Bank Holiday;
IV. pile driving shall not take place outside 09:00 to 16:00 hours Mondays to Fridays, nor at any time on Saturdays, Sundays or Bank Holidays;
V. the arrangements for prior notification of pile driving to the occupiers of potentially affected properties;
VI. the responsible person (e.g. site manager / office) who could be contacted in the event of complaint;
VII. details of wheel washing facilities. All construction vehicles shall have their wheels cleaned before leaving the site;
VIII. a scheme for recycling/disposal of waste resulting from the construction works;
IX. the parking of vehicles of site operatives and visitors;
X. the loading and unloading of plant and materials;
XI. the storage of plant and materials used in constructing the development;
XII. the erection and maintenance of security hoarding including decorative displays and facilities for public viewing, where appropriate;
XIII. details of measures to protect the public footpaths and amenity of users of the pubic footpaths crossing the site during the construction works.

All works shall be carried out in accordance with the approved details. Any alteration to this Plan shall be approved in writing by the Local Planning Authority prior to commencement of the alteration.
Reason: To protect the amenities of the area.

38. Unless prior permission has been obtained in writing from the Local Planning Authority, all noisy activities shall be restricted to the following times of operations.

- 08:00 - 18:00 hours (Monday to Friday);
- 08:00 - 13:00 hours (Saturday)
- No working is permitted on Sundays or Bank Holidays.

In this instance a noisy activity is defined as any activity (for instance, but not restricted to, building construction/demolition operations, refurbishing and landscaping) which generates noise that is audible at the site boundary.
Reason: To avoid the risk of disturbance to neighbouring dwellings from noise during unsocial hours.

Contamination

39. Development shall not commence until a further risk assessment has been completed in accordance with a scheme to be agreed by the Local Planning Authority to assess the nature and extent of any contamination on the site. The investigation and risk assessment shall be undertaken by competent persons and in accordance with DEFRA and the Environment Agency's 'Model Procedures for the Management of Land Contamination, CLR 11. A written report of the findings shall be submitted to and agreed in writing with the Local Planning Authority prior to the commencement of the development. The report of the findings shall include;

a. A further survey of the extent, scale and nature of any potential contamination;

b. A detailed risk assessment of all known site contaminants based on the potential risks to:

- Human health;
- Property (existing or proposed) including buildings, crops, livestock, pets, woodland, service lines and pipes;
- Adjoining land;
- Ground and surface waters;
- Ecological systems and
- Archaeological sites and ancient monuments

Reason:- To ensure that risks from land contamination to the future users of the land and neighbouring land are minimised, together with those to controlled waters, property and ecological systems, and to ensure that the development can be carried out safely without unacceptable risks to workers, neighbours and other offsite receptors

40. If the risk assessment apporved under Condition 38 indicates that remediation is required, no development shall take place until a detailed remediation scheme to bring the site to a condition suitable for the intended use by removing unacceptable risks to human health, property (existing or proposed including buildings, crops, livestock, pets, woodland, service lines and pipes; buildings), adjoining land and ground and surface waters has been submitted to and approved in writing by the Local Planning Authority. The scheme must include:

a. A remediation strategy giving full details of remediation objectives and remediation criteria
b. A validation plan providing details of the data that will be collected in order to demonstrate that the all works set out in (a) are complete and identifying any requirements for longer-term monitoring of pollutant linkages, maintenance and arrangements for contingency action.

The scheme must ensure that the site will not qualify as contaminated land under Part 2A of the Environmental Protection Act 1990 in relation to the intended use of the land after remediation.

Reason:- To ensure that risks from land contamination to the future users of the land and neighbouring land are minimised, together with those to controlled waters, property and ecological systems, and to ensure that the development can be carried out safely without unacceptable risks to workers, neighbours and other offsite

receptors

41.Prior to bringing the development into first use, a validation report demonstrating completion of the works set out in the approved remediation strategy (if required) and the effectiveness of the remediation shall be submitted to and approved, in writing, by the local planning authority. The report shall include results of sampling and monitoring carried out in accordance with the approved validation plan to demonstrate that the site remediation criteria have been met. It shall also include any plan (a long-term monitoring and maintenance plan) for longer-term monitoring of pollutant linkages, maintenance and arrangements for contingency action, as identified in the validation plan and for the reporting of this to the local planning authority.

Reason:- To ensure that risks from land contamination to the future users of the land and neighbouring land are minimised, together with those to controlled waters, property and ecological systems, and to ensure that the development can be carried out safely without unacceptable risks to workers, neighbours and other offsite receptors

42 .In the event that contamination is found at any time when carrying out the approved development that was not previously identified it must be reported in writing immediately to the Local Planning Authority. An investigation and risk assessment must be undertaken in accordance with the requirements of Condition 38, and where remediation is necessary a remediation scheme must be prepared in accordance with the requirement of condition 39 which is subject to the approval in writing of the Local Planning Authority.

Following completion of measures identified in the approved remediation scheme a verification report must be prepared, which is subject to the approval in writing of the Local Planning Authority in accordance with condition 40.

Reason:- To ensure that risks from land contamination to the future users of the land and neighbouring land are minimised, together with those to controlled waters, property and ecological systems, and to ensure that the development can be carried out safely without unacceptable risks to workers, neighbours and other offsite receptors

43.No top soil is to be imported to the site until it has been tested for contamination and assessed for its suitability for the proposed development, a suitable methodology for testing this material should be submitted to and agreed by the Local Planning Authority prior to the soils being imported onto site. The methodology should include the sampling frequency, testing schedules, criteria against which the analytical results will be assessed (as determined by the risk assessment) and source material information. The analysis shall then be carried out and validatory evidence submitted to and approved in writing to by the Local Planning Authority.

Reason:- To ensure that risks from land contamination to the future users of the land and neighbouring land are minimised, together with those to controlled waters, property and ecological systems, and to ensure that the development can be carried out safely without unacceptable risks to workers, neighbours and other offsite receptors

Trees/Landscaping

44.A full Arboricultural Impact Assessment in accordance with guidance in British Standard 5837:2012 *Trees in Relation to Design, Demolition and Construction – Recommendations* shall accompany the first reserved matters application for any

phase agreed under Condition 5 and shall address any potential impact on trees arising from construction and operational use of the development hereby approved including access roads, car parks, lodges, administrative, service and leisure activity related structures and facilities.
Reason:- In the interests of tree protection in accordance with Policy NC1 of the Core Strategy

45. Before the commencement of development (including any demolition, site clearance, stripping or site establishment) temporary protective fencing and advisory notices for the protection of the existing trees to be retained shall be erected in accordance with guidance in British Standard 5837:2012 *Trees in Relation to Design, Demolition and Construction – Recommendations*, and shall be retained in position for the duration of the period that development takes place. Within the fenced areas there shall be no excavation, changes in ground levels, installation of underground services, provision of hard surfacing, passage of vehicles, storage of materials, equipment or site huts, tipping of chemicals, waste or cement, or lighting of fires unless otherwise agreed by the LPA. Such tree protection measures may be implemented on a phased basis in accordance with any phased construction programme approved in connection with the development hereby approved.
Reason:- In the interests of tree protection in accordance with Policy NC1 of the Core Strategy

46. No trees, shrubs or hedgerows shall be removed other than those whose removal is directly required to accommodate the development as subsequently approved under a detailed reserved matters or full planning permission application, or those whose removal is in accordance with any landscaping scheme or habitat and landscape management and development plan approved in connection with the development hereby approved, unless otherwise approved by the LPA. There shall be no removal of any trees, shrubs or hedgerows during the bird nesting season (March to August inclusive), unless otherwise agreed by the LPA and in this case only following careful inspection by a competent person to establish that such trees, shrubs or hedgerow are not in active use by nesting birds.
Reason: In the interests of tree protection in accordance with Policy NC1 of the Core Strategy

47. Prior to the commencement of development (including any demolition, site clearance, stripping or site establishment) a comprehensive Landscape Strategy for the whole site shall be submitted to and approved in writing by the LPA, giving details of proposed creation, maintenance, management and development, including timescales and delivery mechanisms, for all landscaping across the site. This shall include the mitigation and enhancement measures relating to landscaping set out in Chapter 8 (Landscape and Visual) and Chapter 9 (Ecology) of the Environmental Statement. The Strategy shall include for a minimum 20 year maintenance and management operations including timetabled detailed management prescriptions for all structural landscaping throughout the site, to be monitored and reviewed every 5 years. The development shall be carried out strictly in accordance with the agreed details.
Reason: In the interests of the character and appearance of the area in accordance with Polices NC1 and DC3 of the Core Strategy and advice in the Framework

Waste

48. No development shall commence until a Site Waste Management Plan has been submitted to and approved in writing by the Local Planning Authority.
Reason: To protect the amenities of the area and in the interests of securing sustainable development.

Dust

49. No development, including demolition, site stripping and preparatory work shall be commenced until a full Dust Management Plan and method to monitor the effectiveness for any proposed dust mitigation measures together with a timetable for implementation has been submitted to and agreed in writing the Local Planning Authority. The Dust Management Plan should be based on the submitted dust assessment/ mitigation methodologies submitted in Chapter 12 of the Environmental Statement and include specific measures for controlling dust on areas presumed to be contaminated. The development shall thereafter be carried out strictly in accordance with the agreed details and timetable.
Reason: In the interests of the protection of residential amenity.

Archaeology/Heritage

50. No phase of the development agreed under Condition 5 shall be commenced, including demolition and site clearing until a written scheme of archaeological investigation ('the Scheme') for that phase has been submitted to and approved in writing by the Local Planning Authority. The Scheme shall define the area of archaeological interest to be subject to the investigation and provide details of the programme of archaeological works to be carried out within this area, including post-excavation reporting and appropriate publication and interpretation. The Scheme shall thereafter be implemented in full in accordance with the approved details
Reason:- In the interests of protecting the historic environment

51. Prior to any part of the development coming into use an Interpretation board shall be erected on or close to the site of the former Whiston Eaves Farmhouse and Stable block on Whiston Eaves Lane. The siting, size, design, materials and wording for the board shall be previously agreed with the Local Planning Authority
Reason:- In the interests of the historic environment

Informatives

1.The Council has sought (negotiated) a sustainable form of development which complies with the provisions of paragraphs 186-187 of the NPPF

2.This permission should be read in conjunction with the corresponding Unilateral Undertaking dated **TBA**

3.Whist fully recognizing that Drawing No PL1088.M100 is submitted for illustrative purposes only, for the avoidance of any doubt no permission is either given or implied for the area indicated as 'Woodland Activity' on this plan

4. Condition 23 above requiring off-site highway works shall require a Major Works Agreement with Staffordshire County Council and the applicant is therefore requested to contact Staffordshire County Council in respect of securing the Agreement. The link below provides a further link to a Major Works Agreement Information Pack and an application form for the Major Works Agreement. Please complete and send to the address indicated on the
application form which is Network Management Unit, Staffordshire County Council, Staffordshire Place 1, Wedgwood Building, Tipping Street, Stafford, ST16 2DH (or email to nmu@staffordshire.gov.uk)
http://www.staffordshire.gov.uk/transport/staffshighways/licences/

5. The expectation in respect of the traffic management scheme referred to in condition 25 is that an essential Traffic Regulation Order is pursued, to introduce a 30mph speed limit, for road safety mitigating works. This recommendation of approval should not be construed as though the County Council is prejudging of the

Order making process. The developers should note that the Order will be made on behalf of the developer by Staffordshire County Council at the developer's expense and has to be secured before development commences as it is an 'ESSENTIAL' component of the required mitigating measures associated with the proposed development. In case the Order is not already being processed the developer is requested to contact Dale Arthur/Jim Long with immediate effect to enable the Order to be secured at the earliest convenience to avoid delays to implementation of the planning consent. Please note that there are no guarantees that the Order will be successful. This condition also requires the implementation of a signage strategy to advise the permitted routeing for traffic accessing the Park will require the approval of the Highway Authority. The applicant is therefore requested to contact Network Management Unit at Staffordshire County Council, Staffordshire Place 1, Wedgwood Building, Tipping Street, Stafford, ST16 2DH (or email to nmu@staffordshire.gov.uk, to gain the relevant approvals.

6. Under the Land Drainage Act 1991, Consent will be required for the construction of any mill dam, weir, or like obstruction to flow. Within Staffordshire the County Council is now responsible for the regulation of these activities where they affect ordinary watercourses Please contact: Hannah Hogan, Flood Risk Planning & SuDs Officer via e-mail on hannah.hogan@staffordshire.gov.uk or via telephone: 01543 334583 if you would like to discuss this response.

7. Please be aware that the responsibility for safe development and secure occupancy of the site rests with the developer.

- A Demolition or refurbishment asbestos survey and risk assessment should be carried out prior to the demolition of the existing buildings. The enforcing authority for this type of work is the Health and Safety Executive (HSE) and it is recommended that you contact them directly to discuss their requirements: http://www.hse.gov.uk/
- Any approved noise scheme and measurements should pay due regard to British Standard BS8233: Sound insulation and noise reduction for buildings (Code of Practice) and the Building Regulations 2010 Document E or other appropriate guidance.
- Advice on controlling flies and light can be found in: Statutory Nuisance from Insects and Artificial Light (defra 2005) available as a free download http://archive.defra.gov.uk/environment/quality/local/legislation/cnea/documents/statnuisance.pdf
- During any demolition and construction activities (including landscaping) the contractor should take all reasonable steps to prevent dust formation and prevent any dust formed from leaving the site boundary.
    - The control of dust and emissions from construction and demolition Best Practice Guidance, produced by the greater London councils http://www.london.gov.uk/sites/default/files/BPGcontrolofdustandemissions.pdf
    - Building Research Establishment Guidance Document 'Control of Dust from Construction and Demolition Activities' (BR456)
- If required, contamination risk assessments shall be carried out in accordance with UK policy and with the procedural guidance relating to the contaminated land regime, and should be in accordance with Planning Policy Statement 23 and the CLR Report Series 1-12.
    - Submission of reports should also be made to the Environment Agency for comment with regard to their remit to protect ground and surface waters from pollution and their obligations relating to

contaminated land.

- The Local Planning Authority will determine the acceptability of reports on the basis of the information made available to it. Please be aware that should a risk of harm from contamination remain post development, where the applicant had prior knowledge of the contamination, the applicant is likely to be liable under Part II (a) of the Environmental Protection Act 1990 and as such become and “appropriate person”. In this event the applicant will be lawfully responsible to remove the risk posed by the contamination.

- Equally if during any site works a pathway for any contaminant on site is created and humans, waters, property or ecological systems are exposed to this, the applicant or those acting on behalf of the applicant will be liable under part II (a) of the Environmental Protection Act 1990 if the risks are not adequately addressed during the site redevelopment.

- During investigation and remediation works the applicant and those acting on behalf of the applicant must ensure that site workers, public property and the environment are protected against noise, dust, odour and fumes

- The applicant is advised that should there be a requirement as part of the Remediation Strategy to treat, reuse or remove contaminated material on the site, the Environment Agency must be consulted, as these activities may need to be licensed or permitted. Contaminated materials identified for removal off site must be disposed of in an appropriately licensed landfill site.

- Staffordshire Moorlands District Council is keen to liaise with all stakeholders involved in this application. As such, we recommend that a proposed scope of works is forwarded to the Environmental Protection Department and agreed in principle prior to site investigation works being undertaken. The Environmental Protection Department is also prepared to review draft copies of reports prior to final submission to the Planning Department in order to ensure that works undertaken are sufficient to discharge the contaminated land conditions.

Appendix 5.2: 2016 Outline Decision Notice

STAFFORDSHIRE
moorlands
DISTRICT COUNCIL
ACHIEVING · EXCELLENCE

Simon W. Baker B.Ed MBA MIMSPA
Chief Executive

Mr Jon Suckley
HOW Planning LLP
Peter Street
United Kingdom
M2 5GP

Application no: SMD/2016/0378

Determined on: 26th October 2016

Town and Country Planning Act 1990
Town and Country Planning (Development Management Procedure) (England) Order 2015

GRANT OF OUTLINE PLANNING PERMISSION

This permission does not carry any approval or consent which may be required under any enactment, bylaw, order or regulation (e.g. in relation to Building Regulations or the Diversion of Footpaths etc) other than Section 57 of the Town and Country Planning Act, 1990.

Location of Development:
Moneystone Quarry Cheadle Road Oakamoor Staffordshire ST10 2DZ

Description of Development:
Outline application with some matters reserved for the erection of a high quality leisure development comprising holiday lodges; a new central hub building (providing swimming pool, restaurant, bowling alley, spa, gym, informal screen/cinema room, children's soft play area, cafe, shop and sports hall); cafe; visitor centre with farm shop; administration building; maintenance building; archery centre; watersports centra; equipped play areas; mutli-sports area; ropewalks; car parking; and managed footpaths, cycleways and bridleways set in attractive landscaping and ecological enhancements (re-submission of Planning Application SMD/2014/0682)

In pursuance of their power under the above mentioned Act, Staffordshire Moorlands District Council Planning Authority, **HEREBY GRANT OUTLINE PLANNING PERMISSION** for the works described above subject to the following condition(s):

1. No phase of the development (as approved under Condition 5) except for works of site clearance and demolition hereby permitted shall be commenced until full details of the:
a) Layout;
b) Scale;
c) Appearance, and
d) Landscaping;

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Chief Executive

(hereinafter called "the reserved matters") for that phase have been submitted to and approved in writing by the Local Planning Authority. The development shall not be carried out otherwise than in accordance with the approved details.
Reason:- The application is an outline application under the provisions of the Town and Country Planning (General Development Procedure)England Order 2015 and no particulars have been submitted with respect to the matters reserved in this permission (excepting access).

2. Application for approval of the first reserved matters (as identified in Condition 1 above) shall be made to the Local Planning Authority no later than the expiration of 3 years from the date of this permission and the last application for reserved matters approval shall be made to the Local Planning Authority no later than the expiration of 7 years from the date of this permission.
Reason:- To comply with the provisions of Section 91 of the Town and Country Planning Act 1990.

3. The development hereby approved shall be begun not later than whichever is the later of the following dates:
(a) the expiration of 5 years from the date of this permission, or
(b) the expiration of 2 years from the date of the approval of the first reserved matters application by the Local Planning Authority.
Reason:- To comply with the provisions of Section 91 of the Town and Country Planning Act 1990.

4. The development hereby permitted shall be carried out in accordance with the following documents and approved plans:

Red Line Location Plan PL1088.M.106 rev 3
Parameters Plan PL1088.M.110 rev 6
Character Areas Plan PL1088.M.113 rev 3
Eaves Lane Access Plan PB5196-0100 rev C
Proposed Layout of A52/Whiston Eaves Lane Junction PB1608/SK001 rev C
Existing and Restored Landscape Plan (drawing ref. PL1088.M116 Rev 1);

Environmental Statement (Moneystone Park) – June 2016

Reason:- For the avoidance of doubt and in the interests of proper planning.

5. No development, with the exception of site clearance and demolition, shall be commenced until a Phasing Programme has been submitted to and approved in writing by the Local Planning Authority. The Programme shall provide details of the

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phasing of the development including the extent and composition of the phases and the overall programme for development. The development shall thereafter be carried out in accordance with the approved Programme.
Reason:- To ensure that the development is carried out in accordance with the approved plans, for clarity and the avoidance of doubt.

6, The total gross external floorspace of the uses proposed within the buildings and maximum area of other uses to be located within the area identified as Multi Activity Hub Area on the approved Parameters Plan (dwg ref PL1088.M.110 rev 6) as defined by the Town and Country Planning (Use Classes) Order 1987 (as amended), where relevant, shall be limited as follows:-

a)Uses within the Zone for the Main hub building and Visitor centre
Swimming Pool and toddler pool and plant - Up to 415m2
Restaurant/ Bar and outside terrace - Up to 500m2
Bowling alley - Up to 140m2
Spa - Up to 150m2
Gym with studio - Up to 100m
Informal screen room - Up to 80m2
Children's soft play area - Up to 145m2
Café - Up to 70m2
Sports hall – up to 320 m2
Reception area - Up to 145m2
Shop - Up to 50m2

Visitor Centre with farm shop - Up to 490m2 (including up to
Maximum 400m2 retail use)

b) Uses within Zone for Archery centre and lakeside cafe

Lake Café - Up to 130m2

Archery Centre - Up to 260m2

c)Uses within Zone for Administration block and Maintenance depot

Administration Building 525m2 (as existing)

Maintenance Depot - Up to 500m2

d) Uses outside of the above Zones as defined on the Parameters Plan but within the Multi Activity Hub Area as defined on the Parameters Plan

Substation 600m2 (existing compound)

Multi-Sports Area Up to 1,400m2

Equipped Play Area Up to 500m2

Adventure play area Up to 500 m2

Ropewalks Up to 5000m2

e) Car parking
Short stay - up to 170 spaces
Secure Long stay – up to 150 spaces
Staff – up to 67 spaces
Coach – up to 5 bays
Watersports centre – up to 26 spaces

Reason:- To define the permission and ensure that the proposal is carried out in accordance with the approved plans, for clarity and the avoidance of doubt.

7.The total gross floorspace of the uses proposed within the buildings to be located within the area identified as Water Sport Hub Area on the approved Parameters Plan (dwg ref PL1088.M.110 rev 6) as defined by the Town and Country Planning (Use Classes) Order 1987 (as amended) shall be limited as follows:-

Watersport centre – Up to 500 m2

Reason: To define the permission and ensure that the proposal is carried out in accordance with the approved plans, for clarity and the avoidance of doubt.

8. No more than 250 lodges shall be developed on the site within the broad areas identified for Holiday Lodges on the Parameters Plan (dwg ref PL1088.M.110 rev 6) hereby approved.
Reason: To define the permission and ensure that the proposal is carried out in accordance with the approved plans, for clarity and the avoidance of doubt.

9. Any development or activity proposed including any footpaths, cycleways, bridleways and outdoor activities in the areas noted as 'Area of Retained Landscape' on the approved Parameters Plan (dwg ref PL1088.M.110 rev 6) shall be informed by an Ecological and Arboricultural Assessment,identifying the nature of the development/activity proposed and an assessment of its impact, and such assessements shall be submitted as part of any future reserved matters applications for this part of the site.

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Reason:- In the interests of the character and appearance of the area, ecology and tree protection in accordance with Policies NC1, DC1 DC3 and the National Planning Polciy Framework

10. Nothwithstanding the provisions of the Town and Country Planning (General Permitted Development Order)(England) 2015 (or any Order revoking and re-enacting that Order with or without modification) no motorised watersport shall take place on any of the water bodies within the application site with the exception of emergency rescue boats.
Reason:- To safeguard the amenities of nearby residents, users of the area in general and in the interests of the character and appearance of the area in accordance with Polcies DC1, DC3 of the Staffordshire Moorlands Core Strategy and the National Planning Policy Framework

11. At the time of first submission of a reserved matters application for any phase agreed under Condition 5, full details of the following shall be submitted to and approved in writing by the Local Planning Authority for that phase:-

a) Detailed plans and sections showing existing site ground levels and proposed ground levels and finished floor and ridge levels of all buildings.
b) All engineering works, mounding and changes to existing ground levels within that phase including details of cut and fill.
c) Volumes of material to be disposed of off site.

Development of that phase shall thereafter be carried out strictly in accordance with the approved details.
Reason:- In order to protect the character and appearance of the area in accordance with Polices DC 1, DC3 and SS7 of the Core Strategy and the NPPF.

12. Prior to the commencement of any phase of the development agreed under Condition 5, a scheme containing full details of the proposed bridleway(s) within that phase of the development shall be submitted to and approved in writing by the Local Planning Authority. The scheme shall be broadly in accordance with the illustrative Footpath Connection Plan PL 1088 M004 Rev 3 submitted with the application and shall be informed by a Feasibility and Construction Methodology containing an Ecology, Landscape, Visual and Arboricultural Assessment and shall include details on levels, widths, and surface materials, measures to ensure the future maintenance and public use in perpetuity and demonstrate how the bridleway (s) will link to the wider footpath/bridleway network beyond the site. The bridleway(s) shall thereafter be completed in accordance with the approved details and open for public use before first occupation of any development within that phase.

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Reason:- In the interest of the connectivity and accessibility of the site in accordance with the Polices T1, T2 and SS7 of the Core Strategy and the NPPF.

13. No development of any phase agreed under condition 5 shall commence until full details of boundary and other means of enclosures for that phase have been submitted to and approved in writing by the Local Planning Authority. The agreed details shall be completed prior to the development of that phase first coming into use and maintained thereafter for the life of the development in accordance with the agreed details.
Reason:- In the interests of the character and appearance of the area in accordance with Polices DC 1, DC3 and SS7 of the Core Strategy and the NPPF.

14. All future reserved matters applications for any phase agreed under Condition 5 and particularly those relating to layout, scale and appearance shall be in accordance with the the principles contained within the submitted Design and Access Statement and incorporate the Mitigation Measures set out in Table 8.9 of Chapter 8, Landscape and Visual of the Environmental Statement
Reason:- To define the permission, to protect the character and appearance of the area and to secure a sustainable development

15. No facilities or buildings on the site, including recreational, entertainment and retail facilities shall be used for any purpose other than for, or ancillary to, the primary use of the development as a leisure complex
Reason;- To restrict the use in accordance with the spatial polices of the Core Strategy and in particular Polices SS6C, SS7 and the National Planning Policy Framework

16. No phase of the development as agreed under condition 5 shall commence until a detailed site layout plan (the 'Plan') has been submitted to and approved in writing by the Local Planning Authority showing pedestrain and cycle routes for that phase. The Plan shall also include the following:-

-full specification for the construction of the routes
-full details of connections through the site and onto the public highway for pedestrians and cyclists
-phasing of works

No phase of the development, as agreed under condition 5, shall subsequently be brought into use until the pedestrian and cycle routes agreed under this condition for that phase have been laid out and constructed in accordance with the details approved.
Reason:- To comply with the policies contained within the National Planning Policy Framework, the principles contained within Manual for Streets and Policies contained

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within the Staffordshire Moorlands Core Strategy Development Plan 2014 all of which seek to increase connectivity and accessibility and encourage walking and cycling

17. No phase of development as agreed under Condition 5, including demolition, site stripping and other preparatory work, shall commence until a Construction Environmental Management Plan (CEMP) for that phase has been submitted to and approved in writing by the Local Planning Authority. The CEMP shall be in accordance with the Mitigation Measures set out in Table 8.10 of Chapter 8: Landscape and Visual, of the Environmental Statement. The development phase shall thereafter be carried out in accordance with the approved CEMP.
Reason:- In the interests of the character and appearance of the area in accordance with Polices DC 1, DC3 and SS7 of the Core Strategy and the NPPF.

Ecology

18. No phase of the development as agreed under Condition 5, including demolition, site stripping and any other preparatory work, shall be commenced until a Construction Ecological Management Plan for that phase has been submitted to and approved in writing by the Local Planning Authority. The plan shall have regard to the prevailing British standard for 'Biodiversity – Code of Practice for Planning and Development and shall be based on the amended Outline Construction Ecological Management dated June 2016 prepared by Bowland Ecology and included at Appendix 9.3 of the Environmental Statement. The development phase shall thereafter be carried out in full accordance with the approved plan.
Reason:- To ensure appropriate safeguard for protected species and habitats during the course of the development in accordance with Policies NC1 of the Core Strategy and the National Planning Policy Framework

19. No development including demolition, site stripping and any other preparatory work shall be commenced until a Habitat Management Plan, relating to the area edged blue on the Integrated Wildlife Habitat Plan attached at Appendix 1 of the Outline Habitat Management Plan dated June 2016 prepared by Bowland Ecology (Appendix 9.4 of the Environmental Statement) has been submitted to and approved in writing by the Local Planning Authority. The plan shall be based on the design and management principles set out in the submitted Outline Habitat Management Plan and include details of habitat creation, phasing mechanisms, roles and responsibilities for implementation of the plan, its review and monitoring. The development shall thereafter be carried out in accordance with the approved plan.
Reason:- To secure a long term integrated biodiversity enhancement plan in accordance with Policies NC1 of the Core Strategy and the National Planning Policy Framework

Lighting

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20. No phase of development agreed under condition 5 shall be brought into use until full details of the proposed lighting scheme (including floodlighting, street lighting and security lighting) for that phase has been first submitted to and approved in writing by the Local Planning Authority. Such details shall be broadly in accordance with guidance set out in the Institute of Lighting Engineers (Reduction of Light Pollution)(2011) and be accompanied by evidence that it is approved by a qualified ecologist in relation to its impact on bats. There shall be no external lighting at the development other than in accordance with the approved scheme.
Reason:- In the interests of residential amenity, the character and appearance of the area and protected species in accordance with Policies NC1, DC1, DC3 of the Core Strategy and the National Planning Policy Framework

Traffic and Access
21. No phase of the development agreed under Condition 5 shall be brought into use until full details of the following for that phase have been submitted to and approved in writing by the Local Planning Authority:

• Provision of parking, turning and servicing within the site curtilage;
• parking provision for staff parking.
• Means of surface water drainage from all areas intended to remain in private ownership;
• full road construction including longitudinal sections and a satisfactory means of draining roads to an acceptable drainage outfall.

The development phase shall thereafter be carried out in accordance with the approved details.
Reason:- To comply with the policies contained within the National Planning Policy Framework, the principles contained within Manual for Streets and Policies contained within the Staffordshire Moorlands Core Strategy Development Plan 2014.

22. The development hereby permitted shall not be commenced until details of the off site highway works at the junction of Whiston Eaves Lane and the A52 indicated on drawing PB1608/SK001 rev C hereby approved have been submitted to, and approved in writing by the Local Planning Authority. The highways works shall be completed prior to the first occupation of any part of the development hereby approved and in full accordance with the approved details.
Reason:- To comply with the policies contained within the National Planning Policy Framework, the principles contained within Manual for Streets and Policies contained within the Staffordshire Moorlands Core Strategy Development Plan 2014.

23. The development hereby permitted shall not be brought into use until such time that details (including signage and road markings) of the works to realign the main site access on Eaves Lane, indicated on drawing no PB 5196-01001 Rev C hereby

approved, so as to prohibit vehicles from turning right out of the site into Carr Bank Lane have been submitted to and approved in writing by the Local Planning Authority. The highways works shall be completed in accordance with the approved details and shall thereafter be retained for the life of the development.
Reason:- To comply with the policies contained within the National Planning Policy Framework, the principles contained within Manual for Streets and Policies contained within the Staffordshire Moorlands Core Strategy Development Plan 2014.

24. No development shall commence until details of a traffic management scheme to reduce speed levels on the A52 at the junction with the C0165 Whiston Eaves Lane have been submitted to and approved in writing by the Local Planning Authority. The approved traffic management scheme shall thereafter be completed prior to first use of any part of the development hereby approved.
Reason:- To comply with the policies contained within the National Planning Policy Framework, the principles contained within Manual for Streets and Policies contained within the Staffordshire Moorlands Core Strategy Development Plan 2014.

25. The development hereby permitted shall not be commenced until a signage scheme detailing the permitted routeing for all traffic entering and exiting the site has been submitted to and approved in writing by the Local Planning Authority. The approved signage scheme shall be completed prior to first use of any part of the development hereby approved and maintained for the life of the development.
Reason:- To comply with the policies contained within the National Planning Policy Framework, the principles contained within Manual for Streets and Policies contained within the Staffordshire Moorlands Core Strategy Development Plan 2014.

26. The development hereby permitted shall not be commenced until a Construction Traffic Management Plan (CTMP) has been submitted to and approved in writing by the Local Planning Authority. The CTMP shall be based on the mitigation measures set out in paragraphs 13.71 – 13.73 of Chapter 13 of the Environmental Statement. The approved CTMP shall be implemented prior to the commencement of construction and thereafter be adhered to for the full period of construction.
Reason:- To comply with the policies contained within the National Planning Policy Framework, the principles contained within Manual for Streets and Policies contained within the Staffordshire Moorlands Core Strategy Development Plan 2014.

<u>Drainage and Flood Risk</u>
27. The first reserved matters application submitted for the site shall include a statement of general principles for the disposal of foul and surface water from the whole of the development site. No subsequent phase of the development as agreed under Condition 5 shall commence until drainage plans for the disposal of surface water and foul sewage for that phase have been submitted to and approved in writing by the Local Planning Authority.

The surface water drainage scheme for each phase shall include the utilisation of holding sustainable drainage techniques with the incorporation of two treatment trains to help improve water quality; the limitation of surface water run-off, less 20% upon existing rates, the ability to accommodate surface water run-off on-site up to the critical 1 in 100 year event plus an appropriate allowance for climate change, based upon the submission of drainage calculations; and the responsibility for the future maintenance of drainage features for that phase.
The foul and surface water schemes for each phase shall be implemented in accordance with the approved details (including the agreed timing / phasing/maintenance arrangements) before the development of that phase is first brought into use and maintained thereafter in accordance with the approved details for the life of the development
Reason:- To ensure that the development is provided with a satisfactory means of drainage as well as to reduce the risk of creating or exacerbating a flooding problem, to minimise the risk of pollution and improve water quality

28. No phase of the development as agreed under Condition 5 shall commence until an assessment of surface water flow paths and mitigation measures together with timescale for implementation of such mitigation measures for that phase has been submitted to and approved in writing by the Local Planning Authority. The development phase shall thereafter be carried out in accordance with the approved details and timetable and maintained thereafter in accordance with the agreed details for the life of the development
Reason:- To provide adequate mitigation for overland flow and thereby not increasing flood risk.

29. Prior to any works taking place within 5 metres of any open watercourse crossing or adjacent to the site, details of such works shall be submitted to the Local Planning Authority for its written approval. The development shall thereafter be carried out in accordance with the approved details.
Reason:-To allow maintenance of the watercourse, to protect the river habitat, to prevent destabilisation of the river banks and to allow for natural processes of erosion and deposition

30. No floor level shall be less than 150mm above ground level.
Reason:- To protect the development from overland flow.

Noise during construction and operation

31. A scheme for the containment of operational related noise for any buildings hereby approved which are designed for entertainment and leisure purposes shall be submitted to and approved by the Local Planning Authority prior to the occupation of that building. The approved scheme(s) shall be fully implemented prior to the

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occupation of that building.
Reason: To protect the nearby properties from noise.

32. The proposed lodges shall be constructed and sound insulated so as to achieve internal noise levels for daytime Laeq16hr at 35dB and night time Laeq8hr 30dB. All measurements should be pursuant to BS8233:2014.

Reason: To protect occupiers from noise and safeguard their residential amenities

33. There shall be no means for the amplification of sound (music, voice, soundtrack) installed to the exterior of any buildings hereby approved with the exception of fire and security alarms.
Reason: To protect occupiers from noise and safeguard their residential amenities

34. No plant or machinery shall be installed within any part of the development hereby approved until a scheme specifying the make, model and position of the plant or machinery has been submitted to and approved in writing by the Local Planning Authority. The scheme shall include an assessment of the predicted sound levels that will result from the plant or machinery at noise sensitive locations. The methodology of such assessment including the noise sensitive locations shall be first agreed in writing by the Local
Planning Authority. The development shall thereafter be carried out and maintained in accordance with the approved scheme.
Reason:- To ensure that the reasonable residential amenities of adjoining properties are adequately protected from noise pollution

35. No phase of the development as agreed under Condition 5 shall take place, including works of site clearance and demolition, until a Construction and Environmental Method Statement for that phase of the development has been submitted to and approved in writing by the Local Planning Authority, which shall include the following details:-

I. the method and duration of any pile driving operations (expected starting date and completion date)
II. details of vibration mitigation based on the measures advised and discussed in sections 15.113 to 15.115 of Chapter 15 of the Environmental Statement check and having regard to BS 5228:2009 Code of Practice for Noise and Vibration Control on Construction and Open Sites.
III. the hours of work, which shall not exceed the following: construction and associated deliveries to the site shall not take place outside 08:00 to 18:00 hours Mondays to Fridays, and 08:00 to 13:00 hours on Saturdays, nor at any time on Sundays or Bank Holiday;
IV. pile driving shall not take place outside 09:00 to 16:00 hours Mondays to Fridays, nor at any time on Saturdays, Sundays or Bank Holidays;

V. the arrangements for prior notification of pile driving to the occupiers of potentially affected properties;
VI. the responsible person (e.g. site manager / office) who could be contacted in the event of complaint;
VII. details of wheel washing facilities. All construction vehicles shall have their wheels cleaned before leaving the site;
VIII. a scheme for recycling/disposal of waste resulting from the construction works;
IX. the parking of vehicles of site operatives and visitors;
X. the loading and unloading of plant and materials;
XI. the storage of plant and materials used in constructing the development;
XII. the erection and maintenance of security hoarding including decorative displays and facilities for public viewing, where appropriate;
XIII. details of measures to protect the public footpaths and amenity of users of the pubic footpaths crossing the site during the construction works.

All works shall be carried out in accordance with the approved details. Any alteration to this Plan shall be approved in writing by the Local Planning Authority prior to commencement of the alteration.
Reason: To protect the amenities of the area.

Contamination

36. No phase of the development as agreed under Condition 5 shall commence until a further risk assessment has been completed in accordance with a scheme to be agreed by the Local Planning Authority to assess the nature and extent of any contamination on the site in that phase. The investigation and risk assessment shall be undertaken by competent persons and in accordance with DEFRA and the Environment Agency's 'Model Procedures for the Management of Land Contamination, CLR 11. A written report of the findings for that phase shall be submitted to and agreed in writing with the Local Planning Authority prior to the commencement of the development. The report of the findings shall include;

a. A further survey of the extent, scale and nature of any potential contamination;
b. A detailed risk assessment of all known site contaminants based on the potential risks to:
    - Human health;
    - Property (existing or proposed) including buildings, crops, livestock, pets, woodland, service lines and pipes;
    - Adjoining land;
    - Ground and surface waters;

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- Ecological systems and
- Archaeological sites and ancient monuments

Reason:- To ensure that risks from land contamination to the future users of the land and neighbouring land are minimised, together with those to controlled waters, property and ecological systems, and to ensure that the development can be carried out safely without unacceptable risks to workers, neighbours and other offsite receptors

37. If the risk assessment approved under Condition 36 indicates that remediation is required for a phase of the development, then no development of that phase shall take place until a detailed remediation scheme to bring the site to a condition suitable for the intended use by removing unacceptable risks to human health, property (existing or proposed including buildings, crops, livestock, pets, woodland, service lines and pipes; buildings), adjoining land and ground and surface waters has been submitted to and approved in writing by the Local Planning Authority for that phase. The scheme must include:

a. A remediation strategy giving full details of remediation objectives and remediation criteria
b. A validation plan providing details of the data that will be collected in order to demonstrate that the all works set out in (a) are complete and identifying any requirements for longer-term monitoring of pollutant linkages, maintenance and arrangements for contingency action.

The scheme must ensure that the site will not qualify as contaminated land under Part 2A of the Environmental Protection Act 1990 in relation to the intended use of the land after remediation.

Reason:- To ensure that risks from land contamination to the future users of the land and neighbouring land are minimised, together with those to controlled waters, property and ecological systems, and to ensure that the development can be carried out safely without unacceptable risks to workers, neighbours and other offsite receptors

38.Prior to bringing each phase of the development agreed under condition 5 into first use, a validation report demonstrating completion of the works set out in the approved remediation strategy (if required) at Condition 37 and the effectiveness of the remediation for that phase shall be submitted to and approved, in writing, by the Local Planning Authority. The report shall include results of sampling and monitoring carried out in accordance with the approved validation plan to demonstrate that the site remediation criteria have been met. It shall also include any plan (a long-term monitoring and maintenance plan) for longer-term monitoring of pollutant linkages,

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maintenance and arrangements for contingency action, as identified in the validation plan and for the reporting of this to the Local Planning Authority.

Reason:- To ensure that risks from land contamination to the future users of the land and neighbouring land are minimised, together with those to controlled waters, property and ecological systems, and to ensure that the development can be carried out safely without unacceptable risks to workers, neighbours and other offsite receptors

39 .In the event that contamination is found at any time when carrying out the approved development that was not previously identified it must be reported in writing immediately to the Local Planning Authority. An investigation and risk assessment must be undertaken in accordance with the requirements of Condition 36 and where remediation is necessary a remediation scheme must be prepared in accordance with the requirement of condition 37 and submitted to and approved in writing of the Local Planning Authority.

Following completion of measures identified in the approved remediation scheme a verification report must be prepared and submitted to and approved in writing by the Local Planning Authority in accordance with condition 38.

Reason:- To ensure that risks from land contamination to the future users of the land and neighbouring land are minimised, together with those to controlled waters, property and ecological systems, and to ensure that the development can be carried out safely without unacceptable risks to workers, neighbours and other offsite receptors

40.No top soil shall be imported to the site until it has been tested for contamination and assessed for its suitability for the proposed development, a suitable methodology for testing this material should be submitted to and agreed by the Local Planning Authority prior to the soils being imported onto site. The methodology should include the sampling frequency, testing schedules, criteria against which the analytical results will be assessed (as determined by the risk assessment) and source material information. The analysis shall then be carried out and validatory evidence submitted to and approved in writing to by the Local Planning Authority.

Reason:- To ensure that risks from land contamination to the future users of the land and neighbouring land are minimised, together with those to controlled waters, property and ecological systems, and to ensure that the development can be carried out safely without unacceptable risks to workers, neighbours and other offsite receptors

Trees/Landscaping

41.A full Arboricultural Impact Assessment prepared in accordance with guidance in British Standard 5837:2012 *Trees in Relation to Design, Demolition and*

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Construction– Recommendations shall accompany the first reserved matters application submitted for each phase agreed under Condition 5 and shall address any potential impact on trees arising from construction and operational use of the development hereby approved including access roads, car parks, lodges, administrative, service and leisure activity related structures and facilities in that phase.
Reason:- In the interests of tree protection in accordance with Policy NC1 of the Core Strategy

42. Before the commencement of any phase of the development agreed under Condition 5 (including any demolition, site clearance, stripping or site establishment) temporary protective fencing and advisory notices for the protection of the existing trees to be retained in that phase shall be erected in accordance with guidance in British Standard 5837:2012 *Trees in Relation to Design, Demolition and Construction – Recommendations*, and shall be retained in position for the duration of the period that development takes place in that phase. Within the fenced areas there shall be no excavation, changes in ground levels, installation of underground services, provision of hard surfacing, passage of vehicles, storage of materials, equipment or site huts, tipping of chemicals, waste or cement, or lighting of fires unless otherwise agreed by the LPA..
Reason:- In the interests of tree protection in accordance with Policy NC1 of the Core Strategy

43. No trees, shrubs or hedgerows shall be removed other than those:-
a) whose removal is directly required to accommodate the development as subsequently approved under a detailed reserved matters or full planning application and;
b) those whose removal is in accordance with any landscaping scheme or habitat and landscape management and development plan approved in connection with the development hereby approved.

There shall be no removal of any trees, shrubs or hedgerows during the bird nesting season (March to August inclusive), unless otherwise agreed by the Local Planning Authority
Reason: In the interests of tree protection in accordance with Policy NC1 of the Core Strategy

44. The first reserved matters application submitted for the site shall be accompanied by a comprehensive Structural Landscape Strategy, giving details of proposed creation, maintenance, management and development, including timescales and delivery mechanisms, for all structural landscaping across the site. The Structural Landscape Strategy shall be in general accordance with the mitigation and enhancement measures relating to landscaping set out in Chapter 8 (Landscape and Visual) and Chapter 9 (Ecology) of the Environmental Statement. The Strategy shall

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include for a minimum 20 year maintenance and management operations including timetabled detailed management prescriptions for all structural landscaping throughout the site, to be monitored and reviewed every 5 years. The development phases shall thereafter be carried out in accordance with the agreed details and timescales.
Reason: In the interests of the character and appearance of the area in accordance with Polices NC1 and DC3 of the Core Strategy and advice in the Framework

Waste

45. No phase of the development agreed under Condition 5 shall commence until a Site Waste Management Plan for that phase has been submitted to and approved in writing by the Local Planning Authority. The development phase shall thereafter be carried out in accordance with the approved plan.
Reason: To protect the amenities of the area and in the interests of securing sustainable development.

Dust

46. No phase of the development approved under Condition 5, including demolition, site stripping and preparatory work shall commence until a full Dust Management Plan and method to monitor the effectiveness for any proposed dust mitigation measures together with a timetable for implementation for that phase has been submitted to and agreed in writing the Local Planning Authority. The Dust Management Plan shall be in accordance with the submitted dust assessment/ mitigation methodologies submitted in Chapter 12 of the Environmental Statement and include specific measures for controlling dust on areas presumed to be contaminated. The development phase shall thereafter be carried out in accordance with the agreed details and timetable.
Reason: In the interests of the protection of residential amenity.

Archaeology/Heritage

47. No phase of the development agreed under Condition 5 shall be commenced, including demolition and site clearing, until an Archaeological Watching Brief, Walkover and Earthwork Survey specification for that phase has been submitted to and approved in writing by the Local Planning Authority. The specification shall define the area of archaeological interest to be subject to the investigation and provide details of the programme of archaeological works to be carried out within this area, including post-excavation reporting and appropriate publication and interpretation. The Scheme shall thereafter be implemented in full in accordance with the approved details
Reason:- In the interests of protecting the historic environment

48. Prior to any part of the development hereby approved coming into use an Interpretation board shall be erected on or close to the site of the former Whiston

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Eaves Farmhouse and Stable block on Whiston Eaves Lane. The siting, size, design, materials and wording for the board shall be previously submitted to and approved in writing by the Local Planning Authority.
Reason:- In the interests of the historic environment

Informative

1. The Council has sought (negotiated) a sustainable form of development which complies with the provisions of paragraphs 186-187 of the NPPF

2. This permission should be read in conjunction with the corresponding Unilateral Undertaking dated 26th October 2016

3. Condition 22 above requiring off-site highway works shall require a Major Works Agreement with Staffordshire County Council and the applicant is therefore requested to contact Staffordshire County Council in respect of securing the Agreement. The link below provides a further link to a Major Works Agreement Information Pack and an application form for the Major Works Agreement. Please complete and send to the address indicated on the
application form which is Network Management Unit, Staffordshire County Council, Staffordshire Place 1, Wedgwood Building, Tipping Street, Stafford, ST16 2DH (or email to nmu@staffordshire.gov.uk)
http://www.staffordshire.gov.uk/transport/staffshighways/licences/

4. Under the Land Drainage Act 1991, Consent will be required for the construction of any mill dam, weir, or like obstruction to flow. Within Staffordshire the County Council is now responsible for the regulation of these activities where they affect ordinary watercourses Please contact: Hannah Hogan, Flood Risk Planning & SuDs Officer via e-mail on hannah.hogan@staffordshire.gov.uk or via telephone: 01543 334583 if you would like to discuss this response.

5. Please be aware that the responsibility for safe development and secure occupancy of the site rests with the developer.

- A Demolition or refurbishment asbestos survey and risk assessment should be carried out prior to the demolition of the existing buildings. The enforcing authority for this type of work is the Health and Safety Executive (HSE) and it is recommended that you contact them directly to discuss their requirements: http://www.hse.gov.uk/
- Any approved noise scheme and measurements should pay due regard to British Standard BS8233: Sound insulation and noise reduction for buildings (Code of Practice) and the Building Regulations 2010 Document E or other appropriate guidance.

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- Advice on controlling flies and light can be found in: Statutory Nuisance from Insects and Artificial Light (defra 2005) available as a free download http://archive.defra.gov.uk/environment/quality/local/legislation/cnea/documents/statnuisance.pdf
- During any demolition and construction activities (including landscaping) the contractor should take all reasonable steps to prevent dust formation and prevent any dust formed from leaving the site boundary.
  - The control of dust and emissions from construction and demolition Best Practice Guidance, produced by the greater London councils http://www.london.gov.uk/sites/default/files/BPGcontrolofdustandemissions.pdf
  - Building Research Establishment Guidance Document 'Control of Dust from Construction and Demolition Activities' (BR456)
  - If required, contamination risk assessments shall be carried out in accordance with UK policy and with the procedural guidance relating to the contaminated land regime. Submission of reports should also be made to the Environment Agency for comment with regard to their remit to protect ground and surface waters from pollution and their obligations relating to contaminated land.
  - The Local Planning Authority will determine the acceptability of reports on the basis of the information made available to it. Please be aware that should a risk of harm from contamination remain post development, where the applicant had prior knowledge of the contamination, the applicant is likely to be liable under Part II (a) of the Environmental Protection Act 1990 and as such become and "appropriate person". In this event the applicant will be lawfully responsible to remove the risk posed by the contamination.
  - Equally if during any site works a pathway for any contaminant on site is created and humans, waters, property or ecological systems are exposed to this, the applicant or those acting on behalf of the applicant will be liable under part II (a) of the Environmental Protection Act 1990 if the risks are not adequately addressed during the site redevelopment.
  - During investigation and remediation works the applicant and those acting on behalf of the applicant must ensure that site workers, public property and the environment are protected against noise, dust, odour and fumes
  - The applicant is advised that should there be a requirement as part of the Remediation Strategy to treat, reuse or remove contaminated material on the site, the Environment Agency must be consulted, as these activities may need to be licensed or permitted. Contaminated materials identified for removal off site must be disposed of in an appropriately licensed landfill site.

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- Staffordshire Moorlands District Council is keen to liaise with all stakeholders involved in this application. As such, we recommend that a proposed scope of works is forwarded to the Environmental Protection Department and agreed in principle prior to site investigation works being undertaken. The Environmental Protection Department is also prepared to review draft copies of reports prior to final submission to the Planning Department in order to ensure that works undertaken are sufficient to discharge the contaminated land conditions.

X B.J. Haywood

Signed by: Haywood, Ben

On behalf of Staffordshire Moorlands District Council

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NOTES

1. Approval under the Building Regulations may also be required. Advice in this respect can be obtained by contacting the Councils Building Control Section at buildingcontrol@staffsmoorlands.gov.uk

2. Where a vehicle is often driven across a grass verge or kerbed footway to and from premises adjoining a highway, the occupier of the premises may, be required to pay the cost of construction of a crossing, and/or may be required to comply with conditions, imposed by the Authority. You should contact the Highway Authority at Staffordshire County Council.

3. This consent is granted subject to conditions and it is the owner(s) and the person(s) responsible for the implementation of the development who will be fully responsible for their compliance throughout the development and beyond. An application will need to be made to discharge conditions and a fee is payable with the application. For more details please refer to our web site: www.staffsmoorlands.gov.uk If there is a condition that requires work to be carried out or details to be approved prior to the commencement of the development this is called a "condition precedent". The following should be noted with regards to conditions precedent:
   (a) If a condition precedent is not complied with, the whole of the development will be unauthorised and you may be liable to enforcement action.
   (b) Where a condition precedent is breached and the development is unauthorised, the only way to rectify the development is the submission of a new application.

4. Other conditions on this permission must also be complied with. Failure to comply with any condition may render the owner(s) and the person(s) responsible for the implementation of the development liable to enforcement action.

5. If you are aggrieved by the decision of your local planning authority to refuse permission for the proposed development or to grant it subject to conditions, then you can appeal to the Secretary of State under section 78 of the Town and Country Planning Act 1990.

6. If the decision to refuse planning permission is for a householder application, and you want to appeal against your local planning authority's decision then you must do so within 12 weeks of the date of this notice.

7. If this is a decision to refuse planning permission for a minor commercial application, and you want to appeal against your local planning authority's decision then you must do so within 12 weeks of the date of this notice.

8. If this is a decision to refuse express consent for the display of an advertisement, if you want to appeal against your local planning authority's decision then you must do so within 8 weeks of the date of receipt of this notice.

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9. If you want to appeal against your local planning authority's decision for any other type of development, including listed building consents then you must do so within 6 months of the date of this notice Appeals must be made using a form which you can get from the Secretary of State at Temple Quay House, 2 The Square, Temple Quay, Bristol BS1 6PN (Tel: 0303 444 5000) or online at https://acp.planninginspectorate.gov.uk

10. The Secretary of State can allow a longer period for giving notice of an appeal, but will not normally be prepared to use this power unless there are special circumstances which excuse the delay in giving notice of appeal. The Secretary of State need not consider an appeal if it seems to the Secretary of State that the local planning authority could not have granted planning permission for the proposed development or could not have granted it without the conditions they imposed, having regard to the statutory requirements, to the provisions of any development order and to any directions given under a development order.

11. If either the local planning authority or the Secretary of State refuses permission to develop land or grants it subject to conditions, the owner may claim that he can neither put the land to a reasonably beneficial use in its existing state nor render the land capable of a reasonably beneficial use by the carrying out of any development which has been or would be permitted. In these circumstances, the owner may serve a purchase notice on the Council (District Council, London Borough Council or Common Council of the City of London) in whose area the land is situated. This notice will require the Council to purchase his interest in the land in accordance with the provisions of Part VI of the Town and Country Planning Act 1990.

Appendix 8.1: Views and Photomontages

Introduction

In accordance with the selected views as identified in Figure 8.8, the document is divided into **two** main sections:

1. Key Views. This includes the views which were assessed to have the greatest potential for views of the development and as such were tested using wirelines and photomontages views to assess impact.

The photomontages use a wireline outline to show the illustrative masterplan, and a block model where proposed buildings are visible. An wireline outline of maximum parameters for the hub has also been provided where relevant to the view.

2. Potential long distance views. Views that were initially assessed as having potential visibility, but following site inspection have been found to have no view of the development. Site photography is included to demonstrate this.

Verified Views Methodology

PHOTOGRAPHY

Virtual Planit commissioned Gary Beal at Vantage Point Photos for all of the photography. Gary has worked on many verified projects and has over 25 years of professional experience. The aim with the photography is to create an image similar to that perceived by the human eye. The lens and camera configuration can affect this perception but it is critical to maintain data accuracy especially if the proposed development is a considerable distance from the view position.

The equipment used in this instance was: Canon EOS 5D Mark II. The angle of view in landscape orientation is 70 degrees. Each scene was photographed using a survey pin or suitable marker to accurately identify the view location. A plumb line was used to ensure that the centre of the camera lens was directly over the surveyed viewing position at a height of 1.65-1.7 metres. The metadata of each image records the exact time and date of each image allowing accurate lighting conditions to be recreated in the computer model as required. Further information is also recorded such as the camera, lens, and exposure and aperture settings.

SURVEY

Virtual Planit have a long standing relationship with Powers, experienced RICS surveyors, who are familiar and experienced with verified work.

In preparation for the surveys, a series of key points were identified in each of the photographs used to verify the shots. Care is taken to ensure a good spread of points including points close to the camera, points near the target development, together with points at ground and roof level, and points across the width of the image. A wide spread enables a more thorough and accurate analysis. The surveyor would then add a further series of additional reference points, in order to provide a comprehensive range of point reference across the photograph. It is these 2d points on the photograph that are surveyed to give each a 3 dimensional co-ordinate value.

The points were surveyed by a professional survey team using GPS. The survey points are related back to the Ordnance Survey National Grid - selected as it is the most widely used and also allows captured data to be incorporated into other digital products.

3D MODEL AND CAMERA MATCHING.

Virtual Planit were supplied with a digital 3D model of the proposed scheme by the architect. The model is related back to the Ordnance Survey grid and absolute (AOD) heights.

The same 3D model is used as the basis for each of the photographs, and was certified as being correct by the architect.

This 3D model was precisely aligned to the survey information using proprietary 3D modelling and rendering software, using the following information for each of the views.

- Specific details of the camera and lens used.
- The photograph, rotated if necessary to ensure the horizon line is level
- The surveyed viewpoint co-ordinates.
- The surveyed co-ordinates of points on existing buildings or immovable objects within the photograph.
- The 3D model of the proposed scheme.

The information listed above is used to situate the virtual camera in each case, such that the 3D model, survey points and model align exactly with the photograph.

RENDERING

A render is a technical term referring to the process of creating a two-dimensional output image from a 3D model. Using the virtual camera described previously, the 3D modelling and rendering software produces a render of the proposed building.

Where the required output is fully rendered, the output image from the modelling and rendering software displays the predetermined materials, textures and lighting. All materials specifications, textures and daylighting are applied to model prior to rendering. After rendering the fully rendered building is combined with the photograph in proprietary digital ‘paint’ software (again Adobe Photoshop) to produce the photomontage image.

Due to the insignificant screening around the site from land form and vegetation, the majority of the photomontages utilise a ‘wireline’, or outline of the proposals that is accurately positioned on the image. These are drawn around the 3D forms prepared above, and are helpful in showing where development lies within the view - and which elements are screening the proposed development. Wirelines have been coloured to reflect which quarry they are located in - to aid orientation.

In order to achieve the most photorealistic result where development is visible, colour correction adjustments may be made to the rendered image. For example hue, saturation and brightness values of the rendered image may be adjusted to better match the colour tones of the photograph. For example, poor air quality at the time of photography may necessitate the rendered image to be ‘degraded’ to ensure that it behaves visually as the other buildings within the photograph. This is an iterative process and is reliant on the skill of the artist and good communication between the artist and the architect to ensure their vision for the material and texture qualities is maintained. The design team then signed off on the appearance of the scheme in the views.

‘Masks’ are created where the line of sight to the proposed scheme is interrupted by foreground buildings or elements such as lampposts, vehicles and street furniture.

Key Views

View 1 Existing - Photograph from June 2016 ES
View from Staffordshire Moorlands Walk public footpath

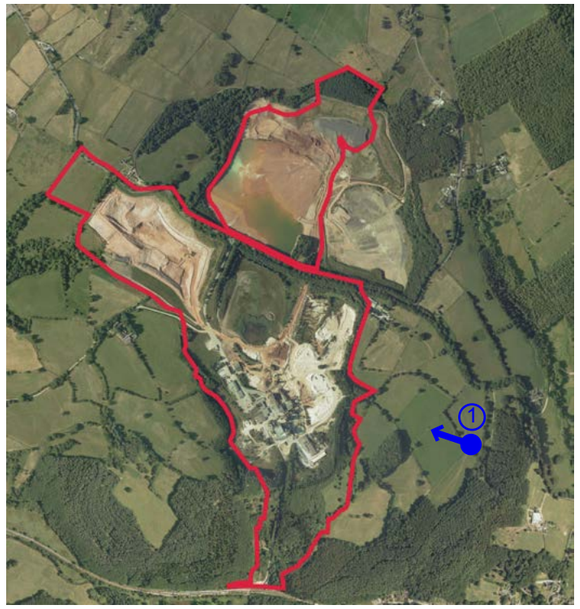


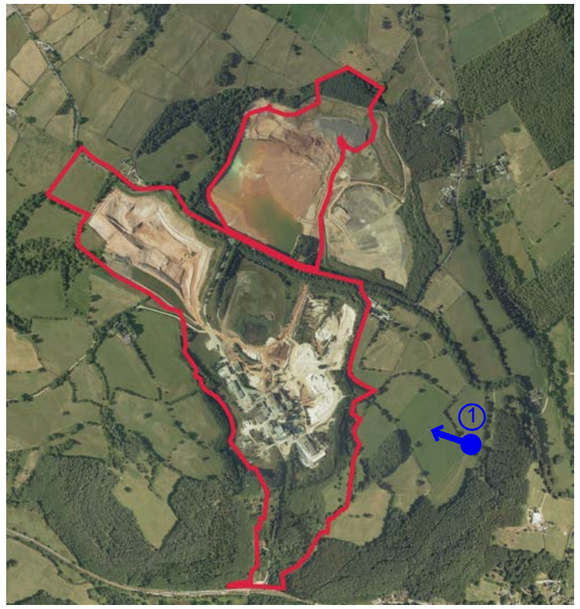
Image Information

Date: 2014-06-20
Time: 11:16:20
Latitude , Longitude (decimal)

Camera: Canon EOS SD Mark II
Focal Length: 35mm
Lens: EF28-70 f/2.8L USM

*viewing distance: 500mm

View 1 Proposed Photomontage - from June 2016 ES
View from Staffordshire Moorlands Walk public footpath



approximate extent of proposed solar farm - (screened from view)

*viewing distance: 500mm

View 1 Updated Existing Photograph - March 2024
View from Staffordshire Moorlands Walk public footpath

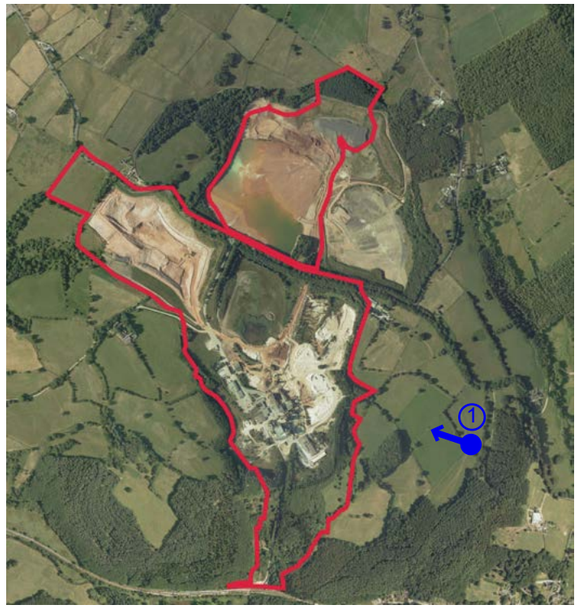


Image Information

Date: 2024-03-21
Time: 09:19:41
Latitude , Longitude (decimal)
53.007124 , -1.9236930

Camera: Canon EOS R5
Focal Length: 28mm
Lens: EF16-35 f/4L IS USM

*viewing distance: 500mm

View 2 Existing - Photograph from June 2016 ES
View from Crowtrees Footpath

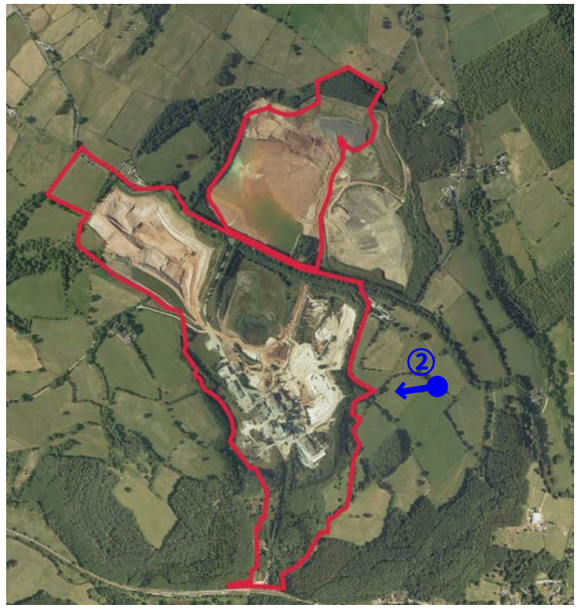


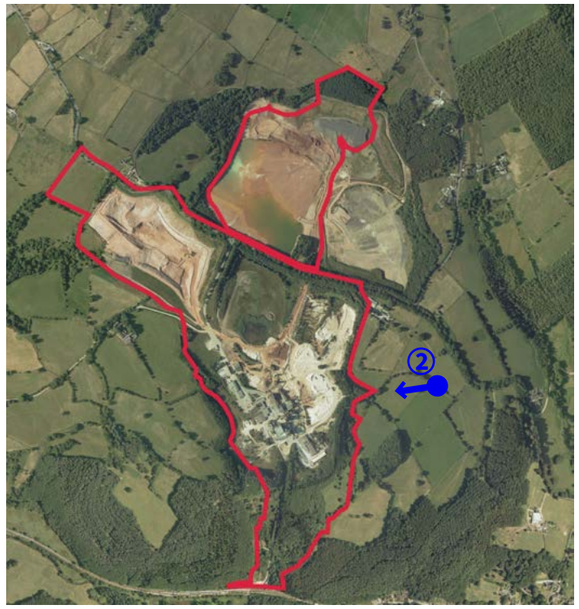
Image Information

Date: 2014-06-20
Time: 11:37:55
Latitude , Longitude (decimal)

Camera: Canon EOS SD Mark II
Focal Length: 35mm
Lens: EF28-70 f/2.8L USM

*viewing distance: 500mm

View 2 Proposed Photomontage - from June 2016 ES
View from Crowtrees Footpath



approximate extent of proposed solar farm - (screened from view)

*viewing distance: 500mm

View 2 Updated Existing Photograph - March 2024
View from Crowtrees Footpath

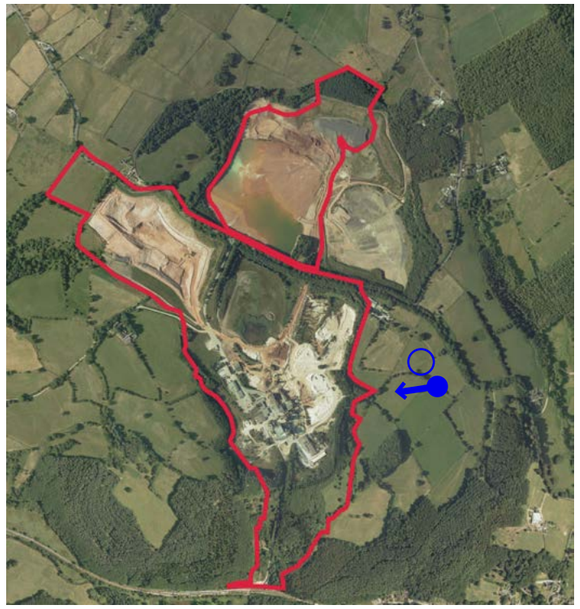


Image Information

Date: 2024-03-21
Time: 09:39:48
Latitude , Longitude (decimal)
53.007124 , -1.9236930

Camera: Canon EOS R5
Focal Length: 50mm
Lens: EF24-70mm f/4L IS USM

*viewing distance: 500mm

View 3 Existing - Photograph from June 2016 ES
View from Site Entrance, Whiston Eaves

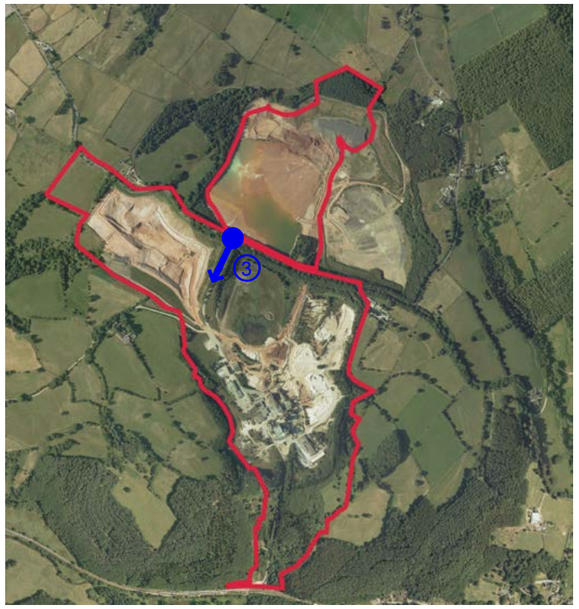


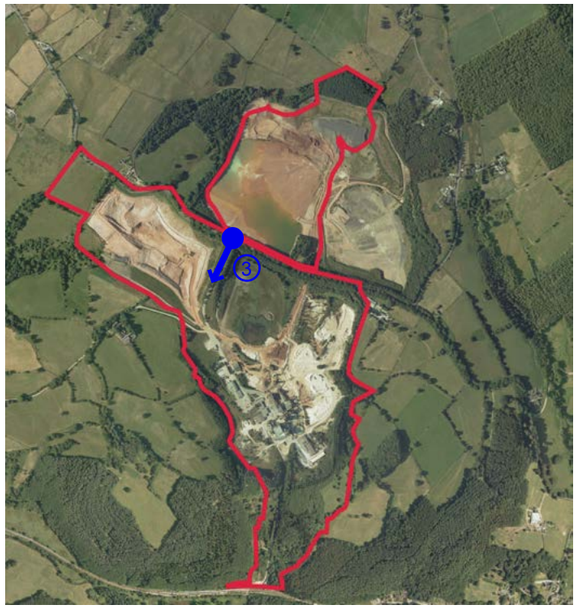
Image Information

Date: 2014-06-20
Time: 10:16:30
Latitude , Longitude (decimal)

Camera: Canon EOS SD Mark II
Focal Length: 35mm
Lens: EF28-70mm f/2.8L USM

*viewing distance: 500mm

View 3 Proposed Photomontage - from June 2016 ES
View from Site Entrance, Whiston Eaves



*viewing distance: 500mm

View 3 Updated Existing Photograph - March 2024
View from Site Entrance, Whiston Eaves

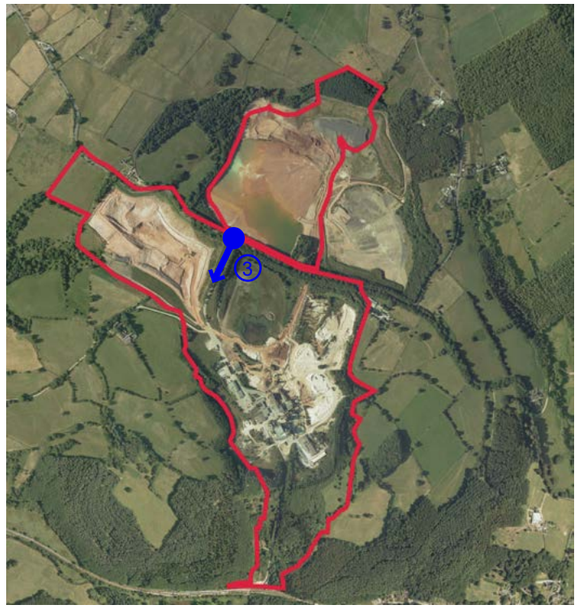


Image Information

Date: 2024-03-13
Time: 11:49:49
Latitude , Longitude (decimal)
53.013030 , -1.9346673

Camera: Canon EOS R5
Focal Length: 35mm
Lens: EF16-35mm f/4L IS USM

*viewing distance: 500mm

View 4 Existing - Photograph from June 2016 ES
View from Eaves Lane, Crowtrees, South

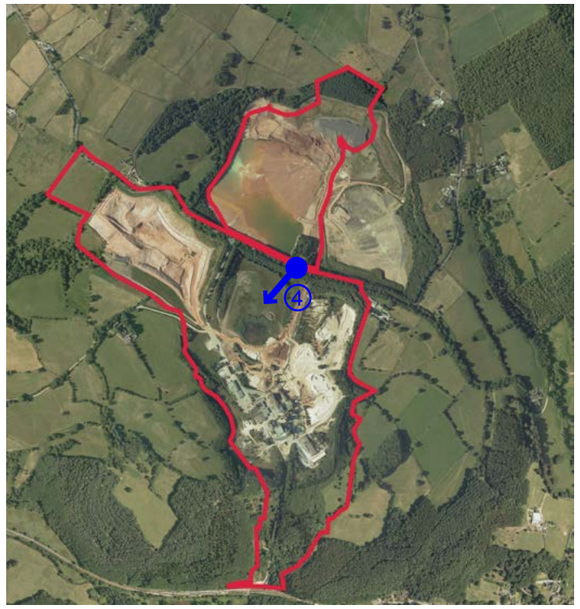


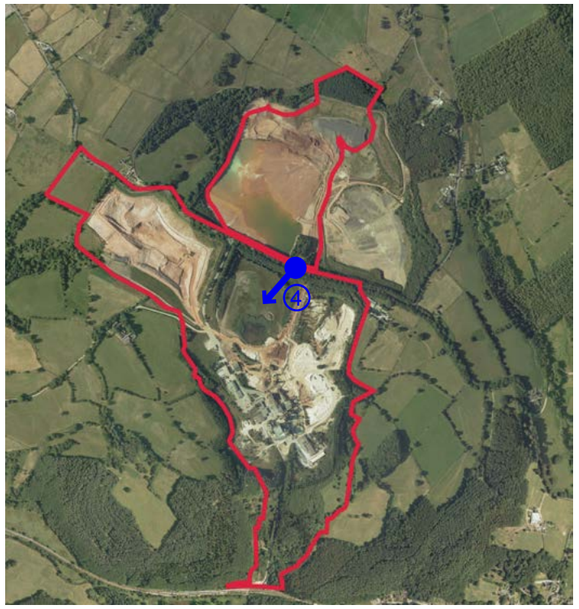
Image Information

Date: 2014-06-20
Time: 10:31:50
Latitude , Longitude (decimal)

Camera: Canon EOS SD Mark II
Focal Length: 35mm
Lens: EF28-70mm f/2.8L USM

*viewing distance: 500mm

View 4 Proposed Photomontage - from June 2016 ES
View from Eaves Lane, Crowtrees, South



*viewing distance: 500mm

View 4 Updated Existing Photograph - March 2024
View from Eaves Lane, Crowtrees, South

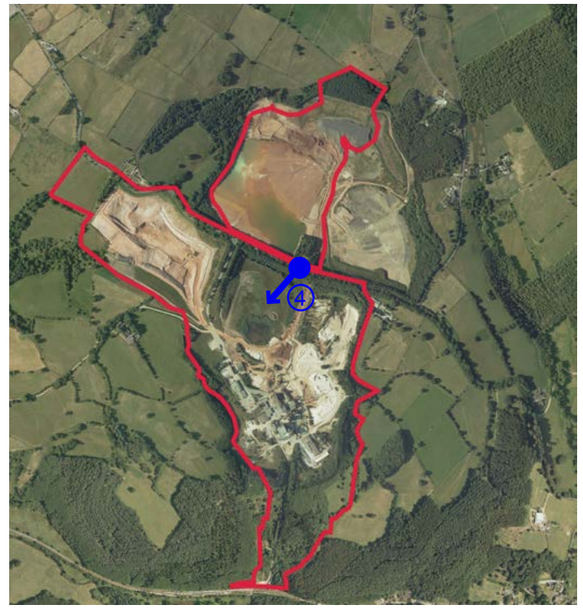


Image Information

Date: 2024-03-13
Time: 12:31:26
Latitude , Longitude (decimal)
53.012253 , -1.9321212

Camera: Canon EOS R5
Focal Length: 28mm
Lens: EF16-35mm f/4L IS USM

*viewing distance: 500mm

View 5 Existing - Photograph from June 2016 ES
View from Eaves Lane, Crowtrees, North

Image Information

Date: 2014-06-20
Time: 10:44:07
Latitude , Longitude (decimal)

Camera: Canon EOS SD Mark II
Focal Length: 35mm
Lens: EF28-70mm f/2.8L USM

*viewing distance: 500mm

View 5 Proposed Photomontage - from June 2016 ES
View from Eaves Lane, Crowtrees, North

approximate extent of proposed solar farm - (screened from view)

*viewing distance: 500mm

View 5 Updated Existing Photograph - March 2024
View from Eaves Lane, Crowtrees, North

Image Information

Date: 2024-03-13
Time: 12:17:07
Latitude , Longitude (decimal)
53.012236 , -1.9320052

Camera: Canon EOS R5
Focal Length: 28mm
Lens: EF16-35mm f/4L IS USM

*viewing distance: 500mm

View 6 Existing - Photograph from June 2016 ES
View from Cottage Farm, Eaves Lane

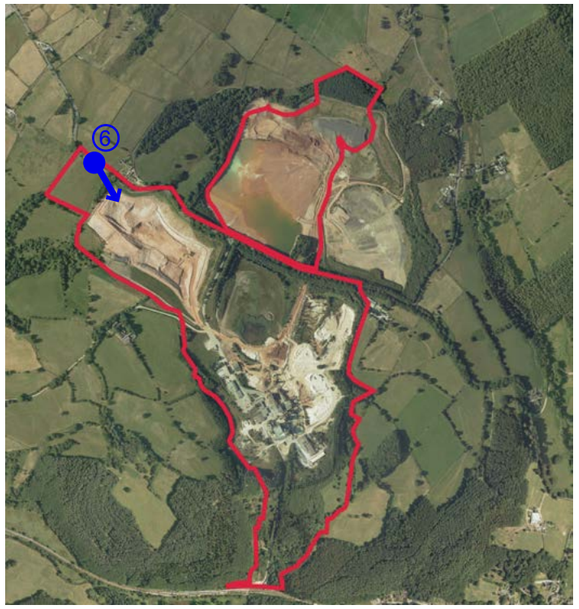


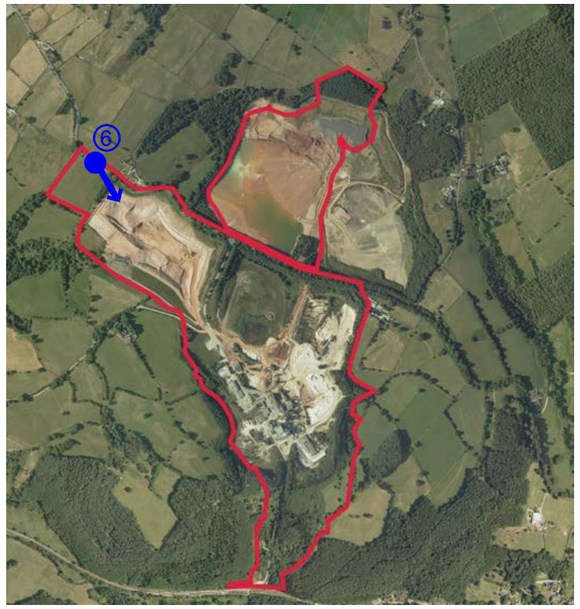
Image Information

Date: 2014-06-20
Time: 09:57:20
Latitude , Longitude (decimal)

Camera: Canon EOS SD Mark II
Focal Length: 35mm
Lens: EF28-70mm f/2.8L USM

*viewing distance: 500mm

View 6 Proposed Photomontage - from June 2016 ES
View from Cottage Farm, Eaves Lane



approximate extent of proposed solar farm - (screened from view)

*viewing distance: 500mm

View 6 Updated Existing Photograph - March 2024
View from Cottage Farm, Eaves Lane

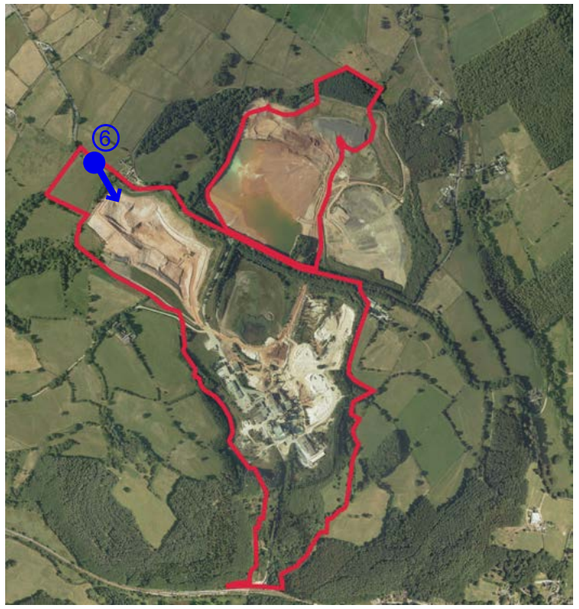


Image Information

Date: 2024-03-21
Time: 15:01:48
Latitude , Longitude (decimal)
53.014354 , -1.9394369

Camera: Canon EOS R5
Focal Length: 35mm
Lens: EF16-35mm f/4L IS USM

*viewing distance: 500mm

View 15 Existing - Photograph from June 2016 ES
View from Blackley Lane

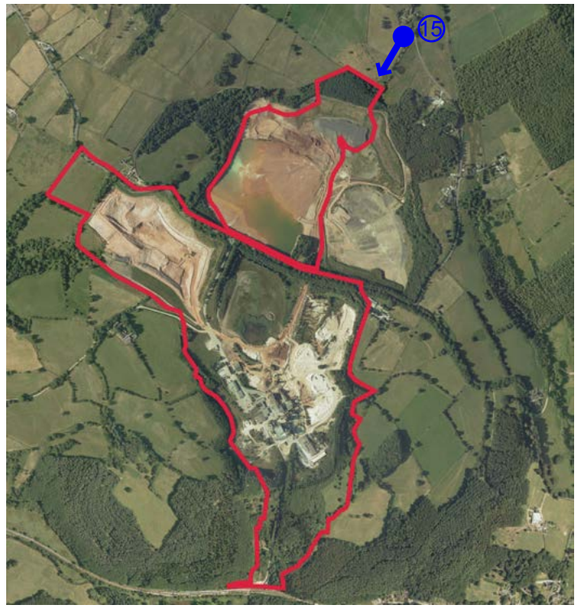


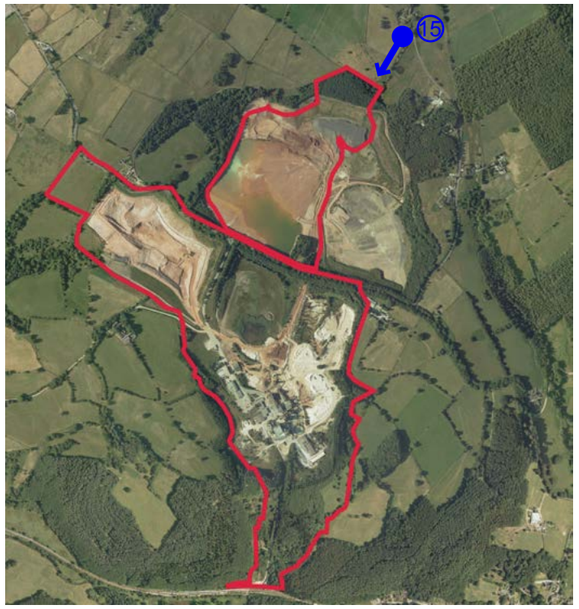
Image Information

Date: 2014-06-20
Time: 09:35:35
Latitude , Longitude (decimal)

Camera: Canon EOS SD Mark II
Focal Length: 34mm
Lens: EF28-70mm f/2.8L USM

*viewing distance: 500mm

View 15 Proposed Photomontage - from June 2016 ES
View from Blackley Lane



*viewing distance: 500mm

View 15 Updated Existing Photograph - March 2024
View from Blackley Lane

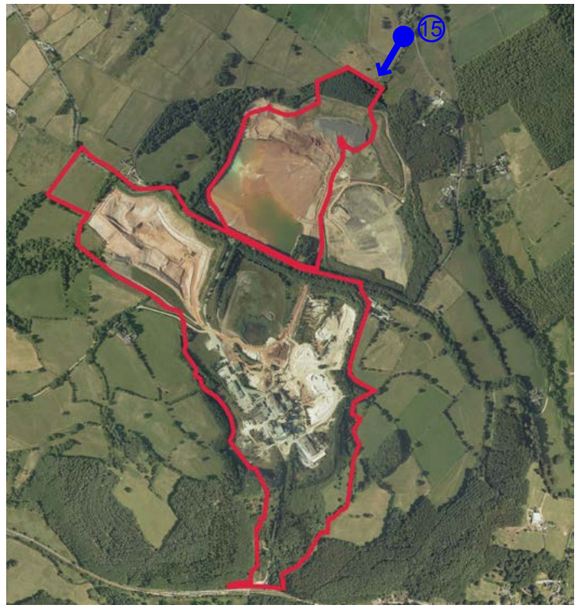


Image Information

Date: 2024-03-21
Time: 08:54:04
Latitude , Longitude (decimal)
53.017691 , -1.9274314

Camera: Canon EOS R5
Focal Length: 35mm
Lens: EF16-35mm f/4L IS USM

*viewing distance: 500mm

View 16 Existing - Photograph from June 2016 ES
View from Hawksmoor Wood

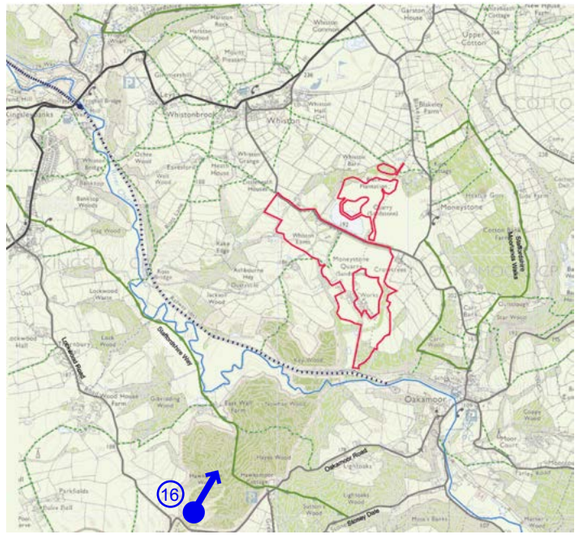


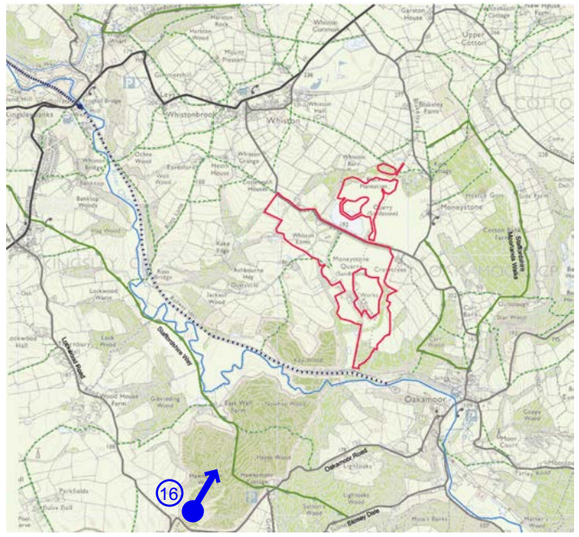
Image Information

Date: 2015-03-18
Time: 14:05:59
Latitude , Longitude (decimal)

Camera: Canon EOS SD Mark II
Focal Length: 50mm
Lens: EF50mm f/1.4 USM

*viewing distance: 500mm

View 16 Proposed Photomontage - from June 2016 ES
View from Hawksmoor Wood



*viewing distance: 500mm

View 16 Updated Existing Photograph - March 2024
View from Hawksmoor Wood

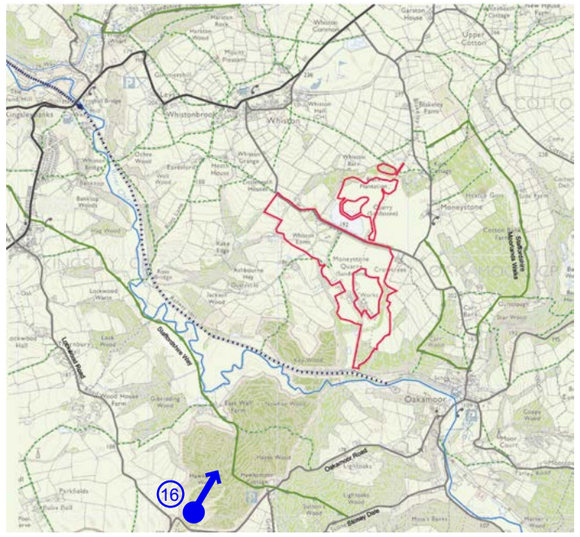


Image Information

Date: 2024-03-21
Time: 10:47:50
Latitude , Longitude (decimal)
52.993268 , -1.9525060

Camera: Canon EOS R5
Focal Length: 28mm
Lens: EF16-35mm f/4L IS USM

*viewing distance: 500mm

View 17 Existing - Photograph from June 2016 ES
View from public footpath adjacent to Little Eaves Farm

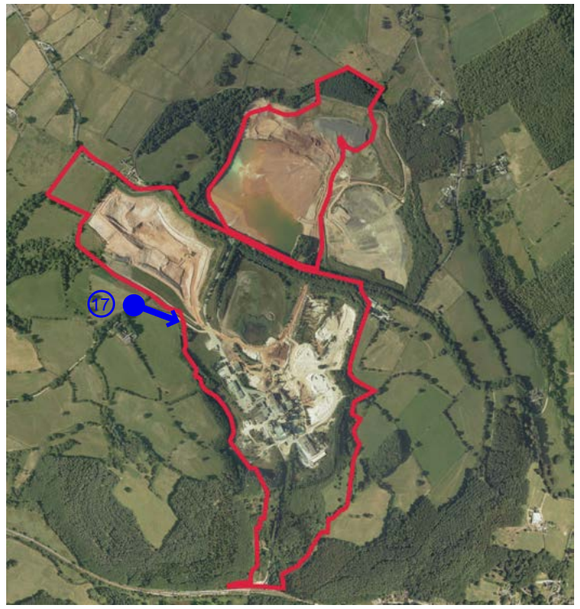


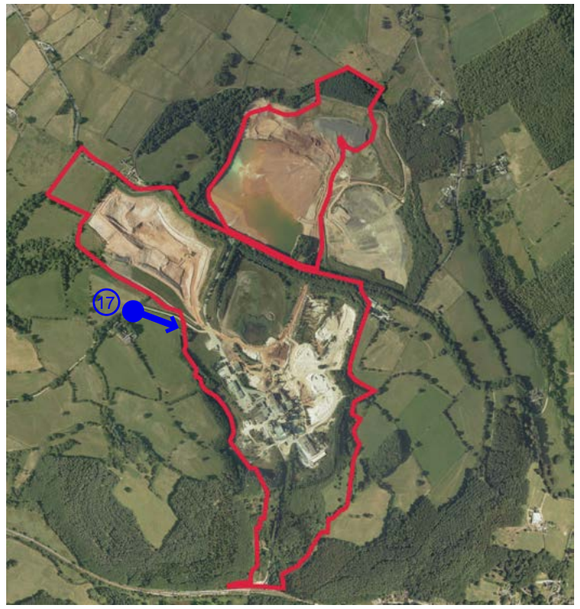
Image Information

Date: 2015-03-18
Time: 15:19:16
Latitude , Longitude (decimal)

Camera: Canon EOS SD Mark II
Focal Length: 50mm
Lens: EF50mm f/1.4 USM

*viewing distance: 500mm

View 17 Proposed Photomontage - from June 2016 ES
View from public footpath adjacent to Little Eaves Farm



*viewing distance: 500mm

View 17 Updated Existing Photograph - March 2024
View from public footpath adjacent to Little Eaves Farm

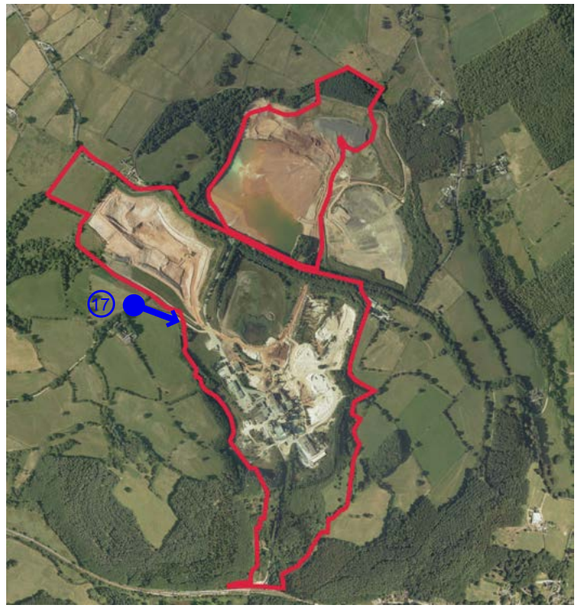


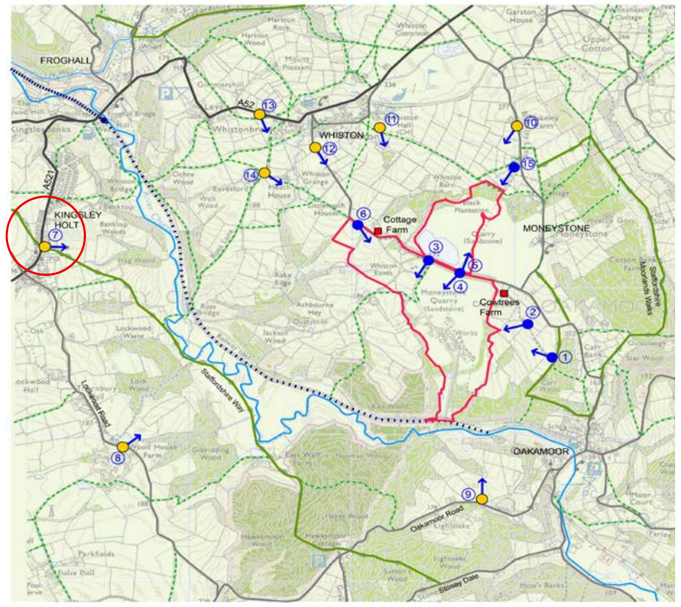
Image Information

Date: 2024-03-13
Time: 11:35:20
Latitude , Longitude (decimal)
53.011130 , -1.9390427

Camera: Canon EOS R5
Focal Length: 28mm
Lens: EF16-35mm f/4L IS USM

*viewing distance: 500mm

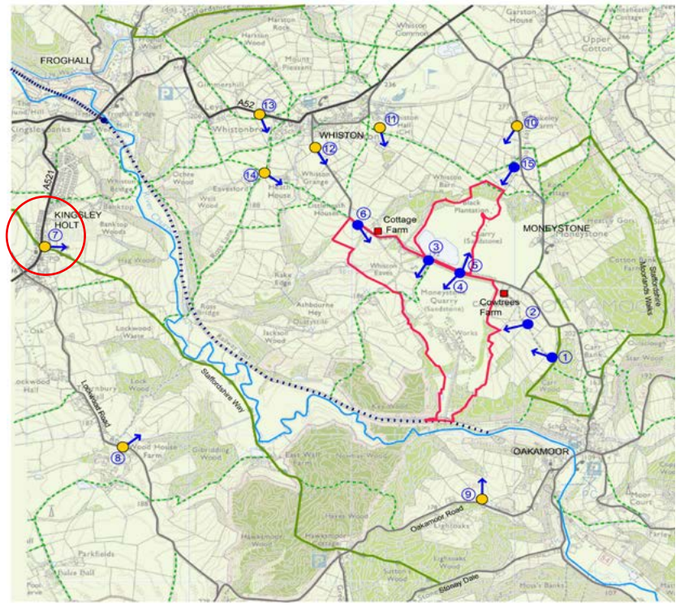
Potential Long Distance Views



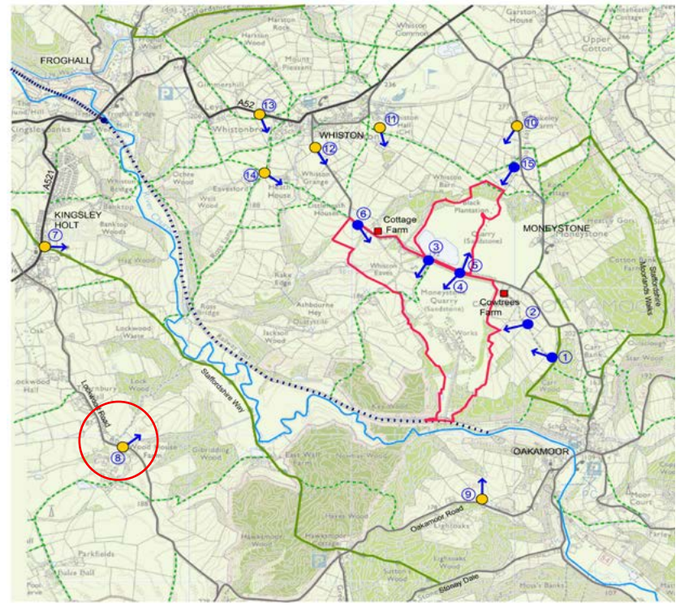
View 7 Existing - Photograph from June 2016 ES*
View from A521, Kingsley Holt

*No photomontage produced - proposed view predicted to have negligible visual impact due to distance between viewpoint & site.

View 7 Updated Existing View - March 2024*
View from A521, Kingsley Holt



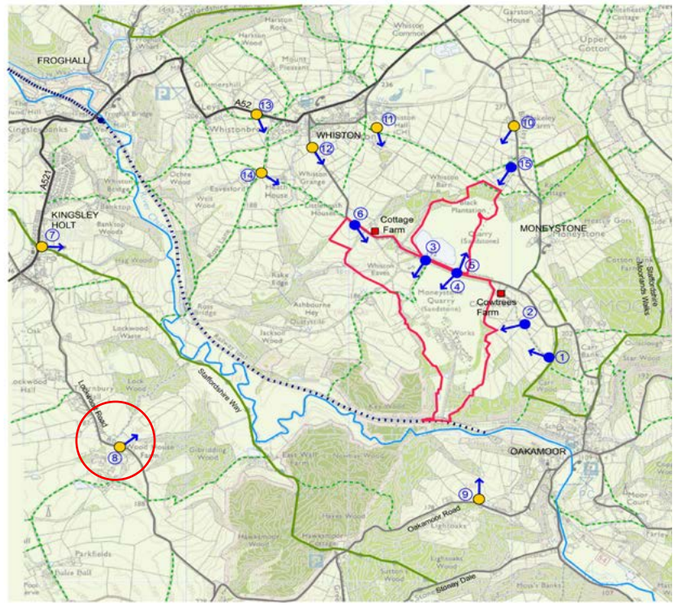
*No photomontage produced - proposed view predicted to have negligible visual impact due to distance between viewpoint & site.



Approximate location of site

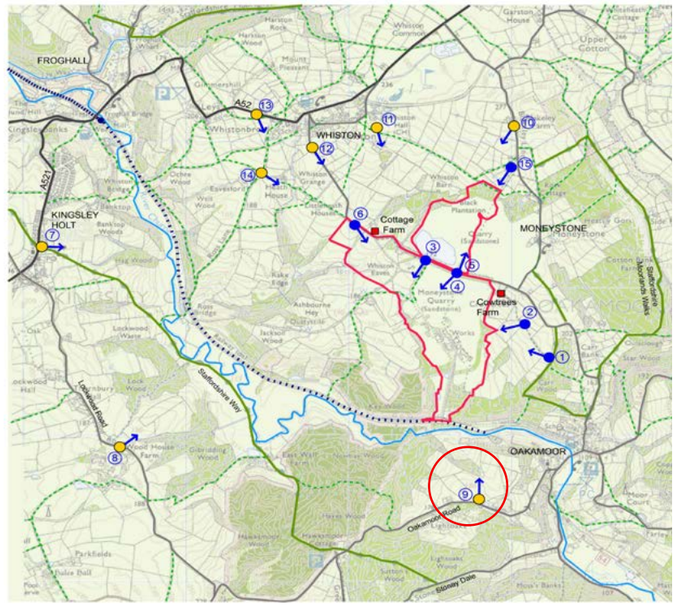
View 8 Existing - Photograph from June 2016 ES*
View from Wood House Farm, Lockwood Road

*No photomontage produced - proposed view predicted to have a benign visual impact due to distance between viewpoint & site.



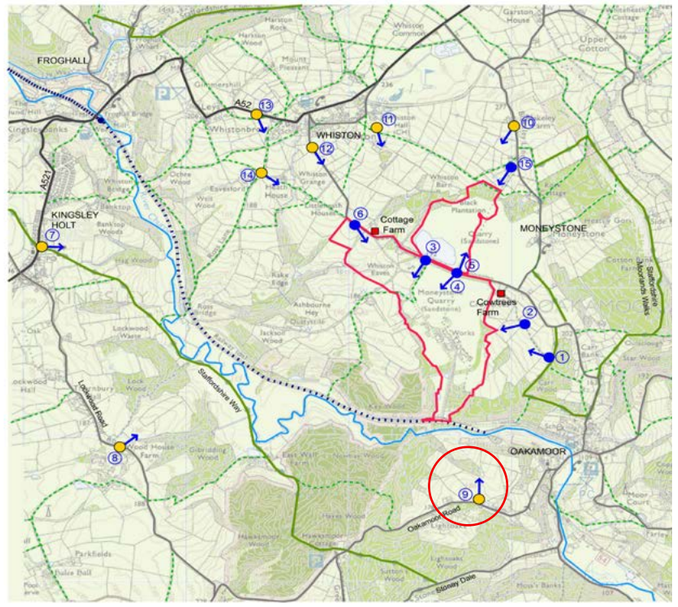
View 8 Updated Existing View - March 2024*
View from Wood House Farm, Lockwood Road

*No photomontage produced - proposed view predicted to have a benign visual impact due to distance between viewpoint & site.



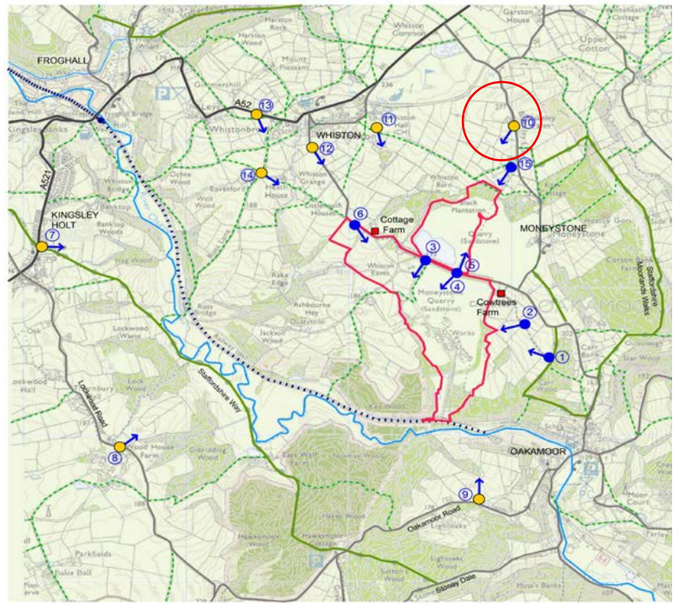
View 9 Existing - Photograph from June 2016 ES*
View from Oakamoor Road

*No photomontage produced - proposed view predicted to have a benign visual impact due to distance between viewpoint & site.



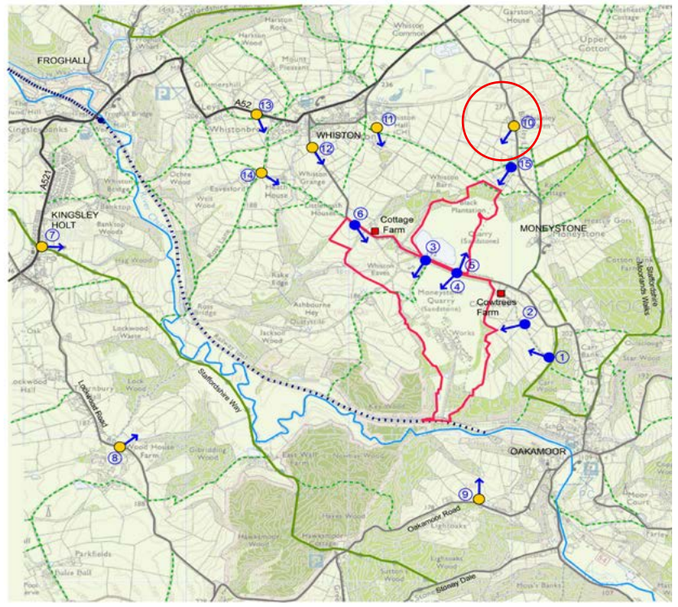
View 9 Updated Existing View - March 2024*
View from Oakamoor Road - March 2024

*No photomontage produced - proposed view predicted to have a benign visual impact due to distance between viewpoint & site.



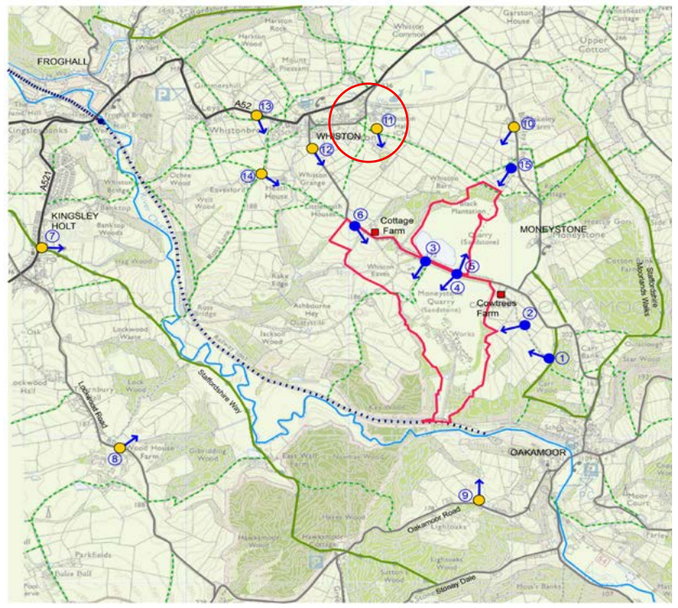
*No photomontage produced - proposed view predicted to have negligible visual impact due to distance between viewpoint & site.

View 10 Existing - Photograph from June 2016 ES*
View from Blakeley Lane



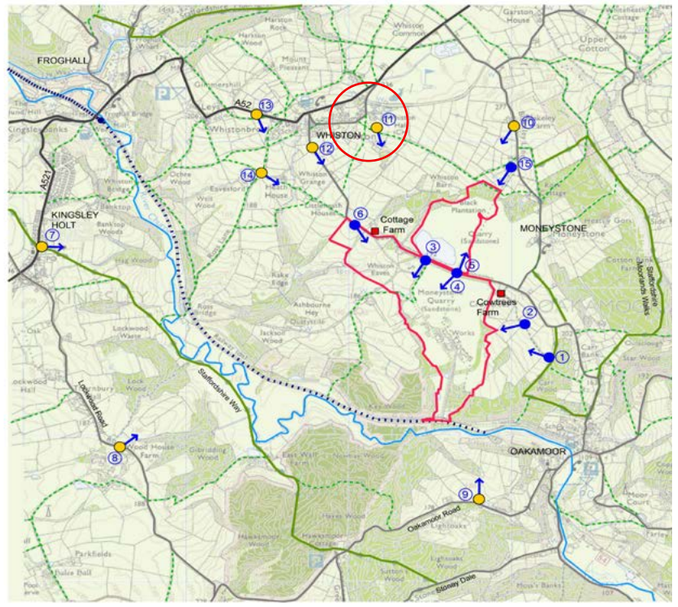
*No photomontage produced - proposed view predicted to have negligible visual impact due to distance between viewpoint & site.

View 10 Updated Existing View - March 2024*
View from Blakeley Lane - March 2024



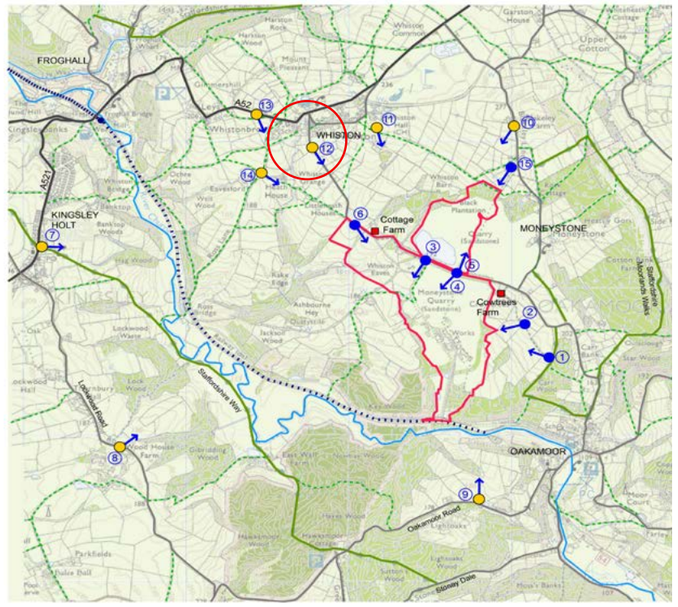
*No photomontage produced - proposed view predicted to have negligible visual impact due to distance between viewpoint & site.

View 11 Existing - Photograph from June 2016 ES*
View from Whiston Hall



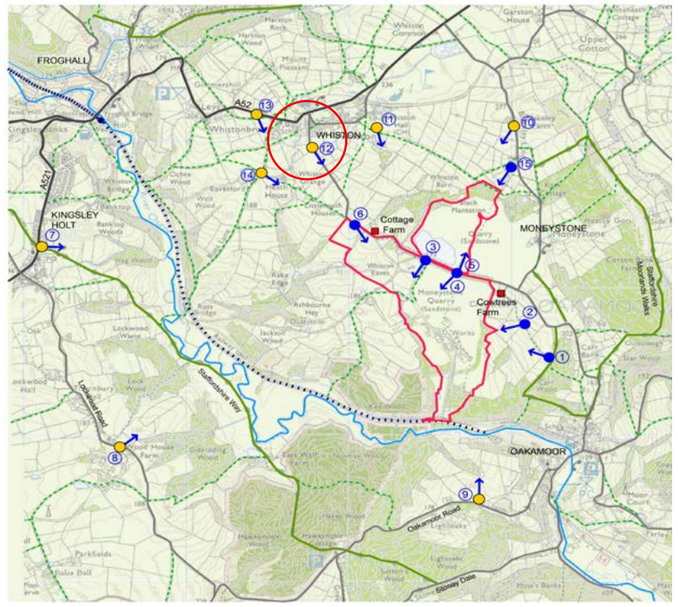
*No photomontage produced - proposed view predicted to have negligible visual impact due to distance between viewpoint & site.

View 11 Updated Existing View - March 2024*
View from Whiston Hall - March 2024



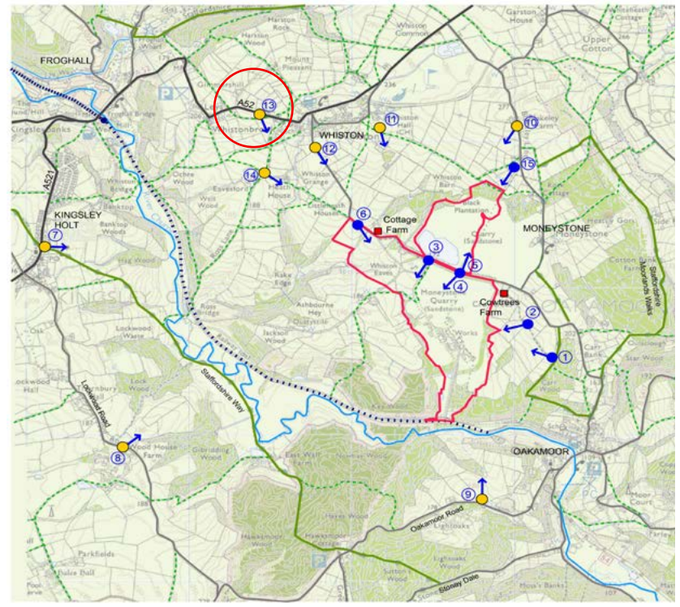
*No photomontage produced - proposed view predicted to have negligible visual impact due to distance between viewpoint & site.

View 12 Existing - Photograph from June 2016 ES*
View from Whiston, off Eaves Lane



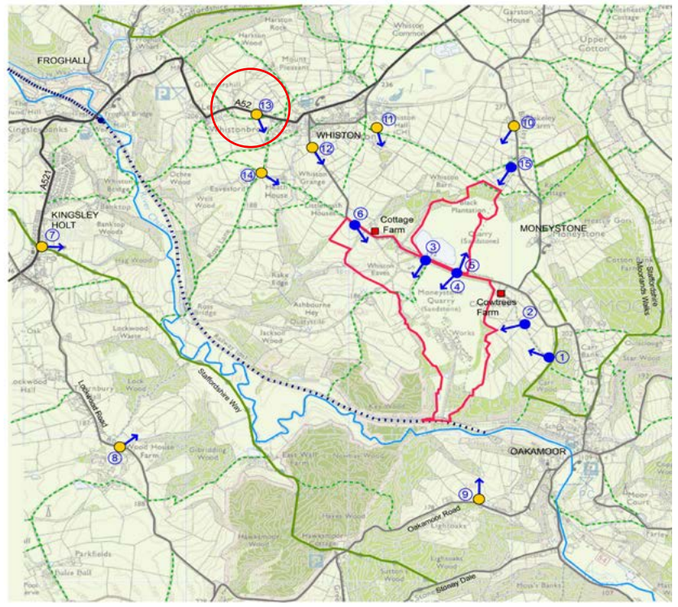
*No photomontage produced - proposed view predicted to have negligible visual impact due to distance between viewpoint & site.

View 12 Updated Existing View - March 2024*
View from Whiston, off Eaves Lane - March 2024



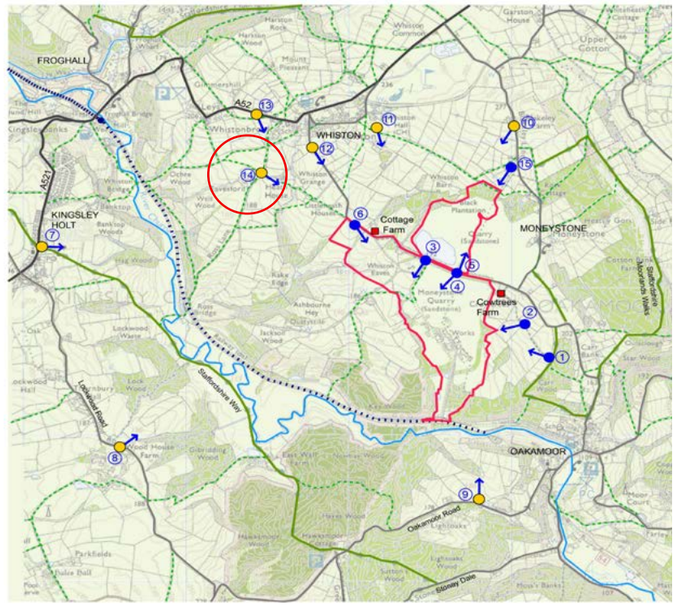
*No photomontage produced - proposed view predicted to have negligible visual impact due to distance between viewpoint & site.

View 13 Existing - Photograph from June 2016 ES*
View from A52



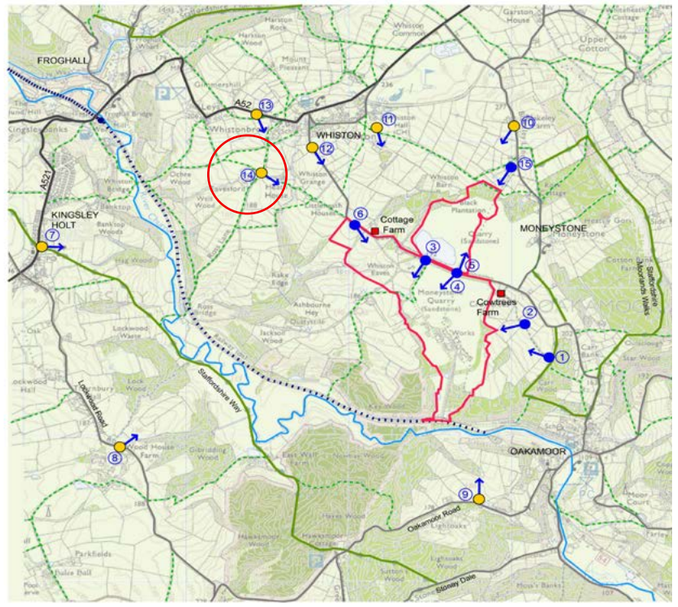
*No photomontage produced - proposed view predicted to have negligible visual impact due to distance between viewpoint & site.

View 13 Updated Existing View - March 2024*
View from A52 - March 2024



*No photomontage produced - proposed view predicted to have negligible visual impact due to distance between viewpoint & site.

View 14 Existing - Photograph from June 2016 ES*
View from Ross Lane



*No photomontage produced - proposed view predicted to have negligible visual impact due to distance between viewpoint & site.

View 14 Updated Existing View - March 2024*
View from Ross Lane - March 2024

APPENDIX 8.1: VIEWS AND PHOTOMONTAGES

Appendix 9.1: Ecological Surveys 2024 Report

Moneystone Quarry Ecology Surveys Report

Date: August 2024

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Document Control

Document:	**BOW111 Moneystone Quarry, Ecological Surveys 2024 Report**			
Version	Date	Prepared by	Technical Reviewer	Approved by
DRAFT	11/07/2024	Curtis Blank, BSc (Hons), ACIEEM, IFM / Patrick Hamblin MSc, BSc	Jeremy James, MSc, BSc (Hons), CEcol, CEnv, MCIEEM	Jeremy James, MSc, BSc (Hons), CEcol, CEnv, MCIEEM
FINAL				

Contents

1. INTRODUCTION

Purpose and Scope

This ecological survey report presents survey data collected during updating ecological surveys carried out during 2024. The survey data informs an Environmental Statement Addendum that has been prepared in support of a planning appeal (APP/B3438/W/24/3344014) in relation to a reserved matters application proposing details for the appearance, scale, layout and landscaping for phase 1 of the leisure development comprising 190 lodges.

This report updates survey information previously presented within the Environmental Statement prepared in support of planning application SMD/2016/0378. The update is required due to the lapse in time between surveys informing the 2016 ES and the mobile nature of some legally protected species. The update surveys focused on:

- habitat changes,
- amphibian population including great crested newt
- reptile populations,
- breeding birds, and
- bats.

Desk Study

An updated desk study was undertaken in 2024, this did not return any significant new records for the site. The information from the desk study is included in Appendix F.

2. HABITATS

1. Maps	
Appendix A – Updated Habitat Changes Plan	
2. Ecology Surveys	
Surveyors:	Patrick Hamblin MSc, BSc (Hons)
Dates:	21/05/2024 to 22/05/2024
Method:	An assessment was made of all areas of vegetation within the site boundaries, based on the standardised UKHab survey methodology. This involved a walkover survey to identify vegetation types, which were then classified against habitat types set out in UKHab classification system (UKHab Ltd, 2023). All habitats within and adjacent to the site boundary were mapped and described. In addition, evidence of and potential for legally protected and notable species was noted. This included bats, amphibians, riparian mammals, badger (*Meles meles*), hedgehog (*Erinaceus europaeus*), invertebrates, birds and reptiles. Any presence of the most common invasive plant species subject to strict legal control including: Japanese knotweed (*Fallopia japonica*), giant knotweed (*F. sachalinensis*), hybrid knotweed (*F. x bohemica*), giant hogweed (*Heracleum mantegazzianum*), rhododendron (*Rhododendron ponticum, R. ponticum x R. maximum and R. luteum*), and Himalayan balsam (*Impatiens glandulifera*) was also noted, if present.
Weather:	21/05/2024: 17 degrees, f1 wind, dry 22/05/2024: 13 degrees, f2 wind, heavy rain
Limitations:	The density of vegetation within some scrub and woodland habitats obstructed safe access to areas of the Site, preventing a comprehensive assessment of the entirety of the Site. The habitat survey focused on the most prominent and important species within the time available, rather than aiming to identify all species that might present within the site. Ecological surveys are also limited by factors that affect the presence of plants and animals, such as the time of year, migration patterns and behaviour. Therefore, the survey of the study area has not produced a complete list of plants and animals. The list of invasive plant species included on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) is extensive and these plants are found in a range of different habitats, including aquatic habitats. The extended UKHab survey checked, in particular, for the presence of Japanese knotweed, giant knotweed, hybrid knotweed, giant hogweed, rhododendron and Himalayan balsam. There may be other invasive plant species present on the site which were not recorded, but it is considered that the survey was sufficient to identify any significant constraints posed by invasive plants.
3. Survey findings	

g3c – Other Neutral Grassland

Parcels of unmanaged neutral grassland were present across the Site, primarily located in close proximity to developed areas towards the centre. Such areas have not been managed, indicated by a tall sward height of approximately 1m on average, though areas were present with shorter swards of approximately 10-20cm. Unpaved pathways, originally bare ground, have been encroached upon by vegetation and have developed into grassland corridors. Small areas within the habitat were found to be waterlogged at the time of survey. Vegetative species typically comprised abundant false oat grass (*Arrhenatherum elatius*); frequent greater birdsfoot trefoil (*Lotus pedunculatus*) and occasional bracken (*Pteridium aquilinum*), broadleaved dock (*Rumex obtusifolius*), cow parsley (*Anthriscus sylvestris*), creeping cinquefoil (*Potentilla reptans*), hogweed (*Heracleum sphondylium*), meadow buttercup (*Ranunculus acris*),

g3c – Other neutral grassland

g1d – Other lowland acid grassland

ragwort (*Jacobaea vulgaris*), red clover (*Trifolium pratense*) and willowherb (*Epilobium* sp.). Additionally, where such habitat had been waterlogged or close to wet habitat, occasional instances of forget-me-not (*Myosotis* sp.) and hard rush were also found to be present.

g1d – Other Lowland Acid Grassland

An expanse of acid grassland was found within the northern extent of the Site, relatively unchanged from previous assessments. The sward was generally tussocky, varying in height typically between 5cm and 50cm. Much like with the neutral grassland on-Site, small areas within the habitat were found to be waterlogged at the time of survey. Vegetative species comprised abundant red fescue (*Festuca rubra* agg); frequent greater birdsfoot trefoil and rough hawk's-beard (*Crepis biennis*); and occasional broadleaved dock, cock's foot (*Dactylis glomerata*) and vetch (*Vicia* sp.). Where areas were waterlogged, locally frequent instances of common sedge (*Carex nigra*) and occasional hard rush were also present.

h3h – Mixed Scrub

Large areas of the Site are comprised of dense mixed scrub habitat developed from previously ephemeral dominated ground. Where scrub had succeeded previous pond habitat in the northern extent of the Site, or where scrub is present in close proximity to current ponds, the ground had been waterlogged, though species composition remained largely the same. Scrub primarily comprised alder (*Alnus glutinosa*), birch (*Betula* sp.), bramble (*Rubus fruticosus*), broom (*Cytisus scoparius*), gorse (*Ulex europaeus*) and willow (*Salix* sp.), with elder (*Sambucus nigra*), hawthorn (*Crataegus monogyna*), hazel (*Corylus avellana*), holly (*Ilex aquifolium*) and pedunculate oak (*Quercus robur*) present in small quantities. The ground layer was typically bare, with intermittent vegetation including frequent colt's foot (*Tussilago farfara*), horsetail (*Equisetum* sp.) and ribwort plantain (*Plantago lanceolata*), with occasional broadleaved dock, herb Robert (*Geranium robertianum*) and white clover. While trees within the habitat largely lacked adequate maturity and size to support bat roosting, a single dead tree was noted as present (TN2) with some limited potential as a roost feature.

h3d – Bramble Scrub

Bands of bramble dominated habitat were present in close proximity to scrub habitat, primarily within the western extent of the Site.

w1g – Other Broadleaved Woodland

Site boundaries, in addition to the northernmost and southernmost extents of the Site, comprised of broadleaved woodland. The majority of this habitat has remained unchanged, though the extent of the habitat has expanded as a result of previous scrub developing into additional woodland. Tree species comprised alder, birch, hawthorn, sycamore (*Acer pseudoplatanus*) and willow. Ground vegetation typically comprised abundant bramble; frequent bracken and nettle (*Urtica dioica*); and occasional cleavers. Trees were largely unfavourable for bat roosting, with exception to a single ash (TN1), though the area has high potential for arboreal bird nesting.

w2c – Other Coniferous Woodland

A line of coniferous trees was found to be present in close proximity to carparking associated with hardstanding within the central extent of the Site. Ground vegetation composition was representative of nearby grassland habitat.

h3h – Mixed Scrub

h3d – Bramble scrub

w1g – Other broadleaved woodland

w2c – Other coniferous woodland

r1c – Oligotrophic and Dystrophic Lakes

A single oligotrophic lake, with minimal signs of nutrient content, was present within the westernmost extent of the Site, developed from an old quarry pit. The water body lacks macrophytes, with the visible lake floor only sparsely vegetated, while the banks were largely bare stone, immediately followed by dense scrub habitat with a bare ground layer. Despite limited vegetation, and a presence of waterfowl, tadpoles were observed within the shallow south-western corner of the lake (TN3).

r1g – Other Standing Water

The Site was host to five additional waterbodies within the survey area, primarily enclosed within woodland or scrub habitat. Ponds were heavily shaded by surrounding habitat and were host to minimal or no emergent vegetation, while bank flora primarily comprised of scrub and associated ground layer species.

r2b – Other Rivers and Streams

A small stream running along a ditch towards the southern extent of the Site. The channel width is approximately 1m with a depth of up to 50cm. The banks were heavily vegetated primarily by locally dominant willowherb. Waterflow travels southwards into the southern woodland habitat and discharges into a local pond, outside of the Site boundary.

u1b – Developed Land - Sealed Surface

The central area of the Site, including buildings and vehicular access, comprise sealed surfaces and hardstanding. These areas supported only rare instances of false oatgrass within the cracks and hold no ecological value. Buildings had some limited potential for bat roosting, with access to the internal structure made possible due to a missing brick (TN5) allowing entry into the wall cavity, and loose panelling over windows (TN6). However, potential for roosting is highly limited, due to the lack of potential thermal stability.

TN1

Mature ash tree located on Site boundary. Noted as PRF-I for bat roosting potential due to loose bark and rot features capable for supporting individual bats. Potential is limited due to the likelihood of exposure to weather conditions, given the position of some openings allowing rain to enter.

TN2

Dead tree present within dense shrub habitat, noted as PRF-I for bat roosting potential. Openings were viable for hosting individual bats, though some features were identified would be highly exposed to weather conditions.

TN3

A large number of tadpoles found in a shallow area of the lake, indicating the habitat's value for amphibians.

TN4

Tadpoles present within a large puddle along the bare ground pathway, indicating the habitat's value for amphibians.

TN5

Missing brick, allowing entry by bats into a large wall cavity.

r1c – Oligotrophic and dystrophic lakes

r1g – Other standing water

r2b – Other rivers and streams

u1b – Developed land - sealed surface

TN6

Metal panelling over windows, small gaps enable access to cavities between the panels and panes.

Himalayan Balsam

The invasive non-native species, Himalayan balsam, was found present across much of the pathway that runs across the northern and southern woodland areas (see Appendix A). Himalayan balsam is listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) and as such it is an offence to cause this species to grow or spread in the wild.

TN1 – Mature Ash

TN2 – Dead Tree

TN3 – Tadpoles in lake

TN4 – Tadpoles present in pathway puddle

TN5 – Missing brick

TN6 – Panel over window

Himalayan Balsam

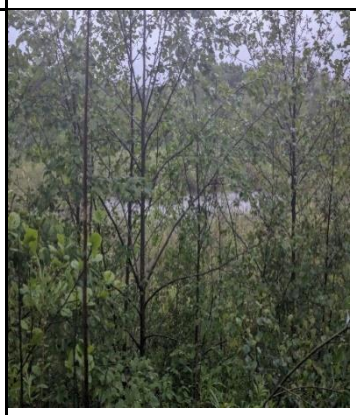
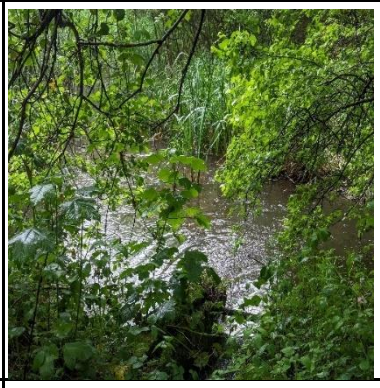
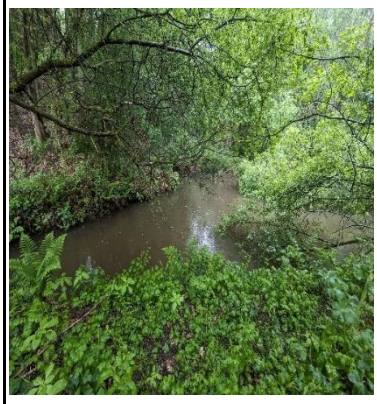
4. Summary

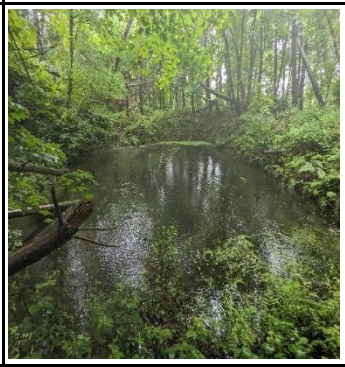
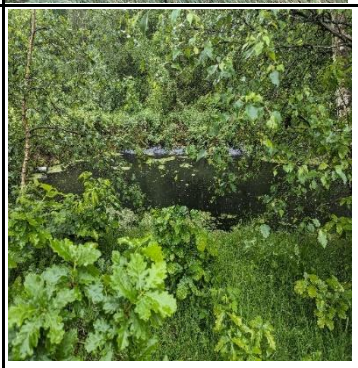
The extent of habitats that have changed or have otherwise been established since previous habitat assessments are illustrated in the Appendix A. It is evident that the site has had a significant increase in scrub habitat, with some areas previously established as neutral grassland, ephemeral and bare ground habitat having become subject to ecological succession over the course of previous years. Some areas that were identified previously as scattered scrub have since established into pockets of more dense mixed scrub habitat within a wider grassland environment. Habitat around Site boundaries have remained largely unchanged, remaining as dense scrub or woodland as

previously identified. In terms of waterbodies, ponds identified within the northern extent of the Site have become encroached upon by scrub habitat, with a new pond established within previously terrestrial ephemeral habitat. Where succession had not occurred, grassland has remained largely the same, primarily neutral grassland habitats, with acid grassland present to the north. No evidence was identified of mammals residing within the Site, though foxes and deer species were observed during survey visits and utilise the Site regularly for commuting and foraging. No badger field sign or badger setts were identified during the habitat survey, however this species was observed during nocturnal faunal surveys in woodland habitat.

3. AMPHIBIANS

<table>
<tr><td colspan="3">1. Maps</td></tr>
<tr><td colspan="3">Appendix B – Updated Species plan.</td></tr>
<tr><td colspan="3">2. Ecology Surveys</td></tr>
<tr><td>Surveyors:</td><td>Curtis Blank, Sam Robinson, Patrick Hamblin, Helena Davies, Felicity Davies, Luke Hall, Pieter van Zuylen, Clare Lusher</td><td rowspan="2">eDNA results:
Pond 14 -- Positive
Pond 7 - Positive
Pond 6 – Positive
Pond 11 – Positive
Pond 13 - Positive
Pond 12 - Negative
Pond 10 - Positive
Pond 9 - Positive
Pond 5 - Positive</td></tr>
<tr><td>Survey Dates:</td><td>Visit 1: 01/05/2024
Visit 2: 08/05/2024
Visit 3: 14/05/2024
Visit 4: 23/05/2024
Visit 5: 05/06/2024
Visit 6: 19/06/2024</td></tr>
<tr><td>Survey Method:</td><td colspan="2">All ponds were subject to eDNA. This confirmed which ponds had great crested newt (GCN) DNA in and therefore would be subject to further surveys. A combination of methods were employed for the surveys including egg searching, night-time torch surveying, and bottle trapping as follows:
• Direct daylight observation was used at each survey visit to search for frog spawn and tadpoles, toad strings and tadpoles and newt eggs (often found within folded leaves).
• A night-search was completed at each survey visit using a high powered torch (500, 000 candlepower Clu-lite lamp). The edge of each pond was searched for approximately 15 minutes for each 50 linear metres.
• Bottle-traps were set at approximately 2m intervals around the margins of ponds which were suitable for this survey technique. The traps were set just before dusk and checked the next morning and removed. The traps were two-litre bottle-traps with green canes (tipped with fluorescent yellow tape).
The highest adult count from bottle trapping or torching during a single visit is used as the overall population assessment.</td></tr>
<tr><td>Weather Conditions:</td><td colspan="2">Visit 1: 14°C, Dry, 100% cloud cover, and F2 wind
Visit 2: 13°C, Dry, 10% cloud cover, and F3 wind
Visit 3: 14°C, Dry, 20% cloud cover, and F1 wind
Visit 4: 11°C, Dry, 100% cloud cover, and F3 wind
Visit 5: 9°C, Dry, 40% cloud cover, and F0 wind
Visit 6: 15°C, Dry, 10% cloud cover, and F1 wind</td></tr>
<tr><td>Limitations to the survey</td><td colspan="2">Pond 13 was deemed too dangerous to bottle due to the sediment, all results are from torching only. Ponds 9 and 10 are both lined ponds so are unable to be bottle trapped as it could damage the lining, all results are from torching only. Ponds 6 and 14 were heavily overgrown with vegetation and limited the area of torching and bottling.</td></tr>
<tr><td colspan="3">3. Survey findings</td></tr>
<tr><td colspan="3">Pond Description</td></tr>
</table>

Pond	Description in 2016	Changes in 2024	Photos in 2024
P6	Dense scrub is colonising the northerly and western margins of the pond. Stands of common reed are present around the margins of pond along with reed mace, water mint and brooklime. A large area of open water is present within the centre of the pond. GCN present.	A large reedbed surrounding the majority of the edge of the pond has formed. To the east and north scrub predominately willow has also formed on the edges.	
P14	Former tailings lagoon – heavily silted with recent development of open water. Little aquatic/emergent vegetation. Willow scrub colonising.	Large willow sections particularly to the north west and east of the pond with some clearing to the south. Reedbeds have also formed on the pond.	
P11	The pond is roughly circular and situated within a clearing of woodland. The pond is steep sided on one side with a cluster of reed. The pond is split into two adjoining sections and fed by an adjacent watercourse. Cessation of quarry working appears to be benefiting this pond. GCN recorded in 2014.	The woodland surrounding this pond is encroaching the banks, with a mixture of grasses and reeds on the western edge of the pond.	
P12	Marginal vegetation is sparse apart from a small patch of emergent reed mace. The pond was part of the former siltation process for the quarry. The pond is heavily shaded by surrounding scrub making the banks inaccessible.	An increase of vegetation surrounding the pond and banks in comparison to 2016.	

P13	The pond is heavily shaded by the surround scrub/woodland habitat with the majority of the bankside impenetrable due to the dense vegetation. No aquatic vegetation was noted to be present with a deep leaf litter.	Vegetation has taken over the majority of the pond especially in the unshaded areas this is predominately reeds and immature willows.	
P7	The pond is heavily shaded with a deep leaf litter and no aquatic vegetation. A layer of willow sp catkins is present upon the surface of the pond.	Pond is predominately the same with some duckweed present on the surface of the pond.	
P8	The pond is situated with dense woodland habitat and has no aquatic vegetation, deep leaf litter and mud margins.	Pond is infilled with vegetation.	
P9 and P10	Two artificial butyl lined ponds supporting great crested newts within Sibelco owned land.	No changes	 
Habitat Suitability Index			

Pond	SI1 - Location	SI2 - Pond area	SI3 - Pond drying	SI4 - Water quality	SI5 - Shade	SI6 - Fowl	SI7 - Fish	SI8 - Ponds	SI9 - Terr'l habitat	SI10 - Macrophytes	HSI Suitability
5	1	0.5	0.1	0.67	0.2	1	1	1	0.33	0.4	**0.5 Below Average**
6	1	N/A	0.9	1	0.2	0.67	0.67	1	1	0.4	**0.68 Average**
7	1	0.4	1	1	0.2	1	0.67	1	1	0.3	**0.66 Average**
8	**Pond Dry at time of visit**										
9	1	0.2	0.9	0.67	1	0.67	1	1	0.67	0.3	**0.66 Average**
10	1	0.7	0.9	0.67	1	0.67	1	1	0.67	0.3	**0.75 Good**
11	1	1	0.9	1	0.2	0.67	0.67	1	1	0.8	**0.76 Good**
12	1	0.9	1	1	0.2	1	0.67	1	1	1	**0.81 Excellent**
13	1	0.7	0.9	0.67	0.2	0.67	0.67	1	1	0.3	**0.64 Average**
14	1	N/A	0.1	1	0.2	0.67	0.67	1	1	0.4	**0.54 Below Average**
15	1	0.85	0.9	0.67	0.3	0.67	0.67	1	1	0.3	**0.68 Average**

Presence/Absence Survey (combined for all three methods):

GCN (Great Crested Newt (m) = male, (f) = female); **SN** (Smooth Newt); **PN** (Palmate Newt), **CF** (Common Frog, t = tadpole); **IN** (Indeterminate Newt species); **SN/PNe** (small newt eft); **CT** (Common Toad).

Visit 1 - 01/05/2024

VISIT 1	Turbidity	Veg Cover	No. bottles	GCN (m)	GCN (f)	Other amphib
Pond 6	1	5	35	2	9	1CF
Pond 7	1	1	10	1	2	4SN
Pond 9	1	0	0	9	16	20SN
Pond 10	1	0	0	1	5	20SN
Pond 11	1	4	10	2	6	2SN
Pond 13	5	3	0	0	0	0
Pond 14	2	5	25	0	0	0

Visit 2 - 08/05/2024

VISIT 2	Turbidity	Veg Cover	No. bottles	GCN (m)	GCN (f)	Other amphib
Pond 6	1	5	15	0	0	0
Pond 7	1	1	10	0	3	11SN, 9PN
Pond 9	1	0	0	3	4	10SN
Pond 10	1	0	0	11	23	35SN, 42PN, 8 IN
Pond 11	1	4	10	5	10	15SN, 15PN
Pond 13	3	3	0	0	0	0
Pond 14	2	5	25	0	0	0

Visit 3 - 14/05/2024

VISIT 3	Turbidity	Veg Cover	No. bottles	GCN (m)	GCN (f)	Other amphib
Pond 6	1	5	15	4	2	1PN, 18CFt
Pond 7	1	5	10	0	0	2SN, 12PN
Pond 9	1	0	0	2	3	13SN
Pond 10	1	0	0	4	13	16SN
Pond 11	1	4	10	4	16	26SN, 3PN
Pond 13	4	3	0	0	0	1SN
Pond 14	2	5	25	0	2	1PN, 1CF

Visit 4 - 23/05/2024

VISIT 4	Turbidity	Veg Cover	No. bottles	GCN (m)	GCN (f)	Other amphib
Pond 6	1	5	15	0	0	0
Pond 7	1	1	10	0	0	2SN, 4PN, 1CF
Pond 9	1	0	0	1	1	7SN
Pond 10	1	0	0	2	3	26SN, 4PN
Pond 11	1	4	10	0	1	3SN, 1PN
Pond 13	3	3	0	0	0	0
Pond 14	2	5	25	0	1	0

Visit 5 - 05/06/2024

VISIT 5	Turbidity	Veg Cover	No. bottles	GCN (m)	GCN (f)	Other amphib
Pond 6	1	4	15	0	0	2SN, 10CFt
Pond 7	1	2	10	0	1	3PN
Pond 9	1	0	0	0	0	1SN
Pond 10	1	0	0	0	2	7SN
Pond 11	2	4	10	0	4	11SN, 2PN
Pond 13	3	3	0	0	0	0
Pond 14	1	5	25	0	0	5SN/PNe

Visit 6 - 19/06/2024

VISIT 6	Turbidity	Veg Cover	No. bottles	GCN (m)	GCN (f)	Other amphib
Pond 6	1	4	15	6	4	3SN, 1 CT
Pond 7	1	2	10	4	6	3SN
Pond 9	1	0	0	0	0	0
Pond 10	1	0	0	0	0	0
Pond 11	3	4	10	3	6	2 SN, 1 PN
Pond 13	2	3	0	0	0	0
Pond 14	1	5	25	3	10	0

4. Summary

Surveys in 2024 confirm the continued presence of a medium sized metapopulation of great crested newts at the site. There have been some fluctuations in terms of conditions and counts in individual ponds;

- Pond 10 and Pond 9 were negative for GCN in 2016. However, in 2024 Pond 10 had a peak count of 34 GCN and Pond 9 with a peak count of 25 GCN and prior to 2016 these ponds returned high counts for GCN. These are two artificially lined pond associated with the existing lab buildings at the site – they are poorly vegetated and it's not surprising that occurrences of GCN can vary widely in these ponds as a results of the frequency of this species at the site.
- Pond 6 had a peak count of 14 GCN back in 2016, with only a peak count of 11 in 2024. This has been put down to the encroachment of reedbed in the pond provides constraints for accurate population size from torching and bottling GCN.
- Pond 11 had a peak count of 5 GCN back in 2016 and a peak count of 20 in 2024. It is considered that an increase in aquatic plant cover in this pond may have improved conditions for GCN in the intervening period.
- Pond 13 returned a positive eDNA result for GCN, but no GCN were identified during any of the 6 standard survey visits. There is connectivity in the form of a stream from Pond 11 which also returned a positive eDNA result and relatively high counts during traditional surveys. Either low numbers of GCN used Pond 13 in early spring or there has been some eDNA drift between the two connected ponds.

The site is still considered to be of significant value for amphibians on a Borough/District Level due to the continued presence of a medium sized population of great crested newts and a diverse amphibian assemblage.

4. REPTILES

<table>
<tr><th colspan="2">1. Maps</th></tr>
<tr><td colspan="2">Appendix B</td></tr>
<tr><th colspan="2">2. Ecology Surveys</th></tr>
<tr><td>Surveyors:</td><td>Curtis Blank BSc (Hons) - Ecologist, Sam Robinson Ba (Hons) - Ecologist, Alex Partington MSc, BSc (Hons) – assistant ecologist, Helena Davies BSc (Hons) - Ecologist, Felicity Davies BSc (Hons) – assistant ecologist, Luke Hall BSc (Hons) - ecologist, Pieter van Zuylen (Assistant ecologist/Intern).</td></tr>
<tr><td>Dates:</td><td>1- 11/04/2024
2- 18/04/2024
3- 25/04/2024
4- 02/05/2024
5- 08/05/2024
6- 14/05/2024
7- 06/06/2024
8- 19/06/2024</td></tr>
<tr><td>Method:</td><td>The survey utilized the standard method of placing artificial refuges, which reptiles use for basking or sheltering, within the survey area. These refuges were strategically positioned in optimal reptile habitats and left for more than seven days to 'bed-in,' allowing reptiles time to discover and use them.

Following the bedding-in period, the refuges were checked on eight occasions. Each check involved a systematic search of the survey area. Surveyors conducted slow walks through suitable habitats, visually scanning the ground, listening for rustling sounds in the vegetation, and searching key basking areas and pre-existing refuges for reptiles and their sloughs (shed skins). This number of checks was deemed sufficient to establish the presence or likely absence of all reptile species in the area and to provide a preliminary estimation of their population size and distribution.

Survey checks were conducted under specific weather conditions: temperatures between 9 and 18 degrees Celsius, hazy or intermittent sunshine, and still or light breezes. The survey dates were spaced throughout the season to minimize disturbance to the reptiles and to encompass a variety of weather conditions, thereby ensuring the most robust results.

Table below showing number of refugia placed into each area.

<table>
<tr><th>Area</th><th>Area Previous Reference</th><th>Refugia</th></tr>
<tr><td>1</td><td>A1</td><td>10</td></tr>
<tr><td>2</td><td>D1</td><td>30</td></tr>
<tr><td>3</td><td>D2</td><td>20</td></tr>
</table>
</td></tr>
<tr><td>Weather:</td><td>1- 15°C, Dry, 70% cloud cover, F1 wind
2- 9°C, Dry, 80% cloud cover, F2 wind
3- 11°C, Dry, 80% cloud cover, F2 wind
4- 16°C, Dry, 20% cloud cover, F1 Wind
5- 15°C, Dry, 60% cloud cover, F3 wind
6- 13°C, Light rain, 100% cloud cover, F2 wind
7- 11°C, Dry, 50% cloud cover, F3 wind
8- 16°C, Dry, 30% cloud cover, F1 Wind</td></tr>
<tr><td>Limitations:</td><td>Visit 6 was completed in sub-optimal weather conditions. An additional survey was completed to fulfil a minimum of 7 surveys in optimal weather conditions.</td></tr>
<tr><th colspan="2">3. Survey findings</th></tr>
</table>

Visit 1

Area 2 (Previously D1) - 3 Slow Worms under Tin 3 and 4

Visit 2

Area 2 (Previously D1) - 2 Slow Worms under Tin 5 and 14. 1 Grass Snake under Tin 6

Visit 3

Area 2 (Previously D1) – 2 Slow Worms under Tin 4 and 14

Visit 4

Area 2 (Previously D1) – 4 Slow Worms under Tin 5, 4 and 14. 1 Common Lizard under Tin 19

Visit 5

Area 2 (Previously D1) – 2 Slow Worms under Tin 2 and 6. 1 Common Lizard under Tin 5

Visit 6

Area 2 (Previously D1) – 1 Slow Worm under Tin 5

Visit 7

Area 1 (Previously A1) – 1 Common Lizard under Tin 7

Area 2 (Previously D1) – 2 Slow Worms under Tin 1 and 3

Visit 8

Area 1 (Previously A1) – 1 Common Lizard under Tin 10

4. Summary

A total of 21 reptiles (1 grass snake, 16 slow worms, 4 common lizards) were recorded in 2024. Area 2 (previously Area D1 in the 2016 ES) held the most records for reptiles. This area is adjacent to mature woodland and grassland and supports a range of manmade refugia consisting of tyres, bricks, log piles etc, However, the area is becoming overgrown/encroached with scrub and is less suitable for basking reptiles.

The update survey results are consistent with previous findings, it is considered that a small population of grass snake and a medium population of slow worm and common lizard occur at the site. It is therefore considered that the site is still of significant value for reptiles on a Borough/District Level.

References

Froglife (1999) Reptile survey: an introduction to planning, conducting and interpreting surveys for snake and lizard conservation. *Froglife Advice Sheet 10. Froglife, Halesworth*.

5. BREEDING BIRD SURVEY REPORT

1. Appendices	
Appendices B and D	
2. Ecology Surveys	
Surveyors:	Curtis Blank BSc (Hons) – Ecologist and Lauren Hadfield BSc (Hons)
Dates:	Visit 1: 28/03/2024 Visit 2: 12/04/2024 Visit 3: 01/05/2024 Visit 4: 23/05/2024 Visit 5: 05/06/2024 Visit 6: 19/06/2024
Method:	A modified breeding bird survey was conducted in line with the specifications detailed at https://birdsurveyguidelines.org/. and by the British Trust for Ornithology (BTO; Gilbert et al., 1998). This methodology follows that stated by Gilbert for the Breeding Bird Survey (BBS) where a transect is walked through the survey area. Mapping methodology comprised plotting the identity and activity of birds recorded within the survey area as per the Common Bird Census (CBC) approach defined in Gilbert et al. (1998). Registrations of birds (sight or sound) were marked onto a site plan using the standard BTO species codes. Care was taken to avoid double counting species/flocks by only recording birds in the forward sightlines. In addition, an assessment of the features on site to provide habitat for birds was made. Survey timings start within half an hour of sunrise and typically be concluded by around mid-morning. As species vary in their detectability throughout the day, therefore one of the six visits was completed in the evening (Visit 4). Breeding bird survey visits were spread evenly between late March and early July in order to ensure that the surveys cover resident breeders which start breeding early, as well as migrant breeders which arrive later. Surveys were planned to avoid adverse weather conditions, such as heavy rain and strong wind, as this can reduce bird activity. In order to reduce survey bias, the transect direction walked varied between visits. Birds of Conservation Concern 5 (BoCC5) (Eaton *et al,* 2021) assessment for birds in the UK, places birds on 'Red', 'Amber' or 'Green' lists to indicate the level of conservation concern. .
Weather:	Visit 1 – 4°C, dry, 90% cloud cover, gentle breeze (BF3) Visit 2 – 10°C, dry, 10% cloud cover, light breeze (BF2) Visit 3 – 12°C, dry, 20% cloud cover, light air (BF1) Visit 4 – 9°C, intermittent showers, 100% cloud cover, gentle breeze (BF3) Visit 5 – 6°C, intermittent showers, 100% cloud cover, light air (BF1) Visit 6 – 16°C, dry, 40% cloud cover, light breeze (BF2)
Limitations:	Ecological surveys are limited by factors that affect the presence of birds, such as the time of year and weather conditions. Therefore, the list of species that may potentially use the site may not be complete, though the survey provides a good indication of the species present and a confident way of identifying the value of the area for birds.
3. Survey findings	
A total of 50 bird species were recorded during the six survey visits within or just outside the DCO boundary: • 14 species were <u>confirmed breeding</u> on or near the site including: **linnet (S41, Red listed)**, **reed bunting (S41, amber listed)**, **bullfinch (S41, Amber listed), wren (Amber listed)**, blackbird, blue tit, carrion crow, chaffinch, chiffchaff, green woodpecker, jackdaw, pied wagtail, robin and treecreeper; • 18 species were identified as <u>probable breeding</u> on or near to site including: **dunnock (S41, Amber listed), song thrush (S41, Red listed), tawny owl (Amber listed), woodpigeon (Amber listed), willow warbler (Amber listed),**	

blackcap, buzzard, Canada goose, coal tit, garden warbler, goldcrest, goldfinch, great spotted woodpecker, great tit, long-tailed tit, magpie, pheasant and raven;

- 16 species were recorded as possible breeding on or near to site including: **cuckoo (S41, Red listed)**, **house sparrow (S41, Red listed)**, **greenfinch (Red listed)**, **grey wagtail (Amber listed), greylag goose (Amber listed), kestrel (Amber listed), mallard (Amber listed), moorhen (Amber listed), oystercatcher (Amber listed), whitethroat (Amber listed)**, jay, lesser whitethroat, mandarin, nuthatch, reed warbler and swallow; and
- 2 species were sighted using the survey area, however, they were considered to be non-breeding, including, **herring gull (Schedule 1, Red listed) and black-headed (Amber listed).**

5. Summary

During bird the update surveys of the application site during 2024 a total of 50 species of bird were recorded at the site, of which 48 species were recorded to be either 'confirmed breeding', 'probable breeding' and 'possible breeding'.

- No species protected under Schedule 1 of the Wildlife and Countryside act 1981 (as amended) was recorded in 2024 at the application site. However, in 2016 the Schedule 1 little ringed plover was recorded and confirmed as 'probable breeding'. A total of two territories were recorded in 2016.
- Seven species recorded in the application site are included on the Natural Environment and Rural Communities Act 2006, Section 41, Habitats and species of principal importance in England: bullfinch (**S41, Amber listed**) , cuckoo (**S41, Red listed**), dunnock (**S41, Amber listed**), house sparrow (**S41, Red listed**), linnet (**S41, Red listed**), reed bunting (**S41, Amber listed**) and song thrush (**S41, Amber listed**). Sixteen species included on the Birds of Conservation Concern (BOCC) Amber list, four of which are S41 species, were also recorded: bullfinch (**S41, Amber listed**), dunnock (**S41, Amber listed**), grey wagtail, greylag goose, kestrel, mallard, moorhen, oystercatcher, reed bunting (**S41, Amber listed**), song thrush (**S41, Amber listed**), tawny owl, whitethroat, willow warbler, woodpigeon and wren. Four species included on the Birds of Conservation Concern (BOCC) Red list, three of which are S41 species, were also recorded: cuckoo (**S41, Red listed**), greenfinch, house sparrow (**S41, Red listed**) and linnet (**S41, Red listed**).
- Two species that were recorded in the application site but considered not to be breeding on site were: black-headed gull (**Amber listed**) and herring gull (**S41, Red listed**).
- Previously to the north of the site Lagoon 7 (Pond 15) has undergone succession with only a small pond remaining with dense mixed scrub replacing an area which previously provided a valuable breeding site for lapwing. During the 2024 surveys no lapwing were recorded in the application site. Due to scrub encroachment lapwing breeding habitat has become suboptimal.

A comparison of breeding species between the current survey in 2024 and the 2016 surveys shows:

- 8 species recorded in 2024 but not 2016 - cuckoo, greenfinch, greylag goose, house sparrow, lesser whitethroat, oystercatcher, swallow and treecreeper.
- 12 species recorded in 2016 but not 2024 - collared dove, coot, lapwing, little grebe, little ringed plover, mistle thrush, rook, stock dove, sparrowhawk, sedge warbler, tufted duck and woodcock.

The difference between the two surveys in general shows that there has been a loss in open wetland species and an increase in woodland and scrub species.

Despite habitat changes, it is considered that the site still support a diverse assemblage of breeding birds including red and amber list and S41 species, the site is therefore still considered to be of significant value for breeding birds at the Borough/District Level.

References

Stanbury, A., Eaton, M., Aebischer, N., Balmer, D., Brown, A., Douse, A., Lindley, P., McCulloch, N., Noble, D., and Win I. (2021). Birds of Conservation Concern 5: the population status of birds in the UK, Channel Islands and Isle of Man, British Birds 114, 723-747.

Fuller, R.J., 1980. A method for assessing the ornithological interest of sites for conservation. Biological Conservation, 17(3), pp.229-239.

Gilbert G, Gibbons DW and Evans J (1998). Bird Monitoring Methods: A manual of techniques for key UK species. RSPB, Bedfordshire Urban Green. (2020). Cowlishaw Abattoir – Ecological Assessment.

Musgrove, A., Aebischer, N., Eaton, M., Hearn, R., Newson, S., Noble, D., Parsons, M., Risely, K. and Stroud, D., 2013. Population estimates of birds in Great Britain and the United Kingdom. British Birds, 106, pp.64-100.

6. BATS

1. Maps			
Appendix E Bat Transect Route and static locations			
2. Ecology Surveys			
Surveyors:	Curtis Blank BSc (Hons), Chloe Leigh BSc (Hons), Clare Lusher BSc (Hons) and Patrick Hamblin MSc, BSc (Hons)	Data analysts:	
Survey Dates:	Visit 1 – 10/06/2024 Visit 2 – 09/07/2024 Visit 3 - 30/07/2024		
Survey Method:	**Habitat Evaluation and Survey Effort** The transect route identified for survey covers a variety of habitats throughout the site to gain insight into how bats use the space. These habitats include; standing water; dense scrub; mature woodlands; and neutral grassland. The walked transect survey commenced at dusk and included a 30 minute vantage point survey in an area of optimal bat habitat, then proceeded with monitoring points, at which surveyors remained stationary for a standardised three minute period. Walked sections of the transect between each monitoring point were walked at a slow steady pace. Surveyors carried a broadband full spectrum detector (EM3 Touch attached to iPad). Bat passes at each walk and monitoring point were recorded with the number of bats observed, species and any other contextual data such as flight direction, social calling or feeding buzzes. The transect route and monitoring points were designed to sample the range of habitats present across the site, whilst avoiding any features which could be difficult to safely navigate in darkness. Two static detectors were deployed for 5 nights with adequate weather conditions before being moved to other part of the site for another 5 nights of adequate weather conditions. All data from these statics were subject to a sonogram analysis to accurately identify species.		

Weather Conditions – Transect Surveys:

Transect & Visit	Visit 1	Visit 2	Visit 3
Date	10/06/2024	09/07/2024	30/07/2024
Start Time	21:32	21:31	21:05
End Time	23:39	23:37	23:14
Sunset	21:32	21:31	21:05
Temp. °C (start)	12°C	17°C	18°C
Rain (start)	None	None	None
Wind[1] (start)	BF1	BF1	BF3
Cloud[2] (start)	20%	90%	40%
Temp. °C (end)	11°C	16°C	16°C
Rain (end)	None	None	None
Wind[1] (end)	BF1	BF1	BF2
Cloud[2] (end)	20%	80%	50%

Static Deployments:

June Statics Dates: 2 statics 10/06/24 – 17/06/24, 2 statics 17/06/24 – 24/06/24

July Statics Dates: 4 statics 25/07/24 – 30/07/24

Limitations to the survey	Static 4 in July had an error and did not record any data.

3. Survey findings

Habitat Description

The transect route covers a wide area of habitat dominated by arable fields with a number of linear features which run between the fields and along the boundaries. These include, broadleaved woodland, broadleaved tree lines, ditches, dense scrub, hedgerows (both species-rich and species-poor) and tree lined minor roads. The land use is mostly arable crop fields.

Summary Transect Results – showing registrations

	Transect 1 - 10/06/2024				Transect 2- 09/07/2024		Transect 3 - TBC		
Listening points	Common Pipistrelle	Daubenton	Noctule	Leisler	Common Pipistrelle	Noctule	Common Pipistrelle	Noctule	Myotis
1	2				2	1			
2					1				
3					2	2	2		
4	1			1		2			1
5	3					2	1	2	1
6			1				2	1	
7	2	2			1	1	2	2	
8						1			
9	2	1							
10	1						1		

Summary Static Detector Results – showing registrations

	Static 1					Static 2		
Date	Common Pipistrelle	Soprano Pipistrelle	Myotis	Noctule	Brown Long-Eared	Common Pipistrelle	Myotis	Noctule
June	859	65	28	76	-	207	28	1
July	150	8	45	115	6	67	6	67

	Static 3						
Date	Common Pipistrelle	Soprano Pipistrelle	Nathusius Pipistrelle	Myotis	Daubenton's	Noctule	Brown Long-Eared
June	1562	42	15	77	255	326	21
July	246	3	-	25	-	63	-

	Static 4					
Date	Common Pipistrelle	Soprano Pipistrelle	Nathusius Pipistrelle	Myotis	Daubenton's	Noctule
June	445	1	2	3	12	35
July	-	-	-	-	-	-

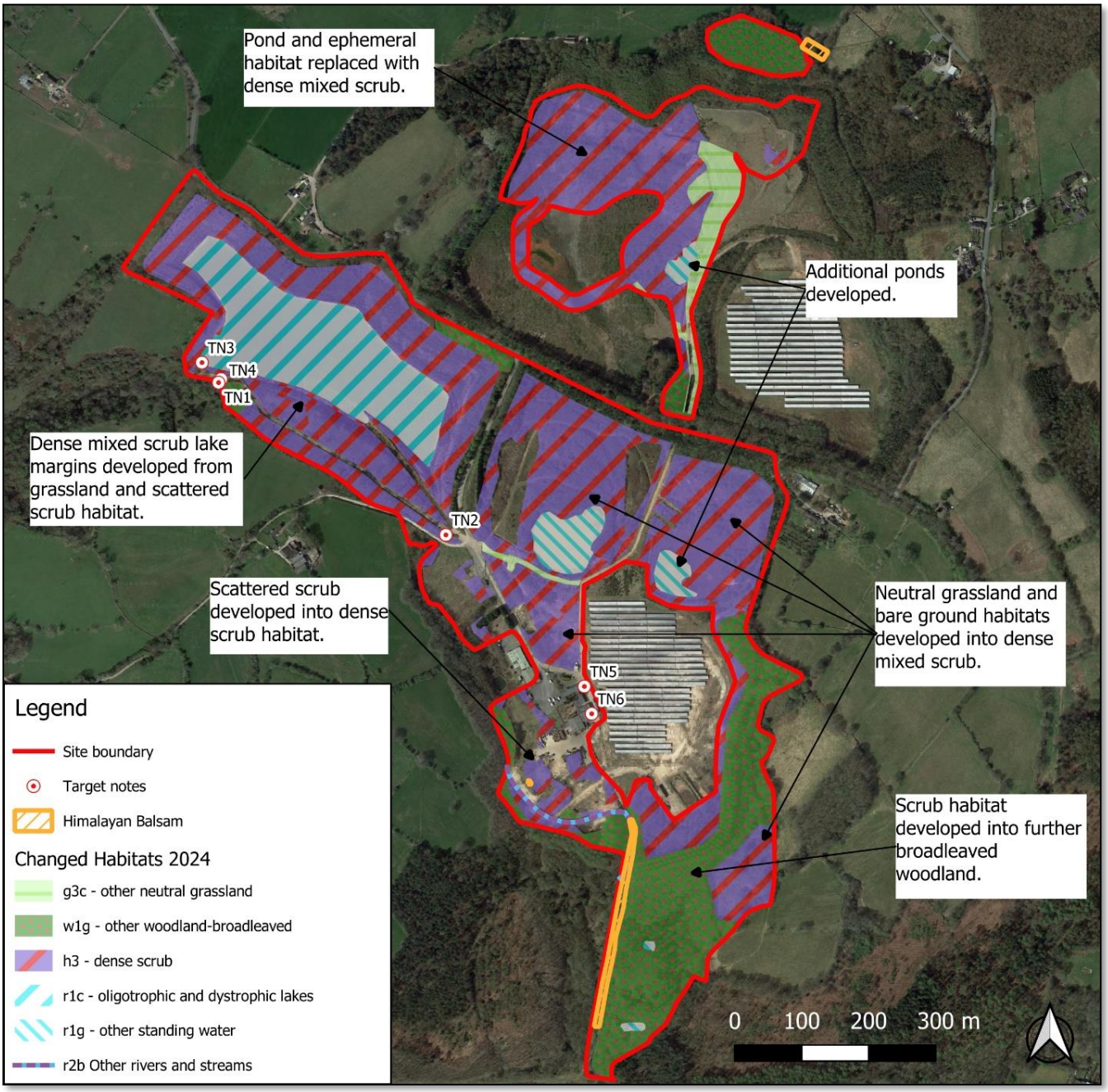
4. Summary

During the transects, common pipistrelle was recorded throughout the site. Daubenton's bat was recorded at two listening points: Listening Point 7, located south of Pond 14, and Listening Point 9, located north of Pond 14. Noctule was identified at nearly all listening points during the second transect.

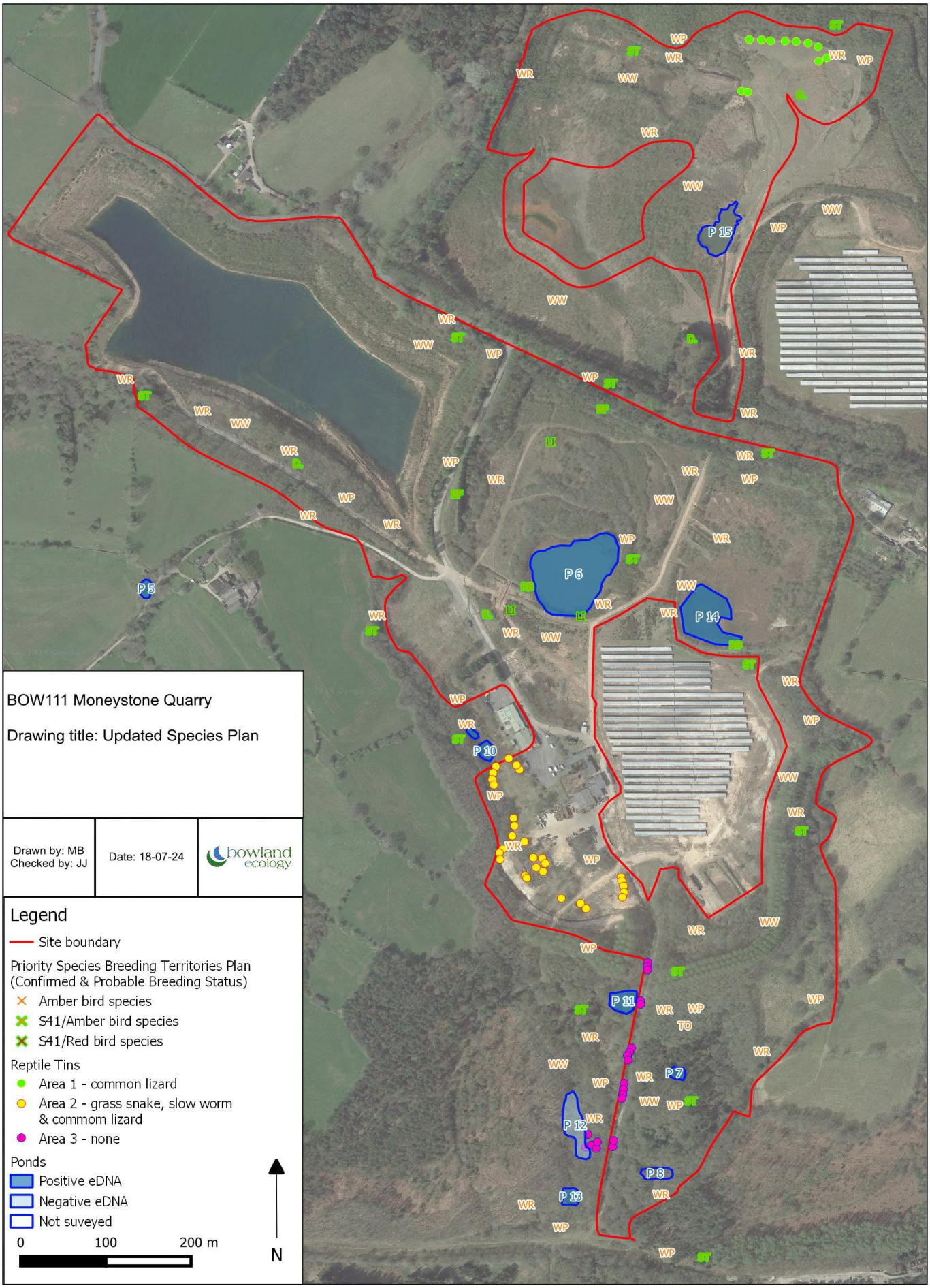
Activity from the June static surveys highlighted that common pipistrelle had the most activity on site. Static 1, located to the north of the site, and Static 3, located to the west of the site next to the large lagoon, had high levels of activity. Static 1 recorded a variety of species typical of habitats with dense scrub, open grassland, and broadleaf woodland. Daubenton's bat was not recorded on the statics, likely due to sub-optimal conditions created by dense scrub encroaching on the pond, which affects their feeding on bodies of water.

The updated surveys confirm that the site continues to support a mosaic of habitats, including woodland, dense scrub, grassland (though reduced in extent), and open water habitats. These habitats provide an abundance of invertebrate prey for various bat species. The site is considered to be of significant value for bats at the Local Level due to the availability of diverse foraging and commuting habitats and the presence of a relatively diverse bat fauna, including Daubenton's bat, brown long-eared bat, pipistrelle species and noctule.

APPENDIX A – UPDATED HABITAT PLAN



APPENDIX B – UPDATED SPECIES PLAN



APPENDIX C – BREEDING BIRD COUNTS 2024

Species	Scientific Names	Visit 1	Visit 2	Visit 3	Visit 4	Visit 5	Visit 6	Breeding status[1]	Cons.Status[2]
blackbird (B.)	***Turdus merula***	5	15	18	14	26	10	C	None
blackcap (BC)	***Sylvia atricapilla***		5	14	5	15		Pr	None
black-headed gull (BH)	***Chroicocephalus ridibundus***			1				N	A
blue tit (BT)	***Cyanistes caeruleus***	2	9	24		17		C	None
bullfinch (BF)	***Pyrrhula pyrrhula***			2		4		C	S41, A
buzzard (BZ)	***Buteo buteo***	3	3	1		1	1	Pr	None
Canada goose (CG)	***Branta canadensis***		10	3	5			Pr	None
carrion crow (C.)	***Corvus corone***	5	7	3	4	11	1	C	None
chaffinch (CH)	***Fringilla coelebs***		3	9		7		C	None
chiffchaff (CC)	***Phylloscopus collybita***	14	21	20	15	31	6	C	None
coal tit (CT)	***Periparus ater***	1	2	5	1			Pr	None
cuckoo (CK)	***Cuculus canorus***					1		Po	S41, R
dunnock (D.)	***Prunella modularis***		1	1	1	2	2	Pr	S41, A
garden warbler (GW)	***Sylvia borin***			13	5	5	4	Pr	None
goldcrest (GC)	***Regulus regulus***		1	9	2	5	1	Pr	None
goldfinch (GO)	***Carduelis carduelis***	8	13	6		2	1	Pr	None
great spotted woodpecker (GS)	***Dendrocopos major***	3	1	1	1			Pr	None
great tit (GT)	***Parus major***	6	6	5	4	3		Pr	None
green woodpecker (G.)	***Picus viridis***			5		1		C	None
greenfinch (GR)	***Chloris chloris***		1	2				Po	R
grey wagtail (GL)	***Motacilla cinerea***					2	1	Po	A
greylag goose (GJ)	***Anser anser***		1	1				Po	A
herring gull (HG)	***Larus argentatus***			1		1		N	S41, R
house sparrow (HS)	***Passer domesticus***					1		Po	S41, R
jackdaw (JD)	***Coloeus monedula***		5	23	9	28		C	None

[1] C = Confirmed; Pr = Probable; Po = Possible and N = Non-breeder

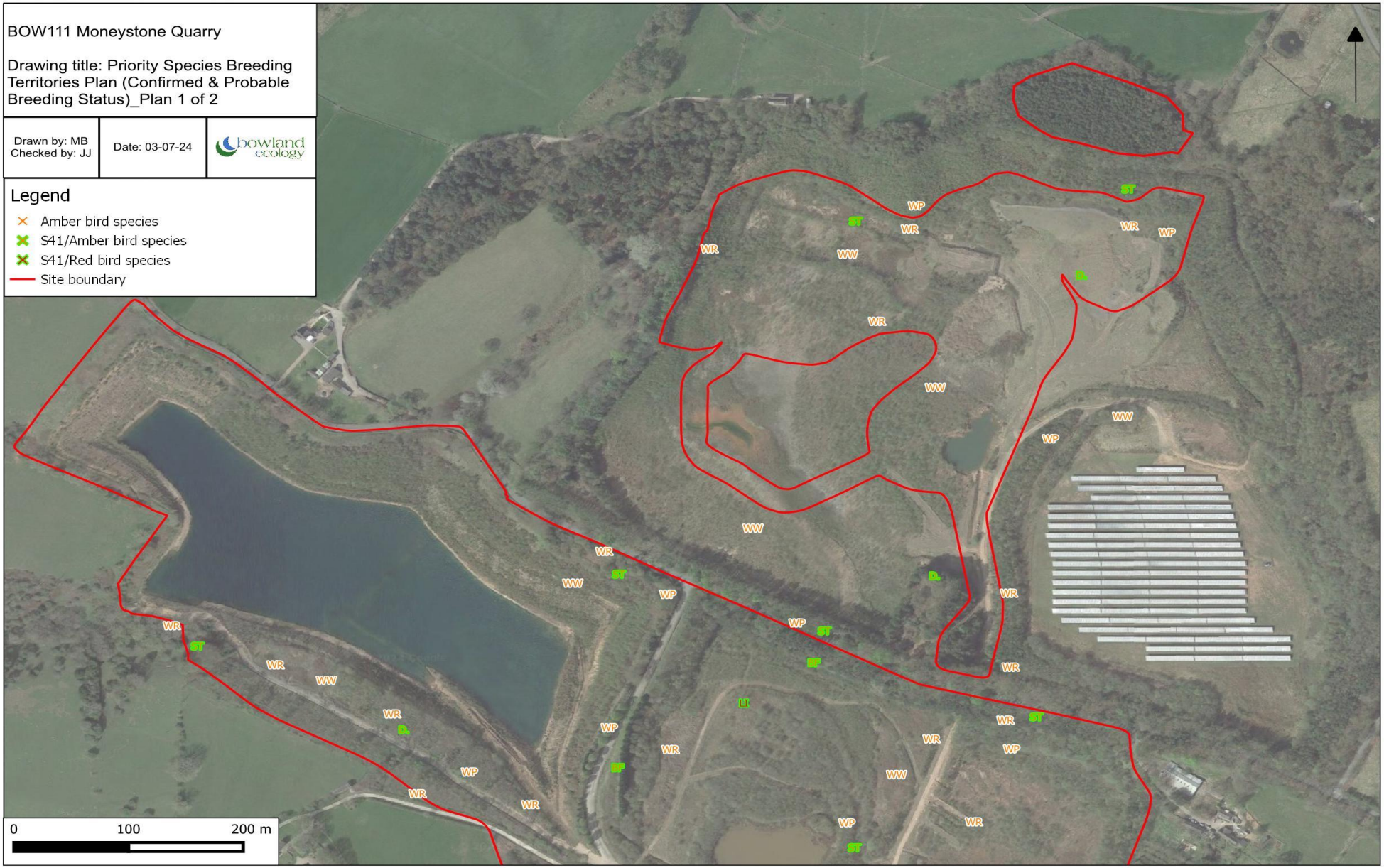
[2] Sch 1 = Schedule 1 (Wildlife and Countryside Act 1981 (as amended)); S41 = NERC Act (2006) conservation priority species; R = Red listed; A = Amber listed

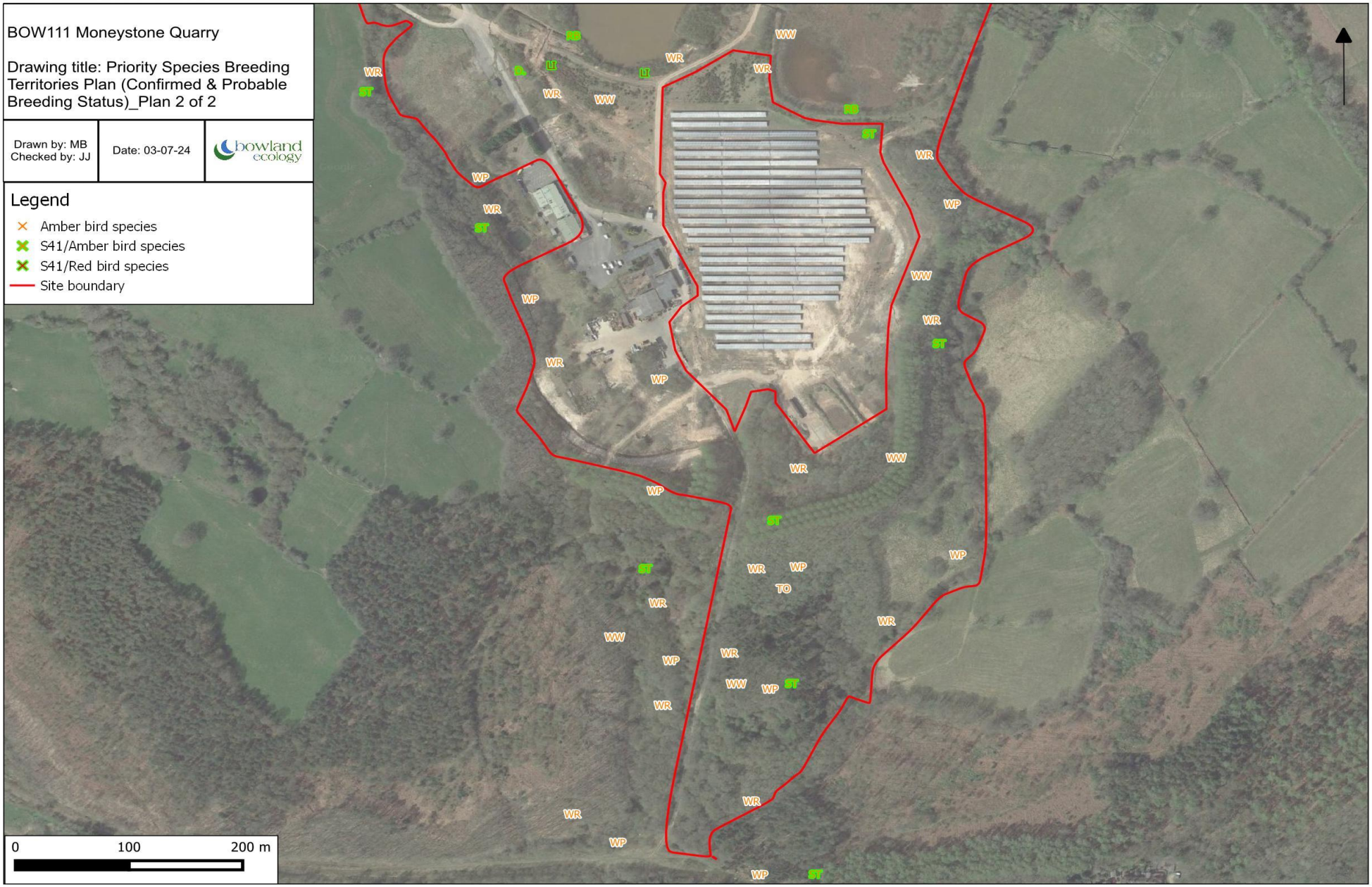
Species	Scientific Names	Visit 1	Visit 2	Visit 3	Visit 4	Visit 5	Visit 6	Breeding status[1]	Cons.Status[2]
jay (J.)	***Garrulus glandarius***		4	1			2	Po	None
kestrel (K.)	***Falco tinnunculus***			1		3		Po	A
lesser whitethroat (LW)	***Curruca curruca***					1		Po	None
linnet (LI)	***Linaria cannabina***		7		5	9		C	S41, R
long-tailed tit (LT)	***Aegithalos caudatus***	2	3	8		3	1	Pr	None
magpie (MG)	***Pica pica***	1	1	3	1	2		Pr	None
mallard (MA)	***Anas platyrhynchos***			1			3	Po	A
mandarin (MN)	***Anas platyrhynchos***			2				Po	None
moorhen (MH)	***Gallinula chloropus***		1					Po	A
nuthatch (NH)	***Sitta europaea***	2	1	1				Po	None
oystercatcher (OC)	***Haematopus ostralegus***		2			1		Po	A
pheasant (PH)	***Phasianus colchicus***	1	6	8	1	5		Pr	None
pied wagtail (PW)	***Motacilla alba***			4	1	3		C	None
raven (RN)	***Corvus corax***	1	3	1	2		2	Pr	None
reed bunting (RB)	***Emberiza schoeniclus***		1	1	1		1	C	S41, A
reed warbler (RW)	***Acrocephalus scirpaceus***			2			1	Po	None
robin (R.)	***Erithacus rubecula***	7	10	17	7	14	3	C	None
song thrush (ST)	***Turdus philomelos***	3	7	15	4	13	6	Pr	S41, A
swallow (SL)	***Hirundo rustica***			1		1	8	Po	None
tawny owl (TO)	***Strix aluco***						2	Pr	A
treecreeper (TC)	***Certhia familiaris***			1		3		C	None
whitethroat (WH)	***Curruca communis***			1		2		Po	A
willow warbler (WW)	***Phylloscopus trochilus***		8	11	12	8	2	Pr	A
woodpigeon (WP)	***Columba palumbus***	5	9	14	5	24	6	Pr	A
wren (WR)	***Troglodytes troglodytes***	9	16	20	17	28	5	C	A

[1] C = Confirmed; Pr = Probable; Po = Possible and N = Non-breeder

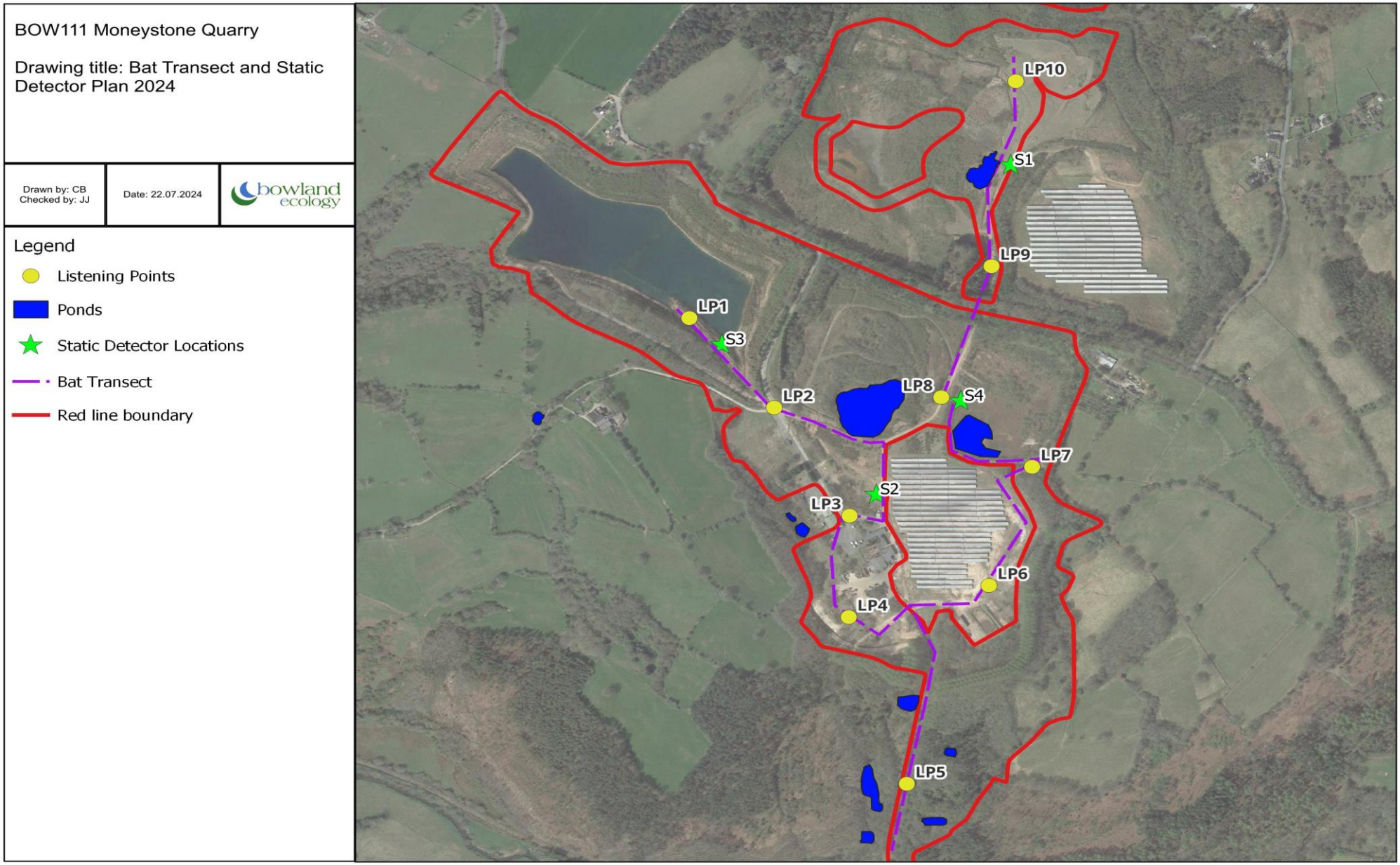
[2] Sch 1 = Schedule 1 (Wildlife and Countryside Act 1981 (as amended)); S41 = NERC Act (2006) conservation priority species; R = Red listed; A = Amber listed

APPENDIX D – BREEDING BIRD PLANS 2024



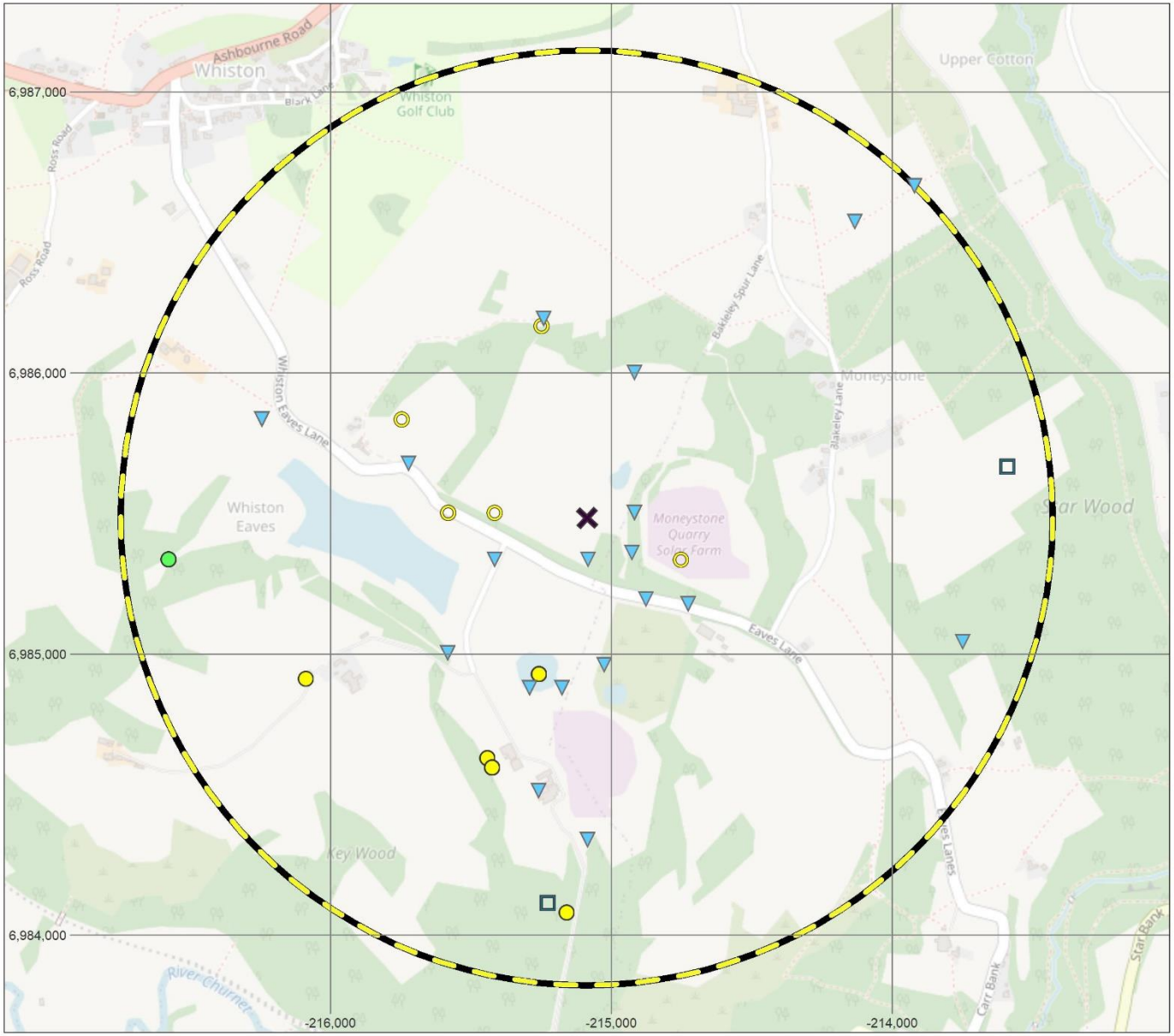

BOW111 Moneystone Quarry
Drawing title: Priority Species Breeding Territories Plan (Confirmed & Probable Breeding Status)_Plan 2 of 2
Drawn by: MB
Checked by: JJ
Date: 03-07-24
bowland ecology
Legend
Amber bird species
S41/Amber bird species
S41/Red bird species
Site boundary
0
100
200 m

APPENDIX E – BAT PLAN 2024



APPENDIX F – DESK STUDY DATA 2024

Note – only legally protected species are included within this Appendix.



Staffordshire Ecological Record

Moneystone Quarry

Protected Species

Note: Where there are multiple species records for the same grid reference, the dot for one species may obscure the dots - all species records are displayed on the accompanying spreadsheet
Badger records are excluded and only 100 m precision records are plotted.
* Excludes otherwise named species.

Key

- Grid Reference (SK 04648 46239)
- 1 km Search Area
- All Bat Species
- All Bird Species
- Amphibians & Reptiles*
- Great Crested Newt (Triturus cristatus)
- Bluebell (Hyacinthoides non-scripta)

0 500 m

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SER/24/326

List of records for European and UK Protected species: 1 km from the site boundary of Moneystone Quarry (SK 04648 46239) produced 16/07/2024

Scientific Name	Common Name	Informal Group	Location	Location Detail	Grid Ref.	Grid Ref. (1km)	Date	Source
Triturus cristatus	Great Crested Newt	amphibian	Moneystone Quarry		SK04044589	SK0445	19/04/2010	Consultants (Bow)
Triturus cristatus	Great Crested Newt	amphibian	Moneystone Quarry		SK04434572	SK0445	11/05/2010	Consultants (Bow)
Triturus cristatus	Great Crested Newt	amphibian	Moneystone Quarry		SK04434572	SK0445	19/04/2010	Consultants (Bow)
Triturus cristatus	Great Crested Newt	amphibian	Moneystone Quarry		SK04434572	SK0445	20/04/2010	Consultants (Bow)
Triturus cristatus	Great Crested Newt	amphibian	Moneystone Quarry		SK04434572	SK0445	28/04/2010	Consultants (Bow)
Triturus cristatus	Great Crested Newt	amphibian	Moneystone Quarry		SK04444570	SK0445	02/06/2010	Consultants (Bow)
Triturus cristatus	Great Crested Newt	amphibian	Moneystone Quarry		SK04444570	SK0445	11/05/2010	Consultants (Bow)
Triturus cristatus	Great Crested Newt	amphibian	Moneystone Quarry		SK04444570	SK0445	14/04/2014	Consultants (Bow)
Triturus cristatus	Great Crested Newt	amphibian	Moneystone Quarry		SK04444570	SK0445	19/04/2010	Consultants (Bow)
Triturus cristatus	Great Crested Newt	amphibian	Moneystone Quarry		SK04444570	SK0445	20/04/2010	Consultants (Bow)
Triturus cristatus	Great Crested Newt	amphibian	Moneystone Quarry		SK04444570	SK0445	25/05/2010	Consultants (Bow)
Triturus cristatus	Great Crested Newt	amphibian	Moneystone Quarry		SK04444570	SK0445	28/04/2010	Consultants (Bow)
Triturus cristatus	Great Crested Newt	amphibian	Moneystone Quarry		SK04544590	SK0445	11/05/2010	Consultants (Bow)
Triturus cristatus	Great Crested Newt	amphibian	Moneystone Quarry		SK04544590	SK0445	14/04/2014	Consultants (Bow)
Triturus cristatus	Great Crested Newt	amphibian	Moneystone Quarry		SK04544590	SK0445	19/04/2010	Consultants (Bow)
Triturus cristatus	Great Crested Newt	amphibian	Moneystone Quarry		SK04544590	SK0445	19/05/2014	Consultants (Bow)
Triturus cristatus	Great Crested Newt	amphibian	Moneystone Quarry		SK04544590	SK0445	20/04/2010	Consultants (Bow)
Triturus cristatus	Great Crested Newt	amphibian	Moneystone Quarry		SK04544590	SK0445	25/05/2010	Consultants (Bow)

Triturus cristatus	Great Crested Newt	amphibian	Moneystone Quarry		SK04544590	SK0445	28/04/2010	Consultants (Bow)
Triturus cristatus	Great Crested Newt	amphibian	Moneystone Quarry		SK04604539	SK0445	14/04/2014	Consultants (Bow)
Triturus cristatus	Great Crested Newt	amphibian	Moneystone Quarry		SK04604539	SK0445	19/05/2014	Consultants (Bow)
Alcedo atthis	Kingfisher	bird	Cotton Dell SWT Nature Reserve		SK0545	SK0545	31/10/2008	West Midland Bird Club (3tz)
Bucephala clangula	Goldeneye	bird	Churnet Valley (overview)		SK0545	SK0545	14/02/1998	West Midland Bird Club (3tz)
Charadrius dubius	Little Ringed Plover	bird	Moneystone Quarry		SK0445	SK0445	2014	Consultants (Bow)
Charadrius dubius	Little Ringed Plover	bird	Moneystone Quarry		SK0446	SK0446	20/05/2014	BirdTrack 2014
Charadrius dubius	Little Ringed Plover	bird	Moneystone Quarry		SK0446	SK0446	30/04/2014	BirdTrack 2014
Charadrius dubius	Little Ringed Plover	bird	Moneystone Quarry		SK048461	SK0446	2014	Consultants (Bow)
Falco peregrinus	Peregrine	bird	Cotton Dell SWT Nature Reserve		SK0545	SK0545	02/09/2007	West Midland Bird Club (3tz)
Falco peregrinus	Peregrine	bird	Cotton Dell SWT Nature Reserve		SK0545	SK0545	10/05/2013	West Midland Bird Club (3tz)
Falco peregrinus	Peregrine	bird	Oakamoor Parish	Oakamoor	SK0545	SK0545	July 2020	SER General Records 2020
Falco subbuteo	Hobby	bird	Churnet Valley (overview)	Churnet Valley	SK0545	SK0545	01/05/2013	West Midland Bird Club (3tz)
Falco subbuteo	Hobby	bird	Cotton Dell SWT Nature Reserve		SK0546	SK0546	29/05/2016	West Midland Bird Club (3tz)
Loxia curvirostra	Crossbill	bird	Moneystone Quarry		SK0446	SK0446	20/05/2014	BirdTrack 2014
Loxia curvirostra	Crossbill	bird	Churnet Valley (overview)		SK0545	SK0545	04/06/2011	West Midland Bird Club (3tz)
Loxia curvirostra	Crossbill	bird	Churnet Valley (overview)		SK0545	SK0545	December 2005	West Midland Bird Club (3tz)
Milvus milvus	Red Kite	bird	Kingsley Parish	Whiston, Froghall	SK0347	SK0347	08/02/2022	West Midland Bird Club (3tz)
Milvus milvus	Red Kite	bird	Kingsley Parish	Whiston, Froghall	SK0347	SK0347	10/06/2022	West Midland Bird Club (3tz)
Milvus milvus	Red Kite	bird	Kingsley Parish	Whiston, Froghall	SK0347	SK0347	17/07/2022	West Midland Bird Club (3tz)

Milvus milvus	Red Kite	bird	Kingsley Parish	Whiston, Froghall	SK0347	SK0347	18/07/2022	West Midland Bird Club (3tz)
Milvus milvus	Red Kite	bird	Kingsley Parish	Whiston, Froghall	SK0347	SK0347	30/05/2023	West Midland Bird Club (3tz)
Milvus milvus	Red Kite	bird	Kingsley Parish	Whiston, Froghall	SK0347	SK0347	30/12/2022	West Midland Bird Club (3tz)
Milvus milvus	Red Kite	bird	Cotton Dell SWT Nature Reserve		SK0545	SK0545	02/01/2015	West Midland Bird Club (3tz)
Milvus milvus	Red Kite	bird	Churnet Valley (overview)	Churnet Valley	SK0545	SK0545	03/07/2012	West Midland Bird Club (3tz)
Milvus milvus	Red Kite	bird	Cotton Dell SWT Nature Reserve		SK0545	SK0545	08/04/2014	West Midland Bird Club (3tz)
Milvus milvus	Red Kite	bird	Cotton Dell SWT Nature Reserve		SK0545	SK0545	12/03/2014	West Midland Bird Club (3tz)
Turdus iliacus	Redwing	bird	Moneystone Quarry		SK0446	SK0446	01/04/2011	SER General Records 2011
Tyto alba	Barn Owl	bird	Moneystone Quarry		SK042464	SK0446	06/09/2013	SER General Records 2013
Tyto alba	Barn Owl	bird	Moneystone Quarry		SK043462	SK0446	19/12/2010	SER General Records 2010
Tyto alba	Barn Owl	bird	Oakamoor Parish	Entrance to Moneystone Quarry, Whiston Eaves Lane	SK043462	SK0446	28/01/2013	SER General Records 2013
Tyto alba	Barn Owl	bird	Moneystone Quarry		SK044462	SK0446	25/11/2012	SER General Records 2012
Tyto alba	Barn Owl	bird	Moneystone Quarry		SK0446	SK0446	06/09/2013	West Midland Bird Club (3tz)
Tyto alba	Barn Owl	bird	Moneystone Quarry		SK0446	SK0446	25/11/2012	West Midland Bird Club (3tz)
Tyto alba	Barn Owl	bird	Moneystone Quarry		SK0446	SK0446	28/01/2013	West Midland Bird Club (3tz)
Tyto alba	Barn Owl	bird	Kingsley Parish	Whiston Barn, Moneystone Quarry	SK045466	SK0446	02/08/2010	SER General Records 2010
Upupa epops	Hoopoe	bird	Kingsley Parish	Whiston	SK0347	SK0347	10/05/2007	West Midland Bird Club (3tz)
Hyacinthoides non-scripta	Bluebell	flowering plant	Churnet Valley SSSI	Harston Wood area	SK0347	SK0347	February 1983 - April 1983	Natural England Files

Hyacinthoides non-scripta	Bluebell	flowering plant	Ashbourne Hey	Field 1	SK037461	SK0346	17/08/2006	SBI 2006 Resurvey
Hyacinthoides non-scripta	Bluebell	flowering plant	Ashbourne Hey	Field 8	SK037461	SK0346	17/08/2006	SBI 2006 Resurvey
Hyacinthoides non-scripta	Bluebell	flowering plant	Ashbourne Hey	Field 8	SK037461	SK0346	17/08/2006	SBI 2006 Resurvey
Chiroptera	Bat	Mammal - bat	Blakeley Farm (proposed wind turbine area)	Near Rock Cottage, Whiston, Staffs	SK0522246873	SK0546	09/08/2020	SER General Records 2020
Chiroptera	Bat	Mammal - bat	Oakamoor Parish		SK0545	SK0545	04/08/1998	Staffordshire Bat Group (SER Records)
Myotis	Myotis Bat species	Mammal - bat	Moneystone Quarry		SK039464	SK0346	08/07/2014	Consultants (Bow)
Myotis	Myotis Bat species	Mammal - bat	Moneystone Quarry		SK04264635	SK0446	08/07/2014	Consultants (Bow)
Myotis	Myotis Bat species	Mammal - bat	Moneystone Quarry		SK044461	SK0446	08/07/2014	Consultants (Bow)
Myotis	Myotis Bat species	Mammal - bat	Moneystone Quarry		SK04544565	SK0445	08/07/2014	Consultants (Bow)
Myotis	Myotis Bat species	Mammal - bat	Whiston Barn Wood	along woodland edge, Eaves Lane*	SK04554666	SK0446	31/07/2018	Consultants (AbE)
Myotis	Myotis Bat species	Mammal - bat	Moneystone Quarry		SK04594587	SK0445	28/07/2010	Consultants (Bow)
Myotis	Myotis Bat species	Mammal - bat	Moneystone Quarry		SK046455	SK0445	02/06/2014	Consultants (Bow)
Myotis	Myotis Bat species	Mammal - bat	Moneystone Quarry		SK046455	SK0445	08/07/2014	Consultants (Bow)
Myotis	Myotis Bat species	Mammal - bat	Moneystone Quarry		SK047462	SK0446	28/07/2010	Consultants (Bow)
Myotis	Myotis Bat species	Mammal - bat	Moneystone Quarry		SK04864605	SK0446	02/06/2014	Consultants (Bow)
Myotis	Myotis Bat species	Mammal - bat	Moneystone Quarry		SK05454597	SK0545	08/07/2014	Consultants (Bow)
Myotis daubentonii	Daubenton's Bat	Mammal - bat	Moneystone Quarry		SK043459	SK0445	02/06/2014	Consultants (Bow)
Myotis daubentonii	Daubenton's Bat	Mammal - bat	Moneystone Quarry		SK043459	SK0445	07/07/2014	Consultants (Bow)
Myotis daubentonii	Daubenton's Bat	Mammal - bat	Moneystone Quarry		SK043459	SK0445	08/07/2014	Consultants (Bow)

Myotis daubentonii	Daubenton's Bat	Mammal - bat	Kingsley Parish	whiston hall golf course	SK0447	SK0447	2017	SER General Records 2017
Myotis daubentonii	Daubenton's Bat	Mammal - bat	Whiston Golf Course	Whiston	SK0447	SK0447	2017	NE Licence Returns
Nyctalus noctula	Noctule Bat	Mammal - bat	Moneystone Quarry		SK039464	SK0346	08/07/2014	Consultants (Bow)
Nyctalus noctula	Noctule Bat	Mammal - bat	Moneystone Quarry		SK043459	SK0445	07/07/2014	Consultants (Bow)
Nyctalus noctula	Noctule Bat	Mammal - bat	Moneystone Quarry		SK043459	SK0445	08/07/2014	Consultants (Bow)
Nyctalus noctula	Noctule Bat	Mammal - bat	Kingsley Parish	whiston hall golf course	SK0447	SK0447	2017	SER General Records 2017
Nyctalus noctula	Noctule Bat	Mammal - bat	Whiston Golf Course	Whiston	SK0447	SK0447	2017	NE Licence Returns
Nyctalus noctula	Noctule Bat	Mammal - bat	Kingsley Parish	over field, Eaves Lane*	SK04554666	SK0446	31/07/2018	Consultants (AbE)
Nyctalus noctula	Noctule Bat	Mammal - bat	Moneystone Quarry		SK046455	SK0445	06/07/2010	Consultants (Bow)
Nyctalus noctula	Noctule Bat	Mammal - bat	Moneystone Quarry		SK047462	SK0446	02/06/2014	Consultants (Bow)
Nyctalus noctula	Noctule Bat	Mammal - bat	Moneystone Quarry		SK047462	SK0446	28/07/2010	Consultants (Bow)
Nyctalus noctula	Noctule Bat	Mammal - bat	Moneystone Quarry		SK047465	SK0446	08/07/2014	Consultants (Bow)
Nyctalus/Eptesicus agg.	Nyctalus/Eptesicus agg.	Mammal - bat	Oakamoor Parish	Oakamoor (near Cheadle) (NBMP site code: 120118)	SK0545	SK0545	04/08/1998	National Bat Monitoring Programme
Pipistrellus	Pipistrelle Bat species	Mammal - bat	Oakamoor Parish	Oakamoor (near Cheadle) (NBMP site code: 120118)	SK0545	SK0545	04/08/1998	National Bat Monitoring Programme
Pipistrellus	Pipistrelle Bat species	Mammal - bat	Oakamoor Parish	Oakamoor (near Cheadle) (NBMP site code: 120118)	SK0545	SK0545	07/07/2003	National Bat Monitoring Programme
Pipistrellus	Pipistrelle Bat species	Mammal - bat	Oakamoor Parish	Oakamoor (near Cheadle) (NBMP site code: 120118)	SK0545	SK0545	11/07/2000	National Bat Monitoring Programme
Pipistrellus	Pipistrelle Bat species	Mammal - bat	Oakamoor Parish	Oakamoor (near Cheadle) (NBMP site code: 120118)	SK0545	SK0545	25/07/2000	National Bat Monitoring Programme

Pipistrellus pipistrellus sensu lato	Pipistrelle	Mammal - bat	Kingsley Parish	Land at Whitston Eaves	SK0445	SK0445	June 1995	Staffordshire County Council
Pipistrellus pipistrellus sensu stricto	Common Pipistrelle	Mammal - bat	Moneystone Quarry		SK039464	SK0346	02/06/2014	Consultants (Bow)
Pipistrellus pipistrellus sensu stricto	Common Pipistrelle	Mammal - bat	Moneystone Quarry		SK039464	SK0346	08/07/2014	Consultants (Bow)
Pipistrellus pipistrellus sensu stricto	Common Pipistrelle	Mammal - bat	Moneystone Quarry		SK043459	SK0445	07/07/2014	Consultants (Bow)
Pipistrellus pipistrellus sensu stricto	Common Pipistrelle	Mammal - bat	Moneystone Quarry		SK044461	SK0446	02/06/2014	Consultants (Bow)
Pipistrellus pipistrellus sensu stricto	Common Pipistrelle	Mammal - bat	Kingsley Parish	whiston hall golf course	SK0447	SK0447	2017	SER General Records 2017
Pipistrellus pipistrellus sensu stricto	Common Pipistrelle	Mammal - bat	Whiston Golf Course	Whiston	SK0447	SK0447	2017	NE Licence Returns
Pipistrellus pipistrellus sensu stricto	Common Pipistrelle	Mammal - bat	Moneystone Quarry		SK04524587	SK0445	08/07/2014	Consultants (Bow)
Pipistrellus pipistrellus sensu stricto	Common Pipistrelle	Mammal - bat	Moneystone Quarry		SK04544565	SK0445	02/06/2014	Consultants (Bow)
Pipistrellus pipistrellus sensu stricto	Common Pipistrelle	Mammal - bat	Moneystone Quarry		SK04544565	SK0445	08/07/2014	Consultants (Bow)
Pipistrellus pipistrellus sensu stricto	Common Pipistrelle	Mammal - bat	Kingsley Parish	Barn, Eaves Lane*	SK04554666	SK0446	31/07/2018	Consultants (AbE)
Pipistrellus pipistrellus sensu stricto	Common Pipistrelle	Mammal - bat	Moneystone Quarry		SK04594587	SK0445	28/07/2010	Consultants (Bow)
Pipistrellus pipistrellus sensu stricto	Common Pipistrelle	Mammal - bat	Moneystone Quarry		SK046455	SK0445	06/07/2010	Consultants (Bow)

Pipistrellus pipistrellus sensu stricto	Common Pipistrelle	Mammal - bat	Moneystone Quarry		SK046461	SK0446	08/07/2014	Consultants (Bow)
Pipistrellus pipistrellus sensu stricto	Common Pipistrelle	Mammal - bat	Moneystone Quarry		SK04684592	SK0445	08/07/2014	Consultants (Bow)
Pipistrellus pipistrellus sensu stricto	Common Pipistrelle	Mammal - bat	Moneystone Quarry		SK04744616	SK0446	08/07/2014	Consultants (Bow)
Pipistrellus pipistrellus sensu stricto	Common Pipistrelle	Mammal - bat	Moneystone Quarry		SK047462	SK0446	28/07/2010	Consultants (Bow)
Pipistrellus pipistrellus sensu stricto	Common Pipistrelle	Mammal - bat	Moneystone Quarry		SK04774606	SK0446	08/07/2014	Consultants (Bow)
Pipistrellus pipistrellus sensu stricto	Common Pipistrelle	Mammal - bat	Moneystone Quarry		SK04864605	SK0446	02/06/2014	Consultants (Bow)
Pipistrellus pipistrellus sensu stricto	Common Pipistrelle	Mammal - bat	Moneystone Quarry		SK04864605	SK0446	08/07/2014	Consultants (Bow)
Pipistrellus pipistrellus sensu stricto	Common Pipistrelle	Mammal - bat	Blakeley Farm (proposed wind turbine area)	Blakeley Farm	SK053469	SK0546	23/06/2012	Consultants (EnvCe)
Pipistrellus pipistrellus sensu stricto	Common Pipistrelle	Mammal - bat	Blakeley Farm (proposed wind turbine area)	Blakeley Farm	SK053469	SK0546	23/06/2012	Consultants (EnvCe)
Pipistrellus pipistrellus sensu stricto	Common Pipistrelle	Mammal - bat	Blakeley Farm (proposed wind turbine area)	Blakeley Farm	SK053469	SK0546	28/06/2012	Consultants (EnvCe)
Pipistrellus pipistrellus sensu stricto	Common Pipistrelle	Mammal - bat	Oakamoor Parish		SK0545	SK0545	03/07/2002	Staffordshire Bat Group (SER Records)
Pipistrellus pipistrellus sensu stricto	Common Pipistrelle	Mammal - bat	Oakamoor Parish	Oakamoor (near Cheadle) (NBMP site code: 120118)	SK0545	SK0545	03/07/2002	National Bat Monitoring Programme
Pipistrellus pipistrellus sensu stricto	Common Pipistrelle	Mammal - bat	Oakamoor Parish	Oakamoor (near Cheadle) (NBMP site code: 120118)	SK0545	SK0545	04/08/1998	National Bat Monitoring Programme

Pipistrellus pipistrellus sensu stricto	Common Pipistrelle	Mammal - bat	Oakamoor Parish		SK0545	SK0545	04/08/1998	Staffordshire Bat Group (SER Records)
Pipistrellus pipistrellus sensu stricto	Common Pipistrelle	Mammal - bat	Oakamoor Parish		SK0545	SK0545	07/07/2003	Staffordshire Bat Group (SER Records)
Pipistrellus pipistrellus sensu stricto	Common Pipistrelle	Mammal - bat	Oakamoor Parish	Oakamoor (near Cheadle) (NBMP site code: 120118)	SK0545	SK0545	07/07/2003	National Bat Monitoring Programme
Pipistrellus pipistrellus sensu stricto	Common Pipistrelle	Mammal - bat	Oakamoor Parish		SK0545	SK0545	11/07/2000	Staffordshire Bat Group (SER Records)
Pipistrellus pipistrellus sensu stricto	Common Pipistrelle	Mammal - bat	Oakamoor Parish	Oakamoor (near Cheadle) (NBMP site code: 120118)	SK0545	SK0545	11/07/2000	National Bat Monitoring Programme
Pipistrellus pipistrellus sensu stricto	Common Pipistrelle	Mammal - bat	Oakamoor Parish	Oakamoor (near Cheadle) (NBMP site code: 120118)	SK0545	SK0545	15/07/1998	National Bat Monitoring Programme
Pipistrellus pipistrellus sensu stricto	Common Pipistrelle	Mammal - bat	Oakamoor Parish		SK0545	SK0545	15/07/1998	Staffordshire Bat Group (SER Records)
Pipistrellus pipistrellus sensu stricto	Common Pipistrelle	Mammal - bat	Oakamoor Parish		SK0545	SK0545	25/07/2000	Staffordshire Bat Group (SER Records)
Pipistrellus pipistrellus sensu stricto	Common Pipistrelle	Mammal - bat	Oakamoor Parish	Oakamoor (near Cheadle) (NBMP site code: 120118)	SK0545	SK0545	25/07/2000	National Bat Monitoring Programme
Pipistrellus pygmaeus	Soprano Pipistrelle	Mammal - bat	Moneystone Quarry		SK04524587	SK0445	08/07/2014	Consultants (Bow)
Pipistrellus pygmaeus	Soprano Pipistrelle	Mammal - bat	Moneystone Quarry		SK047462	SK0446	28/07/2010	Consultants (Bow)
Plecotus auritus	Brown Long-eared Bat	Mammal - bat	Moneystone Quarry		SK039464	SK0346	02/06/2014	Consultants (Bow)
Plecotus auritus	Brown Long-eared Bat	Mammal - bat	Kingsley Parish	whiston hall golf course	SK0447	SK0447	2017	SER General Records 2017
Plecotus auritus	Brown Long-eared Bat	Mammal - bat	Whiston Golf Course	Whiston	SK0447	SK0447	2017	NE Licence Returns
Plecotus auritus	Brown Long-eared Bat	Mammal - bat	Kingsley Parish	Barn, Eaves Lane*	SK04554666	SK0446	31/07/2018	Consultants (AbE)

Anguis fragilis	Slow-worm	reptile	Moneystone Quarry		SK0445	SK0445	1963 - 2001	Staffordshire BRC data
Anguis fragilis	Slow-worm	reptile	Heathy Gore (south)		SK055463	SK0546	10/07/2008	SBI 2008 Resurvey
Natrix helvetica	Grass Snake	reptile	Oakamoor Parish	sand quarry, Cowtrees	SK0446	SK0446	1963	Staffordshire BRC data
Zootoca vivipara	Common Lizard	reptile	Moneystone Quarry		SK0445	SK0445	1963 - 2001	Staffordshire BRC data
Zootoca vivipara	Common Lizard	reptile	Moneystone Quarry		SK04564541	SK0445	13/10/2008	Consultants (AWA)
Lutra lutra	Eurasian Otter	terrestrial mammal	Hawksmoor Nature Reserve	Oakamoor side of River Churnet	SK0445	SK0445	26/07/1990	Staffordshire BRC data
Lutra lutra	Eurasian Otter	terrestrial mammal	Hawksmoor Nature Reserve	Oakamoor side of River Churnet, Hawksmoor Nature Reserve	SK0445	SK0445	27/01/2009	Staffordshire Mammal Group (3tw/9r6)
Meles meles	Eurasian Badger	terrestrial mammal	Present			SK0546		SER General Records 2011
Meles meles	Eurasian Badger	terrestrial mammal	Present			SK0546		Consultants (EnvCe)
Meles meles	Eurasian Badger	terrestrial mammal	Present			SK0446		Consultants (Ecotrack)
Meles meles	Eurasian Badger	terrestrial mammal	Present			SK0546		Consultants (Bow)
Meles meles	Eurasian Badger	terrestrial mammal	Present			SK0546		Consultants (Bow)
Meles meles	Eurasian Badger	terrestrial mammal	Present			SK0346		Consultants (Bow)
Meles meles	Eurasian Badger	terrestrial mammal	Present			SK0346		Consultants (Bow)
Meles meles	Eurasian Badger	terrestrial mammal	Present			SK0446		Consultants (Bow)
Meles meles	Eurasian Badger	terrestrial mammal	Present			SK0446		Consultants (Bow)
Meles meles	Eurasian Badger	terrestrial mammal	Present			SK0446		Consultants (Bow)
Meles meles	Eurasian Badger	terrestrial mammal	Present			SK0446		Consultants (Bow)
Meles meles	Eurasian Badger	terrestrial mammal	Present			SK0546		Consultants (Bow)

Meles meles	Eurasian Badger	terrestrial mammal	Present	SK0445	Consultants (Bow)
Meles meles	Eurasian Badger	terrestrial mammal	Present	SK0546	Staffordshire Mammal Group (3tw/9r6)
Meles meles	Eurasian Badger	terrestrial mammal	Present	SK0347	Staffordshire Mammal Group (3tw/9r6)
Meles meles	Eurasian Badger	terrestrial mammal	Present	SK0445	Staffordshire County Council
Meles meles	Eurasian Badger	terrestrial mammal	Present	SK0445	Staffordshire County Council
Meles meles	Eurasian Badger	terrestrial mammal	Present	SK0445	iRecord 2022 quarantine
Meles meles	Eurasian Badger	terrestrial mammal	Present	SK0447	SER General Records 2017
Meles meles	Eurasian Badger	terrestrial mammal	Present	SK0447	NE Licence Returns
Meles meles	Eurasian Badger	terrestrial mammal	Present	SK0545	Staffordshire Mammal Group (3tw/9r6)
Meles meles	Eurasian Badger	terrestrial mammal	Present	SK0545	Staffordshire Mammal Group (3tw/9r6)
Meles meles	Eurasian Badger	terrestrial mammal	Present	SK0545	Staffordshire Mammal Group (3tw/9r6)
Meles meles	Eurasian Badger	terrestrial mammal	Present	SK0545	Staffordshire Mammal Group (3tw/9r6)
Meles meles	Eurasian Badger	terrestrial mammal	Present	SK0545	Staffordshire Mammal Group (3tw/9r6)
Meles meles	Eurasian Badger	terrestrial mammal	Present	SK0545	Staffordshire Mammal Group (3tw/9r6)
Meles meles	Eurasian Badger	terrestrial mammal	Present	SK0546	Staffordshire County Council

Appendix 11.1: Bi-Annual report (418040MM/3); dated May 2017

Abbeydale
Building Environment Consultants

BI-ANNUAL
MONITORING REPORT

MONEYSTONE PARK, WHISTON

STAFFORDSHIRE

Report 418040MM/3 May 2017

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BI-ANNUAL MONITORING REPORT MONEYSTONE PARK, WHISTON, STAFFORDSHIRE Report 418040MM/3 May 2017

DOCUMENT VERIFICATION

	Prepared By	Checked By
Name:	Glyn Hogg	Peter J Lloyd
Qualifications:	MSci FGS	BSc MSc FGS C.Geol
Position:	Engineer	MD
Signature:		

SUMMARY

Site Grid Ref:	404560E 346110N	**Site Level (m AOD)**	194	**Site Area (Ha)**	12 Ha.
Development proposed:	Restoration of Moneystone Quarry				
Past site development:	Sandstone Quarry				
Made Ground:	20 to 35m deep tailings lagoons				
Superficials:	None				
Ground Conditions **Bedrock:**	Sandstone over shale dipping 4 to 7 degrees to south.				
Shallowest coal:	No Coal of economic importance identified.				
Groundwater:	Groundwater encountered in basal 2m of sandstone, plus surface of tailings.				
Ground Improvement:	Improvement of tailings surface				
Drainage:	Drainage of lagoon surfaces				
Remediation:	Quarry to be restored.				
Gas protection:	Not required.				
Further Investigation:	Continued monitoring.				

BI-ANNUAL
MONITORING REPORT
MONEYSTONE PARK, WHISTON,
STAFFORDSHIRE
Report 418040MM/3 May 2017

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BI-ANNUAL
MONITORING REPORT
MONEYSTONE PARK, WHISTON, STAFFORDSHIRE
Report 418040MM/3 May 2017

1. INTRODUCTION

On the instruction of Bolsterstone plc, on behalf of Laver Leisure, quarterly geo-environmental monitoring visits were undertaken by Abbeydale Building Environment Consultants Ltd in and around the former Moneystone Quarry, off Whiston Eaves Lane, Oakamoor.

The site is located between the villages of Whiston and Oakamoor and is centred within National Grid Reference square SK 044 459 between 110m to 240m AOD (See Fig 1), covering an area of approximately 170 hectares.

This report was produced on behalf of our client, Laver Leisure and their advisors and financiers, and should not be relied upon or transferred to any other parties without the express written authorisation of Abbeydale BEC Ltd and our client. If any unauthorised third party comes into possession of this report, they rely on it at their own risk and the authors owe them no duty of care or skill.

Abbeydale BEC have undertaken thirty three monitoring visits to date, between 20 December 2010 and 24 January 2017 for the purpose of monitoring quarry features in and around the site. The monitoring findings have been recorded and presented in monitoring letters following each visit. The comments and recommendations presented in this bi-annual report are based on the findings of the quarterly visits between January 2015 and January 2017, to provide an overview of available information and ground conditions encountered during each visit. There may be other conditions prevailing on the site which have not been disclosed by these investigations and which have not been taken into account by this report. Responsibility cannot be accepted for conditions not revealed by the investigations.

When writing this report the proposed development was for an extreme activity holiday park with a hotel, lodges, lakes and lagoons. There will be potential to offer water sports including scuba diving, swimming, sailing, canoeing etc along with fishing. The park will also offer other outdoor activities such as mountain biking, nature trails, climbing, clay pigeon shooting etc. Subsequent to previous planning applications two areas of the site (Areas D&E) are currently in the process of having solar PV panels installed. If there are changes to these proposals, then some modification to the comments and recommendations given may be required.

2. OBJECTIVES

This biannual report has been undertaken to evaluate and summarise the information gathered from the previous monitoring visits and to identify any potential areas of concern. As part of this evaluation ground and surface water levels have been recorded, along with pH and visual assessments of quarry stability. This has included groundwater level monitoring in several standpipes and spot height measurements of the Q3 lake level. In addition we have also taken into account observations recorded during previous demolition works and the more recent program of earthworks.

Where relevant this report makes reference to previous monitoring letters and reports, including the Bi-Annual Monitoring Report (ABEC Ref: 418040MM2), dated February 2015.

3. SUMMARY OF MOST RECENT CONDITIONS - 24 JANUARY 2017

Following our previous monitoring letter, dated 1 December 2016 (ABEC Ref: 418040QMV161201), we carried out our thirty third monitoring visit on 24th January 2017. In brief:-

1. Our most recent visit indicated that the water level in Q3 had fallen by approximately 0.26m to 156.81m AOD and had fallen enough to allow access to the western end of Q3 along the bench running around the edge of the quarry. See Fig 2.

2. The borehole monitoring of the site indicates that groundwater levels have reduced in some areas while increased in others since the last monitoring visit. Significant rises of 1.46m and 0.76m were recorded in BH121(28m) and BH92029 respectively. See Fig 1 and Table 1. BH92017 has consistently recorded a localised high anomaly in groundwater levels and it has previously been suggested that it may represent a perched water table. In contrast the boreholes within the L3 dam (BH121 and BH122) have shown relatively rapid fluctuations. The most recent visit indicates a rise of 1.46m in the deep (28m) borehole seated in the dam, with a decrease of 0.12m in the shallow (13m) borehole in the tailings. The boreholes within and adjacent to the Whiston Eaves Lane landbridge have all recorded decreases in water level, while the boreholes to the southwest of Q3 have recorded increases.

3. The pH monitoring recorded that roughly one third of values were within the EU bathing water limits, with an average pH of 7.9. See Table 2, Figs 2 and Fig 3. Seepages into the River Churnet were found with a range in pH of 7.3 to 7.5. In previous visits, these seepages have been acidic. As on previous visits, acidic groundwater seepages were also recorded to the north of Area B. See Table 2 and Fig 2. The pH of the River Churnet was found to be 7.6 with a clear reduction in the amount of bubbles in the centre of the river, though these were still present. The river was noted to be relatively low, though it had risen by around 0.07m from the previous visit, with a flow of around 0.26m/sec.

4. The ongoing collapse of SP5 dam had continued further, with part of the edge of the pond having fallen away. This had caused the water level in SP5 to decrease leaving a visible tide mark roughly 0.30m above the water level. It would appear that the collapse had occurred fairly recently, and that the water level in SP5 had not yet reached equilibrium as the outflowing water seemed to be of greater volume than the inflow, suggesting that the pond was still draining. **This will require continued monitoring, but with no risk to the external environment, no action is proposed at this stage.**

5. SP1 remained very heavily silted, with very little surface ponding visible. **It is recommended that at least a proportion of the silt is removed to allow its continued use as a silt trap.**

6. The outfall trench excavated to the west of L4 has filled with sand washed down the access track from the north. **It is recommended that this is cleaned out and a silt trap provided up slope of the outfall to limit further buildup.**

7. The Stream D diversion was noted to be flowing, with increased amounts of vegetation within the flow which has caused the flow to begin to meander within the base of the channel. On the previous visits, the amount of water flowing down the spillway has increased along with the ponding behind the spillway. It had been anticipated that over time the ponding in the diversion area will reduce and silt up resulting in reduced flow in the old stream, however this is yet to occur. **An action to lower the outfall of the diversion by 1m is recommended.**

8. Since the previous visit, the ponding in L7 has increased and continues to extend to the old tailings piled in the southeast corner of L7. The ponding on L7 has submerged tall grasses, suggesting that the ponding has increased beyond its usual extent. The stockpile to the north of Q2 has been monitored on previous visits with no further movement noted. The red coloured tailings excavated from L7 remain spread across the southern face of the stockpile. **Some method of reducing the ponding of the water across L7 needs to be considered.**

9. The excavation into L7 has continued to fill with water, and is now roughly 1m below the surface of the tailings. The sides of the excavation which are visible are vertical above the waterline. When first excavated the tailings here were able to dry out and harden. However, with the water level rising the excavation sides have spalled away, especially in the southeast corner, and it is anticipated that the tailings below the water level will continue to slump, increasing the extent of the excavation. **The outfall from Stream F into this area needs to be repaired.**

10. No signs of rockfalls have been noted in Q1 or Q2, though potential instability on rock faces around the site remain. However due to restricted public access these do not currently present a significant risk to the occasional site visitor.

11. In Q3, the quarry sides did not show any signs of instability, however the bench appears to have slumped along the northern side of Q3. Slumping has been noted previously in this area, however it appeared one of the slumps was more recent. As the bench has been submerged on the last few visits, the slump could have occurred anytime after April 2016 when the bench was last unsubmerged.

12. The installation of solar PV in Areas E and B has largely been completed, with the panels in place across both areas. During the visit, engineers were seen working in a new concrete building to the southwest of Area E, connecting wires. It is understood that a cable is to be extended from the solar panels in Area E to Eaves Lane via the fields to the east of L4. An area of the field to the east of L4 appeared to have been excavated and then put back, suggesting the cable has been placed. Further uphill from this area, adjacent to Eaves Lane, active machinery including a cherry picker could be seen. Prior to the placement of solar panels in Area E, surface water had been causing erosion channels to form. The solar panels have had small stone bunds placed behind each row to direct surface water flow around the outside of the panels rather then through them. This concentrating of the surface water flow has cause a gulley to form along the western edge of the solar panels. Also, it would appear that the stone bunds have been breached in places, allowing surface water to flow around the feet of the solar panels which has caused some of them to sink. Although outside Laver Leisure jurisdiction, further observations are proposed in future visits.

4. HYDROLOGY

Q3 Water Levels:

Since the cessation of quarrying and pumping on 16 December 2010, water level in the Q3 lake has risen from the base of the quarry at approximately 131m AOD, to a maximum level of 158.3m AOD in August 2014. See Table 3. The most recent January 2017 visit indicated a current level of 156.82m AOD, a reduction of 1.48m from the recorded maximum.

The Q3 lake was originally noted to be filling from seepages along the north face of Q3 with an initial rapid rate of level rise. In the early stages of water level rise it was noted to be heavily influenced by preceding weather conditions. By May 2011, Lagoon L8 to the east end of Q3 was no longer receiving acidic tailing fluids from L7, with the only visible inflow of water being the small acidic seepage in the northeast corner. It was considered that the small acidic flow into L8 was sourced from the saturated tailings in L7 and consequently would persist for some time. The August 2011 monitoring visit recorded a decrease in the rate of level rise, which was suspected to be due in part to preceding warmer weather conditions. This was again highlighted when a 0.6m level rise in October 2011 followed a significantly wetter period.

Between December 2011 and February 2012 Q3 lake levels rose at around 0.3m each month. It is indicated that prior to overtopping of the central dam, Q3 rose at a

slightly faster rate than L8. Although the flow in the northeastern corner was still present the levels in L8 still lagged behind those in Q3. During the February 2012 visit a strong flow was recorded down the north face of Q3 and subsequently identified as a burst water main on Whiston Eaves Lane. From February 2012 Q3 lake levels generally rose less than 0.3m/month with L8 continuing to lag behind Q3 such that by May 2012 there was a difference in level of 0.87m. At this time the water level in L8 was approximately 150mm below the level of the L8 dam notch. By July 2012 a shallow flow (100mm) was noted to be overtopping the notch. Following the overtopping the water level within L8 rose rapidly and by September 2012 the lake was rising as a single body, with a level of 153.17m AOD. The lake continued to rise and by December 2012 the dam was completely submerged. It was anticipated that following overtopping the lake level rise would slow, however as shown on Table 3, a rapid increase of 1.24m was recorded between December 2012 and February 2013 equating to a rate increase of 2 to 3 times. This was then followed by a further increase of 1.8m between February 2013 and April 2013 which at the time was considered due to increased inflow from snowmelt and a reduction in both evaporation and drainage from the lake. As anticipated the warmer weather in the spring and summer months resulted in a drop in the rate of filling between April and July 2013. From July 2013 it was no longer possible to access the western end of the quarry via the bench. At the time of the inflow reduction, several boreholes also recorded reduced groundwater levels, in particular BH24012 in the northeast corner of Q3 showing a drop of 2.3m. Previous assessments suggested the lake would fill to approximately 155m AOD, although by July 2013 the level was in excess of this at 157.29m AOD.

The reduction in the level rise rate was anticipated to represent an equilibrium having been reached at this stage which appeared to be confirmed with the following visit in October 2013 recording a drop in lake level of 0.41m. It was noted at the time that a beach line had formed around the edge of the lake suggesting the level was remaining relatively constant and an equalibrium had been reached.

In 2014 the monitoring frequency was reduced and consequently some of the small scale fluctuations may have gone unrecorded. The two monitoring visits that followed in April and July 2014 indicated successive large increases in level of 0.75m and 0.64m respectively, bringing the lake to its maximum recorded level of 158.30m AOD. As water level rose to July 2014, BH95013 became submerged. Prior to this it was noted that the groundwater level in BH95013 was below the level of the lake, suggesting that groundwater was flowing through the landbridge to the south of Q3.

As water level rose it was noted that the ground to the south of Q3, at the head of Stream A, became saturated further suggesting a hydraulic link between the two areas. Given the rapid increases in lake level it was suggested that consideration be given to testing both Q3 and Stream A water in anticipation of it overtopping the concrete spillway in the southwest corner, at approximately 159m AOD. However, the October 2014 and January 2015 visits recorded successive large decreases of 0.72m and 0.92m respectively. The reduction in level to January meant it was again possible to access the western end of the quarry along the bench, not possible since July 2013. The reason for the drop was initially unclear, although it has subsequently

become clear that fracture channels in the sandstone, previously blocked, south of Q3 have been opened.

Following the decrease in January 2015, the level continued to drop until April 2016. The decrease slowed in the spring and summer months despite the increased evaporation and reduced rainfall. The rate of decrease was observed to have increased in the October 2015 visit before decreasing again in January 2016, at which point the lake level was 155.19m AOD, the lowest recorded level since April 2013. Following the decrease, a period of increase began in April 2016. The initial rate of rise was relatively quick, with an increase in level of 1.74m recorded between January and April 2016. This was thought to be due to modifications to the outfalls of L4 and L5, which was allowing L4 to drain into L5 and then through the pipe bridge and into Q3. The rate of increase then slowed in the subsequent visits of July and August 2016, as the bench was submerged and the inflow from L4 and L5 ceased. The lake level reached 157.39m AOD, 0.91m below the previous maximum level of 158.30m. Since August 2016, the lake level has been decreasing to its last monitored level of 156.81m in January 2017.

The lake level in Q3 has often reflected relative changes in other waterbodies on the site, such as L7 and the River Churnet, as following abnormally dry months they have all shown a decrease. However, often Q3 has shown fluctuations which do not match the other waterbodies. A lag in the response time between a change in the water level in L7 and Q3 has previously been suggested. Also, it is anticipated that the blocking and unblocking of underground drainage pathways in the sandstone south of Q3 may influence the water level in Q3.

The rising water levels in Q3 have resulted in several small slips being recorded, particularly along the northern edge of the bench, where wave action has resulted in washing out of finer particles. It appears that following the recent fluctuations in lake level and subsequent submergence and emergence of the bench that an additional small slip has occurred along the northern edge of the bench. With large changes in water levels further instability and slips should be anticipated.

On the most recent visit aquatic vegetation was observed to be growing below the water level on the quarry slopes in the west of Q3.

L7 Water Levels:

L7 was historically used for the desilting and storage of acidic tailings from processing in much the same way as L8 and L4. The water collected on the surface of the tailings was siphoned back to the processing area through the tunnel for reuse. In August 2011 the water level was drastically reduced following cessation of pumping from the production areas and over the following months reduced further to a series of small ponds. As the surface of L7 became visible it was apparent that the surface water had drained down a series of sinkholes located around the southern edge of the lagoon. The surface ponds were connected by a small watercourse flowing to the largest sinkhole in the southeast corner of L7. Located above the acidic flow into the corner of L8 the smaller sinkholes along the southwestern edge of L7 appeared to be linked.

As monitoring has progressed it has become apparent that the water level within L7 is strongly influenced by the preceding weather conditions. On recent visits, ponding has been restricted to the southeast corner of L7, and it would appear that the sinkholes in the southeast corner have become blocked. This also being consistent with a reduction in the waterlevels in the boreholes in the landbridge.

The extent of the ponding has changed from visit to visit. On most of the recent visits, the ponding has consisted of two main areas connected by a thinner middle section of ponding, resembling a bow tie. When the ponding has increased, such as on the most recent visit, the ponding in the central area has increased to form one large pond instead of two connected ponds. The vegetation on L7 reflects the prominent areas of pondings, as the areas not usually submerged are continuing to green over. The majority of recent visits have also shown the ponding to extend to the old tailings stockpiled to the southeast corner of L7.

In previous monitoring visits it has been noted that the surface of the tailings was very soft due to the saturated state of the tailings. A rockfall on the western side of L7 was previously reported with the debris having sunk into the tailings. This would suggest that at the time of the failure the moisture content of the tailings will have been close to the liquid limit. The water ponding on the surface of L7 will maintain the high moisture content of the tailings and has consequently made access onto the surface difficult. However, more recently the edges of the lagoon have begun to green over and appear on the surface to be firming up. In addition, subsequent rockfall debris appears to be resting on the surface suggesting locally firmer ground conditions.

In 2016, ESG undertook an investigation to try to determine the state of the tailings in L7. It was determined that although a crust was present along the dryer northern edge, elsewhere it could be penetrated relatively easily and remained extremely soft below.

To further investigate ways in which the lagoons could be made safe an area was dug in the shallower north eastern corner of L7. By following the sloping base of the quarry and dewatering with a sump pump an area of tailings 5m deep was removed and stockpiled on the northern slopes to dry. Due to the negative pore pressure developed in the tailings the side walls of tailings were able to stand near vertical and the crust edges became firm. However, as soon as the pump was turned off the sides of the excavation slumped and the water level returned to within 0.5-1.0m of the original surface of the tailings.

Surface Streams:
Flow measurements of Streams A, B and C have historically shown significant variations in flow and have been seen to be influenced by the preceding weather conditions. See Fig 6 and Fig 11. The rainfall data collected from the surrounding areas indicates a rough correlation with stream flows and indicates the influence of preceding weather on flows. The correlation is less pronounced in Stream C due to the smaller fluctuations and flows.

From June 2007 Stream A showed relatively consistent flow readings with an average flow of approximately 500m^3/day. Some seasonal variations were observed which were also reflected in Streams B and C. Stream A will undoubtedly have been

affected by the excavation of Q3 and the associated reduction of groundwater levels. Initially the subsequent rise in waterlevel in Q3 had little effect on the flow of Streams A, B & C. However, by the April and July 2014 monitoring visits the ground to the south of Q3 and BH95013 had became saturated with small flows recorded. This area represents the Stream A headwaters and it is anticipated that as the lake reached its maximum level, percolation through the south landbridge allowed for the Stream A flow to re-establish. Based on topography it is apparent that the excavation of Q3 has resulted in significant reductions to the catchments of Streams A and C. See Fig 9a to 9c. Due to this the variations in surface flow and run-off to the streams will be attenuated by Q3.

Stream B has consistently shown the largest variations in flow rate, however the highs recorded by the Abbeydale monitoring are significantly lower (58% - 90%) than the historic highs recorded by the quarry prior to extraction of Q3. Although flows down Stream B have clearly been affected by Q3, it will not have been as significantly affected as Stream A or Stream C. Between September 2012 and December 2012 it was noted that the 'V' notch associated with Stream C was blocked and water was flowing around the monitoring point. Subsequently, it appears as though some repairs to the 'V' notch were undertaken, along with some vegetation management of the surrounding areas.

No flow monitoring is understood to have been undertaken for Stream D or E. When the quarry was operational Stream D acted as the overflow from the Production Area. A series of silt ponds, SP1, 2 and 3, were regularly maintained to prevent silt reaching the River Churnet. Since the cessation of quarry production the ponds and Stream D have continued to take the natural run-off flows, and have become increasingly vegetated around their margins. From visual assessments during the post production monitoring visits the flow down Stream D does not appear to have shown significant variation, possibly as a result of infiltration into the underlying tailings of L3. Since the diversion of Stream D at the end of 2014 the flow over the L3 spillway has greatly reduced, however recent visits have shown a gradual increase. At the present time it is anticipated that the majority of Area E is drained by Stream D, with the eastern most areas being drained down Stream E.

Between June and August 2014 restoration earthworks were undertaken in Areas B and E. As part of the restoration in Area B a new drainage ditch was excavated along the northern edge, linked to the original drainage ditch to the north of Q2E. A small flow (Stream F) has been recorded within the northern arm of the ditch, which then joins a second and increases in volume along the southern edge of Area B. The source of the water will be from the base of the sandstone rock face north of Area B. There also currently appear to be seepages from the underlying shale bedrock, with multiple small seepages recorded along the northern face. It is anticipated that precipitation from the slopes to the north of Area B will filter down and flow along the boundary between the Sandstone and Mudstone. Prior to remedial works in Area B it is anticipated that the groundwater will have continued to flow along the bedrock before discharging directly into L7. On recent visits the new drainage channel has begun to vegetate, while the original drainage ditch has had the small saplings removed once again.

L3 Dam

Following the January 2012 investigation into the L3 dam, the boreholes (BH121 and BH122) have been included in the monthly monitoring visits, see Fig 8. Initially, continuous level logging software installed within both standpipes in BH121 indicated the groundwater level in the tailings (13m) to be generally around 141m AOD. Various spikes shown in the water level data were concluded to be the result of surface water influx during periods of wetter weather. The deeper (28m) standpipe was seated into the dam and recorded water levels generally between 136m and 137m AOD. On one occasion the water level dropped to below 130m AOD and correlated to a prolonged peak in the overlying tailings. It was suggested that the drop in level was related to the opening of new flow pathways in the underlying Sandstone bedrock or through the dam.

Prior to, and during the 2012 investigation surface ponding was recorded on the surface of the tailings directly behind the dam. Previous water level highs in both the dam and tailings material were generally recorded during the winter months. In particular during the 2012/2013 winter the water level in the tailings was seen to be at ground level. This had drained away following the diversion works, however recent visits have shown the ponding to be increasing. It has become apparent during the monitoring that fluctuations are again occurring in the dam and tailings material which appear to be influenced by preceding weather conditions. However, fluctuations have decreased in the most recent visits.

The rapidly fluctuating water levels within the L3 dam are cause for concern due to the pore pressures building up in the material. The previous investigation found that the tailings within L3 were generally in a saturated state, at or close to the liquid limit. These were found to be overlain by approximately 2m of sand as a capping layer. In order to improve the engineering properties for future construction and improve the overall stability of the dam its was concluded necessary to implement drainage measures to divert water away from the dam crest.

To assist in the drainage of the L3 dam, Stream D was diverted in October 2014 from its original course over the spillway, to discharge directly onto the incline before flowing into SP1. See Fig 2. Initially, this reduced the volume of water flowing over the surface close to the dam crest and consequently over the course of the coming months there was a decrease in water level in BH121 and BH122. In addition, the significant fluctuations in level previously recorded were reduced. By reducing the water level in this way it will contribute to the overall stability of the L3 dam and allow some consolidation of tailings behind the dam which to date appears to have been halted by the recharge from the surface water flows. However, since October 2015, the water level in the tailings standpipe has been at or just below ground level. This correlates with the increased ponding behind the spillway. As no noticeable change in the Stream D flow rate has been recorded during the monitoring it is concluded that the change in level is due to an increased infiltration through the surface of L3 from the diversion. There is therefore a need to reduce the water level in the diversion. This would most easily be achieved by lowering the bed level of the diversion where it passes through the bund, before overflowing onto the incline. We therefore propose that the centre of the diversion stream is dug out to a metre below the level of the incline at the diversion exit. This will in turn will allow the tailing

up-stream of the bund to erode and cause the diversion as a whole to have a lower bed level.

Groundwater Flows

The variation in catchment areas pre and post quarrying is indicated in Figure 9a and 9b. As expected the excavation of Q3 had significantly affected the catchment areas of Stream A and C. Consequently in addition to the surface flows noted above, Q3 will also act to attenuate groundwater flows as a source of stream recharge. See Fig 7. Although the Stream B catchment is further from Q3, the monitoring has indicated that the peaks in groundwater level from BH23004 correlate closely to the variations in level of Q3 and consequently give some indication of the extent of Q3 influence. However, the variations in flow are more heavily influenced by the preceding weather conditions than the other streams.

The vector plot of groundwater flows (Fig 9c) indicates that Q3 and the underlying strata orientation are the main controls on groundwater flow paths. Observations along the railway have noted seepages from the bedrock at multiple locations including on the river banks. The plot further confirms the influence of seepages from L7 in the filling of Q3. As mentioned it is clear from the plot that Q3 will be acting to attenuate the groundwater flows to a certain degree.

5. ENVIRONMENTAL

The Environmental Assessment Desk Study Report (Ref: 418040EA) was prepared in March 2011. This found that although contamination will have been present, from the result of producing sand, the environmental legacy to human and environmental receptors are limited to the high and low pH present. Consequently the pH of streams and water bodies have been monitored since cessation of quarrying.

The pH levels have been recorded on previous monitoring visits from all main surface water bodies (including lagoons, streams and the River Churnet) along with groundwater seepages where present. The monitoring locations have remained relatively constant around accessible water bodies, although variations have been possible/necessary where site works or changing conditions have made other parts of the quarry available. The results of the pH monitoring are recorded in Table 2 and with contour plots of pH shown in Figures 5a to 5i.

Quarry pH

Throughout the course of the monitoring it has become apparent that the extremes of pH across the site are reducing. See Figure 3 and Table 2. However, our monitoring visits on occasion have continued to identify localised areas of high and low pH. These have been most noticeable when restoration and site works at the site have exposed new areas and suggests there may be further legacy sources remaining.

During the early monitoring visits between December 2010 and February 2011, there was a large range of pH recorded with values as high as pH 13.3 and as low as pH 2.0. These extreme values were found to be associated with the processing and the

tailings produced. At this time the remaining surface water pH was recorded at or close to neutral and in general pH tended to increase towards the River Churnet in the south. See Fig 5a.

Subsequent visits also recorded the pH of groundwater and indicated a pH of around 6.5. An exception to this was the water within BH24012 which indicated a pH of 5.5. Its location suggested that the source of the low pH may be the water flowing through the acidic tailings in L7 and daylighting in the northeast corner of L8. Although surface water in L7 had been tested and found close to neutral it was thought that the surface flows are influenced by preceding weather conditions and therefore were not representative of the acidic porewater found within the body of the tailings. In November 2016, groundwater in BH24012 was found to have a pH of 5.9. At this time, the pH of the L7 ponding was measured at pH 5.3 within the excavation into the tailings.

During the monitoring several acidic seepages were recorded along the north face of Q3 and were seen to be affecting the pH of the water on a local scale. A greater number of seepages were observed towards the eastern end of Q3 which may indicate why L8 recorded consistently lower pH values than Q3, at times as low as pH 4.5. Following overtopping of the dam in July 2012 the pH of L8 increased due to dilution by Q3 although the acidic flow in the northeast corner of L8 was still affecting pH locally as recently as April 2013 (See Fig 5e). Following the rise of the water level the influence of the acidic seepages appears to have reduced due to dilution. If the water level continues to drop as it is currently, then the acidic seepage may become more pronounced once more.

In general three main areas of persistent low pH were recorded as follows:-

- seepages into L8/Q3
- a natural seepage from the northern slopes into Q2N
- an acidic seepage at the River Churnet.

The discharge to the River Churnet was first recorded in June 2011 with a pH of 4.7. It has been noted on subsequent visits that the acidic discharge is affecting the pH of the river, adjacent to the north bank, for considerable distance downstream. The acidic water was traced during the September 2012 monitoring visit to a seepage at the base of T2. It has been suggested that the source of the acidic water may be the tailings present in the Q1 and Q2 lagoons with groundwater flows leaching acidity and flowing along fractures in the sandstone. However, the seepages in this area have not seemed to affect the pH of Stream E which flows to the east of the quarry and has often recorded near neutral values.

Monitoring of Streams A to E has been undertaken since Q3 formed. In general Stream A, B and C follow similar trends with variations in pH occurring at the same time. This would tend to indicate these are influenced by the weather in much the same way as L7. As expected, with distance from sources of low pH, the pH levels generally increase to the west and southwest of Q3 in the direction of the streams. Given the proximity of Stream A and C to Q3 this effect is slightly less pronounced than that for Stream B. This is likely due to percolation from Q3 through the bedrock landbridge in these areas. It should be noted that the majority of values for Streams A

to C are within EU bathing water limits of 6.5 and 8.5, with no values recorded outside this range since the 2015 Annual Report.

Stream D consistently recorded pH values of 6.5 to 7.5 from April 2015 to July 2016, and from November 2016 to January. However in July 2016 Stream D was found to have a pH of 9.0 in the diversion channel reflecting the fresh exposed tailings which included white fragments of lime.

Stream E recorded values of 6.3 to 7.7, with additional readings in December 2012, January and April 2015 and November 2016 showing no values lower than pH 6.3. When traced previously it was found that Stream E water does not pass through the quarry, and instead runs along the eastern site boundary before flowing under the railway and past the EA monitoring station. The lower values recorded are anticipated to be due to mixing of the surface water with the acidic groundwater at the base of T2.

Extreme highs previously recorded between April 2013 and January 2014 were associated with previously buried waste material associated with the L7 flume. High pH values were again recorded from July 2016 to the most recent visit, with a range in pH of 9.7-13.0. As before, this is due to lime contained within the tailings stockpiles adjacent to the east side of L7.

In summer of 2014 a series of restoration earthworks were undertaken in Area B, north of Q2E which exposed previously unrecorded acidic seepages. As part of the earthworks a drainage ditch was excavated along the northern edge of Area B, connecting to an existing surface watercourse. The visits since September 2014 have recorded pH values as low as pH 4.1 in groundwater seepages from the rock face to the north of the ditch. This suggests acidic sources may be present in the natural ground north of Q2 or may suggest that the pH of groundwater flowing through the Sandstones is naturally low.

pH values across the site have shown large fluctuations over the last 24 months, with pH values fluctuating from predominately Acid to Alkali and vice versa in consecutive visits.

L7 pH

Monitoring of L7 has revealed that the pH appears to have been affected by the recent excavations into the tailings which occurred between August and November 2016, see Fig 12. It can be seen that prior to the excavations the pH in L7 showed some variation between pH 10 and 6 between visits, however the minimum, maximum and average for each individual visit were over a small range. Following the excavation, the range between the minimum, maximum and average pH has increased, and all three values have become more alkaline. This is thought to be due to the uncovering of pockets of high pH lime which were previously buried. Over time it is anticipated that the pH values will decrease towards more neutral levels, however this shows that the potential for high fluctuations in pH in L7 remains whilst the tailings remain exposed and/or are disturbed.

River Churnet pH

Past monitoring of the River Churnet showed that upstream of the acidic discharge the pH of the river has ranged between 5.8 and 8.0 with an average value of 7.1. The river water was found to generally be within EU bathing water limits above the acidic discharges. Downstream of the acidic discharges the pH of the river Churnet adjacent to the north bank was generally less than pH 6.5. When the river was monitored downstream of the acidic discharges and adjacent to the bridge the pH of the river was generally outside the EU bathing water limits.

Following the April 2015 visit, pH began to rise over subsequent visits. See Fig 12. The average pH of the river has been within EU bathing water limits since the October 2015 visit. The minimum recorded value has also risen since the April 2015 visit, as the acidic seepages from the bank have been either absent or more neutral, with the exception of the December 2016 visit. The rise in pH in the river from April 2015 correlates with the rise in pH in L7. See Fig 12. This may show that L7 is having more of a control over the pH of the river for this period than previously anticipated.

During a site visit in December 2014 with the EA, a trail of foam/bubbles was observed down the centre of the river, adjacent to the pump house. A series of pH readings were undertaken with the EA recording typical upstream river readings and included the more acidic readings from outlets downstream. The river was again observed upstream where it meanders close to the railway and no foam/bubble were recorded. The only evidence of activity between the locations were pheasant feeding troughs in the marshes and therefore it was concluded that the quarry was not the source of the “pollution” with an alternative source likely. Recent visits have again observed the trail of bubbles down the centre of the stream, with occasional areas of foam trapped against the banks of the river. As yet no explanation of the bubbles has been determined, but observations will be made during each visit.

Baseline Survey

Following recommendations made in the previous biannual report in 2015, an environmental baseline survey was carried out by Abbeydale BEC in November and December 2016. To undertake the environmental baseline assessment, nineteen surface and ground water samples were tested from around the site. Water samples were tested from each settling pond, lagoon as well as from the river and also standpipes which were of sufficient diameter to insert a bailer. Also, 7 samples were tested of the L7 tailing materials which were excavated in November 2016 and spread across the tip to the north of L7. The distribution of sampling points is shown on Fig 13.

Laboratory testing was carried out by Scientific Analysis Laboratories (SAL). Testing methods are recorded on the results sheets provided. The results are summarised on Tables 5a to 5d. The testing undertaken consisted of a broad range of metal and PAH testing on both solids and leachate including pH.

Soil chemical testing at this stage has been limited to the L7 tailings material (see Tables 5a and 5b). The results are all below Soil Guideline Values (SGV) or Generic Assessment Criteria (GAC) values for an end use of public open space. The only

exceptions being elevated Dibenzo (a,h) Anthracene in Stockpile 1. However the guideline value for Dibenzo (a,h) Anthracene is less than the limit of detection of the lab test. In Stockpile 1 Chromium (VI) was found to be above the LQM guidelines but below the CS4 guidelines. The elevated sulphate found will not be of concern to human health.

Soil leachate results (see Tables 5c and 5d) indicate that all values are below either Environmental Quality Standards (EQS) or Water Supply Regulations (WRS), with the only exception being elevated Sulphate in several water samples and an elevation of Nickel in water sample 15 (Groundwater from standpipe 24012 in the northeast corner of Q3). The laboratory detection limits for phenols are above the EQS level, however all samples recorded values below the detection limits.

The pH of the samples taken from the L7 tailings stockpiles ranged from pH 8.0 to 9.1 which is consistent with previous monitoring visits. The pH of the water samples varied from pH 5.7 in the area of the acidic seepage into Stream F around the edge of Area B to pH 9.9 in the L4 outfall. Two samples had a pH below the EU bathing water guidelines, one located in the area of the acidic seepage into Stream F and the other sample from groundwater in the eastern corner of Q3. This agrees with previous suggestions that the natural groundwater coming into the quarry is acidic in nature. Three samples had a pH above the EU bathing water guidelines. These were located in the L4 outfall, the southern corner of Q3 at the base of the ramp, and in the flooded excavation into L7. Both are considered the result of recently exposed lime rich tailings influencing the results.

6. ENGINEERING

Q2 Features

During the course of the monitoring various features have been monitored in Q2 including rock faces, tips and bunds. Monitoring of the bund around Q2E (L6) has recorded no evidence of movement. Initial concerns regarding fallen small trees next to the north tunnel portal in September 2011 was put down to the shallow rooting of the young immature trees. During the September 2011 visit a sinkhole in the surface of Q2E was noted to have been filled in with sand. The sinkhole was located at the end of a central drainage channel across Q2E, previously used to drain the surface water. An investigation into the capping layer of Q2E was undertaken in July 2013 for the purpose of determining settlements and founding material. The investigation found the capping material of Q2E to be a layered construction between 4m to 6m thick overlying very soft tailings. See Fig 11. Due to vegetation cover at the time only a limited area could be investigated but suggested a staged capping process had been undertaken. During the July 2016 visit an excavator associated with the solar panel construction was seen on Q2E which had filled the central drainage channel and was in the process of leveling the area. On the following visit in November 2016, solar panels had been installed in this area and further access to this area is now restricted.

Initial observations of L7 in Q2W between May and June 2011 reported that L7 was still receiving tailings via pipeline from the processing plant. Reports suggest the acidic liquor and tailings mix had been replaced by a more neutral surface water

which then began to drop in level from June 2011. With the only surface water remaining as two hourglass shaped ponds by August 2011, evidence of consolidation was noted along the southern face. Tailings tide marks initially indicating 0.5m to 1.0m of settlement. This has gradually increased to about 2m of settlement in 2015, and is now estimated at 3m of settlement.

When first exposed the surface of the tailings were very soft. However, on following visits it was noted that the surface of the tailings have begun to firm up with the vegetation cover around the edges becoming more established. The state of the tailings underlying the surface had previously been unclear. However following the excavation into the tailings in 2016, samples were collected and tested showing moisture contents of 4% to 200% above the liquid limit. This shows that the tailings beneath the crust remain in a semi liquid state. As part of the investigation it was determined that although a crust was present along the dryer northern edge, it could be penetrated relatively easily and remained extremely soft below.

During the excavation into L7, the pipe which passes into L7 under the access track from the end of Stream F appears to have been damaged. It was noted in December 2016 that the pipe appeared buckled with very little flow, and ponding was seen at the end of Stream F where the pipe originates. It is recommended that this pipe is repaired, relevelled and the end of Stream F is cleared of loose material to prevent the pipe becoming blocked.

The stockpile to the north of Q2 was previously reported to have slumped by around 1m to 2m. The continued monitoring of the stockpile for further signs of movement indicate no movement through the current period, although its stability remains close to unity. With the limited access its potential failure is of limited concern.

Rock Face Stability

As part of the monitoring visits, visual inspections of the exposed faces have been undertaken. There has been evidence that blocks have fallen in the past around the eastern edge of Q1 with several smaller falls recorded approaching the tunnel portal.

In Q2 several areas of concern have been noted, in particular a large rock fall recorded on the western edge of L7 and understood to have initially failed between December 2012 and April 2013. The initial fall debris was noted to have sunk into the tailings indicating the very soft state. However, more recent visits have indicated additional falls in the same location suggesting a progressive failure of the face. The more recent falls appear to be resting on the surface of the tailings which would appear to confirm that the tailings around the edge are beginning to firm up. Although access to inspect the face is restricted it appears as though additional loose, highly weathered blocks are evident to the south of the main fall. Similar loose blocks have been previously recorded along the exposed rock at the southeast of the quarry. The orientation of the jointing evident in the rest of the exposed quarry faces indicates a potential failure plane and suggests that further falls may be anticipated in the future along the western edge of Q2.

The amount of trees and vegetation growing against the faces of Q1 has increased, obscuring parts of the rock face. However, this also highlights any areas of collapse as

the vegetation coverage is taken out by the rockfall leaving a bare face. Comparing the recent quarry face to the quarry face in 2015 shows no new bare areas, suggesting no major collapses have taken place since 2015.

Several small slips have been recorded in the bench around Q3 which are considered in part to be due to a rising water level. The wave action created by the water's surface will erode the bench and result in washing out of the finer material. The exposed faces around Q3 also show a significant degree of fracturing and weathering, particularly at the western end where the quarrymen found the sandstone to be heavily weathered.

When lake levels reduced in 2015 and 2016, evidence of weakening of the sandstones rock mass strength was found in the previously saturated rock. The distinct red stain had been bleached from the Sandstone, with a distinct sugary surface. Point load strength tests carried out recorded mass strengths in the order of Is50 = 10MPa, whilst the same rock exposed on the quarry face above the maximum water line records an Is50 = 30MPa. These results indicated a considerable strength reduction of the rock mass within 9 months of being submerged. Now that the Q3 lake level has fallen to expose the bench again, further rock samples will be collected and tested as part of future monitoring visits, to determine whether the strength of the rock has further deteriorated following the latest period of submergence.

As previously reported the risk of toppling failures is not as great in Q3 as it is in Q2 or Q1 due to the inclined faces with the main areas of concern currently being the exposed faces along the eastern and southern sides of Q3. There does however remain the risk of future rock failures, particularly at the western end, where the mass strength of the sandstone was previously found by the quarrymen to be reduced.

Due to the limited site access the currently noted falls do not present a significant risk of harm and will continue to be monitored for future movement concerns. As development of the site progresses it would be considered prudent to undertake a more detailed assessment and inspection of all exposed rock faces to identify potential areas of concern and possible remedial solutions.

Tunnel

During our monitoring visits we have undertaken an observational role in monitoring the land bridge tunnel between Q1 and Q2. The tunnel shows multiple protection measures including bolting, netting and rock fall shelters. Within the tunnel there have been no signs of instability noted and no block falls have been reported. In addition there has been no evidence of water seepages. At the tunnel portals there is evidence of potential minor rock falls although these have not been large enough to pose a significant risk with the debris deflected to the sides by the shelters. It is anticipated that there may be some arching effects within the tunnel that provide a confining pressure to prevent the fall of smaller blocks.

In May 2016, the tunnel was inspected by an Abbeydale BEC Engineer and a report (Ref:418051TMB) was produced. The overall stability of the tunnel was considered to be acceptable with no significant failures or displacements observed. Given the strength of the rock and the general blocky nature of the rock mass structure, the

current vertical to horizontal stress ratio is considered acceptable. No significant stress induced failures are anticipated.

Due to restricted visitor access to the site and minimal traffic using the tunnel at present the potential risks posed by the tunnel are minimal. However, when the park is developed and the number of site users increases a further analysis of the stability of the tunnel will be required to inform detailed design requirements.

L3 Stability

As previously reported the significant variations in groundwater level in the L3 dam and tailings have raised concerns regarding potential instability. The 2012 investigation recorded several soft zones within the dam construction suggesting localised weakening of the dam material. At the time it was also reported that moisture contents in the dam increased with depth. Although some seepage will occur in an embankment or earth dam, the increase with depth suggests a potential for stability issues. This situation was realised in the mid-1960's when records indicate the dam came close to failing and consequently a rock blanket was installed at the base. More recently due to concerns over running water within the dam Stream D was diverted across the dam to drain surface water and flow down the spillway to the eastern end of the dam.

Following the January 2012 investigation stability analyses were undertaken to assess the state of the dam. The results of the analysis were inconclusive at the time due to uncertainties over construction of the dam. However, sensitivity analyses indicated that the soft zones recorded by the 2012 investigation were of considerable importance in the overall stability. Additionally, the analysis indicated the significance of the water pressures and groundwater level behind the dam with an 8% increase in FoS corresponding to a 4m drop in surface water table.

As previously mentioned, towards the end of 2014, the original Stream D was diverted in order to reduce the amount of water flowing across the back face of the dam. It was anticipated that this would reduce the amount of water percolating through the tailings and reaching the dam. Initially this led to a drop in water level in the standpipe within the tailings, and less water flowing down the spillway as well as a visual decrease in surface ponding. However, recent visits have shown an increase in ponding and the amount of water flowing down the spillway, as well as a water level in the standpipe in the tailings just below ground level.

Restoration Earthworks

As part of the restoration at the quarry, a series of earthworks were undertaken to re-grade Areas E and B and reported on in more detail in the previous 2015 Bi-annual report. In Area E, initially all surface structures were demolished to below ground level before site won material comprising sands and sandy clays were used as infill. The material was excavated from in front of L5 and compacted across the site to provide a minimum CBR of 3%. It should be noted that where significant subsurface structures such as foundation slabs and heavy duty haul roads were encountered they were left in-situ and therefore there will be varying thickness of fill across Area E. The material was placed dry of optimum and has since consolidated under self weight. The overall gradient of Area E is currently around 1 in 17 to the south.

As part of the restoration of Area E the water level in L4 was drained by a new channel excavated through the access track to the north. The purpose of this was to allow surface water from L4 to drain to L5 and then into Q3 as agreed with the EA as part of the original activity park drainage plans. This was observed to be occurring during the April 2016 visit, where the water had eroded a channel onto bedrock at the west end of the tunnel leading to Q3. The following visits have shown water to be pooled within the channels from L4 to L5 and L5 to Q3, but no flow between them with the tunnel and eroded channel in Q3 remaining dry.

In Area B the earthworks were limited to a surface topsoil strip of between 0.5m to 1m thick. The topsoil was stockpiled in Q2E for later re-use. During the excavation of material around Area B a ridge of sandstone bedrock was encountered. As anticipated following the surface topsoil strip, the ground was saturated and the Stream F ditch was excavated to collect groundwater. The overall gradient of Area B is currently around 1 in 11 to the southwest. The ditch was seen to be having the desired effects, with subsequent visits showing the drying out and greening up of Area B. However, following the 2016 excavations into L7, stockpiles of the tailings material were placed by bulldozer in the east corner of Area B, adjacent to the ditch. Due to the saturated nature of these tailings, water seeped out which spread over Area B. This wetting combined with the tracks of the bulldozer has had the effect of churning up the surface of Area B, destroying the vegetation and making the surface waterlogged and soft. Over time, after the stockpiles of tailings have fully dried out, Area B is expected to continue once more to dry out and green over provided more tailings stockpiles are not added.

Following the earthworks undertaken in Area E, heavy rainfall had resulted in some surface gullying. Hydroseeding was undertaken in Area E to prevent further loss of material, which has slowly improved the surface. However, gullying was still occurring in the south of Area E, adjacent to the top of the incline. To remedy this, a 1m wide channel was excavated and filled with stone around July 2016 to act as a land drain for the surface runoff. Other gullies adjacent to the incline were also filled with stone at this time.

L4 and L7 Capping

In 2016 Abbeydale BEC were asked to consider whether the two lagoons known as L4 and L7 located within Moneystone Quarries Q1 and Q2 could be made stable. A separate report into the capping was produced in February 2017 ref: 418052 L7 SI.

In 2016 ESG carried out an investigation to determine the actual state of the L7 tailings. A long armed 360 mechanical excavator was used to take samples from the surface crust and at greater depth. Moisture Content test results obtained by ESG ranged between 4% to 200% above the liquid limit, showing that the tailings in L7 remain in a semi liquid state. To stabilise these materials moisture needs to be generally reduced to below the plastic limit or the materials themselves contained. It was determined that although a crust was present along the dryer northern edge, elsewhere it could be penetrated relatively easily and remained extremely soft below.

To investigate ways in which the lagoons could be made safe a pit was dug in the shallower north eastern corner of L7. By following the sloping base of the quarry and dewatering with a sump pump an area of tailings 5m deep was removed and stockpiled on the northern slopes to dry. Due to the negative pore pressure developed in the tailings the side walls of the excavation were able to stand near vertical and the crust edges became firm. However, as soon as the pump was turned off the sides of the excavation slumped and the water level returned to within 0.5m of the original surface of the tailings.

A further investigation into the potential of capping the tailings was undertaken from the northern edge of L7. By following the original safety guidance set by Sibelco a light weight dozer was used to place a 2m to 3m thickness of imported Class 2C inert fill across the tailings lagoon surface. Pushing out material on a 15m to 20m wide front capping material was extended 30m to 40m in a south westerly direction across a vegetated area of the lagoon. Around the sides of the cap the tailings rose slightly to form a 0.5m wave, but no evidence that the cap broke through the crust was observed.

The assessment of Lagoons L4 and L7 has found that without engineering intervention the surface of the lagoons will remain in a soft state for a period of the order of decades, rather than several years as originally envisaged. Five options for the capping are presented in detail. In brief, these are:

- Maintain the status quo
- GeoGrid Mat
- Drainage Pipes
- Excavation and Re-Compaction of Tailings
- Import of Inert Capping Material (Recommended Option)

7. CONCLUSION

The quarterly monitoring has been carried out throughout the 2015 to 2017 period with additional visits when restoration earthworks dictated. We would recommend that the monitoring is continued in a similar manner. However, as development progresses additional visits will need to be considered as part of the monitoring program.

As discussed within the text of this report a number of additional actions are recommended. These are:

1. Continue to monitor the drawdown and safety of SP5 dam.
2. Lower the bed of Stream D diversion by 1m where it passes through L3 bund.
3. Clear SP1 of silt to allow flow to cross free standing water.
4. Repair the pipe running from Stream F into L7.
5. A method of capping and making safe lagoons L4 and L7 should be agreed with the local authority. If no capping is granted considerations should be given to controlling the surface water in L7 to limit its ponding in the lower southern area.

At this stage, prior to development, we would recommend that monitoring continues on the current 3 monthly basis. However, as development progresses at the site we would recommend the monitoring is increased to monthly visits. As part of the monitoring we will continue to monitor ground and surface water levels along with pH of accessible water bodies. The rockfalls recorded and exposed faces will continue to be monitored for signs of future instability. Rock samples from Q3 will be collected and point load tested to further assess the effect that the lake water is having on the strength of the rock. On future monitoring visits, attempts to measure the change in the water level of the ponding in L7 will be made.

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TABLES

Moneystone Table 1

WATER MONITORING BOREHOLES

95013 BH surface level reduced because of quarrying (previously 161.61)

South of road North of road

BOREHOLE NUMBER	80003	80004	92010	92017	92029	92032	95012	95013	95014	96007	23008	23001	23004	24012	24013	BH122	BH121 (28m)	BH121 (13m)
NORTHING	346058	346082	346297	346022	346092	346364	345921	346170	346427	346190	346792	346522	346515	346162	346229	345425	345430	345430
EASTING	404774	404777	404295	404206	403898	403914	404336	404029	403774	404503	403867	403897	403620	404412	404430	404572	404521	404521
SURFACE LEVEL (m.AOD)	201.56	203.90	188.01	181.19	166.55	170.38	169.12	159.00	171.69	193.59	197.00	183.73	166.60	174.93	192.70	150.5	149	149
Base of Sandstone	167.00	170.00	158.00	142.00	120.00	139.00	158.00	136.00	138.00	165.00	175.00	151.00	137.00	158.00	164.00	132		
Date read :																		
4-May-11	DRY	Dry	DRY	166.69		153.66			152.08	NR	177.40	Dry	155.35	162.47	DRY			
1-Jun-11	172.26	Dry	DRY	166.65	141.65	154.02	137.02		154.99	170.61	177.47	Dry	155.60	163.28	DRY			
14-Jul-11	174.46	177.41	163.57	166.66	141.95	154.42	137.36		155.31	172.98	177.03	Dry	155.80	164.15	165.90			
9-Aug-11	175.25	178.34	164.29	166.56	142.21	154.42	137.86		155.26	174.44	176.59	Dry	155.76	164.80	166.18			
8-Sep-11	174.03	176.36	163.73	166.48	142.67	154.53	138.47	148.54	155.10	173.56	176.18	Dry	155.52	165.15	166.60			
3-Oct-11	172.64	174.24	DRY	166.29	142.83	154.50	138.77	148.57	154.94	172.31	BLOCKED	Dry	155.43	164.33	166.66			
22-Nov-11	172.26	173.18	DRY	167.18	142.86	154.22	138.57	148.64	154.74	171.01	175.73	Dry	155.11	163.38	166.30			
19-Dec-11	171.84	173.01	DRY	167.76	142.83	154.24	138.40	148.94	154.69	170.19	175.69	Dry	155.05	163.03	166.08			
9-Jan-12	172.55	174.56	161.51	168.66	142.94	154.48	138.35	149.18	154.82	171.71	175.60	Dry	154.72	163.30	165.88	138.29	140.34	147.83
6-Feb-12	172.90	174.91	161.50	167.55	143.01	154.38	137.31	149.20	154.68	171.61	175.73	Dry	155.12	163.61	165.72	138.20	142.29	145.36
15-Feb-12																138.49	137.34	144.50
20-Mar-12				167.76		154.35		149.56	154.79			Dry	155.10	163.71		138.55	135.27	140.82
20-Apr-12	172.28	173.66	161.86	167.84	143.24	154.37	138.94	149.61	154.97	170.67	176.25	Dry	155.08	163.43	168.44	141.44	135.45	140.48
22-May-12	172.96	174.93	162.96	167.67	142.99	154.88	139.11	150.09	156.19	171.10	176.64	Dry	Blocked	163.56	168.42	138.74	135.24	144.39
3-Jul-12	173.24	175.97	162.40	167.74	143.30	155.20	139.38	150.43	156.42	171.59	177.48	Dry	155.13	163.69	168.41	141.83	134.73	141.23
17-Sep-12	173.72	175.90	162.44	167.12	143.33		141.69	150.95	156.69	172.54	BLOCKED	Dry	155.71	164.14	168.44	138.93	134.77	142.20
31-Oct-12				167.75		157.02	141.45	151.31	157.80		178.64	Dry	156.68	164.37		139.12	135.37	145.40
6-Dec-12				168.24		157.37	141.94	151.80	158.46		178.61	Dry	158.80	164.10		139.60	146.78	149.00
12-Feb-13				168.44	147.52	158.83		152.80	158.77	174.52	178.88	Dry	159.40	165.76		139.81	147.26	149.00
26-Apr-13	174.71	177.05	166.78	167.07	148.98	159.53	146.60	154.77	160.43	174.34	180.00	162.98	161.37	165.99	170.44	141.86	135.30	
30-Jul-13				166.76	148.90	159.83			158.99		177.85		160.70	163.69		141.35	134.57	139.95
26-Oct-13	>30m	Dry	162.35	168.43	149.05	160.12	146.44	156.50	157.89	170.15	177.02	Dry	159.10	163.13	Dry (24.2)	138.82	134.25	144.20
8-Jan-14	173.39	175.29	163.81	168.39	148.64	158.03	146.44	156.46	158.36	171.38	178.29	159.83	158.81	161.18	Dry (24.2)	139.20	145.53	148.13
15-Apr-14	174.87	177.37	166.95	167.70	149.63	159.73	147.52	156.92	160.39	174.36	179.81	162.39	161.35	165.50	170.02	139.78	140.51	146.98
9-Jul-14	172.67	175.65	164.49	166.75	150.19	159.42		Submerged	160.03	172.05	BLOCKED	161.62	160.84	164.75	169.10	142.00	136.71	145.25
16-Sep-14			162.72	BLOCKED	149.90	158.98			159.27	170.25	177.24		159.89	163.54	168.37			
6-Oct-14	172.22	D @ 172.54														141.73	137.10	143.62
20-Jan-15	172.21	174.00	162.84	167.93	148.54	157.68	Dry (22.8)	157.56	157.94	170.39	176.09	159.25	158.45	163.29	Dry (24.7)		135.90	145.53
28-Apr-15	171.96	174.65	BLOCKED	BLOCKED	BLOCKED	153.57	146.07	157.55	157.54	171.34	176.56	158.45	166.60	163.87	167.55	138.27	135.58	143.20
28-Jul-15				166.70				157.19	157.66		177.30	Dry	153.22	163.37	168.46		140.10	
31-Oct-15	Dry (29.16)	Dry (31.2)	161.49	167.09	147.01	156.81	144.82	157.07	157.00	170.22	176.12	Dry	157.53	163.10	Dry (24.4)	140.27	139.06	148.64
29-Jan-16	172.66	174.25	163.19	167.23	147.10	155.56	Dry (24.8)	157.25	157.24	177.19	176.62	Dry (25.06)	153.53	166.18	Dry (24.5)	139.05	137.88	148.65
7-Apr-16	174.32	176.60	168.22	168.36	148.10	151.88		157.30	157.97	176.84	179.34	Dry		168.50	176.55	140.04	137.99	148.54
5-Jul-16	174.01	173.98	166.36	167.39	149.16	159.07		157.40	159.74	173.69	179.29	160.40	160.48	165.45	173.96	139.37	138.12	147.99
11-Nov-16	201.56	203.90	162.86	166.29	148.45	157.80				170.84				162.68	169.15	138.58	136.21	148.46
1-Dec-16	Dry (29.15)	Dry (30)	162.61	167.22	147.09	158.33		157.40		170.83	176.80			162.48	169.12			
24-Jan-17	Dry (29.15)	Dry (30)	162.16	167.89	147.85	157.78	146.12	157.55	157.99	170.74	176.18	159.23	157.75	160.33	DRY	139.20	137.67	148.34
Tip Set at : (m.A.O.D)	172.33	172.19	157.51	157.95	134.90	143.88	136.32	140.37	137.27	168.79	173.08	158.63	146.88	156.39	163.70	121.50	120.00	120.00

Water Levels are m.AOD

Date	Visit	Number	Location	pH	Material	Comment
20/12/2010	A	1	L8	6.7	W	
20/12/2010	A	2	L8	5.6	W	
20/12/2010	A	3	Q3	6.7	W	
20/12/2010	A	4	Q3	6.3	W	
20/12/2010	A	5	Q3	6.6	W	
20/12/2010	A	6	L8	3	W	Inlet from Production
20/12/2010	A	7	L4	6.9	S	
20/12/2010	A	8	L7	2	W	Channel adjacent to L4
20/12/2010	A	9	Q3	6.9	W	
20/12/2010	A	10	Q3	5.4	W	
20/12/2010	A	11	Q3	6.3	W	
20/12/2010	A	12	Q3	6.8	W	
20/12/2010	A	13	Q3	7.5	W	
07/01/2011	B	1	L4	6.3	W	
07/01/2011	B	3	L4	5.7	W	
07/01/2011	B	14	L7	3.2	W	Channel adjacent to L4
07/01/2011	B	21	L6	7.1	W	
07/01/2011	B	22	L7	2.8	W	
07/01/2011	B	26	L7 Flume	12.3	W	Flume, not tested on site.
07/01/2011	B	27	L6	13.3	W	
07/01/2011	B	34	Q3	7.1	W	
07/01/2011	B	36	Q3	6.9	W	
07/01/2011	B	37	L8	4.3	W	
07/01/2011	B	39	L8	6	W	Sample possibly melt water between 2 layers of ice.
07/01/2011	B	45	Production	9.7	W	
07/01/2011	B	46	Production	9.7	W	
07/01/2011	B	47	Production	9.4	W	
07/01/2011	B	51	SP1	7.2	S	Not tested on site
07/01/2011	B	51	SP1	8	W	
07/01/2011	B	52	SP1	7.4	W	
07/01/2011	B	54	SP2	7.1	W	
07/01/2011	B	54			S	Not tested on site
07/01/2011	B	55	SP2	8.6	S	Not tested on site
07/01/2011	B	56	SP3	6.9	W	
07/01/2011	B	58	Stream E	7.2	W	
07/01/2011	B	59	River Churnet	7.1	W	River Churnet
07/01/2011	B	61	SP5	6.8	W	
07/01/2011	B	64	Stream D	8.1	W	
07/01/2011	B	65	Stream E	7.1	W	
07/01/2011	B	66	SP2	7	W	
07/01/2011	B	68	Stream A	6.9	W	3 samples taken
07/01/2011	B	69	Stream C	6.9	W	3 samples taken
07/01/2011	B	70	Stream B	6.8	W	3 samples taken
07/01/2011	B	71	Q3	4.8	W	

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Date	Visit	Number	Location	pH	Material	Comment
07/01/2011	B	72	Q3	7	W	
07/01/2011	B	73	Q3	7	W	
07/01/2011	B	74	Q3	7.3	W	
07/01/2011	B	75	Q3	6.7	W	
07/01/2011	B	76	Q3	6.9	W	
07/01/2011	B	77	Q3	6.8	W	
07/01/2011	B	78	Q3	6.7	W	
07/01/2011	B	79	Q3	6.4	W	
07/01/2011	B	82	Spring L7	7.1	W	
09/02/2011	C	1	Stream D	6.7	W	
09/02/2011	C	2	Stream D	7.3	S	
09/02/2011	C	3	L3	7.1	S	
09/02/2011	C	4	Stream D	6.8	W	
09/02/2011	C	5	L3	6.9	W	
09/02/2011	C	6	SP1	6.9	W	
09/02/2011	C	7	SP2	6.3	W	
09/02/2011	C	8	SP2	6.4	W	
09/02/2011	C	9	SP2	6.9	W	
09/02/2011	C	10	Stream D	6.6	W	
09/02/2011	C	11	River Churnet	6.9	W	
09/02/2011	C	12	SP2	6.9	S	
09/02/2011	C	14	Q3		S	
09/02/2011	C	15	Stream A	6.9	W	
09/02/2011	C	16	Stream C	6.8	W	
09/02/2011	C	17	Stream B	6.9	W	
09/02/2011	C	18	Q3	7.8	S	
09/02/2011	C	50	L4	6.5	W	
09/02/2011	C	51	L4	6.5	W	
09/02/2011	C	52	L7	6.8	W	Channel adjacent to L4
09/02/2011	C	53	L4	6.6	W	
09/02/2011	C	54	L7	6.5	W	Channel adjacent to L4
09/02/2011	C	55	L4	6.9	S	
09/02/2011	C	56	L8	6.9	W	Outfall from L8
09/02/2011	C	57	L5	7.1	W	
09/02/2011	C	58	L5	7.1	W	
09/02/2011	C	59	L7	6.5	W	
09/02/2011	C	60	L7	6.7	S	
09/02/2011	C	61	L7	3.8	W	Flume
09/02/2011	C	62	L7	13	W	Flume
09/02/2011	C	63	L7	12.4	W	Flume
09/02/2011	C	64	L7	3.1	W	Flume
09/02/2011	C	65	L7	6.7	W	Flume
09/02/2011	C	66	Spring L7	7.2	W	
09/02/2011	C	67	L7	6.6	W	

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TABLE 2

Date	Visit	Number	Location	pH	Material	Comment
09/02/2011	C	68	L7	6.3	W	
09/02/2011	C	69	L8	6.7	W	
09/02/2011	C	70	L8	7	W	
09/02/2011	C	71	L8	6.7	W	
09/02/2011	C	72	L8	7.2	W	
09/02/2011	C	73	L8	6.9	W	
09/02/2011	C	74	L8	7.1	W	Inlet from Production
09/02/2011	C	75	L8	7.5	W	
09/02/2011	C	76	L8	7	S	
09/02/2011	C	77	Q3	7.4	W	
09/02/2011	C	78	Q3	7.4	W	
09/02/2011	C	79	Q3	7.6	W	
09/02/2011	C	80	Q3	6.7	W	
09/02/2011	C	81	Q3	7.3	W	
09/02/2011	C	82	Q3	7.3	W	
09/02/2011	C	83	Q3	7.3	W	
09/02/2011	C	84	Q3	7.2	W	
09/02/2011	C	85	L8	7	W	Inlet from Production
04/05/2011	D	1	L7	7.9	W	
04/05/2011	D	2	L7	7.7	W	
04/05/2011	D	3	L4	7.6	W	
04/05/2011	D	4	L4	7.6	W	
04/05/2011	D	5	L5	8	W	
04/05/2011	D	6	Stream A	7.9	W	
04/05/2011	D	7	Stream C	7.5	W	
04/05/2011	D	8	Stream B	7.7	W	
04/05/2011	D	9	Q3	7.4	W	
04/05/2011	D	10	Stream B	7.8	W	
04/05/2011	D	11	L8	5.6	W	
04/05/2011	D	12	Q3	6.7	W	
01/06/2011	E	1	L7	7.7	W	
01/06/2011	E	2	L7	8.2	W	
01/06/2011	E	3	L7	8.4	W	Outfall from L7
01/06/2011	E	4	L4	7.9	W	
01/06/2011	E	5	L5	8.1	W	
01/06/2011	E	6	Stream A	7.4	W	
01/06/2011	E	7	Stream C	7.5	W	
01/06/2011	E	8	Stream B	7.3	W	
01/06/2011	E	9	Q3	7.3	W	
01/06/2011	E	10	Stream B	7.1	W	
01/06/2011	E	11	L8	4.9	W	
01/06/2011	E	12	L8	4.8	W	
01/06/2011	E	13	Q3	5.3	W	Seepage on quarry floor
01/06/2011	E	14	Q3	6.4	W	

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01/06/2011	E	15	SP1	7.5	W	
01/06/2011	E	16	SP2	7.7	W	
01/06/2011	E	17	SP3	8	W	
01/06/2011	E	18	River Churnet	7.2	W	Taken down stream of pump
01/06/2011	E	19	Outfall into river	6.8	W	Outfall from Quarry
01/06/2011	E	20	Outfall into river	4.7	W	Outfall opposite Engine Shed
01/06/2011	E	21	River Churnet	6.4	W	Taken at the railway bridge
01/06/2011	E	22	BH 24012	5.5	W	NE of Q3
01/06/2011	E	23	BH 95012	6.5	W	SE of Q3
01/06/2011	E	24	BH 95014	6.4	W	NW of Q3
01/06/2011	E	25	BH 23004	6.4	W	NW of Q3
14/07/2011	F	1	GW flow into L8 (NE)	4.1	W	
14/07/2011	F	2	N corner of L8	4.4	W	
14/07/2011	F	3	S corner of L8	4.5	W	
14/07/2011	F	4	GW flow into E of Q3	5.3	W	
14/07/2011	F	5	GW flow into E of Q3	5.8	W	
14/07/2011	F	6	GW flow into E of Q3	6.1	W	
14/07/2011	F	7	E end of Q3	6.2	W	
14/07/2011	F	8	E end of Q3	6.3	W	
14/07/2011	F	9	SE corner of L8	4.4	W	
14/07/2011	F	10	E end of Q3	6.2	W	
14/07/2011	F	11	Stream A	6.5	W	
14/07/2011	F	12	Stream B	6.7	W	
14/07/2011	F	13	Stream C	6.8	W	
14/07/2011	F	14	NW end of Q3	6.8	W	
14/07/2011	F	15	SW end of Q3	6.9	W	
14/07/2011	F	16	Stream B near farm	7.1	W	
14/07/2011	F	17	SE end of L7	7.4	W	
14/07/2011	F	18	L7 adjacent to siphon	7.9	W	
14/07/2011	F	19	Channel adjacent to L4	7.9	W	Outfall from L7
14/07/2011	F	20	L5	8	W	
14/07/2011	F	21	SP1	7.8	W	
14/07/2011	F	22	SP2	8	W	
14/07/2011	F	23	SP3	8.2	W	
14/07/2011	F	24	Outfall into river	7.4	W	Outfall from Quarry
14/07/2011	F	25	Outfall into river	4.4	W	Outfall opposite Engine Shed
14/07/2011	F	26	River Churnet	6.4	W	Taken at the railway bridge
14/07/2011	F	27	River Churnet	6.9	W	Adjacent to pump
09/08/2011	G	1	GW flow into L8 (NE)	4.1	W	
09/08/2011	G	2	NW end of L8	4.3	W	
09/08/2011	G	3	GW flow into E of Q3	4.8	W	
09/08/2011	G	4	GW flow into E of Q3	5.6	W	
09/08/2011	G	5	Q3 lake adjacent to dam	6.1	W	
09/08/2011	G	6	GW flow into E of Q3	6.3	W	

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09/08/2011	G	7	SW L8	4.5	W	
09/08/2011	G	8	NW Q3	6.5	W	
09/08/2011	G	9	SW Q3	6.7	W	
09/08/2011	G	10	GW flow above G9	6.7	W	
09/08/2011	G	11	Stream B near farm	7.3	W	
09/08/2011	G	12	L7 adjacent to siphon	7.1	W	
09/08/2011	G	13	Stream D near track	7.3	W	
09/08/2011	G	14	SP2	7.8	W	
09/08/2011	G	15	Outfall into river	7.6	W	Outfall from Quarry
09/08/2011	G	16	Outfall into river	4.5	W	Outfall opposite Engine Shed
09/08/2011	G	17	Drain on railway	6	W	Adjacent to weigh bridge
09/08/2011	G	18	River Churnet	6.5	W	Taken at the railway bridge
09/08/2011	G	19	River Churnet	7.1	W	Adjacent to pump
09/08/2011	G	20	Stream D	7.4	W	Outfall from SP3
09/08/2011	G	21	SP1	8	W	
09/08/2011	G	22	Stream A	6.2	W	
09/08/2011	G	23	Stream B	6.6	W	
09/08/2011	G	24	Stream C	6.7	W	
08/09/2011	H	1	Issue below 24012 (L8)	4.2	W	
08/09/2011	H	2	Issue next to L8 dam	4.3	W	above current water level
08/09/2011	H	3	SW corner of L8	4.5	W	
08/09/2011	H	4	Q3 next to rocks	5.9	W	W/L pole installed adjacent
08/09/2011	H	5	Q3 adjacent to dam NE	6.1	W	
08/09/2011	H	6	NW corner L8 adj to dam	4.5	W	
08/09/2011	H	7	L8 N shore ~midpoint	4.5	W	
08/09/2011	H	8	Seepage from L8 N side	4.4	W	
08/09/2011	H	9	Q3 midpoint of dam	6	W	
08/09/2011	H	10	Q3 SW corner	6.2	W	Below 95013
08/09/2011	H	11	Stream A	6.4	W	
08/09/2011	H	12	Stream C	6.5	W	
08/09/2011	H	13	Stream B	6.8	W	
08/09/2011	H	14	Q3 lake W end	6.6	W	
08/09/2011	H	15	Outflow into Q3 W end	6.5	W	
08/09/2011	H	16	GW flow at SW corner	6.8	W	
08/09/2011	H	17	Stream B near farm	7.2	W	
08/09/2011	H	18	Stream into L6	7.4	W	Daylights below T3
08/09/2011	H	19	Outflow into river	8.8	W	Outfall from Quarry
08/09/2011	H	20	River Churnet	8.3	W	Down from outfall
08/09/2011	H	21	Acidic outflow	4.6	W	Groundwater
08/09/2011	H	22	2nd Acidic Water outflow	4.5	W	Groundwater
08/09/2011	H	23	River Churnet	6.2	W	Below acidic outflow
08/09/2011	H	24	River Churnet	6.7	W	Taken at railway bridge
08/09/2011	H	25	River Churnet	6.9	W	Taken at pump house 3
03/10/2011	I	1	Outfall beneath 24012	4.5	W	

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Date	Visit	Number	Location	pH	Material	Comment
03/10/2011	I	2	Near rock N face of Q3	6.1	W	
03/10/2011	I	3	L8 NW corner	4.6	W	
03/10/2011	I	4	Q3 beneath notch on dam	6.1	W	
03/10/2011	I	5	L8 SW corner	4.6	W	
03/10/2011	I	6	Q3 adjacent to access ramp	6.1	W	
03/10/2011	I	7	Q3 beneath outfall	6.4	W	
03/10/2011	I	8	Q3 west end north side	6.5	W	
03/10/2011	I	9	Q3 west end south side	6.7	W	
03/10/2011	I	10	South central L5	6.5	W	
03/10/2011	I	11	Water issue N end of L7	7.1	W	
03/10/2011	I	12	Stream D	7.3	W	
03/10/2011	I	13	SP2 N end	6.8	W	
03/10/2011	I	14	Outfall from SP2	7.1	W	
03/10/2011	I	15	SP4	6.7	W	
03/10/2011	I	16	Stream E base of T3	4.1	W	
03/10/2011	I	17	Stream E base of T3	4	W	
03/10/2011	I	18	Stream E	4.4	W	
03/10/2011	I	19	Stream E down stream	5.4	W	
03/10/2011	I	20	Stream E adjacent to railway	5.5	W	
03/10/2011	I	21	Outfall Stream E / SP5	5.8	W	
03/10/2011	I	22	SP5 outfall	6	W	
03/10/2011	I	23	Outfall into River Churnet	5.7	W	
03/10/2011	I	24	River Churnet	6.7	W	Downstream of No. 23
03/10/2011	I	25	Acidic outflow No. 1	4.5	W	
03/10/2011	I	26	Acidic outflow No. 2	4.4	W	
03/10/2011	I	27	River Churnet	6.4	W	Taken at railway bridge
03/10/2011	I	28	River Churnet	6.8	W	Taken at pump house 3
22/11/2011	J	1	Ponded water top of DD	7.5	W	
22/11/2011	J	2	Water flowing from DD	7.8	W	
22/11/2011	J	3	SP1	7.8	W	
22/11/2011	J	4	Stream in road	7.8	W	
22/11/2011	J	5	Stagnant pond SP4	8	W	
22/11/2011	J	6	Field to E	4.2	W	
22/11/2011	J	7	Stream below field	6	W	Taken down stream
22/11/2011	J	8	Flow on mudstone	6.2	W	
22/11/2011	J	9	Stream below field – Sandst	6.3	W	Taken down stream
22/11/2011	J	10	Stream below field – Sandst	6.5	W	Taken down stream
22/11/2011	J	11	Stream to pond below SP5	6.6	W	
22/11/2011	J	12	Outfall to SP5	6.6	W	
22/11/2011	J	13	12” Pipe outfall	6.7	W	
22/11/2011	J	14	Railway Culvert	6.9	W	
22/11/2011	J	15		6.8	W	
22/11/2011	J	16	River Churnet	6.9	W	Flowing leaf = 5m in 20sec
22/11/2011	J	17	Seepage upbank	7.2	W	

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22/11/2011	J	18	Stream from railway shed	4.6	W	
22/11/2011	J	19	River Churnet	6.5	W	Near bridge
22/11/2011	J	20	River Churnet bank	6.5	W	wet area between river and shed
22/11/2011	J	21	Ponded water in reed bed	7	W	
22/11/2011	J	22	Water by pump	7.1	W	Ochre colouring
22/11/2011	J	23	River at pump	7.4	W	
22/11/2011	J	24	Stream D	7.4	W	
22/11/2011	J	25	SP3	7.5	W	
22/11/2011	J	26	Above SP3	7.6	W	
22/11/2011	J	27	Stream near SP2	7.5	W	
22/11/2011	J	28	SP2	7.4	W	
22/11/2011	J	29	SP2	7.5	W	
22/11/2011	J	30	Pump pond	7.8	W	
22/11/2011	J	31	Stream B near farm	7.8	W	
22/11/2011	J	32	N corner of L8	5	W	
22/11/2011	J	33	Q3 east end north side	6.2	W	
22/11/2011	J	34	Q3 west end north side	6.5	W	
22/11/2011	J	35	Q3 SW corner	6.8	W	
22/11/2011	J	36	Q3 South causeway	6.9	W	
22/11/2011	J	37	L8 (causeway)	5	W	
22/11/2011	J	38	L8 outflow W corner	4.7	W	
22/11/2011	J	39	Pond in Q1	5.8	W	
22/11/2011	J	40	Q1 lake	6.4	W	
22/11/2011	J	41	Q2 N stream	6.8	W	
22/11/2011	J	42	Q2 stream back of tip	6.9	W	
22/11/2011	J	43	Surface Water	7.2	W	
22/11/2011	J	44	Q2 central pond	7.4	W	
22/11/2011	J	45	Stream A	8	W	
22/11/2011	J	46	Stream B	7.8	W	
22/11/2011	J	47	Stream C	7.8	W	
19/12/2011	K	1	Q3 below notch	8	W	
19/12/2011	K	2	Q3 N side	7.8	W	Adj to staff
19/12/2011	K	3	L8 below notch	5	W	
19/12/2011	K	4	L8 below measuring stick	5.2	W	S side
19/12/2011	K	5	Q3 adj to dam	6.6	W	S side
19/12/2011	K	6	Q3 W end, S side	6.9	W	
19/12/2011	K	7	Q3 W end, N side	7	W	
19/12/2011	K	8	Stream A	8.4	W	
19/12/2011	K	9	Stream B	7.9	W	
19/12/2011	K	10	Stream C	8.4	W	
19/12/2011	K	11	Outfall into river	7.9	W	Official/Authorised
19/12/2011	K	12	River churnet	7.7	W	
19/12/2011	K	13	Acidic outflow	4.8	W	
09/01/2012	L	1	Q3 N side	6	W	Adj to dam

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TABLE 2

Date	Visit	Number	Location	pH	Material	Comment
09/01/2012	L	2	Q3 N side	6.3	W	Adj to staff
09/01/2012	L	3	L8 N side	5.2	W	Adj to dam
09/01/2012	L	4	L8 S side	5.1	W	Adj to dam
09/01/2012	L	5	Q3 S side	6.4	W	Adj to dam
09/01/2012	L	6	Outfall into L8	5.2	W	
09/01/2012	L	7	Q3 below 95013	6.2	W	
09/01/2012	L	8	Stream A	6.5	W	
09/01/2012	L	9	Stream B	6.8	W	
09/01/2012	L	10	Stream C	6.8	W	
09/01/2012	L	11	Stream B near farm	6.9	W	
09/01/2012	L	12	Quarry outfall into river	7.1	W	
09/01/2012	L	13	River Churnet	7.1	W	
09/01/2012	L	14	Acidic outflow	4.8	W	
09/01/2012	L	15	River Churnet	6.4	W	Downstream of No. 14
09/01/2012	L	16	Surface Water	10.5	W	Near processing plant
09/01/2012	L	17	Stream D	8.5	W	East of access road
09/01/2012	L	18	Stream D	8.5	W	West of access road
09/01/2012	L	19	Tank	8.4	W	
09/01/2012	L	20	Tank	8.5	W	
09/01/2012	L	21	Pipe outflow	8.3	W	
09/01/2012	L	22	L4	8.2	W	West side
09/01/2012	L	23	L4	8.2	W	West side
09/01/2012	L	24	Surface water near L7	8.5	W	
09/01/2012	L	25	Surface water near L7	8.2	W	
09/01/2012	L	26	Surface water near L7	8.3	W	
09/01/2012	L	27	Surface water near L7	8.6	W	
09/01/2012	L	28	Surface water near L7	8.5	W	
09/01/2012	L	29	Surface Water	11.9	W	At base of disturbed lime
06/02/2012	M	1	Stream A	6.9	W	
06/02/2012	M	2	Stream B	6.6	W	
06/02/2012	M	3	Stream C	7.3	W	
06/02/2012	M	4	Stream B near farm	6.8	W	
06/02/2012	M	5	Surface flow	9.1	W	Next to weigh bridge
06/02/2012	M	6	L8 NE corner	5.3	W	Seepage
06/02/2012	M	7	Surface flow on Q3 N side	6.1	W	above dam
06/02/2012	M	8	Surface flow on Q3 N side	6.3	W	above dam
06/02/2012	M	9	Q3 W end, N side	6.3	W	
06/02/2012	M	10	Q3 W end, S side	6.5	W	
06/02/2012	M	11	Q3 below 95013	6.6	W	
06/02/2012	M	12	Q3 adjacent to access ramp	7	W	
06/02/2012	M	13	Q3 adj to dam	7.2	W	
06/02/2012	M	14	L8 adj to dam	5.6	W	SW corner
06/02/2012	M	15	L8 below notch	5.8	W	
06/02/2012	M	16	Q3 below notch	5.9	W	

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06/02/2012	M	17	Surface ponding	6.6	W	Entrance to Q1
06/02/2012	M	18	L5 pond	6.2	W	
06/02/2012	M	19	L4 West side	6.4	W	
06/02/2012	M	20	River D	6.7	W	
06/02/2012	M	21	Railway access road	7.6	W	Surface flow
06/02/2012	M	22	Inflow to SP1	7.9	W	
06/02/2012	M	23	SP4	8.8	W	
06/02/2012	M	24	SP5	7.8	W	
06/02/2012	M	25	Outfall into River Churnet	7.4	W	
06/02/2012	M	26	River churnet	7.4	W	
06/02/2012	M	27	Acidic outflow	4.9	W	Near river churnet
06/02/2012	M	28	Acidic outflow	4.5	W	Near railway lines
06/02/2012	M	29	SP3	6.2	W	
06/02/2012	M	30	Outfall from SP2	6.7	W	
06/02/2012	M	31	Surface flow in Q2	6.8	W	Near tunnel
06/02/2012	M	32	Surface flow in Q2	7	W	
06/02/2012	M	33	Surface flow in Q2	7.2	W	
20/03/2012	N	1	Stream D	6.9	W	On W side of access track
20/03/2012	N	2	Q3 below 95013	7.2	W	
20/03/2012	N	3	Field to SE of Quarry	6.7	W	Surface water
20/03/2012	N	4	Stream A	6.6	W	
20/03/2012	N	5	Stream B	6.6	W	
20/03/2012	N	6	Stream C	7.1	W	
20/03/2012	N	7	Stream B near farm	7.3	W	
20/03/2012	N	8	Q2 access track	7.3	W	Surface water
20/03/2012	N	9	Q2 access track	8.2	W	Surface water
20/03/2012	N	10	Q2 N stream	8.1	W	Surface flow
20/03/2012	N	11	Q2 N stream	8	W	Groundwater
20/03/2012	N	12	Railway access road	7.1	W	Next to SP1
20/03/2012	N	13	Outfall into River Churnet	7.9	W	Next to EA station
20/03/2012	N	14	River Churnet	8	W	Above outfall
20/03/2012	N	15	Acidic outflow	4.8	W	
20/03/2012	N	16	River Churnet	6.1	W	Below acidic outflow
20/03/2012	N	17	Q3 S side	6.9	W	
20/03/2012	N	18	L8 below notch	5.2	W	
20/03/2012	N	19	Q3 below notch	6	W	
20/03/2012	N	20	L8 SW corner	5	W	
20/03/2012	N	21	Outfall beneath 24012	4.8	W	
12/04/2012	O	1	L8 SW corner	5	W	
12/04/2012	O	2	L8 below notch	4.7	W	
12/04/2012	O	3	Q3 below notch	6.1	W	
12/04/2012	O	4	Surface Water	6.4	W	SE of Q3
12/04/2012	O	5	Surface Water	6.8	W	Q3 access road
12/04/2012	O	6	Surface Water	9.8	W	Q2 access road

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Date	Visit	Number	Location	pH	Material	Comment
12/04/2012	O	7	Surface Water	8.9	W	near lime pit
12/04/2012	O	8	Surface Water	8.8	W	Base of shale tip
12/04/2012	O	9	Surface Water	8.6	W	Base of shale tip
12/04/2012	O	10	Surface Water	8.7	W	Base of shale tip
12/04/2012	O	11	Q2 N stream	8.7	W	
12/04/2012	O	12	Q2 N stream	8.8	W	
12/04/2012	O	13	Q2 N stream	8.5	W	
12/04/2012	O	14	Outfall into River Churnet	8	W	Near EA station
12/04/2012	O	15	Outfall into River Churnet	7.9	W	Near EA station
12/04/2012	O	16	Acidic outflow	4.9	W	
12/04/2012	O	17	channel N of acidic outfllow	4.7	W	
12/04/2012	O	18	upstream of acidic outflow	4.6	W	
12/04/2012	O	19	upstream of acidic outflow	4.5	W	
12/04/2012	O	20	upstream of acidic outflow	4.5	W	
12/04/2012	O	21	upstream of acidic outflow	4.7	W	
12/04/2012	O	22	upstream of acidic outflow	4.5	W	
12/04/2012	O	23	upstream of acidic outflow	4.6	W	
12/04/2012	O	24	upstream of acidic outflow	4.5	W	
12/04/2012	O	25	Ponding E of acidic outflow	4.5	W	
12/04/2012	O	26	Flowing into SP2	6.9	W	
12/04/2012	O	27	Ponding on Q1 access track	7.7	W	
12/04/2012	O	28	Ponding on Q1 access track	7.8	W	
12/04/2012	O	29	L4 SE corner	7.4	W	
12/04/2012	O	30	Stream D	7.4	W	
12/04/2012	O	31	Q3 below 95013	7.8	W	
12/04/2012	O	32	Q3 W end	7.8	W	
12/04/2012	O	33	Stream B	7.8	W	
12/04/2012	O	34	Stream C	8	W	
22/05/2012	P	1	Stream D	6.7	W	
22/05/2012	P	2	Outfall into River Churnet	6.7	W	Near EA station
22/05/2012	P	3	Acidic outflow	5	W	
22/05/2012	P	4	Acidic outflow by river	5.8	W	
22/05/2012	P	5	upstream of acidic outflow	5.3	W	
22/05/2012	P	6	upstream of acidic outflow	5.5	W	
22/05/2012	P	7	upstream of acidic outflow	5.4	W	
22/05/2012	P	8	Q2 access track	7	W	
22/05/2012	P	9	Q2 access track	8.2	W	Frogspawn
22/05/2012	P	10	Q2 access track	8.3	W	Frogspawn
22/05/2012	P	11	L8 NW corner	5.3	W	
22/05/2012	P	12	Q3 adj to dam	6.1	W	
22/05/2012	P	13	L8 SW corner	5.2	W	
22/05/2012	P	14	Q3 South causeway	6.2	W	
22/05/2012	P	15	Q3 SW corner	6.5	W	
22/05/2012	P	16	Q3 W end	6.7	W	

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Date	Visit	Number	Location	pH	Material	Comment
22/05/2012	P	17	Stream A	7.9	W	
22/05/2012	P	18	Stream B	7.8	W	
22/05/2012	P	19	Stream C	7.8	W	
03/07/2012	Q	1	EA monitoring station	6.2	W	
03/07/2012	Q	2	Upstream of EA station	6.3	W	
03/07/2012	Q	3	Acidic outflow	5.2	W	
03/07/2012	Q	4	Acidic outflow	5.1	W	Discharge to river
03/07/2012	Q	5	upstream of acidic outflow	5.2	W	
03/07/2012	Q	6	upstream of acidic outflow	5.1	W	
03/07/2012	Q	7	upstream of acidic outflow	5.2	W	
03/07/2012	Q	8	upstream of acidic outflow	5.2	W	
03/07/2012	Q	9	SP1 feed	7.1	W	
03/07/2012	Q	10	Railway access road	7.6	W	Near processing plant
03/07/2012	Q	11	Stream D	7.7	W	
03/07/2012	Q	12	Q3 W end	7.4	W	
03/07/2012	Q	13	Ponding on Q3 roadway	8.2	W	
03/07/2012	Q	14	SW corner of Q3	7.5	W	
03/07/2012	Q	15	Q3 on access road	7.5	W	
03/07/2012	Q	16	Q3 adj to dam	7.6	W	
03/07/2012	Q	17	L8 below notch	7.4	W	
03/07/2012	Q	18	Water flowing over notch	7.6	W	
03/07/2012	Q	19	L8 adj to dam	7.3	W	S side
03/07/2012	Q	20	Q3 below notch	7.4	W	
03/07/2012	Q	21	L8 adj to access road	5.3	W	
03/07/2012	Q	22	Q2 access track	7.4	W	tadpole pool
03/07/2012	Q	23	Q2 access track	7.8	W	surface ponding
03/07/2012	Q	24	Feed to Q2	7.8	W	Surface water
03/07/2012	Q	25	Q2 access track	8.1	W	surface ponding
03/07/2012	Q	26	Q1 access track	8.2	W	
03/07/2012	Q	27	L8 adj to access road	5.5	W	Re-tested No. 21
03/07/2012	Q	28	SE side of L8	5.3	W	
03/07/2012	Q	29	Water flowing over notch	6.4	W	Re-tested
17/09/2012	R	1	Q3 NW side of dam	6.3	W	
17/09/2012	R	2	L8 E side of dam	6.3	W	
17/09/2012	R	3	L8 SE side of dam	6.4	W	
17/09/2012	R	4	Q3 SW side of dam	6.7	W	
17/09/2012	R	5	L8 S side	6.8	W	
17/09/2012	R	6	Q3 on old access track	6.9	W	
17/09/2012	R	7	E end of L8	6.2	W	Seepage
17/09/2012	R	8	E end of L8 – GW flow	5.1	W	
17/09/2012	R	9	L8 E end	5.7	W	Adj to GW flow into lake
17/09/2012	R	10	L8 N shore ~midpoint	6	W	
17/09/2012	R	11	Q3 NE side	6	W	Adj to dam
17/09/2012	R	12	Q3 NE side	6.3	W	30m from dam

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Date	Visit	Number	Location	pH	Material	Comment
17/09/2012	R	13	Water flow on N side Q3	6.6	W	
17/09/2012	R	14	Q3 N end	6.7	W	
17/09/2012	R	15	Q3 N end S side	6.8	W	
17/09/2012	R	16	Q3 S corner	6.8	W	WL 0.3m above bench
17/09/2012	R	17	S end of Q1 E	6.9	W	
17/09/2012	R	18	W end of Q1 E	7	W	
17/09/2012	R	19	Water seepage from tip	7.2	W	
17/09/2012	R	20	Seepage at N end of Q2W	7.7	W	
17/09/2012	R	21	Flow at base of Q2W N slope	7.9	W	
17/09/2012	R	22	Flow into Q2W	7.6	W	
17/09/2012	R	23	Flow into Q2W	8.2	W	
17/09/2012	R	24	S side of Q1W	7.9	W	
17/09/2012	R	25	Stream A	7.8	W	
17/09/2012	R	26	Stream B	7.7	W	
17/09/2012	R	27	Stream C	7.9	W	
17/09/2012	R	28	S side of Track L3	7.7	W	Stream D
17/09/2012	R	29	SP1	7.9	W	
17/09/2012	R	30	SP2 at base of L3	7.7	W	Flow through rock blanket.
17/09/2012	R	31	EA monitoring station	7.7	W	
17/09/2012	R	32	River Churnet	7.9	W	Upstream of EA station
17/09/2012	R	33	Acidic outflow	5.4	W	White precipitate
17/09/2012	R	34	Drain by railway	6.4	W	
17/09/2012	R	35	Drain opposite No.34	6.4	W	other side of tracks
17/09/2012	R	36	N side of track	5.2	W	Downstream of tracks
17/09/2012	R	37	2nd Acidic Water outflow	4.9	W	Opposite engine shed
17/09/2012	R	38	2nd Acidic Water outflow	5.4	W	At river
17/09/2012	R	39	River Churnet	6.2	W	Downstream of No. 38 (5m)
17/09/2012	R	40	River Churnet	6.6	W	Downstream of No. 39 (20m)
17/09/2012	R	41	Stream E	7	W	N side of railway
17/09/2012	R	42	Stream E	7	W	Outfall at SP5
17/09/2012	R	43	SP5	6.9	W	
17/09/2012	R	44	Stream E	7	W	Upstream of SP5
17/09/2012	R	45	Seepage in former Stream E	7.2	W	
17/09/2012	R	46	Stream E	6.9	W	
17/09/2012	R	47	Stream E	6.8	W	
17/09/2012	R	48	GW seepage	5.3	W	Base of T2
17/09/2012	R	49	GW seepage	5	W	Upstream of No.48
17/09/2012	R	50	GW seepage	5	W	Upstream of No.49
17/09/2012	R	51	Stream E	6.3	W	
17/09/2012	R	52	GW seepage	4.9	W	Base of T2
31/10/2012	S	1	East of Station house	5.3	W	
31/10/2012	S	2	Downstreamof EA station	5.6	W	
31/10/2012	S	3	Upstreamof EA station	5.6	W	
31/10/2012	S	4	Acidic outflow	5	W	

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31/10/2012	S	5	River Churnet	5.7	W	Near acidic outflow
31/10/2012	S	6	upstream of acidic outflow	5.4	W	
31/10/2012	S	7	upstream of acidic outflow	5.5	W	
31/10/2012	S	8	upstream of acidic outflow	5.5	W	
31/10/2012	S	9	upstream of acidic outflow	5.3	W	
31/10/2012	S	10	upstream of acidic outflow	5.4	W	
31/10/2012	S	11	Surface Water	6.3	W	S of silos
31/10/2012	S	12	Surface Water	7.5	W	Nr silos in processing area.
31/10/2012	S	13	Stream D	7.4	W	
31/10/2012	S	14	Q2 access track	7.2	W	
31/10/2012	S	15	Q2 access track	7.3	W	NE corner
31/10/2012	S	16	Q2 access track	7.3	W	Feed to L7
31/10/2012	S	17	Q2 access track	7.5	W	
31/10/2012	S	18	SW corner of Q3	7.3	W	
31/10/2012	S	19	Q3 S Face	7.2	W	
31/10/2012	S	20	Q3 on access track	7.2	W	
31/10/2012	S	21	L8 South Face	7.2	W	
31/10/2012	S	22	Surface Water	7.4	W	Start of Q1 Track
31/10/2012	S	23	Surface Water	7.5	W	Between Q1E and Q1W
31/10/2012	S	24	Groundwater Spring	7.1	W	In quarry access road
31/10/2012	S	25	Stream A	7.3	W	
31/10/2012	S	26	Stream B	7.2	W	
31/10/2012	S	27	Stream C	7.3	W	
06/12/2012	T	1	L8 S side	5.3	W	
06/12/2012	T	2	Stream A	6	W	
06/12/2012	T	3	Stream B	6.2	W	
06/12/2012	T	4	Stream C	6.2	W	
06/12/2012	T	5	Q1 access track	6.5	W	Surface ponding
06/12/2012	T	6	Q1 access track	6.8	W	S of L5 bund
06/12/2012	T	7	L5 pond	6.8	W	
06/12/2012	T	8	Access track	6.8	W	Between L5 and L4
06/12/2012	T	9	L4	6.8	W	
06/12/2012	T	10	Stockpile S of L4	6.7	W	Surface ponding
06/12/2012	T	11	Ponds in processing area	7.3	W	
06/12/2012	T	12	Water in BH121	7.2	W	Overtopping SP
06/12/2012	T	13	Stream D	7.2	W	
06/12/2012	T	14	SP1	7.3	W	
06/12/2012	T	15	Pump house	7.2	W	Surface ponding
06/12/2012	T	16	Pump house	7.3	W	Surface ponding
06/12/2012	T	17	River Churnet	7.3	W	Upstream of pump house
06/12/2012	T	18	EA monitoring station	7.1	W	Stream E
06/12/2012	T	19	Acidic Discharge	5.4	W	
06/12/2012	T	20	River Churnet	6.1	W	upstream of acidic outflow
06/12/2012	T	21	River Churnet	6.3	W	downstream of A discharge

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06/12/2012	T	22	Acidic Discharge	5.3	W	Nr rails
06/12/2012	T	23	Fields to E of quarry	6.1	W	Surface ponding
06/12/2012	T	24	Stream E	6.1	W	in fields
06/12/2012	T	25	Seepage into Stream E	6.5	W	Groundwater
06/12/2012	T	26	Stream E	6.4	W	E of T2 and stockpiles
06/12/2012	T	27	E of Stockpiles	6.5	W	
06/12/2012	T	28	Q3 below 95013	5.6	W	
06/12/2012	T	29	Q3 W end	5.8	W	S side
06/12/2012	T	30	Q3 W end	5.9	W	N side
06/12/2012	T	31	Stream into Q3	6.1	W	N side
06/12/2012	T	32	Q3 N side	6.2	W	
06/12/2012	T	33	Q3 N side	6.3	W	
06/12/2012	T	34	L8 N shore ~midpoint	6.5	W	
06/12/2012	T	35	NE stream	5.6	W	
06/12/2012	T	36	NE outfall	5	W	seepage 2m above bench
06/12/2012	T	37	Ne lake	5.7	W	
06/12/2012	T	38	L8 SE corner	5.9	W	
06/12/2012	T	39	Q2W	6.6	W	Frozen surface ponding
12/02/2013	U	1	Stream A	6.4	W	
12/02/2013	U	2	Stream B	5.9	W	
12/02/2013	U	3	Stream C	5.9	W	
12/02/2013	U	4	Q3 below 95013	6.1	W	
12/02/2013	U	5	inflow to L8	5.3	W	E corner
12/02/2013	U	6	L8 N shore ~midpoint	5.7	W	
12/02/2013	U	7	Q3 W end, N side	5.8	W	
12/02/2013	U	8	Surface flow into Q3	6.1	W	Former Stream C
12/02/2013	U	9	Q3 W end	6.1	W	
12/02/2013	U	10	Stream D	6.2	W	
12/02/2013	U	11	Surface Water	6.1	W	Flow down track to SP1
12/02/2013	U	12	SP1	6.7	W	
12/02/2013	U	13	Surface ponding	6.6	W	Near Pump house
12/02/2013	U	14	River Churnet	6.8	W	Above pump house
12/02/2013	U	15	Ponding under pump house	6.8	W	
12/02/2013	U	16	EA monitoring station	6.7	W	
12/02/2013	U	17	Surface Water	6.7	W	Next to signal box
12/02/2013	U	18	Acidic Discharge	5.8	W	Adj to River Churnet
12/02/2013	U	19	River Churnet	6.1	W	Below acidic outflow
12/02/2013	U	20	Acidic Discharge	5.7	W	Upstream
12/02/2013	U	21	Surface flow	5.9	W	into Acidic discharge
12/02/2013	U	22	Groundwater flow	6.1	W	Base of T2
26/04/2013	V	1	Stream A	6.4	W	
26/04/2013	V	2	Stream B	6.3	W	
26/04/2013	V	3	Stream C	6.6	W	
26/04/2013	V	4	Ponding in Field	6.3	W	Near stream A

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TABLE 2

Date	Visit	Number	Location	pH	Material	Comment
26/04/2013	V	5	Groundwater Issue	6.6	W	Ochre colouring
26/04/2013	V	6	Below 95013	6.3	W	
26/04/2013	V	7	Below 24012	6.4	W	E end of Q3
26/04/2013	V	8	Acidic Discharge	4.8	W	NE of Q3
26/04/2013	V	9	Surface ponding	5.2	W	L8 north bench
26/04/2013	V	10	L8 N shore ~midpoint	5.6	W	
26/04/2013	V	11	Q3 N side	5.9	W	
26/04/2013	V	12	L8 (causeway)	6.1	W	
26/04/2013	V	13	Stream D	6.3	W	
26/04/2013	V	14	Surface Water	6.8	W	Top of railway access road
26/04/2013	V	15	Discharge to SP1	7.4	W	
26/04/2013	V	16	River Churnet	7.3	W	Upstream
26/04/2013	V	17	EA monitoring station	7.1	W	
26/04/2013	V	18	Acidic Discharge	5.2	W	
26/04/2013	V	19	River Churnet	5.6	W	downstream of A discharge
26/04/2013	V	20	2nd Acidic Water outflow	4.8	W	Groundwater seepage
26/04/2013	V	21	Surface Water	4.9	W	Engine shed
26/04/2013	V	22	Bridge over river	5.9	W	
26/04/2013	V	23	Material in flume	12.1	S	N side of Q2W
26/04/2013	V	24	Soil Sample	6.9	S	N side of Q2W
26/04/2013	V	25	Soil Sample	7.1	S	Q2E
26/04/2013	V	26	Soil Sample	6.9	S	N side of Q2W
30/07/2013	W	1	Ponding	6.5	W	N of Railway
30/07/2013	W	2	Ponding	6.6	W	N of Railway
30/07/2013	W	3	Upstream of EA station	6.9	W	
30/07/2013	W	4	Downstreamof EA station	7	W	
30/07/2013	W	5	Acidic outflow	6.2	W	
30/07/2013	W	6	River Churnet	6.9	W	Nr acidic outflow
30/07/2013	W	7	Flow into SP1	6.8	W	
30/07/2013	W	8	Ponded water	10.3	W	in demolished tower
30/07/2013	W	9	Stream D	8.6	W	
30/07/2013	W	10	Ponding	8.4	W	Q1 Track
30/07/2013	W	11	Ponding	8.2	W	Q1 Track
30/07/2013	W	12	Ponding	8.1	W	Access Track
30/07/2013	W	13	Ponding in Q2W	8.2	W	
30/07/2013	W	14	Ponding	7.7	W	N side of Q2W
30/07/2013	W	15	Ponding	8	W	Base of Q2 tip
30/07/2013	W	16	Ponding	7.7	W	Q2 Track
30/07/2013	W	17	Q2E ditch	7.9	W	Behind infilled area
30/07/2013	W	18	Q2E ditch	7.6	W	downstream of 17
30/07/2013	W	19	Q2E access track	8.2	W	
30/07/2013	W	20	Stream into Q2W	7.9	W	
30/07/2013	W	21	Q3 south bank	7.9	W	
30/07/2013	W	22	Q3 south bank	7.8	W	

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Date	Visit	Number	Location	pH	Material	Comment
30/07/2013	W	23	Q3 Access track	7.8	W	
30/07/2013	W	24	Q3 SE corner	7.7	W	
30/07/2013	W	25	Q3 NW corner	7.6	W	
30/07/2013	W	26	Q3 outflow on N Bench	7.7	W	
30/07/2013	W	27	Q3 N side	7.5	W	
30/07/2013	W	28	Q3 W end, S side	7.5	W	
26/10/2013	X	1	Flow down access track	8.5	W	
26/10/2013	X	2	Flow to SP1	7.6	W	
26/10/2013	X	3	SP1	7.5	W	
26/10/2013	X	4	Ponding at railway	7.3	W	Base of access track
26/10/2013	X	5	Surface ponding	7.3	W	Adjacent to pump
26/10/2013	X	6	Surface ponding	7.3	W	Adjacent to pump
26/10/2013	X	7	River Churnet	7.2	W	
26/10/2013	X	8	EA monitoring station	7.2	W	
26/10/2013	X	9	Acidic outflow	4.6	W	
26/10/2013	X	10	River Churnet	5.1	W	downstream of A discharge
26/10/2013	X	11	Stream D	5.6	W	
26/10/2013	X	12	Settling pond	5.6	W	processing area
26/10/2013	X	13	Q1 access track	6.3	W	
26/10/2013	X	14	Surface ponding	6.9	W	L4
26/10/2013	X	15	L4 West side	6.5	W	
26/10/2013	X	16	Q2 access track	6.5	W	
26/10/2013	X	17	L7 Flume	10.5	W	
26/10/2013	X	18	Q2 track	10.2	W	Adj to flume
26/10/2013	X	19	Ponding	9	W	Base of SP
26/10/2013	X	20	Surface flow	8.6	W	north of SP
26/10/2013	X	21	surface ponding	8.7	W	Q2E gully
26/10/2013	X	22	Surface ponding	8.3	W	Q2E access track
26/10/2013	X	23	Stream B near farm	8.3	W	
26/10/2013	X	24	Stream C	8.3	W	
26/10/2013	X	25	Stream B	8.1	W	
26/10/2013	X	26	Stream A	8.1	W	
26/10/2013	X	27	Surface flow	8.1	W	South of Q3
26/10/2013	X	28	Q3 south bank	7.5	W	Below 95013
26/10/2013	X	29	surface ponding	7.8	W	Track south of Q3
26/10/2013	X	30	Ponding	8.1	W	East bench of Q3
26/10/2013	X	31	Q3 N shore	7.6	W	Surface ponding
26/10/2013	X	32	Q3 N shore	7.7	W	
26/10/2013	X	33	Q3 N shore	7.7	W	Approx mid-point
26/10/2013	X	34	Q3 W end	7.6	W	
26/10/2013	X	35	Q3 N shore	7.6	W	
26/10/2013	X	36	Q3 W end	8.1	W	
26/10/2013	X	37	Q3 W end, S side	7.6	W	
08/01/2014	Y	1	L3	5.8	W	Ponding on surface

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Date	Visit	Number	Location	pH	Material	Comment
08/01/2014	Y	2	Stream D	5.9	W	
08/01/2014	Y	3	Surface flow on access road	6	W	
08/01/2014	Y	4	SP1	6.3	W	
08/01/2014	Y	5	Pump house	6.3	W	Surface ponding
08/01/2014	Y	6	Pump house	6.3	W	Surface ponding
08/01/2014	Y	7	River Churnet	6.3	W	Pump house
08/01/2014	Y	8	EA monitoring station	6.4	W	
08/01/2014	Y	9	River Churnet	6.4	W	EA Monitoring Station
08/01/2014	Y	10	Acidic Discharge	4.9	W	
08/01/2014	Y	11	River Churnet	5.1	W	Downstream of Acidic Discharge
08/01/2014	Y	12	Acidic Discharge	4.8	W	Near Tracks
08/01/2014	Y	13	Drain by railway	5.2	W	
08/01/2014	Y	14	Groundwater flow	5.3	W	Base of T2
08/01/2014	Y	15	Ponded water	5.5	W	
08/01/2014	Y	16	Silo	5.8	W	
08/01/2014	Y	17	Surface Water	6.3	W	
08/01/2014	Y	18	Surface Water	6.3	W	
08/01/2014	Y	19	Q1 surface water	6.4	W	
08/01/2014	Y	20	Q2 access track	6.5	W	Surface ponding
08/01/2014	Y	21	Surface ponding	12.4	W	Q2 Eacess track
08/01/2014	Y	22	Q2E surface water	9.1	W	Gully
08/01/2014	Y	23	Q2E surface water	8.9	W	Gully
08/01/2014	Y	24	Q2E surface water	8.9	W	Gully
08/01/2014	Y	25	Q2E surface water	8.8	W	Gully
08/01/2014	Y	26	Q2E surface water	8.8	W	Gully
08/01/2014	Y	27	Surface ponding	8.8	W	Q2 E
08/01/2014	Y	28	Surface ponding	8.5	W	
08/01/2014	Y	29	Surface flow	8.4	W	North of Q2 tip
08/01/2014	Y	30	Surface ponding	11.4	W	Q2 Flume north
08/01/2014	Y	31	Stream C	8.9	W	
08/01/2014	Y	32	Stream B	8.6	W	
08/01/2014	Y	33	Stream A	8.6	W	
08/01/2014	Y	34	Groundwater flow	8.6	W	S of Q3
08/01/2014	Y	35	Surface flow	8.5	W	Head of stream A?
08/01/2014	Y	36	Q3	8.2	W	Below 95013
08/01/2014	Y	37	Q3 Access track	8.1	W	
08/01/2014	Y	38	Q3	8.2	W	South bank
08/01/2014	Y	39	Q3	8.5	W	L8 causeway
08/01/2014	Y	40	Q3	8.1	W	East end
08/01/2014	Y	41	Q3	8.1	W	West end north side
08/01/2014	Y	42	Q3	8.1	W	Q3 stream C inflow
08/01/2014	Y	43	Q3	8	W	West end
08/01/2014	Y	44	Q3	8	W	West end
15/04/2014	Z	1	Q3	6.4	W	access to L8

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Date	Visit	Number	Location	pH	Material	Comment
15/04/2014	Z	2	Q3	6.2	W	East end of L8
15/04/2014	Z	3	Surface ponding	6	W	Top of Q3 access road
15/04/2014	Z	4	Q3	6.4	W	Below 95013
15/04/2014	Z	5	South of Q3 overflow	6.4	W	
15/04/2014	Z	6	South of Q3	6.6	W	Head of stream A?
15/04/2014	Z	7	StreamA	6.6	W	Upstream
15/04/2014	Z	8	Stream A	6.5	W	Upstream
15/04/2014	Z	9	Surface Water	6.5	W	
15/04/2014	Z	10	Stream A	6.5	W	
15/04/2014	Z	11	Stream A	6.5	W	V notch
15/04/2014	Z	12	Stream C	6.4	W	V notch
15/04/2014	Z	13	Stream B	6.5	W	V notch
15/04/2014	Z	14	Q2E ditch	6.9	W	
15/04/2014	Z	15	Q2E ditch	6.8	W	Upstream of crossing point
15/04/2014	Z	16	Q2E surface water	6.8	W	
15/04/2014	Z	17	Surface Ponding	6.4	W	North of Q2E
15/04/2014	Z	18	Surface Ponding	6.6	W	Next to BH121
15/04/2014	Z	19	Stream D	6.4	W	
09/07/2014	Aa	1	Q3 east end	5.1	W	L8 access track
09/07/2014	Aa	2	Stream C	5.7	W	
09/07/2014	Aa	3	Stream B	5.3	W	Upstream of C
09/07/2014	Aa	4	Stream B	5.2	W	Downstream of C
09/07/2014	Aa	5	Stream A	5.3	W	
09/07/2014	Aa	6	Stream A	5.2	W	Upstream
09/07/2014	Aa	7	Q3 overflow	5.3	W	
09/07/2014	Aa	8	Q3 W end, S side	5.2	W	
09/07/2014	Aa	9	Q3 W end, N side	5.3	W	
09/07/2014	Aa	10	Q1E	5.7	W	New outflow
09/07/2014	Aa	11	Q1W	5.8	W	Gully ponding
09/07/2014	Aa	12	Q1W	5.8	W	
09/07/2014	Aa	13	River Churnet	5.8	W	Upstream
09/07/2014	Aa	14	EA monitoring station	5.4	W	
09/07/2014	Aa	15	River Churnet	5.6	W	Downstream
16/09/2014	Ab	1	Q3 L8 Access track	6.1	W	
16/09/2014	Ab	2	Stream B	6	W	Top
16/09/2014	Ab	3	Stream C	6.3	W	
16/09/2014	Ab	4	Stream B	6.4	W	Above C
16/09/2014	Ab	5	Stream B	6.5	W	Next to V notch
16/09/2014	Ab	6	Stream A	6.6	W	Downstream
16/09/2014	Ab	7	Stream A	6.6	W	At V notch
16/09/2014	Ab	8	Surface Ponding	6.4	W	South of stream A
16/09/2014	Ab	9	95013	6.5	W	
16/09/2014	Ab	10	Q3 West end	6.5	W	
16/09/2014	Ab	11	Q3 West end	6.6	W	

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Date	Visit	Number	Location	pH	Material	Comment
16/09/2014	Ab	12	Q3 west end north side	6.6	W	
16/09/2014	Ab	13	Area B	6.6	W	Surface
16/09/2014	Ab	14	Area B	6.6	W	S Ditch
16/09/2014	Ab	15	Area B	6.6	W	S Ditch
16/09/2014	Ab	16	Area B	6.4	W	West ditch
16/09/2014	Ab	17	Area B	6.4	W	ponding north
16/09/2014	Ab	18	Area B	6.1	W	top
16/09/2014	Ab	19	Area B	5.8	W	
16/09/2014	Ab	20	Area B	5.8	W	
16/09/2014	Ab	21	Area B	5.1	W	
16/09/2014	Ab	22	Area B	4.1	W	
16/09/2014	Ab	23	Area B	4.3	W	
16/09/2014	Ab	24	Area B	4.1	W	
16/09/2014	Ab	25	Area B	4.5	W	
16/09/2014	Ab	26	L7	5.8	W	
16/09/2014	Ab	27	L7	6.3	W	
16/09/2014	Ab	28	L7	6.9	W	
06/10/2014	Ac	29	BH121	7.4	W	Surface ponding
06/10/2014	Ac	30	Stream D	6.7	W	
06/10/2014	Ac	31	Stream D	6.7	W	at spillway
06/10/2014	Ac	32	Ponding south of offices	7	W	
06/10/2014	Ac	33	Ponding	6.9	W	
06/10/2014	Ac	34	Top of track	6.8	W	
06/10/2014	Ac	35	Track	6.9	W	Adj to dam
06/10/2014	Ac	36	Track	6.9	W	Below Sp1
06/10/2014	Ac	37	Track	7	W	Flow down track
06/10/2014	Ac	38	Track	7	W	Bottom of track
06/10/2014	Ac	39	Ponding	7.1	W	near old railway lines
06/10/2014	Ac	40	River Churnet	7	W	Pump house
06/10/2014	Ac	41	EA monitoring station	7	W	
06/10/2014	Ac	42	Acidic Discharge	4.8	W	
06/10/2014	Ac	43	River Churnet	5.4	W	Opposite engine shed
06/10/2014	Ac	44	Surface Ponding	5	W	Opposite engine shed
06/10/2014	Ac	45	West of office block	6.4	W	
06/10/2014	Ac	46	Ponding on drive	6.6	W	
06/10/2014	Ac	47	Ponding	6.6	W	
06/10/2014	Ac	48	Q3	6.7	W	base of ramp
06/10/2014	Ac	49	Q3 Access track	6.4	W	
06/10/2014	Ac	50	Surface flow	6.6	W	On Q3 track
06/10/2014	Ac	51	Surface flow	6.6	W	On Q3 track
06/10/2014	Ac	52	Surface flow	6.6	W	On Q3 track
06/10/2014	Ac	53	Q2 NW corner	6.7	W	
20/01/2015	Ad	1	Stream D	6.3	W	At pipe bridge
20/01/2015	Ad	2	Stream D Seepage	6.5	W	Original Stream D

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20/01/2015	Ad	3	Stream D	6.6	W	At diversion
20/01/2015	Ad	4	End of Stream D	6.6	W	Adj to Access track
20/01/2015	Ad	5	sp1 inlet	6.8	W	
20/01/2015	Ad	6	sp3 outfall	6.3	W	
20/01/2015	Ad	7	Flow from SP3	7	W	
20/01/2015	Ad	8	Flow to west of 7	7.1	W	
20/01/2015	Ad	9	Surface Ponding	7.3	W	West along tracks
20/01/2015	Ad	10	Surface ponding	6.7	W	Pump house
20/01/2015	Ad	11	River Churnet	6.9	W	At pump house
20/01/2015	Ad	12	Upstream of pump house	7	W	
20/01/2015	Ad	13	River Churnet	7	W	on meander corner
20/01/2015	Ad	14	EA monitoring station	6.8	W	
20/01/2015	Ad	15		7	W	
20/01/2015	Ad	16	Acidic Discharge	5.2	W	
20/01/2015	Ad	17	2nd Acidic seepage	5	W	
20/01/2015	Ad	18	Acidic seepage	4.8	W	
20/01/2015	Ad	19	River Churnet	5.5	W	Downstream
20/01/2015	Ad	20	Surface Ponding	5.2	W	adj to engine shed
20/01/2015	Ad	21	River Churnet	5.8	W	East side of bridge
20/01/2015	Ad	22	Flow from pipe	6	W	
20/01/2015	Ad	23	Stream E	6.2	W	Left arm
20/01/2015	Ad	24	Flow from SP5	6.4	W	
20/01/2015	Ad	25	Stream E	6.4	W	Adj to T2
20/01/2015	Ad	26	ponding	5.7	W	Groundwater from TP2
20/01/2015	Ad	27	surface Ponding	4.9	W	Groundwater from TP2
20/01/2015	Ad	28	L4 outflow	5.8	W	
20/01/2015	Ad	29	Surface flow	6.3	W	Area B
20/01/2015	Ad	30	Area B stream	6.2	W	Sinks
20/01/2015	Ad	31	Stream F	6.2	W	Upstream of 30
20/01/2015	Ad	32	Stream F	6.1	W	Upstream of 31
20/01/2015	Ad	33	Stream F	6	W	Upstream of 32
20/01/2015	Ad	34	Stream F	5.1	W	
20/01/2015	Ad	35	Seepage from North bank	4.8	W	into stream F
20/01/2015	Ad	36	Stream F	4.9	W	
20/01/2015	Ad	37	Seepage from North bank	4.6	W	seepage above No. 36
20/01/2015	Ad	38	Stream F	4.6	W	upstream
20/01/2015	Ad	39	Surface ponding	5.1	W	
20/01/2015	Ad	40	Q3	6	W	Survey location
20/01/2015	Ad	41	Q3 south bank	6.2	W	
20/01/2015	Ad	42	Stream E	6.1	W	
20/01/2015	Ad	43	Stream E	6.2	W	Right arm
20/01/2015	Ad	44	Q3 south corner	6.3	W	access track
20/01/2015	Ad	45	Q3 East corner	6.3	W	below 24012
20/01/2015	Ad	46	Q3 North Bank	6.4	W	

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20/01/2015	Ad	47	Q3 Northwest corner	6.5	W	north side
20/01/2015	Ad	48	Q3 northwest corner	6.6	W	south side
20/01/2015	Ad	49	Q3 between 45&46	6.5	W	
28/04/2015	Ae	1	Stream D	5.3	W	
28/04/2015	Ae	2	Entry to SP1	6.3	W	
28/04/2015	Ae	3	SP1	6.5	W	
28/04/2015	Ae	4	SP2	6.5	W	
28/04/2015	Ae	5	SP3	6.6	W	
28/04/2015	Ae	6	Inflow below SP3	6.7	W	
28/04/2015	Ae	7	ditch s of railway	6.8	W	
28/04/2015	Ae	8	Blue pipe from ground	6.8	W	
28/04/2015	Ae	9	Meadowland	6.7	W	
28/04/2015	Ae	10	River pump house	6.7	W	
28/04/2015	Ae	11	Monitoring station	6.7	W	
28/04/2015	Ae	12	canal	4.8	W	
28/04/2015	Ae	13	outlet at river level	4.8	W	
28/04/2015	Ae	14	Canal train shed	4.7	W	
28/04/2015	Ae	15	River surface before bridge	5.5	W	
28/04/2015	Ae	16	In rail track	5.6	W	
28/04/2015	Ae	17	Flow from pipe	5.9	W	
28/04/2015	Ae	18	Stream E	6	W	
28/04/2015	Ae	19	SP4 Outlet	6.1	W	
28/04/2015	Ae	20	Upstream of SP4	6.2	W	
28/04/2015	Ae	21	Stream E	6.3	W	
28/04/2015	Ae	22	By fines/ s/st	6.3	W	
28/04/2015	Ae	23	SP5	6.5	W	
28/04/2015	Ae	24	Above Dam D	6.4	W	
28/04/2015	Ae	25	Stream D	6.5	W	
28/04/2015	Ae	26	Old Stream	6.6	W	
28/04/2015	Ae	27	Water level down to Berms	6.5	W	
28/04/2015	Ae	28	Q3 Access track	6.5	W	
28/04/2015	Ae	29	Outlet. Tadpoles.	6.8	W	
28/04/2015	Ae	30	q1 west pond	6.8	W	
28/04/2015	Ae	31	L4 entrance	6.8	W	
28/04/2015	Ae	32	Area B stream	7	W	
28/04/2015	Ae	33	Top stream	5.8	W	
28/04/2015	Ae	34	At corner	5.5	W	
28/04/2015	Ae	35	Water on slope area B	5.6	W	
28/04/2015	Ae	36	In L7 entrance stream	6.4	W	
28/04/2015	Ae	37	In L7 pond	6.7	W	
28/04/2015	Ae	38	At Sample Location A5 Q3	6.8	W	
28/04/2015	Ae	39	Stream into Q3	6.9	W	
28/04/2015	Ae	40	Q3 NW corner	6.8	W	
28/04/2015	Ae	41	Stream C	7	W	

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TABLE 2

Date	Visit	Number	Location	pH	Material	Comment
28/04/2015	Ae	42	Stream B	7	W	
28/04/2015	Ae	43	Stream A	7	W	
28/07/2015	Af	1	L5 trench	6.8	W	Adjacent surface ponding
28/07/2015	Af	2	L5 trench	6.9	W	Ponding in trench
28/07/2015	Af	3	L5 trench	6.8	W	Ponding in trench
28/07/2015	Af	4	Track adjacent to L5	6.7	W	Ponding
28/07/2015	Af	5	L4 outflow	6.8	W	Ponding
28/07/2015	Af	6	Q2 surface flow	7	W	Adjacent to track
28/07/2015	Af	7	Ponding in flume area	7.3	W	
28/07/2015	Af	8	Ponding at Area B ditch	7.2	W	
28/07/2015	Af	9	Q2 lagoon	7.4	W	Ponding
28/07/2015	Af	10	Flume outfall into Q2	7.3	W	
28/07/2015	Af	11	Area B flow	7.9	W	Base of NW stream
28/07/2015	Af	12	Area B flow	7.8	W	Top of NW stream
28/07/2015	Af	13	Stream F near E corner	7.8	W	
28/07/2015	Af	14	Stream F	6.4	W	E corner
28/07/2015	Af	15	Area B	6.3	W	Ponding nr 14
28/07/2015	Af	16	Stream F	5.5	W	upstream of corner
28/07/2015	Af	17	Seepage in Area B	4.8	W	From rock to north
28/07/2015	Af	18	Stream F flow	4.7	W	upstream of 17
28/07/2015	Af	19	Area B	5	W	Surface ponding
28/07/2015	Af	20	Area B	5.1	W	Surface ponding
28/07/2015	Af	21	Stream F flow	5.6	W	South side, middle
28/07/2015	Af	22	Stream F flow	5.6	W	Downstream of 21
28/07/2015	Af	23	Ponding at end of stream F	5.6	W	
28/07/2015	Af	24	Area D ponding in trench	6	W	
28/07/2015	Af	25	Area D ponding	6.1	W	upstream of 24
28/07/2015	Af	26	Area D ponding	6.2	W	upstream of 25
28/07/2015	Af	27	Stream D diversion	6.5	W	at bridge
28/07/2015	Af	28	Ponding	6.6	W	Forestry access
28/07/2015	Af	29	Stream D	7.1	W	Original course
28/07/2015	Af	30	Stream D diversion	7.1	W	At access track
28/07/2015	Af	31	SP1 inflow drain	7.3	W	
28/07/2015	Af	32	Ponding at engine shed	7.4	W	
28/07/2015	Af	33	Q3 Access track	7.1	W	
28/07/2015	Af	34	Q3 south side	7.2	W	Mid point
28/07/2015	Af	35	Q3 south side	7.3	W	Near 95013
28/07/2015	Af	36	Stream A	7.5	W	
28/07/2015	Af	37	Stream B	7.4	W	
28/07/2015	Af	38	Stream C	7.4	W	
28/07/2015	Af	39	Former L8 access track	7.3	W	
28/07/2015	Af	40	Q3 North corner	5.4	W	Seepage in NE corner
28/07/2015	Af	41	Q3 north side	5.5	W	
28/07/2015	Af	42	Q3 NW corner	5.8	W	

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Date	Visit	Number	Location	pH	Material	Comment
28/07/2015	Af	43	Q3 West end	5.8	W	
31/10/2015	Ag	1	End of Stream D diversion	7.2	W	Adj to track
31/10/2015	Ag	2	SP1 inflow drain	7.4	W	
31/10/2015	Ag	3	Pump house	7.5	W	
31/10/2015	Ag	4	Acidic Discharge	7.5	W	north of track
31/10/2015	Ag	5	Acidic Discharge	5.8	W	flow to river
31/10/2015	Ag	6	EA monitoring station	6.2	W	
31/10/2015	Ag	7	Stream D diversion	6.5	W	At culvert
31/10/2015	Ag	8	Q1 access track	6.8	W	Ponding
31/10/2015	Ag	9	L5 outflow	6.9	W	
31/10/2015	Ag	10	Ponding at Q2W	7	W	adj to unsuitable
31/10/2015	Ag	11	Stream B near farm	7	W	
31/10/2015	Ag	12	Stream C	7.3	W	At dam
31/10/2015	Ag	13	Stream C	7.3	W	At V notch
31/10/2015	Ag	14	Stream B	7.2	W	At V notch
31/10/2015	Ag	15	Stream A	7.4	W	Downstream
31/10/2015	Ag	16	Stream A	7.4	W	At V notch
31/10/2015	Ag	17	Below spillway	7.4	W	
31/10/2015	Ag	18	Q3 south side	7.4	W	midpoint
31/10/2015	Ag	19	L8 (causeway)	7.4	W	
31/10/2015	Ag	20	Q3 East corner	6.3	W	Acidic Seepage
31/10/2015	Ag	21	Q3 N side	6.5	W	
31/10/2015	Ag	22	Q3 W end, N side	6.7	W	
31/10/2015	Ag	23	Q3 W end, S side	6.8	W	
29/01/2016	Ah	1	Q3 access	10.2	W	Surface ponding
29/01/2016	Ah	2	Q3 access	9.5	W	Surface Ponding
29/01/2016	Ah	3	Groundwater	7.8	GW	From BH24012
29/01/2016	Ah	4	Q3	7.4	W	Concrete tunnel entrance
29/01/2016	Ah	5	Q1 access track ponding	7.7	W	
29/01/2016	Ah	6	Processing Area	7.5	W	Surface ponding
29/01/2016	Ah	7	Stream D Diversion	7.6	W	at pipe bridge
29/01/2016	Ah	8	Stream D	7.6	W	at diversion point
29/01/2016	Ah	9	Old D at diversion	7.5	W	
29/01/2016	Ah	10	Old D at crossing point	7.7	W	
29/01/2016	Ah	11	Groundwater	7.5	GW	BH121 shallow
29/01/2016	Ah	12	Groundwater	7.6	GW	BH121 Deep
29/01/2016	Ah	13	Area E	7.9	W	Surface Runoff
29/01/2016	Ah	14	Railway access track	7.7	W	top end
29/01/2016	Ah	15	Stream D diversion	8	W	outfall to track
29/01/2016	Ah	16	SP1 inflow	8	W	
29/01/2016	Ah	17	Seepage down from SP1	7.9	W	
29/01/2016	Ah	18	SP5 outflow	8.3	W	SP 5 outflow
29/01/2016	Ah	19	Downstream of SP5	8.2	W	
29/01/2016	Ah	20	Surface flow to East of SP5	8.2	W	

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29/01/2016	Ah	21	Surface flow from SP5	8.1	W	
29/01/2016	Ah	22	EA station	7.9	W	
29/01/2016	Ah	23	River Churnet	7.8	W	At EA station
29/01/2016	Ah	24	Acidic discharge	7.8	W	
29/01/2016	Ah	25	Surface flow	7.5	W	
29/01/2016	Ah	26	Seepages into River Churnet	7.3	W	
29/01/2016	Ah	27	Seepage	7.2	W	At Engine Shed
29/01/2016	Ah	28	River Churnet	7.2	W	At rail bridge
29/01/2016	Ah	29	Ponding	7.5	W	At pump house
29/01/2016	Ah	30	River Churnet	7.3	W	At pump house
29/01/2016	Ah	31	Flow into River Churnet	7.7	W	
29/01/2016	Ah	32	Area E	7.8	W	Seepage
29/01/2016	Ah	33	L4 east side ponding	8	W	
29/01/2016	Ah	34	L4 SE side ponding	7.8	W	
29/01/2016	Ah	35	L4 outflow W side	7.9	W	
29/01/2016	Ah	36	L4 outflow	7.9	W	Downstream from 35
29/01/2016	Ah	37	L7	7.7	W	Surface ponding
29/01/2016	Ah	38	L7	8.3	W	Ponding on unsuitable area
29/01/2016	Ah	39	Area D	8.3	W	Drainage gully
29/01/2016	Ah	40	Adj to area D sinkhole	8.7	W	
29/01/2016	Ah	41	Area D	8.6	W	Surface ponding
29/01/2016	Ah	42	Area D	8.6	W	At pipe bridge
29/01/2016	Ah	43	Area D	8.4	W	Ponding area D
29/01/2016	Ah	44	Stream F	8.4	W	Sinks
29/01/2016	Ah	45	Surface flow in Area B	8.5	W	
29/01/2016	Ah	46	Stream F	8.6	W	North side midpoint
29/01/2016	Ah	47	Stream F	8.6	W	Upstream of 46
29/01/2016	Ah	48	Stream F	8.3	W	Downstream of 46
29/01/2016	Ah	49	Stream F	8.3	W	Downstream from 48
29/01/2016	Ah	50	Stream F	7.9	W	Seepage on N face
29/01/2016	Ah	51	Corner of Area B	7.8	W	
29/01/2016	Ah	52	Stream F	7.7	W	South side midpoint
29/01/2016	Ah	53	Ponding	7.5	W	W end of tip
29/01/2016	Ah	54	Stream at rear of tip	7.1	W	Stream at rear of tip
29/01/2016	Ah	55	Overland flow	7.4	W	Adjacent to 54
29/01/2016	Ah	56	Stream at rear of tip	7.4	W	Stream at rear of tip
29/01/2016	Ah	57	Overland flow	6.5	W	Upstream of 55
29/01/2016	Ah	58	Surface Ponding	8.2	W	At top of SBC access track
29/01/2016	Ah	59	Ponding	8.1	W	Adjacent to Area E
29/01/2016	Ah	60	Q3 access road	7.9	W	
29/01/2016	Ah	61	Q3 access road	7.9	W	Upslope
29/01/2016	Ah	62	Old L8 access track	7.9	W	
29/01/2016	Ah	63	L8 E corner	7.5	W	Acidic seepage
29/01/2016	Ah	64	Q3, N side, mid right	7.9	W	

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29/01/2016	Ah	65	Q3 N side, mid left	7.9	W	
29/01/2016	Ah	66	Q3 west end middle	7.9	W	
29/01/2016	Ah	67	Q3 SW corner	7.9	W	
29/01/2016	Ah	68	Flow into Q3	8	W	Old Stream A
07/04/2016	Ai	1	Conc. pipe under path	7.9	W	
07/04/2016	Ai	2	Puddle	7.6	W	
07/04/2016	Ai	3	Gulley joins path	7	W	
07/04/2016	Ai	4	SP1 inflow channel	7.1	W	
07/04/2016	Ai	5	SP2 SE corner	7.1	W	
07/04/2016	Ai	6	Small pool between SP 2 +3	7.2	W	
07/04/2016	Ai	7	SP3 inflow	7	W	
07/04/2016	Ai	8	Stream inflow	7	W	
07/04/2016	Ai	9	Puddle next to pump house	7.1	W	
07/04/2016	Ai	10	Flow into river	7.1	W	
07/04/2016	Ai	11	River C at pump house	6.6	W	
07/04/2016	Ai	12	Stream at monitoring station	6.9	W	
07/04/2016	Ai	13	Pool west of engine shed	8.8	W	
07/04/2016	Ai	14	River Churnett	6.5	W	
07/04/2016	Ai	15	Flow from bank	6.5	W	
07/04/2016	Ai	16	Stream E	6.7	W	
07/04/2016	Ai	17	Flow into stream E	6.6	W	
07/04/2016	Ai	18	SP4 outflow	6.7	W	
07/04/2016	Ai	19	Flow into SP4 (stream E)	6.7	W	
07/04/2016	Ai	20	SP5	6.3	W	
07/04/2016	Ai	21	Survey point	6.6	W	
07/04/2016	Ai	22	Top of Q3 east	6.9	W	
07/04/2016	Ai	23	Stream NE corner	6.9	W	
07/04/2016	Ai	24	NE bench #1	6.4	W	
07/04/2016	Ai	25	200m W bench	6.6	W	
07/04/2016	Ai	26	C corner bench	6.3	W	
07/04/2016	Ai	27	C lake Q3 #2	6.1	W	
07/04/2016	Ai	28	NW stream #3	6.2	W	
07/04/2016	Ai	29	NW corner #4	6.4	W	
07/04/2016	Ai	30	SW corner	6.3	W	
07/04/2016	Ai	31	S corner #5	6.7	W	
07/04/2016	Ai	32	S corner	6.3	W	
07/04/2016	Ai	33	Outfall	6.4	W	
07/04/2016	Ai	34	South path	6.4	W	
07/04/2016	Ai	35	South path	6.6	W	
07/04/2016	Ai	36	Entrance puddle	6.3	W	
07/04/2016	Ai	37	Q2 Q3 stream	6.4	W	
07/04/2016	Ai	38	NW of Q1 W	6.6	W	
07/04/2016	Ai	39	NERw to Q1 W	6.7	W	
07/04/2016	Ai	40	N of tunnel	6.4	W	

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Date	Visit	Number	Location	pH	Material	Comment
07/04/2016	Ai	41	L7 lake	6	W	
07/04/2016	Ai	42	Area A stream.	7.1	W	
07/04/2016	Ai	43	Flume	7.3	W	
07/04/2016	Ai	44	N area B stream	7.3	W	
07/04/2016	Ai	45	NE area B stream	7.6	W	
07/04/2016	Ai	46	Q2 E stream	7.1	W	
07/04/2016	Ai	47	L4 outfall	7.3	W	
07/04/2016	Ai	48	Area E gully middle	7.2	W	
07/04/2016	Ai	49	Area E bottom	7.1	W	
07/04/2016	Ai	50	Stream A V-notch	6.9	W	
07/04/2016	Ai	51	Stream C V-notch	7.1	W	
07/04/2016	Ai	52	Stream B V-notch	6.8	W	
05/07/2016	Aj	1	Top of spillway	7.7	W	
05/07/2016	Aj	2	Upstream from spillway	8.2	W	
05/07/2016	Aj	3	Puddle in road	8.3	W	
05/07/2016	Aj	4	NW of bridge under road	8	W	
05/07/2016	Aj	5	East of pipe under road	9.6	W	
05/07/2016	Aj	6	West of pipe under road	9	W	
05/07/2016	Aj	7	Flow from area E	10.7	W	
05/07/2016	Aj	8	Flow at top of conveyer hill	10.3	W	
05/07/2016	Aj	9	East end of spillway avoidance	9.6	W	
05/07/2016	Aj	10	Spillway avoidance flow	9.8	W	
05/07/2016	Aj	11	Area E run-off pool	9.5	W	
05/07/2016	Aj	12	Flow into SP1	10.1	W	
05/07/2016	Aj	13	SP2	8.8	W	
05/07/2016	Aj	14	Pump house access track puddle	8.4	W	
05/07/2016	Aj	15	River @ pump house	9.1	W	
05/07/2016	Aj	16	Seepage on bank	7.8	W	
05/07/2016	Aj	17	Seepage next to pump house path	7.9	W	
05/07/2016	Aj	18	EA Station	8.2	W	
05/07/2016	Aj	19	Stream E at pipe	8.6	W	
05/07/2016	Aj	20	Stream E above junction	8.7	W	
05/07/2016	Aj	21	Flow from SP5	8.4	W	
05/07/2016	Aj	22	Outfall of SP5	8.8	W	
05/07/2016	Aj	23	SP5 west	8.5	W	
05/07/2016	Aj	24	Pool in "	9.9	W	
05/07/2016	Aj	25	Pool to west of L4	10.1	W	
05/07/2016	Aj	26	L4-L5 channel	9.8	W	
05/07/2016	Aj	27	North of rock tunnel pool	9.7	W	
05/07/2016	Aj	28	L7	9.8	W	
05/07/2016	Aj	29	Flow in channel west of L6	9.9	W	
05/07/2016	Aj	30	Pool next to track	9.7	W	
05/07/2016	Aj	31	From 29 Stream F	9.9	W	
05/07/2016	Aj	32	Up from 31 Stream F	9.7	W	

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05/07/2016	Aj	33	Flow away from T4 way	9.7	W	
05/07/2016	Aj	34	Up from 32 Stream F	9.6	W	
05/07/2016	Aj	35	Up from 34 Stream F	9.3	W	
05/07/2016	Aj	36	Flow along edge	9.2	W	
05/07/2016	Aj	37	Up from 36 Stream F	8.5	W	
05/07/2016	Aj	38	Up from 37 Stream F	8.1	W	
05/07/2016	Aj	39	Corner of field	6	W	
05/07/2016	Aj	40	North field	6.3	W	
05/07/2016	Aj	41	seepage into stream F	5.5	W	
05/07/2016	Aj	42	Flow stream F	5.9	W	
05/07/2016	Aj	43	Pool	7.6	W	
05/07/2016	Aj	44	Pool	8	W	
05/07/2016	Aj	45	Pool	8	W	
05/07/2016	Aj	46	Flow Stream F	6.2	W	
05/07/2016	Aj	47	Flow next to tip	7.3	W	
05/07/2016	Aj	48	Pool next to track	7.8	W	
05/07/2016	Aj	49	Q2E pool	8.6	W	
05/07/2016	Aj	50	L5 -> Q3 Channel	9.1	W	
05/07/2016	Aj	51	Q3 Next to life ring	9	W	
05/07/2016	Aj	52	Q3 south side	9	W	
05/07/2016	Aj	53	Q3 south side	8.9	W	
05/07/2016	Aj	54	Q3 SE corner	8.6	W	
05/07/2016	Aj	55	Q3 SE side	9	W	
05/07/2016	Aj	56	Stream A V-notch	8.4	W	Measured in office
05/07/2016	Aj	57	Stream B V-notch	8.4	W	Measured in office
05/07/2016	Aj	58	Stream C V-notch	8.6	W	Measured in office
11/11/2016	Ak	1	Behind spill way	6.9	W	Pond
11/11/2016	Ak	2	Southside of pipe bridge	8	W	In stream D diversion
11/11/2016	Ak	3	Area E	8.5	W	Stream D diversion south end
11/11/2016	Ak	4	Area E	9.3	W	Slow down spill way
11/11/2016	Ak	5	Spillway	8.9	W	Slow between SP1 and diversion
11/11/2016	Ak	6	SP1	9.1	W	Inflow
11/11/2016	Ak	7	SP2	8.7	W	Main body
11/11/2016	Ak	8	SP3	7.8	W	Main body
11/11/2016	Ak	9	Railway Line	8.2	W	Pond
11/11/2016	Ak	10	Pump house track	7.9	W	Pond
11/11/2016	Ak	11	River	8	W	Just W of pump house
11/11/2016	Ak	12	Reed beds	7.7	W	Ponding N of river
11/11/2016	Ak	13	EA Station	6.8	W	Stream E
11/11/2016	Ak	14	River	7.4	W	River at EA station
11/11/2016	Ak	15	Stream E	7.5	W	North of railway
11/11/2016	Ak	16	Stream E	7.7	W	Upstream of SP5 join
11/11/2016	Ak	17	SP5	7.7	W	Outflow near stream E
11/11/2016	Ak	18	SP5	7.8	W	Main body

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Date	Visit	Number	Location	pH	Material	Comment
11/11/2016	Ak	19	SP4	7.2	W	Main body
11/11/2016	Ak	20	Stream E	7.7	W	East of SP4
11/11/2016	Ak	21	Stream D	7.7	W	West of car park
11/11/2016	Ak	22	L5	8.4	W	Eastern shore
11/11/2016	Ak	23	L4	10.2	W	Western outfall
11/11/2016	Ak	24	L7	12.9	W	Pond near tailings pile at south east corner
11/11/2016	Ak	25	L7	9.2	W	Excavation
11/11/2016	Ak	26	L7	9.5	W	Stream in channel
11/11/2016	Ak	27	L7	8.5	W	North side
11/11/2016	Ak	28	L7	8.6	W	North side
11/11/2016	Ak	29	Top of Q2 E	8	W	Perimeter stream
11/11/2016	Ak	30	Top of Q2 E	8	W	Perimeter stream
11/11/2016	Ak	31	Top of Q2 E	5.4	W	Perimeter stream
11/11/2016	Ak	32	Top of Q2 E	5.3	W	Perimeter stream corner
11/11/2016	Ak	33	Top of Q2 E	5.9	W	Perimeter stream
11/11/2016	Ak	34	Top of Q2 E	6.5	W	Perimeter stream
11/11/2016	Ak	35	Q3 borehole	5.9	W	24012
11/11/2016	Ak	36	Stream A	6.6	W	V-notch
11/11/2016	Ak	37	Stream C	7	W	V-notch
11/11/2016	Ak	38	Stream B	7.3	W	V-notch
11/11/2016	Ak	39	Q3	7.5	W	Access ramp
01/12/2016	Al	1	Q3	8	W	
01/12/2016	Al	2	Area E Bottom	8.4	W	
01/12/2016	Al	3		8.3	W	
01/12/2016	Al	4		8.2	W	
01/12/2016	Al	5	Stream E	7.7	W	
01/12/2016	Al	6	Pond	7.1	W	
01/12/2016	Al	7	Stream E	7.6	W	
01/12/2016	Al	8	Pond	5.6	W	
01/12/2016	Al	9	Stream E	6.3	W	
01/12/2016	Al	10	Stream E	6.8	W	
01/12/2016	Al	11	SP5 Race	7	W	
01/12/2016	Al	12	SP5 Race	7.1	W	
01/12/2016	Al	13	SP5 Lake	7.3	W	
01/12/2016	Al	14	Stream E	7.4	W	
01/12/2016	Al	15	Stream E Flow SP5	7.5	W	
01/12/2016	Al	16	Sediment in water	7.4	W	
01/12/2016	Al	17	Spring above truck	7.2	W	
01/12/2016	Al	18	Below shed	5.1	W	
01/12/2016	Al	19	Measuring Station	6.3	W	
01/12/2016	Al	20	River	7.1	W	
01/12/2016	Al	21	Pubbles by ramp	7.1	W	
01/12/2016	Al	22	River	7.4	W	
01/12/2016	Al	23	Stream D	7.9	W	

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pH MONITORING RECORDS

Client: Laver Leisure

Project: Moneystone Quarry, Oakamoor

Number: 418050

TABLE 2

Date	Visit	Number	Location	pH	Material	Comment
01/12/2016	AI	24	SP3	7.9	W	
01/12/2016	AI	25	SP2 WL low	7.3	W	
01/12/2016	AI	26	SP1 Newly Full	8.4	W	
01/12/2016	AI	27	SP1 Sediment including L/St	8.5	W	
01/12/2016	AI	28	-			
01/12/2016	AI	29	Stream D Diversion	8.2	W	
01/12/2016	AI	30	L5 Overflow	9.6	W	
01/12/2016	AI	31	L5 South	8.7	W	
01/12/2016	AI	32	L5 East #A white sand	8.6	W	
01/12/2016	AI	33	Puddle	9.1	W	
01/12/2016	AI	34	L4 outlet	8.7	W	
01/12/2016	AI	35	Puddle in wardles tip	13	W	#B red tailings
01/12/2016	AI	36	L7 east	10	W	
01/12/2016	AI	37	Area B stream blocked	9.7	W	
01/12/2016	AI	38	New pond 3m below	9	W	
01/12/2016	AI	39	Stream above Q2E	9.3	W	
01/12/2016	AI	40	Area B NE corner	5	W	
01/12/2016	AI	41	Tailings pond Area B	6.4	W	
01/12/2016	AI	42	Q2 N	8.5	W	East side of tip. Flow on edge of area B
01/12/2016	AI	43	Q2 N	8.5	W	Flow along northern edge of area B
01/12/2016	AI	44	Q2 N	8.4	W	Pond on top of tip
01/12/2016	AI	45	Q2 W	8	W	NW corner ponding from GW flow
01/12/2016	AI	46	Q2 W	8.3	W	Surface pond
01/12/2016	AI	47	Area E	9.2	W	Pond near weigh station
01/12/2016	AI	48	Q3	8.8	W	South corner
01/12/2016	AI	49	Q3	8.8	W	South corner
01/12/2016	AI	50	Q3	8.7	W	East corner
01/12/2016	AI	51	Stream X	8.2	W	
01/12/2016	AI	52	Stream B	7.9	W	
01/12/2016	AI	53	Stream C	8	W	at v-notch
01/12/2016	AI	54	Stream A	7.9	W	at v-notch
24/01/2017	Am	1	Q3	8.6	W	Near Outfall
24/01/2017	Am	2	Q3	7.7	W	West End South
24/01/2017	Am	3	Q3	7.5	W	West End North
24/01/2017	Am	4	Q3	7.7	W	Bench West End
24/01/2017	Am	5	Q3	7.8	W	Bench at North
24/01/2017	Am	6	Q3	7.9	W	North
24/01/2017	Am	7	Q3	8	W	NE Corner
24/01/2017	Am	8	Q3	4.6	W	NE Seepage
24/01/2017	Am	9	Q3	6	W	South Corner
24/01/2017	Am	10	Q3	6.2	W	Base Of Ramp
24/01/2017	Am	11	Q3	6.4	W	South Bench
24/01/2017	Am	12	Spillway	6.8	W	Ponding
24/01/2017	Am	13	Track near Spillway	6.8	W	Pond

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pH MONITORING RECORDS

Client: Laver Leisure

Project: Moneystone Quarry, Oakamoor

Number: 418050

TABLE 2

Date	Visit	Number	Location	pH	Material	Comment
24/01/2017	Am	14	Diversion Channel	7.2	W	South Side of Pipe Bridge
24/01/2017	Am	15	Stream D	7.3	W	Near Car Park
24/01/2017	Am	16	Area B	8	W	Pond Near Sheds
24/01/2017	Am	17	Area B	8.7	W	Pond South of Solar Bund
24/01/2017	Am	18	Area B	8.7	W	Flow at top of incline
24/01/2017	Am	19	Stream D	8.4	W	End of diverison channel
24/01/2017	Am	20	Incline	8.6	W	Froth in boundary flow
24/01/2017	Am	21	SP1	8.7	W	SP1 Inflow
24/01/2017	Am	22	SP2	7.6	W	Surface Reading
24/01/2017	Am	23	SP3	7.8	W	Surface Reading
24/01/2017	Am	24	Old Railway	8.1	W	Pond on Pump House access track
24/01/2017	Am	25	River Churnet Bank	7.3	W	Seepage
24/01/2017	Am	26	River Churnet Bank	7.4	W	Seepage from pipe
24/01/2017	Am	27	River Churnet	7.6	W	Upstream from pumphouse
24/01/2017	Am	28	River Churnet Bank	7.5	W	Seepage
24/01/2017	Am	29	River Churnet	7.6	W	Next to pump house
24/01/2017	Am	30	EA Station	7.5	W	EA Station Flow
24/01/2017	Am	31	River Churnet	7.7	W	North of EA outflow.
24/01/2017	Am	32	Stream E	7.7	W	North of Railway
24/01/2017	Am	33	Stream E	7.5	W	Ponding North of Stream E
24/01/2017	Am	34	SP5	7.6	W	Near Collapsed Outfall
24/01/2017	Am	35	L4	7.8	W	At outfall
24/01/2017	Am	36	L7	9.8	W	Ponding on old tailings in SE corner
24/01/2017	Am	37	L7	13	W	Cloudy Ponding on old tailings in SE corner
24/01/2017	Am	38	L7	11.2	W	Access Track Ponding
24/01/2017	Am	39	L7	9.6	W	Northern End of L7 Excavation
24/01/2017	Am	40	L7	12.2	W	L7 side of pipe under road
24/01/2017	Am	41	L7	9.4	W	Area B side of pipe under road
24/01/2017	Am	42	L7	9.2	W	Foam in ponding next to track
24/01/2017	Am	43	Area E	9.1	W	Flow next to tip
24/01/2017	Am	44	Area E	8.5	W	North Corner Flow
24/01/2017	Am	45	Area E	7.9	W	North Stream
24/01/2017	Am	46	Area E	7.5	W	North Stream
24/01/2017	Am	47	Area E	5.2	W	Seepage from North
24/01/2017	Am	48	Area E	5	W	East Corner
24/01/2017	Am	49	Area E	5.6	W	South Flow
24/01/2017	Am	50	Area E	8	W	Pond at base of Tip
24/01/2017	Am	51	L7	8	W	NW corner
24/01/2017	Am	52	L7	7.7	W	NW Corner
24/01/2017	Am	53	L5	8.2	W	L5 at Beach
24/01/2017	Am	54	L5	8.8	W	Outfall trench towards Q3
24/01/2017	Am	55	Stream A	7.9	W	At V-Notch
24/01/2017	Am	56	Stream B	7.8	W	Upstream of join with Stream C
24/01/2017	Am	57	Stream C	7.9	W	At V-Notch

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pH MONITORING RECORDS

Client: Laver Leisure

Project: Moneystone Quarry, Oakamoor

Number: 418050

TABLE 2

Table 3: Observed Q3 Water Levels					Inflow(m3/day)			River Flows (m3/day)		
Date	Days	Q3 Level	L8 Level	Level Rise (mm/day)	Volume	Avg	Period	A	B	C
16/12/2010	0	131.00			0					
20/12/2010	4	135.50	140.50	1125	2438	610	610			
07/01/2011	22	141.00		306	26301	1196	1326	382	1043	55
09/02/2011	55	144.00		91	68194	1240	1269	159	731	<50
04/05/2011	139	147.00	149.14	36	147528	1061	944	<100	109	<50
01/06/2011	167	148.25	149.64	45	169145	1013	772	<100	159	<50
14/07/2011	210	149.50	149.56	29	200000	952	718	<100	109	<50
09/08/2011	236	149.70	149.66	8	207567	880	291	<100	<100	<50
08/09/2011	266	150.00	149.96	10	218917	823	378	<100	109	<50
03/10/2011	291	150.16	150.47	6	224970	773	242	<100	159	<50
19/10/2011	307	150.74	150.81	36	246913	804	1371	<100	159	<50
22/11/2011	341	151.05	150.87	9	258490	758	340	159	256	<50
19/12/2011	368	151.39	150.85	13	271504	738	482	382	1224	81
09/01/2012	389	151.72	151.13	16	283876	730	589	220	483	112
06/02/2012	417	152.02	151.12	11	295226	708	405	159	1043	<50
20/03/2012	460	152.24	151.37	5	303662	660	196	295	431	<50
12/04/2012	483	152.38	151.46	6	308770	639	222	382	1224	81
22/05/2012	523	152.63	151.76	6	318417	609	241	295	337	<50
03/07/2012	565	152.90	152.10	6	328632	582	243	382	483	<50
17/09/2012	641	153.17		4	340246	531	153	295	1043	<50
31/10/2012	685	153.30		3	345623	505	122	295	1043	<50
06/12/2012	721	153.71		12	363474	504	496	663	1424	95
12/02/2013	789	154.95		18	423700	537	886	1131	3729	112
26/04/2013	862	156.75		25	520697	604	1329	539	731	<50
18/06/2013	915	157.25		9	547709	599	510	295	382	55
30/07/2013	957	157.29		1	549866	575	51	159	220	<50
26/10/2013	1045	156.88		-5	527760	505	-251	1224	3027	150
08/01/2014	1119	156.91		0	529108	473	18	483	1879	81
15/04/2014	1216	157.66		8	569654	468	418	188	878	<50
09/07/2014	1301	158.30		8	604322	465	408	382	483	150
06/10/2014	1390	157.58		-8	565502	407	-436	483	382	<50
20/01/2015	1496	156.66		-9	515898	345	-468	<100	<100	<50
28/04/2015	1594	156.29		-4	495949	311	-204	599	483	<50
28/07/2015	1685	156.15		-2	488401	290	-83	220	382	<50
31/10/2015	1780	155.46		-7	450928	253	-394	295	1879	55
29/01/2016	1870	155.19		-3	436802	234	-157	382	1642	81
07/04/2016	1939	156.57		20	511208	264	1078	382	2412	194
05/07/2016	2028	157.32		8	551645	272	454	295	599	112
02/08/2016	2056	157.393		7	555420	270	378			
11/11/2016	2157	157.093		-3	539244	250	-160	295	220	55
01/12/2016	2177	157.073		-1	538166	247	-54	295	539	55
24/01/2017	2231	156.818		-5	524417	235	-255	483	731	81

Table 4: Stream A, B and C flow rate.

	A	B	C		A	B	C	River Churnet	
	Head (mm)				Flow (m3/d)			Estimated Flow Speed (m/s)	River Level (m relative to previous visit)
20/03/2012	90	105	30		295	431			
12/04/2012	100	160	70		382	1224	81		
22/05/2012	90	95	30		295	337			
03/07/2012	100	110	35		382	483			
17/09/2012	90	150	50		295	1043			
31/10/2012	90	150	55		295	1043			
06/12/2012	125	170	75		663	1424	95		
12/02/2013	155	250	80		1131	3729	112		
26/04/2013	115	130	45		539	731			
01/06/2013	90	100	60		295	382	55		
30/07/2013	70	80	40		159	220			
26/10/2013	160	230	90		1224	3027	150		
08/01/2014	110	190	70		483	1879	81		
15/04/2014	75	140	50		188	878			
09/07/2014	100	110	90		382	483	150		
16/09/2014	110	100	55		483	382			
20/01/2015									
28/04/2015	120	110	50		599	483			
28/07/2015	80	100	30		220	382			
30/10/2015	90	190	60		295	1879	55		
28/01/2016	100	180	70		382	1642	81		
07/04/2016	100	210	100		382	2412	194		
05/07/2016	90	120	80		295	599	112		-0.15
11/11/2016	90	80	60		295	220	55		0.23
01/12/2016	90	115	60		295	539	55		-0.23
24/01/2017	110	130	70		483	731	81	0.26	0.07

Public Open Space near Residential Housing

			Toxic										Phytotoxic			Organics		Other			
Exploratory Hole	Depth (m)	Date	Arsenic As	Beryllium Be	Cadmium Cd	Chromium (III) Cr	Chromium (VI) Cr	Lead Pb	Mercury Hg	Selenium Se	Nickel Ni	Vanadium V	Copper Cu	Boron B	Zinc Zn	SOM	Phenols	Cyanide (total) Cn	Asbestos	Sulphate g/l	pH (units)
Stock 1	0.00	11/11/2016	-	-	-	-	22	-	-	-	-	-	-	-	-	0.1	-	-	N.D	-	8.1
Stock A	0.00	01/12/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1	-	-	N.D	-	8.0
Stock B	0.00	01/12/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1	-	-	N.D	1.50	8.0
Stock C	0.00	01/12/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1	-	-	N.D	1.50	8.0
Stock D	0.00	01/12/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1	-	-	N.D	0.80	9.1
Stock E	0.00	01/12/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	0.2	-	-	N.D	1.40	8.4
Stock F	0.00	01/12/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1	-	-	N.D	0.90	9.1
Number			7	7	7		7	7	7	7	7	7	7	7	7	7	7	7		7	7
Average			4.71	2.00	1.00		4.00	8.71	1.00	3.00	10.14	20.14	4.14	1.00	17.71	0.11	1.00	1.00		0.90	8.39
Minimum			2	2	1		1	1	1	3	1	1	1	1	1	0.1	1	1		0.1	8
Maximum			10	2	1		22	15	1	3	19	44	8	1	37	0.2	1	1		1.5	9.1
Standard Dev			2.87	0.00	0.00		7.94	4.72	0.00	0.00	5.70	13.04	2.79	0.00	11.61	0.04	0.00	0.00		0.61	0.51
US95			6.8		1.0			12.2	1.0	3.0	14.3		6.2	1.0	26.2		1.0	1.0		1.4	8.8
Source: LQM S4UL 2015			79	2.2	120	1500	7.7	630	120	1100	230	2000	12000	21000	81000	%	11000	50		0.5	5 to 9
			79 CS4U		220 CS4U		23 CS4U	760 CS4U										DUTCH		BRE	

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Notes:

1. Levels expressed as mg/kg (ppm) unless stated.
2. Soil guideline values are for POS(res).
3. Tested levels below SGV are shown as -
   For actual result see certificate sheet.
4. Levels presented for SOM 6%.

CHEMICAL RESULTS ASSESSMENT

Client: Laver Leisure

Project: Moneystone

Number: 418051

TABLE 5A

2016 - SOIL METALS - POS(RES) 418051.GPJ ABEC TEMPLATE.GDT 27/2/17

Public Open Space near Residential Housing

			Probable carcinogens (2)			Possible carcinogens (2)													
Exploratory Hole	Depth (m)	Soil Organic Content (%)	Benzo (a) Anthracene	Dibenzo (a,h) Anthracene	Benzo (a) Pyrene	Chrysene	Benzo (b&k) Fluoranthene	Indeno (1,2,3-cd) Pyrene	Fluorene	Phen-anthrene	Pyrene	Acenaph-thylene	Benzo (g,h,i) Perylene	Acenaphthene	Anthracene	Naphthalene	Fluoranthene	Carcinogenic PAH Total	PAH 16 Total
Stock 1	0.00	0.1	-	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	6.00	15
Stock A	0.00	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.60	1.5
Stock B	0.00	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.60	1.5
Stock C	0.00	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.60	1.5
Stock D	0.00	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.60	1.5
Stock E	0.00	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.60	1.5
Stock F	0.00	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.60	1.5
Number			7	7	7	7	7	7	7	7	7	7	7	7	7	7	7		7
Average				0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23		3.43
Minimum			0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1		1.5
Maximum			1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		15
Standard Dev			0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34		5.10
US95				0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5		7.2
Source: LQM S4UL 2015			29	0.57	5.7 10	57	7.1	82	9900	3100	7400	15000	640	15000	74000	4900	3100		

Notes:

1. Levels expressed as mg/kg (ppm) unless stated.
2. International Agency for Research on Cancer (IARC) classifications
3. Soil guideline values are for POS(res).
4. Tested levels below SGV are shown as -
   For actual result see certificate sheet.
5. Levels presented for SOM 1% -
   Higher concentrations may be permissible

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PAH RESULTS ASSESSMENT

Client: Laver Leisure

Project: Moneystone

Number: 418051

TABLE 5B

Exploratory Hole	Depth (m)	Date	Class	Arsenic As	Beryllium Be	Boron B	Cadmium Cd	Chromium (total) Cr	Copper Cu	Lead Pb	Mercury Hg	Nickel Ni	Selenium Se	Vanadium V	Zinc Zn	Cyanide (tot) Cn (mg/l)	Phenols (mg/l)	Sulphate (mg/l)	pH (units)	PAH (Total)
Stock 1	0.00	11/11/2016		-	-	-	-	-	-	-	-	-	-		-	-	-	620	7.90	
WS1	0.00	11/11/2016		-	-	-	-	-	-	-	-	-	-		-	-	-	-	8.10	
WS10	0.00	11/11/2016		-	-	-	-	-	-	-	-	-	-		-	-	-	-	7.50	
WS11	0.00	01/11/2016		-	-	-	-	39	16	-	-	-	-		-	-	-	330	9.90	
WS12	0.00	11/11/2016		-	-	-	-	15	8.8	-	-	-	-		-	-	-	530	9.40	
WS13	0.00	11/11/2016		-	-	-	-	-	-	-	-	-	-		-	-	-	330	7.30	
WS14	0.00	11/11/2016		-	-	-	0.57	-	-	-	-	-	-		-	-	-	-	5.70	
WS15	0.00	11/11/2016		-	-	-	0.55	-	31	-	0.07	63	-		58	-	-	-	6.30	
WS16	0.00	11/11/2016		-	-	-	-	-	-	-	-	-	-		-	-	-	-	7.50	
WS17	0.00	11/11/2016		-	-	-	-	-	11	-	-	-	-		-	-	-	-	7.40	
WS18	0.00	11/11/2016		-	-	-	0.1	-	-	-	-	-	-		-	-	-	-	7.30	
WS19	0.00	11/11/2016		-	-	-	-	-	-	-	-	-	-		-	-	-	-	8.80	
WS2	0.00	11/11/2016		-	-	-	-	-	-	-	-	-	-		-	-	-	-	7.80	
WS3	0.00	11/11/2016		-	-	-	-	-	-	-	-	-	-		-	-	-	-	7.20	
WS4	0.00	11/11/2016		-	-	-	-	-	8.1	-	-	-	-		-	-	-	-	7.50	
WS5	0.00	11/11/2016		-	-	-	-	-	8.1	-	-	-	-		-	-	-	-	7.40	
WS6	0.00	11/11/2016		-	-	-	-	-	-	-	-	-	-		-	-	-	-	7.80	
WS7	0.00	11/11/2016		-	-	-	-	-	-	-	-	-	-		-	-	-	-	6.80	
WS8	0.00	11/11/2016		-	-	-	-	-	-	-	-	-	-		-	-	-	-	7.60	
WS9	0.00	11/11/2016		-	-	-	-	-	-	-	-	-	-		-	-	-	-	7.20	
Number				20	20	20	20	20	20	20	20	20	20		20	20	20	20	20	0
Average				0.6	0.1	25.45	0.091	3.850	5.80	0.4	0.1	5.90	0.8		10.8	0.05	0.10	160	7.6	
Minimum				0.2	0.05	10	0.02	1	0.5	0.3	0.05	1	0.5		3	0.05	0.1	50	5.7	
Maximum				2.6	0.26	42	0.57	39	31	0.7	0.07	63	3		58	0.05	0.1	620	9.9	
Standard Dev				0.5	0.0	11.83	0.162	8.851	7.21	0.1	0.0	13.61	0.7		13.1	0.00	0.00	169	0.9	
US95				0.8		30.02	0.154	7.272	8.58	0.5	0.1	11.16	1.1		15.9	0.05	0.10	225	8.0	
[4]Water Supply Regulations (2000)				10		1000	5	50	2000	25	1	20	10	50	250	50		250		0.1
[4]Environmental Quality Standard				50	12	2000	0.09	4.7	6	7.2	0.05	20	250	20*	50	1000	0.1**	400	6-9	

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Notes:

1. Levels expressed as ug/l (ppb) unless stated.
2. * Assuming <100mg CaCO3/1
3. ** 0.1 = LOD, EQS limits = 0.03 mg/l
4. Elevations assessed against WSR and EQS whichever is lowest limit value. Concentrations below limit values given as -.

LEACHATE RESULTS ASSESSMENT

Client: Laver Leisure

Project: Moneystone

Number: 418051

TABLE 5C

			Probable carcinogens (2)			Possible carcinogens (2)												
Exploratory Hole	Depth (m)	Stratum	Benzo (a) Anthracene	Dibenzo (a,h) Anthracene	Benzo (a) Pyrene	Chrysene	Benzo (b&k) Fluoranthene	Indeno (1,2,3-cd) Pyrene	Fluorene	Phen-anthrene	Pyrene	Acenaph-thylene	Benzo (g,h,i) Perylene	Acenaphthene	Anthracene	Naphthalene	Fluoranthene	Carcinogenic PAH Total	PAH 16 Total
Stock 1	0.00		-	-	-	-	-	0.01	-	-	-	-	0.01	-	-	-	-	0.06	0.19
Stock A	0.00																		
Stock B	0.00																		
Stock C	0.00																		
Stock D	0.00																		
Stock E	0.00																		
Stock F	0.00																		
WS1			-	-	0.1	-	0.1	0.1	-	-	-	-	0.1	-	-	-	-	0.60	1.5
WS10			-	-	0.1	-	0.1	0.1	-	-	-	-	0.1	-	-	-	-	0.60	1.5
WS11			-	-	0.1	-	0.1	0.1	-	-	-	-	0.1	-	-	-	-	0.60	1.5
WS12			-	-	0.1	-	0.1	0.1	-	-	-	-	0.1	-	-	-	-	0.60	1.5
WS13			-	-	0.1	-	0.1	0.1	-	-	-	-	0.1	-	-	-	-	0.60	1.5
WS14			-	-	0.1	-	0.1	0.1	-	-	-	-	0.1	-	-	-	-	0.60	1.5
WS15			-	-	0.1	-	0.1	0.1	-	-	-	-	0.1	-	-	-	-	0.60	1.5
WS16			-	-	0.1	-	0.1	0.1	-	-	-	-	0.1	-	-	-	-	0.60	1.5
WS17			-	-	0.1	-	0.1	0.1	-	-	-	-	0.1	-	-	-	-	0.60	1.5
WS18			-	-	0.1	-	0.1	0.1	-	-	-	-	0.1	-	-	-	-	0.60	1.5
WS19			-	-	0.1	-	0.1	0.1	-	-	-	-	0.1	-	-	-	-	0.60	1.5
WS2			-	-	0.1	-	0.1	0.1	-	-	-	-	0.1	-	-	-	-	0.60	1.5
WS3			-	-	0.1	-	0.1	0.1	-	-	-	-	0.1	-	-	-	-	0.60	1.5
WS4			-	-	0.1	-	0.1	0.1	-	-	-	-	0.1	-	-	-	-	0.60	1.5
		Number	20	20	20	20	20	20	20	20	20	20	20	7	20	20	20		20
		Average	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.23	0.10	0.10	0.10		1.43
		Minimum	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.03	0.02	0.01	0.01	0.1	0.01	0.01	0.02		0.19
		Maximum	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1	0.1	0.1	0.1		1.5
		Standard Dev	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.34	0.02	0.02	0.02		0.29
		US95	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.5	0.1	0.1	0.1		1.5
		Limit Value	0.1	0.1	0.05*	0.1	0.03	0.002	0.1	0.1	0.1	0.1	0.002	0.1	0.1*	0.1	0.1*		

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Notes:
1. Levels expressed as µg/l.
2. International Agency for Research on Cancer (IARC) classifications

*Acceptable annual average concentration. Maximum may be higher

** I(123-cd)P and B(ghi)P share limit value - added together must not exceed 0.002 µg/l)

LEACHABLE SPECIATED PAH RESULTS

Client: Laver Leisure

Project: Moneystone

Number: 418051

TABLE 5D

			Probable carcinogens (2)			Possible carcinogens (2)												
Exploratory Hole	Depth (m)	Stratum	Benzo (a) Anthracene	Dibenzo (a,h) Anthracene	Benzo (a) Pyrene	Chrysene	Benzo (b&k) Fluoranthene	Indeno (1,2,3-cd) Pyrene	Fluorene	Phen-anthrene	Pyrene	Acenaph-thylene	Benzo (g,h,i) Perylene	Acenaphthene	Anthracene	Naphthalene	Fluoranthene	Carcinogenic PAH Total	PAH 16 Total
WS5			-	-	0.1	-	0.1	0.1	-	-	-	-	0.1	-	-	-	-	0.60	1.5
WS6			-	-	0.1	-	0.1	0.1	-	-	-	-	0.1	-	-	-	-	0.60	1.5
WS7			-	-	0.1	-	0.1	0.1	-	-	-	-	0.1	-	-	-	-	0.60	1.5
WS8			-	-	0.1	-	0.1	0.1	-	-	-	-	0.1	-	-	-	-	0.60	1.5
WS9			-	-	0.1	-	0.1	0.1	-	-	-	-	0.1	-	-	-	-	0.60	1.5
Number			20	20	20	20	20	20	20	20	20	20	20	7	20	20	20		20
Average			0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.23	0.10	0.10	0.10		1.43
Minimum			0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.03	0.02	0.01	0.01	0.1	0.01	0.01	0.02		0.19
Maximum			0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1	0.1	0.1	0.1		1.5
Standard Dev			0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.34	0.02	0.02	0.02		0.29
US95			0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.5	0.1	0.1	0.1		1.5
Limit Value			0.1	0.1	0.05*	0.1	0.03	0.002	0.1	0.1	0.1	0.1	0.002	0.1	0.1*	0.1	0.1*		

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Notes:
1. Levels expressed as µg/l.
2. International Agency for Research on Cancer (IARC) classifications

*Acceptable annual average concentration. Maximum may be higher

** I(123-cd)P and B(ghi)P share limit value - added together must not exceed 0.002 µg/l)

LEACHABLE SPECIATED PAH RESULTS

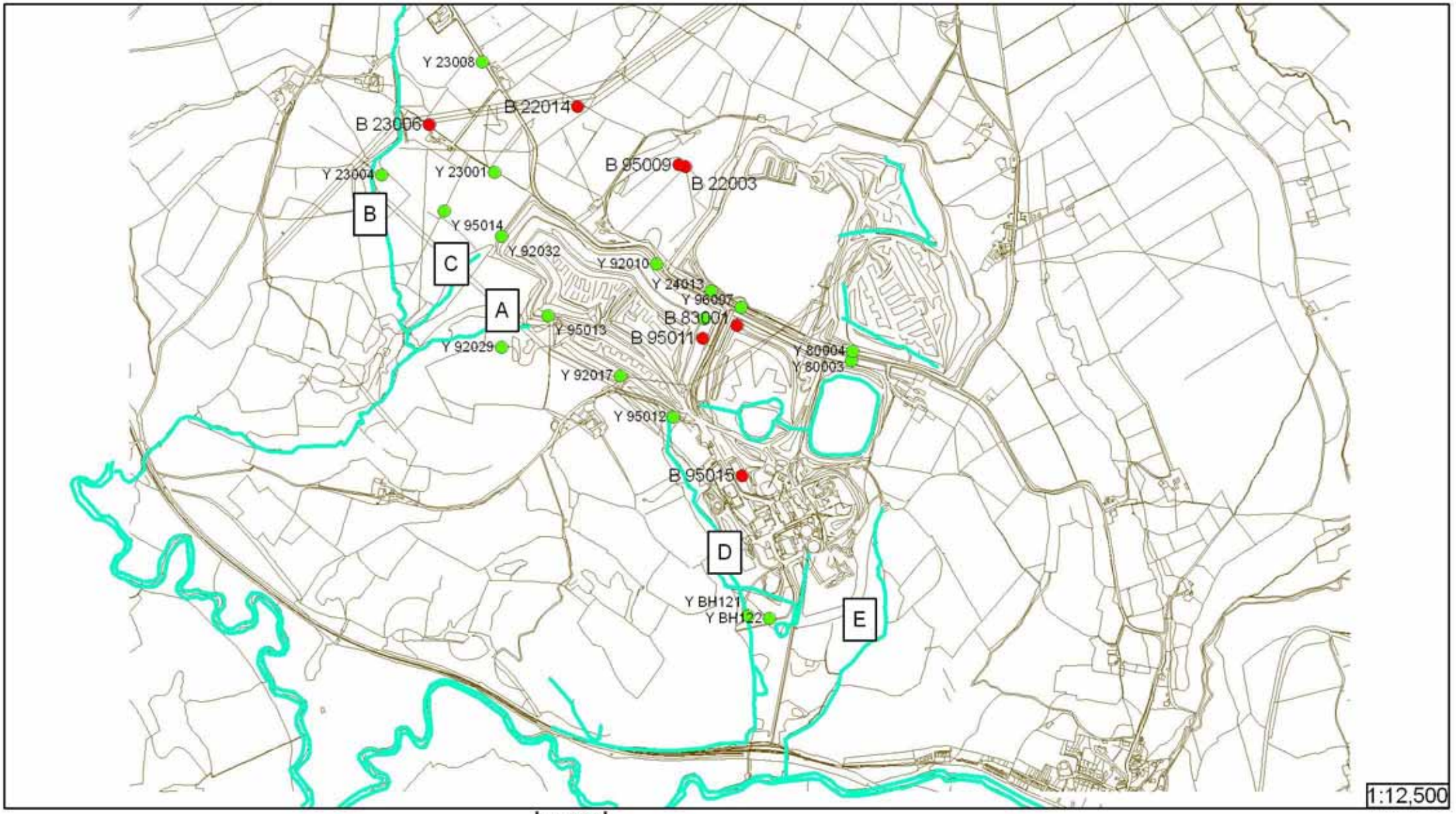
Client: Laver Leisure

Project: Moneystone

Number: 418051

TABLE 5D

FIGURES



Legend

- Not monitored / blocked
- Available
- Rivers & Streams

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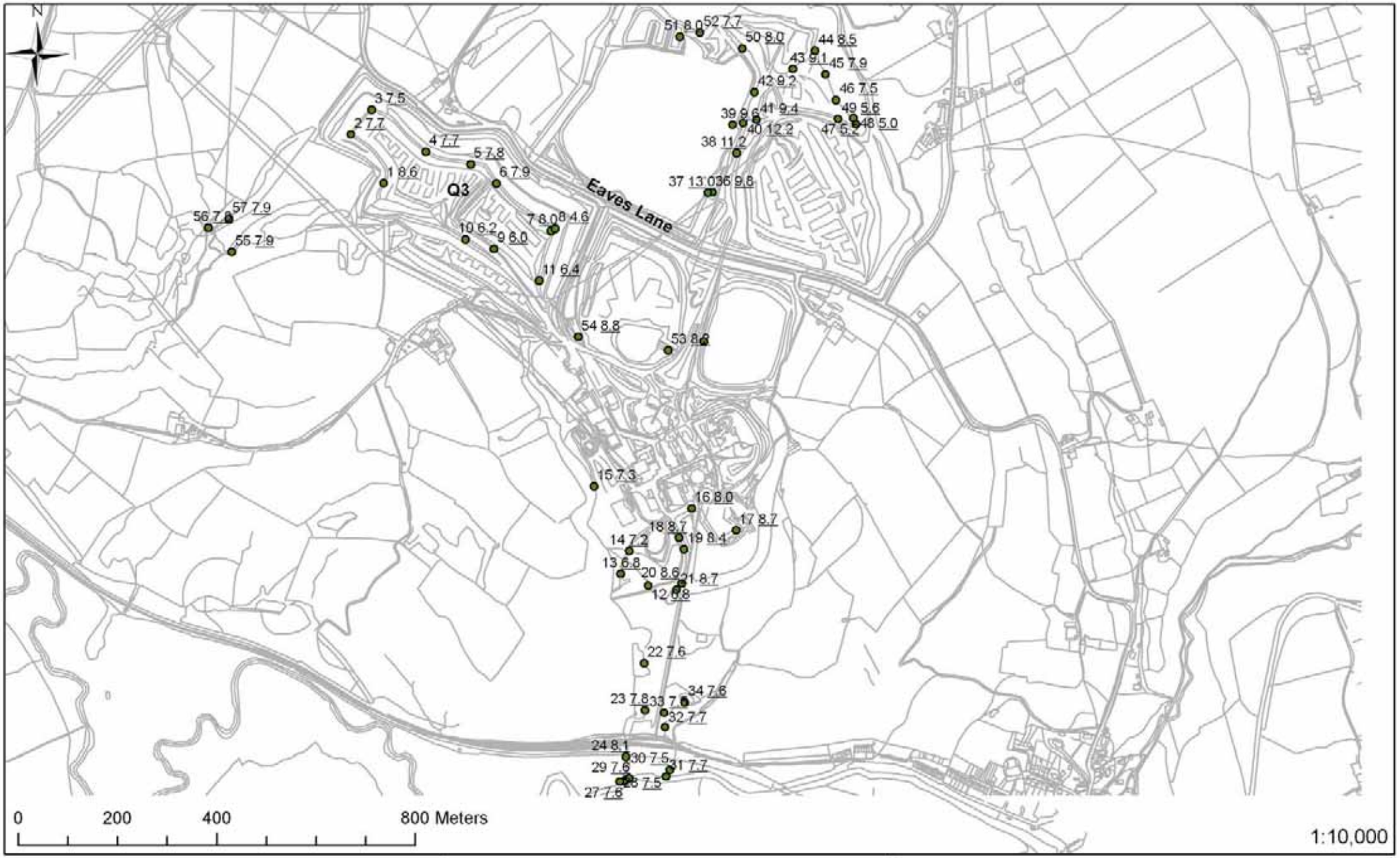
Site Plan

Project: Moneystone Park
Job No: 418051
Client: Laver Leisure

Fig 1



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Legend

- pH Events Visit Am (Jan 17) (pH Underlined)

pH Location Plan

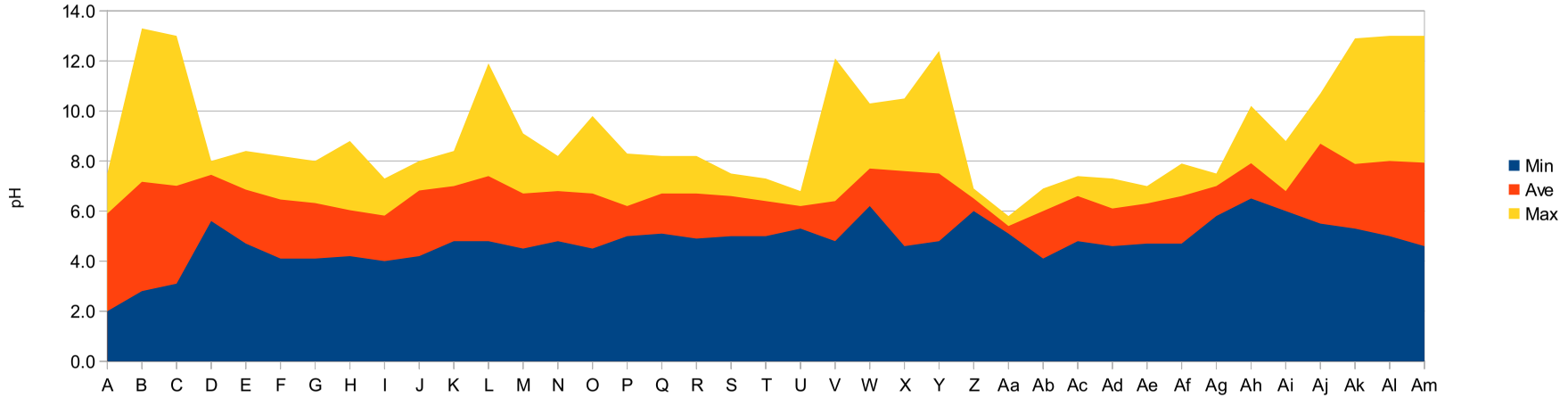
Project: Moneystone Park
Job No: 418051
Client: Laver Leisure

Fig 2

Moneystone Park

Monthly pH readings from December 2010

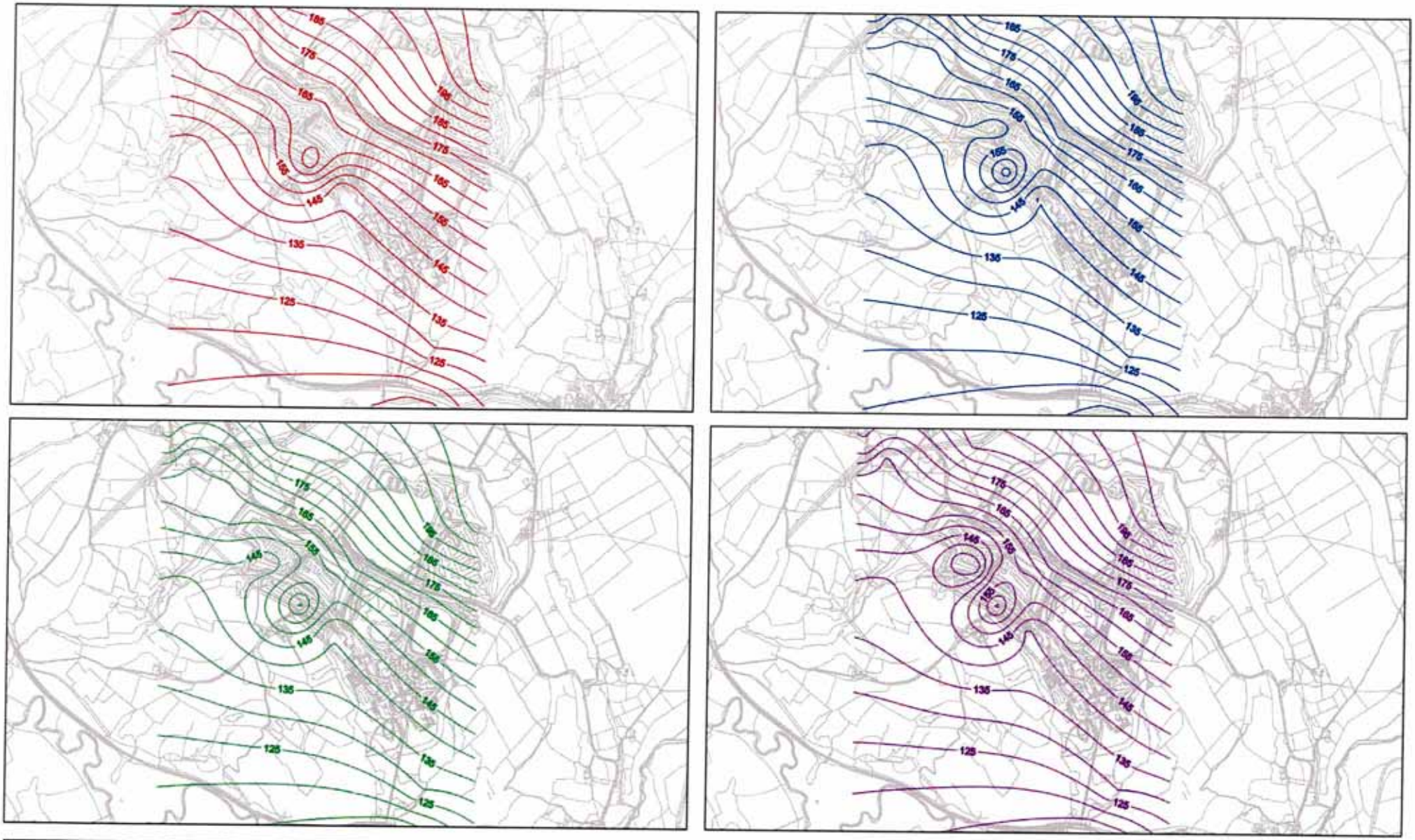
Fig 3



Visit	A	B	C	D	E	F	G	H	I	J	K	L	M
Date	20/12/10	07/01/11	09/02/11	04/05/11	01/06/11	14/07/11	09/08/11	08/09/11	03/10/11	22/11/11	19/12/11	09/01/12	06/02/12
Min	2.0	2.8	3.1	5.6	4.7	4.1	4.1	4.2	4.0	4.2	4.8	4.8	4.5
Ave	5.9	7.2	7.0	7.5	6.9	6.5	6.3	6.0	5.8	6.8	7.0	7.4	6.7
Max	7.5	13.3	13.0	8.0	8.4	8.2	8.0	8.8	7.3	8.0	8.4	11.9	9.1
STDEV	1.6	1.9	1.4	0.7	1.1	1.3	1.1	1.3	1.0	0.9	1.3	1.6	1.0
No.	13.0	39.0	52.0	12.0	25.0	27.0	24.0	25.0	28.0	47.0	13.0	29.0	33.0

Visit	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
Date	20/03/12	12/04/12	22/05/12	03/07/12	17/09/12	31/10/12	06/12/12	12/02/13	26/04/13	30/07/13	26/10/13	08/01/14	15/04/14
Min	4.8	4.5	5.0	5.1	4.9	5.0	5.0	5.3	4.8	6.2	4.6	4.8	6.0
Ave	6.8	6.8	6.5	6.7	6.7	6.6	6.4	6.2	6.4	7.7	7.6	7.5	6.5
Max	8.2	9.8	8.3	8.2	8.2	7.5	7.3	6.8	12.1	10.3	10.5	12.4	6.9
STDEV	1.1	1.8	1.1	1.1	0.9	0.9	0.6	0.4	1.4	0.8	1.2	1.7	0.2
No.	21.0	34.0	19.0	29.0	52.0	27.0	39.0	22.0	26.0	28.0	37.0	44.0	19.0

Visit	Aa	Ab	Ac	Ad	Ae	Af	Ag	Ah	Ai	Aj	Ak	Al	Am
Date	09/07/14	16/09/14	06/10/14	20/01/15	28/04/15	28/07/15	31/10/15	29/01/16	07/04/16	05/07/16	11/11/16	01/12/16	24/01/17
Min	5.1	4.1	4.8	4.6	4.7	4.7	5.8	6.5	6.0	5.5	5.3	5.0	4.6
Ave	5.4	6.0	6.6	6.1	6.3	6.6	7.0	7.91	6.8	8.69	7.88	8.0	7.93
Max	5.8	6.9	7.4	7.3	7.0	7.9	7.5	10.2	8.8	10.7	12.9	13.0	13
STDEV	0.3	0.8	0.6	0.7	0.6	0.9	0.5	0.54	0.5	1.17	1.36	1.3	1.45
No.	15.0	28.0	25.0	49.0	43.0	43.0	23.0	68	52.0	55	39	53	57



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Legend

- Feb 04 GW Plot
- Mar 10 GW Plot
- Jun 10 GW Plot
- Sep 10 GW Plot

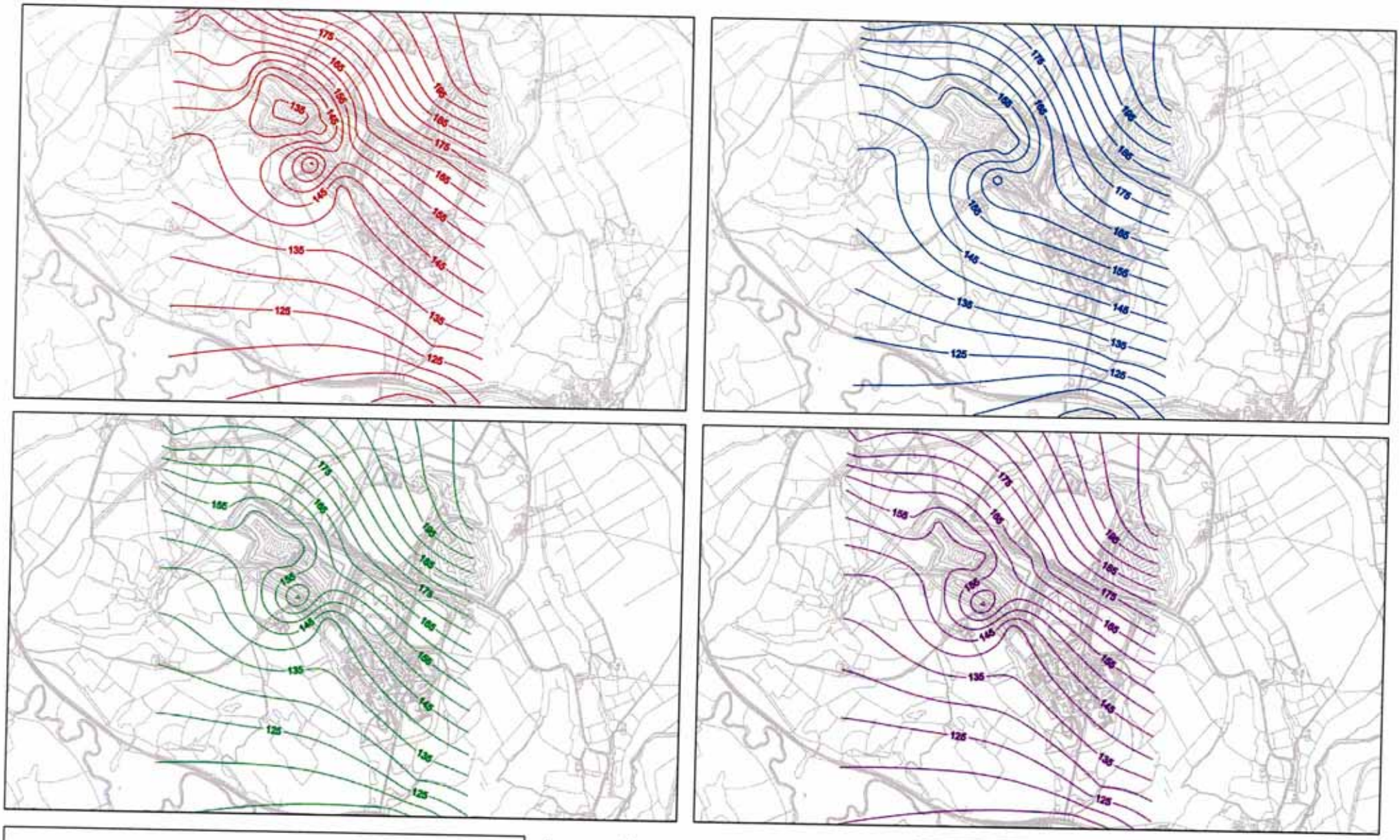
1:15,000

N

Groundwater Feb 2004 to Sep 2010

Project: Moneystone Park
Job No: 418040
Client: Laver Leisure
January 2015

Fig 4a



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Legend

- Dec 10 GW Plot
- May 11 GW Plot
- Jun 11 GW Plot
- Jul 11 GW Plot

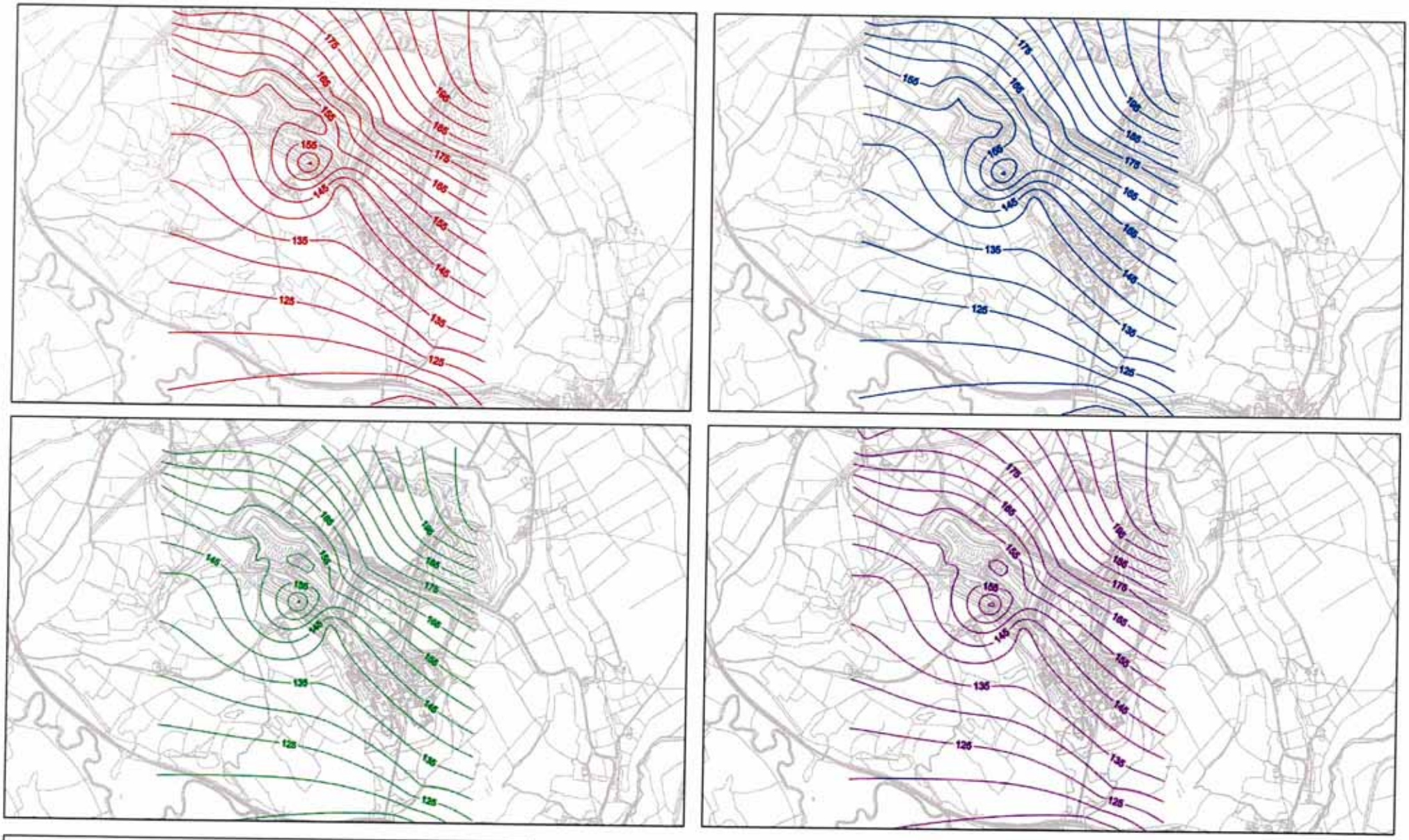
1:15,000

N

Groundwater Dec 2010 to Jul 2011

Project: Moneystone Park
Job No: 418040
Client: Laver Leisure
January 2015

Fig 4b



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Legend

- Aug 11 GW Plot
- Sep 11 GW Plot
- Oct 11 GW Plot
- Nov 11 GW Plot

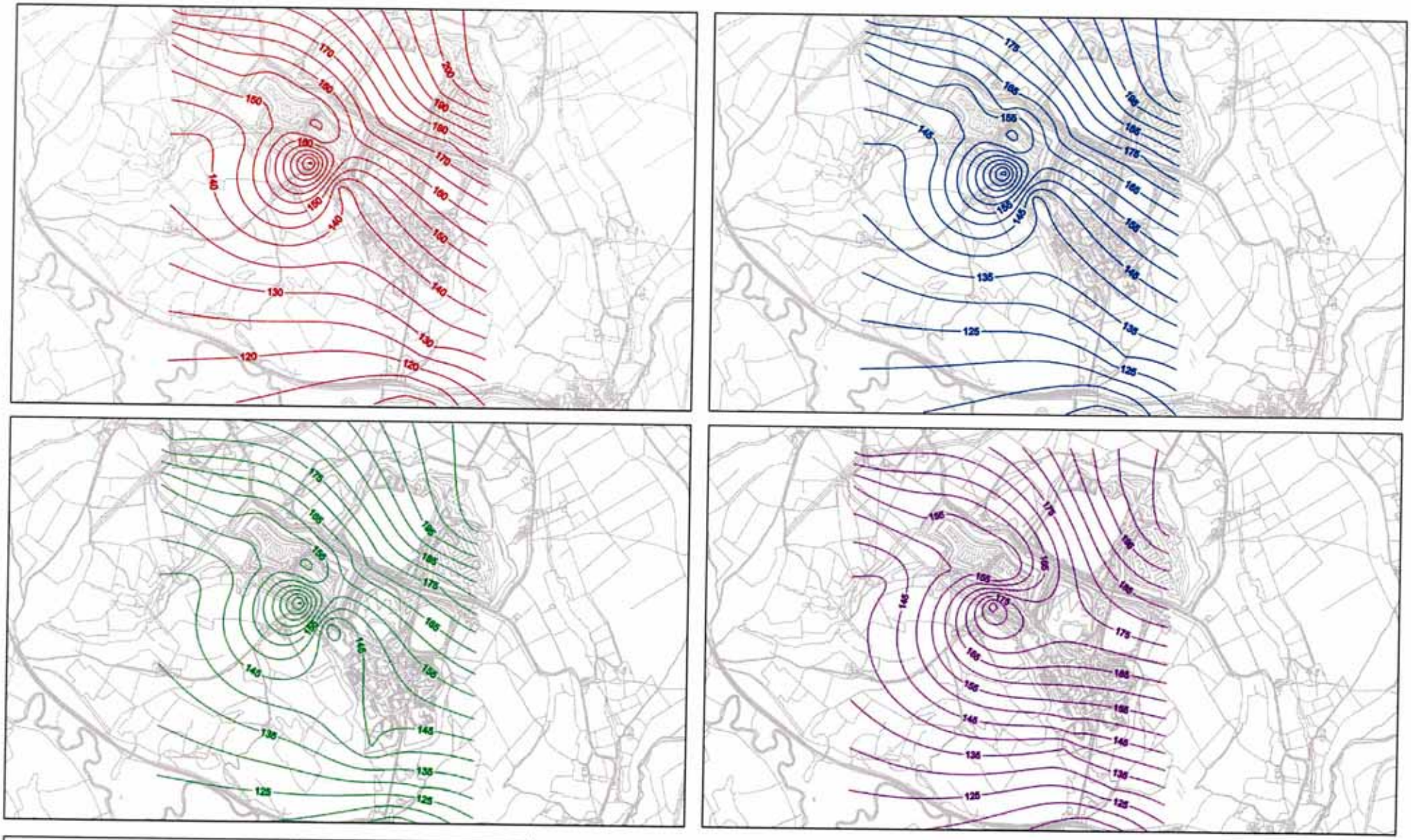
1:15,000

N

Groundwater Aug to Nov 2011

Project: Moneystone Park
Job No: 418040
Client: Laver Leisure
January 2015

Fig 4c



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Legend

- Dec 11 GW Plot
- Jan 12 GW Plot
- Feb 12 GW Plot
- Mar 12 GW Plot

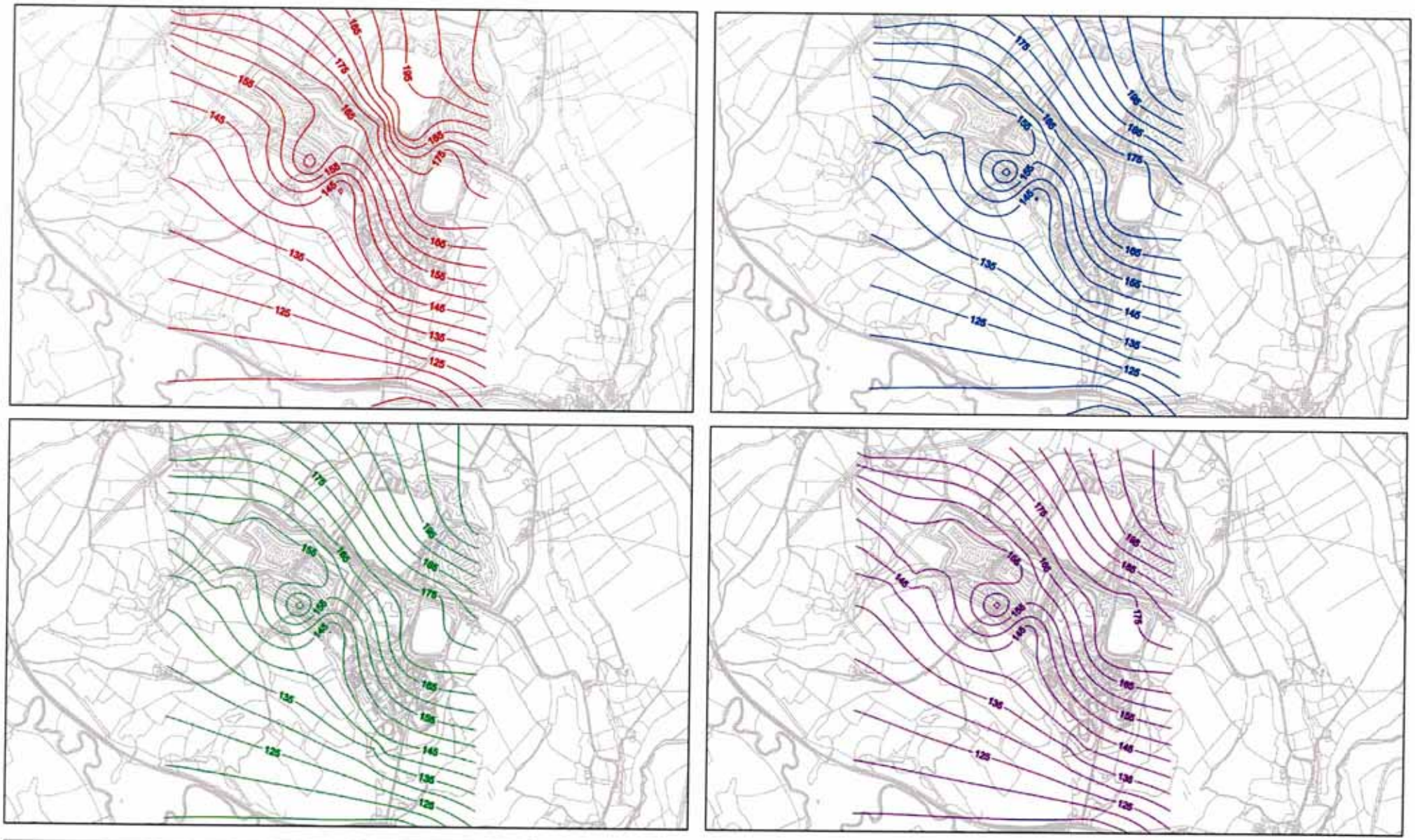
1:15,000

N

Groundwater Dec 2011 to Mar 2012

Project: Moneystone Park
Job No: 418040
Client: Laver Leisure
January 2015

Fig 4d



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Legend

- Apr 12 GW Plot
- May 12 GW Plot
- Jul 12 GW Plot
- Sep 12 GW Plot

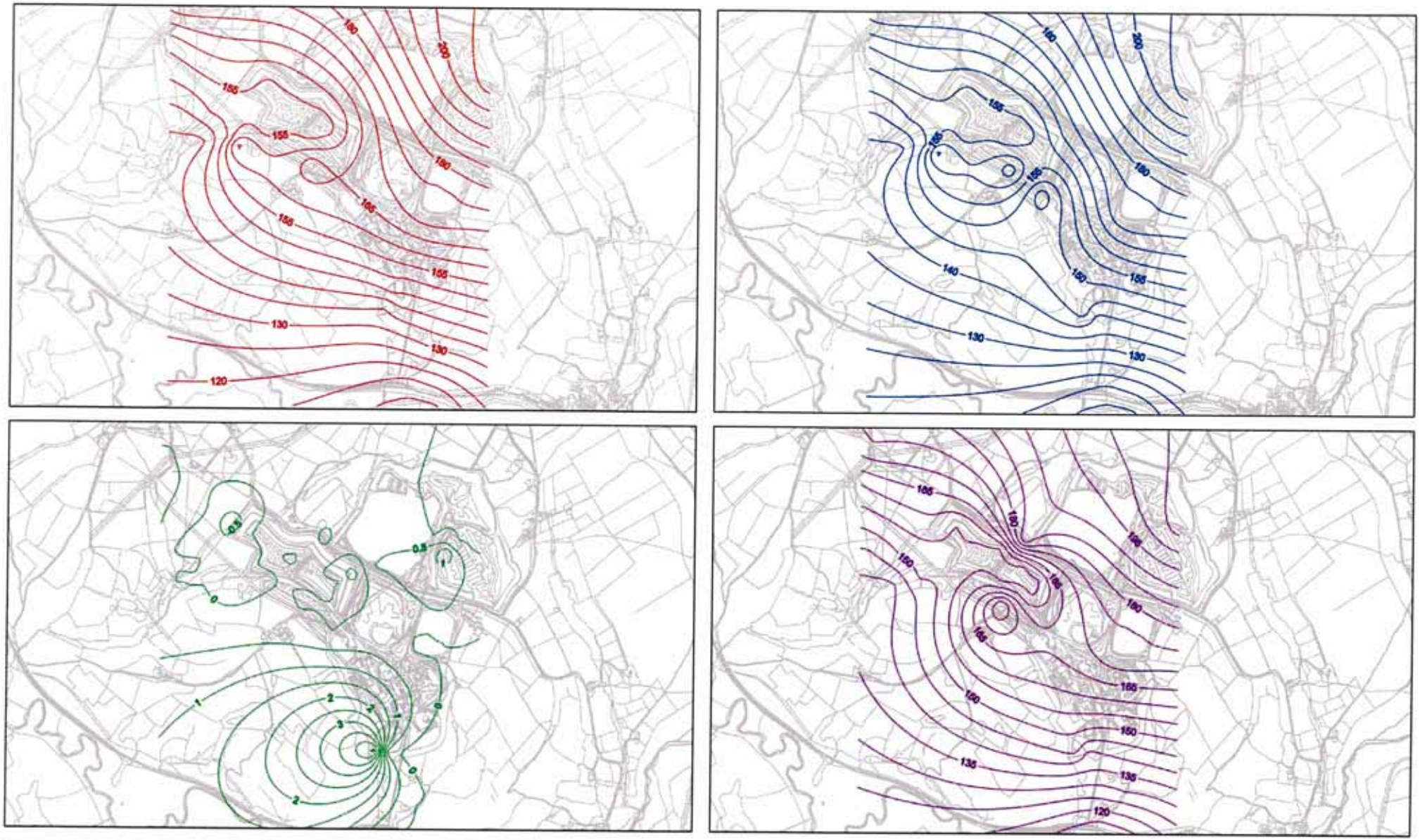
1:15,000

N

Groundwater Apr to Sep 2012

Project: Moneystone Park
Job No: 418040
Client: Laver Leisure
January 2015

Fig 4e



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Legend

- Oct 12 GW Plot
- Dec 12 GW Plot
- Jan 13 GW Plot
- Feb 13 GW Plot

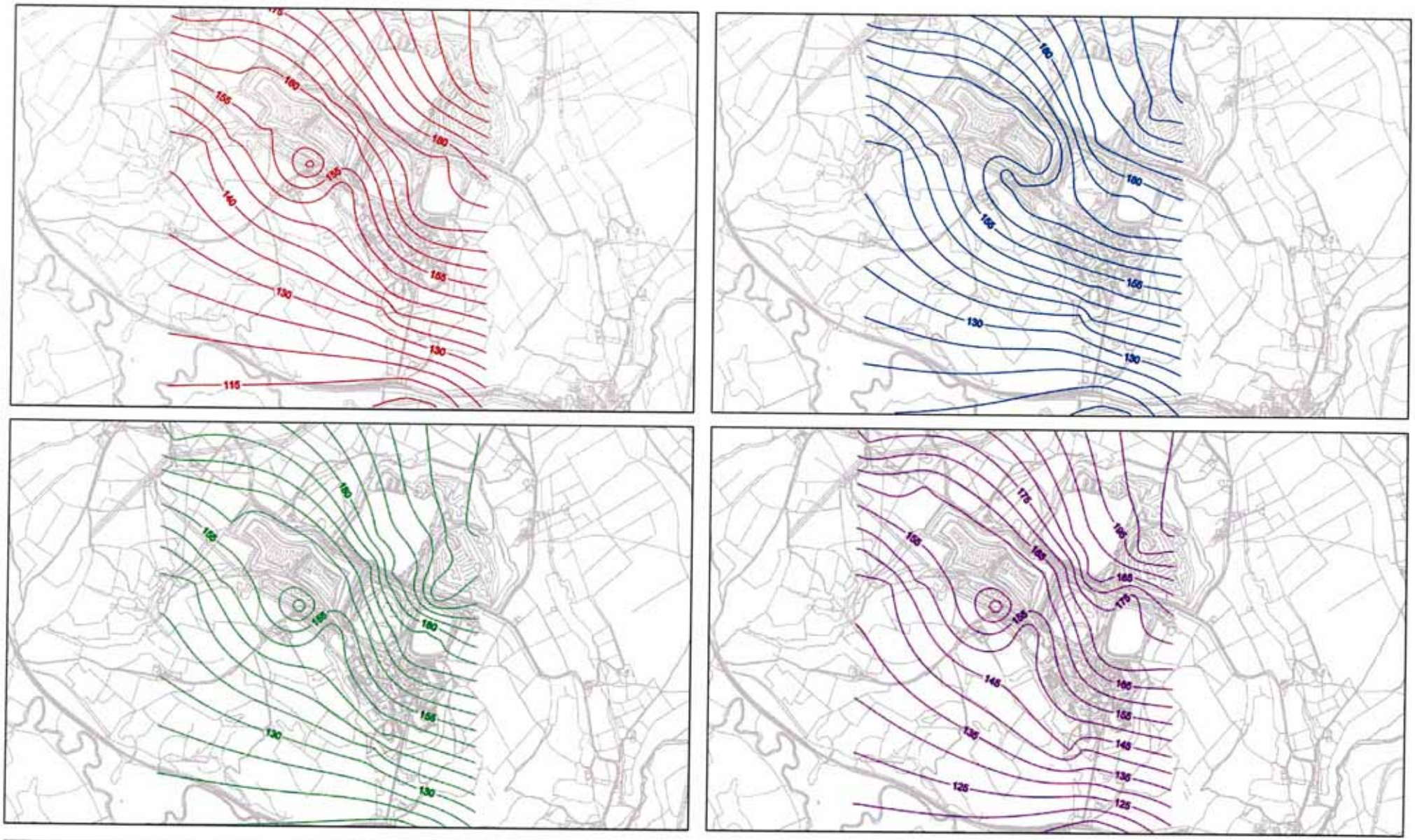
1:15,000

N

Groundwater Oct 2012 to Feb 2013

Project: Moneystone Park
Job No: 418040
Client: Laver Leisure
January 2015

Fig 4f



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Legend

- Apr 13 GW Plot
- Jul 13 GW Plot
- Oct 13 GW Plot
- Jan 14 GW Plot

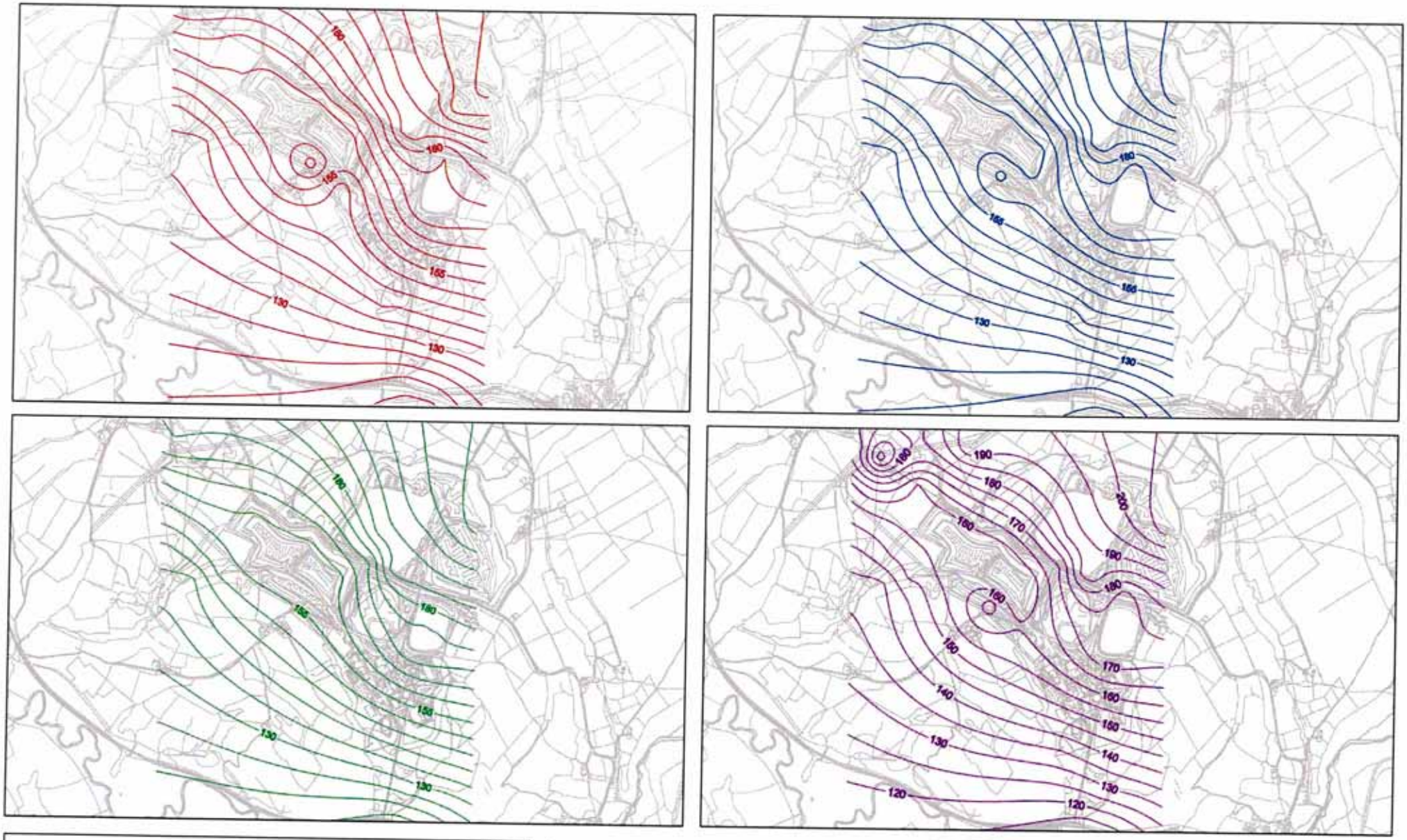
1:15,000

N

Groundwater Apr 2013 to Jan 2014

Project: Moneystone Park
Job No: 418040
Client: Laver Leisure
January 2015

Fig 4g



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Legend

- Apr 14 GW Plot
- Jul 14 GW Plot
- Sep 14 GW Plot
- Jan 15 GW Plot

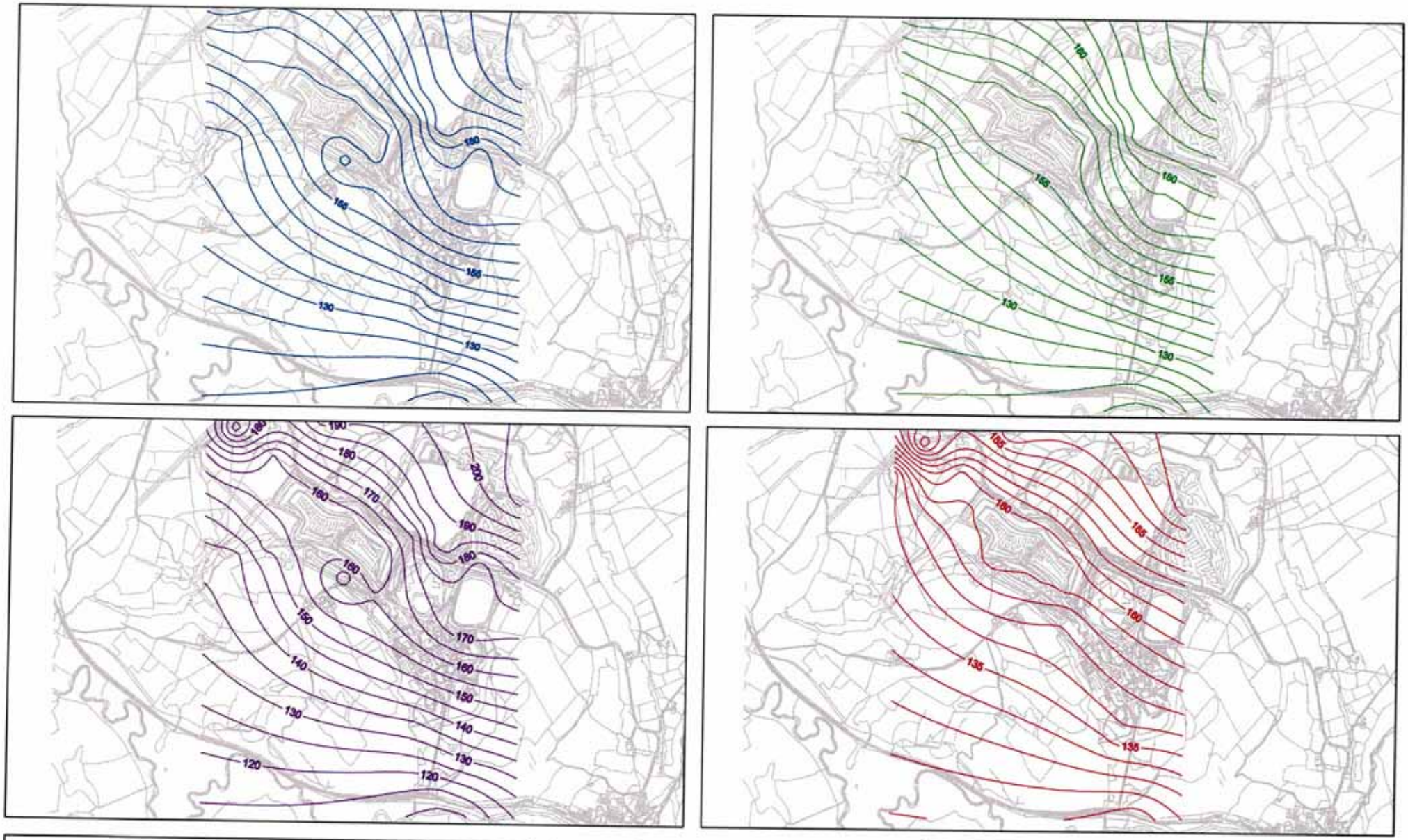
1:15,000

N

Groundwater Apr 2014 to Jan 2015

Project: Moneystone Park
Job No: 418040
Client: Laver Leisure
January 2015

Fig 4h



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Legend

- Jul 14 GW Plot
- Sep 14 GW Plot
- Jan 15 GW Plot
- Apr 15 GW Plot

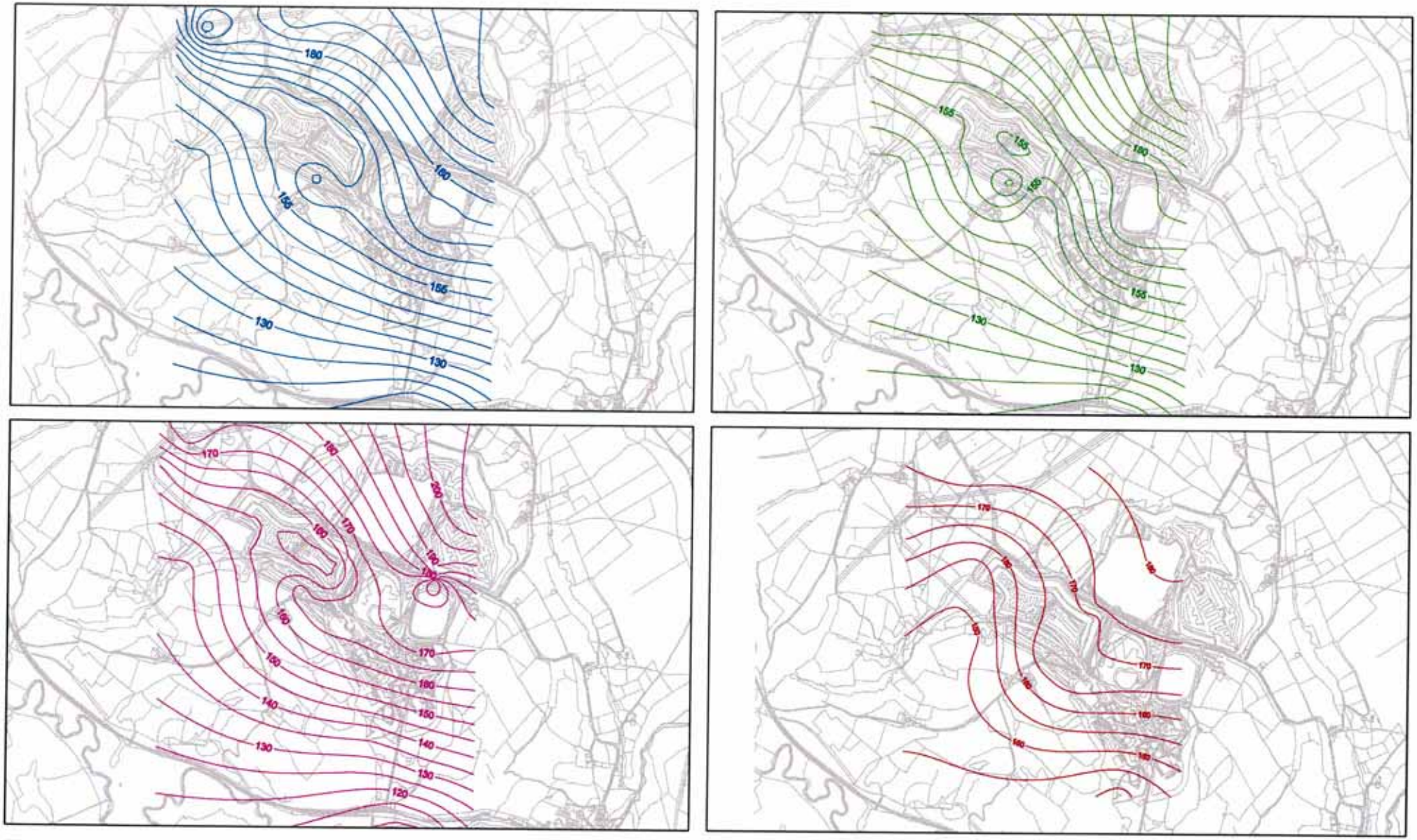
1:15,000

N

Groundwater Sep 2014 to Jul 2015

Project: Moneystone Park
Job No: 418051
Client: Laver Leisure

Fig 4i



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Legend

- Jul 15 (Af)
- Oct 15 (Ag)
- Jan 16 (Ah)
- Apr 16 (Ai)

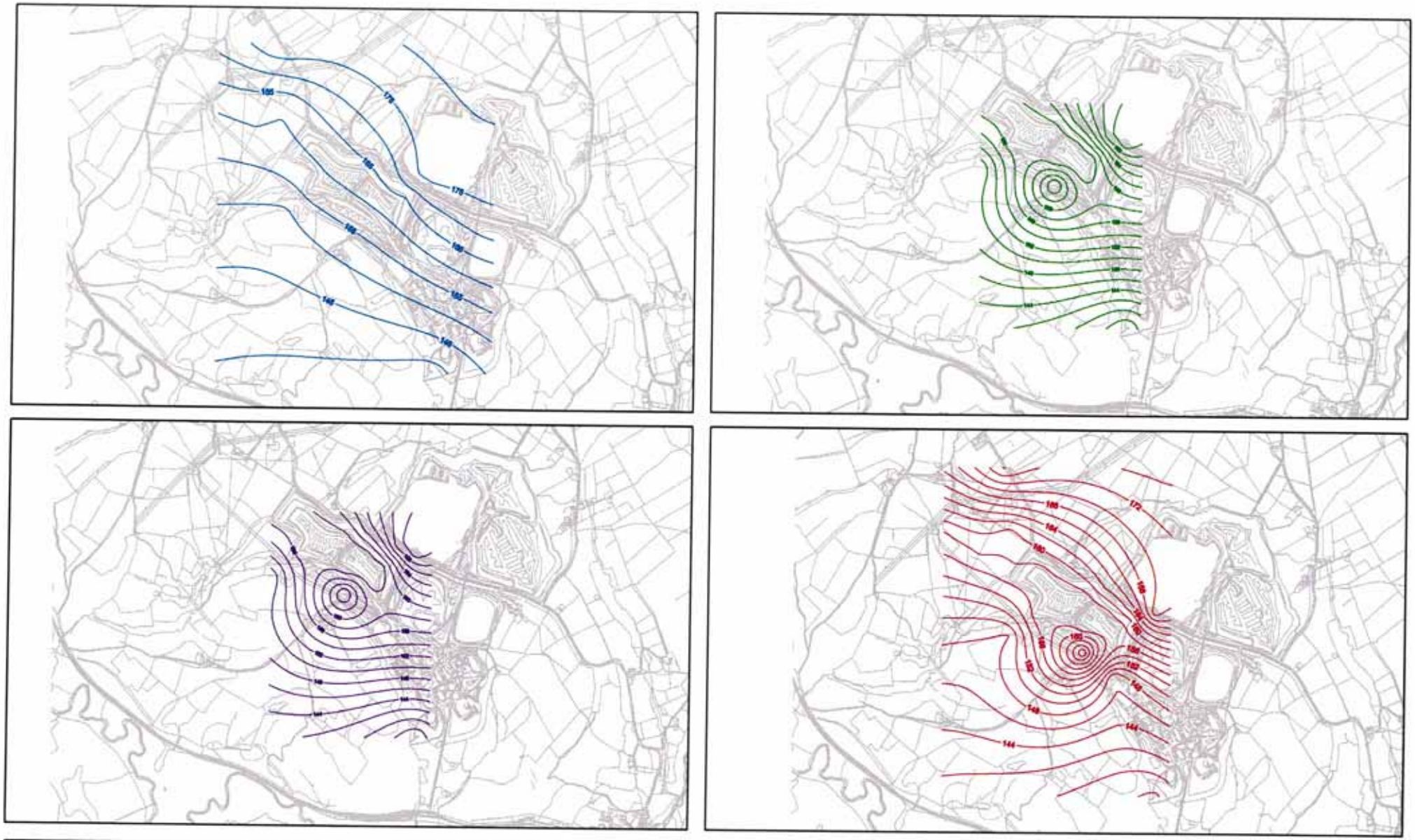
1:15,000

N

Groundwater July 2015 to Apr 2016

Project: Moneystone Park
Job No: 418051
Client: Laver Leisure

Fig 4j



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Legend

- Jul 16 (Aj)
- Nov 16 (Ak)
- Dec 16 (Al)
- Jan 17 (Am)

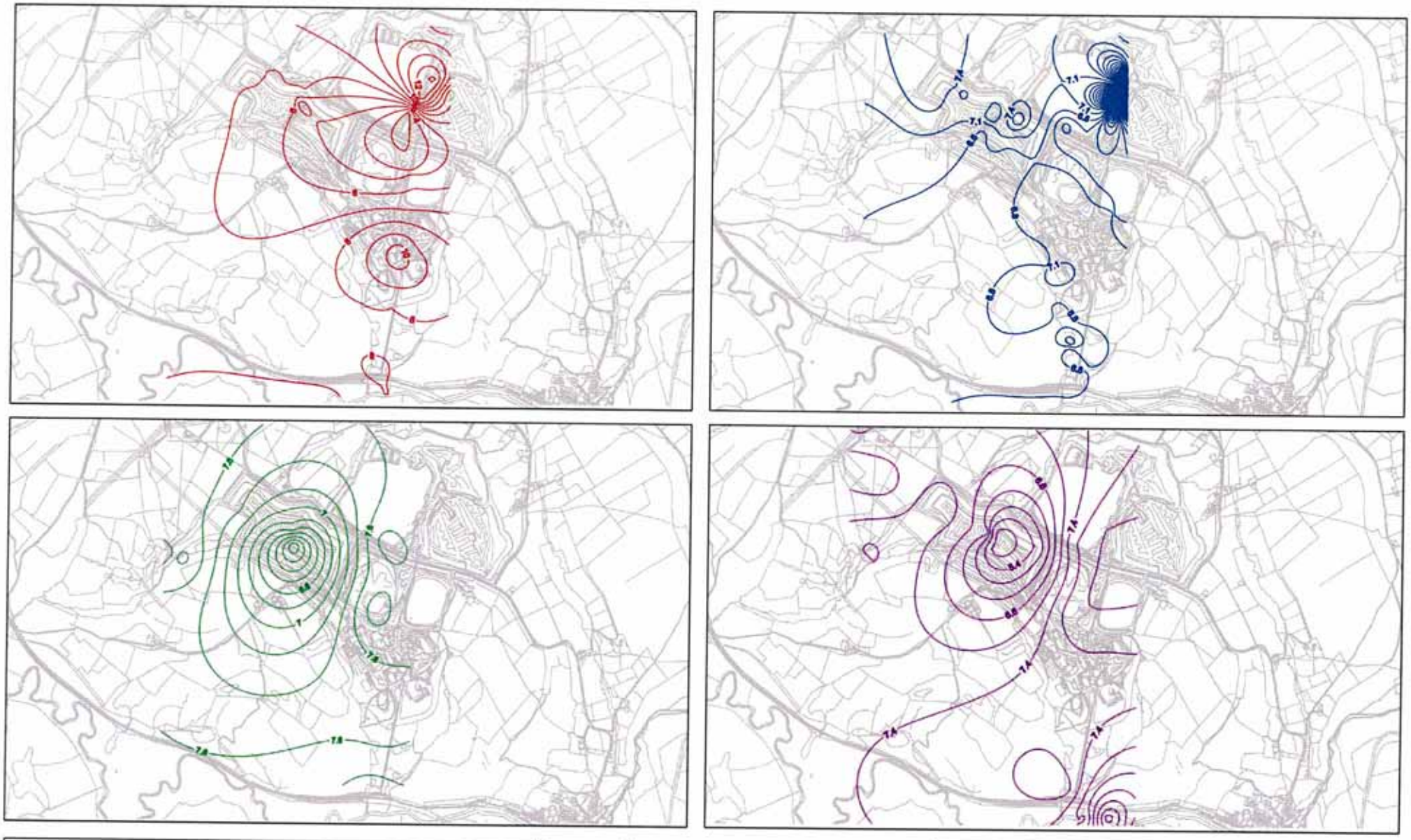
1:15,000

N

Groundwater July 2016 to Jan 2017

Project: Moneystone Park
Job No: 418051
Client: Laver Leisure

Fig 4K



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Legend

- Jan 11 pH Plot
- Feb 11 pH Plot
- May 11 pH plot
- Jun 11 pH Plot

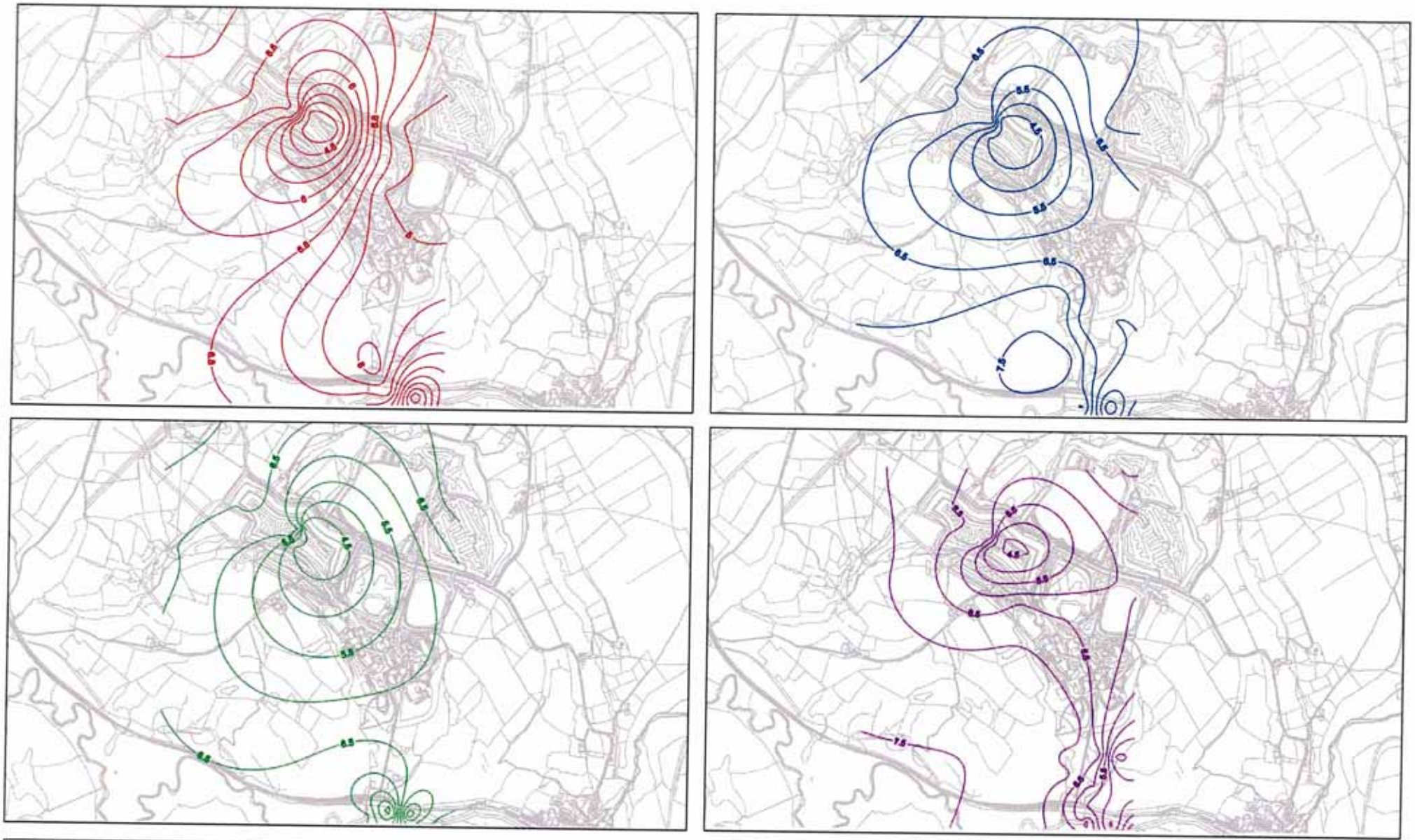
1:15,000

N

pH Distribution Jan to Jun 2011

Project: Moneystone Park
Job No: 418040
Client: Laver Leisure
January 2015

Fig 5a



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Legend

- Jul 11 pH Plot
- Aug 11 pH Plot
- Sep 11 pH Plot
- Oct 11 pH Plot

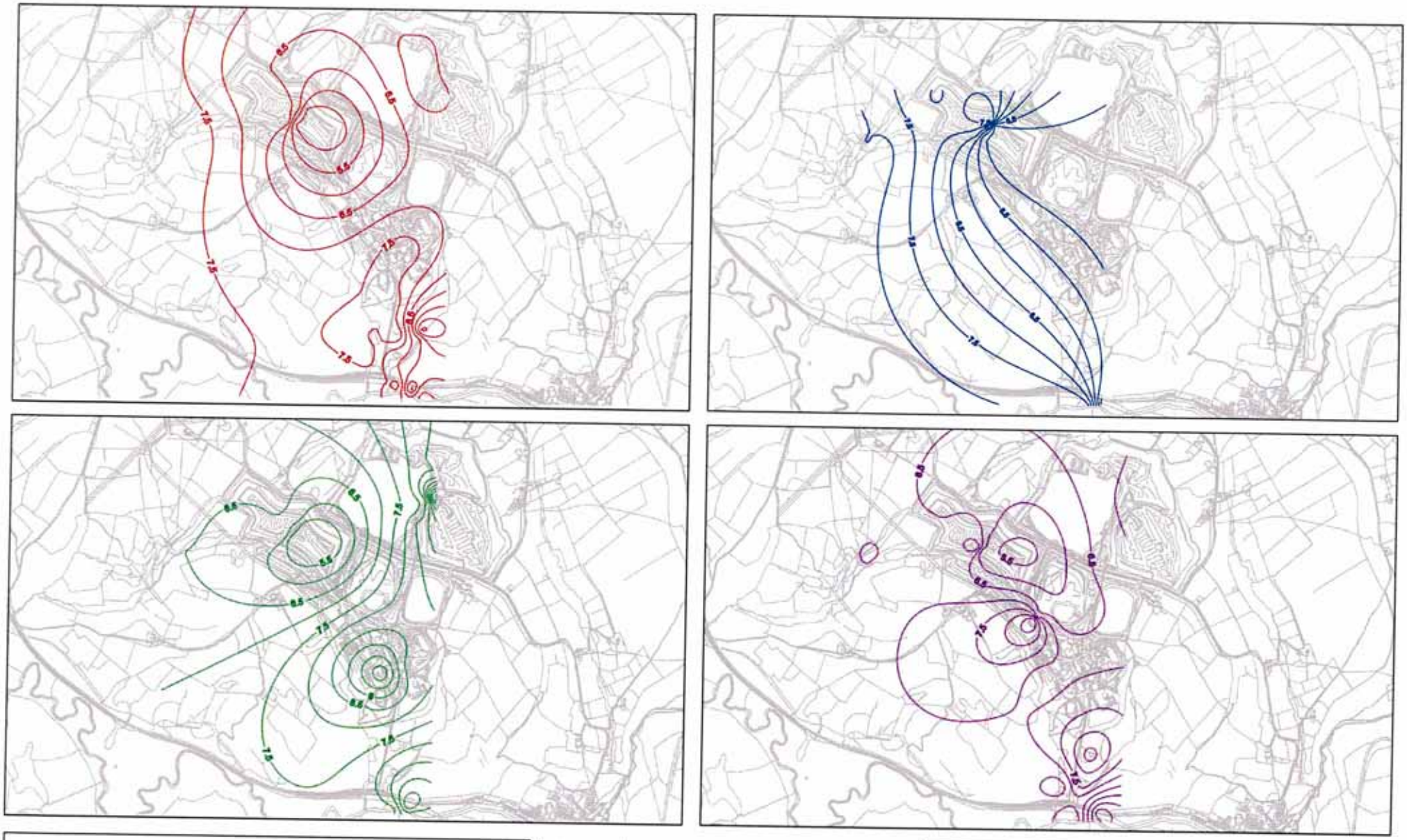
1:15,000

N

pH Distribution Jul to Oct 2011

Project: Moneystone Park
Job No: 418040
Client: Laver Leisure
January 2015

Fig 5b



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Legend

- Nov 11 pH Plot
- Dec 11 pH Plot
- Jan 12 pH Plot
- Feb 12 pH Plot

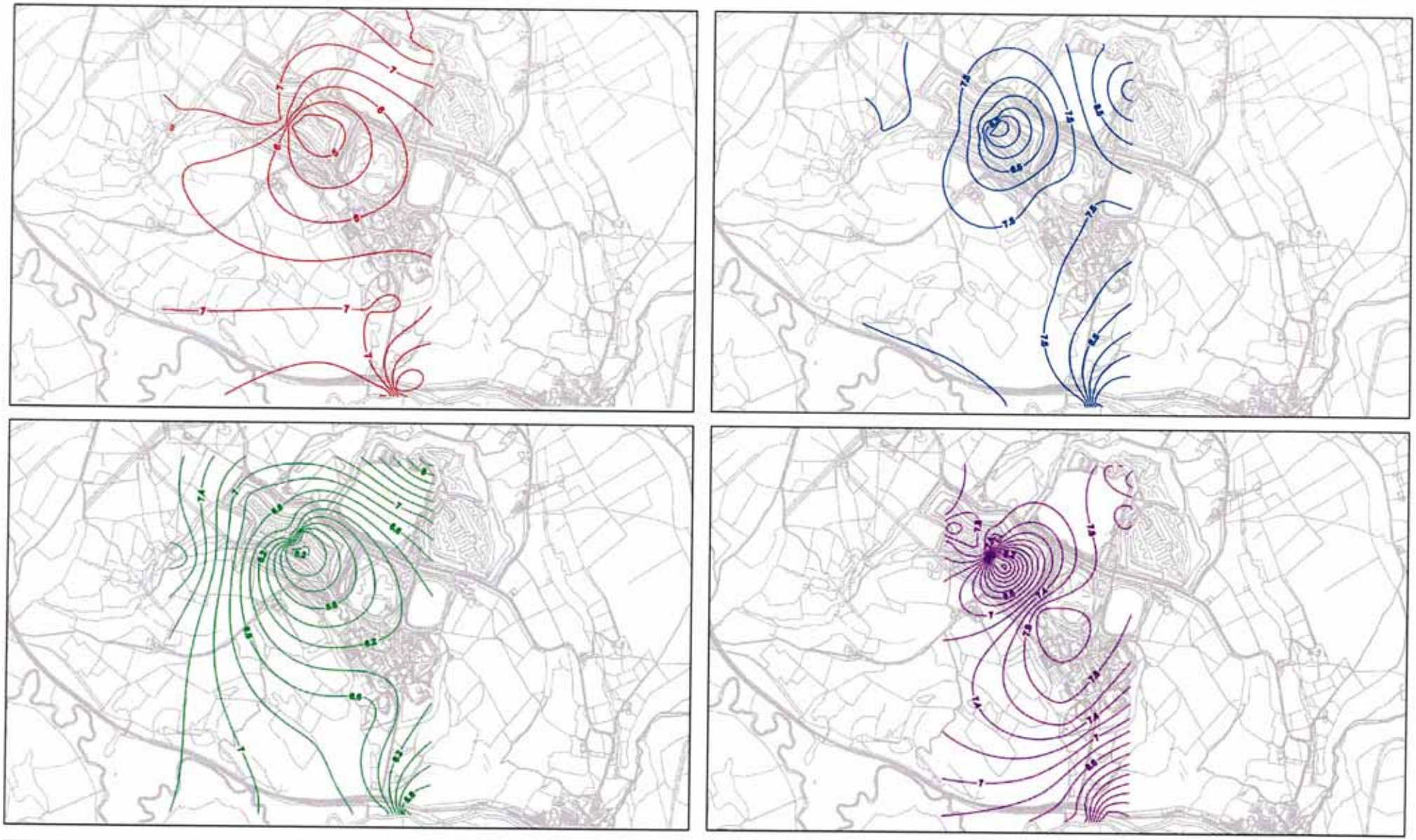
1:15,000

N

pH Distribution Nov 2011 to Feb 2012

Project: Moneystone Park
Job No: 418040
Client: Laver Leisure
January 2015

Fig 5c



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Legend

- Mar 12 pH Plot
- Apr 12 pH Plot
- May 12 pH Plot
- Jul 12 pH Plot

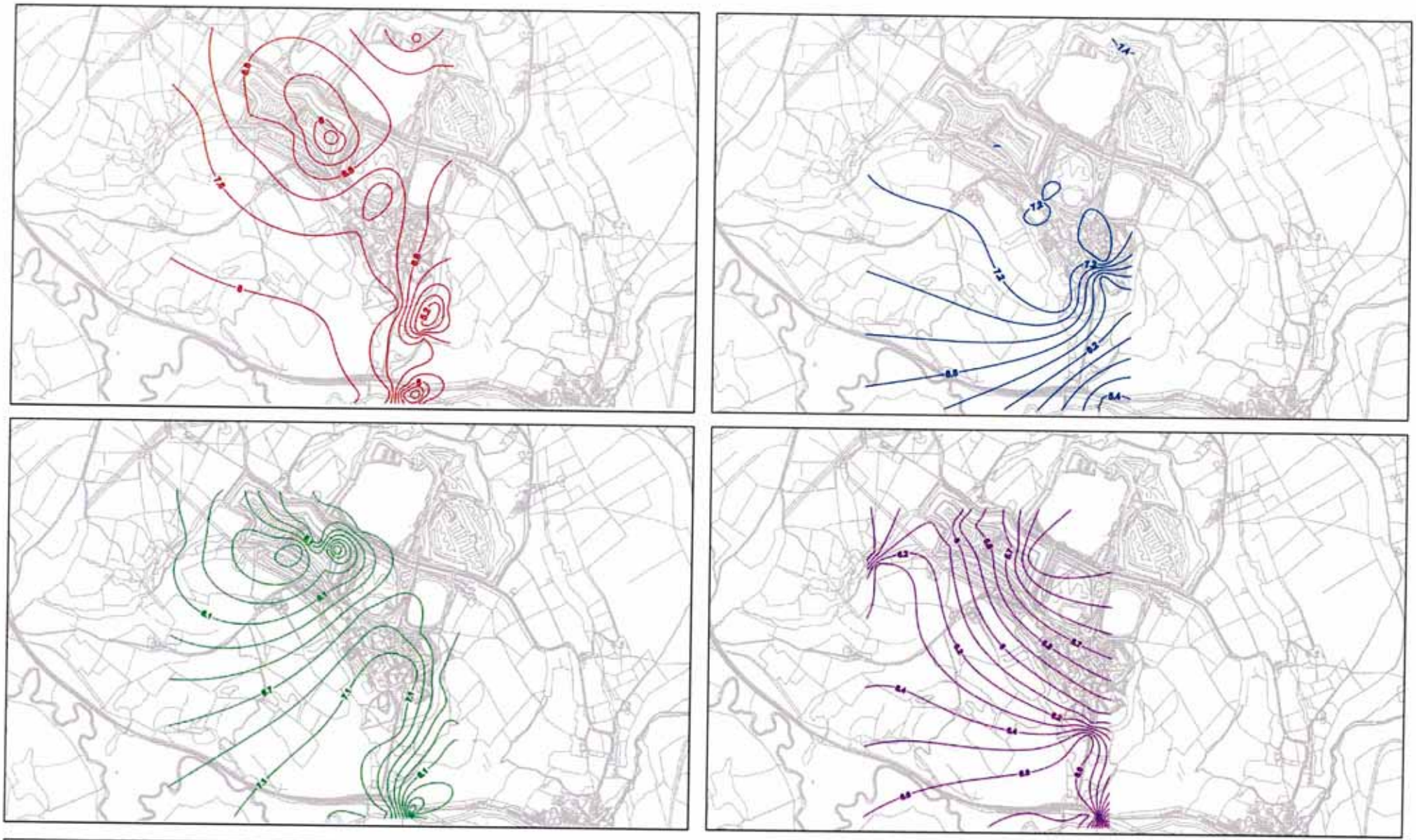
1:15,000

N

pH Distribution Mar to Jul 2012

Project: Moneystone Park
Job No: 418040
Client: Laver Leisure
January 2015

Fig 5d



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Legend

- Sep 12 pH Plot
- Oct 12 pH Plot
- Dec 12 pH Plot
- Feb 13 pH Plot

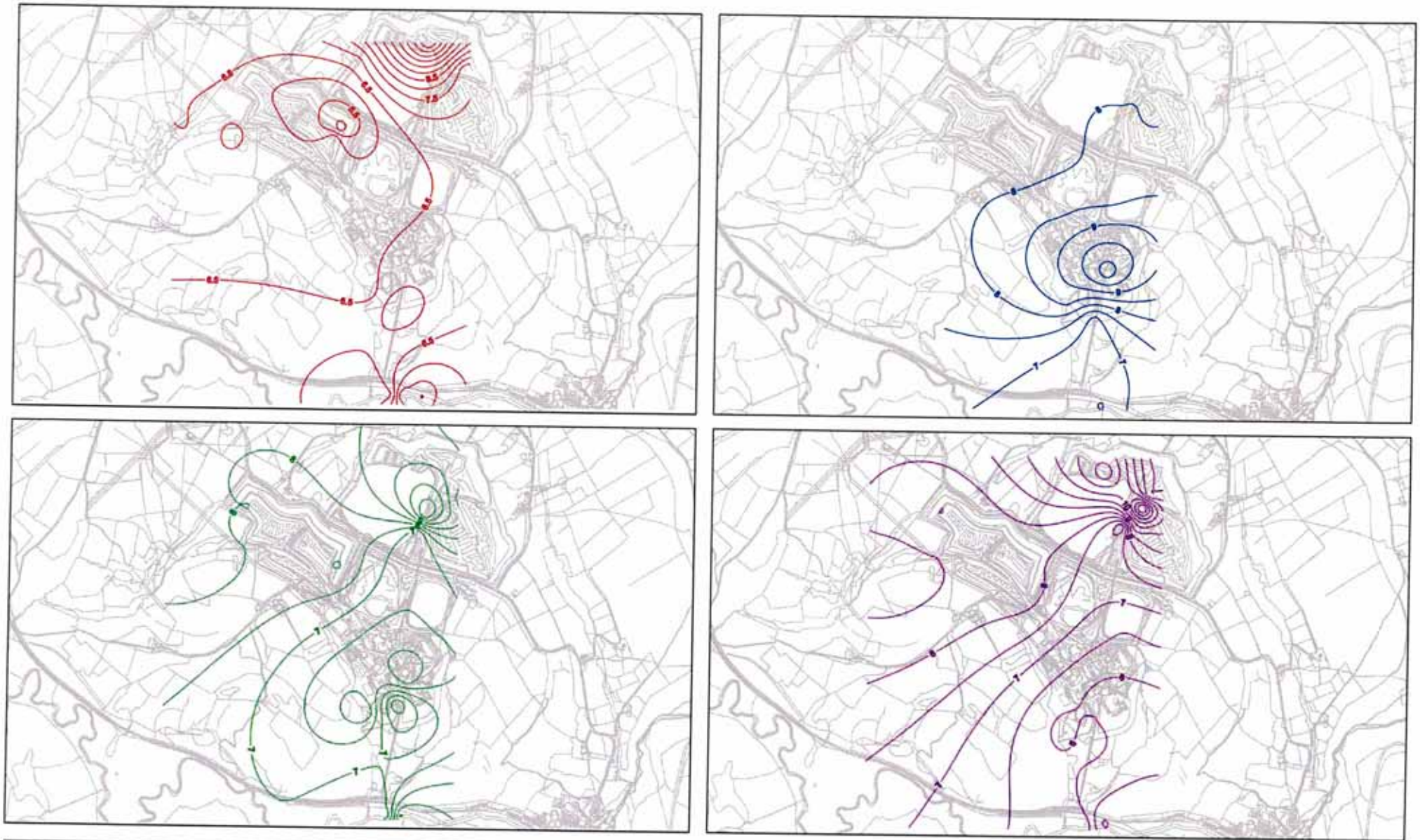
1:15,000

N

pH Distribution Sep 2012 to Feb 2013

Project: Moneystone Park
Job No: 418040
Client: Laver Leisure
January 2015

Fig 5e



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Legend

- Apr 13 pH Plot
- Jul 13 pH Plot
- Oct 13 pH Plot
- Jan 14 pH Plot

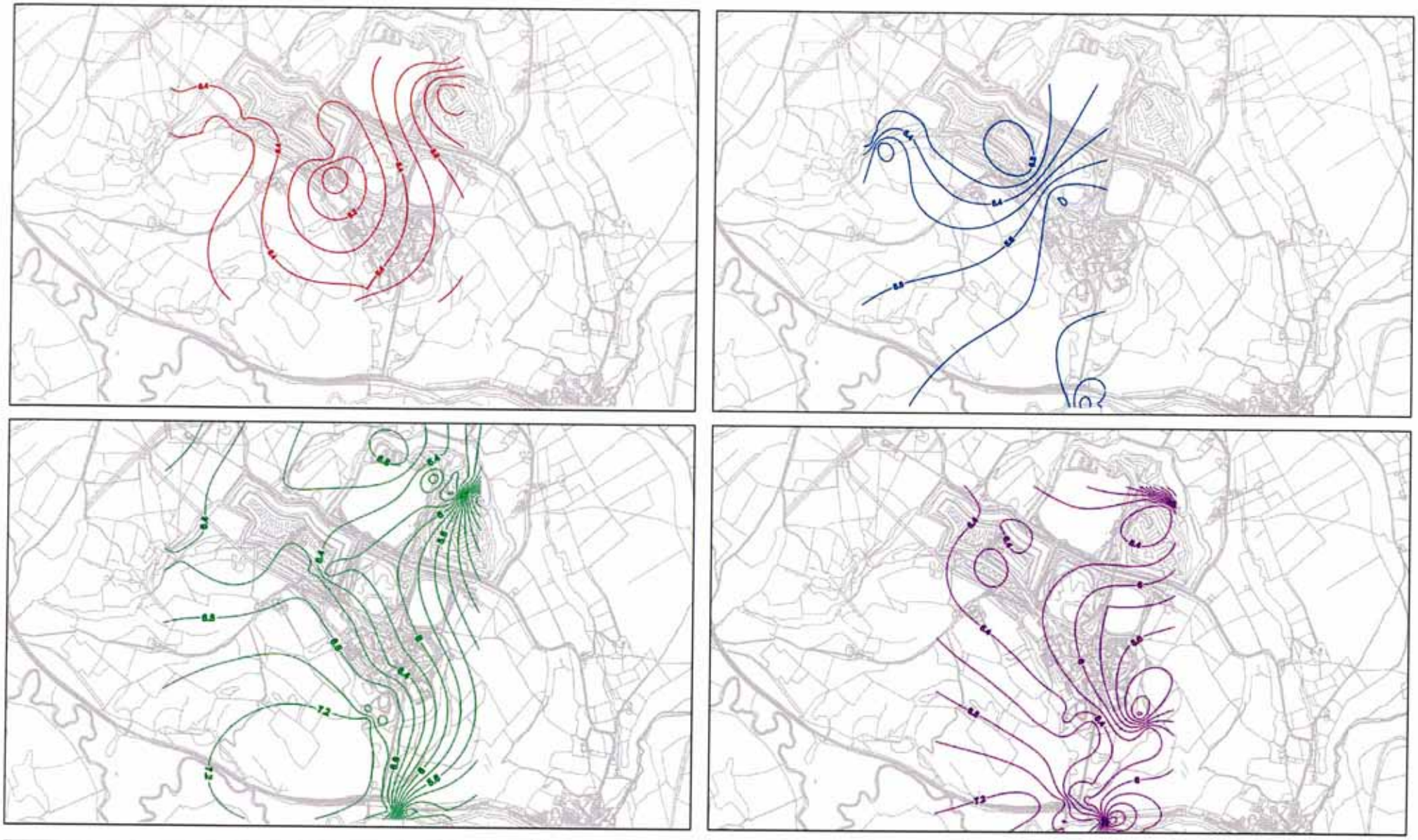
1:15,000

N

pH Distribution Apr 2013 to Jan 2014

Project: Moneystone Park
Job No: 418040
Client: Laver Leisure
January 2015

Fig 5f



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Legend

- Apr 14 pH Plot
- Jul 14 pH Plot
- Oct 14 pH Plot
- Jan 15 pH Plot

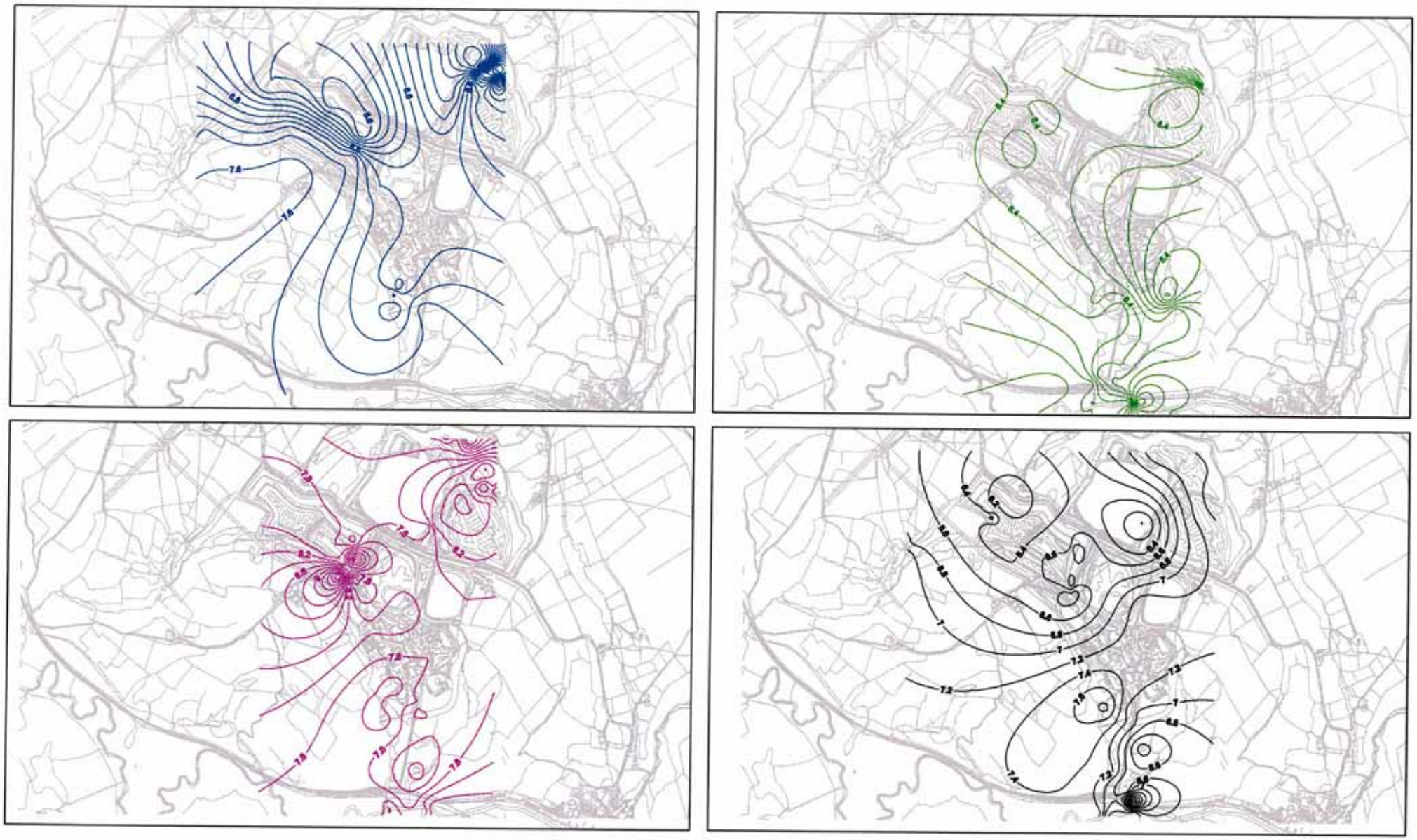
1:15,000

N

pH Distribution Apr 2014 to Jan 2015

Project: Moneystone Park
Job No: 418040
Client: Laver Leisure
January 2015

Fig 5g



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Legend

- Jul 15 pH Plot
- Oct 15 pH Plot
- Jan 16 pH Plot
- Apr 16 pH Plot

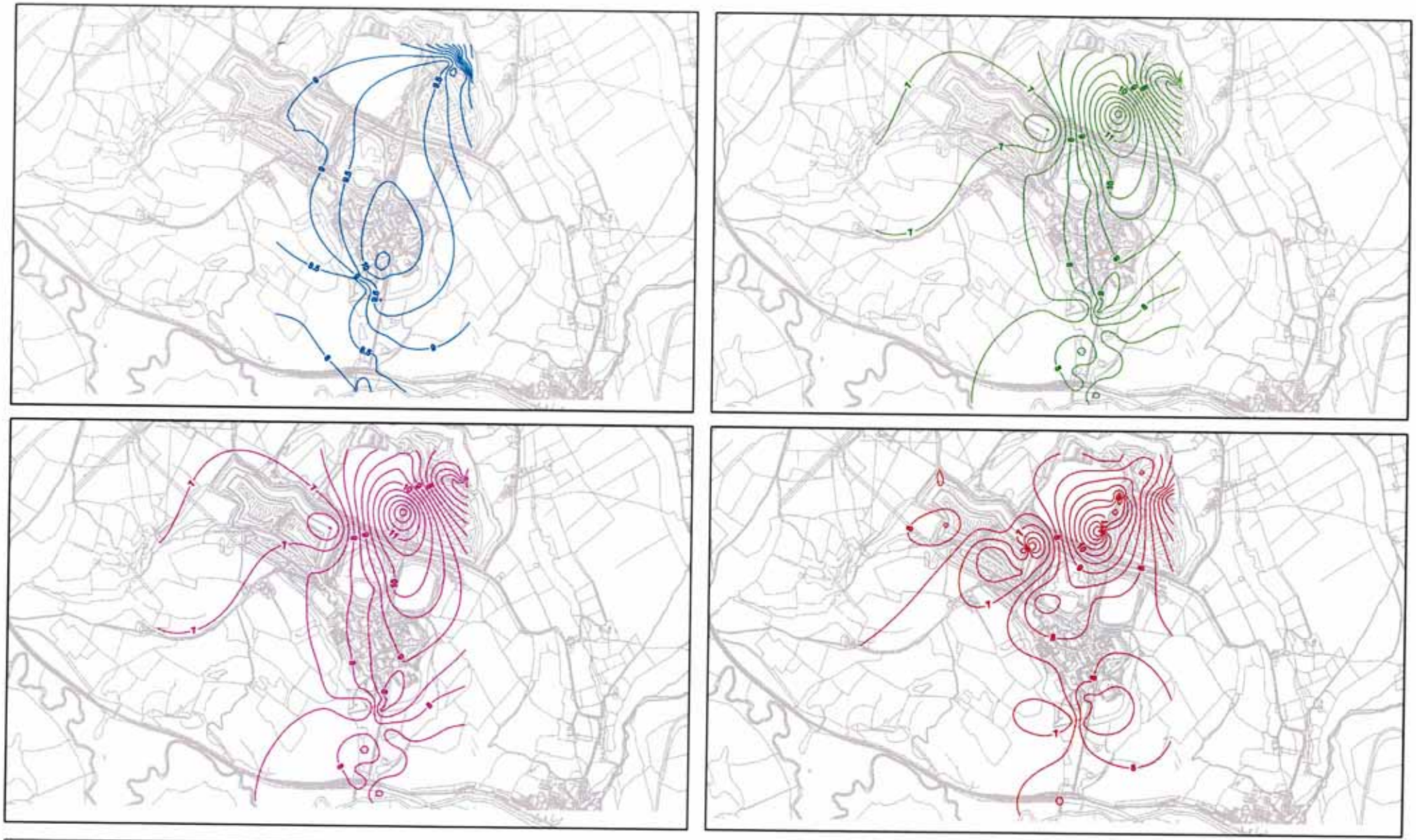
1:15,000

N

pH Jul 2015 to Apr 2016

Project: Moneystone Park
Job No: 418051
Client: Laver Leisure
April 2016

Fig 5H



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Legend

- Jul 16 pH Plot
- Nov 16 pH Plot
- Dec 16 pH Plot
- Jan 17 pH Plot

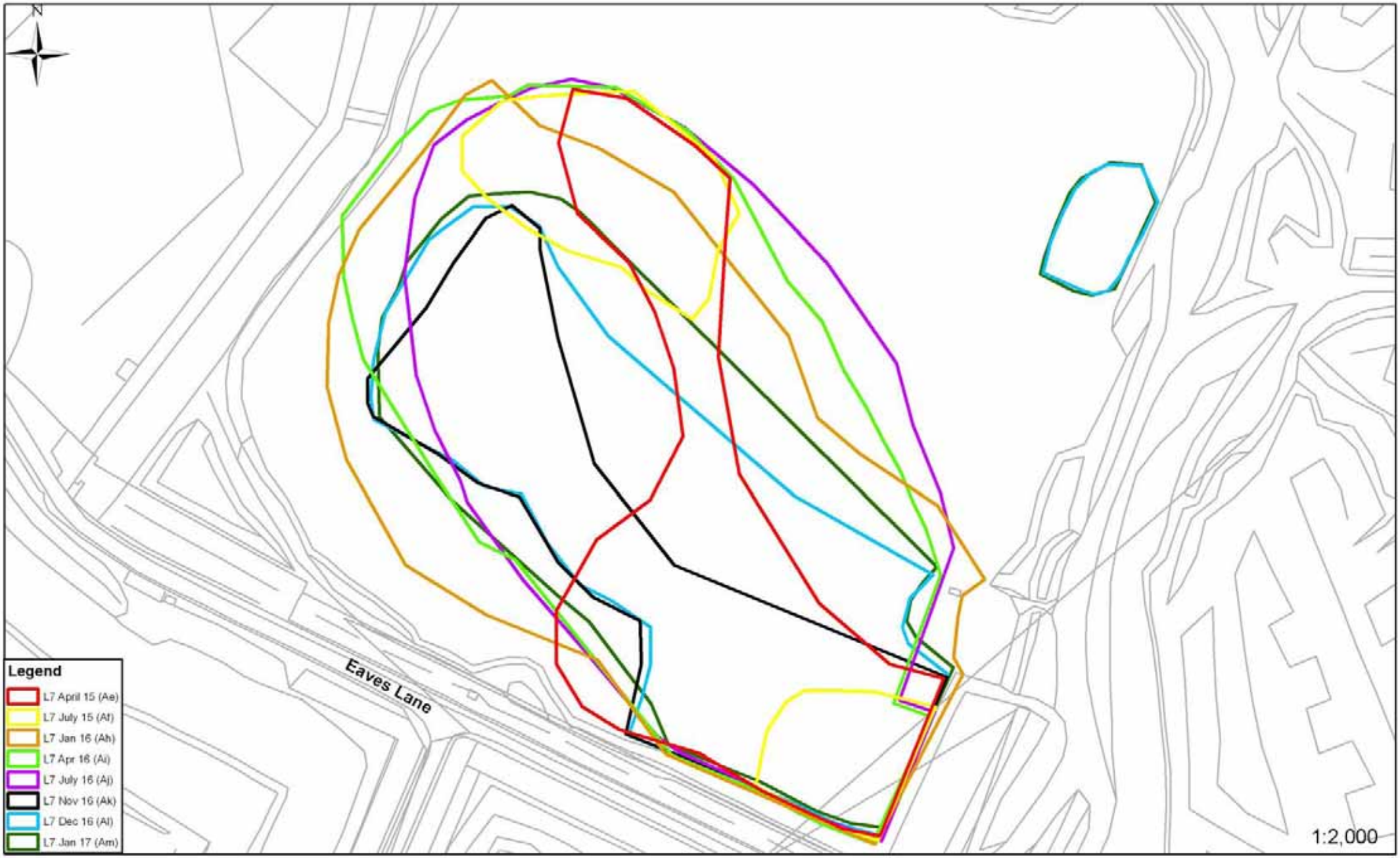
1:15,000

N

pH July 2016 to January 2017

Project: Moneystone Park
Job No: 418051
Client: Laver Leisure
January 2017

Fig 5



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0 30 60 120 Meters

L7 Ponding

Project: Moneystone Park
Job No: 418051
Client: Laver Leisure

Fig 6

Figure 7: Q3 Level and Stream Flow

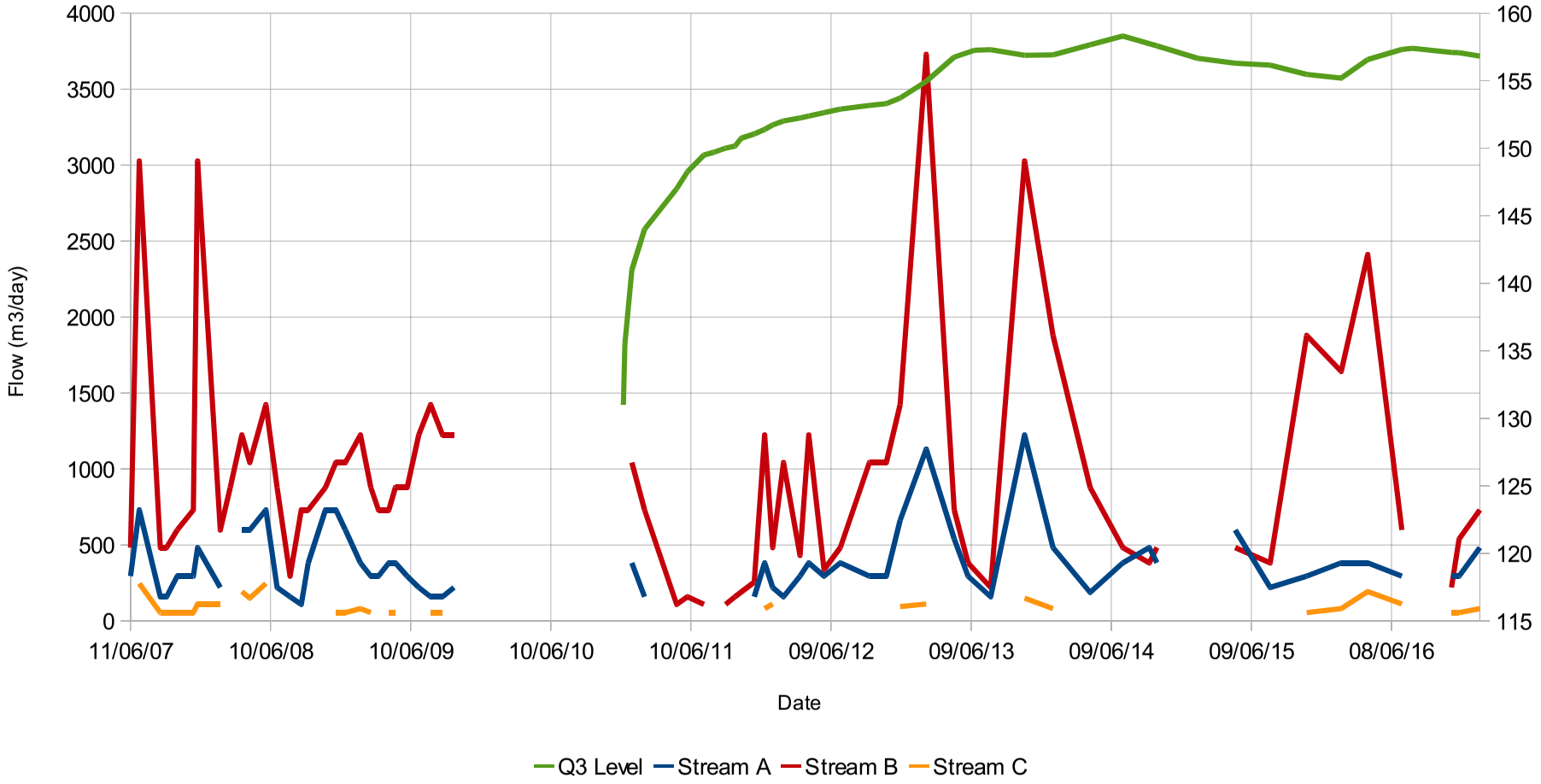
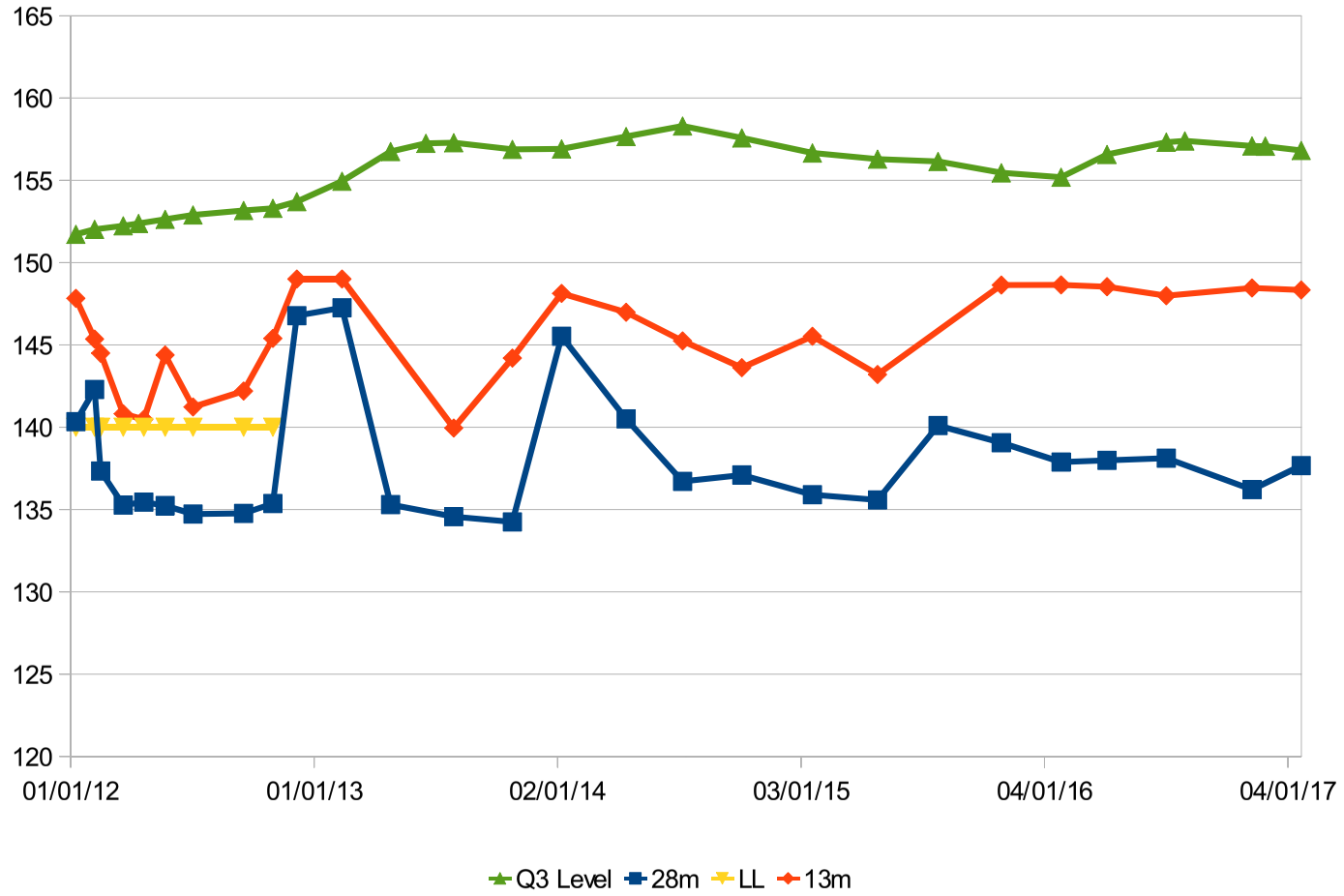
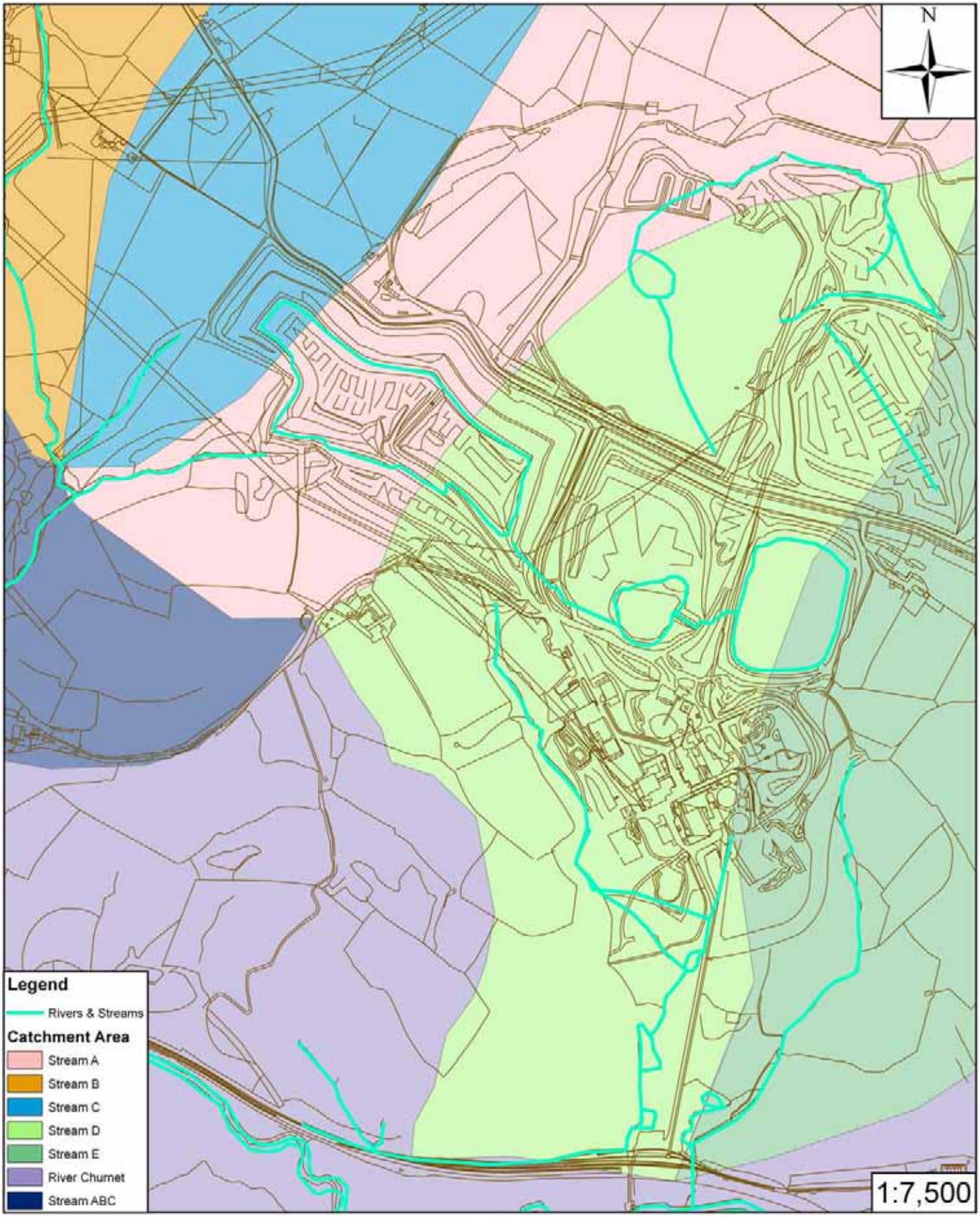


Fig 8: L3 water levels





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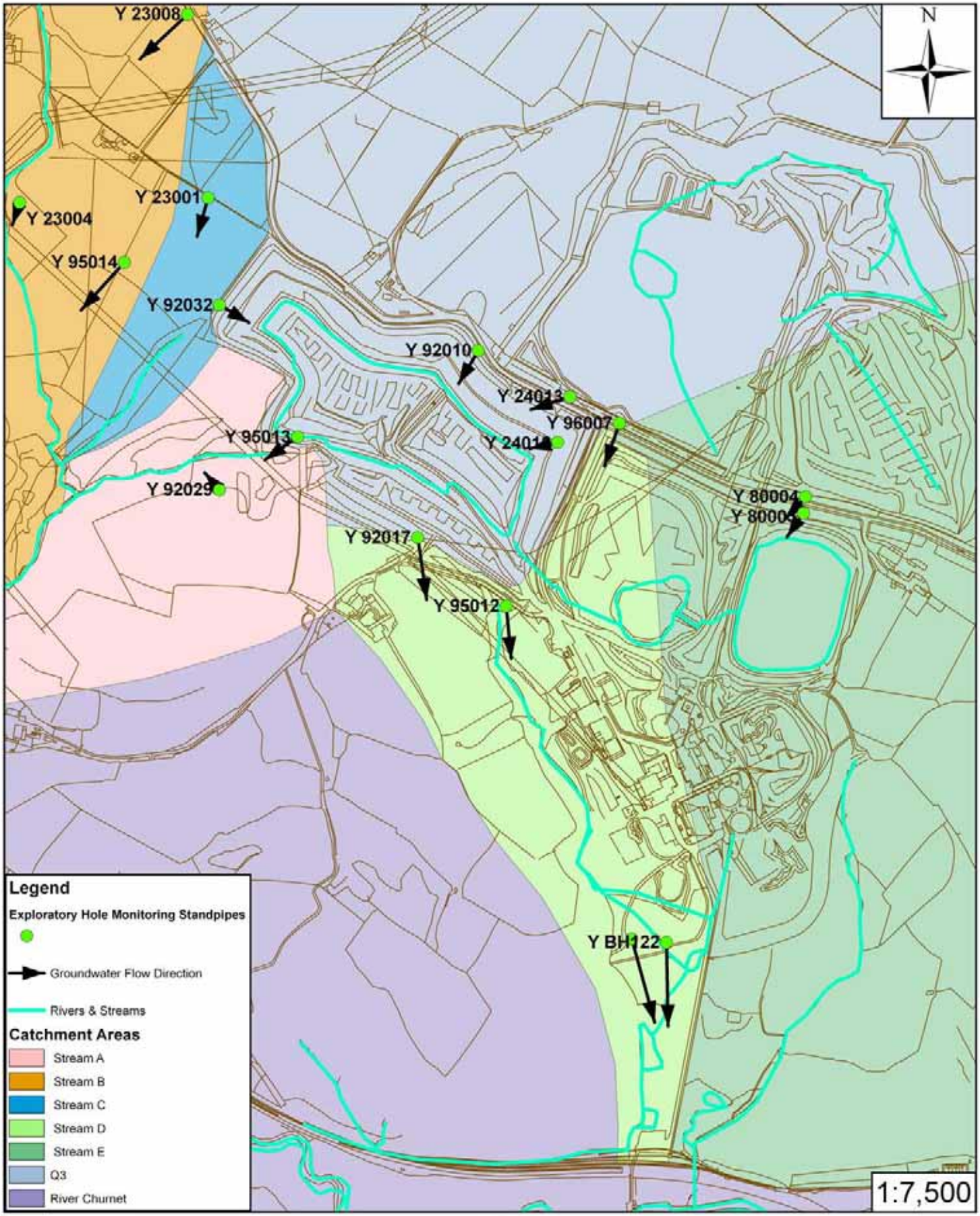
Pre-Quarry Catchment Areas

Project: Moneystone Quarry, Oakamoor
Job No: 418040
Client: Laver Leisure

Fig 9a



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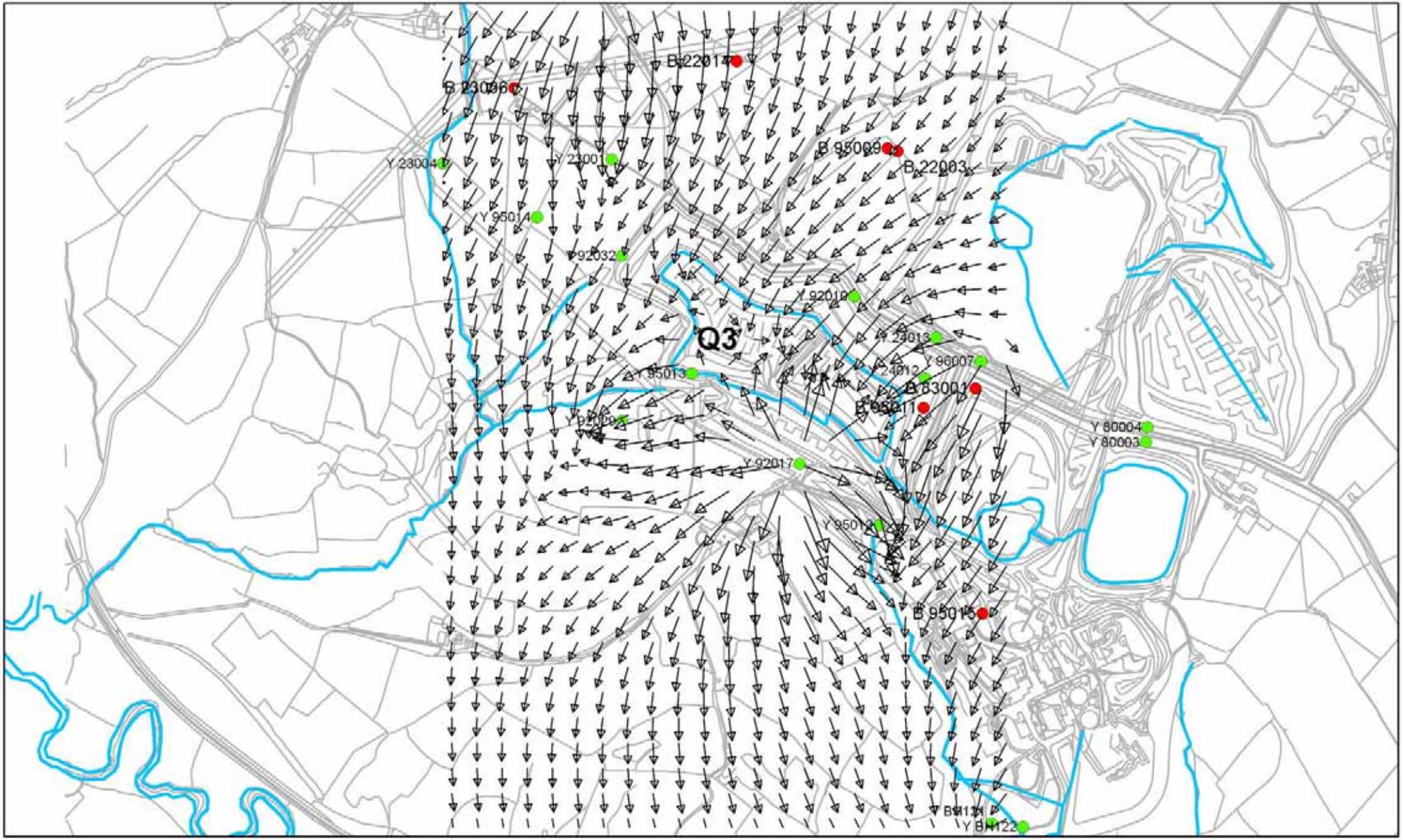
Catchment Areas

Project: Moneystone Quarry, Oakamoor
Job No: 418040
Client: Laver Leisure

Fig 9b



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N

1:8,000

Groundwater Vectors January 2017

Project: Moneystone Park
Job No: 418040
Client: Laver Leisure

Fig 9c

Figure 10 - Standpipe Levels

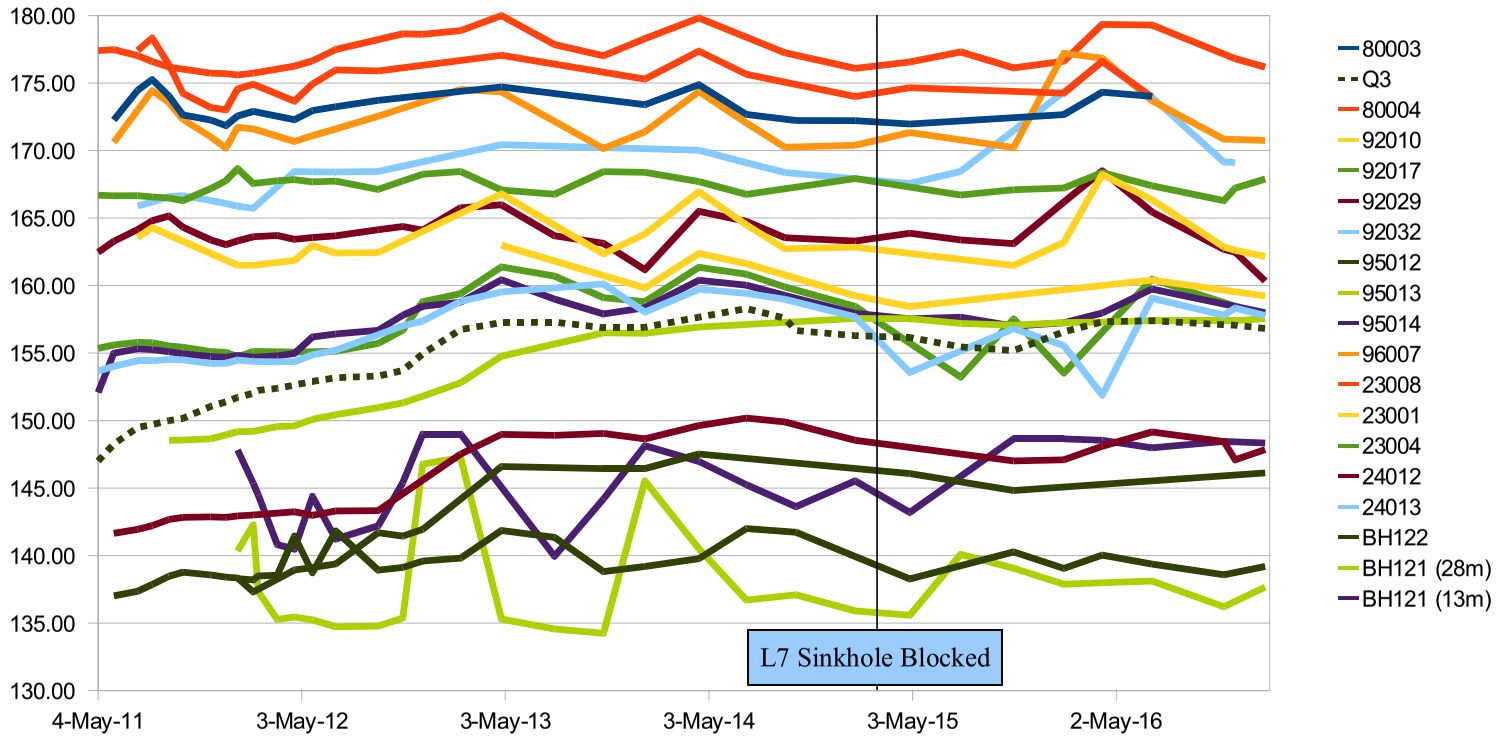


Figure 11 - Stream Flow versus Rainfall

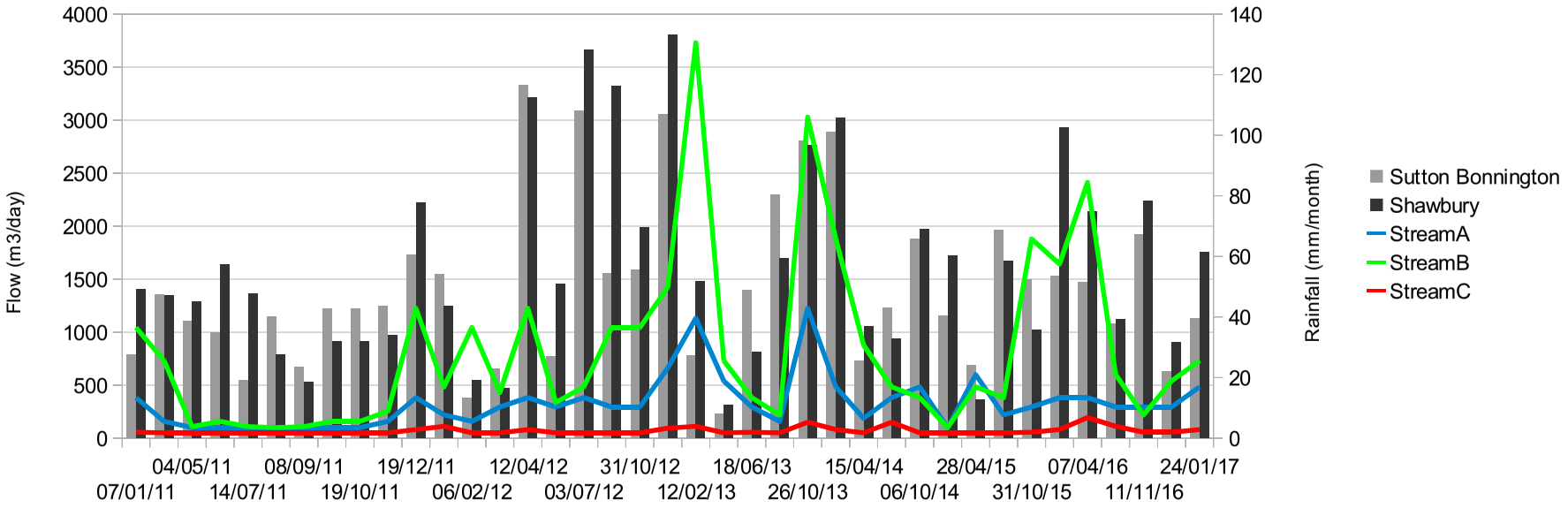
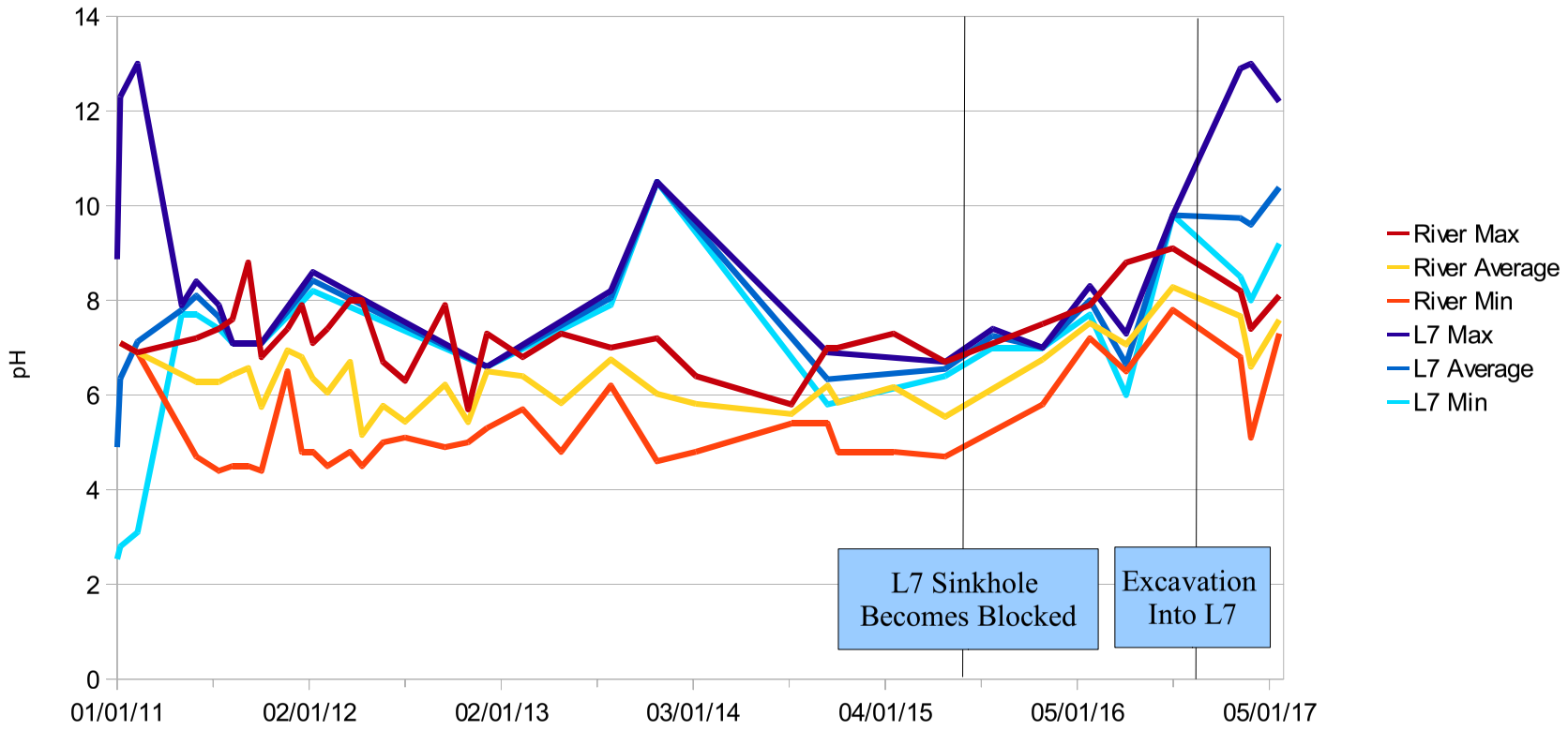
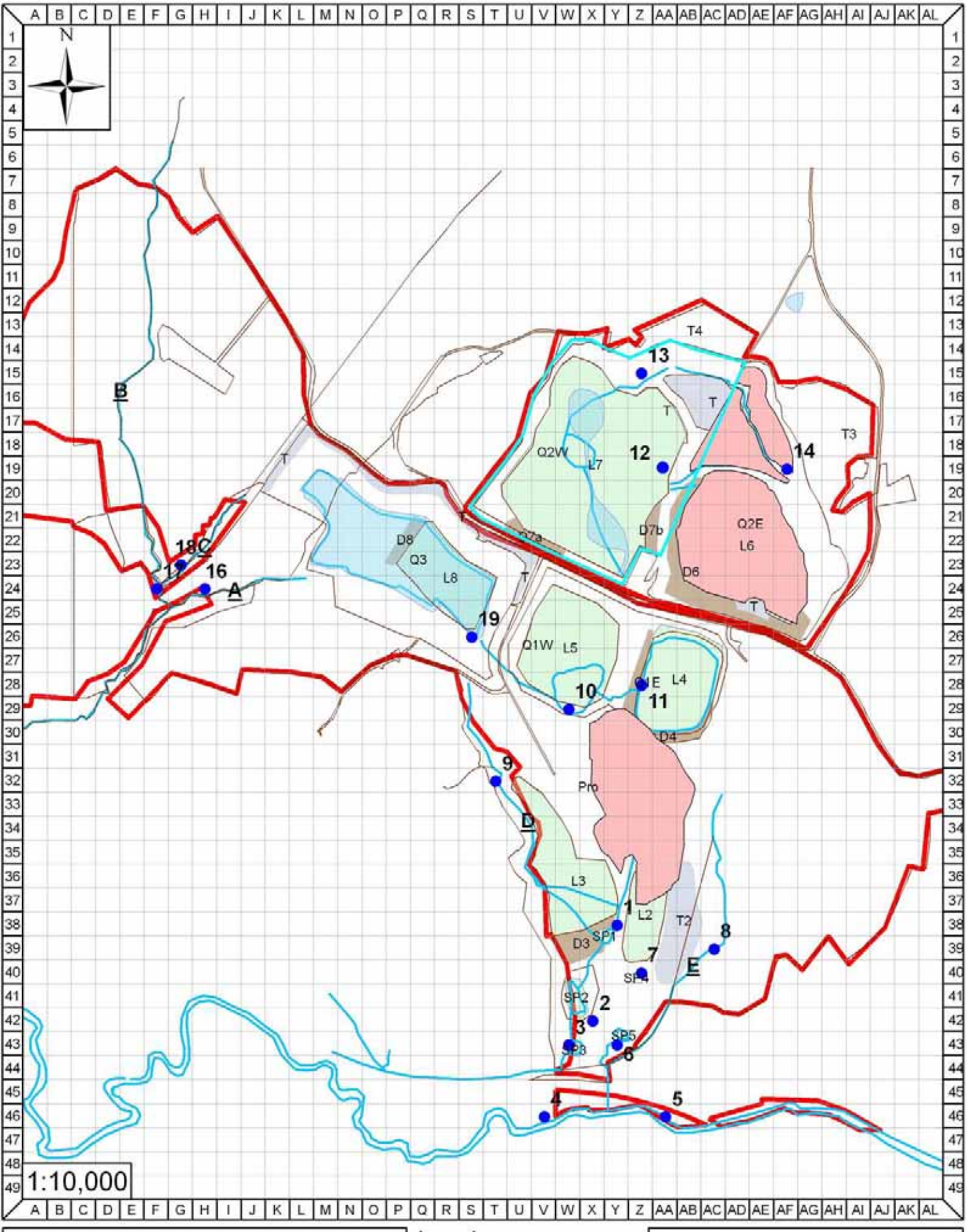


Figure 12 - pH in River Churnet and L7





Legend

- GW Sample Locations
- Proposed Solar
- Lagoon
- Dams
- Tips

Baseline Survey - Groundwater

Project: Moneystone Park
Job No: 418055
Client: Laver Leisure

Fig 13

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LABORATORY RESULTS

Hadfield House
Hadfield Street
Cornbrook
Manchester
M16 9FE
Tel : 0161 874 2400
Fax : 0161 874 2468

Scientific Analysis Laboratories Ltd

Certificate of Analysis

Report Number: 614292-1

Date of Report: 30-Nov-2016

Customer: Abbeydale BEC Ltd
4 Neville Street
Wakefield
WF1 5EF

Customer Contact: Mr. Glyn Hogg

Customer Job Reference: 418055
Customer Purchase Order: 3042
Customer Site Reference: Moneystone
Date Job Received at SAL: 14-Nov-2016
Date Analysis Started: 15-Nov-2016
Date Analysis Completed: 29-Nov-2016

The results reported relate to samples received in the laboratory and may not be representative of a whole batch.
Opinions and interpretations expressed herein are outside the scope of UKAS accreditation
This report should not be reproduced except in full without the written approval of the laboratory
Tests covered by this certificate were conducted in accordance with SAL SOPs
All results have been reviewed in accordance with Section 25 of the SAL Quality Manual

UKAS TESTING
1549

mCERTS THE ENVIRONMENT AGENCY'S MONITORING CERTIFICATION SCHEME

Report checked and authorised by :
Mr Richard Wong
Project Manager

Issued by :
Mr Richard Wong
Project Manager

SAL Reference: 614292
Project Site: Moneystone
Customer Reference: 418055

Soil Analysed as Soil
MCERTS Preparation

SAL Reference	**614292 020**
Customer Sample Reference	**Stockpile 1**
Date Sampled	**11-NOV-2016**
Type	**Sandy Soil**

Determinand	Method	Test Sample	LOD	Units	
Moisture @105C	T162	AR	0.1	%	**33**
Retained on 10mm sieve	T2	A40	0.1	%	<0.1

SAL Reference: 614292
Project Site: Moneystone
Customer Reference: 418055

Soil Analysed as Soil
Abbey Dale BEC 1

SAL Reference	**614292 020**
Customer Sample Reference	**Stockpile 1**
Date Sampled	**11-NOV-2016**
Type	**Sandy Soil**

Determinand	Method	Test Sample	LOD	Units	
Arsenic	T6	M40	2	mg/kg	**3**
Beryllium	T6	A40	2	mg/kg	<2
Boron (water-soluble)	T6	AR	1	mg/kg	<1
Cadmium	T6	M40	1	mg/kg	<1
Chromium	T6	M40	1	mg/kg	**22**
Chromium (trivalent)	T85	AR	2	mg/kg	**22**
Chromium VI	T6	AR	1	mg/kg	<1
Copper	T6	M40	1	mg/kg	**3**
Lead	T6	M40	1	mg/kg	**11**
Mercury	T6	M40	1	mg/kg	<1
Nickel	T6	M40	1	mg/kg	**10**
Selenium	T6	M40	3	mg/kg	<3
Vanadium	T6	M40	1	mg/kg	**19**
Zinc	T6	M40	1	mg/kg	**16**
Cyanide(Total)	T546	AR	1	mg/kg	<1
Cyanide(free)	T546	AR	1	mg/kg	<1
Phenols(Mono)	T546	AR	1	mg/kg	<1
SO4(2:1)	T6	AR	0.1	g/l	<0.1
Soil Organic Matter	T287	A40	0.1	%	<0.1
Asbestos ID	T27	AR			N.D.
pH	T7	AR			**8.1**

SAL Reference: 614292
Project Site: Moneystone
Customer Reference: 418055

Soil Analysed as Soil
% Stones

SAL Reference	**614292 020**
Customer Sample Reference	**Stockpile 1**
Date Sampled	**11-NOV-2016**
Type	**Sandy Soil**

Determinand	Method	Test Sample	LOD	Units	
Retained on 2mm	T2	A40	0.1	%	**1.4**
Retained on 20mm	T2	A40	0.1	%	<0.1
Retained on 50mm	T2	A40	0.1	%	<0.1

SAL Reference: 614292
Project Site: Moneystone
Customer Reference: 418055

Soil Analysed as Soil
Total and Speciated USEPA16 PAH

SAL Reference	**614292 020**
Customer Sample Reference	**Stockpile 1**
Date Sampled	**11-NOV-2016**
Type	**Sandy Soil**

Determinand	Method	Test Sample	LOD	Units	
Naphthalene	T207	M105	0.1	mg/kg	(100) <1.0
Acenaphthylene	T207	M105	0.1	mg/kg	(100) <1.0
Acenaphthene	T207	M105	0.1	mg/kg	(100) <1.0
Fluorene	T207	M105	0.1	mg/kg	(100) <1.0
Phenanthrene	T207	M105	0.1	mg/kg	(100) <1.0
Anthracene	T207	M105	0.1	mg/kg	(100) <1.0
Fluoranthene	T207	M105	0.1	mg/kg	(100) <1.0
Pyrene	T207	M105	0.1	mg/kg	(100) <1.0
Benzo(a)Anthracene	T207	M105	0.1	mg/kg	(100) <1.0
Chrysene	T207	M105	0.1	mg/kg	(100) <1.0
Benzo(b/k)Fluoranthene	T207	M105	0.1	mg/kg	(100) <1.0
Benzo(a)Pyrene	T207	M105	0.1	mg/kg	(100) <1.0
Indeno(123-cd)Pyrene	T207	M105	0.1	mg/kg	(100) <1.0
Dibenzo(ah)Anthracene	T207	M105	0.1	mg/kg	(100) <1.0
Benzo(ghi)Perylene	T207	M105	0.1	mg/kg	(100) <1.0
PAH(total)	T207	M105	0.1	mg/kg	(100) <1.0

SAL Reference: 614292
Project Site: Moneystone
Customer Reference: 418055

Leachate Analysed as Water
Abbey Dale BEC 1

SAL Reference	**614292 020**
Customer Sample Reference	**Stockpile 1**
Date Sampled	**11-NOV-2016**
Type	**Sandy Soil**

Determinand	Method	Test Sample	LOD	Units	
As (Dissolved)	T281	10:1	0.2	µg/l	<0.2
Be (Dissolved)	T281	10:1	0.05	µg/l	<0.05
Boron	T6	10:1	10	µg/l	<10
Cd (Dissolved)	T281	10:1	0.02	µg/l	<0.02
Cr (Dissolved)	T281	10:1	1	µg/l	<1
Chromium VI	T4	10:1	30	µg/l	<30
Cu (Dissolved)	T281	10:1	0.5	µg/l	<0.5
Pb (Dissolved)	T281	10:1	0.3	µg/l	<0.3
Hg (Dissolved)	T281	10:1	0.05	µg/l	<0.05
Ni (Dissolved)	T281	10:1	1	µg/l	<1
Se (Dissolved)	T281	10:1	0.5	µg/l	<0.5
V (Dissolved)	T281	10:1	2	µg/l	<2
Zn (Dissolved)	T281	10:1	2	µg/l	**3**
Cyanide(Total)	T4	10:1	0.05	mg/l	<0.05
Cyanide(free)	T4	10:1	0.05	mg/l	<0.05
Phenols(Mono)	T4	10:1	0.1	mg/l	<0.1
SO4(Total)	T6	10:1	50	mg/l	**620**
Total Organic Carbon	T21	10:1	1	mg/l	<1
pH	T7	10:1			**7.9**

SAL Reference: 614292
Project Site: Moneystone
Customer Reference: 418055

Water Analysed as Water
Abbey Dale BEC 1

	SAL Reference	614292 001	614292 002	614292 003	614292 004	614292 005	614292 006	614292 007	614292 008	614292 009	614292 010
	Customer Sample Reference	1	2	3	4	5	6	7	8	9	10
	Date Sampled	11-NOV-2016	11-NOV-2016	11-NOV-2016	11-NOV-2016	11-NOV-2016	11-NOV-2016	11-NOV-2016	11-NOV-2016	11-NOV-2016	11-NOV-2016
Determinand	**Method** / **Test Sample** / **LOD** / **Units**										
As (Dissolved)	T281 AR 0.2 µg/l	**0.6**	**0.7**	**0.5**	**0.8**	**0.7**	<0.2	**0.3**	<0.2	**0.3**	**0.4**
Be (Dissolved)	T281 AR 0.05 µg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Boron	T6 AR 10 µg/l	**42**	**39**	**42**	**30**	**30**	**23**	**32**	**19**	**39**	<10
Cd (Dissolved)	T281 AR 0.02 µg/l	<0.02	<0.02	<0.02	**0.05**	**0.07**	<0.02	**0.04**	<0.02	<0.02	<0.02
Cr (Dissolved)	T281 AR 1 µg/l	**2**	**4**	<1	<1	**1**	<1	<1	<1	<1	<1
Chromium VI	T4 AR 30 µg/l	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30
Cu (Dissolved)	T281 AR 0.5 µg/l	**4.8**	**5.6**	**1.4**	**8.1**	**8.1**	**1.7**	**1.1**	**1.8**	**1.8**	**1.9**
Pb (Dissolved)	T281 AR 0.3 µg/l	**0.7**	**0.4**	<0.3	**0.5**	**0.6**	<0.3	**0.6**	<0.3	<0.3	<0.3
Hg (Dissolved)	T281 AR 0.05 µg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Ni (Dissolved)	T281 AR 1 µg/l	**2**	**2**	**2**	**5**	**5**	**8**	**2**	**1**	**4**	<1
Se (Dissolved)	T281 AR 0.5 µg/l	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
V (Dissolved)	T281 AR 2 µg/l	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Zn (Dissolved)	T281 AR 2 µg/l	**5**	**5**	**7**	**9**	**8**	**5**	**8**	**6**	**5**	**4**
Cyanide(Total)	T4 AR 0.05 mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Cyanide(free)	T4 AR 0.05 mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Phenols(Mono)	T4 AR 0.1 mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
SO4(Total)	T6 AR 50 mg/l	**71**	**74**	**75**	<50	<50	**230**	<50	**160**	<50	<50
Total Organic Carbon	T21 AR 1 mg/l	**35**	**31**	**42**	**29**	**28**	**13**	**80**	**18**	**40**	**19**
pH	T7 AR	**8.1**	**7.8**	**7.2**	**7.5**	**7.4**	**7.8**	**6.8**	**7.6**	**7.2**	**7.5**

SAL Reference: 614292
Project Site: Moneystone
Customer Reference: 418055

Water Analysed as Water
Abbey Dale BEC 1

	SAL Reference	614292 011	614292 012	614292 013	614292 014	614292 015	614292 016	614292 017	614292 018	614292 019
	Customer Sample Reference	11	12	13	14	15	16	17	18	19
	Date Sampled	11-NOV-2016	11-NOV-2016	11-NOV-2016	11-NOV-2016	11-NOV-2016	11-NOV-2016	11-NOV-2016	11-NOV-2016	11-NOV-2016
Determinand	**Method** / **Test Sample** / **LOD** / **Units**									
As (Dissolved)	T281 AR 0.2 µg/l	**2.6**	**1.0**	**0.3**	**0.5**	**0.9**	<0.2	**0.9**	**0.2**	**0.2**
Be (Dissolved)	T281 AR 0.05 µg/l	<0.05	<0.05	<0.05	**0.26**	**0.08**	<0.05	<0.05	<0.05	**0.07**
Boron	T6 AR 10 µg/l	**34**	<10	**11**	**22**	**13**	**30**	**39**	**10**	**24**
Cd (Dissolved)	T281 AR 0.02 µg/l	<0.02	**0.08**	**0.03**	**0.57**	**0.55**	**0.07**	**0.06**	**0.10**	<0.02
Cr (Dissolved)	T281 AR 1 µg/l	**39**	**15**	<1	<1	**2**	<1	<1	<1	<1
Chromium VI	T4 AR 30 µg/l	(2) <30	(2) <30	<30	<30	<30	<30	<30	<30	<30
Cu (Dissolved)	T281 AR 0.5 µg/l	**16**	**8.8**	**1.9**	**5.3**	**31**	**1.1**	**11**	**3.0**	**1.0**
Pb (Dissolved)	T281 AR 0.3 µg/l	<0.3	<0.3	<0.3	<0.3	**0.6**	<0.3	**0.6**	<0.3	<0.3
Hg (Dissolved)	T281 AR 0.05 µg/l	<0.05	<0.05	<0.05	<0.05	**0.07**	<0.05	<0.05	<0.05	<0.05
Ni (Dissolved)	T281 AR 1 µg/l	**2**	**3**	**1**	**8**	**63**	**2**	**3**	**2**	<1
Se (Dissolved)	T281 AR 0.5 µg/l	**3.0**	**1.2**	<0.5	**1.9**	**1.7**	**0.7**	<0.5	**0.6**	**0.8**
V (Dissolved)	T281 AR 2 µg/l	**14**	<2	<2	<2	<2	<2	<2	<2	<2
Zn (Dissolved)	T281 AR 2 µg/l	**4**	**5**	**7**	**35**	**58**	**8**	**16**	**12**	**6**
Cyanide(Total)	T4 AR 0.05 mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Cyanide(free)	T4 AR 0.05 mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Phenols(Mono)	T4 AR 0.1 mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
SO4(Total)	T6 AR 50 mg/l	**330**	**530**	**330**	<50	**190**	<50	<50	<50	**140**
Total Organic Carbon	T21 AR 1 mg/l	**8**	**15**	**30**	<1	**25**	**9**	**23**	**12**	**8**
pH	T7 AR	**9.9**	**9.4**	**7.3**	**5.7**	**6.3**	**7.5**	**7.4**	**7.3**	**8.8**

SAL Reference: 614292
Project Site: Moneystone
Customer Reference: 418055

Leachate Analysed as Water
Total and Speciated USEPA16 PAH

SAL Reference	**614292 020**
Customer Sample Reference	**Stockpile 1**
Date Sampled	**11-NOV-2016**
Type	**Sandy Soil**

Determinand	Method	Test Sample	LOD	Units	
Naphthalene	T149	10:1	0.01	µg/l	(13) **0.01**
Acenaphthylene	T149	10:1	0.01	µg/l	(13) <0.01
Acenaphthene	T149	10:1	0.01	µg/l	(13) **0.01**
Fluorene	T149	10:1	0.01	µg/l	(13) **0.01**
Phenanthrene	T149	10:1	0.01	µg/l	(13) **0.03**
Anthracene	T149	10:1	0.01	µg/l	(13) **0.01**
Fluoranthene	T149	10:1	0.01	µg/l	(13) **0.02**
Pyrene	T149	10:1	0.01	µg/l	(13) **0.02**
Benzo(a)Anthracene	T149	10:1	0.01	µg/l	(13) <0.01
Chrysene	T149	10:1	0.01	µg/l	(13) <0.01
Benzo(b/k)Fluoranthene	T149	10:1	0.01	µg/l	(13) <0.01
Benzo(a)Pyrene	T149	10:1	0.01	µg/l	(13) <0.01
Indeno(123-cd)Pyrene	T149	10:1	0.01	µg/l	(13) <0.01
Dibenzo(ah)Anthracene	T149	10:1	0.01	µg/l	(13) <0.01
Benzo(ghi)Perylene	T149	10:1	0.01	µg/l	(13) <0.01
PAH(total)	T149	10:1	0.01	µg/l	**0.11**

SAL Reference: 614292
Project Site: Moneystone
Customer Reference: 418055

Water Analysed as Water
Total and Speciated USEPA16 PAH

SAL Reference					**614292 001**	**614292 002**	**614292 003**	**614292 004**	**614292 005**	**614292 006**	**614292 007**	**614292 008**	**614292 009**	**614292 010**
Customer Sample Reference					**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Date Sampled					**11-NOV-2016**	**11-NOV-2016**	**11-NOV-2016**	**11-NOV-2016**	**11-NOV-2016**	**11-NOV-2016**	**11-NOV-2016**	**11-NOV-2016**	**11-NOV-2016**	**11-NOV-2016**
Determinand	**Method**	**Test Sample**	**LOD**	**Units**										
Naphthalene	T149	AR	0.01	µg/l	(13,100) <0.10	(100,13) <0.10	(13,100) <0.10	(13,100) <0.10	(13,100) <0.10	(13,100) <0.10	(13,100) <0.10	(100,13) <0.10	(13,100) <0.10	(100,13) <0.10
Acenaphthylene	T149	AR	0.01	µg/l	(100,13) <0.10	(100,13) <0.10	(100,13) <0.10	(13,100) <0.10	(100,13) <0.10	(100,13) <0.10	(100,13) <0.10	(100,13) <0.10	(13,100) <0.10	(100,13) <0.10
Acenaphthene	T149	AR	0.01	µg/l	(100,13) <0.10	(100,13) <0.10	(100,13) <0.10	(13,100) <0.10	(100,13) <0.10	(100,13) <0.10	(100,13) <0.10	(13,100) <0.10	(13,100) <0.10	(100,13) <0.10
Fluorene	T149	AR	0.01	µg/l	(13,100) <0.10	(13,100) <0.10	(13,100) <0.10	(100,13) <0.10	(13,100) <0.10	(13,100) <0.10	(13,100) <0.10	(100,13) <0.10	(100,13) <0.10	(13,100) <0.10
Phenanthrene	T149	AR	0.01	µg/l	(13,100) <0.10	(13,100) <0.10	(100,13) <0.10	(100,13) <0.10	(13,100) <0.10	(100,13) <0.10	(100,13) <0.10	(13,100) <0.10	(13,100) <0.10	(13,100) <0.10
Anthracene	T149	AR	0.01	µg/l	(100,13) <0.10	(100,13) <0.10	(100,13) <0.10	(100,13) <0.10	(13,100) <0.10	(13,100) <0.10	(13,100) <0.10	(13,100) <0.10	(100,13) <0.10	(13,100) <0.10
Fluoranthene	T149	AR	0.01	µg/l	(13,100) <0.10	(13,100) <0.10	(13,100) <0.10	(100,13) <0.10	(100,13) <0.10	(13,100) <0.10	(100,13) <0.10	(13,100) <0.10	(13,100) <0.10	(13,100) <0.10
Pyrene	T149	AR	0.01	µg/l	(100,13) <0.10	(100,13) <0.10	(13,100) <0.10	(100,13) <0.10	(13,100) <0.10	(13,100) <0.10	(13,100) <0.10	(100,13) <0.10	(13,100) <0.10	(13,100) <0.10
Benzo(a)Anthracene	T149	AR	0.01	µg/l	(13,100) <0.10	(100,13) <0.10	(100,13) <0.10	(13,100) <0.10	(13,100) <0.10	(13,100) <0.10	(13,100) <0.10	(13,100) <0.10	(100,13) <0.10	(13,100) <0.10
Chrysene	T149	AR	0.01	µg/l	(100,13) <0.10	(13,100) <0.10	(13,100) <0.10	(13,100) <0.10	(13,100) <0.10	(13,100) <0.10	(100,13) <0.10	(100,13) <0.10	(100,13) <0.10	(13,100) <0.10
Benzo(b/k)Fluoranthene	T149	AR	0.01	µg/l	(100,13) <0.10	(13,100) <0.10	(100,13) <0.10	(100,13) <0.10	(13,100) <0.10	(13,100) <0.10	(13,100) <0.10	(100,13) <0.10	(100,13) <0.10	(100,13) <0.10
Benzo(a)Pyrene	T149	AR	0.01	µg/l	(13,100) <0.10	(100,13) <0.10	(100,13) <0.10	(13,100) <0.10	(13,100) <0.10	(100,13) <0.10	(13,100) <0.10	(13,100) <0.10	(100,13) <0.10	(100,13) <0.10
Indeno(123-cd)Pyrene	T149	AR	0.01	µg/l	(13,100) <0.10	(13,100) <0.10	(100,13) <0.10	(13,100) <0.10	(13,100) <0.10	(13,100) <0.10	(100,13) <0.10	(13,100) <0.10	(100,13) <0.10	(13,100) <0.10
Dibenzo(ah)Anthracene	T149	AR	0.01	µg/l	(13,100) <0.10	(100,13) <0.10	(13,100) <0.10	(100,13) <0.10	(100,13) <0.10	(100,13) <0.10	(13,100) <0.10	(13,100) <0.10	(100,13) <0.10	(100,13) <0.10
Benzo(ghi)Perylene	T149	AR	0.01	µg/l	(13,100) <0.10	(100,13) <0.10	(100,13) <0.10	(100,13) <0.10	(100,13) <0.10	(13,100) <0.10	(13,100) <0.10	(13,100) <0.10	(13,100) <0.10	(13,100) <0.10
PAH(total)	T149	AR	0.01	µg/l	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10

SAL Reference: 614292
Project Site: Moneystone
Customer Reference: 418055

Water Analysed as Water
Total and Speciated USEPA16 PAH

	SAL Reference	614292 011	614292 012	614292 013	614292 014	614292 015	614292 016	614292 017	614292 018	614292 019
	Customer Sample Reference	11	12	13	14	15	16	17	18	19
	Date Sampled	11-NOV-2016	11-NOV-2016	11-NOV-2016	11-NOV-2016	11-NOV-2016	11-NOV-2016	11-NOV-2016	11-NOV-2016	11-NOV-2016
Determinand	**Method** / **Test Sample** / **LOD** / **Units**									
Naphthalene	T149 AR 0.01 µg/l	(100,13) <0.10	(13) **0.10**	(13,100) <0.10	(13,100) <0.10	(100,13) <0.10	(13,100) <0.10	(100,13) <0.10	(13,100) <0.10	(100,13) <0.10
Acenaphthylene	T149 AR 0.01 µg/l	(100,13) <0.10	(100,13) <0.10	(13,100) <0.10	(13,100) <0.10	(100,13) <0.10	(13,100) <0.10	(13) **0.10**	(13,100) <0.10	(13,100) <0.10
Acenaphthene	T149 AR 0.01 µg/l	(100,13) <0.10	(13,100) <0.10	(100,13) <0.10	(100,13) <0.10	(100,13) <0.10	(13,100) <0.10	(13) **0.10**	(100,13) <0.10	(100,13) <0.10
Fluorene	T149 AR 0.01 µg/l	(13,100) <0.10	(13) **0.10**	(13) **0.10**	(13) **0.10**	(13) **0.10**	(100,13) <0.10	(13) **0.10**	(13,100) <0.10	(13) **0.10**
Phenanthrene	T149 AR 0.01 µg/l	(13,100) <0.10	(13) **0.10**	(13,100) <0.10	(100,13) <0.10	(13,100) <0.10	(13,100) <0.10	(13) **0.10**	(100,13) <0.10	(13) **0.10**
Anthracene	T149 AR 0.01 µg/l	(13,100) <0.10	(13,100) <0.10	(100,13) <0.10	(13,100) <0.10	(100,13) <0.10	(13,100) <0.10	(13,100) <0.10	(100,13) <0.10	(100,13) <0.10
Fluoranthene	T149 AR 0.01 µg/l	(13,100) <0.10	(13) **0.10**	(13,100) <0.10	(13,100) <0.10	(13,100) <0.10	(13,100) <0.10	(13,100) <0.10	(100,13) <0.10	(13,100) <0.10
Pyrene	T149 AR 0.01 µg/l	(100,13) <0.10	(13) **0.10**	(100,13) <0.10	(13,100) <0.10	(13,100) <0.10	(13,100) <0.10	(13,100) <0.10	(13,100) <0.10	(100,13) <0.10
Benzo(a)Anthracene	T149 AR 0.01 µg/l	(13,100) <0.10	(100,13) <0.10	(100,13) <0.10	(100,13) <0.10	(13,100) <0.10	(100,13) <0.10	(100,13) <0.10	(100,13) <0.10	(100,13) <0.10
Chrysene	T149 AR 0.01 µg/l	(13,100) <0.10	(100,13) <0.10	(13,100) <0.10	(100,13) <0.10	(100,13) <0.10	(13,100) <0.10	(100,13) <0.10	(100,13) <0.10	(100,13) <0.10
Benzo(b/k)Fluoranthene	T149 AR 0.01 µg/l	(100,13) <0.10	(100,13) <0.10	(13,100) <0.10	(13,100) <0.10	(100,13) <0.10	(13,100) <0.10	(13,100) <0.10	(100,13) <0.10	(13,100) <0.10
Benzo(a)Pyrene	T149 AR 0.01 µg/l	(100,13) <0.10	(100,13) <0.10	(13,100) <0.10	(100,13) <0.10	(13,100) <0.10	(13,100) <0.10	(100,13) <0.10	(100,13) <0.10	(13,100) <0.10
Indeno(123-cd)Pyrene	T149 AR 0.01 µg/l	(100,13) <0.10	(100,13) <0.10	(100,13) <0.10	(100,13) <0.10	(13,100) <0.10	(100,13) <0.10	(13,100) <0.10	(100,13) <0.10	(100,13) <0.10
Dibenzo(ah)Anthracene	T149 AR 0.01 µg/l	(100,13) <0.10	(100,13) <0.10	(100,13) <0.10	(100,13) <0.10	(100,13) <0.10	(100,13) <0.10	(13,100) <0.10	(100,13) <0.10	(100,13) <0.10
Benzo(ghi)Perylene	T149 AR 0.01 µg/l	(100,13) <0.10	(13,100) <0.10	(100,13) <0.10	(100,13) <0.10	(13,100) <0.10	(100,13) <0.10	(13,100) <0.10	(100,13) <0.10	(13,100) <0.10
PAH(total)	T149 AR 0.01 µg/l	<0.10	**0.50**	**0.10**	**0.10**	**0.10**	<0.10	**0.40**	<0.10	**0.20**

Index to symbols used in 614292-1

Value	Description
10:1	Leachate
AR	As Received
M105	Analysis conducted on an "as received" aliquot. Results are reported on a dry weight basis where moisture content was determined by assisted drying of sample at 105C
A40	Assisted dried < 40C
M40	Analysis conducted on sample assisted dried at no more than 40C. Results are reported on a dry weight basis.
N.D.	Not Detected
100	LOD determined by sample aliquot used for analysis
13	Results have been blank corrected.
2	LOD Raised Due to Matrix Interference
S	Analysis was subcontracted
M	Analysis is MCERTS accredited
U	Analysis is UKAS accredited
N	Analysis is not UKAS accredited

Notes

Asbestos ID performed at REC Asbestos

Method Index

Value	Description
T4	Colorimetry
T21	OX/IR
T149	GC/MS (SIR)
T2	Grav
T27	PLM

T7	Probe
T281	ICP/MS (Filtered)
T6	ICP/OES
T287	Calc TOC/0.58
T546	Colorimetry (CF)
T85	Calc
T162	Grav (1 Dec) (105 C)
T207	GC/MS (MCERTS)

Accreditation Summary

Determinand	Method	Test Sample	LOD	Units	Symbol	SAL References
As (Dissolved)	T281	AR	0.2	µg/l	U	001-019
Be (Dissolved)	T281	AR	0.05	µg/l	U	001-019
Boron	T6	AR	10	µg/l	N	001-019
Cd (Dissolved)	T281	AR	0.02	µg/l	U	001-019
Cr (Dissolved)	T281	AR	1	µg/l	U	001-019
Chromium VI	T4	AR	30	µg/l	N	001-019
Cu (Dissolved)	T281	AR	0.5	µg/l	U	001-019
Pb (Dissolved)	T281	AR	0.3	µg/l	U	001-019
Hg (Dissolved)	T281	AR	0.05	µg/l	U	001-019
Ni (Dissolved)	T281	AR	1	µg/l	U	001-019
Se (Dissolved)	T281	AR	0.5	µg/l	U	001-019
V (Dissolved)	T281	AR	2	µg/l	U	001-019
Zn (Dissolved)	T281	AR	2	µg/l	U	001-019
Cyanide(Total)	T4	AR	0.05	mg/l	U	001-019
Cyanide(free)	T4	AR	0.05	mg/l	U	001-019
Phenols(Mono)	T4	AR	0.1	mg/l	U	001-019
SO4(Total)	T6	AR	50	mg/l	N	001-019
Total Organic Carbon	T21	AR	1	mg/l	U	001-019
pH	T7	AR			U	001-019
Naphthalene	T149	10:1	0.01	µg/l	U	020
Acenaphthylene	T149	10:1	0.01	µg/l	U	020
Acenaphthene	T149	10:1	0.01	µg/l	U	020
Fluorene	T149	10:1	0.01	µg/l	U	020
Phenanthrene	T149	10:1	0.01	µg/l	U	020
Anthracene	T149	10:1	0.01	µg/l	U	020
Fluoranthene	T149	10:1	0.01	µg/l	U	020
Pyrene	T149	10:1	0.01	µg/l	U	020
Benzo(a)Anthracene	T149	10:1	0.01	µg/l	U	020
Chrysene	T149	10:1	0.01	µg/l	U	020
Benzo(b/k)Fluoranthene	T149	10:1	0.01	µg/l	U	020
Benzo(a)Pyrene	T149	10:1	0.01	µg/l	U	020
Indeno(123-cd)Pyrene	T149	10:1	0.01	µg/l	U	020
Dibenzo(ah)Anthracene	T149	10:1	0.01	µg/l	U	020
Benzo(ghi)Perylene	T149	10:1	0.01	µg/l	U	020
PAH(total)	T149	10:1	0.01	µg/l	U	020
Arsenic	T6	M40	2	mg/kg	M	020
Beryllium	T6	A40	2	mg/kg	U	020
Boron (water-soluble)	T6	AR	1	mg/kg	N	020
Cadmium	T6	M40	1	mg/kg	M	020
Chromium	T6	M40	1	mg/kg	M	020
Chromium (trivalent)	T85	AR	2	mg/kg	N	020
Chromium VI	T6	AR	1	mg/kg	N	020
Copper	T6	M40	1	mg/kg	M	020
Lead	T6	M40	1	mg/kg	M	020
Mercury	T6	M40	1	mg/kg	M	020
Nickel	T6	M40	1	mg/kg	M	020
Selenium	T6	M40	3	mg/kg	M	020
Vanadium	T6	M40	1	mg/kg	M	020
Zinc	T6	M40	1	mg/kg	M	020
Cyanide(Total)	T546	AR	1	mg/kg	M	020
Cyanide(free)	T546	AR	1	mg/kg	M	020
Phenols(Mono)	T546	AR	1	mg/kg	M	020
SO4(2:1)	T6	AR	0.1	g/l	N	020
Soil Organic Matter	T287	A40	0.1	%	N	020
Asbestos ID	T27	AR			SU	020
pH	T7	AR			M	020
Retained on 2mm	T2	A40	0.1	%	N	020
Retained on 20mm	T2	A40	0.1	%	N	020

Determinand	Method	Test Sample	LOD	Units	Symbol	SAL References
Retained on 50mm	T2	A40	0.1	%	N	020
Naphthalene	T207	M105	0.1	mg/kg	M	020
Acenaphthylene	T207	M105	0.1	mg/kg	U	020
Acenaphthene	T207	M105	0.1	mg/kg	M	020
Fluorene	T207	M105	0.1	mg/kg	M	020
Phenanthrene	T207	M105	0.1	mg/kg	M	020
Anthracene	T207	M105	0.1	mg/kg	U	020
Fluoranthene	T207	M105	0.1	mg/kg	M	020
Pyrene	T207	M105	0.1	mg/kg	M	020
Benzo(a)Anthracene	T207	M105	0.1	mg/kg	M	020
Chrysene	T207	M105	0.1	mg/kg	M	020
Benzo(b/k)Fluoranthene	T207	M105	0.1	mg/kg	M	020
Benzo(a)Pyrene	T207	M105	0.1	mg/kg	M	020
Indeno(123-cd)Pyrene	T207	M105	0.1	mg/kg	M	020
Dibenzo(ah)Anthracene	T207	M105	0.1	mg/kg	M	020
Benzo(ghi)Perylene	T207	M105	0.1	mg/kg	M	020
PAH(total)	T207	M105	0.1	mg/kg	U	020
Moisture @105C	T162	AR	0.1	%	N	020
Retained on 10mm sieve	T2	A40	0.1	%	N	020
As (Dissolved)	T281	10:1	0.2	µg/l	U	020
Be (Dissolved)	T281	10:1	0.05	µg/l	U	020
Boron	T6	10:1	10	µg/l	N	020
Cd (Dissolved)	T281	10:1	0.02	µg/l	U	020
Cr (Dissolved)	T281	10:1	1	µg/l	U	020
Chromium VI	T4	10:1	30	µg/l	N	020
Cu (Dissolved)	T281	10:1	0.5	µg/l	U	020
Pb (Dissolved)	T281	10:1	0.3	µg/l	U	020
Hg (Dissolved)	T281	10:1	0.05	µg/l	U	020
Ni (Dissolved)	T281	10:1	1	µg/l	U	020
Se (Dissolved)	T281	10:1	0.5	µg/l	U	020
V (Dissolved)	T281	10:1	2	µg/l	U	020
Zn (Dissolved)	T281	10:1	2	µg/l	U	020
Cyanide(Total)	T4	10:1	0.05	mg/l	U	020
Cyanide(free)	T4	10:1	0.05	mg/l	U	020
Phenols(Mono)	T4	10:1	0.1	mg/l	U	020
SO4(Total)	T6	10:1	50	mg/l	N	020
Total Organic Carbon	T21	10:1	1	mg/l	U	020
pH	T7	10:1			U	020
Naphthalene	T149	AR	0.01	µg/l	U	001-019
Acenaphthylene	T149	AR	0.01	µg/l	U	001-019
Acenaphthene	T149	AR	0.01	µg/l	U	001-019
Fluorene	T149	AR	0.01	µg/l	U	001-019
Phenanthrene	T149	AR	0.01	µg/l	U	001-019
Anthracene	T149	AR	0.01	µg/l	U	001-019
Fluoranthene	T149	AR	0.01	µg/l	U	001-019
Pyrene	T149	AR	0.01	µg/l	U	001-019
Benzo(a)Anthracene	T149	AR	0.01	µg/l	U	001-019
Chrysene	T149	AR	0.01	µg/l	U	001-019
Benzo(b/k)Fluoranthene	T149	AR	0.01	µg/l	U	001-019
Benzo(a)Pyrene	T149	AR	0.01	µg/l	U	001-019
Indeno(123-cd)Pyrene	T149	AR	0.01	µg/l	U	001-019
Dibenzo(ah)Anthracene	T149	AR	0.01	µg/l	U	001-019
Benzo(ghi)Perylene	T149	AR	0.01	µg/l	U	001-019
PAH(total)	T149	AR	0.01	µg/l	U	001-019

Hadfield House
Hadfield Street
Cornbrook
Manchester
M16 9FE
Tel : 0161 874 2400
Fax : 0161 874 2468

Scientific Analysis Laboratories Ltd

Certificate of Analysis

Report Number: 619185-1

Date of Report: 19-Dec-2016

Customer: Abbeydale BEC Ltd
4 Neville Street
Wakefield
WF1 5EF

Customer Contact: Mr. Glyn Hogg

Customer Job Reference: 418052
Customer Purchase Order: 3053
Customer Site Reference: Moneystone
Date Job Received at SAL: 05-Dec-2016
Date Analysis Started: 05-Dec-2016
Date Analysis Completed: 19-Dec-2016

The results reported relate to samples received in the laboratory and may not be representative of a whole batch.
Opinions and interpretations expressed herein are outside the scope of UKAS accreditation
This report should not be reproduced except in full without the written approval of the laboratory
Tests covered by this certificate were conducted in accordance with SAL SOPs
All results have been reviewed in accordance with Section 25 of the SAL Quality Manual

UKAS TESTING
1549

mCERTS THE ENVIRONMENT AGENCY'S MONITORING CERTIFICATION SCHEME

Report checked and authorised by :
Mr Richard Wong
Project Manager

Issued by :
Mr Richard Wong
Project Manager

SAL Reference: 619185
Project Site: Moneystone
Customer Reference: 418052

Soil Analysed as Soil
MCERTS Preparation

	SAL Reference	619185 001	619185 002	619185 003	619185 004	619185 005	619185 006
	Customer Sample Reference	A	B	C	D	E	F
	Date Sampled	01-DEC-2016	01-DEC-2016	01-DEC-2016	01-DEC-2016	01-DEC-2016	01-DEC-2016
	Type	Sandy Soil	Sandy Soil	Sandy Soil	Sandy Soil	Sandy Soil	Sandy Soil
Determinand	Method / Test Sample / LOD / Units						
Moisture @105C	T162 / AR / 0.1 / %	**4.9**	**41**	**29**	**40**	**39**	**37**
Retained on 10mm sieve	T2 / A40 / 0.1 / %	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

SAL Reference: 619185
Project Site: Moneystone
Customer Reference: 418052

Soil Analysed as Soil
Abbey Dale BEC 1

	SAL Reference	619185 001	619185 002	619185 003	619185 004	619185 005	619185 006
	Customer Sample Reference	A	B	C	D	E	F
	Date Sampled	01-DEC-2016	01-DEC-2016	01-DEC-2016	01-DEC-2016	01-DEC-2016	01-DEC-2016
	Type	Sandy Soil	Sandy Soil	Sandy Soil	Sandy Soil	Sandy Soil	Sandy Soil
Determinand	Method / Test Sample / LOD / Units						
Arsenic	T6 / M40 / 2 / mg/kg	<2	**10**	**4**	**6**	**6**	**2**
Beryllium	T6 / A40 / 2 / mg/kg	<2	**2**	<2	<2	<2	<2
Boron (water-soluble)	T6 / AR / 1 / mg/kg	<1	<1	<1	<1	<1	<1
Cadmium	T6 / M40 / 1 / mg/kg	<1	<1	<1	<1	<1	<1
Chromium	T6 / M40 / 1 / mg/kg	<1	**46**	**19**	**24**	**24**	**14**
Chromium (trivalent)	T85 / AR / 2 / mg/kg	<2	**46**	**19**	**24**	**24**	**14**
Chromium VI	T6 / AR / 1 / mg/kg	<1	<1	<1	<1	<1	<1
Copper	T6 / M40 / 1 / mg/kg	<1	**8**	**3**	**4**	**8**	**2**
Lead	T6 / M40 / 1 / mg/kg	<1	**15**	**7**	**10**	**12**	**5**
Mercury	T6 / M40 / 1 / mg/kg	<1	<1	<1	<1	<1	<1
Nickel	T6 / M40 / 1 / mg/kg	<1	**19**	**8**	**12**	**14**	**7**
Selenium	T6 / M40 / 3 / mg/kg	<3	<3	<3	<3	<3	<3
Vanadium	T6 / M40 / 1 / mg/kg	<1	**44**	**17**	**23**	**24**	**13**
Zinc	T6 / M40 / 1 / mg/kg	<1	**37**	**13**	**19**	**27**	**11**
Cyanide(Total)	T546 / AR / 1 / mg/kg	**1**	<1	<1	<1	<1	<1
Cyanide(free)	T546 / AR / 1 / mg/kg	<1	<1	<1	<1	<1	<1
Phenols(Mono)	T546 / AR / 1 / mg/kg	<1	<1	<1	<1	<1	<1
SO4(2:1)	T6 / AR / 0.1 / g/l	<0.1	**1.5**	**0.5**	**0.8**	**1.4**	**0.9**
Soil Organic Matter	T287 / A40 / 0.1 / %	<0.1	<0.1	<0.1	<0.1	**0.2**	<0.1
Asbestos ID	T27 / AR / /	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
pH	T7 / AR / /	**8.0**	**8.0**	**8.2**	**9.1**	**8.4**	**9.1**

SAL Reference: 619185
Project Site: Moneystone
Customer Reference: 418052

Soil Analysed as Soil
% Stones

	SAL Reference	619185 001	619185 002	619185 003	619185 004	619185 005	619185 006
	Customer Sample Reference	A	B	C	D	E	F
	Date Sampled	01-DEC-2016	01-DEC-2016	01-DEC-2016	01-DEC-2016	01-DEC-2016	01-DEC-2016
	Type	Sandy Soil	Sandy Soil	Sandy Soil	Sandy Soil	Sandy Soil	Sandy Soil
Determinand	Method / Test Sample / LOD / Units						
Retained on 2mm	T2 / A40 / 0.1 / %	**0.3**	**1.1**	**1.3**	**1.0**	**1.1**	**1.1**
Retained on 20mm	T2 / A40 / 0.1 / %	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Retained on 50mm	T2 / A40 / 0.1 / %	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

SAL Reference: 619185
Project Site: Moneystone
Customer Reference: 418052

Soil Analysed as Soil
Total and Speciated USEPA16 PAH

					SAL Reference	**619185 001**	**619185 002**	**619185 003**	**619185 004**	**619185 005**	**619185 006**
					Customer Sample Reference	**A**	**B**	**C**	**D**	**E**	**F**
					Date Sampled	**01-DEC-2016**	**01-DEC-2016**	**01-DEC-2016**	**01-DEC-2016**	**01-DEC-2016**	**01-DEC-2016**
					Type	**Sandy Soil**	**Sandy Soil**	**Sandy Soil**	**Sandy Soil**	**Sandy Soil**	**Sandy Soil**
Determinand	**Method**	**Test Sample**	**LOD**	**Units**							
Naphthalene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)Anthracene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b/k)Fluoranthene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)Pyrene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Indeno(123-cd)Pyrene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(ah)Anthracene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)Perylene	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
PAH(total)	T207	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

Index to symbols used in 619185-1

Value	Description
M40	Analysis conducted on sample assisted dried at no more than 40C. Results are reported on a dry weight basis.
AR	As Received
M105	Analysis conducted on an "as received" aliquot. Results are reported on a dry weight basis where moisture content was determined by assisted drying of sample at 105C
A40	Assisted dried < 40C
N.D.	Not Detected
S	Analysis was subcontracted
M	Analysis is MCERTS accredited
U	Analysis is UKAS accredited
N	Analysis is not UKAS accredited

Notes

Asbestos ID performed at REC Asbestos

Method Index

Value	Description
T6	ICP/OES
T2	Grav
T287	Calc TOC/0.58
T27	PLM
T207	GC/MS (MCERTS)
T546	Colorimetry (CF)
T85	Calc
T7	Probe
T162	Grav (1 Dec) (105 C)

Accreditation Summary

Determinand	Method	Test Sample	LOD	Units	Symbol	SAL References
Arsenic	T6	M40	2	mg/kg	M	001-006
Beryllium	T6	A40	2	mg/kg	U	001-006
Boron (water-soluble)	T6	AR	1	mg/kg	N	001-006
Cadmium	T6	M40	1	mg/kg	M	001-006
Chromium	T6	M40	1	mg/kg	M	001-006
Chromium (trivalent)	T85	AR	2	mg/kg	N	001-006
Chromium VI	T6	AR	1	mg/kg	N	001-006
Copper	T6	M40	1	mg/kg	M	001-006
Lead	T6	M40	1	mg/kg	M	001-006
Mercury	T6	M40	1	mg/kg	M	001-006
Nickel	T6	M40	1	mg/kg	M	001-006
Selenium	T6	M40	3	mg/kg	M	001-006
Vanadium	T6	M40	1	mg/kg	M	001-006
Zinc	T6	M40	1	mg/kg	M	001-006
Cyanide(Total)	T546	AR	1	mg/kg	M	001-006
Cyanide(free)	T546	AR	1	mg/kg	M	001-006
Phenols(Mono)	T546	AR	1	mg/kg	M	001-006
SO4(2:1)	T6	AR	0.1	g/l	N	001-006
Soil Organic Matter	T287	A40	0.1	%	N	001-006
Asbestos ID	T27	AR			SU	001-006
pH	T7	AR			M	001-006
Retained on 2mm	T2	A40	0.1	%	N	001-006
Retained on 20mm	T2	A40	0.1	%	N	001-006
Retained on 50mm	T2	A40	0.1	%	N	001-006
Naphthalene	T207	M105	0.1	mg/kg	M	001-006
Acenaphthylene	T207	M105	0.1	mg/kg	U	001-006
Acenaphthene	T207	M105	0.1	mg/kg	M	001-006
Fluorene	T207	M105	0.1	mg/kg	M	001-006
Phenanthrene	T207	M105	0.1	mg/kg	M	001-006
Anthracene	T207	M105	0.1	mg/kg	U	001-006
Fluoranthene	T207	M105	0.1	mg/kg	M	001-006
Pyrene	T207	M105	0.1	mg/kg	M	001-006
Benzo(a)Anthracene	T207	M105	0.1	mg/kg	M	001-006
Chrysene	T207	M105	0.1	mg/kg	M	001-006
Benzo(b/k)Fluoranthene	T207	M105	0.1	mg/kg	M	001-006
Benzo(a)Pyrene	T207	M105	0.1	mg/kg	M	001-006
Indeno(123-cd)Pyrene	T207	M105	0.1	mg/kg	M	001-006
Dibenzo(ah)Anthracene	T207	M105	0.1	mg/kg	M	001-006
Benzo(ghi)Perylene	T207	M105	0.1	mg/kg	M	001-006
PAH(total)	T207	M105	0.1	mg/kg	U	001-006
Moisture @105C	T162	AR	0.1	%	N	001-006
Retained on 10mm sieve	T2	A40	0.1	%	N	001-006

APPENDIX A - FURTHER REPORTING

None requested at present - February 2017

Appendix 11.2: Biennial Monitoring Report; dated April 2019

Abbeydale
Building Environment Consultants

BIENNIAL MONITORING REPORT

MONEYSTONE QUARRY, OAKAMOOR

STAFFORDSHIRE

Report: 418040MM/4 **April 2019**

Client:
Bolsterstone plc
36 Bridge Business Centre
Beresford Way
Chesterfield
S41 9FG

Abbeydale Building Environment Consultants Ltd, 4 Neville Street, Wakefield, WF1 5EF,
Tel: 01924 376622 | E-mail: info@abbeydalebec.com | www.abbeydalebec.com
Director: P J Lloyd BSc MSc CGeol FGS | Company Registation No. 06707508 | VAT: 600 2099 91

BIENNIAL MONITORING REPORT
MONEYSTONE QUARRY, STAFFORDSHIRE

Report: 418040MM/4 **April 2019**

DOCUMENT VERIFICATION SHEET

	Prepared By:	Checked By:
Name:	Glyn Hogg	Peter J Lloyd
Qualifications:	MSci FGS	BSc MSc CGeol FGS
Position:	Engineer	Managing Director
Signature:	G.Hogg	

SUMMARY

Site Grid Ref:	404400E 345900N	**Site Level (m AOD):**	110-240	**Site Area (ha):**	170

Development proposals: Holiday park with lodges, lakes and lagoons.

Past site development: Site was previously a sandstone quarry with tailings lagoons.

Q3 Water Level: 156.193m AOD.

Groundwater: Risen in majority of locations since last visit.

pH Levels: Increase in maximum value, decrease in average and minimum values.

Ponding on L7: Restricted to a small area in the centre.

Stream Flows: Similar in Streams A and C. Slight increase in Stream B.

Stability of Quarry Faces: No change noted.

BIENNIAL MONITORING REPORT
MONEYSTONE QUARRY, STAFFORDSHIRE

Report: 418040MM/4 April 2019

TABLE OF CONTENTS

APPENDICES

BIENNIAL MONITORING REPORT
MONEYSTONE QUARRY, STAFFORDSHIRE

Report: 418040MM/4 **April 2019**

1. INTRODUCTION

On the instruction of Bolsterstone plc, on behalf of Laver Leisure, quarterly geo-environmental monitoring visits were undertaken by Abbeydale Building Environment Consultants Ltd in and around the former Moneystone Quarry, off Whiston Eaves Lane, Oakamoor.

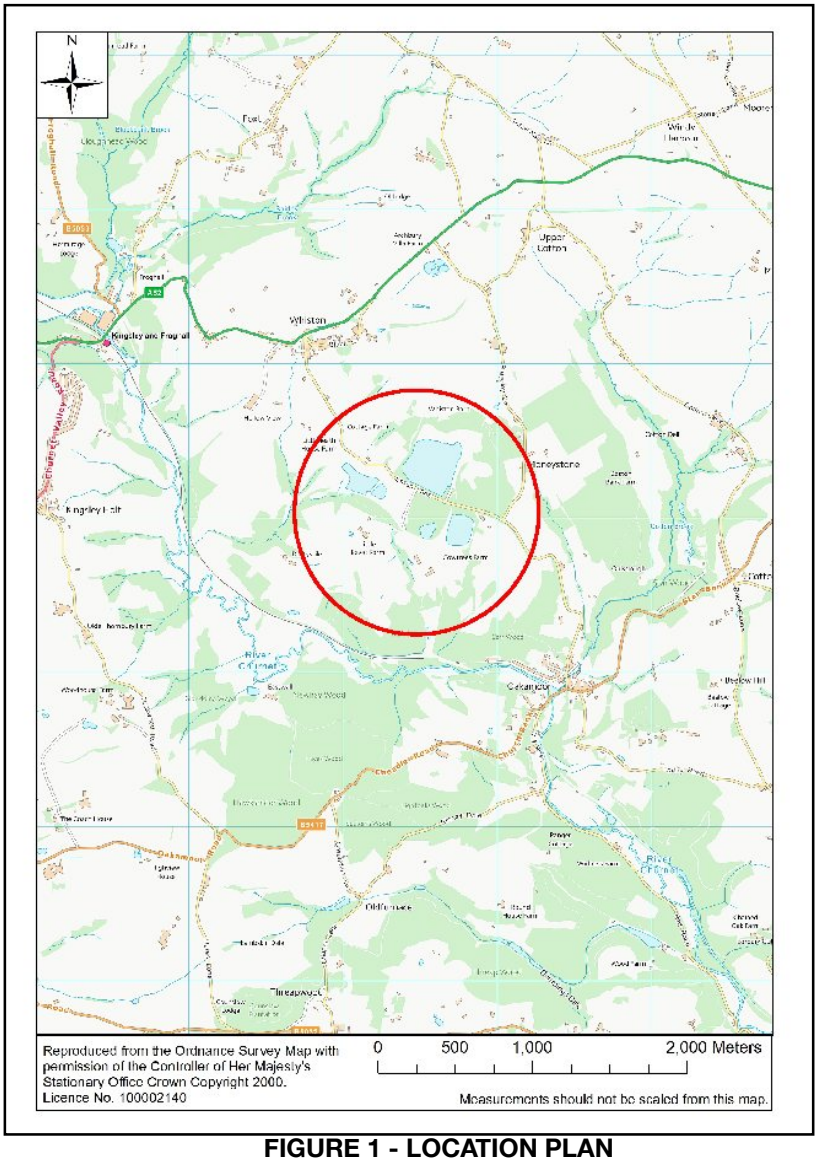

FIGURE 1 - LOCATION PLAN

The site is located between the villages of Whiston and Oakamoor and is centred within National Grid Reference square SK 044 459 between 110m to 240m AOD (See Fig 1), covering an area of approximately 170 hectares.

This report was produced on behalf of our client, Laver Leisure and their advisors and financiers, and should not be relied upon or transferred to any other parties without the express written authorisation of Abbeydale BEC Ltd and our client. If any unauthorised third party comes into possession of this report, they rely on it at their own risk and the authors owe them no duty of care or skill.

Abbeydale BEC have undertaken forty one monitoring visits to date, between the 20th of December 2010 and the 8th of January 2019 for the purpose of monitoring quarry features in and around the site. The monitoring findings have been recorded and presented in monitoring letters following each visit. The comments and recommendations presented in this biennial report are based on the findings of the quarterly visits between January 2017 and January 2019, to provide an overview of available information and ground conditions encountered during each visit. There may be other conditions prevailing on the site which have not been disclosed by these investigations and which have not been taken into account by this report. Responsibility cannot be accepted for conditions not revealed by the investigations.

When writing this report the proposed development was for an extreme activity holiday park with a hotel, lodges, lakes and lagoons. There will be potential to offer water sports including scuba diving, swimming, sailing, canoeing etc along with fishing. The park will also offer other outdoor activities such as mountain biking, nature trails, climbing, clay pigeon shooting etc. If there are changes to these proposals, then some modification to the comments and recommendations given may be required.

2. RECENT HISTORY OF THE SITE

As a result of the site investigation in 2018, the site has undergone significant changes since January 2017 with access tracks created across the site, as summarised below:

2.1. General

Since the construction of the Solar Farm in 2016-2017 the quarry has increasingly become more naturally vegetated with previously bare sand and rock becoming green. Surface water streams have also become more established with flow running from Q2 into Q1 and then into Q3.

During our time on site undertaking the investigation earlier in 2018, several sinkholes had been observed along the new drainage channel that brings water from L7 in Q2. These sinkholes are caused by the water flowing across the top of the fractured sandstone bedrock and then running into open fractures in the rock. Although these sinkholes have been filled with gravel by site operatives, on the May 2018 monitoring visit a new sinkhole was seen adjacent to the pipe bridge that brings water under the track from L4, causing both flows to disappear into the bedrock. Since then any water flowing from L4 or L7 has flowed into the sinkhole rather than flowing into L5.

2.2. Quarry 1

Along the western edge of L4 within Q1E, three earth bunds have been extended out around 30m into L4 to allow investigation through the lagoon tailings below. Each bund comprised material taken from different parts of the site to allow an assessment of the suitability of the materials to be used as a capping material at a later date. This included some of the bund at the south side of the solar panels which was removed for this use.

The southern most bund caused the tailings along its southern edge to form a 100-200mm bulge extending 3-5m from the bund. This suggests that although a firm crust has developed on the surface away from the area of surface ponding, the underlying tailings are still very wet and soft.

A Geo-Grid was placed on the surface of the western half of the southern bund, and covered with an additional half metre of material to allow assessment to be made of the benefits of incorporating a Geo-Grid into any future capping of L4. As these bunds on the surface of L4 have the potential to settle, monitoring visits now include level monitoring of the bunds.

To assist with the site investigation, an access track has been made along the west and north edge of L5 within Q1W. A track has also been extended from halfway along the western edge towards the centre of L5. During the creation of this track in the early months of 2018, the site was very wet and as a result the track into the centre of L5 was flooded and inaccessible, with other areas of ponding on the access track to the north and west of L5. To improve the track around L5, material from the bund along the northern edge of the access ramp into Q3 was placed. After largely dry periods of weather, the access track was seen to have firmed and can now be driven on with a 4x4 vehicle.

2.3. Quarry 2

To assist in the drying out of the tailing crust of L7 within Q2, a series of trenches have been cut along the northern and eastern edges of L7. Where groundwater had previously been seen seeping from the bedrock in the slope in the northwest corner of L7, a bund and series of channels have been created. This causes the water to flow clockwise around the perimeter of L7, and into the excavation created previously. From here, a 2-3 deep has been cut which takes the water south, where it joins another channel which runs from the southeast corner of L7 and has been cut around 1m lower than the surface of the tailings. These two channels become one and enter a 150mm diameter plastic pipe which extends south through the rock tunnel and deposits the water into a channel that flows into L5.

An earth bund has been extended from the area of the previous 2014 earthworks stockpile in the southeast corner of L7. This bund extends around 100m in a northwest direction towards the centre of L7. Along the edges of the bund the tailings have bulged over a distance of 2-3m from the bund; to the south of the bund the bulge is 200-300mm high while the tailings to the northern side have risen by around 100mm. Several 10-20mm cracks have formed across the bund indicating that differential settlement is occurring.

2.4. Quarry 3

As part of the site investigation work in 2018, the existing track which extended up the hill to the south of Q3 has been cleared and extended west all the way to the overflow at the south west corner of Q3.

The existing 165m AOD bench around the east side of Q3 has been widened and extended by an excavator with breaker. A ~200m long track now extends along the eastern side of Q3 and then around 20m west from the northeast corner. The track splits south of the northeast corner and a ramp has been constructed down the existing Q3 slope to join the 155m AOD bench in the northeast corner of Q3.

As mentioned previously, the bund along the northern edge of the access ramp into Q3 has been removed. A pipe has been installed under the surface of the new track to allow water from the tunnel under the road to pass into Q3 without eroding the track.

Increased vegetation on the 165m AOD bench has caused the northwest corner of Q3 to be inaccessible due to thick gorse and trees.

2.5. Stream D Diversion Channel

The eastern end of the diversion channel has been cut down by roughly 1m below the level of the incline track along a 4-5m length.

2.6. Silt Ponds

Towards the south of the site, on the slope down to the River Churnet, five tailings ponds were located. In SP1, the tailings that had filled the pond have been cleared out allowing ponding of water to occur. Following the collapse of the outfall in SP5 in 2016, a pond has begun to form in the centre of SP5.

3. HYDROLOGY

3.1. Q1 Water Level

As part of the 2014 restoration a trench had been excavated into the western edge of L4 along with a pipe bridge under the access track in order to drain excess water from L4 into L5 and Q3. As part of the 2018 earthworks, the trench and pipe bridge from the outfall of L4 were deepened. This was done to help control and lower the water level in L

The ponding on L4 has generally been restricted to the lower southern area. On a few visits, water was seen in the outfall trench from L4, but was never seen flowing through the pipe bridge. Conversely, with the crust no longer being flooded, the vegetation on the higher central and northern areas has become more established with shrubs and small trees up to ~3m in height. If the extent of ponding on L4 becomes more consistent, the vegetation will become more established. The surface around the small trees has become firmer.

3.2. Q2 Water Levels

To assist in the drainage of L7, a series of trenches were cut in early 2018. Where groundwater had previously been seen seeping from the bedrock in the slope in the northwest corner of L7, a bund and series of channels have been created. This has caused the water to flow clockwise around the perimeter of L7, and into the excavation created previously in 2016. From here, a channel has been cut which takes the water south, where it joins another channel which runs from the southeast corner of L7 and has been cut around 1m lower than the surface of the tailings. These two channels become one and enter a 150mm diameter plastic pipe which extends south through the rock tunnel.

The flow over the surface of L7 is heavily influenced by the preceding weather conditions. Previous visits have seen the ponding gradually increase before assumed sinkholes open up which then drain L7 until the sinkholes become blocked causing ponding to increase again. However, following the recent drainage works, ponding on L7 is now restricted to a small area in the centre of L7.

Due to the recent earthworks carried out to drain L7, vegetation now covers the majority of L7 around the central pond, growing in areas that have previously been submerged. Small trees and shrubs have become established, and are spreading closer towards the centre of L7. A larger variety of plants can now be seen growing in L7, including gorse and evening primrose. Vegetation will become more established if the surface ponding remains restricted to the centre of L7.

3.3. Q3 Lake Level

Since the cessation of quarrying and pumping on the 16th of December 2010, water level in the Q3 lake has risen from the base of the quarry at approximately 131m AOD, to a maximum level of 158.3m AOD in August 2014. See Table 3. Over the previous two years, the lake level has fluctuated between 155.748m AOD in January 2018 and 156.818m AOD in January 2017.

Since January 2017, the water level decreased with each visit until May 2018 where the level rose by almost a metre, to a level of 156.703m AOD. The next visit in August 2018 recorded a very slight rise to 156.708m AOD. The lake level then decreased on following visits to a level of 156.193m AOD on the most recent visit in January 2019.

The lake level in Q3 has often reflected relative changes in other waterbodies on the site, such as L7 and the River Churnet, as following abnormally dry months they have all shown a decrease. However, often Q3 has shown fluctuations which do not match the other waterbodies. A lag in the response time between a change in the water level in L7 and Q3 has previously been suggested. Also, it is anticipated that the blocking and unblocking of underground drainage pathways in the sandstone south of Q3 may influence the water level in Q3.

Over the previous two years, subaquatic vegetation has been increasing, especially along the northwestern shore.

3.4. Stream Measurements

Previous visits have consistently shown that Streams A, B and C are influenced by the preceding weather conditions. Stream A also appears to be influenced by the lake level in Q3.

The flows of Stream A, B and C have been recorded on each monitoring visit. Over the previous two years, recorded Stream A flow has ranged between 483m^3/d and 159m^3/d, with an average of 269m^3/d across the nine visits. Stream B ranged between 1043m^3/d and 295m^3/d with an average of 520m^3/d. Stream C has shown little variation, with an average of 58m^3/d and values ranging between 55m^3/d and 81m^3/d.

It is thought that Stream B is fed by groundwater flow from the area to the northwest of Q3. Stream A however, is thought to be at least partly fed from Q3, via percolation through the sandstone bedrock, yet the majority of water in Stream A was seen to be coming from the hillside south of the head of Stream A.

No flow monitoring is understood to have been undertaken for Stream D or E. When the quarry was operational Stream D acted as the overflow from the Production Area. A series of silt ponds, SP1, 2 and 3, were regularly maintained to prevent silt reaching the River Churnet. Since the cessation of quarry production the ponds and Stream D have continued to take the natural run-off flows, and have become increasingly vegetated around their margins. From visual assessments during the post production monitoring visits the flow down Stream D does not appear to have shown significant variation, possibly as a result of infiltration into the underlying tailings of L3. Since the diversion of Stream D at the end of 2014 the flow over the L3 spillway has greatly reduced, however recent visits have shown a gradual increase. At the present time it is anticipated that the majority of Area E is drained by Stream D, with the eastern most areas being drained down Stream E.

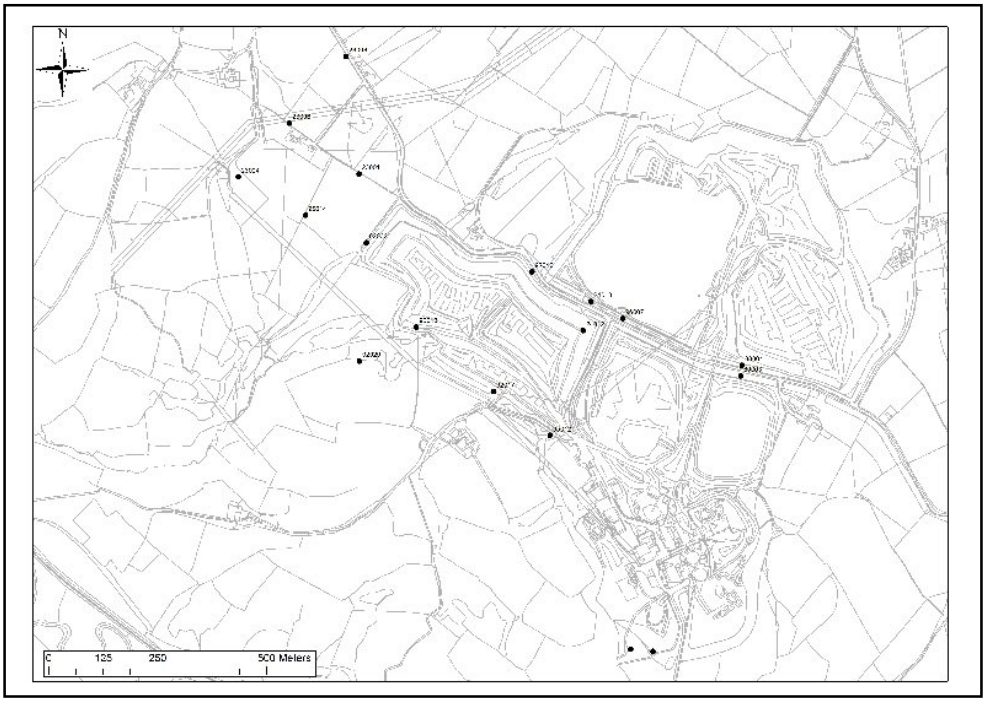

Figure 2 - Site Plan - Groundwater Monitoring Holes

4. pH WITHIN THE QUARRY AND SURROUNDING AREA

The Environmental Assessment Desk Study Report (Ref: 418040EA) was prepared in March 2011. This found that although contamination will have been present, from the result of producing sand, the environmental legacy to human and environmental receptors are limited to the high and low pH present. Consequently the pH of streams and water bodies have been monitored since cessation of quarrying.

The pH levels have been recorded on previous monitoring visits from all main surface water bodies (including lagoons, streams and the River Churnet) along with groundwater seepages where present. The monitoring locations have remained relatively constant around accessible water bodies, although variations have been possible/necessary where site works or changing conditions have made other parts of the quarry available. The results of the pH monitoring are recorded in Table 2 and with contour plots of pH shown in Figure 5.

Throughout the course of the monitoring it has become apparent that the extremes of pH across the site are reducing. See Figure 3 and Table 2. However, our monitoring visits on occasion have continued to identify localised areas of high and low pH. These have been most noticeable when restoration and site works at the site have exposed new areas and suggests there may be further legacy sources remaining.

During the previous two years, the minimum, maximum and average pH across the site have all decreased. The minimum pH recorded in the January 2017 visit was 4.6 pH, while the lowest pH on the January 2019 visit was 3.0 pH. A highest minimum pH of 4.9 was recorded during the January 2018 visit. In general three main areas of persistent low pH were recorded as follows:- seepages into Q3, a natural seepage from the northern slopes into Q2N an acidic seepage at the River Churnet.

The maximum pH has also generally decreased, although some of the recorded values remained high. The maximum pH value over the previous two years was recorded in January 2017 at 13.0, while the maximum pH in the January 2019 visit was 8.5. The maximum pH value has generally been found in the southeast corner of L7, in ponding adjacent to the old tailings stockpile. However, following the earthworks draining ponded water on the south of L7 at the start of 2018, this area in no longer accessible. On, the most recent visits the highest pH has generally been found in Q3 near the access ramp or overflow.

The average pH has also decreased over the previous two years, falling from pH 7.9 in January 2017 to pH 6.6 in January 2019. The highest average pH across this period was pH 8.0 recorded in April 2017.

Monitoring of Streams A to E has been undertaken since Q3 formed. In general Stream A, B and C follow similar trends with variations in pH occurring at the same time. This would tend to indicate these are influenced by the weather in much the same way as L7. As expected, with distance from sources of low pH, the pH levels generally increase to the west and southwest of Q3 in the direction of the streams. Given the proximity of Stream A and C to Q3 this effect is slightly less pronounced than that for Stream B. This is likely

due to percolation from Q3 through the bedrock landbridge in these areas. It should be noted that the majority of values for Streams A to C are within EU bathing water limits of pH 6.5 and 8.5, with the percentage of values within the limits over the previous two years generally at around 75%. However, the January 2019 visit showed only 53% of the values within the limits.

4.1. River Churnet

Past monitoring of the River Churnet showed that upstream of the acidic discharge the pH of the river has ranged between 5.7 and 8.2 with an average value of 7.5. The river water was found to generally be within EU bathing water limits above the acidic discharges. The average pH of the river has been within EU bathing water limits since the January 2017 visit. The acidic seepages from the bank have been either absent or more neutral, with the exception of the January 2019 visit when a pH of 3.0 was recorded at a seepage from the bank.

4.2. Water In Q3 Lake

Following the decreases in the level of Q3, the 155m AOD bench is now above the lake level for most of its length, other than near the overflow where the bench is at a slightly lower elevation.

The pH of Q3 was generally recorded to range from pH ~5.7 in the eastern corner adjacent to the seepage, to pH ~8.5 at the base of the access ramp and near the outfall. The acidic seepage was recorded to have a pH of 4.6 on three visits. As was observed in past monitoring visits, there was an increase in pH with distance from the seepage in the eastern corner. It has previously been anticipated that as lake volumes increase the variability in pH would decrease from greater mixing and dilution, though more data would be required to confirm this.

4.3. Water In L7 Lake

Previous visits have noted the surface water pH to be generally in keeping with the rest of the quarry between pH 6 and pH 8. The pH measured over the previous two years was generally between pH 6.7-8.1. However, spikes in pH were occasionally recorded, with values as high as pH 13.0.

The pH appears to have been affected by the excavations into the tailings which occurred between August and November 2016. Prior to the excavations the pH in L7 showed some variation between pH 10 and 6, however the minimum, maximum and average for each individual visit were over a small range. This is thought to be due to the uncovering of pockets of high pH lime which were previously buried. Over time it is anticipated that the pH values will decrease towards more neutral levels, however this shows that the potential for high fluctuations in pH in L7 remains whilst the tailings remain exposed and/or are disturbed.

5. ENGINEERING

5.1. Quarry Faces

As part of the monitoring visits, visual inspections of the exposed faces have been undertaken. There has been evidence that blocks have fallen in the past around the eastern edge of Q1 with several smaller falls recorded approaching the tunnel portal.

In Q2 several areas of concern have been noted, in particular a large rock fall recorded on the western edge of L7 and having initially failed between December 2012 and April 2013. The initial fall debris was noted to have sunk into the tailings indicating the very soft state. However, more recent visits have indicated additional falls in the same location suggesting a progressive failure of the face. The more recent falls appear to be resting on the surface of the tailings which would appear to confirm that the tailings around the edge are beginning to firm up. Although access to inspect the face is restricted it appears as though additional loose, highly weathered blocks are evident to the south of the main fall. Similar loose blocks have been previously recorded along the exposed rock at the southeast of the quarry. The orientation of the jointing evident in the rest of the exposed quarry faces indicates a potential failure plane and suggests that further falls may be anticipated in the future along the western edge of Q2.

The amount of trees and vegetation growing against the faces of Q1 has increased, obscuring parts of the rock face. However, this also highlights any areas of collapse as the vegetation coverage is taken out by the rockfall leaving a bare face. Comparing the recent quarry face to the quarry face in 2017 shows no new bare areas, suggesting no major collapses have taken place since 2017. When the site is developed, 6m natural barriers should be considered at the top and bottom of the quarry faces in Q1.

Several small slips have been recorded in the bench around Q3 which are considered in part to be due to a rising water level. The wave action created by the water's surface will erode the bench and result in washing out of the finer material. The exposed faces around Q3 also show a significant degree of fracturing and weathering, particularly at the western end where the quarrymen found the sandstone to be heavily weathered.

When lake levels reduced in 2015 and 2016, evidence of weakening of the sandstones rock mass strength was found in the previously saturated rock. The distinct red stain had been bleached from the Sandstone, with a distinct sugary surface. Point load strength tests carried out recorded mass strengths in the order of Is50 = 10MPa, whilst the same rock exposed on the quarry face above the maximum water line records an Is50 = 30MPa. These results indicated a considerable strength reduction of the rock mass within 9 months of being submerged. Now that the Q3 lake level has fallen to expose the bench again, further rock samples will be collected and tested as part of future monitoring visits, to determine whether the strength of the rock has further deteriorated following the latest period of submergence.

As previously reported the risk of toppling failures is not as great in Q3 as it is in Q2 or Q1 due to the inclined faces with the main areas of concern currently being the exposed faces along the eastern and southern sides of Q3. There does however remain the risk of

future rock failures, particularly at the western end, where the mass strength of the sandstone was previously found by the quarrymen to be reduced.

Due to the limited site access the currently noted falls do not present a significant risk of harm and will continue to be monitored for future movement concerns. As development of the site progresses it would be considered prudent to undertake a more detailed assessment and inspection of all exposed rock faces to identify potential areas of concern and possible remedial solutions.

The sandstone quarry faces exposed in Q3 during the early 2018 access work have begun to fracture to gravel and cobble sized fragments, reducing to sand. Over time, vegetation will grow on the exposed slopes which will help to protect the rock face. Until vegetation becomes established, rock traps may be considered to protect the people below the rock face.

5.2. Tunnel

Prior to the visit in July 2016 a 'Tunnel Stability Assessment' report was submitted, dated June 2016. The report concluded that the tunnel in its present condition is stable. No changes to the state of the interior of the tunnel were observed. Before public access is allowed through the rock tunnel a full study and testing will be required. On a previous visit, at the north end of the tunnel a section of the protective canopy had fallen away and other sections appear to be on the verge of falling.

Due to restricted visitor access to the site and minimal traffic using the tunnel at present the potential risks posed by the tunnel are minimal. However, when the park is developed and the number of site users increases a further analysis of the stability of the tunnel will be required to inform detailed design requirements.

5.3. Q3 Outfall

To reduce the lake level in Q3, and to allow it to be controlled, modifications to the outfall level are proposed. The outfall level is to be reduced from 159m AOD to 154m AOD. To allow modification of the outfall, the lake level is to be temporarily lowered to a level of ~153m AOD via a pump or syphon. The pump/syphon will extend over the land bridge and outfall into Stream A. It is estimated that a daily flow of 600-800m^3 will allow the the lake water to be lowered and temporarily maintained at 153m AOD.

5.4. Q1E Bunds

Along the western edge of L4, three earth bunds have been extended out around 30m into L4 to allow investigation through the lagoon tailings below. Each bund comprised material taken from different parts of the site to allow an assessment of the suitability of the materials to be used as a capping material at a later date. This included some of the bund at the south side of the solar panels which was removed for this use. A Geo-Grid was placed on the surface of the western half of the southern bund, and covered with an additional half metre of material to allow assessment to be made of the benefits of incorporating a Geo-Grid into any future capping of L4.

The quarterly monitoring visits include monitoring of the three bunds to measure the amount of settlement which is occurring. The results are presented in Table 5.

The monitoring to date shows that the three bunds have settled since monitoring began. Generally, the amount of settlement increases with distance out into the lagoon, which reflects the increasing thickness of tailings. See Table 5. The results show that the central bund has settled the most, with changes of 8cm and 7cm recorded at the eastern end. The northern bund and southern bund have settled at similar rates. The western end of the southern bund has settled the least, by 2-3cm. This is where the Geo-Grid was installed during the construction of the bunds.

Monitoring of the bunds will be continued in future monitoring visits, and more conclusions will be made once more data is available.

5.5. L3 Dam

As previously reported the significant variations in groundwater level in the L3 dam and tailings have raised concerns regarding potential instability. The 2012 investigation recorded several soft zones within the dam construction suggesting localised weakening of the dam material. At the time it was also reported that moisture contents in the dam increased with depth. Although some seepage will occur in an embankment or earth dam, the increase with depth suggests a potential for stability issues. This situation was realised in the mid-1960's when records indicate the dam came close to failing and consequently a rock blanket was installed at the base.

More recently due to concerns over running water within the dam Stream D was diverted across the dam to drain surface water and flow down the spillway to the eastern end of the dam to reduce the amount of water flowing across the back face of the dam. It was anticipated that this would reduce the amount of water percolating through the tailings and so reaching the dam. Initially this led to a drop in water level in the standpipe within the tailings, and less water flowing down the spillway as well as a visual decrease in surface ponding. However, recent visits have shown an increase in ponding and the amount of water flowing down the spillway.

6. CONCLUSIONS AND ACTIONS

The quarterly monitoring has been carried out throughout the 2017 to 2019 period with additional visits when restoration earthworks dictated. We would recommend that the monitoring is continued in a similar manner. However, as development progresses additional visits will need to be considered as part of the monitoring program.

- From investigation of Q1 and the initial assessment of L7 the importance of keeping the surfaces of the lagoons drained have become increasingly clear. By forming drainage channels around the north and east of L7 the crust to the north of the track has significantly dried and stiffened. To improve the southern area of L7 further drainage works need to be considered. We would also recommend that two boreholes are drilled to the base of the lagoon at locations along the track and drainage pipes installed. At

the same time installing shallower pipes along the track to monitor standing water levels in the tailings.

- Following the agreement with the EA for the syphon in Q3 to control the lake level, more regular monitoring of the Q3 outfall and Stream A may be required. As part of the outfall works a temporary syphon is to be installed across the landbridge between Q3 lake and stream A. As part of this work the EA require continuous monitoring for pH and turbidity and if either exceed determined limits flow should cease. Initially monitoring will be daily, but provided patterns of flow, pH and turbidity can be established monitoring can be reduced to weekly and potentially monthly. Whilst monitoring will be limited to Q3 and Stream A areas, monitoring of other areas might be considered where additional time on site is limited.

- At this stage, prior to development, we would recommend that monitoring continues on the current 3 monthly basis. However, as development progresses at the site we would recommend the monitoring is increased to monthly visits. As part of the monitoring we will continue to monitor ground and surface water levels along with pH of accessible water bodies. The rockfalls recorded and exposed faces will continue to be monitored for signs of future instability. Level monitoring of the bunds in Q1E will continue, and may be extended to include monitoring of the bund in Q2W.

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APPENDIX A - TABLES

Moneystone Table 1

el reduced because of quarryi

WATER MONITORING BOREHOLES														South of road	North of road			
BOREHOLE NUMBER	**80003**	**80004**	**92010**	**92017**	**92029**	**92032**	**95012**	**95013**	**95014**	**96007**	**23008**	**23001**	**23004**	**24012**	**24013**	**BH122**	**BH121 (28m)**	**BH121 (13m)**
NORTHING	**346058**	**346082**	**346297**	**346022**	**346092**	**346364**	**345921**	**346170**	**346427**	**346190**	**346792**	**346522**	**346515**	**346162**	**346229**	**345425**	**345430**	**345430**
EASTING	**404774**	**404777**	**404295**	**404206**	**403898**	**403914**	**404336**	**404029**	**403774**	**404503**	**403867**	**403897**	**403620**	**404412**	**404430**	**404572**	**404521**	**404521**
SURFACE LEVEL (m.AOD)																		
	201.56	**203.90**	**188.01**	**181.19**	**166.55**	**170.38**	**169.12**	**159.00**	**171.69**	**193.59**	**197.00**	**183.73**	**166.60**	**174.93**	**192.70**	**151**	**149**	**149**
Base of Sandstone	167.00	170.00	158.00	142.00	120.00	139.00	158.00	136.00	138.00	165.00	175.00	151.00	137.00	158.00	164.00	132		
Date read :																		
24/01/2017	Dry (29.15)	Dry (30)	162.16	167.89	147.85	157.78	146.12	157.55	157.99	170.74	176.18	159.23	157.75	160.33		139.20	137.67	148.34
25/04/2017	173.10	174.90	163.70	167.33	148.21	157.85	145.97	157.56	158.27	171.72	177.30	159.08	158.70	163.02		139.90	137.80	148.05
20/07/2017	172.44	Dry (>30.6)	162.49	166.75	148.25	157.93				171.04	177.57	159.23	159.10	162.53	Dry (24.14)	138.74	134.73	140.84
12/10/2017	Dry (29.15)	Dry (>30.6)	161.76	167.64	146.80	NR	145.42	157.50	158.54	170.03	176.25	Dry (24.53)	157.55	162.43	Dry (24.14)	138.75	139.30	148.43
24/01/2018	172.26	174.12	162.23	167.74	147.38	Dry @26.1	144.66	157.24	157.29	170.62	176.50	Dry @24.6	154.00	161.08	DRY @24.25	140.30	143.98	148.40
18/05/2018								156.97						160.15			140.07	
07/08/2018				166.57	146.71	158.48			159.39	170.61	178.50		160.15		DRY @ 24.7	138.80	139.17	Dry @13
02/10/2018			161.89	160.99	144.83	158.08		157.15	158.69	170.04	177.15	159.93		160.00	DRY @ 24.7	138.85	138.63	140.98
08/01/2019			161.61	166.99	147.20	158.28			158.49	164.79	177.45			159.88	DRY @ 24.7	139.37	141.35	148.40
Tip Set at : (m.A.O.D)	172	172	157.51	157.95	134.90	143.88	136.32	140.37	137.27	169	173	159	146.88	156.39	163.70	121.50	120.00	120.00
Water Levels are m.AOD																		

Date	Visit	Number	Location	pH	Material	Comment
01/12/2016	AI	24	SP3	7.9	W	
01/12/2016	AI	25	SP2 WL low	7.3	W	
01/12/2016	AI	26	SP1 Newly Full	8.4	W	
01/12/2016	AI	27	SP1 Sediment including L/St	8.5	W	
01/12/2016	AI	28	-			
01/12/2016	AI	29	Stream D Diversion	8.2	W	
01/12/2016	AI	30	L5 Overflow	9.6	W	
01/12/2016	AI	31	L5 South	8.7	W	
01/12/2016	AI	32	L5 East #A white sand	8.6	W	
01/12/2016	AI	33	Puddle	9.1	W	
01/12/2016	AI	34	L4 outlet	8.7	W	
01/12/2016	AI	35	Puddle in wardles tip	13	W	#B red tailings
01/12/2016	AI	36	L7 east	10	W	
01/12/2016	AI	37	Area B stream blocked	9.7	W	
01/12/2016	AI	38	New pond 3m below	9	W	
01/12/2016	AI	39	Stream above Q2E	9.3	W	
01/12/2016	AI	40	Area B NE corner	5	W	
01/12/2016	AI	41	Tailings pond Area B	6.4	W	
01/12/2016	AI	42	Q2 N	8.5	W	East side of tip. Flow on edge of area B
01/12/2016	AI	43	Q2 N	8.5	W	Flow along northern edge of area B
01/12/2016	AI	44	Q2 N	8.4	W	Pond on top of tip
01/12/2016	AI	45	Q2 W	8	W	NW corner ponding from GW flow
01/12/2016	AI	46	Q2 W	8.3	W	Surface pond
01/12/2016	AI	47	Area E	9.2	W	Pond near weigh station
01/12/2016	AI	48	Q3	8.8	W	South corner
01/12/2016	AI	49	Q3	8.8	W	South corner
01/12/2016	AI	50	Q3	8.7	W	East corner
01/12/2016	AI	51	Stream X	8.2	W	
01/12/2016	AI	52	Stream B	7.9	W	
01/12/2016	AI	53	Stream C	8	W	at v-notch
01/12/2016	AI	54	Stream A	7.9	W	at v-notch
24/01/2017	Am	1	Q3	8.6	W	Near Outfall
24/01/2017	Am	2	Q3	7.7	W	West End South
24/01/2017	Am	3	Q3	7.5	W	West End North
24/01/2017	Am	4	Q3	7.7	W	Bench West End
24/01/2017	Am	5	Q3	7.8	W	Bench at North
24/01/2017	Am	6	Q3	7.9	W	North
24/01/2017	Am	7	Q3	8	W	NE Corner
24/01/2017	Am	8	Q3	4.6	W	NE Seepage
24/01/2017	Am	9	Q3	6	W	South Corner
24/01/2017	Am	10	Q3	6.2	W	Base Of Ramp
24/01/2017	Am	11	Q3	6.4	W	South Bench
24/01/2017	Am	12	Spillway	6.8	W	Ponding
24/01/2017	Am	13	Track near Spillway	6.8	W	Pond

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pH MONITORING RECORDS

Client: Laver Leisure

Project: Moneystone Quarry, Oakamoor

Number: 418050

TABLE 2

Date	Visit	Number	Location	pH	Material	Comment
24/01/2017	Am	14	Diversion Channel	7.2	W	South Side of Pipe Bridge
24/01/2017	Am	15	Stream D	7.3	W	Near Car Park
24/01/2017	Am	16	Area B	8	W	Pond Near Sheds
24/01/2017	Am	17	Area B	8.7	W	Pond South of Solar Bund
24/01/2017	Am	18	Area B	8.7	W	Flow at top of incline
24/01/2017	Am	19	Stream D	8.4	W	End of diverison channel
24/01/2017	Am	20	Incline	8.6	W	Froth in boundary flow
24/01/2017	Am	21	SP1	8.7	W	SP1 Inflow
24/01/2017	Am	22	SP2	7.6	W	Surface Reading
24/01/2017	Am	23	SP3	7.8	W	Surface Reading
24/01/2017	Am	24	Old Railway	8.1	W	Pond on Pump House access track
24/01/2017	Am	25	River Churnet Bank	7.3	W	Seepage
24/01/2017	Am	26	River Churnet Bank	7.4	W	Seepage from pipe
24/01/2017	Am	27	River Churnet	7.6	W	Upstream from pumphouse
24/01/2017	Am	28	River Churnet Bank	7.5	W	Seepage
24/01/2017	Am	29	River Churnet	7.6	W	Next to pump house
24/01/2017	Am	30	EA Station	7.5	W	EA Station Flow
24/01/2017	Am	31	River Churnet	7.7	W	North of EA outflow.
24/01/2017	Am	32	Stream E	7.7	W	North of Railway
24/01/2017	Am	33	Stream E	7.5	W	Ponding North of Stream E
24/01/2017	Am	34	SP5	7.6	W	Near Collapsed Outfall
24/01/2017	Am	35	L4	7.8	W	At outfall
24/01/2017	Am	36	L7	9.8	W	Ponding on old tailings in SE corner
24/01/2017	Am	37	L7	13	W	Cloudy Ponding on old tailings in SE corner
24/01/2017	Am	38	L7	11.2	W	Access Track Ponding
24/01/2017	Am	39	L7	9.6	W	Northern End of L7 Excavation
24/01/2017	Am	40	L7	12.2	W	L7 side of pipe under road
24/01/2017	Am	41	L7	9.4	W	Area B side of pipe under road
24/01/2017	Am	42	L7	9.2	W	Foam in ponding next to track
24/01/2017	Am	43	Area E	9.1	W	Flow next to tip
24/01/2017	Am	44	Area E	8.5	W	North Corner Flow
24/01/2017	Am	45	Area E	7.9	W	North Stream
24/01/2017	Am	46	Area E	7.5	W	North Stream
24/01/2017	Am	47	Area E	5.2	W	Seepage from North
24/01/2017	Am	48	Area E	5	W	East Corner
24/01/2017	Am	49	Area E	5.6	W	South Flow
24/01/2017	Am	50	Area E	8	W	Pond at base of Tip
24/01/2017	Am	51	L7	8	W	NW corner
24/01/2017	Am	52	L7	7.7	W	NW Corner
24/01/2017	Am	53	L5	8.2	W	L5 at Beach
24/01/2017	Am	54	L5	8.8	W	Outfall trench towards Q3
24/01/2017	Am	55	Stream A	7.9	W	At V-Notch
24/01/2017	Am	56	Stream B	7.8	W	Upstream of join with Stream C
24/01/2017	Am	57	Stream C	7.9	W	At V-Notch

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Project: Moneystone Quarry, Oakamoor

Number: 418050

TABLE 2

Date	Visit	Number	Location	pH	Material	Comment
25/04/2017	An	1	Q3	8.2	W	Next to overflow
25/04/2017	An	2	Stream A	8	W	At Source
25/04/2017	An	3	Stream A	7.7	W	V-Notch
25/04/2017	An	4	Stream B	7.5	W	V-Notch
25/04/2017	An	5	Stream C	7.9	W	V-Notch
25/04/2017	An	6	Stream D Diversion Channel	8.2	W	Next to bridge
25/04/2017	An	7	Puddle	9	W	South of Area E
25/04/2017	An	8	Puddle	8.7	W	Top of incline
25/04/2017	An	9	Stream D Diversion Channel	8.9	W	East end of channel
25/04/2017	An	10	SP1	9.4	W	Inflow
25/04/2017	An	11	SP2	9	W	Pond
25/04/2017	An	12	SP3	8.6	W	Pond
25/04/2017	An	13	River Churnet	8.5	W	At pump house
25/04/2017	An	14	Seepage into River Churnet	7.4	W	From metal pipe
25/04/2017	An	15	Seepage into River Churnet	7.3	W	From bank
25/04/2017	An	16	River Churnet	8.2	W	Upstream of seepages
25/04/2017	An	17	Stream E	7.5	W	At EA station
25/04/2017	An	18	Stream E	8	W	Upstream of SP5
25/04/2017	An	19	SP5	7.9	W	Outfall
25/04/2017	An	20	L7	8.4	W	Eastern Shore
25/04/2017	An	21	L4	8.6	W	Outfall Channel
25/04/2017	An	22	L7	8.5	W	Next to tailings tip
25/04/2017	An	23	Stream F	7.2	W	North end next to tip
25/04/2017	An	24	Area B Ponding	7.1	W	Within Tailings stockpiles
25/04/2017	An	25	Seepage into Stream F	4.3	W	Seepage from rock face
20/07/2017	Ao	1	Old Stream D	7.4	W	Ponding behind spillway
20/07/2017	Ao	2	Old Stream D	7.4	W	W of pipe bridge
20/07/2017	Ao	3	Stream D diversion	7.7	W	E of pipe bridge
20/07/2017	Ao	4	Incline	8	W	Ponding
20/07/2017	Ao	5	Stream D diversion	8.2	W	Eastern end
20/07/2017	Ao	6	Incline	7.7	W	Ponding
20/07/2017	Ao	7	Incline	8.1	W	Ponding
20/07/2017	Ao	8	SP2	7.3	W	Surface
20/07/2017	Ao	9	SP3	7.8	W	Surface
20/07/2017	Ao	10	River	8	W	At pumphouse
20/07/2017	Ao	11	Stream E	6.8	W	EA Station
20/07/2017	Ao	12	River	7.3	W	at EA
20/07/2017	Ao	13	Stream E	7.4	W	N of railway
20/07/2017	Ao	14	Old SP5 Outfall	6.6	W	Next to join with new outfall
20/07/2017	Ao	15	SP5	7	W	At outfall
20/07/2017	Ao	16	L5	7.9	W	Eastern shore
20/07/2017	Ao	17	L5	8	W	Southern shore
20/07/2017	Ao	18	Q3	8.6	W	South corner
20/07/2017	Ao	19	Q3	6.5	W	Inflow east corner

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Date	Visit	Number	Location	pH	Material	Comment
20/07/2017	Ao	20	Q3	7.2	W	East corner
20/07/2017	Ao	21	Q3	7.5	W	North centre
20/07/2017	Ao	22	Q3	7.4	W	North corner
20/07/2017	Ao	23	Q3	7.7	W	NW Corner
20/07/2017	Ao	24	Q3	7.7	W	Near overflow
20/07/2017	Ao	25	L7	11.1	W	From Outfall Pipe
20/07/2017	Ao	26	L7	9.6	W	Exacavation
20/07/2017	Ao	27	L7	7.8	W	Northern Pond
20/07/2017	Ao	28	L7	8.5	W	Pond from bedrock
20/07/2017	Ao	29	Stream F	8	W	Source
20/07/2017	Ao	30	Stream F	6.3	W	East of 29
20/07/2017	Ao	31	Stream F	5.3	W	Seapage from rock
20/07/2017	Ao	32	Stream F	4.9	W	Stream
20/07/2017	Ao	33	Stream F	4.3	W	Seapage from rock
20/07/2017	Ao	34	Stream F	5.1	W	Stream
20/07/2017	Ao	35	Stream F	6.1	W	Ponding at pipe bridge
20/07/2017	Ao	36	Q3	6.5	W	Next to benchmark
20/07/2017	Ao	37	Stream A	6.8	W	V - Notch
20/07/2017	Ao	38	Stream B	6.6	W	Above confluence with C
20/07/2017	Ao	39	Stream C	6.9	W	Above confluence with B
12/10/2017	Ap	1	Old Stream D	7.2	W	Pond
12/10/2017	Ap	2	Old Stream D	7.2	W	Pipe bridge
12/10/2017	Ap	3	Diversion D	7.4	W	E of Pipe Bridge
12/10/2017	Ap	4	Stream D	7.3	W	N of Diversion Split
12/10/2017	Ap	5	Area E	8	W	Surface Pond
12/10/2017	Ap	6	Area E	8.2	W	Flow down incline
12/10/2017	Ap	7	Stream D Diversion	7.9	W	Outfall
12/10/2017	Ap	8	Stream D Diversion	8.1	W	Inflow to SP1
12/10/2017	Ap	9	SP1	8.1	W	Surface flow
12/10/2017	Ap	10	SP2	7.7	W	Surface pond
12/10/2017	Ap	11	SP3	7.6	W	Surface pond
12/10/2017	Ap	12	Pump House Path	7.4	W	Surface pond
12/10/2017	Ap	13	River C	7.7	W	Pump house stream
12/10/2017	Ap	14	Bank of River	7	W	Seepage
12/10/2017	Ap	15	Bank of River	6.9	W	Seepage
12/10/2017	Ap	16	River C	7.1	W	W of pump house
12/10/2017	Ap	17	Stream E	7.1	W	EA station
12/10/2017	Ap	18	River C	7.4	W	At EA station
12/10/2017	Ap	19	Stream E	7.4	W	North of spillway
12/10/2017	Ap	20	SP5	7.5	W	Outflow
12/10/2017	Ap	21	Area E	7.8	W	Ponding in southern bund
12/10/2017	Ap	22	Area E	8.4	W	Pond next to L5
12/10/2017	Ap	23	L4	7.9	W	Outfall channel
12/10/2017	Ap	24	L5	7.9	W	Surface

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Date	Visit	Number	Location	pH	Material	Comment
12/10/2017	Ap	25	L5 Outflow	8.1	W	Channel towards Q3
12/10/2017	Ap	26	L5 Outflow	8.2	W	Channel towards Q3
12/10/2017	Ap	27	L7	9.5	W	Pond next to old tailings
12/10/2017	Ap	28	L7	9.2	W	Pond on access track
12/10/2017	Ap	29	L7	8.6	W	Excavation pond
12/10/2017	Ap	30	L7	8.9	W	Inflow into excavation
12/10/2017	Ap	31	Stream F	8.9	W	South end
12/10/2017	Ap	32	L7	7.9	W	North ponding
12/10/2017	Ap	33	L7	7	W	North ponding black water
12/10/2017	Ap	34	L7	8.3	W	Ponding from bedrock
12/10/2017	Ap	35	L7	8.5	W	Flow from bedrock
12/10/2017	Ap	36	Stream A	8.3	W	V - Notch
12/10/2017	Ap	37	Stream B	8.1	W	Above confluence with C
12/10/2017	Ap	38	Stream C	8.2	W	Above confluence with B
12/10/2017	Ap	39	L7	7.6	W	North pond
12/10/2017	Ap	40	Stream F	6.7	W	NW corner
12/10/2017	Ap	41	Stream F	5.1	W	North
12/10/2017	Ap	42	Stream F	4.8	W	North
12/10/2017	Ap	43	Stream F	4.4	W	Seepage from bedrock
12/10/2017	Ap	44	Stream F	4.3	W	North corner
12/10/2017	Ap	45	Stream F	5.1	W	NE
12/10/2017	Ap	46	Q3	5.9	W	SE corner
12/10/2017	Ap	47	Q3	6	W	E corner
12/10/2017	Ap	48	Q3	4.6	W	E corner seepage
12/10/2017	Ap	49	Q3	5.9	W	N edge
12/10/2017	Ap	50	Q3	6.1	W	NW corner
12/10/2017	Ap	51	Q3	6.5	W	W corner
12/10/2017	Ap	52	Q3	6.9	W	SW corner
23/01/2018	Aq	1	L7	7.2	W	Old tailings
23/01/2018	Aq	2	L7	12.3	W	Old tailings next to lime
23/01/2018	Aq	3	L7	9.8	W	L7 next to tailings
23/01/2018	Aq	4	L7	9.6	W	L7 new outflow
23/01/2018	Aq	5	L7	9	W	pipe inflow
23/01/2018	Aq	6	L7	9	W	excavation
23/01/2018	Aq	7	L7	7.3	W	northern pond
23/01/2018	Aq	8	L7	8.4	W	nw water from bedrock
23/01/2018	Aq	9	L7	7.9	W	nw ponding
23/01/2018	Aq	10	Stream F	7.7	W	top end
23/01/2018	Aq	11	Stream F	6.7	W	mid way top
23/01/2018	Aq	12	Stream F	4.9	W	seepage at corner
23/01/2018	Aq	13	Stream F	5.2	W	corner
23/01/2018	Aq	14	Stream F	5.5	W	v2 way east side
23/01/2018	Aq	15	Q3	6.4	W	bottom of ramp
23/01/2018	Aq	16	Q3	5.8	W	NE inflow

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Date	Visit	Number	Location	pH	Material	Comment
23/01/2018	Aq	17	Q3	6.1	W	NE corner
23/01/2018	Aq	18	Q3	6.7	W	N corner
23/01/2018	Aq	19	Q3	6.8	W	NW inflow
23/01/2018	Aq	20	Q3	7.1	W	W corner
23/01/2018	Aq	21	Q3	7.2	W	Near overflow
23/01/2018	Aq	22	L5	7.3	W	outflow to Q3
23/01/2018	Aq	23	L5	7.6	W	Ponding south
23/01/2018	Aq	24	L5	7.5	W	east pond
23/01/2018	Aq	25	L5	8.2	W	new inflow
23/01/2018	Aq	26	L4	8.3	W	outflow channel
23/01/2018	Aq	27	Old stream D	7.8	W	at bridge
23/01/2018	Aq	28	Old stream D	8	W	pipe bridge
23/01/2018	Aq	29	Old stream D diversion	7.7	W	pipe bridge
23/01/2018	Aq	30	Stream A	7.7	W	v-notch
23/01/2018	Aq	31	Stream C	7.7	W	v-notch
23/01/2018	Aq	32	Stream B	7.9	W	v-notch
23/01/2018	Aq	33	Old stream C	8.2	W	top of field
23/01/2018	Aq	34	B	8.6	W	top of incline
23/01/2018	Aq	35	Stream D diversion	8.3	W	end
23/01/2018	Aq	36	SP1	8.1	W	pond
23/01/2018	Aq	37	SP2	7.2	W	pond 2
23/01/2018	Aq	38	between SP2 & SP3	8	W	stream/pond
23/01/2018	Aq	39	SP3	7.7	W	pond 3
23/01/2018	Aq	40	Pump House	7.9	W	pump house pond access
23/01/2018	Aq	41	River C	8	W	Pump house
23/01/2018	Aq	42	River C	7.7	W	upstream of pumphouse
23/01/2018	Aq	43	Stream E	7.8	W	EA station
23/01/2018	Aq	44	River C	7.8	W	EA station
23/01/2018	Aq	45	Stream E	7.8	W	North of pipe on the railway
23/01/2018	Aq	46	SP5	7.8	W	Outflow
23/01/2018	Aq	47	SP4	8	W	Overflow
18/05/2018	Ar	1	Q3	8.2	W	Overflow
18/05/2018	Ar	2	Stream A	7.4	W	V-Notch
18/05/2018	Ar	3	Stream B	7.1	W	V-Notch
18/05/2018	Ar	4	Stream C	7.5	W	V-Notch
18/05/2018	Ar	5	Stream D	7.3	W	Near Spillway
18/05/2018	Ar	6	Stream D Diversion	7.6	W	South of Pipe Bridge
18/05/2018	Ar	7	Stream D Diversion	7.8	W	Incline End
18/05/2018	Ar	8	SP1	8.1	W	Pond
18/05/2018	Ar	9	SP2	7.6	W	Pond
18/05/2018	Ar	10	SP3	8	W	Pond
18/05/2018	Ar	11	River Churnet	7.4	W	Pumphouse
18/05/2018	Ar	12	Stream at EA Station	7.1	W	Stream
18/05/2018	Ar	13	River Churnet	7.3	W	At EA Station

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18/05/2018	Ar	14	L4	7.8	W	Outflow
18/05/2018	Ar	15	L7	7.9	W	Outflow
18/05/2018	Ar	16	L7	8	W	Excavation
18/05/2018	Ar	17	Stream F	8.1	W	West End
18/05/2018	Ar	18	Stream F	4.9	W	Seepage
18/05/2018	Ar	19	Q3	6.6	W	Access Ramp
18/05/2018	Ar	20	Q3	4.6	W	New Ramp
07/08/2018	As	1	D Diversion	8	W	Incline Outfall
07/08/2018	As	2	SP1	8.2	W	Pond
07/08/2018	As	3	SP2	8	W	Pond
07/08/2018	As	4	SP3	8	W	Pond
07/08/2018	As	5	River C	8	W	Pump House
07/08/2018	As	6	Stream E	7.5	W	Stream from SP5
07/08/2018	As	7	Q3	7.6	W	Overflow
07/08/2018	As	8	Q3	7.6	W	Western End
07/08/2018	As	9	Q3	7.6	W	West
07/08/2018	As	10	Q3	7.6	W	North West Corner
07/08/2018	As	11	Q3	7.5	W	North Side
07/08/2018	As	12	Q3	4.6	W	North East Seepage
07/08/2018	As	13	Q3	6.3	W	Bottom of Ramp
07/08/2018	As	14	L5	6.4	W	Outflow
07/08/2018	As	15	L7	7.6	W	Excavation
07/08/2018	As	16	L7	6.7	W	Pond next to North tailings
07/08/2018	As	17	L7	7.2	W	Bedrock seepage pond
07/08/2018	As	18	Stream F	6.2	W	Northwest corner
07/08/2018	As	19	Stream F	6.3	W	Upstream of seepage
07/08/2018	As	20	Stream F	3.7	W	Seepage
07/08/2018	As	21	Stream F	5.3	W	Pipe under road
07/08/2018	As	22	L5	6.6	W	East shore
07/08/2018	As	23	Stream A	6.6	W	V-notch
07/08/2018	As	24	Stream B	6.6	W	V-notch
07/08/2018	As	25	Stream C	6.8	W	V-notch
02/10/2018	At	1	Old Stream D	7.9	W	Behind Spillway
02/10/2018	At	2	Stream D Diversion	8	W	At pipe bridge
02/10/2018	At	3	Stream D Diversion	7.8	W	Incline end
02/10/2018	At	4	SP1	7.7	W	Pond
02/10/2018	At	5	SP2	7.8	W	Pond
02/10/2018	At	6	Spillway	7.9	W	Surface Flow
02/10/2018	At	7	SP3	7.9	W	Pond
02/10/2018	At	8	River Churnet	8	W	Upstream of Pump House
02/10/2018	At	9	River Churnet	7.9	W	At pump house
02/10/2018	At	10	Stream E	6.7	W	At EA Station
02/10/2018	At	11	River Churnet	6.7	W	At EA Station
02/10/2018	At	12	Q3	7.4	W	Bottom of ramp

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Date	Visit	Number	Location	pH	Material	Comment
02/10/2018	At	13	Q3	5	W	NE Corner Inflow
02/10/2018	At	14	Q3	5.7	W	Adjacent to inflow
02/10/2018	At	15	Q3	6.1	W	North Side
02/10/2018	At	16	L5	6.5	W	Outfall
02/10/2018	At	17	Stream F	7.4	W	Pipe Bridge
02/10/2018	At	18	L7	7.1	W	Excavation
02/10/2018	At	19	L7	7.2	W	Excavation Inflow
02/10/2018	At	20	L7	7.5	W	North Channel
02/10/2018	At	21	L7	8.1	W	Seepage From Bedrock
02/10/2018	At	22	Stream F	4.7	W	Northwestern End
02/10/2018	At	23	Stream F	4.1	W	East Corner Seepage
02/10/2018	At	24	Stream F	4.1	W	East Corner
02/10/2018	At	25	L5	5.6	W	Pond
02/10/2018	At	26	Stream A	6.7	W	V-notch
02/10/2018	At	27	Stream B	6.7	W	V-notch
02/10/2018	At	28	Stream C	6.8	W	V-notch
08/01/2019	Au	1	Q3	8.5	W	Base of Ramp
08/01/2019	Au	2	Old Stream D	8.2	W	Pipe Bridge
08/01/2019	Au	3	Old Stream D	8.1	W	Top of Spillway
08/01/2019	Au	4	Stream D Diversion	8	W	Pipe Bridge
08/01/2019	Au	5	Area E	7.7	W	Pond at top of Incline
08/01/2019	Au	6	Stream D Diversion	7.8	W	Outfall onto Incline
08/01/2019	Au	7	SP1	7.7	W	Pond
08/01/2019	Au	8	SP2	7.7	W	Pond
08/01/2019	Au	9	SP3	7.7	W	Pond
08/01/2019	Au	10	River Churnet	3	W	Seepage From Pipe
08/01/2019	Au	11	River Churnet	5.7	W	Upstream of Outflow
08/01/2019	Au	12	River Churnet	5.9	W	River at Pumphouse
08/01/2019	Au	13	Stream E	6.1	W	Stream at EA Station
08/01/2019	Au	14	River Churnet	6.2	W	At EA Station
08/01/2019	Au	15	Stream E	6.5	W	North of old Railway
08/01/2019	Au	16	SP5	6.7	W	Pond
08/01/2019	Au	17	Q3	4.8	W	Seepage in NE Corner
08/01/2019	Au	18	Q3	5.7	W	NE Corner
08/01/2019	Au	19	Q3	5.9	W	Northern Edge
08/01/2019	Au	20	L5	6.3	W	Outflow to Q3
08/01/2019	Au	21	L4	7	W	Outflow Channel
08/01/2019	Au	22	L5	7.9	W	Eastern Shore
08/01/2019	Au	23	L5	7.6	W	Flow from L7
08/01/2019	Au	24	L7	7.6	W	Outflow Channel
08/01/2019	Au	25	Stream F	8	W	Pipe Bridge
08/01/2019	Au	26	L7	7.7	W	Excavation
08/01/2019	Au	27	L7	7.2	W	Drainage Channel in N side
08/01/2019	Au	28	Stream F	5.9	W	Upflow of seepage

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Date	Visit	Number	Location	pH	Material	Comment
08/01/2019	Au	29	Stream F	4.3	W	Seepage
08/01/2019	Au	30	Stream A	6.1	W	V-Notch
08/01/2019	Au	31	Stream B	6.1	W	V-Notch
08/01/2019	Au	32	Stream C	6.3	W	V-Notch

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TABLE 2

Table 3: Observed Q3 Water Levels					Inflow(m3/day)			River Flows (m3/day)		
Date	Days	Q3 Level	L8 Level	Level Rise (mm/day)	Volume	Avg	Period	A	B	C
16/12/2010	0	131.00			0					
20/12/2010	4	135.50	140.50	1125	2438	610	610			
07/01/2011	22	141.00		306	26301	1196	1326	382	1043	55
09/02/2011	55	144.00		91	68194	1240	1269	159	731	<50
04/05/2011	139	147.00	149.14	36	147528	1061	944	<100	109	<50
01/06/2011	167	148.25	149.64	45	169145	1013	772	<100	159	<50
14/07/2011	210	149.50	149.56	29	200000	952	718	<100	109	<50
09/08/2011	236	149.70	149.66	8	207567	880	291	<100	<100	<50
08/09/2011	266	150.00	149.96	10	218917	823	378	<100	109	<50
03/10/2011	291	150.16	150.47	6	224970	773	242	<100	159	<50
19/10/2011	307	150.74	150.81	36	246913	804	1371	<100	159	<50
22/11/2011	341	151.05	150.87	9	258490	758	340	159	256	<50
19/12/2011	368	151.39	150.85	13	271504	738	482	382	1224	81
09/01/2012	389	151.72	151.13	16	283876	730	589	220	483	112
06/02/2012	417	152.02	151.12	11	295226	708	405	159	1043	<50
20/03/2012	460	152.24	151.37	5	303662	660	196	295	431	<50
12/04/2012	483	152.38	151.46	6	308770	639	222	382	1224	81
22/05/2012	523	152.63	151.76	6	318417	609	241	295	337	<50
03/07/2012	565	152.90	152.10	6	328632	582	243	382	483	<50
17/09/2012	641	153.17		4	340246	531	153	295	1043	<50
31/10/2012	685	153.30		3	345623	505	122	295	1043	<50
06/12/2012	721	153.71		12	363474	504	496	663	1424	95
12/02/2013	789	154.95		18	423700	537	886	1131	3729	112
26/04/2013	862	156.75		25	520697	604	1329	539	731	<50
18/06/2013	915	157.25		9	547709	599	510	295	382	55
30/07/2013	957	157.29		1	549866	575	51	159	220	<50
26/10/2013	1045	156.88		-5	527760	505	-251	1224	3027	150
08/01/2014	1119	156.91		0	529108	473	18	483	1879	81
15/04/2014	1216	157.66		8	569654	468	418	188	878	<50
09/07/2014	1301	158.30		8	604322	465	408	382	483	150
06/10/2014	1390	157.58		-8	565502	407	-436	483	382	<50
20/01/2015	1496	156.66		-9	515898	345	-468	<100	<100	<50
28/04/2015	1594	156.29		-4	495949	311	-204	599	483	<50
28/07/2015	1685	156.15		-2	488401	290	-83	220	382	<50
31/10/2015	1780	155.46		-7	450928	253	-394	295	1879	55
29/01/2016	1870	155.19		-3	436802	234	-157	382	1642	81
07/04/2016	1939	156.57		20	511208	264	1078	382	2412	194
05/07/2016	2028	157.32		8	551645	272	454	295	599	112
02/08/2016	2056	157.393		7	555420	270	378			
11/11/2016	2157	157.093		-3	539244	250	-160	295	220	55
01/12/2016	2177	157.073		-1	538166	247	-54	295	539	55
24/01/2017	2231	156.818		-5	524417	235	-255	483	731	81
25/04/2017	2322	156.658		-2	515791	222	-95	220	483	55
20/07/2017	2408	156.403		-3	502042	208	-160	220	295	<50
12/10/2017	2492	156.093		-4	485327	195	-199	382	483	<50
23/01/2018	2595	155.748		-3	466726	180	-181	483	1043	55
18/05/2018	2710	156.703		8	518217	191	448	159	483	55
07/08/2018	2791	156.708		0	518486	186	3	159	295	<50
02/10/2018	2847	156.633		-1	514443	181	-72	159	382	<50
08/01/2019	2945	156.193		-4	490719	167	-242	159	483	<50

Table 4: Stream A, B and C flow rate

	A	B	C		A	B	C	River Churnet	
	Head (mm)				Flow (m3/d)			Estimated Flow Speed (m/s)	River Level (m relative to previous visit)
	90°	90°	53° 8'						
	A	B	C		A	B	C		
20/01/2015									
28/04/2015	120	110	50		599	483			
28/07/2015	80	100	30		220	382			
30/10/2015	90	190	60		295	1879	55		
28/01/2016	100	180	70		382	1642	81		
07/04/2016	100	210	100		382	2412	194		
05/07/2016	90	120	80		295	599	112		-0.15
11/11/2016	90	80	60		295	220	55		0.23
01/12/2016	90	115	60		295	539	55		-0.23
24/01/2017	110	130	70		483	731	81	0.26	0.07
25/04/2017	80	110	60		220	483	55	0.17	-0.07
20/07/2017	80	90	50		220	295		0.40	-0.07
12/10/2017	100	110	50		382	483	<55	0.36	0.24
23/01/2018	110	150	60		483	1043	55	1.25	0.21
18/05/2018	70	110	60		159	483	55	0.35	-0.37
07/08/2018	70	90	50		159	295	<55	0.18	-0.13
02/10/2018	70	100	50		159	382	<55	0.23	0.04
08/01/2019	70	110	50		159	483	<55	0.30	0.12

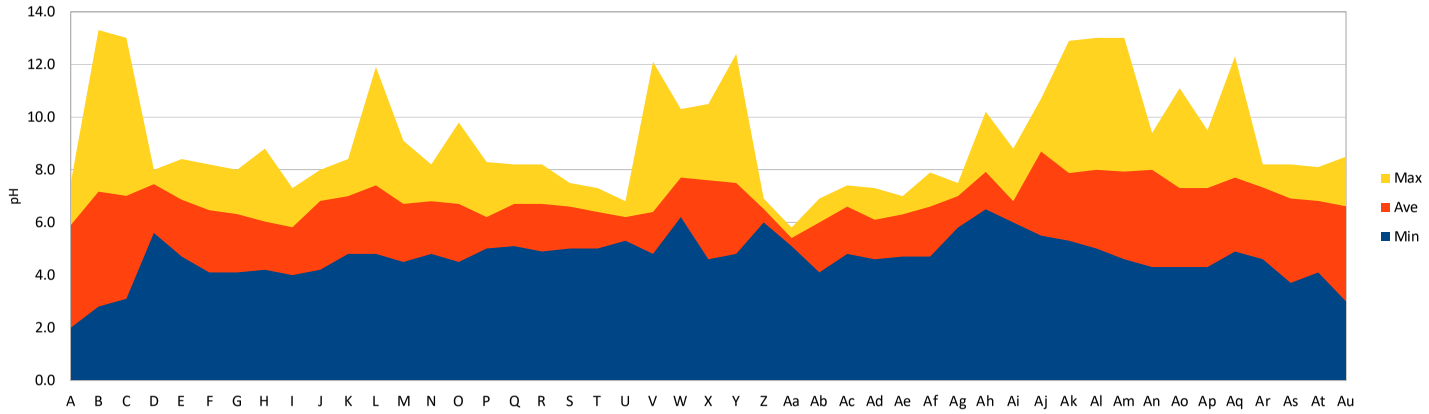
Table 5 - Level Monitoring of Trial Bunds on L4 at Moneystone Quarry Q1E.

Date	1A	1B	1C	1D	1E	1F	1G	2A	2B	2C	2D	3A	3B	3C	3D	3E	E.WS5	E.WS1	L5 Water Level	DATUM (TOP OF PIPE UNDER ROAD)	ELEVATION OF THEODOLITE	REMARKS
18/07/18	**175.560**	**175.820**	**176.020**	**175.715**	**175.810**	**175.485**	**175.595**	**175.395**	**175.570**	**174.995**	**174.955**	**175.880**	**175.460**	**175.600**	**175.175**	**175.255**	**1.465**	**1.735**			**177.215**	**All levels relative to the two points on bedrock (1A, 3A), assumed not to have moved**
07/08/18	**175.560**	**175.820**	**176.015**	**175.700**	**175.800**	**175.470**	**175.580**	**175.380**	**175.555**	**174.975**	**174.935**	**175.880**	**175.450**	**175.595**	**175.160**	**175.240**			**170.085**	**173.290**	**177.270**	**All levels relative to the top of the pipe under the road.**
02/10/18	**175.565**	**175.815**	**176.005**	**175.680**	**175.775**	**175.440**	**175.545**	**175.370**	**175.545**	**174.945**	**174.900**	**175.890**	**175.440**	**175.585**	**175.215**	**CNL**			**170.190**	**173.290**	**177.080**	**All levels relative to the top of the pipe under the road.**
08/01/19	**175.560**	**175.800**	**175.990**	**175.660**	**175.750**	**175.420**	**175.525**	**175.350**	**175.530**	**174.925**	**174.875**	**175.885**	**175.420**	**175.565**	**175.110**	**175.200**			**170.185**	**173.290**	**177.280**	**All levels relative to the top of the pipe under the road.**
P																						
Movement since last reading																						
18/07/18																						
07/08/18	0	0	-5	-15	-10	-15	-15	-15	-15	-20	-20	0	-10	-5	-15	-15						
02/10/18	5	-5	-10	-20	-25	-30	-35	-10	-10	-30	-35	10	-10	-10	55							
08/01/19	-5	-15	-15	-20	-25	-20	-20	-20	-15	-20	-25	-5	-20	-20	-105							
Movement since first reading																						
18/07/18																						
07/08/18	0	0	-5	-15	-10	-15	-15	-15	-15	-20	-20	0	-10	-5	-15	-15						
02/10/18	5	-5	-15	-35	-35	-45	-50	-25	-25	-50	-55	10	-20	-15	40							
08/01/19	0	-20	-30	-55	-60	-65	-70	-45	-40	-70	-80	5	-40	-35	-65	-55						

APPENDIX B - FIGURES

Moneystone Park
Monthly pH readings from December 2010

Fig 3

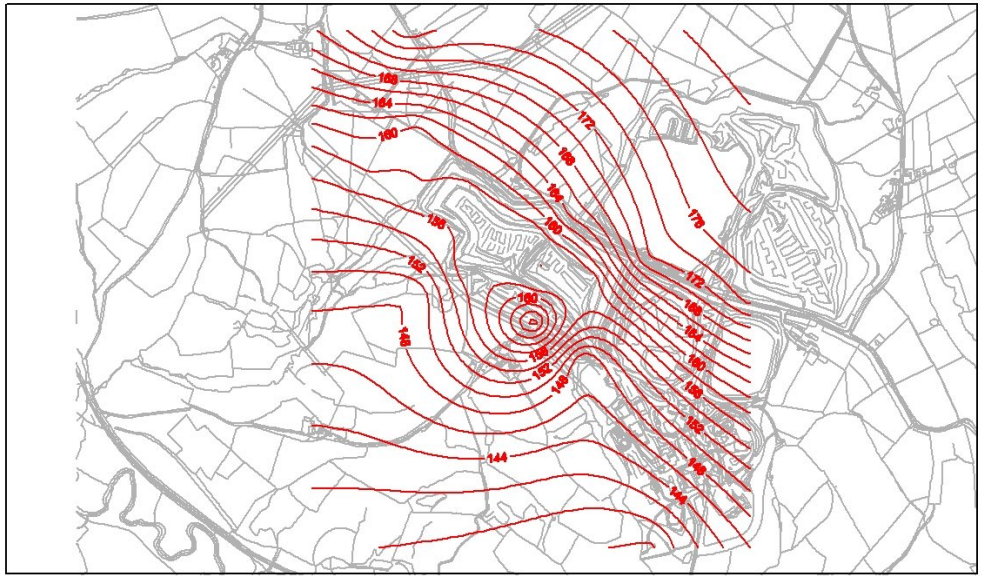


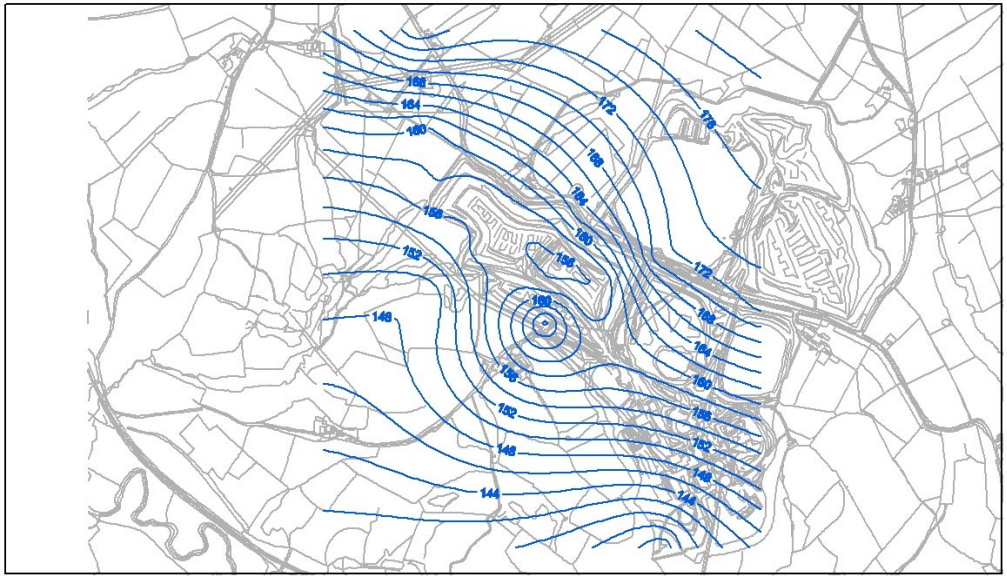
Visit	A	B	C	D	E	F	G	H	I	J	K	L	M
Date	20/12/10	7/1/11	9/2/11	4/5/11	1/6/11	14/7/11	9/8/11	8/9/11	3/10/11	22/11/11	19/12/11	9/1/12	6/2/12
Min	2.0	2.8	3.1	5.6	4.7	4.1	4.1	4.2	4.0	4.2	4.8	4.8	4.5
Ave	5.9	7.2	7.0	7.5	6.9	6.5	6.3	6.0	5.8	6.8	7.0	7.4	6.7
Max	7.5	13.3	13.0	8.0	8.4	8.2	8.0	8.8	7.3	8.0	8.4	11.9	9.1
STDEV	1.6	1.9	1.4	0.7	1.1	1.3	1.1	1.3	1.0	0.9	1.3	1.6	1.0
No.	13	39	52	12	25	27	24	25	28	47	13	29	33

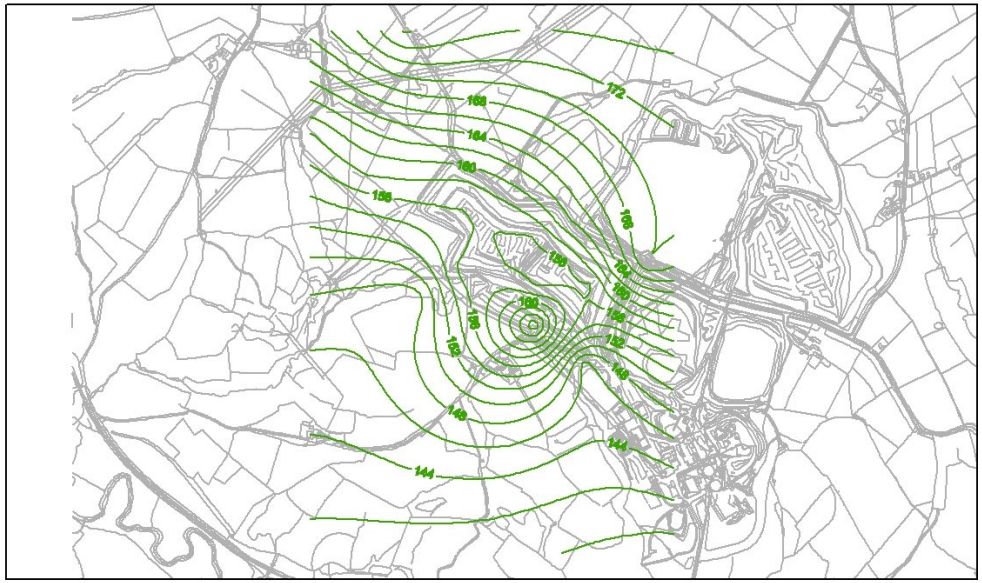
Visit	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
Date	20/3/12	12/4/12	22/5/12	3/7/12	17/9/12	31/10/12	6/12/12	12/2/13	26/4/13	30/7/13	26/10/13	8/1/14	15/4/14
Min	4.8	4.5	5.0	5.1	4.9	5.0	5.0	5.3	4.8	6.2	4.6	4.8	6.0
Ave	6.8	6.8	6.5	6.7	6.7	6.6	6.4	6.2	6.4	7.7	7.6	7.5	6.5
Max	8.2	9.8	8.3	8.2	8.2	7.5	7.3	6.8	12.1	10.3	10.5	12.4	6.9
STDEV	1.1	1.8	1.1	1.1	0.9	0.9	0.6	0.4	1.4	0.8	1.2	1.7	0.2
No.	21	34	19	29	52	27	39	22	26	28	37	44	19

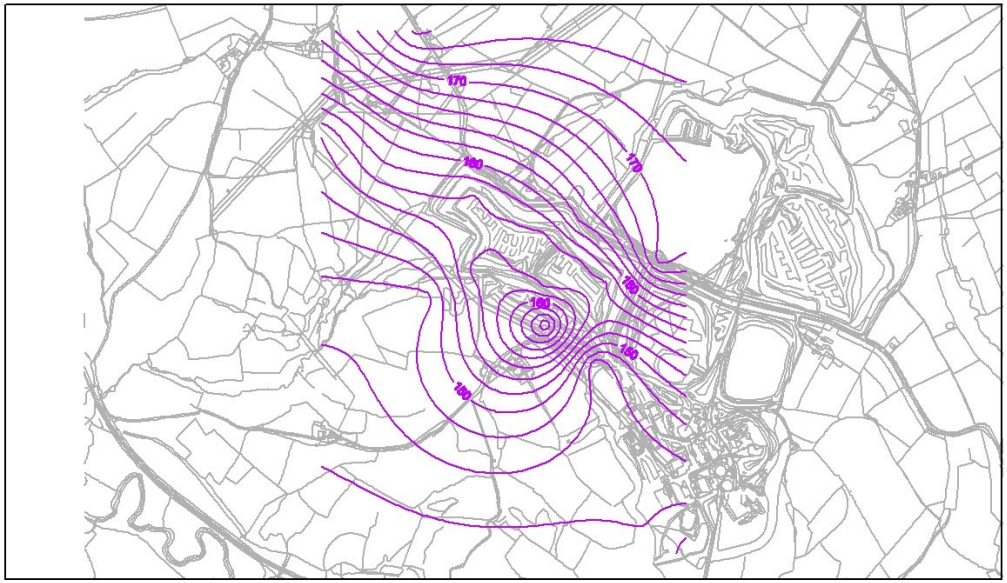
Visit	Aa	Ab	Ac	Ad	Ae	Af	Ag	Ah	Ai	Aj	Ak	Al	Am
Date	9/7/14	16/9/14	6/10/14	20/1/15	28/04/15	28/07/15	31/10/15	29/01/16	07/04/16	05/07/16	11/11/16	01/12/16	24/01/17
Min	5.1	4.1	4.8	4.6	4.7	4.7	5.8	6.5	6.0	5.5	5.3	5.0	4.6
Ave	5.4	6.0	6.6	6.1	6.3	6.6	7.0	7.91	6.8	8.69	7.87692308	8.0	7.92631579
Max	5.8	6.9	7.4	7.3	7.0	7.9	7.5	10.2	8.8	10.7	12.9	13.0	13
STDEV	0.3	0.8	0.6	0.7	0.6	0.9	0.5	0.54	0.5	1.17	1.36178318	1.3	1.44932574
No.	15	28	25	49	43	43	23	68	52.0	55	39	53	57

Visit	An	Ao	Ap	Aq	Ar	As	At	Au
Date	25/4/17	20/07/17	12/10/17	23/01/18	18/05/18	07/08/18	02/10/18	08/01/2019
Min	4.3	4.3	4.3	4.9	4.6	3.7	4.1	3.0
Ave	8.0	7.3	7.3	7.7	7.315	6.9	6.82142857	6.61
Max	9.4	11.1	9.5	12.3	8.2	8.2	8.1	8.5
STDEV	1.0	1.2	1.2	1.2	0.96751173	1.11	1.20442307	1.18
No.	25	39	52	47	20	25	28	39









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Legend

- Apr 17 (An)
- Jul 17 (Ao)
- Oct 17 (Ap)
- Jan 18 (Aq)

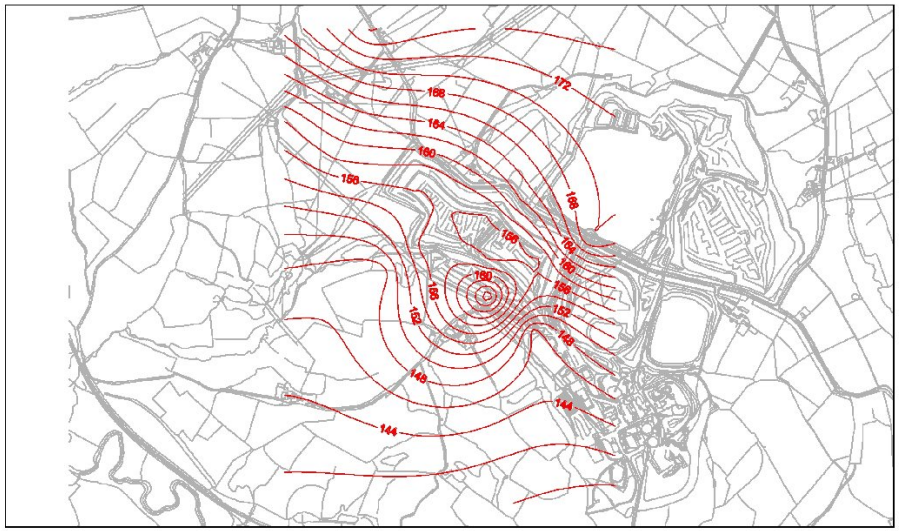
1:15,000

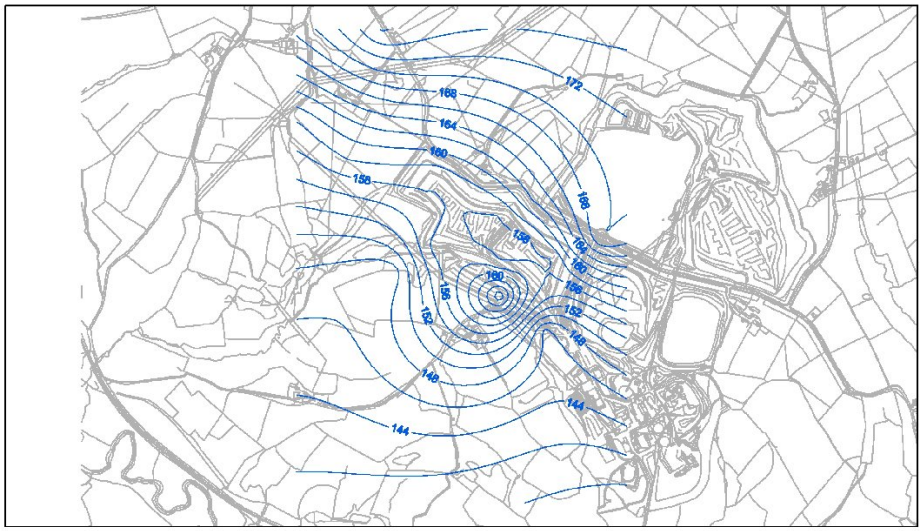
N

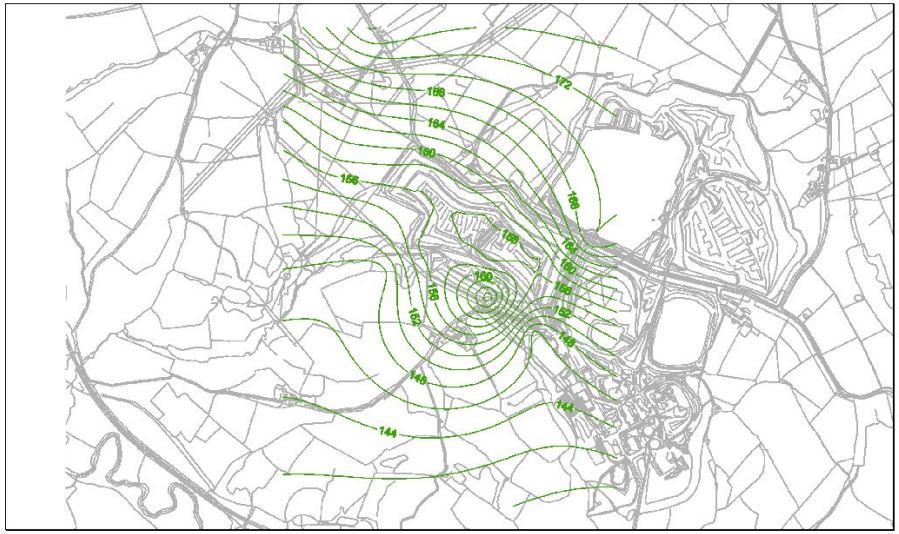
Groundwater April 2017 to Jan 2018

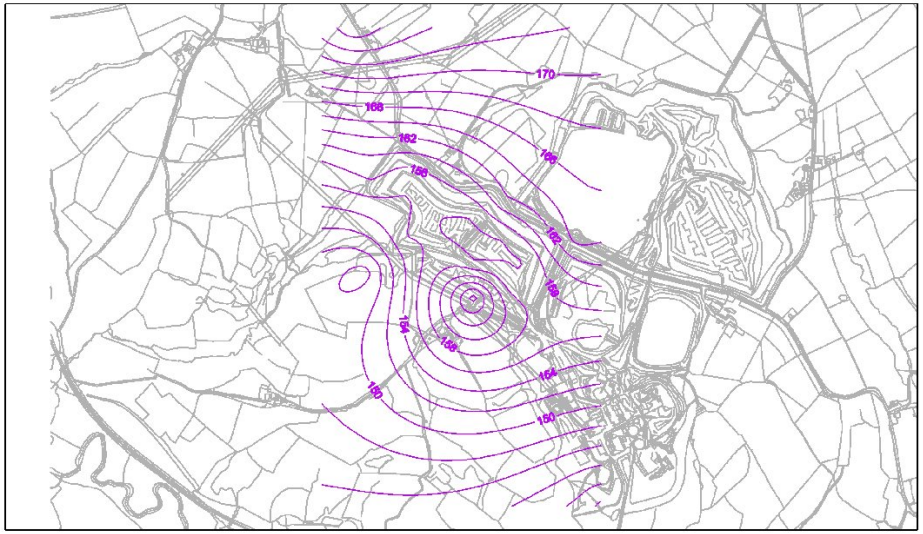
Project: Moneystone Park
Job No: 418051
Client: Laver Leisure

Fig 4









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Legend

- Jan 18 (Aq)
- Aug 18 (As)
- Oct 18 (At)
- Jan 19 (Au)

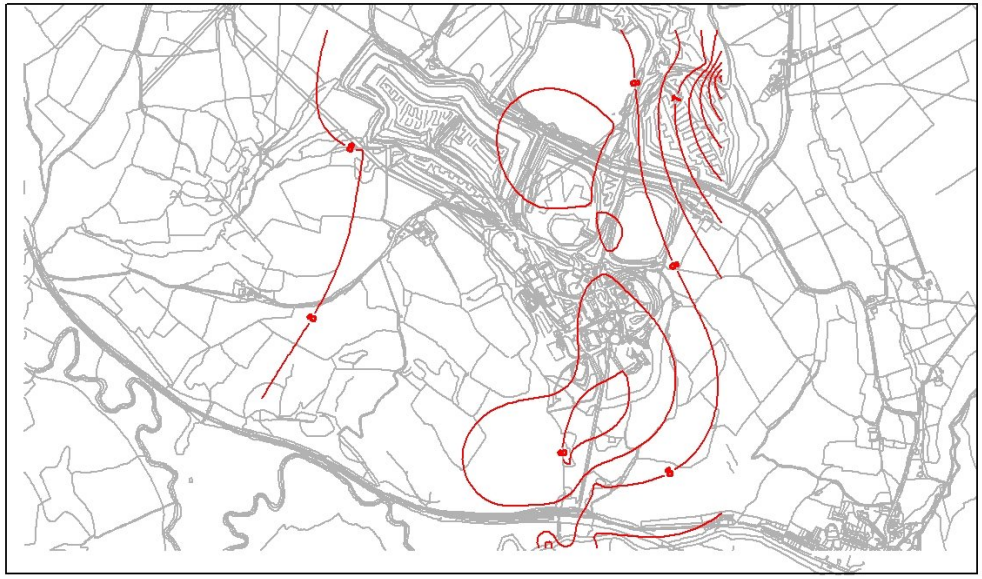
1:15,000

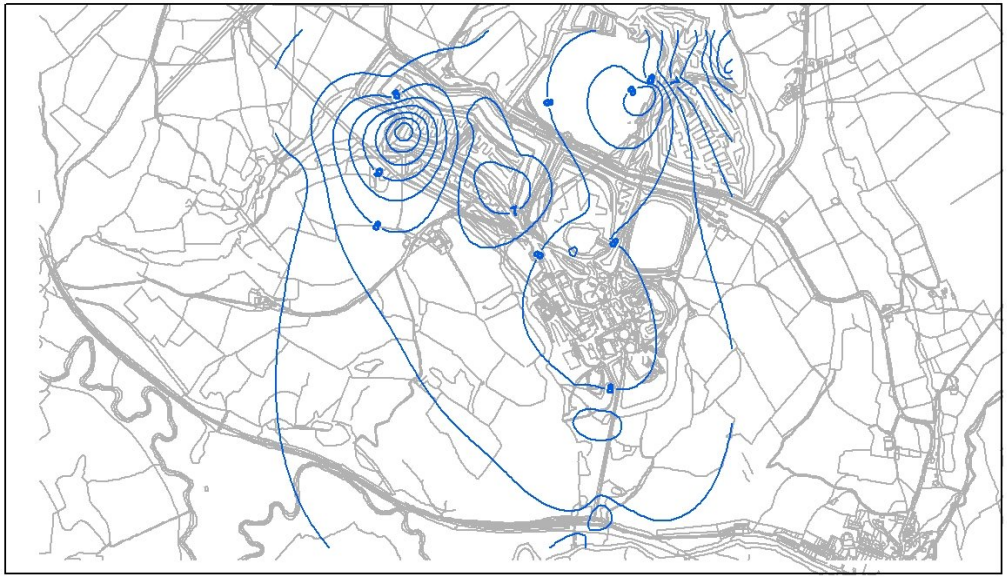
N

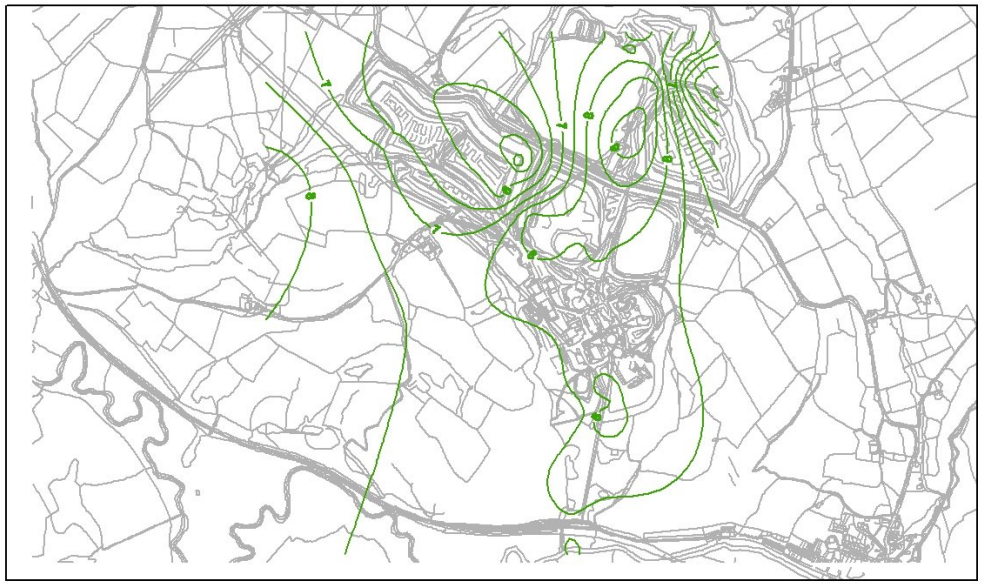
Groundwater Jan 2018 to Jan 2019

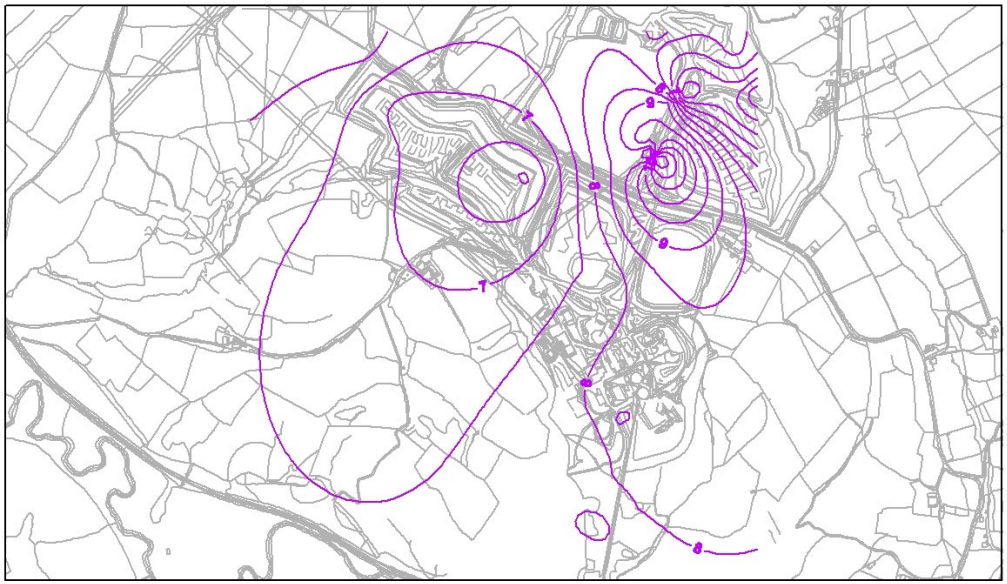
Project: Moneystone Park
Job No: 418051
Client: Laver Leisure

Fig 4m









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Legend

- Apr 17 pH Plot
- Jul 17 pH Plot
- Oct 17 pH Plot
- Jan 18 pH Plot

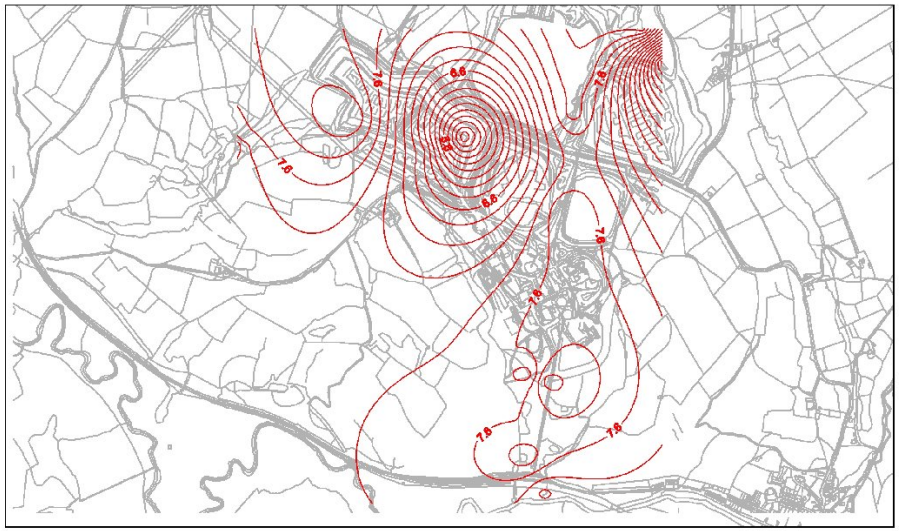
1:15,000

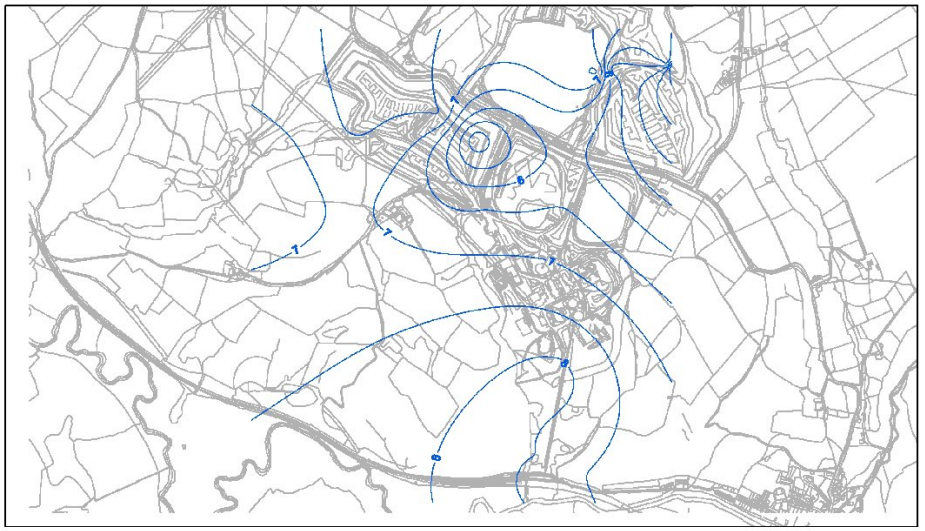
N

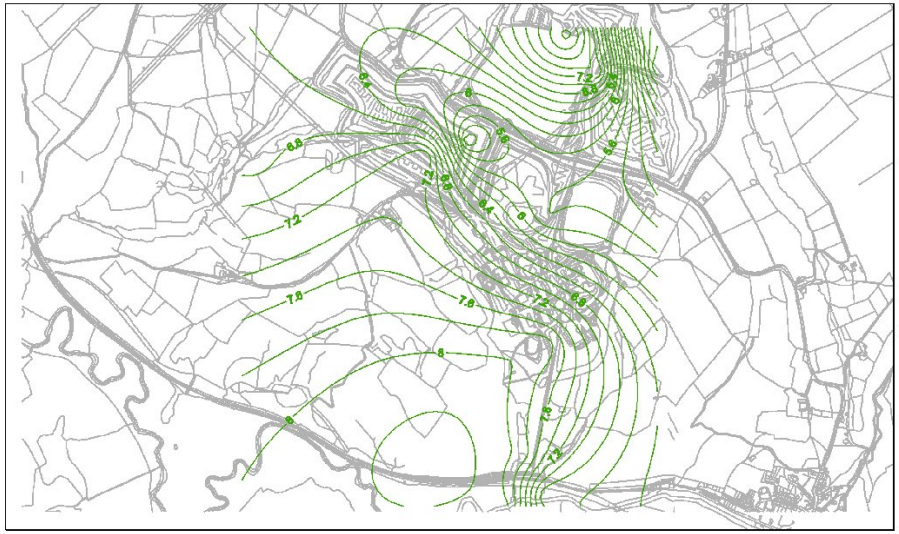
pH April 2017 to January 2018

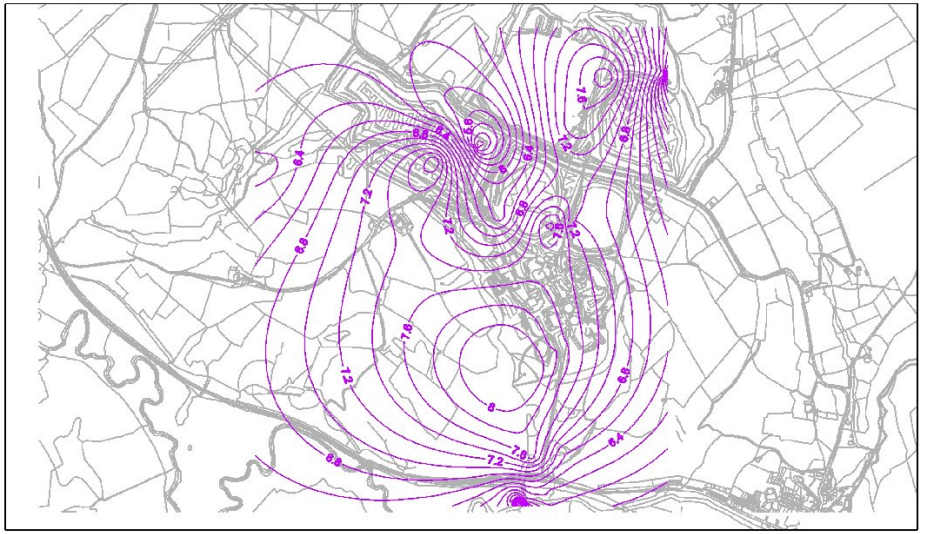
Project: Moneystone Park
Job No: 418051
Client: Laver Leisure

Fig 5j









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Legend

- May 18 pH
- Aug 18 pH
- Oct 18 pH
- Jan 19 pH

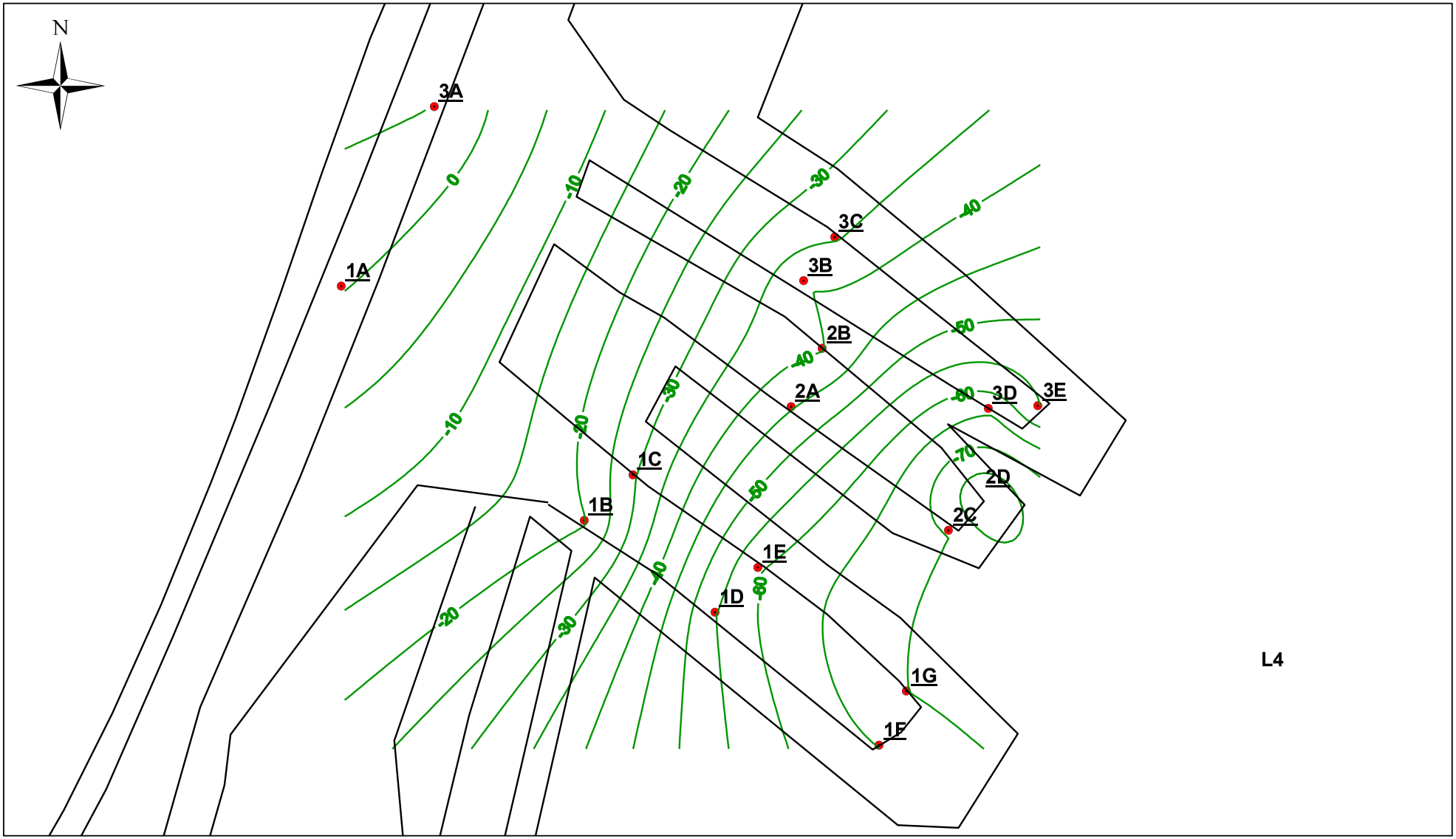
1:15,000

N

pH May 2018 to Jan 2019

Project: Moneystone Park
Job No: 418051
Client: Laver Leisure

Fig 5k



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0 5 10 20 Meters

Q1E Monitoring Locations

Project: Moneystone Park
Job No: 418055
Client: Laver Leisure

Fig 6

Appendix 11.3: Biennial Monitoring Report (418040MM/5); dated April 2021

Abbeydale

Building Environment Consultants

BIENNIAL MONITORING REPORT

MONEYSTONE QUARRY, OAKAMOOR

STAFFORDSHIRE

Report: 418040MM/5 **April 2021**

Client:
Bolsterstone plc
36 Bridge Business Centre
Beresford Way
Chesterfield
S41 9FG

Abbeydale Building Environment Consultants Ltd, 4 Neville Street, Wakefield, WF1 5EF,
Tel: 01924 376622 | E-mail: info@abbeydalebec.com | www.abbeydalebec.com
Director: P J Lloyd BSc MSc CGeol FGS | Company Registation No. 06707508 | VAT: 600 2099 91

BIENNIAL MONITORING REPORT
MONEYSTONE QUARRY, STAFFORDSHIRE

Report: 418040MM/5 April 2021

DOCUMENT VERIFICATION SHEET

	Prepared By:	Checked By:
Name:	William Watkins	Peter J Lloyd
Qualifications:	BSc MSc FGS	BSc MSc CGeol FGS
Position:	Engineer	Managing Director
Signature:	William Watkins	PJL

SUMMARY

Site Grid Ref:	404400E 345900N	**Site Level (m AOD):**	110-240	**Site Area (ha):**	170

Development proposals: Holiday park with lodges, lakes and lagoons.

Past site development: Site was previously a sandstone quarry with tailings lagoons.

Q3 Water Level: 156.103m AOD.

Groundwater: Increases and decreases noted across the site.

pH Levels: Maximum pH value decreased, minimum has decreased and average value has decreased.

Ponding on L7: Restricted to a small area in the centre.

Stream Flows: Decreases in stream A, B and C flows.

Stability of Quarry Faces: No significant change noted.

BIENNIAL MONITORING REPORT
MONEYSTONE QUARRY, STAFFORDSHIRE

Report: 418040MM/5 April 2021

TABLE OF CONTENTS

APPENDICES

BIENNIAL MONITORING REPORT
MONEYSTONE QUARRY, STAFFORDSHIRE

Report: 418040MM/5 **April 2021**

1. INTRODUCTION

On the instruction of Bolsterstone plc, on behalf of Laver Leisure, quarterly geo-environmental monitoring visits have been undertaken by Abbeydale Building Environment Consultants Ltd in and around the former Moneystone Quarry, off Whiston Eaves Lane, Oakamoor.

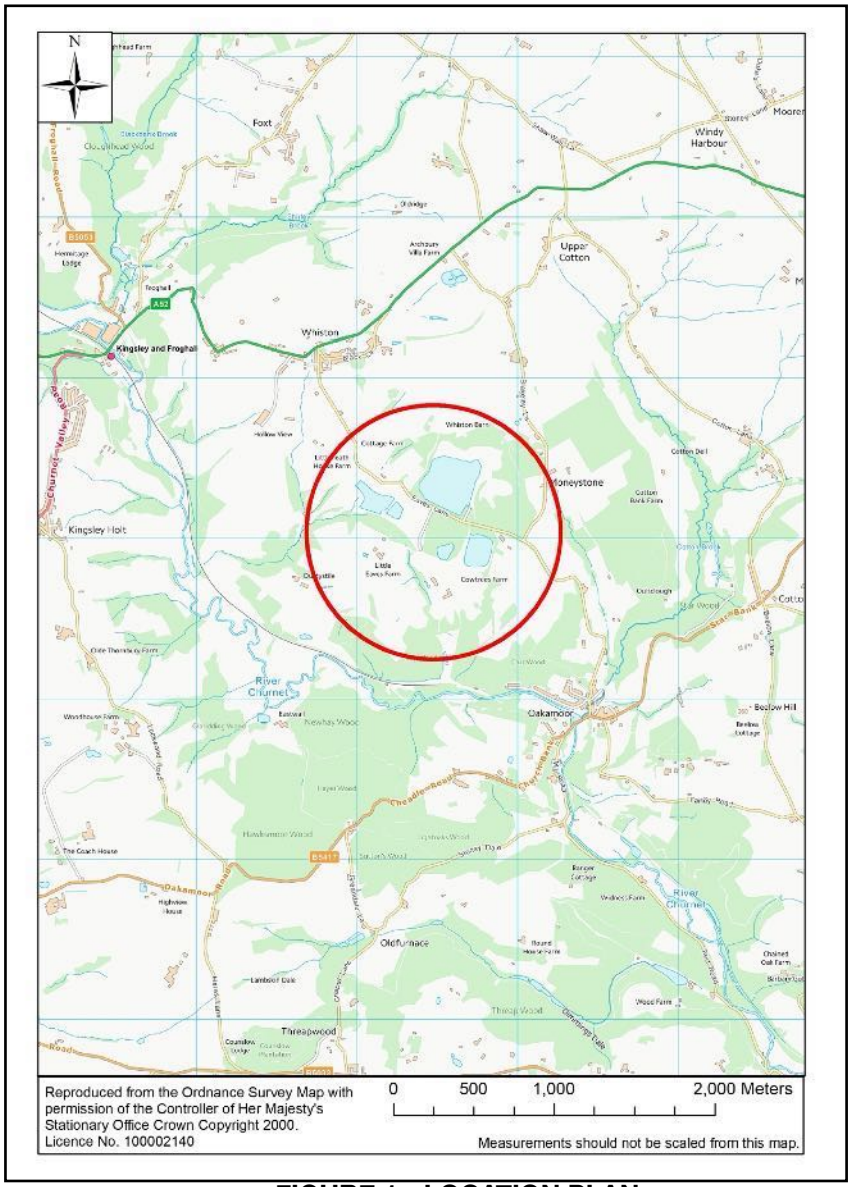

FIGURE 1 - LOCATION PLAN

The site is located between the villages of Whiston and Oakamoor and is centred within National Grid Reference square SK 044 459 between 110m to 240m AOD (See Fig 1), covering an area of approximately 170 hectares.

This report was produced on behalf of our client, Laver Leisure and their advisors and financiers, and should not be relied upon or transferred to any other parties without the express written authorisation of Abbeydale BEC Ltd and our client. If any unauthorised third party comes into possession of this report, they rely on it at their own risk and the authors owe them no duty of care or skill.

Abbeydale BEC have undertaken fifty monitoring visits to date, between the 20th of December 2010 and the 21st of April 2021 for the purpose of monitoring quarry features in and around the site. The monitoring findings have been recorded and presented in monitoring letters following each visit. The comments and recommendations presented in this biennial report are based on the findings of the quarterly visits between January 2019 and April 2021, to provide an overview of available information and ground conditions encountered during each visit. There may be other conditions prevailing on the site which have not been disclosed by these investigations and which have not been taken into account by this report. Responsibility cannot be accepted for conditions not revealed by the investigations.

When writing this report the proposed development was for an activity holiday park with a hotel, lodges, lakes and lagoons. There will be potential to offer water sports including scuba diving, swimming, sailing, canoeing etc along with fishing. The park will also offer other outdoor activities such as mountain biking, nature trails, climbing, clay pigeon shooting etc. If there are changes to these proposals, then some modification to the comments and recommendations given may be required.

2. RECENT HISTORY OF THE SITE

As a result of the site investigation in 2018, and earth works in preparation for a new outfall structure in Q3 the site has undergone significant changes since January 2017 with access tracks and new surface water diversion channels created across the site, as summarised below:

2.1. General

Since the construction of the Solar Farm in 2016-2017 the quarry has increasingly become more naturally rejuvenated with previously bare sand and rock becoming covered with established vegetation. Surface water streams had also become more established with flow running from Q2 through the tunnel pipe into Q1W and then into Q3; however continued reductions in surface water levels has seen significantly less surface water running between the quarries since the start of 2020.

During our time on site undertaking the investigation in 2018, several sinkholes had been observed along the new drainage channel that brings water from L7 in Q2 to L5 in Q1W. These sinkholes are caused by the water flowing across the top of the fractured sandstone bedrock and then running into open fractures in the rock. Although these

sinkholes had been filled with gravel by site operatives, on the May 2018 monitoring visit a new sinkhole was seen adjacent to the pipe bridge that brings water under the track from L4, causing both flows to disappear into the bedrock. Since then any water flowing from L4 or L7 has flowed into the sinkhole rather than flowing into L5; with no new sink holes having been noted to form since.

2.2. Quarry 1

Along the western edge of L4 within Q1E, three earth bunds were extended out around 30m into L4 in 2018 to allow investigation through the lagoon tailings below. Each bund comprised material taken from different parts of the site to allow an assessment of the suitability of the materials to be used as a capping material at a later date. This included some of the bund at the south side of the solar panels which was removed for this use.

The southern most bund caused the tailings along its southern edge to form a 100-200mm bulge extending 3-5m from the bund. This suggested that although a firm crust has developed on the surface away from the area of surface ponding, the underlying tailings are still very wet and soft and continues to be be the case.

A Geo-Grid was placed on the surface of the western half of the southern bund, and covered with an additional half metre of material to allow assessment to be made of the benefits of incorporating a Geo-Grid into any future capping of L4. As these bunds on the surface of L4 have the potential to settle, monitoring visits now include level monitoring of the bunds.

To assist with the site investigation in 2018, an access track was constructed along the west and north edge of L5 within Q1W. A track has also been extended from halfway along the western edge towards the centre of L5. During the creation of this track in the early months of 2018, the site was very wet and as a result the track into the centre of L5 was flooded and inaccessible, with other areas of ponding on the access track to the north and west of L5. To improve the track around L5, material from the bund along the northern edge of the access ramp into Q3 was placed. After dryer periods of weather, the access track has firmed up since late 2018 and can now be driven on with a 4x4 vehicle.

To divert surface water from Q1 running into Q3, and to maintain the current water level in L5, a trench was excavated in October 2020. The trench diverts water from L5 above the Q1W pipe bridge track to drain onto the ground on the north side of the weigh bridge. Water has since been noted to flow through this trench after periods of heavy rain and drain onto ground on the north side of the weigh bridge as intended.

2.3. Quarry 2

To assist in the drying out of the tailing crust of L7 within Q2, a series of trenches were cut along the northern and eastern edges of L7 in 2018. Where groundwater had previously been seen seeping from the bedrock in the slope in the northwest corner of L7, a bund and series of channels have been created. This causes the water to flow clockwise around the perimeter of L7, and into the excavation created previously. From here, a 2-3m deep excavation was cut which takes the water south, to join another channel which runs from the southeast corner of L7 and has been cut around 1m lower than the surface of the tailings. These two channels become one and enter a 150mm diameter plastic pipe

which extends south through the rock tunnel and deposits the water into a channel that flows into L5.

An earth bund was extended from the area of the previous 2014 earthworks stockpile in the southeast corner of L7 in 2018. This bund extends around 100m in a northwest direction towards the centre of L7. Along the edges of the bund the tailings have bulged over a distance of 2-3m from the bund; to the south of the bund the bulge is 200-300mm high while the tailings to the northern side have risen by around 100mm. Several 10-20mm cracks formed in the months following the bunds creation and have continued to widen through to 2021 to be 20-40mm across the bund, indicating that differential settlement is still occurring.

2.4. Quarry 3

As part of the site investigation work in 2018, the existing track which extended up the hill to the south of Q3 was cleared and extended west to the overflow at the south west corner of Q3.

The existing 165m AOD bench around the east side of Q3 was widened and extended by an excavator with breaker in 2018 ~200m along the eastern side of Q3 and then around 20m west from the northeast corner. A pipe was installed under the surface of the new track to allow any water from the tunnel under the road to pass into Q3 without eroding the track. Additionally a ramp was constructed down the existing Q3 slope to join the 155m AOD bench in the northeast corner of Q3.

As mentioned previously, the bund along the northern edge of the access ramp into Q3 has been removed.

Increased vegetation on the 165m AOD bench has caused the northwest corner of Q3 to be inaccessible due to thick gorse and trees.

In January of 2021 a Ground Investigation and Hydrological Assessment was undertaken in the area of the proposed Quarry 3 (Q3) outfall in the south west corner of Q3 to evaluate the hydrology of the headwaters of Stream A within the SSSI and how the outfall will influence this area. At an elevation of approximately 156m AOD a series of tests were undertaken by excavating two trial pits. To allow future monitoring of the pits 100mm diameter standpipes were installed into the side of the pits before backfilling with the arisings.

2.5. Stream D Diversion Channel

Having become very congested with vegetation during previous years, the stream D diversion channel was cleaned out and the north side of the channel cut back and widened in September 2020 to prevent the water ponding, as it had been doing, further up-stream. The concern being that the water table had risen in the tailings behind the L3 dam to such an extent that a relatively strong flow of water down the original stream D had been reestablished which was causing flooding of the ground behind the dam. The works flattened the diversion cut on one side of the channel, to between 1:1.5 and 1:2 (v:h), and deepened the channel by 0.5m, leaving the vegetation which has grown on the opposite bank. Observations in subsequent visits have noted less ponding in the area behind the

dam and better flow of water through the diversion. Subsequent visits have also observed that the flow down the original stream D appears to be reduced following the works.

2.6. Silt Ponds

The five tailings ponds located to the south of the site, on the slope down to the River Churnet have seen little change over the period. With the tailings that had filled SP1, having been cleared out in 2019 water again ponds in SP1 before flowing to SP2.. Following the collapse of the bund in SP5 in 2016, a reduced pond has formed in the centre of SP5 and the channel through bund has become established.

3. HYDROLOGY

The standpipes in the quarry area have continued to be monitored between January 2019 and April 2021, see Figure 2, and have showed both increases and decreases in water levels across Moneystone throughout the January 2019- April 2021 period.

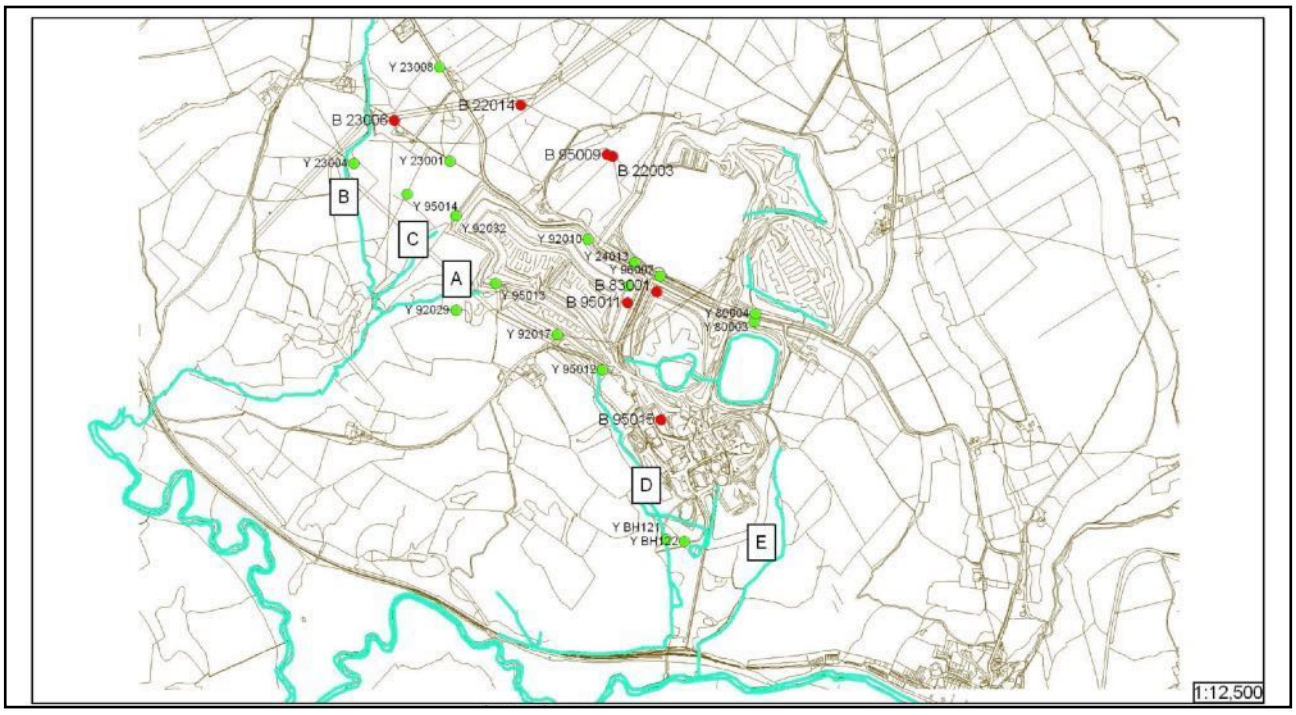

Figure 2 - Water Monitoring Locations

3.1. Q1 Water Level

As part of the 2014 restoration a trench had been excavated into the western edge of L4 along with a pipe bridge under the access track in order to drain excess water from L4 into L5 and Q3.

The ponding on L4 has generally been restricted to the lower southern area. On a few visits, water was seen in the outfall trench from L4, but was never seen flowing through the pipe bridge. Conversely, with the crust no longer being flooded, the vegetation on the higher central and northern areas has become more established with shrubs and trees up

to ~6m in height. As the extent of ponding on L4 has become more consistent, the vegetation has continued to become more established. The surface around the small trees has become firmer. Water levels in L4 are not to exceed 173.290m AOD as part of the current proposals.

As part of the 2018 earthworks, the trench and pipe bridge from the outfall of L5 were deepened. This was done to help control and lower the water level in L5. Water levels in L5, shown on Table 5, have remained between a maximum level of 171.380m AOD and a minimum level of 169.850m AOD throughout the January 2019 - April 2021 period.

3.2. Q2 Water Levels

To assist in the drainage of L7, a series of trenches were cut in early 2018. Where groundwater had previously been seen seeping from the bedrock in the slope in the northwest corner of L7, a bund and series of channels have been created. This has caused the water to flow clockwise around the perimeter of L7, and into the excavation created previously in 2016. From here, a channel has been cut which takes the water south, where it joins another channel which runs from the southeast corner of L7 and has been cut around 1m lower than the surface of the tailings. These two channels become one and enter a 150mm diameter plastic pipe which extends south through the rock tunnel.

The flow over the surface of L7 is heavily influenced by the preceding weather conditions. Previous visits have seen the ponding gradually increase before assumed sinkholes open up which then drain L7 until the sinkholes become blocked causing ponding to increase again. Following the recent drainage works, ponding on L7 is now restricted to a small area in the centre of L7. Levels in Q2 to date have not reached the max 195.000m AOD level.

Due to the 2018 earthworks carried out to drain L7, vegetation now covers the majority of L7 around the central pond, growing in areas that have previously been submerged. Trees and shrubs have become established, and are spreading closer towards the centre of L7. A larger variety of plants can now be seen growing in L7, including gorse and evening primrose. Vegetation will continue to become more established provided the surface ponding remains restricted to the centre of L7.

3.3. Q3 Lake Level

Since the cessation of quarrying and pumping on the 16th of December 2010, water level in the Q3 lake has risen from the base of the quarry at approximately 131m AOD, to a maximum level of 158.3m AOD in August 2014. See Table 3. Over the previous two years, the lake level has fluctuated between 154.89m AOD in July 2019 and 157.79m AOD in April 2020.

Since January 2019, the water level decreased with each visit until October 2019 when the level rose by about half metre, to a level of 155.44m AOD. The water level continued to increase with each visit until April 2020 to a level of 157.79m AOD. The lake level then decreased on following visits to a level of 155.73m AOD in January 2021. The water level then increased again in the latest visit in April 2021 to 156.10m AOD, see Figure 3. This has been influenced by earth works in 2018 within the quarries. With surface water from

Q2 being drained into L5 and then into Q3. However from October 2020 the surface water from L5 has been diverted toward Stream D in an attempt to further reduce water in Q3.

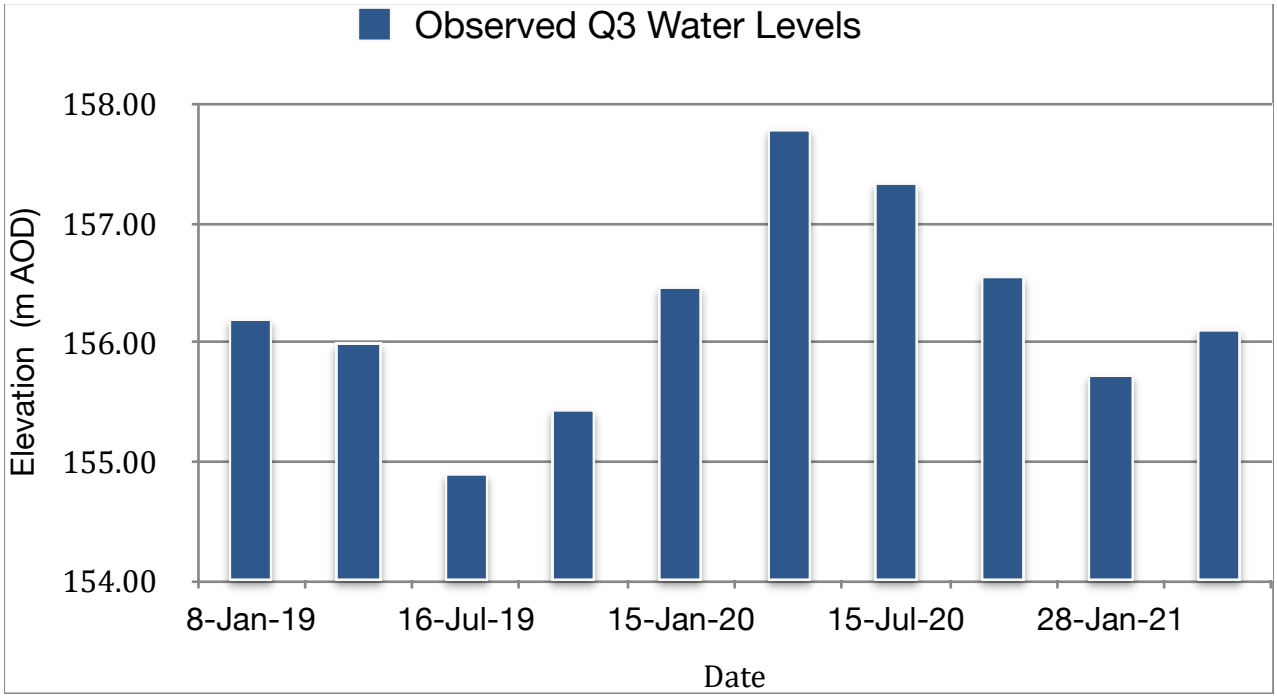

FIGURE 3 - Q3 WATER LEVELS

The lake level in Q3 has often reflected relative changes in other waterbodies on the site, such as L7 and the River Churnet, as following abnormally dry months they have all shown a decrease. However, often Q3 has shown fluctuations which do not match the other waterbodies. A lag in the response time between a change in the water level in L7 and Q3 has previously been suggested. It is anticipated that the blocking and unblocking of underground drainage pathways in the sandstone south of Q3 may influence the water level in Q3.

Over the previous two years, subaquatic vegetation has been further increasing, especially along the northwestern shore, but ground vegetation below the ~158m AOD has noticeably died back and only during the most recent visit has regrowth been observed.

3.4. Stream Measurements

Previous visits have consistently shown that Streams A, B and C are influenced by the preceding weather conditions. Stream A also appears to be influenced by the lake level in Q3. During February 2021 a hydrology report was carried out (Report Ref: 418057SA) and should be consulted for further detail regarding the hydrology around Stream A.

The flows of Stream A, B and C have been recorded on each monitoring visit and fortnightly as part of monitoring the syphoning of water from Q3 into Stream A. Over the previous two years, Stream A flow has ranged between 159m^3/d and 1879m^3/d, with an

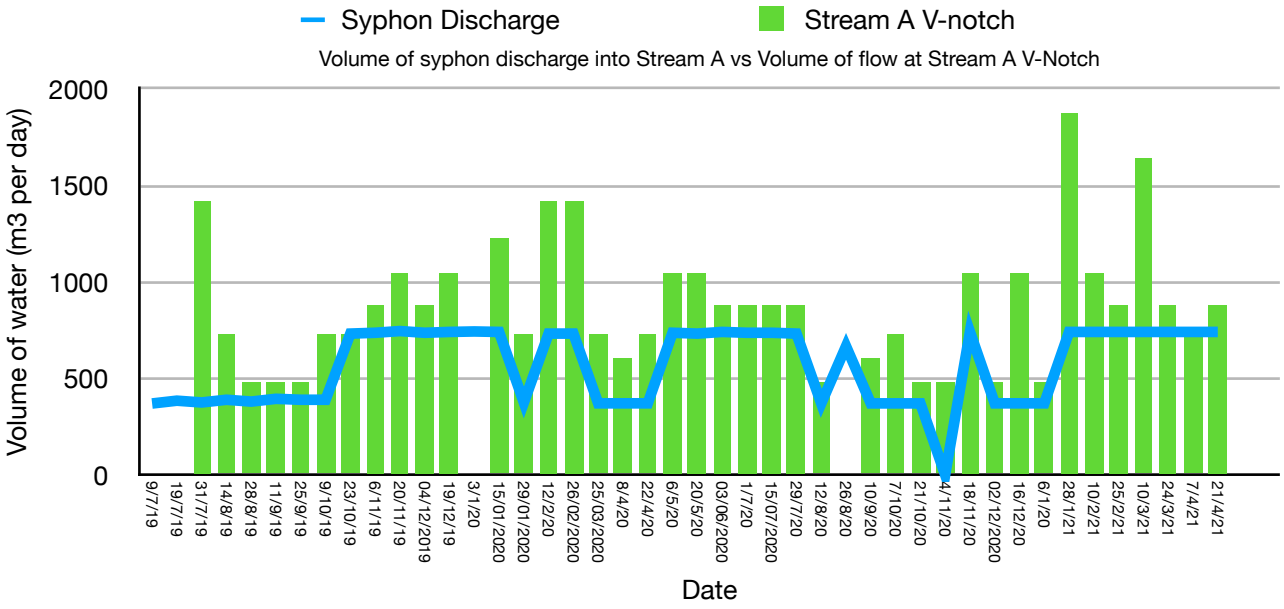

FIGURE 4 - DISCHARGE INTO STREAM A VS VOLUME OF FLOW AT STREAM A V-NOTCH

average of 843m³/d across the nine visits. Stream B ranged between 295m³/d and 4113m³/d with an average of 1,273m³/d. Stream C has shown little variation, with an average of 133m³/d and values ranging between 55m³/d and 951m³/d.

It is thought that Stream B is fed by surface and groundwater flow from the area to the northwest of Q3. Stream A had previously lost its catchment with the excavation of Q3. To recover flow to the head of the stream a syphon was installed in mid July 2019 drawing water from Q3 lake. Between July to October syphon flows where typically 384 m3/day; a second syphon was installed adjacent to the first syphon in October 2019 and with the introduction of a second syphon drawdown from Q3 increased to a typical value of 635 m3/day over the period between October 2019 and April 2021. This has been reflected in the flows measured at Stream A V notch approximately 190m down stream. During drier periods it has been noted that flows at the v notch have been less than the syphon flow whilst during wetter periods of the year supplementary flows from various springs mainly on the south side of the stream have been noted.

No flow monitoring is understood to have been undertaken for Stream D or E. When the quarry was operational Stream D acted as the overflow from the Production Area. A series of silt ponds, SP1, 2 and 3, were regularly maintained to prevent silt reaching the River Churnet. Since the cessation of quarry production the ponds and Stream D have continued to take the natural run-off flows, and had become increasingly vegetated around their margins requiring the diversion earthworks previously mentioned in 2020. From visual assessments during the post production monitoring visits the flow down Stream D does not appear to have shown significant variation, possibly as a result of infiltration into the underlying tailings of L3. Since the clearing and re-profiling of the diversion of the Stream D the flow through stream D and over the L3 spillway has reduced, however more recent visits since September 2020 have shown a gradual increase. At the present time it is anticipated that the majority of Area E is drained by Stream D, with the eastern most areas being drained down Stream E.

3.5. Syphon Measurements

Since the start of pumping from Q3 the Syphons have been monitored on a biweekly basis, recording the rate of flow from both syphons, pH and the flow volumes at the installed V notches in streams A, B and C. A typical volume of 635 m^3/day of water was drawn out of Q3 via the syphons over the period between October 2019 and April 2021. The maximum volume being drawn by the syphons was recorded as 745 m^3/day on 20/11/19, The minimum volume being drawn by the syphons was recorded as 370 m^3/day. It should be noted that syphon drawdowns where very consistent across the course of the monitoring and that the main cause in variation was the discontinuation of drawing water from one of the syphons which would then require restarting. Figure 4 shows the relation between the syphon draw drown and the volume of flow recored going through the Stream A V-notch.

3.6. Moneystone Ground Water Measurements

Throughout the monitoring period, the boreholes have shown varying rates of change. Using the groundwater monitoring data obtained we have produced groundwater contour plots to indicate changes in the area. See Appendix B Fig 5 and Appendix A Table 1. The visits indicate level changes across boreholes within the quarry area are variable when compared to surface water observations. The standpipes in the quarry area, see Figure 2, showed both frequent increases and decreases in water levels between visits with no overall observable trend.

The standpipes in the L3 dam BH121(13m) has showed a gradual decrease in water level over the period from 148.4m AOD in January 2012 to 147.53m AOD in April 2021. BH121(28m) however has showed an overall increase in water level, from 141.35m AOD in January 2019 to 145.04m AOD in April 2021, with a maximum level of 147.86m AOD in January 2021.

Prior to Stream D being diverted, consistently large water level changes were recorded in BH121 and BH122. Following the diversion standing water in the tailings and dam started to fall and the previously flooded ground behind the dam dried. However, over this last period the standing water has been recovering, and fluctuations in the borehole levels again were seen to be occurring. This indicates some maintenance of the diversion channel was required to reduce ground water levels against the dam. To reduce levels the end of the Stream D diversion has been cut down by roughly 1m below the level of the incline track along a 4-5m length. The continuing fluctuations might suggest further monitoring is required and will need further assessment.

The groundwater contour plots over the last period showed a similar pattern across visits. The groundwater in BH92017 is again seen to be higher than in the surrounding area; this is due to perched water in the mudstone bedrock and in following reports will be omitted from contour plots to more accurately display ground water levels within the sandstone across the site. Up dated contour plots excluding BH92017 in addition to those with BH92017 have been added to Fig 5, see Appendix B.

SP1 has had the silt removed previously, resulting in water being allowed to pond before draining into SP2. Below SP3 the stream runs through the railway culvert and across water meadows to the river and then enters the river as a number of riverlets just

upstream of the pump station. The SP5 bund was noted to have collapsed on the April 2017 visit. With further erosion around the breach, it was assumed that the water level in SP5 would naturally fall until a channel was formed which takes water straight from the inflow to the outfall, with no ponding. However, as of the April 2021 visits a small pond remains in the base of the old pond. Tension cracks have also been seen in the steep walls of the breach trench downstream of SP5, suggesting that the trench walls will collapse further until they become less steep. However, there is no longer sufficient ponded water to be a concern, so allowing inspection to be limited to an annual winter visit.

The level of the River Churnet has increased by a total of 0.11m since the January 2019 visit with river levels falling and rising without any specific pattern up to 0.57m relative to previous measurements between visits. The river flow speed has varied between 0.14m/s in July 2019 and 1.7m/s in April 2021. At the EA monitoring station the channel which Stream E flows through, has been completely blocked by a fresh deposit of sand and gravel which now diverts the stream to the north and has resulted in the flooding of a large expanse of the embankment between the railway track and river. Further inspection of this area will be undertaken to determine if the change in flow is causing river bank erosion.

4. pH WITHIN THE QUARRY AND SURROUNDING AREA

The Environmental Assessment Desk Study Report (Ref: 418040EA) was prepared in March 2011. This found that although contamination will have been present, from the result of producing sand, the environmental legacy to human and environmental receptors are limited to the high and low pH present. Consequently the pH of streams and water bodies have been monitored since cessation of quarrying.

The pH levels have been recorded on previous monitoring visits from all main surface water bodies (including lagoons, streams and the River Churnet) along with groundwater seepages where present. The monitoring locations have remained relatively constant around accessible water bodies, although variations have been possible/necessary where site works or changing conditions have made other parts of the quarry available. The results of the pH monitoring are recorded in Table 2 and with contour plots of pH shown in Figure 6.

Throughout the course of the monitoring it has become apparent that the extremes of pH across the site are reducing. See Figure 7 and Table 2. However, our monitoring visits on occasion have continued to identify localised areas of high and low pH. These have been most noticeable when restoration and site works at the site have exposed new areas and suggests there may be further legacy sources remaining.

During the previous two years, the minimum and average pH across the site have increased while the maximum has decreased. The minimum pH recorded in the January 2019 visit was 3.0 pH, while the minimum pH on the April 2021 visit was 5.2 pH. A highest minimum pH of 6.3 was recorded during the April 2020 visit. In general three main areas of persistent low pH were recorded as follows:- seepages into Q3, a natural seepage from the northern slopes into Q2N, and acidic seepages into the River Churnet.

The maximum pH has generally decreased, although some of the recorded values remained high. The maximum pH value over the previous two years was recorded in April 2019 at 8.9, while the maximum pH in the April 2021 visit was 7.9. The maximum pH value has generally been found in the southeast corner of L7, in ponding adjacent to the old tailings stockpile. However, following the earthworks draining ponded water on the south of L7 at the start of 2018, this area in no longer accessible. On, the most recent visits the highest pH has generally been found in Q2 in stream F the Q2 excavation.

The average pH has increased over the previous two years, rising from pH 6.7 in January 2019 to pH 7.0 in April2021. The highest average pH across this period was pH 7.6 recorded in July 2019 and January and April of 2020.

Monitoring of Streams A to E has been undertaken since Q3 formed. In general Stream A, B and C follow similar trends with variations in pH occurring at the same time. This would tend to indicate these are influenced by the weather in much the same way as L7. As expected, with distance from sources of low pH, the pH levels generally increase to the west and southwest of Q3 in the direction of the streams. Given the proximity of Stream A and C to Q3 this effect is slightly less pronounced than that for Stream B. This is likely due to percolation from Q3 through the bedrock land bridge in these areas. It should be noted that the majority of values for Streams A to C are within EU bathing water limits of pH 6.5 and 8.5, with the percentage of values within the limits over the previous two years generally at around 75%.

4.1. River Churnet

Past monitoring of the River Churnet showed that upstream of the acidic discharge the pH of the river has ranged between 5.7 and 8.2 with an average value of 7.5. The river water was found to generally be within EU bathing water limits above the acidic discharges. The average pH of the river has been within EU bathing water limits since the January 2019 visit. The acidic seepages from the bank have been either absent or more neutral, with the exception of the January 2019 visit when a pH of 3.0 was recorded at a seepage from the bank.

Flow rates of the river Churnet have been recorded throughout the period, see Table 4. The maximum flow rate recorded during the period was 1.7m/s in April 2021 and the minimum flow rate was 0.14m/s recorded during the July 2019 visit. The average flow rate across the period was 0.88m/s.

4.2. Water In Q3 Lake

Following the decreases in the level of Q3, the 155m AOD bench is now above the lake level for most of its length, other than near the overflow where the bench is at a slightly lower elevation.

The pH of Q3 was generally recorded to range from pH ~5.7 in the eastern corner adjacent to the seepage, to pH ~7.4 at the base of the the outfall. The acidic seepage was recorded to have a pH of 4.8 on three visits. As was observed in past monitoring visits, there was an increase in pH with distance from the seepage in the eastern corner. It has previously been anticipated that as lake volumes increase the variability in pH would

decrease from greater mixing and dilution, though more data would be required to confirm this.

4.3. Water In L7 Lake

Previous visits have noted the surface water pH to be generally in keeping with the rest of the quarry between pH 6 and pH 8. The pH measured over the previous two years was generally between pH 7.0-8.7.

The pH appeared to have been affected by the excavations into the tailings which occurred between August and November 2016. Prior to the excavations the pH in L7 showed some variation between pH 10 and 6. This is thought to be due to the uncovering of pockets of high pH lime which were previously buried. However the minimum, maximum and average for each individual visit were over a small range. Over time it is anticipated that the pH values will decrease towards more neutral levels, however this shows that the potential for high fluctuations in pH in L7 remains whilst the tailings remain exposed and/or are disturbed.

5. ENGINEERING

5.1. Quarry Faces

As part of the monitoring visits, visual inspections of the exposed faces have been undertaken. There has been evidence that blocks have fallen in the past around the eastern edge of Q1 with several smaller falls recorded approaching the tunnel portal.

In Q2 several areas of concern have been noted, in particular a large rock fall recorded on the western edge of L7 and having initially failed between December 2012 and April 2013. The initial fall debris was noted to have sunk into the tailings indicating the very soft state. However, more recent visits have indicated additional falls in the same location suggesting a progressive failure of the face. The more recent falls appear to be resting on the surface of the tailings which would appear to confirm that the tailings around the edge are beginning to firm up. Although access to inspect the face is restricted it appears as though additional loose, highly weathered blocks are evident to the south of the main fall. Similar loose blocks have been previously recorded along the exposed rock at the southeast of the quarry. The orientation of the jointing evident in the rest of the exposed quarry faces indicates a potential failure plane and suggests that further falls may be anticipated in the future along the western edge of Q2.

The amount of trees and vegetation growing against the faces of Q1 has increased, obscuring parts of the rock face. However, this also highlights any areas of collapse as the vegetation coverage is taken out by the rockfall leaving a bare face. Comparing the recent quarry face to the quarry face in 2019 shows no new bare areas, suggesting no major collapses have taken place since 2019. When the site is developed, 6m natural barriers should be considered at the top and bottom of the quarry faces in Q1.

Several small slips have historically been recorded in the 155m bench around Q3 which were considered in part to be due to a rising water level. The wave action created by the water's surface will erode the bench and result in washing out of the finer material. The

exposed faces around Q3 also show a significant degree of fracturing and weathering, particularly at the western end where the quarrymen found the sandstone to be heavily weathered.

In October 2018 a ‘Overview site investigation’ the report concluded that when lake levels reduced in 2015 and 2016, evidence of weakening of the sandstones rock mass strength was found in the previously saturated rock. However, the strength loss was not found to be sufficient to cause a mass failure of the quarry faces, although minor surface failures might still be anticipated.

As previously reported the risk of toppling failures is not as great in Q3 as it is in Q2 or Q1 due to the inclined faces with the main areas of concern currently being the exposed faces along the eastern and southern sides of Q3. There does however remain the risk of future rock failures, particularly at the western end, where the mass strength of the sandstone was previously found by the quarrymen to be reduced.

Due to the limited site access the currently noted falls do not present a significant risk of harm and will continue to be monitored for future movement concerns. As development of the site progresses it would be considered prudent to undertake a more detailed assessment and inspection of all exposed rock faces to identify potential areas of concern and possible remedial solutions.

The sandstone quarry faces exposed in Q3 during the early 2018 access work have shown to be prone to surface spoiling in a number of locations, fracturing to gravel and cobble sized fragments, and then reducing to sand. Over time, vegetation has grown on the exposed slopes and benches helping to protect the rock face however access along the benches may start to become increasingly difficult with time. As vegetation continues to established.

FIGURE 8 - Q3

During the 2021 July quarterly monitoring visit a rock fall was noted to have occurred along the 165m AOD bench around the east side of Q3. See Fig 8. This highlights the ongoing hazard of small scale rock falls on rock faces within Q3 and the necessity of the specified rock traps.

5.2. Tunnel

Prior to the visit in July 2016 a 'Tunnel Stability Assessment' report was submitted, dated June 2016. The report concluded that the tunnel in its present condition is stable. No changes to the state of the interior of the tunnel were observed. However, before public access is allowed through the rock tunnel a full study and testing will be required. On a previous visit, at the north end of the tunnel a section of the protective canopy had fallen away and other sections appear to be on the verge of falling.

Due to restricted visitor access to the site and minimal traffic using the tunnel at present the potential risks posed by the tunnel are minimal. However, when the park is developed and the number of site users increases a further analysis of the stability of the tunnel will be required to inform detailed design requirements.

5.3. Q3 Outfall

In mid July 2019, a syphon was set up adjacent to the outfall in Q3 which drains water into the top of Stream A. The purpose of the syphon was to temporarily reduce the water level in Q3 to around 153.00m AOD and allow a new outfall to be constructed at a lower level (156.00m AOD). To aid in lowering the water level in Q3, a second syphon was installed adjacent to the first syphon in October 2019. Both syphons are maintained with a fortnightly cycle of monitoring. During the most recent period Since 28th January 2021 to 21st of April 2021 an estimated 60,762m^3 (741m^3/day) drained from Q3 into Stream A.

In late January 2021 an assessment of the hydrology of the headwaters of Stream A and how the outfall will influence the SSSI area was undertaken. The purpose to assess the potential of water seeping from the sandstone into the valley of Stream A; and to determine the flow path through the SSSI of the overflowing water. As part of the assessment in-situ soakaway testing to determine the soakaway performance in the area of the outfall. The soakaway and flow testing at the proposed outfall location indicated flow rates of at least 4320m^3/day have been shown to flow through the original stream beds and sinkholes within the headwater of Stream A.

Subsequently a report by JBA is being undertaken to evaluate the hydrogeology in more detail, due for publication in September 2021

5.4. Q1E Capping Bunds

In 2018, along the western edge of L4, three earth bunds were extended out around 30m into L4 to allow investigation through the lagoon tailings below. Each bund comprised material taken from different parts of the site to allow an assessment of the suitability of the materials to be used as a capping material at a later date. This included some of the bund at the south side of the solar panels which was removed for this use. A Geo-Grid

was placed on the surface of the western half of the southern bund, and covered with an additional half metre of material to allow assessment to be made of the benefits of incorporating a Geo-Grid into any future capping of L4.

The quarterly monitoring visits include monitoring of the three bunds to measure the amount of settlement which is occurring. The results are presented in Table 5.

The monitoring to date shows that the three bunds have settled 80 to 150mm since monitoring began. Generally, the amount of settlement increases with distance out into the lagoon, which reflects the increasing thickness of tailings. See Table 5 and Figure 9 and Figure 10. The results show that the northern bund has settled the most, with changes of 90mm to 140mm recorded at the eastern end. The northern bund and southern bund have settled at similar rates. The western end of the southern bund has settled the least, by 30mm. This is where the Geo-Grid was installed during the construction of the bunds.

Monitoring of the bunds will be continued in future monitoring visits, and more conclusions will be made once more data is available. Pins 1C 2C 2D and 3C have been lost over the course of the monitoring so far and will be reinstated in following visits.

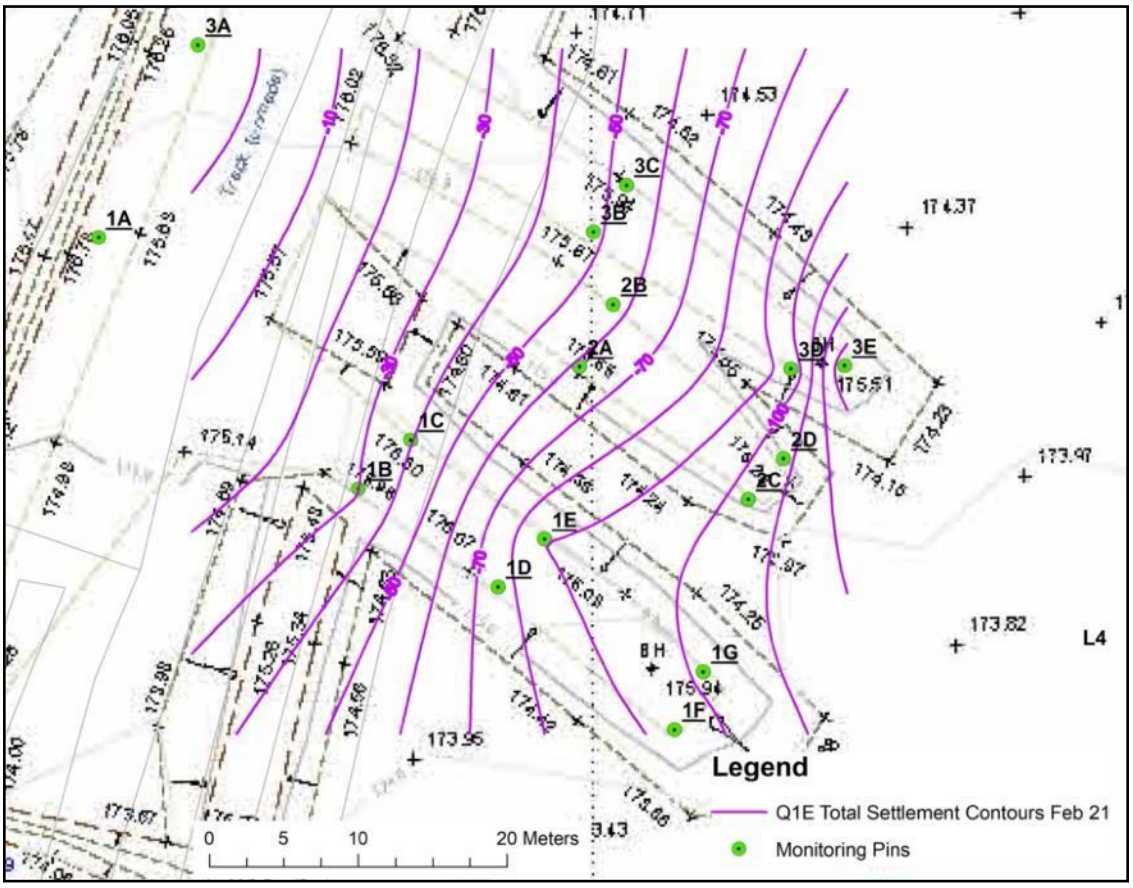

FIGURE - 9 Q1E TOTAL SETTLEMENT CONTOURS (MM)

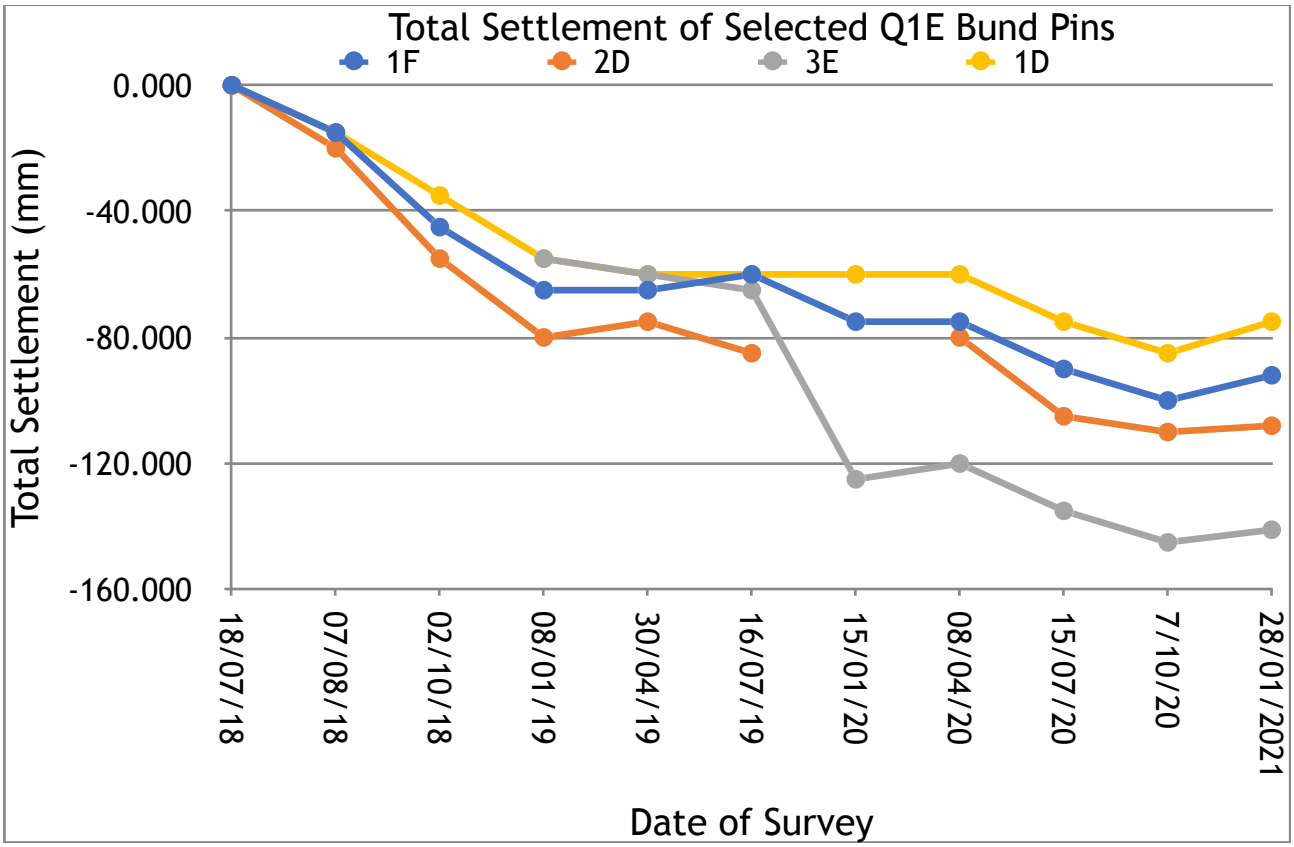

FIGURE - 10 Q1E TOTAL SETTLEMENT OF SELECTED Q1E BUND PINS

5.5. L3 Dam

As previously reported the significant variations in groundwater level in the L3 dam and tailings have raised concerns regarding potential instability. The 2012 investigation recorded several soft zones within the dam construction suggesting localised weakening of the dam material. At the time it was also reported that moisture contents in the dam increased with depth. Although some seepage will occur in an embankment or earth dam, the increase with depth suggests a potential for stability issues. This situation was realised in the mid-1960's when records indicate the dam came close to failing and consequently a rock blanket was installed at the base.

More recently due to concerns over running water within the dam Stream D was diverted away from the dam to drain surface water and flow down the spillway to the eastern end of the dam to reduce the amount of water flowing across the back face of the dam. It was anticipated that this would reduce the amount of water percolating through the tailings and so reaching the dam. Initially this led to a drop in water level in the standpipe within the tailings, and less water flowing down the spillway as well as a visual decrease in surface ponding. However, during the last two years an increase in ponding and the amount of water flowing down the spillway were being observed.

In September 2020 the Stream D diversion channel was cleaned of vegetation and the north side of the channel cut back and widened to prevent the water ponding, as it had been doing, further up-stream. The concern being that the water table had risen in the

tailings behind the L3 dam to such an extent that a relatively strong flow of water down the original stream had been reestablished which was causing flooding of the ground behind the dam. The works flattened the diversion cut on one side of the channel, to between 1:1.5 and 1:2 (v:h), and deepened the channel by 0.5m, leaving the vegetation which has grown on the opposite bank. Future monitoring will be required to determine if these recent works have improved the drainage around the dam.

5.6. L5 Outfall Modifications

A trench was excavated in September 2020 so that water from L5 was diverted above the Q1W pipe bridge track to drain onto the ground on the north side of the weigh bridge. This was to temporarily reduce the water flow into Q3, as well as to maintain the current water level in L5.

Following periods of heavy rain, water has been observed to flow through the new L5 diversion trench before meeting the road and flowing towards the site buildings. Water levels in Q3 have also been seen to fall.

6. CONCLUSIONS AND ACTIONS

The quarterly monitoring has been carried out throughout the January 2019 to April 2021 period with additional visits when restoration earthworks dictated. We would recommend that the monitoring is continued in a similar manner. However, as development progresses additional visits will need to be considered as part of the monitoring program.

- The Modified L5 outfall will continue to divert surface water from L5 and prevent it running down into Q3, instead flowing out onto the area of ground by the weigh bridge. The outfall will be monitored to ensure any slumped material doesn't block the flow of water.

- The amount of water pumped out of Q3 equates to an average of 635 m^3/day since its inception. As per the agreement with the EA monitoring for pH and turbidity have been carried out all parameters have constantly been within the determined limits which were agreed. Monitoring of the Outfall will continue on a bi-weekly basis.

- At this stage, prior to development, we would recommend that monitoring continues on the current three monthly basis. However, as development progresses at the site we would recommend the monitoring is returned to monthly visits. As part of the monitoring we will continue to monitor ground and surface water levels along with pH of accessible water bodies. The rockfalls recorded and exposed faces will continue to be monitored for signs of future instability. Level monitoring of the bunds in Q1E will continue, and may be extended to include monitoring of the bund in Q2W.

APPENDIX A - TABLES

Table 1

Moneystone Table 1

95013 BH surface level reduced because of quarrying (previously 161.61)

BOREHOLE NUMBER	92010	92017	92029	92032	95013	95014	96007	23001	23004	South of road 24012	North of road 24013	BH122	BH121 (28m)	BH121 (13m)	C.RC1	ABH-1	ABH-2
NORTHING	346297	346022	346092	346364	346170	346427	346190	346522	346515	346162	346229	345425	345430	345430	346179	346169	346170
EASTING	404295	404206	403898	403914	404029	403774	404503	403897	403620	404412	404430	404572	404521	404521	404380	403990	403997
SURFACE LEVEL (m.AOD)																	
	188.01	181.19	166.55	170.38	159.00	171.69	193.59	183.73	166.60	174.93	192.70	151	149	149	172	158	158
Base of Sandstone	158.00	142.00	120.00	139.00	136.00	138.00	165.00	151.00	137.00	158.00	164.00	132					
Date read :																	
18/05/2018					157					160.15			140.07		161.85	152.67	153.07
07/08/2018		166.57	146.71	158.48		159.39	171		160		DRY @ 24.7	138.80	139.17	Dry @13	161.76	153.05	154.77
02/10/2018	162	160.99	144.83	158.08	157.15	158.69	170	159.93		160.00	DRY @ 24.7	138.85	138.63	140.98	160.99	146.59	154.24
08/01/2019	161.61	166.99	147.20	158.28		158.49	164.79			159.88	DRY @ 24.7	139.37	141.35	148.40	161.17	147	152.65
30/04/2019	162.41	166.79	147.20	157.08		157.62	170.29			159.38	DRY @ 24.7	139.77	142.40	148.72	161.40	147.60	154.10
17/07/2019	162.31	166.79	147.53	157.28		157.69	170.59			159.73	DRY @ 24.8	138.90	140.55	144.10	161.40		153.80
31/07/2019										159	DRY @ 24.9	139	144	149	162		
14/08/2019											DRY @ 24.10	142.00	141.50	148.50			
28/08/2019											DRY @ 24.11	138.85	142.00	148.65	161.60		
25/09/2019											DRY @ 24.12	138.85	142.65	148.80	162.45		
09/10/2019	162.41	167.99	147.05			156.19				159.53		139.20	142.65	148.95	162.75		
15/01/2020	165.01			159.38						160.43		138.00	146.60	147.60	162.70	147.40	154.44
08/04/2020	166.51	167.04	150.05	160.68	157.62	161.69		164.63		164.93		139.03	144.05	147.85	163.60	148.30	155.50
15/07/2020		165.99	149.07	159.58	157.54	150.09		160.06		164.12		138.60	143.35	147.70	162.20	146.24	153.63
23/09/2020	162.74	166.68	148.64	158.39		158.94	170.47	160.45	159.44	160.61	Dry	142.22	147.68	147.70	161.46		153.02
28/01/2021	162.86	168.81	148.17	158.03	157.80	158.66	170.52	159.59	159.19	164.66	Dry@24.9	139.89	147.86	147.87	161.72	152.46	Gone
21/04/2021	164.25	166.77	148.63	159.39	157.80	160.40	171.50	159.15	161.38	163.18	Dry@25.0	138.98	145.04	147.53	161.99	152.62	Gone
Tip Set at : (m.A.O.D)	157.51	157.95	134.90	143.88	137.76	137.27	168.79	158.63	146.88	156.39	163.70	121.50	120.00	120.00	154.70	146.00	152.60
Water Levels are m.AOD																	

Moneystone Table 1

BOREHOLE NUMBER	B-WS24	B-WS26	B-WS34	B-WS36	B-CP2 short	B-CP2 tall	D-WS27	DWS43	E-WS 1	E-WS5	E-WS40	E-WS42	E-CP1 short	E-CP1 tall	I-WS22	WS20
NORTHING	**345887**	**346005**	**346071**	**346084**	**345874**	**345874**	**345839**	**345854**	**345960**	**345937**	**345909**	**345846**	**345952**	**345952**	**346302**	**345508**
EASTING	**404480**	**404503**	**404497**	**404559**	**404506**	**404506**	**404527**	**404509**	**404715**	**404706**	**404676**	**404673**	**404711**	**404711**	**404624**	**404522**
SURFACE LEVEL (m.AOD)																
	172	**173**	**175**	**176**	**172**	**172**	**169**	**169**	**176**	**176**	**175**	**175**	**176**	**176**	**195**	**157**
Base of Sandstone																
Date read :																
18/05/2018	172.10	173.20	175	175.60	172.10	172.10	169.00	169.40	175.50	175.90	175	175.40	176.20	176.20	195.00	
07/08/2018		170.37		172.26	165.70	162.49	165.96	165.84					168.73	160.52	191.27	
02/10/2018	167.80	172.68	171.10	170.85	165.90	162.36	166.45	166.10		175.90			168.63	160.00	191.55	154.27
08/01/2019	168.10	172.90	171		165.50	162.50	167.55	166		173.85			169	160	193.05	156.50
30/04/2019	167.80	172.93	Dry @ 4.5m	171.85	165.47	162.40	167.20	166.22	Dry	173.70	Dry	172.25	168.80	160.95	193.27	155.38
17/07/2019	168.20	172.33	Dry @ 4.5m		166.50	162.34	167.30	166.30	Dry	173.50	Dry		168.60	160.60	191.55	155.35
31/07/2019	168	173	Dry @ 4.5m	172	166	162	167	166	Dry	174	Dry	173	169	161		156
14/08/2019	167.80	173.20	Dry @ 4.5m		166.75	162.40	167.41	166.45	Dry	173.90	Dry	171.65	166.80	160.70		155.44
28/08/2019	167.80	173.05	Dry @ 4.5m	172.05	166.95	162.30	167.20	166.30	Dry	174.10	Dry	171.75	168.90	160.80		155.45
25/09/2019	168.10	173.20	Dry @ 4.5m	172.10	167.05	162.40	166.15	166.20	Dry	173.60	Dry		168.80	160.65	192.20	155.45
09/10/2019	168.10	173.20		172.60	167.60	162.40	168.00	166.70	173.65	174.50		172.25	169.45	161.60	193.50	155.50
15/01/2020	168.05	173.10		174.10	166.00	162.70	168.00	166.70	174.00	174.40		172.45	168.80	162.90	193.60	155.50
08/04/2020		172.65		174.33	165.83	165.46	167.25	166.22	173.00	173.78		171.88	169.70	161.70	193.06	155.50
15/07/2020	Dry	172.90	Dry	172.50	166.78	162.39	166.04	165.69	Dry	172.70	Dry	171.43	168.85	161.03	191.55	155.43
23/09/2020	168.04	172.70			167.69	161.92	166.23		Dry	171.85					191.40	155.38
28/01/2021	169.11	173.20	171.14	173.56	165.52	163.41	168.20	166.83	174.00	175.08	171.16	172.46	170.08	163.04	194.18	155.61
21/04/2021	167.40	172.52	169.25	173.70	166.32	163.77	167.05	169.40	172.40	173.39	169.85	169.95	169.42	161.44	193.90	155.23
Tip Set at : (m.A.O.D)	167.40	169.20	169.25	170.15	154.60		164.00	163.95	172.40	170.90	169.85	169.95	163.20	159.20	190.00	152.00
Water Levels are m.AOD																

Date	Visit	Number	Location	pH	Material	Comment
02/10/2018	At	13	Q3	5	W	NE Corner Inflow
02/10/2018	At	14	Q3	5.7	W	Adjacent to inflow
02/10/2018	At	15	Q3	6.1	W	North Side
02/10/2018	At	16	L5	6.5	W	Outfall
02/10/2018	At	17	Stream F	7.4	W	Pipe Bridge
02/10/2018	At	18	L7	7.1	W	Excavation
02/10/2018	At	19	L7	7.2	W	Excavation Inflow
02/10/2018	At	20	L7	7.5	W	North Channel
02/10/2018	At	21	L7	8.1	W	Seepage From Bedrock
02/10/2018	At	22	Stream F	4.7	W	Northwestern End
02/10/2018	At	23	Stream F	4.1	W	East Corner Seepage
02/10/2018	At	24	Stream F	4.1	W	East Corner
02/10/2018	At	25	L5	5.6	W	Pond
02/10/2018	At	26	Stream A	6.7	W	V-notch
02/10/2018	At	27	Stream B	6.7	W	V-notch
02/10/2018	At	28	Stream C	6.8	W	V-notch
08/01/2019	Au	1	Q3	8.5	W	Base of Ramp
08/01/2019	Au	2	Old Stream D	8.2	W	Pipe Bridge
08/01/2019	Au	3	Old Stream D	8.1	W	Top of Spillway
08/01/2019	Au	4	Stream D Diversion	8	W	Pipe Bridge
08/01/2019	Au	5	Area E	7.7	W	Pond at top of Incline
08/01/2019	Au	6	Stream D Diversion	7.8	W	Outfall onto Incline
08/01/2019	Au	7	SP1	7.7	W	Pond
08/01/2019	Au	8	SP2	7.7	W	Pond
08/01/2019	Au	9	SP3	7.7	W	Pond
08/01/2019	Au	10	River Churnet	3	W	Seepage From Pipe
08/01/2019	Au	11	River Churnet	5.7	W	Upstream of Outflow
08/01/2019	Au	12	River Churnet	5.9	W	River at Pumphouse
08/01/2019	Au	13	Stream E	6.1	W	Stream at EA Station
08/01/2019	Au	14	River Churnet	6.2	W	At EA Station
08/01/2019	Au	15	Stream E	6.5	W	North of old Railway
08/01/2019	Au	16	SP5	6.7	W	Pond
08/01/2019	Au	17	Q3	4.8	W	Seepage in NE Corner
08/01/2019	Au	18	Q3	5.7	W	NE Corner
08/01/2019	Au	19	Q3	5.9	W	Northern Edge
08/01/2019	Au	20	L5	6.3	W	Outflow to Q3
08/01/2019	Au	21	L4	7	W	Outflow Channel
08/01/2019	Au	22	L5	7.9	W	Eastern Shore
08/01/2019	Au	23	L5	7.6	W	Flow from L7
08/01/2019	Au	24	L7	7.6	W	Outflow Channel
08/01/2019	Au	25	Stream F	8	W	Pipe Bridge
08/01/2019	Au	26	L7	7.7	W	Excavation
08/01/2019	Au	27	L7	7.2	W	Drainage Channel in N side
08/01/2019	Au	28	Stream F	5.9	W	Upflow of seepage

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pH MONITORING RECORDS

Client: Laver Leisure

Project: Moneystone Quarry, Oakamoor

Number: 418050

TABLE 2

Date	Visit	Number	Location	pH	Material	Comment
08/01/2019	Au	29	Stream F	4.3	W	Seepage
08/01/2019	Au	30	Stream A	6.1	W	V-Notch
08/01/2019	Au	31	Stream B	6.1	W	V-Notch
08/01/2019	Au	32	Stream C	6.3	W	V-Notch
30/04/2019	Av	1	Q3	8.9	W	Base of ramp
30/04/2019	Av	2	Old Stream D	8	W	Stream at top of spillway
30/04/2019	Av	3	Stream D Diversion	8	W	At pipe bridge
30/04/2019	Av	4	Area E	8	W	Flow down incline
30/04/2019	Av	5	Stream D Diversion	7.9	W	Outfall onto incline
30/04/2019	Av	6	SP1	8	W	Pond
30/04/2019	Av	7	SP2	7.9	W	Pond
30/04/2019	Av	8	SP3	8.1	W	Pond
30/04/2019	Av	9	Near Churnet	3.7	W	Surafce water
30/04/2019	Av	10	Churnet Bank	4.9	W	Seepage from metal pipe
30/04/2019	Av	11	River Churnet	5.7	W	Upstream of pump house
30/04/2019	Av	12	River Churnet	6	W	At pump house
30/04/2019	Av	13	Stream E	6.4	W	At EA Station
30/04/2019	Av	14	River Churnet	6.5	W	At EA Station
30/04/2019	Av	15	Stream E	6.8	W	North of railway
30/04/2019	Av	16	SP5	6.8	W	At outfall
30/04/2019	Av	17	Q3	7.1	W	Near overflow
30/04/2019	Av	18	Q3	7.3	W	Inflow from L5
30/04/2019	Av	19	Q3 Seepage	5	W	Seepage in NE corner
30/04/2019	Av	20	Q3	6.1	W	NE corner
30/04/2019	Av	21	Q3	6.5	W	Along northern edge
30/04/2019	Av	22	Stream A	6.8	W	At V-Notch
30/04/2019	Av	23	Stream B	6.7	W	At V-Notch
30/04/2019	Av	24	Stream C	6.9	W	At V-Notch
30/04/2019	Av	25	L5	7	W	Beach on eastern side
30/04/2019	Av	26	L4	7.2	W	Outfall trench
30/04/2019	Av	27	L5	7.4	W	South of rock tunnel
30/04/2019	Av	28	L7	7.5	W	SE outfall
30/04/2019	Av	29	L7	7.6	W	Excavtion
30/04/2019	Av	30	Stream F	6	W	N corner
30/04/2019	Av	31	Stream F	5.4	W	Upstream of seepage
30/04/2019	Av	32	Stream F	4	W	Seepage from bedrock
16/07/2019	Aw	1	Q3	8.1	W	Ramp Base
16/07/2019	Aw	2	Q3	4.9	W	Inflow
16/07/2019	Aw	3	Q3	6.3	W	Near Inflow
16/07/2019	Aw	4	L5	7.8	W	Beach
16/07/2019	Aw	5	L7	8.7	W	Excavation
16/07/2019	Aw	6	Stream D	8	W	Diversion
16/07/2019	Aw	7	SP1	8.1	W	Pond
16/07/2019	Aw	8	SP2	7.8	W	Pond

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pH MONITORING RECORDS

Client: Laver Leisure

Project: Moneystone Quarry, Oakamoor

Number: 418050

TABLE 2

Date	Visit	Number	Location	pH	Material	Comment
16/07/2019	Aw	9	River C	8	W	Pumphouse
16/07/2019	Aw	10	Stream D	7.6	W	Diversion Pipe Bridge
16/07/2019	Aw	11	Stream D	7.7	W	Pond
16/07/2019	Aw	12	Stream A	7.4	W	V-Notch
16/07/2019	Aw	13	Stream B	7.6	W	V-Notch
16/07/2019	Aw	14	Stream C	7.8	W	V-Notch
09/10/2019	Ax	1	Q3	7.9	W	Base of Ramp
09/10/2019	Ax	2	D Diversion	7.7	W	Pipe Bridge
09/10/2019	Ax	3	Old Stream D	7.6	W	Top of Spillway
09/10/2019	Ax	4	Incline	8.6	W	Flow above Stream D Diversion
09/10/2019	Ax	5	D Diversion	8	W	Incline
09/10/2019	Ax	6	SP1	8.1	W	Pond
09/10/2019	Ax	7	Q3	7.9	W	Underpass Flow
09/10/2019	Ax	8	Q3	5.9	W	Seepage
09/10/2019	Ax	9	Q3	6.6	W	Adjacent to Seepage
09/10/2019	Ax	10	Q3	4.9	W	Beach Seepage
09/10/2019	Ax	11	Q3	6.5	W	Overflow
09/10/2019	Ax	12	L4	7	W	Overflow Trench
09/10/2019	Ax	13	L4	7.4	W	Lake
09/10/2019	Ax	14	L7	7.6	W	Stream from Excavation
09/10/2019	Ax	15	L7	7.7	W	Stream from Lake
09/10/2019	Ax	16	Stream F	8	W	At Pipe Bridge
09/10/2019	Ax	17	L7	8.4	W	Excavation Pond
09/10/2019	Ax	18	L5	8.1	W	Outflow
09/10/2019	Ax	19	Stream A	7.2	W	V-Notch
09/10/2019	Ax	20	Stream B	7.4	W	V-Notch
09/10/2019	Ax	21	Stream C	7.5	W	V-Notch
15/01/2020	Ay	1	Q3	8	W	Base of Ramp
15/01/2020	Ay	2	Stream D Diversion	7.6	W	Pipe Bridge
15/01/2020	Ay	3	Old Stream D	7.7	W	South of Pipe Bridge
15/01/2020	Ay	4	Incline	8.5	W	Above Stream D
15/01/2020	Ay	5	Incline	8	W	End of Stream D Diversion
15/01/2020	Ay	6	SP1	8	W	Pond
15/01/2020	Ay	7	SP2	7.9	W	Pond
15/01/2020	Ay	8	SP3	8.1	W	Pond
15/01/2020	Ay	9	River Churnet	8	W	At Pumphouse
15/01/2020	Ay	10	Bank Of Churnet	7.5	W	Flow into River near Pumphouse
15/01/2020	Ay	11	Stream E	7.5	W	At EA Station
15/01/2020	Ay	12	River Churnet	7.8	W	At EA Station
15/01/2020	Ay	13	Stream E	7.8	W	North of Railway
15/01/2020	Ay	14	Q3	8	W	Flow through Tunnel
15/01/2020	Ay	15	Q3	7.9	W	Ponding on upper track
15/01/2020	Ay	16	Q3	5.9	W	Seepage in NE corner
15/01/2020	Ay	17	Q3	6.6	W	NE corner

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TABLE 2

Date	Visit	Number	Location	pH	Material	Comment
15/01/2020	Ay	18	Q3	7.1	W	Northern middle corner
15/01/2020	Ay	19	Q3	7.4	W	Overflow
15/01/2020	Ay	20	L5	7.6	W	Channel to Q3
15/01/2020	Ay	21	L4	7.7	W	Outfall
15/01/2020	Ay	22	L5	7.9	W	Flow from L7
15/01/2020	Ay	23	L5	8.1	W	Lake at beach
15/01/2020	Ay	24	L7	8	W	Outfall
15/01/2020	Ay	25	L7	8.1	W	Excavation Outfall
15/01/2020	Ay	26	L7	8.2	W	Excavation
15/01/2020	Ay	27	Stream F	7.6	W	Stream F north of tip
15/01/2020	Ay	28	Stream F	7.3	W	Stream F at pipe bridge
15/01/2020	Ay	29	Stream A	7	W	V-Notch
15/01/2020	Ay	30	Stream B	7.1	W	V-Notch
15/01/2020	Ay	31	Stream C	7.2	W	V-Notch
15/01/2020	Ay	32	Syhpon	7.1	W	Stream A
10/02/2020	Bc	1	Q3	6.5	W	Outfall
10/02/2020	Bc	2	V Notch	6.4	W	Stream A
10/02/2020	Bc	3	V Notch	6.6	W	Stream B
10/02/2020	Bc	4	V Notch	6.7	W	Stream C
10/02/2020	Bc	5	Q3	6.5	W	South side
10/02/2020	Bc	6	Q3	6.6	W	ramp
10/02/2020	Bc	7	Q3	6.5	W	ne corner
10/02/2020	Bc	8	Q3	5.5	W	ne seepage
10/02/2020	Bc	9	D diversion	7.5	W	pipe bridge
10/02/2020	Bc	10	D diversion	7.6	W	incline
10/02/2020	Bc	11	Old Stream D	7.3	W	top of spillway
10/02/2020	Bc	12	SP1	7.8	W	pond
10/02/2020	Bc	13	SP2	7.9	W	pond
10/02/2020	Bc	14	SP3	8	W	pond
10/02/2020	Bc	15	River c	7.7	W	pump house
10/02/2020	Bc	16	River c	6.4	W	orange seepage on bank
10/02/2020	Bc	17	stream	6.7	W	ea station
10/02/2020	Bc	18	river c	7.3	W	near ea station
10/02/2020	Bc	19	L4	7	W	outfall
10/02/2020	Bc	20	L4/5	7.4	W	central stream
10/02/2020	Bc	21	L5	7.7	W	pond
10/02/2020	Bc	22	L7	7.4	W	excavation outfall
10/02/2020	Bc	23	L7	7.5	W	outfall
10/02/2020	Bc	24	L7	8	W	stream
10/02/2020	Bc	25	L7	7.6	W	excavation
10/02/2020	Bc	26	Q1E	7.2	W	L5 Trench
10/02/2020	Bc	1	Q3	6.5	W	Outfall
10/02/2020	Bc	2	V Notch	6.4	W	Stream A
10/02/2020	Bc	3	V Notch	6.6	W	Stream B

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TABLE 2

Date	Visit	Number	Location	pH	Material	Comment
10/02/2020	Bc	4	V Notch	6.7	W	Stream C
10/02/2020	Bc	5	Q3	6.5	W	south side
10/02/2020	Bc	6	Q3	6.6	W	Ramp
10/02/2020	Bc	7	Q3	6.5	W	NE corner
10/02/2020	Bc	8	Q3	5.5	W	NE seepage
10/02/2020	Bc	9	D diversion	7.5	W	Pipe Bridge
10/02/2020	Bc	10	D diversion	7.6	W	Incline
10/02/2020	Bc	11	Old stream D	7.3	W	top of spill way
10/02/2020	Bc	12	SP1	7.8	W	pond
10/02/2020	Bc	13	SP2	7.9	W	pond
10/02/2020	Bc	14	SP3	8	W	pond
10/02/2020	Bc	15	River c	7.7	W	by pump house
10/02/2020	Bc	16	River c	6.4	W	orange seepage from bank
10/02/2020	Bc	17	stream	6.7	W	EA station
10/02/2020	Bc	18	river c	7.3	W	Near EA
10/02/2020	Bc	19	L4	7	W	Outfall
10/02/2020	Bc	20	L4/5	7.4	W	Central Stream
10/02/2020	Bc	21	L5	7.7	W	Pond
10/02/2020	Bc	22	L7	7.4	W	Excavation outfall
10/02/2020	Bc	23	L7	7.5	W	Outfall
10/02/2020	Bc	24	L7	8	W	Stream
10/02/2020	Bc	25	L7	7.6	W	Excavation
10/02/2020	Bc	26	Q1E	7.2	W	L5 trench
08/04/2020	Az	1	Q3	7.5	W	Base of Ramp
08/04/2020	Az	2	Old Stream D	7.4	W	Top of spillway
08/04/2020	Az	3	Stream D Diversion	7.7	W	Pipe bridge
08/04/2020	Az	4	Stream D Diversion	7.8	W	Incline
08/04/2020	Az	5	SP1	8	W	Pond
08/04/2020	Az	6	SP2	7.8	W	Pond
08/04/2020	Az	7	SP3	8.1	W	Pond
08/04/2020	Az	8	River Churnet	8	W	Pumphouse
08/04/2020	Az	9	River Churnet	6.3	W	Seepage from bank
08/04/2020	Az	10	Stream E	6.9	W	At EA Station
08/04/2020	Az	11	River Churnet	7.1	W	Near EA Station
08/04/2020	Az	12	L5	7.2	W	Pond/Outfall
08/04/2020	Az	13	L4	8.1	W	Flow from L7
08/04/2020	Az	14	L4	7.9	W	Pond/Beach
08/04/2020	Az	15	Q3	7.5	W	North East Corner
08/04/2020	Az	16	L7	7.6	W	Excavation Outfall
08/04/2020	Az	17	L7	7.5	W	Outfall
08/04/2020	Az	18	L7	7.9	W	Stream F
08/04/2020	Az	19	L7	7.4	W	Stream F Pipe Bridge
08/04/2020	Az	20	Stream A	7.6	W	V-Notch
08/04/2020	Az	21	Stream B	7.6	W	V-Notch

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TABLE 2

Date	Visit	Number	Location	pH	Material	Comment
08/04/2020	Az	22	Stream C	7.5	W	V-Notch
15/07/2020	Ba	1	Q3	7.1	W	Ramp
15/07/2020	Ba	2	D Diversion	7.1	W	Pipe Bridge
15/07/2020	Ba	3	Old Stream D	7.2	W	Stream
15/07/2020	Ba	4	Incline	7.6	W	D Diversion Stream
15/07/2020	Ba	5	D Diversion	7.6	W	Incline
15/07/2020	Ba	6	SP1	7.8	W	Pond
15/07/2020	Ba	7	SP2	7.7	W	Pond
15/07/2020	Ba	8	SP3	8	W	Pond
15/07/2020	Ba	9	River Churnet	8.2	W	Pump House
15/07/2020	Ba	10	Stream E	7.4	W	EA Station
15/07/2020	Ba	11	L7	7.8	W	Excavation
15/07/2020	Ba	12	L7	7	W	Channel into excavation
15/07/2020	Ba	13	L7	7.7	W	Stream F
15/07/2020	Ba	14	L4	7.3	W	Pond
15/07/2020	Ba	15	Q3	7.6	W	Northeast Corner
15/07/2020	Ba	16	Q3	5.7	W	Seepage
15/07/2020	Ba	17	Q3	6.7	W	Outfall
15/07/2020	Ba	18	Stream A	6.9	W	Stream
15/07/2020	Ba	19	Stream B	6.9	W	Stream
15/07/2020	Ba	20	Stream C	7	W	Stream
07/10/2020	Bb	1	Q3	6.3	W	Ramp
07/10/2020	Bb	2	Q3	6.3	W	NE corner
07/10/2020	Bb	3	Q3	5	W	NE seepage
07/10/2020	Bb	4	Q3	6.1	W	Outfall
07/10/2020	Bb	5	Q3	6.5	W	Syphon
07/10/2020	Bb	6	Stream A	6.5	W	Stream just before Syphon input
07/10/2020	Bb	7	Stream A	6.6	W	V-notch
07/10/2020	Bb	8	Stream B	6.7	W	V-notch
07/10/2020	Bb	9	Stream C	6.8	W	V-notch
07/10/2020	Bb	10	Stream D diversion	7	W	Pipe Bridge
07/10/2020	Bb	11	Old Stream D diversion	7.2	W	Pipe Bridge
07/10/2020	Bb	12	Incline	8.2	W	
07/10/2020	Bb	13	D diversion	7.9	W	
07/10/2020	Bb	14	SP1	7.9	W	Pond
07/10/2020	Bb	15	SP2	7.8	W	Pond
07/10/2020	Bb	16	SP3	8	W	Pond
07/10/2020	Bb	17	River C	7.6	W	Pump House
07/10/2020	Bb	18	Stream E	7.2	W	EA Station
07/10/2020	Bb	19	River C	7.5	W	EA Station
07/10/2020	Bb	20	L5	7.6	W	Beach
07/10/2020	Bb	21	L7 Tunnel	7.7	W	Tunnel pipe discharge
07/10/2020	Bb	22	L7	8.2	W	Excavation
07/10/2020	Bb	23	L7	7.8	W	Outfall

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TABLE 2

Date	Visit	Number	Location	pH	Material	Comment
07/10/2020	Bb	24	Stream F	8.2	W	Pipe Bridge
10/02/2021	Bc	1	Q3	6.5	W	Outfall
10/02/2021	Bc	2	V Notch	6.4	W	Stream A
10/02/2021	Bc	3	V Notch	6.6	W	Stream B
10/02/2021	Bc	4	V Notch	6.7	W	Stream C
10/02/2021	Bc	5	Q3	6.5	W	South Side
10/02/2021	Bc	6	Q3	6.6	W	Ramp
10/02/2021	Bc	7	Q3	6.5	W	NE Corner
10/02/2021	Bc	8	Q3	5.5	W	NE Seepage
10/02/2021	Bc	9	D diversion	7.5	W	Pipe bridge
10/02/2021	Bc	10	D diversion	7.6	W	Incline
10/02/2021	Bc	11	Old Stream D	7.3	W	Top of spilway
10/02/2021	Bc	12	SP1	7.8	W	pond
10/02/2021	Bc	13	SP2	7.9	W	pond
10/02/2021	Bc	14	SP3	8	W	pond
10/02/2021	Bc	15	River C	7.7	W	By Pumphouse
10/02/2021	Bc	16	River C	6.4	W	Orange Seepage from Bank
10/02/2021	Bc	17	Stream	6.7	W	EA Station
10/02/2021	Bc	18	River C	7.3	W	Near EA Station
10/02/2021	Bc	19	L4	7	W	Outfall
10/02/2021	Bc	20	L4/5	7.4	W	Central Stream
10/02/2021	Bc	21	L5	7.7	W	Pond
10/02/2021	Bc	22	L7	7.4	W	Excavation Outfall
10/02/2021	Bc	23	L7	7.5	W	Outfall
10/02/2021	Bc	24	L7	8	W	Stream
10/02/2021	Bc	25	L7	7.6	W	Excavation
10/02/2021	Bc	26	Q1E	7.2	W	L5 Trench
21/04/2021	Bd	1	Q3	6.2	W	Bucket
21/04/2021	Bd	2	Q3	6.3	W	Outfall
21/04/2021	Bd	3	Q3	6.3	W	South Bank
21/04/2021	Bd	4	Q3	6.3	W	Ramp
21/04/2021	Bd	5	Q3	6.2	W	NW Corner
21/04/2021	Bd	6	Q3	5.2	W	NW Seepage
21/04/2021	Bd	7	Stream D	6.5	W	Old Stream D
21/04/2021	Bd	8	Dam Outfall	7	W	Dam
21/04/2021	Bd	9	Stream D diversion Mouth	7.1	W	D Diversion
21/04/2021	Bd	10	Stream D diversion Pipe	7.2	W	D Diversion
21/04/2021	Bd	11	SP1	7.4	W	SP1
21/04/2021	Bd	12	SP2	7.4	W	SP2
21/04/2021	Bd	13	SP3	7.5	W	SP3
21/04/2021	Bd	14	River C	7.7	W	Pump House
21/04/2021	Bd	15	River C	6.8	W	Seepage
21/04/2021	Bd	16	EA Station	7.1	W	River C
21/04/2021	Bd	17	River EA	7.2	W	River C

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TABLE 2

Date	Visit	Number	Location	pH	Material	Comment
21/04/2021	Bd	18	L4	7.8	W	L4
21/04/2021	Bd	19	Tunnel Pipe	7.8	W	Tunnel
21/04/2021	Bd	20	North of Tunnel	7.9	W	Tunnel
21/04/2021	Bd	21	Q2 Excavation	7.6	W	Q2 Excavation
21/04/2021	Bd	22	Stream F Pipe	7.8	W	Stream F
21/04/2021	Bd	23	A	6.4	W	A
21/04/2021	Bd	24	B	6.5	W	B
21/04/2021	Bd	25	C	6.4	W	C
21/04/2021	Bd	26	SP4	7.3	W	SP4
21/04/2021	Bd	27	Stream F North	7.9	W	Stream F North

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TABLE 2

	Table 3: Observed Q3 Water Levels					Inflow(m3/day)		River Flows (m3/day)		
Date	Days	Q3 Level	L8 Level	Level Rise (mm/ day)	Volume	Avg	Period	A	B	C
16-Dec-10	0	131.00			0					
20-Dec-10	4d	135.50	140.50	1125	2438	610	610			
7-Jan-11	22d	141.00		306	26301	1196	1326	382	1043	55
9-Feb-11	55d	144.00		91	68194	1240	1269	159	731	<50
4-May-11	139d	147.00	149.14	36	147528	1061	944	<100	109	<50
1-Jun-11	167d	148.25	149.64	45	169145	1013	772	<100	159	<50
14-Jul-11	210d	149.50	149.56	29	200000	952	718	<100	109	<50
9-Aug-11	236d	149.70	149.66	8	207567	880	291	<100	<100	<50
8-Sep-11	266d	150.00	149.96	10	218917	823	378	<100	109	<50
3-Oct-11	291d	150.16	150.47	6	224970	773	242	<100	159	<50
19-Oct-11	307d	150.74	150.81	36	246913	804	1371	<100	159	<50
22-Nov-11	341d	151.05	150.87	9	258490	758	340	159	256	<50
19-Dec-11	368d	151.39	150.85	13	271504	738	482	382	1224	81
9-Jan-12	389d	151.72	151.13	16	283876	730	589	220	483	112
6-Feb-12	417d	152.02	151.12	11	295226	708	405	159	1043	<50
20-Mar-12	460d	152.24	151.37	5	303662	660	196	295	431	<50
12-Apr-12	483d	152.38	151.46	6	308770	639	222	382	1224	81
22-May-12	523d	152.63	151.76	6	318417	609	241	295	337	<50
3-Jul-12	565d	152.90	152.10	6	328632	582	243	382	483	<50
17-Sep-12	641d	153.17		4	340246	531	153	295	1043	<50
31-Oct-12	685d	153.30		3	345623	505	122	295	1043	<50
6-Dec-12	721d	153.71		12	363474	504	496	663	1424	95
12-Feb-13	789d	154.95		18	423700	537	886	1131	3729	112
26-Apr-13	862d	156.75		25	520697	604	1329	539	731	<50
18-Jun-13	915d	157.25		9	547709	599	510	295	382	55
30-Jul-13	957d	157.29		1	549866	575	51	159	220	<50
26-Oct-13	1045d	156.88		-5	527760	505	-251	1224	3027	150
8-Jan-14	1119d	156.91		0	529108	473	18	483	1879	81
15-Apr-14	1216d	157.66		8	569654	468	418	188	878	<50
9-Jul-14	1301d	158.30		8	604322	465	408	382	483	150
6-Oct-14	1390d	157.58		-8	565502	407	-436	483	382	<50
20-Jan-15	1496d	156.66		-9	515898	345	-468	<100	<100	<50
28-Apr-15	1594d	156.29		-4	495949	311	-204	599	483	<50
28-Jul-15	1685d	156.15		-2	488401	290	-83	220	382	<50
31-Oct-15	1780d	155.46		-7	450928	253	-394	295	1879	55
29-Jan-16	1870d	155.19		-3	436802	234	-157	382	1642	81
7-Apr-16	1939d	156.57		20	511208	264	1078	382	2412	194
5-Jul-16	2028d	157.32		8	551645	272	454	295	599	112
2-Aug-16	2056d	157.39		7	555420	270	378			
11-Nov-16	2157d	157.09		-3	539244	250	-160	295	220	55
1-Dec-16	2177d	157.07		-1	538166	247	-54	295	539	55
24-Jan-17	2231d	156.82		-5	524417	235	-255	483	731	81
25-Apr-17	2322d	156.66		-2	515791	222	-95	220	483	55
20-Jul-17	2408d	156.40		-3	502042	208	-160	220	295	<50
12-Oct-17	2492d	156.09		-4	485327	195	-199	382	483	<50
23-Jan-18	2595d	155.75		-3	466726	180	-181	483	1043	55
18-May-18	2710d	156.70		8	518217	191	448	159	483	55
7-Aug-18	2791d	156.71		0	518486	186	3	159	295	<50
2-Oct-18	2847d	156.63		-1	514443	181	-72	159	382	<50
8-Jan-19	2945d	156.19		-4	490719	167	-242	159	483	<50
30-Apr-19	3057d	155.98		-2	479397	157	-101	483	731	<50
16-Jul-19	3134d	154.89		-14	420627	134	-763	599	382	<50
9-Oct-19	3219d	155.44		6	450281	140	349	731	1424	81
15-Jan-20	3317d	156.46		10	505007	152	558	1224	3367	194
8-Apr-20	3401d	157.79		16	576555	170	852	599	878	81
15-Jul-20	3499d	157.34		-5	552724	158	-243	878	382	81
8-Oct-20	3584d	156.55		-9	509860	142	-504	731	1879	246
28-Jan-21	3696d	155.73		-7	465594	126	-395	1879	4113	951
21-Apr-21	3779d	156.10		5	485867	129	244	878	731	55

Table 4: Stream A, B and C flow rate.

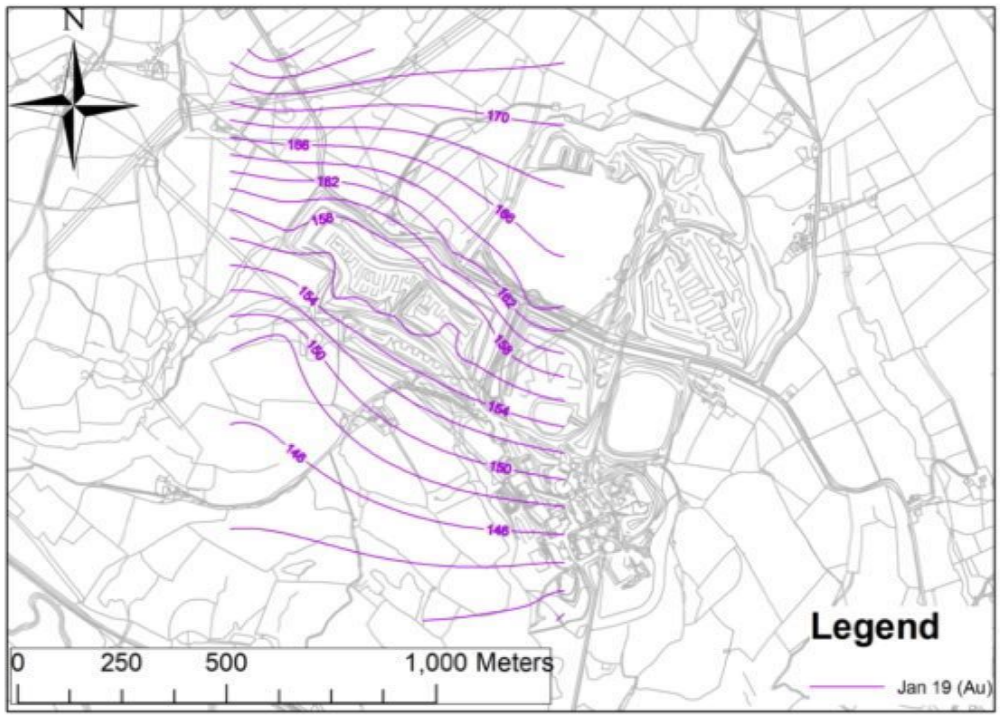
	A	B	C	A	B	C	Syphons	River Churnet	
	Head (mm)			Flow (m3/d)				Estimated Flow Speed (m/s)	River Level (m relative to previous visit)
	90°	90°	53° 8'						
	A	B	C	A	B	C	Syphons		
23/01/2018	110	150	60	483	1043	55		1.25	0.21
18/05/2018	70	110	60	159	483	55		0.35	-0.37
07/08/2018	70	90	50	159	295			0.18	-0.13
02/10/2018	70	100	50	159	382			0.23	0.04
08/01/2019	70	110	50	159	483			0.30	0.12
30/04/2019	110	130	50	483	731			0.41	0.09
16/07/2019	120	100	50	599	382			0.14	-0.20
31/07/2019	170	130	60	1424	731	55	375		
14/08/2019	130	160	80	731	1224	112	389		
28/08/2019	110	100	40	483	382		379		
25/09/2019	110	170	70	483	1424	81	389		
09/10/2019	130	170	70	731	1424	81	389		
23/10/2019	130	140	60	731	878	55	732		
06/11/2019	140	160	60	878	1224	55	736		
20/11/2019	150	180	80	1043	1642	112	745		
04/12/2019	140	160	70	878	1224	81	736		
18/12/2019	150	170	80	1043	1424	112	741		
15/01/2019	160	240	100	1224	3367	194	741	1.11	0.55
30/01/2020	130	170	80	731	1424	112	375		
12/02/2020	170	220	110	1424	2709	246	732		
26/02/2020	170	250	130	1424	3729	372	732		
25/03/2020	130	150	70	731	1043	81	370		
08/04/2020	120	140	70	599	878	81	370	0.42	-0.5
22/04/2020	130	130	70	731	731	81	370		
06/05/2020	150	130	70	1043	731	81	736		
20/05/2020	150	120	70	1043	599	81	732		
03/06/2020	140	120	70	878	599	81	741		
17/06/2020	140	120	65	878	599	67	NR		
01/07/2020	140	110	80	878	483	112	736		
15/07/2020	140	100	70	878	382	81	736	0.5	0
29/07/2020	140	110	60	878	483	55	732		
12/08/2020	110	130	70	483	731	81	370		
10/09/2020	120	110	60	599	483	55	370		
23/09/2020	130	90	70	731	295	81	NR		
08/10/2020	130	190	110	731	1879	246	370	1	0.57
04/11/2020	110	160	70	483	1224	81	0		
19/11/2020	150	170	60	1043	1424	55	741		
02/12/2020	110	150	60	483	1043	55	370		
16/12/2020	150	260	130	1043	4113	372	370		
06/01/2021	110	150	60	483	1043	55	370		
28/01/2020	190	260	190	1879	4113	951	741		
10/02/2020	150	180	80	1043	1642	112	741	0.63	-0.43
21/04/2021	140	130	60	878	731	55	741	1.7	-0.09

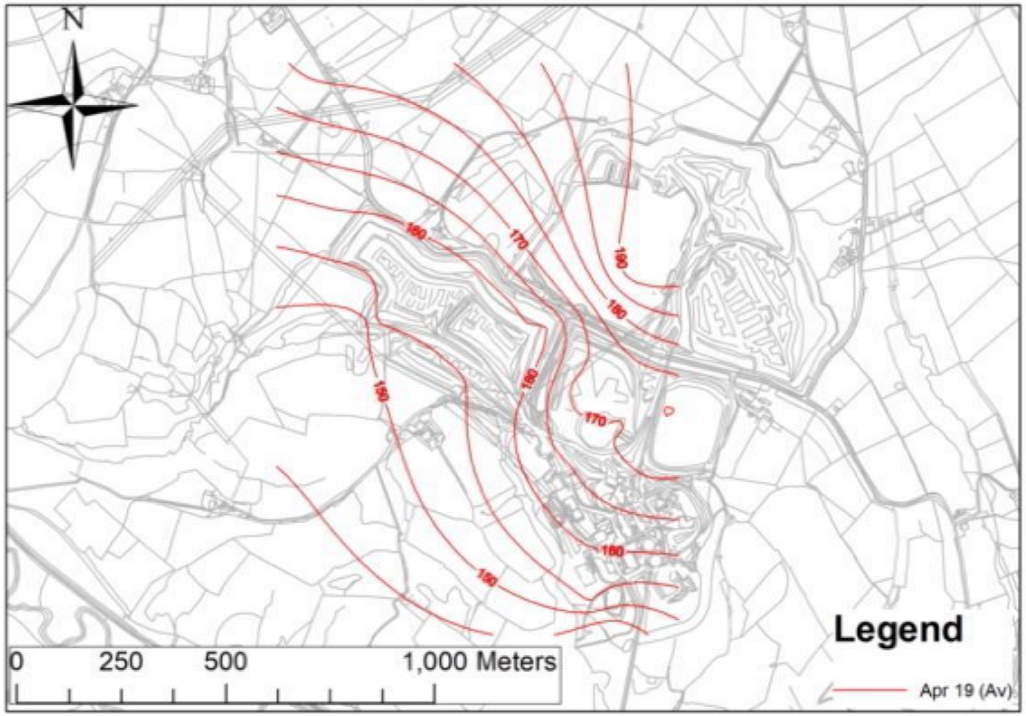
Table 5 - Level Monitoring of Trial Bunds on L4 at Moneystone Quarry Q1E.

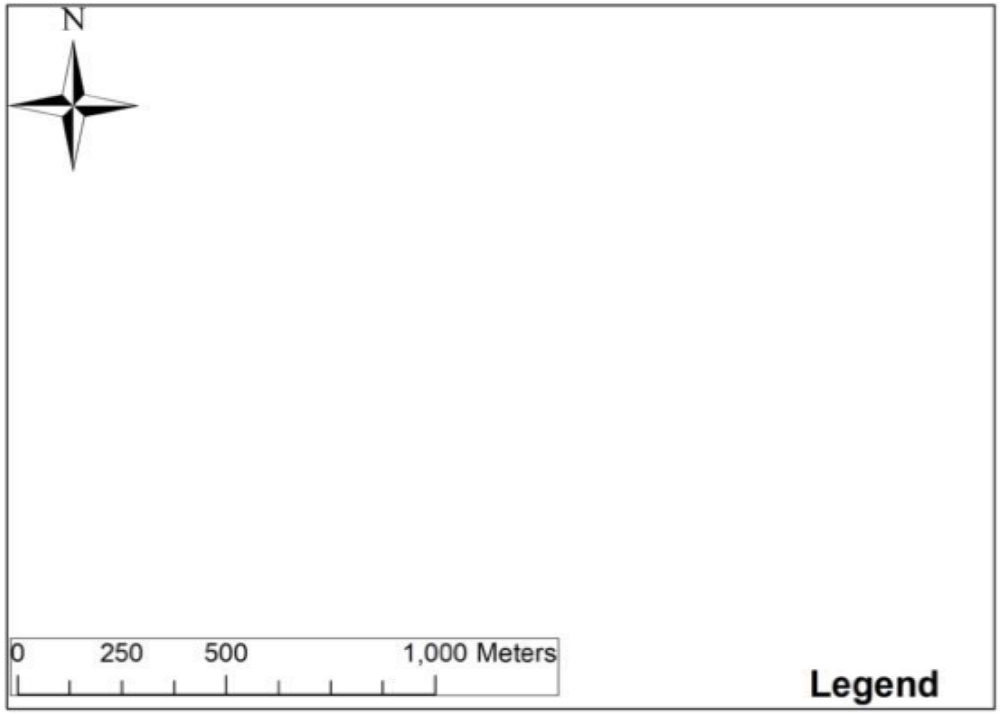
Date	1A	1B	1C	1D	1E	1F	1G	2A	2B	2C	2D	3A	3B	3C	3D	3E	E.WS5	E.WS1	L5 Water Level	DATUM (TOP OF PIPE UNDER ROAD)	ELEVATION OF THEODOLITE 1	ELEVATION OF THEODOLITE 2	ELEVATION OF THEODOLITE 3	REMARKS
18/07/18	**175.560**	**175.820**	**176.020**	**175.715**	**175.810**	**175.485**	**175.595**	**175.395**	**175.570**	**174.995**	**174.955**	**175.880**	**175.460**	**175.600**	**175.175**	**175.255**	**1.465**	**1.735**			**177.215**			**All levels relative to the two points on bedrock (1A, 3A), assumed not to have moved**
07/08/18	**175.560**	**175.820**	**176.015**	**175.700**	**175.800**	**175.470**	**175.580**	**175.380**	**175.555**	**174.975**	**174.935**	**175.880**	**175.450**	**175.595**	**175.160**	**175.240**			**170.085**	**173.290**	**177.270**			**All levels relative to the top of the pipe under the road.**
02/10/18	**175.565**	**175.815**	**176.005**	**175.680**	**175.775**	**175.440**	**175.545**	**175.370**	**175.545**	**174.945**	**174.900**	**175.890**	**175.440**	**175.585**	**175.215**	**CNL**			**170.190**	**173.290**	**177.080**			**All levels relative to the top of the pipe under the road.**
08/01/19	**175.560**	**175.800**	**175.990**	**175.660**	**175.750**	**175.420**	**175.525**	**175.350**	**175.530**	**174.925**	**174.875**	**175.885**	**175.420**	**175.565**	**175.110**	**175.200**			**170.565**	**173.290**	**177.280**			**All levels relative to the top of the pipe under the road.**
30/04/19	**175.555**	**175.800**	**175.985**	**175.655**	**175.745**	**175.420**	**175.520**	**175.345**	**175.525**	**174.915**	**174.880**	**175.885**	**175.420**	**175.565**	**175.110**	**175.195**			**170.185**	**173.290**	**177.480**			**All levels relative to the top of the pipe under the road.**
16/07/19	**175.555**	**175.800**	**175.980**	**175.655**	**175.745**	**175.425**	**CNL**	**175.345**	**175.520**	**CNL**	**174.870**	**175.885**	**175.415**	**175.560**	**175.105**	**175.190**			**171.380**	**173.290**	**177.460**			**All levels relative to the top of the pipe under the road.**
09/10/19	**175.265**	**175.410**	**175.595**	**175.260**	**175.160**	**175.020**	**175.130**	**175.005**	**175.135**	**CNL**	**174.475**	**175.495**	**175.020**	**175.110**	**174.715**	**174.750**			**169.535**	**173.290**	**176.710**			**All levels relative to the top of the pipe under the road.**
15/01/20	**175.560**	**175.800**	**175.980**	**175.655**	**175.745**	**175.410**	**175.515**	**175.345**	**175.525**	**174.870**	**CNL**	**175.885**	**175.415**	**175.565**	**175.105**	**175.130**			**170.275**	**173.290**	**177.060**			**All levels relative to the top of the pipe under the road.**
08/04/20	**175.560**	**175.800**	**175.975**	**175.655**	**175.750**	**175.410**	**175.520**	**175.345**	**175.520**	**CNL**	**174.875**	**175.885**	**175.415**	**175.560**	**175.105**	**175.135**			169.295	**173.290**	177.390			**All levels relative to the top of the pipe under the road.**
15/07/20	**175.555**	**175.745**	**175.965**	**175.640**	**175.735**	**175.395**	**175.505**	**175.320**	**175.500**	**CNL**	**174.850**	**175.880**	**175.405**	**175.550**	**175.085**	**175.120**		Too Much Veget		**173.290**	176.795	177.390	177.555	**All levels relative to the top of the pipe under the road.**
7/10/20	**175.550**	**175.785**	**CNL**	**175.630**	**175.720**	**175.385**	**175.485**	**175.330**	**175.510**	**CNL**	**174.845**	**175.885**	**175.415**	**CNL**	**175.080**	**175.110**			169.850	**173.290**	176.845	177.340	177.515	**All levels relative to the top of the pipe under the road.**
28/01/2021	**175.560**	**175.791**	**CNL**	**175.640**	**175.730**	**175.393**	**175.493**	**175.333**	**175.513**	**CNL**	**174.847**	**175.888**	**175.412**	**CNL**	**175.082**	**175.114**			170.272	**173.290**	176.525	177.314		**All levels relative to the top of the pipe under the road.**
Movement since last reading																								
18/07/18																								
07/08/18	0	0	-5	-15	-10	-15	-15	-15	-15	-20	-20	0	-10	-5	-15	-15								
02/10/18	5	-5	-10	-20	-25	-30	-35	-10	-10	-30	-35	10	-10	-10	55									
08/01/19	-5	-15	-15	-20	-25	-20	-20	-20	-15	-20	-25	-5	-20	-20	-105									
30/04/19	-5	0	-5	-5	-5	0	-5	-5	-5	-10	5	0	0	0	0	-5								
16/07/19	0	0	-5	0	0	5		0	-5		-10	0	-5	-5	-5	-5								
09/10/19	-290	-390	-385	-395	-585	-405		-340	-385		-395	-390	-395	-450	-390	-440								
15/01/20	295	390	385	395	585	390	385	340	390			390	395	455	390	380								
08/04/20	0	0	-5	0	5	0	5	0	-5			0	0	-5	0	5								
15/07/20	-5	-55	-10	-15	-15	-15	-15	-25	-20		-25	-5	-10	-10	-20	-15								
7/10/20	-5	40		-10	-15	-10	-20	10	10		-5	5	10		-5	-10								
28/01/2021	10	6		10	10	8	8	3	3		2	3	-3		2	4								
Movement since first reading																								
18/07/18																								
07/08/18	0	0	-5	-15	-10	-15	-15	-15	-15	-20	-20	0	-10	-5	-15	-15								
02/10/18	5	-5	-15	-35	-35	-45	-50	-25	-25	-50	-55	10	-20	-15	40									
08/01/19	0	-20	-30	-55	-60	-65	-70	-45	-40	-70	-80	5	-40	-35	-65	-55								
30/04/19	-5	-20	-35	-60	-65	-65	-75	-50	-45	-80	-75	5	-40	-35	-65	-60								
16/07/19	-5	-20	-40	-60	-65	-60		-50	-50		-85	5	-45	-40	-70	-65								
09/10/19	-295	-410	-425	-455	-650	-465	-465	-390	-435		-480	-385	-440	-490	-460	-505								
15/01/20	0	-20	-40	-60	-65	-75	-80	-50	-45	-125		5	-45	-35	-70	-125								
08/04/20	0	-20	-45	-60	-60	-75	-75	-50	-50		-80	5	-45	-40	-70	-120								
15/07/20	-5	-75	-55	-75	-75	-90	-90	-75	-70		-105	0	-55	-50	-90	-135								
7/10/20	-10	-35		-85	-90	-100	-110	-65	-60		-110	5	-45		-95	-145								
28/01/2021	0	-29		-75	-80	-92	-102	-62	-57		-108	8	-48		-93	-141								

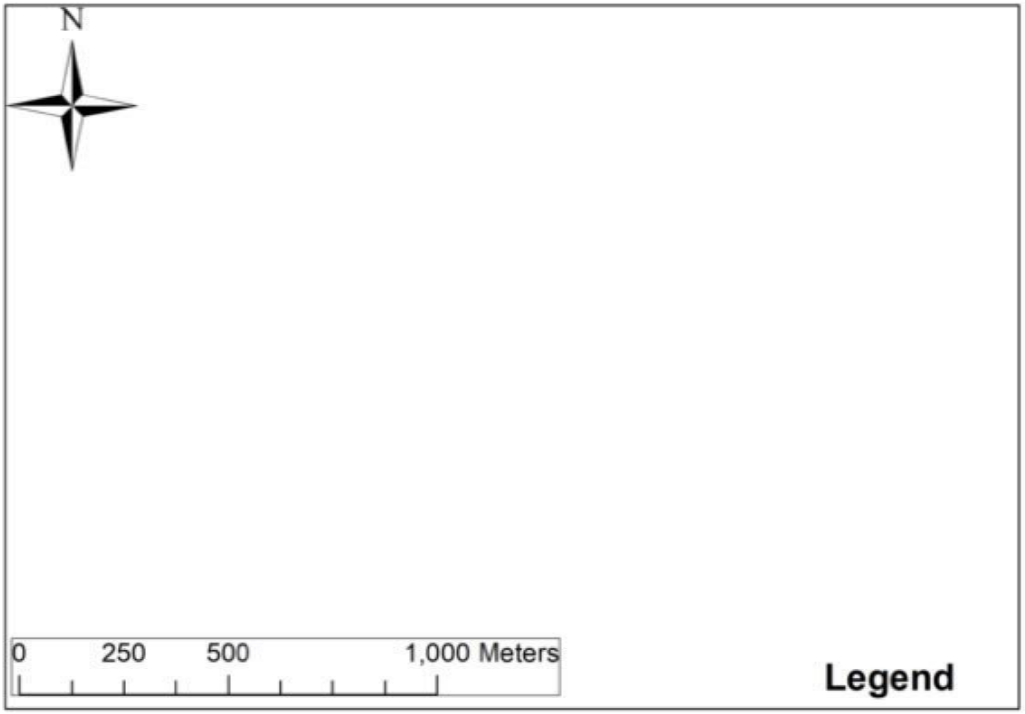
APPENDIX B - FIGURES

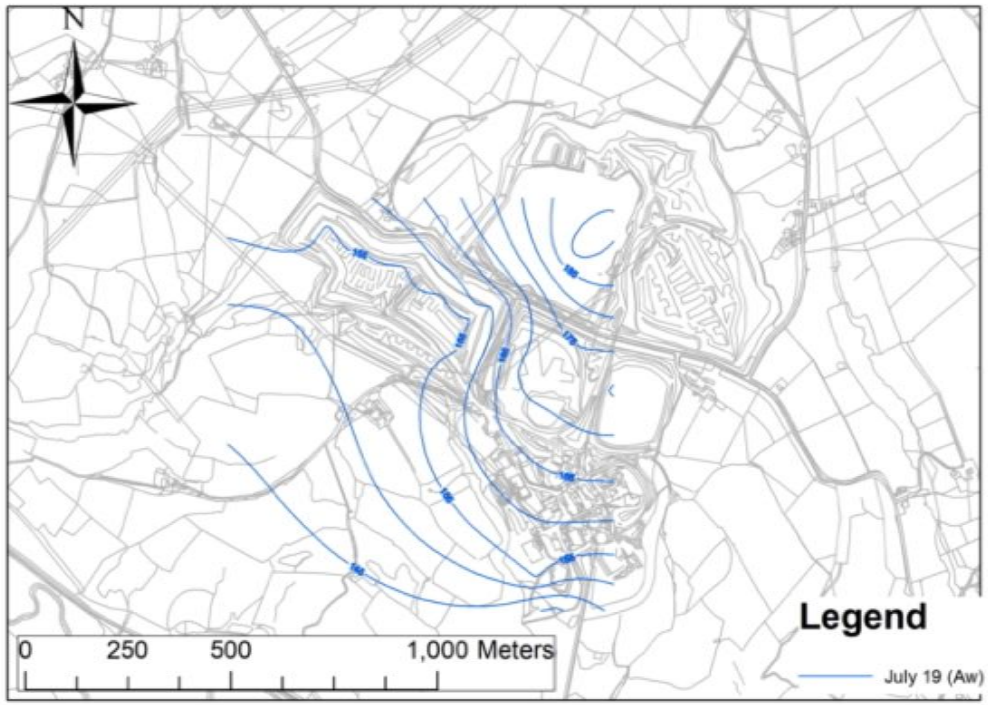
GROUNDWATER CONTOURS EXCLUDING BH92017

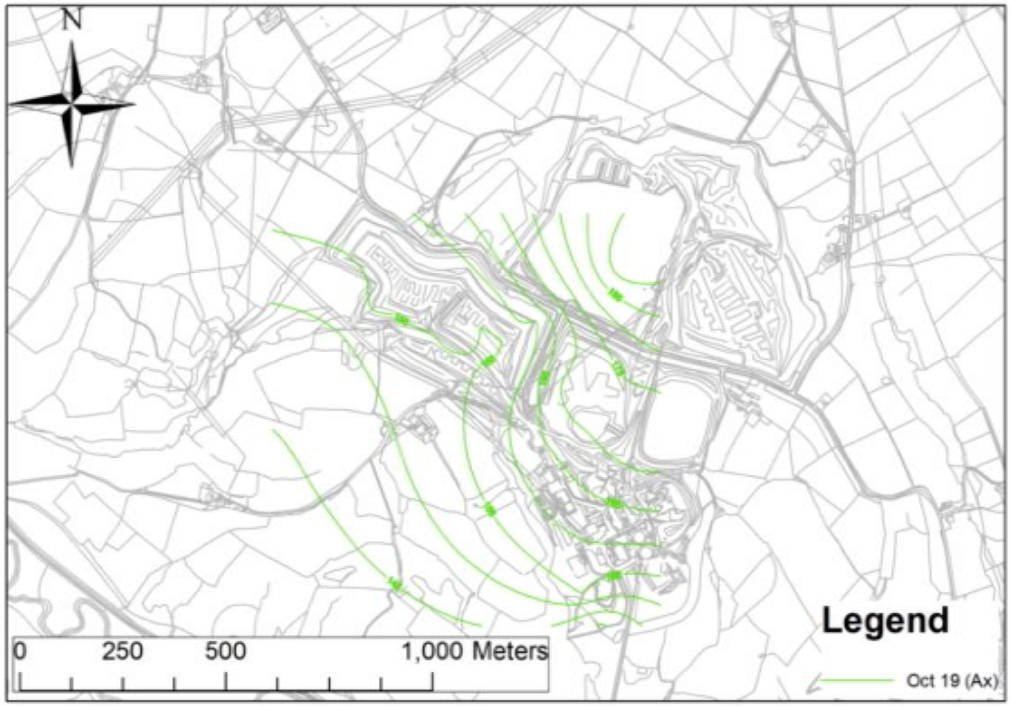

N
170
166
162
158
154
150
146
0
250
500
1,000 Meters
Legend
Jan 19 (Au)

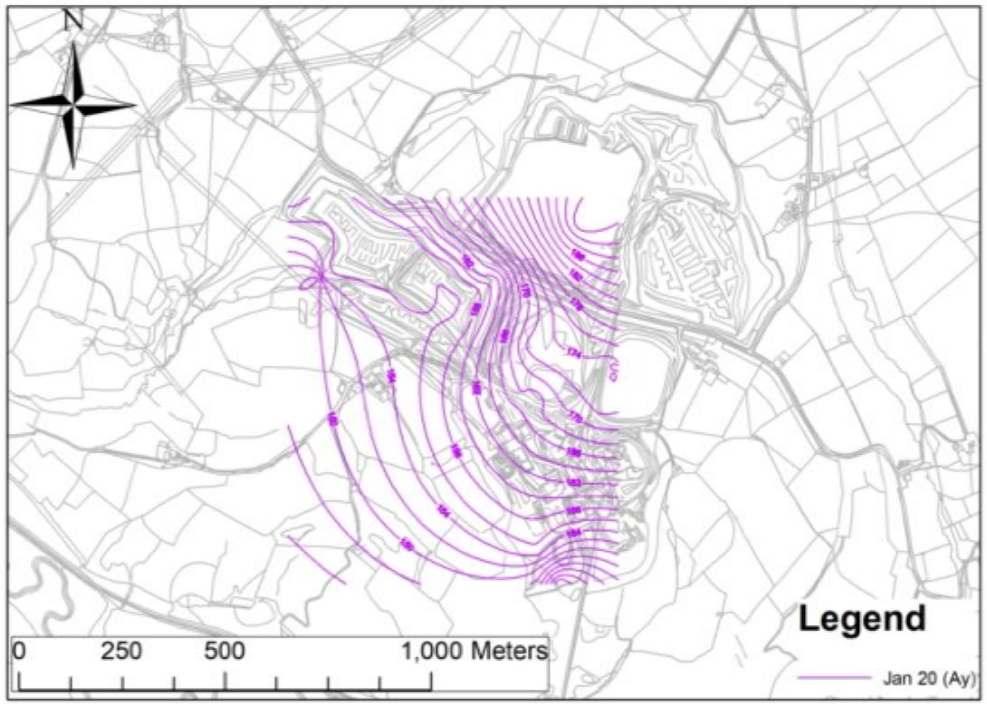

N
190
170
190
180
190
170
160
190
0
250
500
1,000 Meters
Legend
Apr 19 (Av)

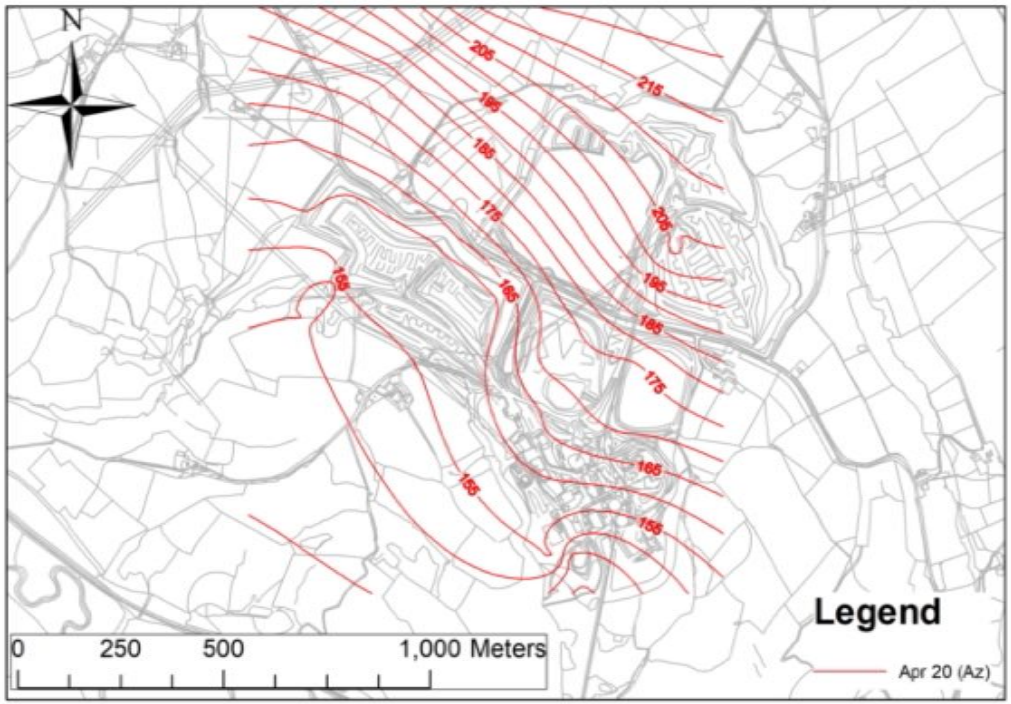

N
0
250
500
1,000 Meters
Legend

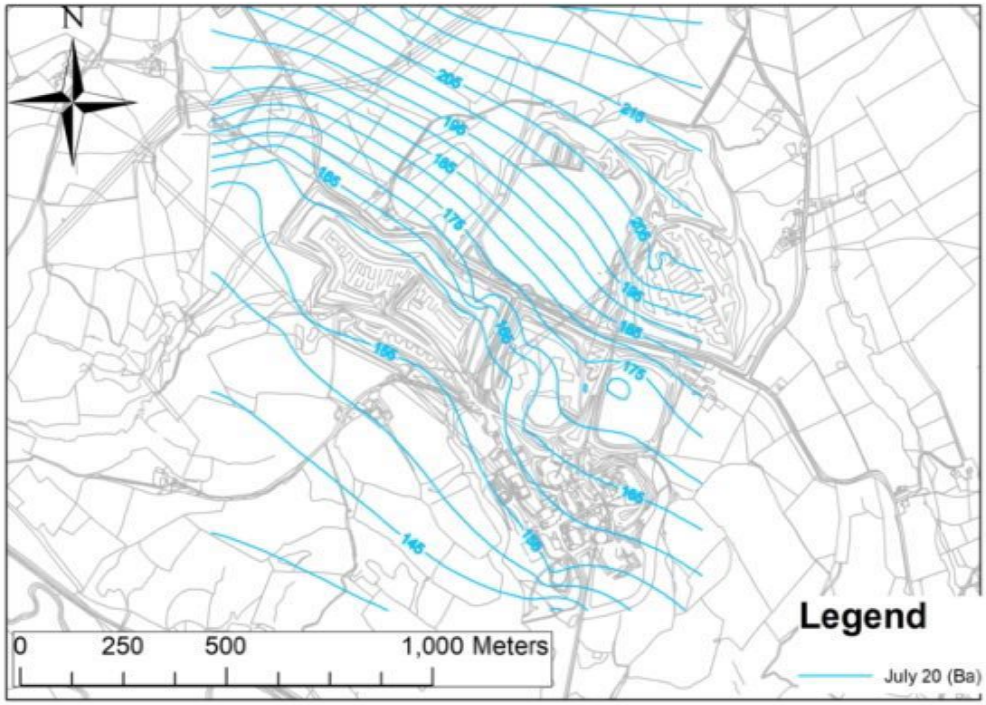

N
0
250
500
1,000 Meters
Legend


N
0 250 500 1,000 Meters
Legend
July 19 (Aw)


N
0 250 500 1,000 Meters
Legend
Oct 19 (Ax)


N
0 250 500 1,000 Meters
Legend
Jan 20 (Ay)


N
205
215
195
185
175
205
165
195
185
175
165
155
155
0 250 500 1,000 Meters
Legend
Apr 20 (Az)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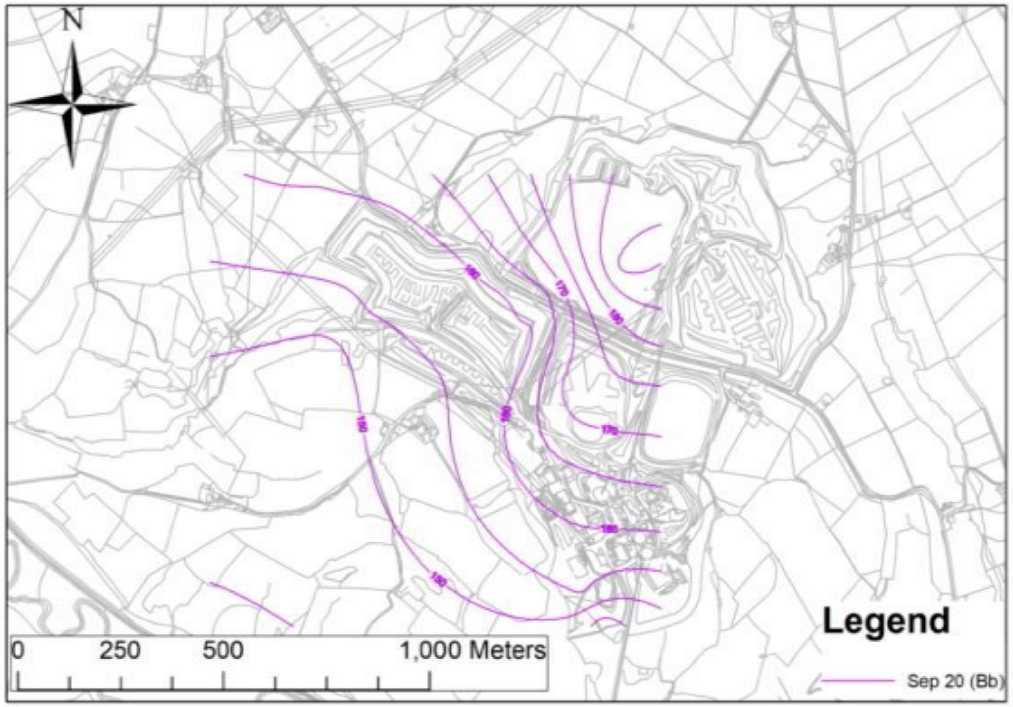
Legend
July 20 (Ba)


N
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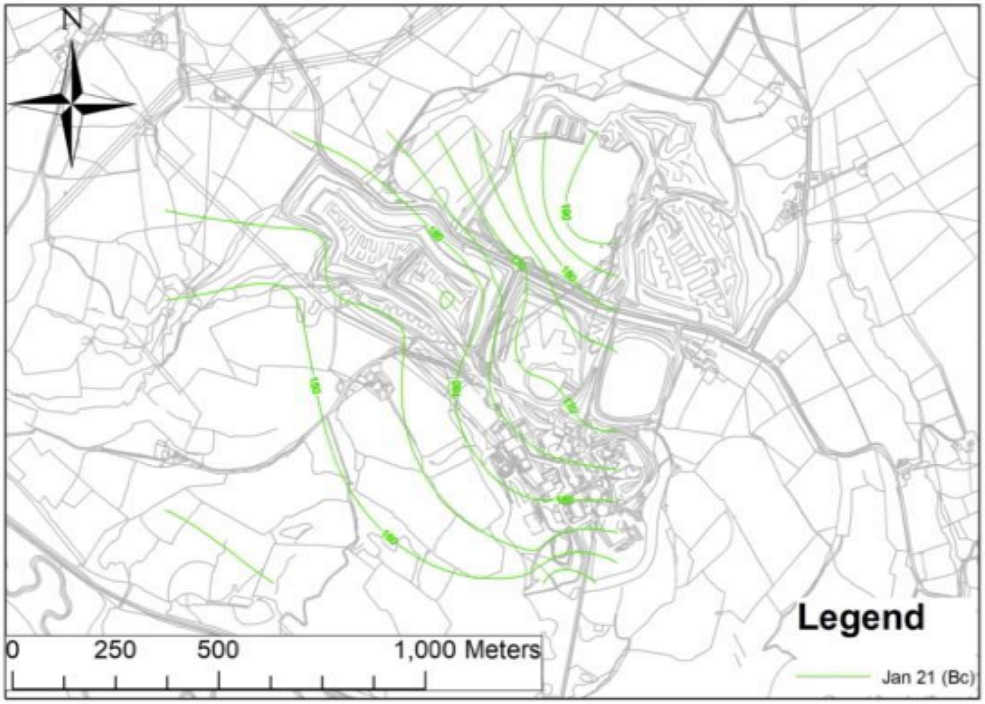
Legend
Sep 20 (Bb)


N
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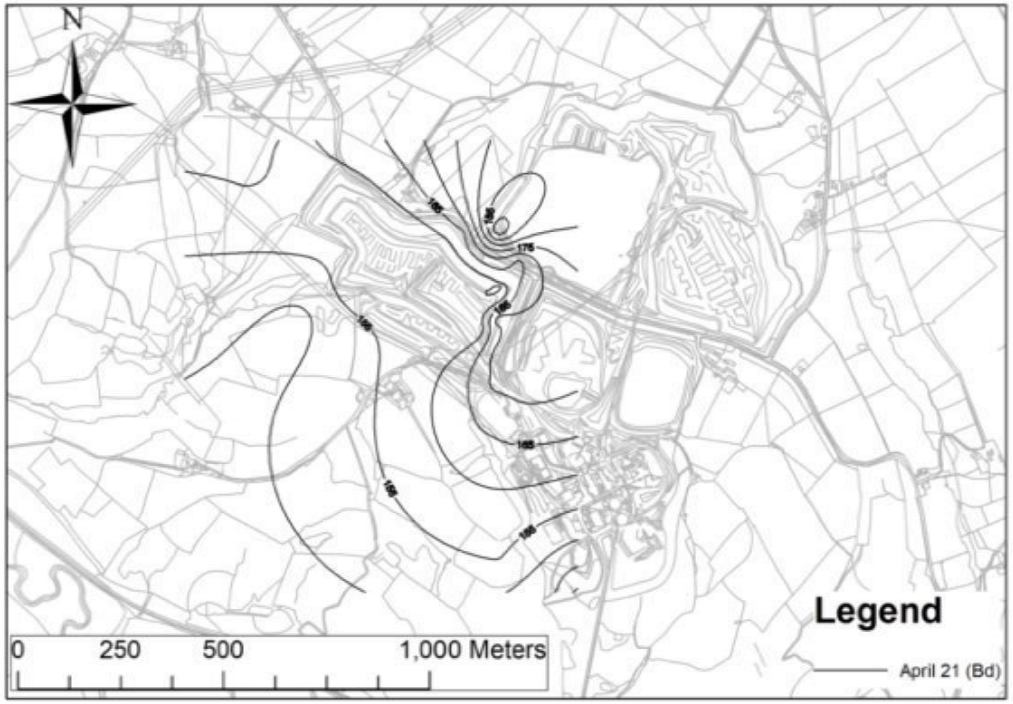
Legend
Jan 21 (Bc)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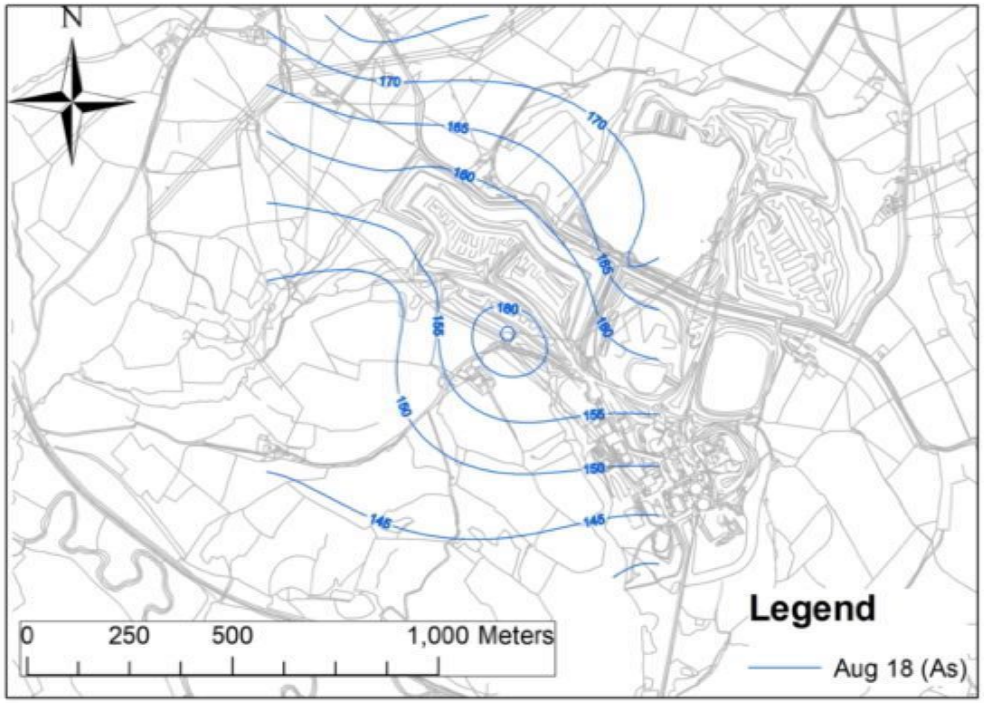
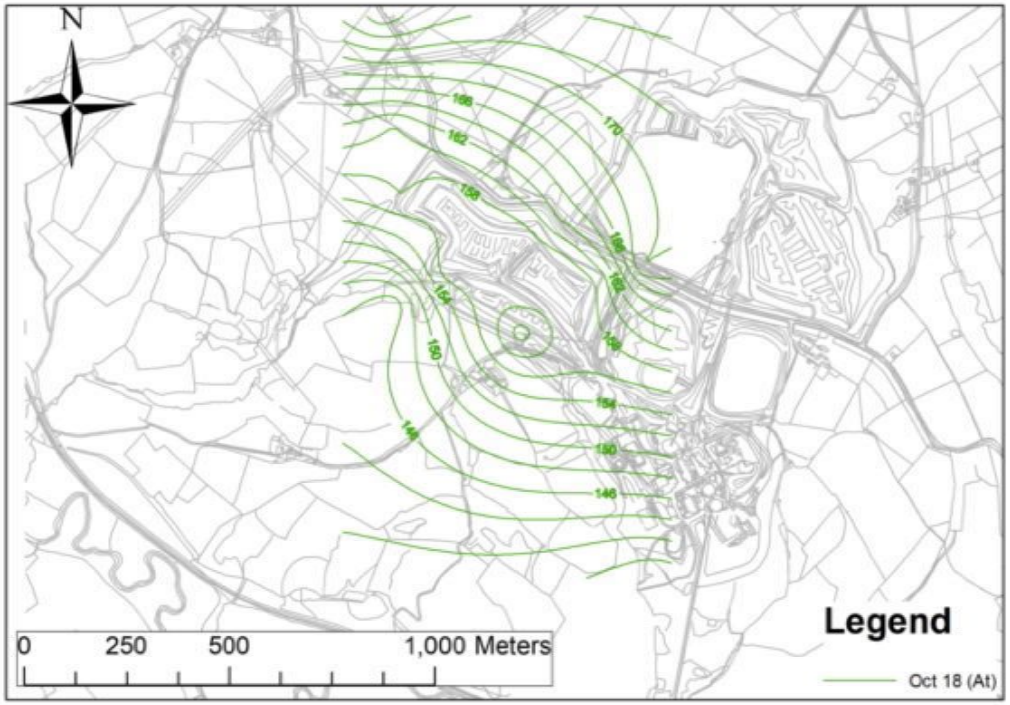
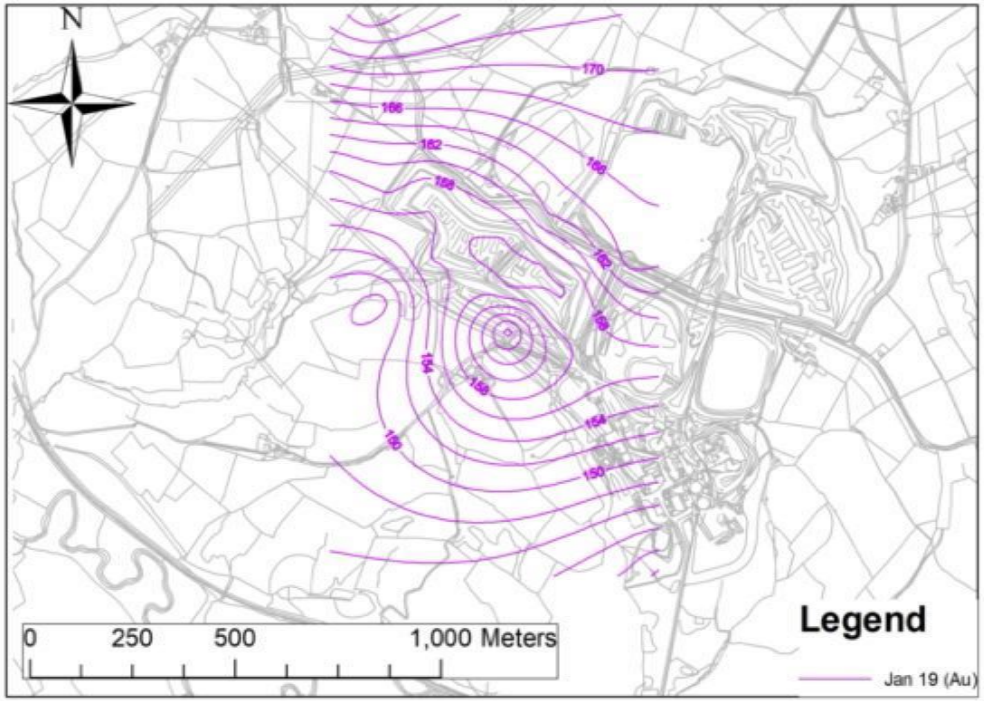
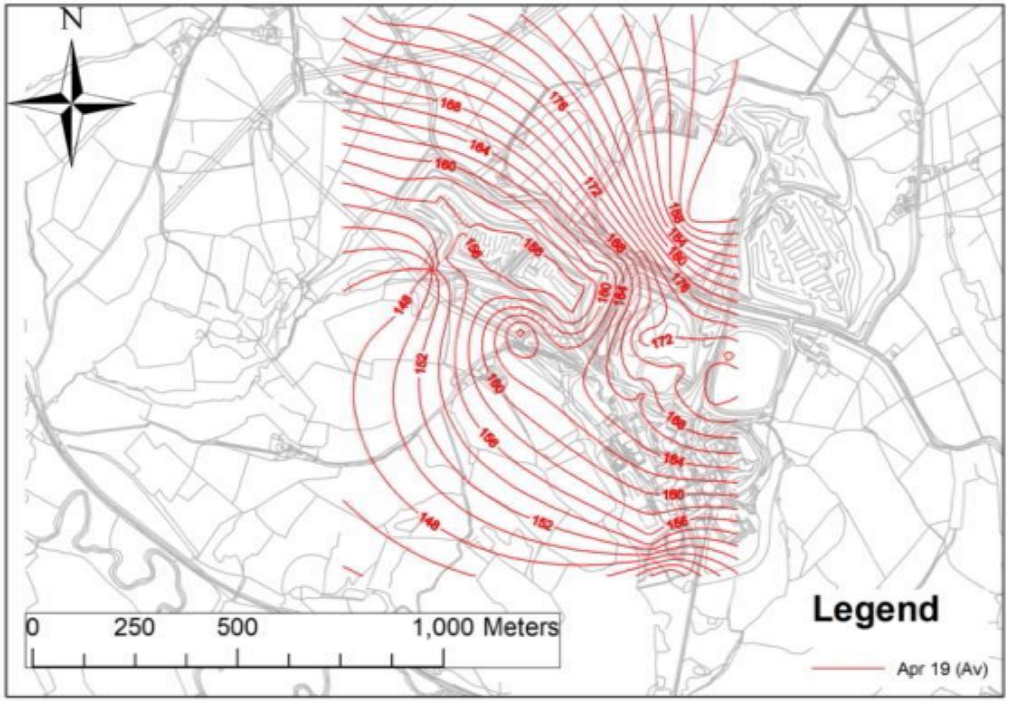
Legend
April 21 (Bd)

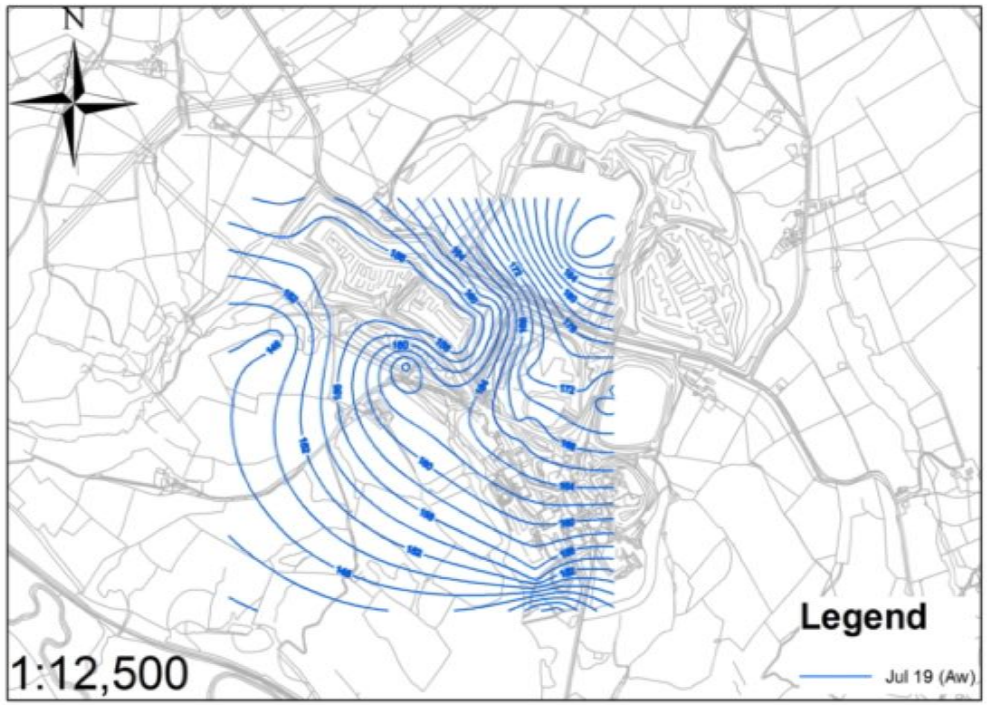
GROUNDWATER CONTOURS


N
170
165
160
155
150
145
0 250 500 1,000 Meters
Legend
Aug 18 (As)


N
166
162
158
154
150
146
170
0 250 500 1,000 Meters
Legend
Oct 18 (At)


N
170
166
162
158
154
150
0 250 500 1,000 Meters
Legend
Jan 19 (Au)


N
168
164
160
156
152
148
176
172
0 250 500 1,000 Meters
Legend
Apr 19 (Av)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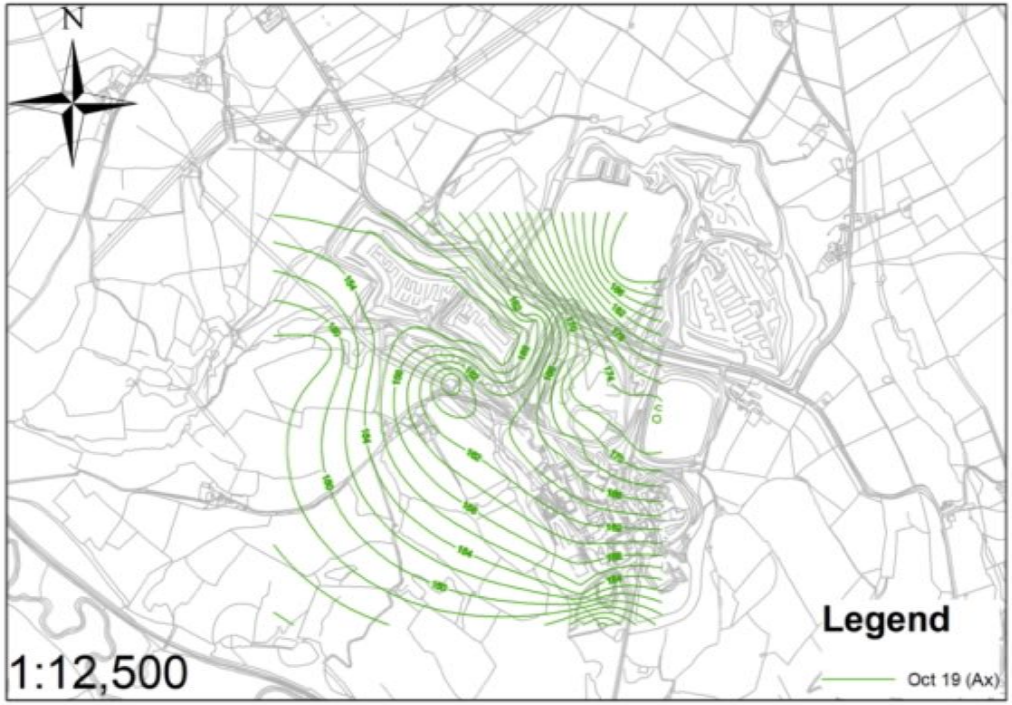
Legend
Jul 19 (Aw)
1:12,500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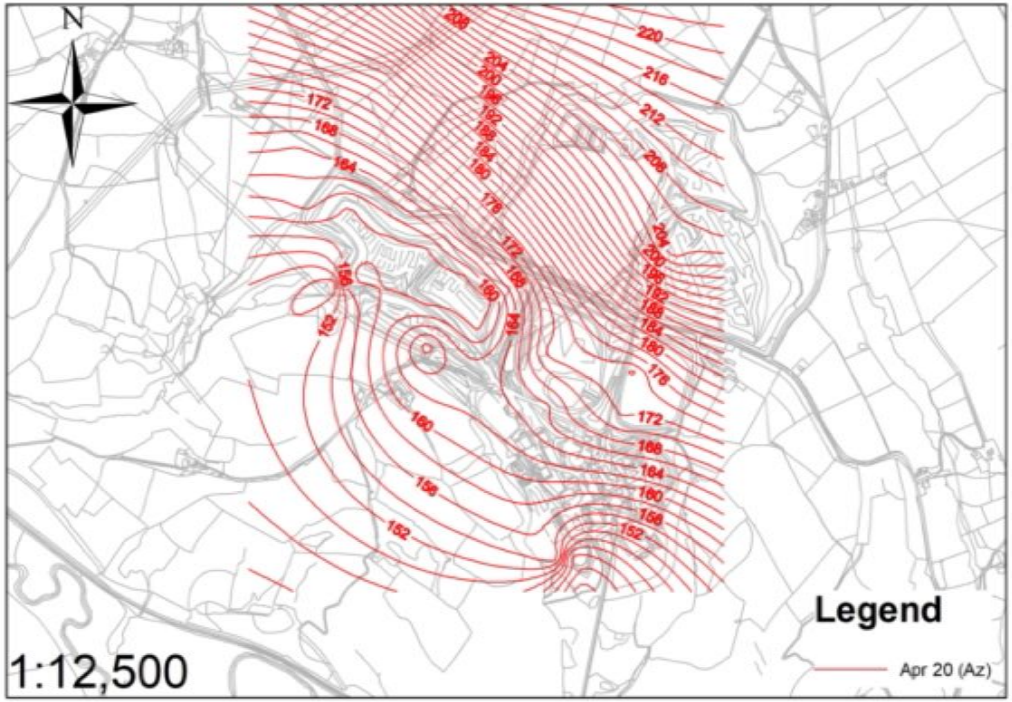
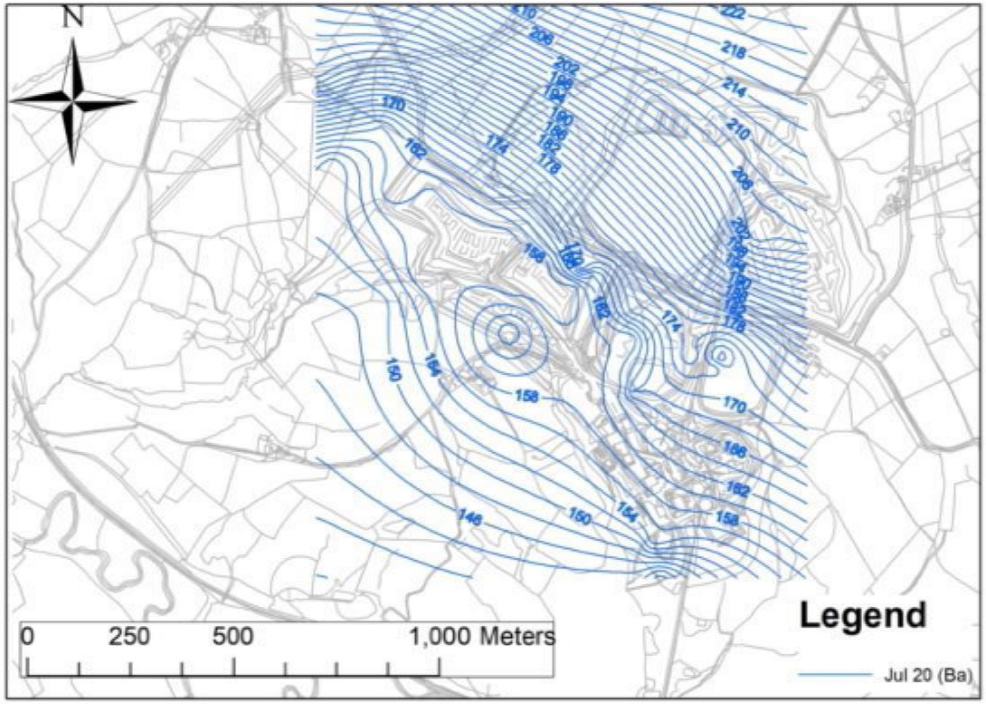
Legend
Oct 19 (Ax)
1:12,500


N
Legend
Jan 20 (Ay)
1:12,500


N
Legend
Apr 20 (Az)
1:12,500


N
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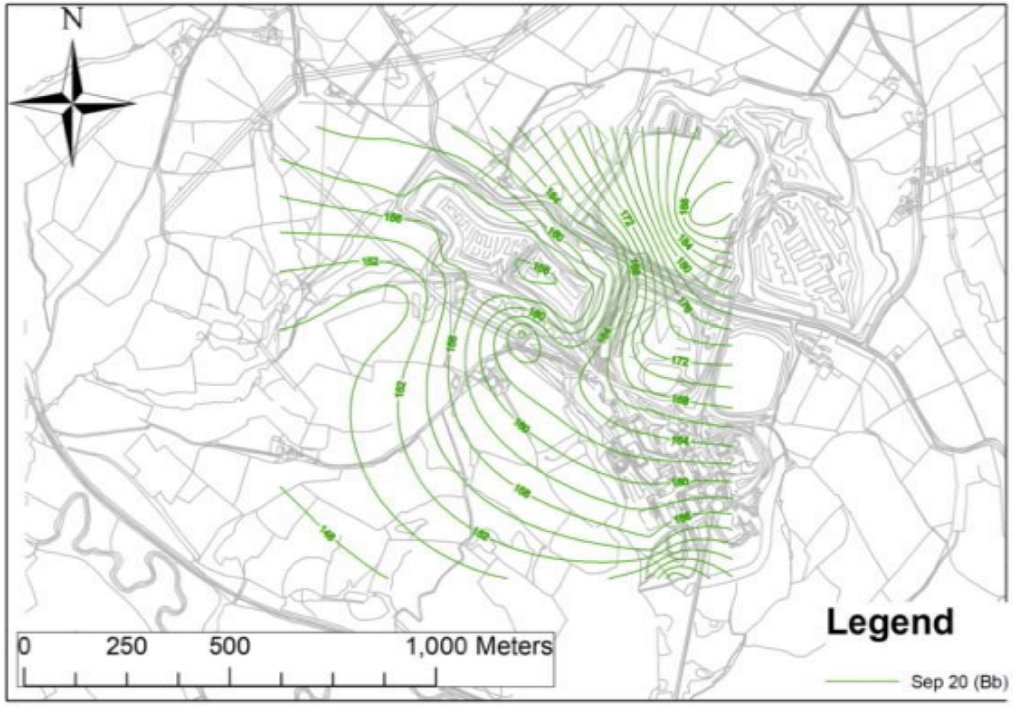
Legend
Jul 20 (Ba)


N
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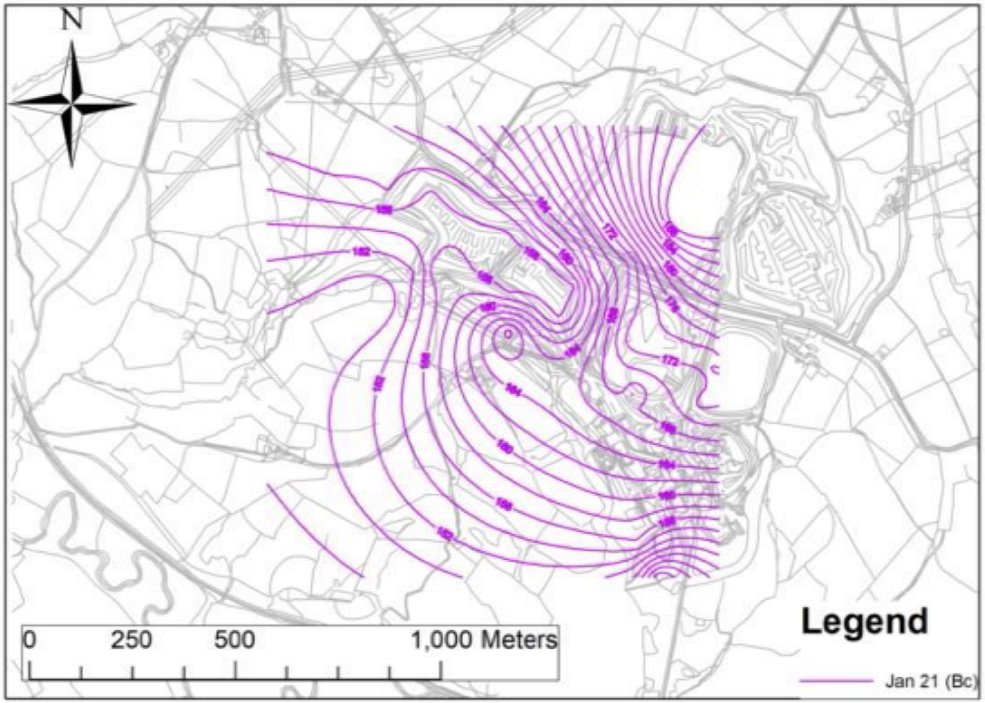
Legend
Sep 20 (Bb)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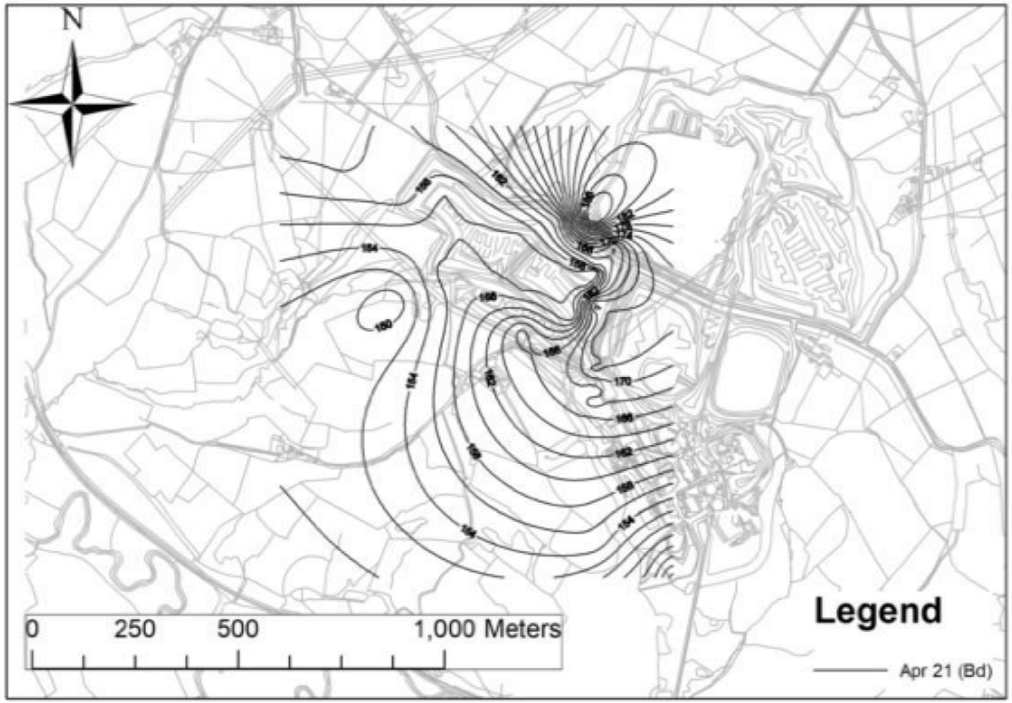
Legend
Jan 21 (Bc)


N
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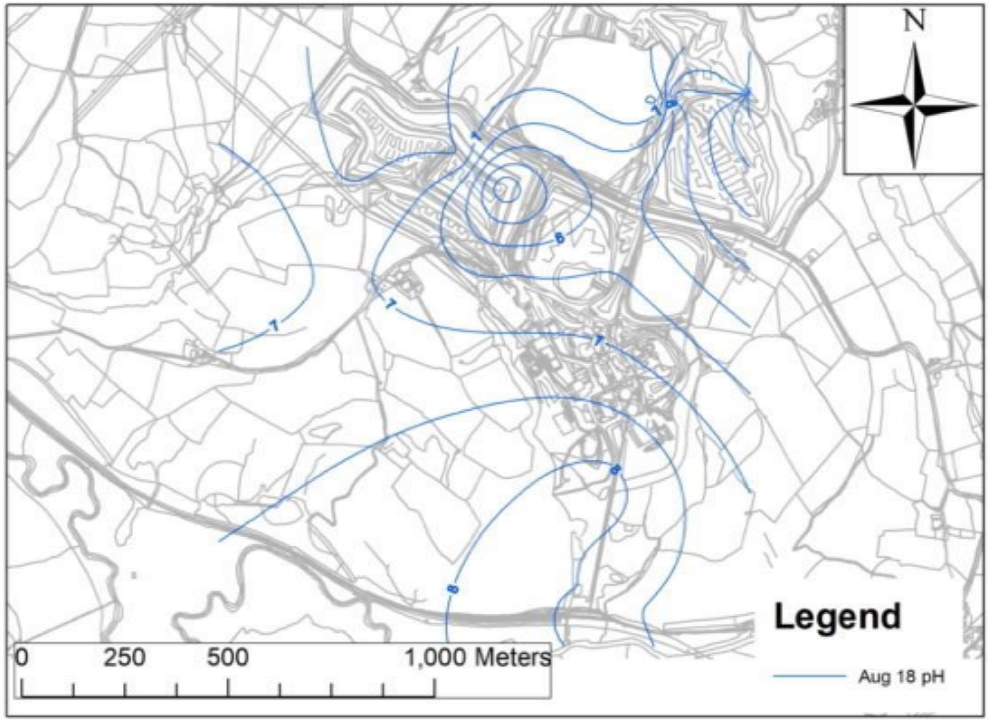
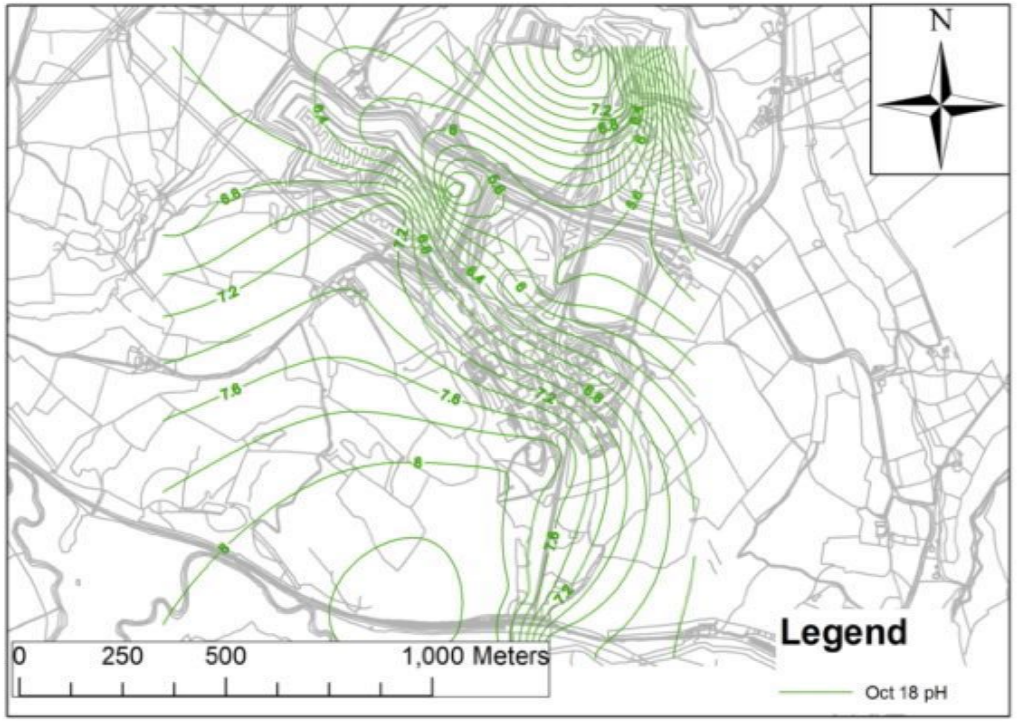
Legend
Apr 21 (Bd)

pH CONTOURS


N
Legend
0 250 500 1,000 Meters
Aug 18 pH


N
Legend
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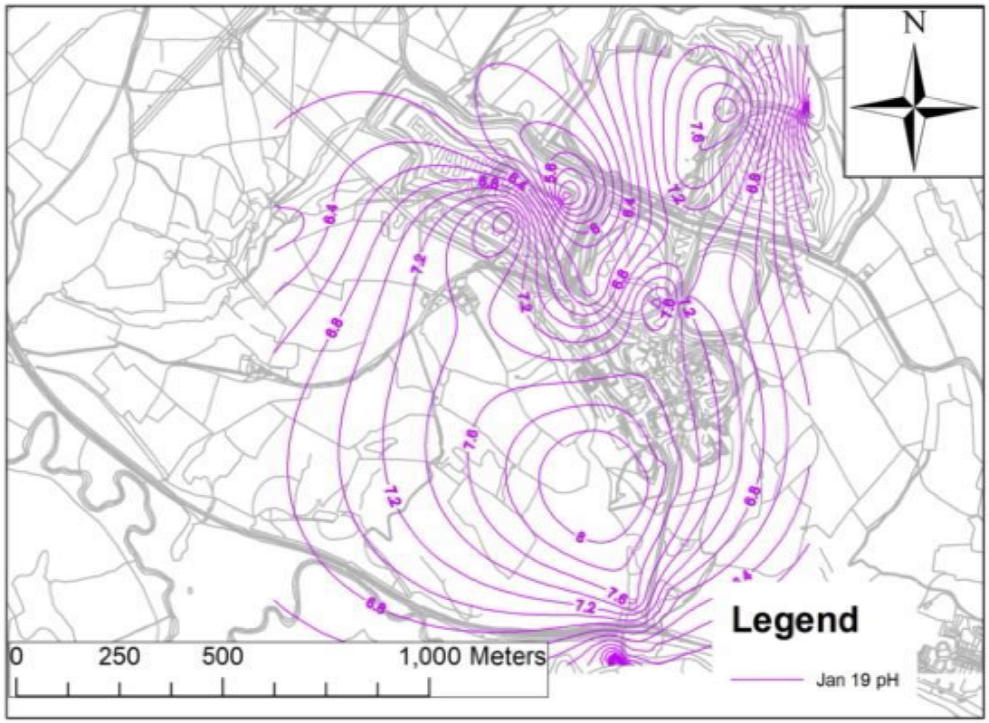
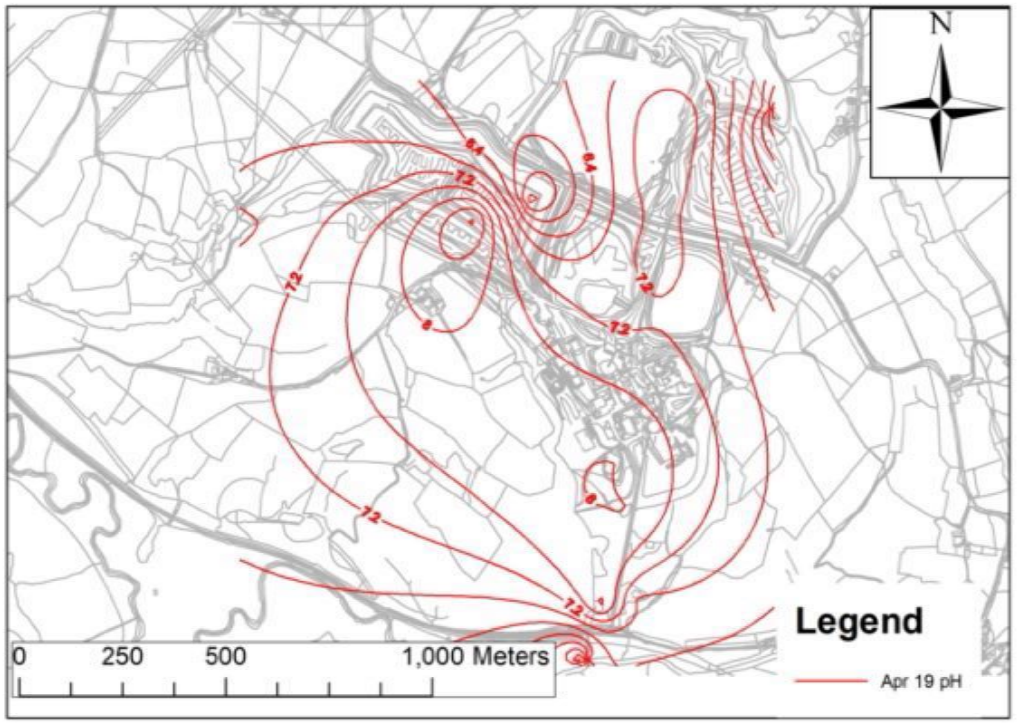
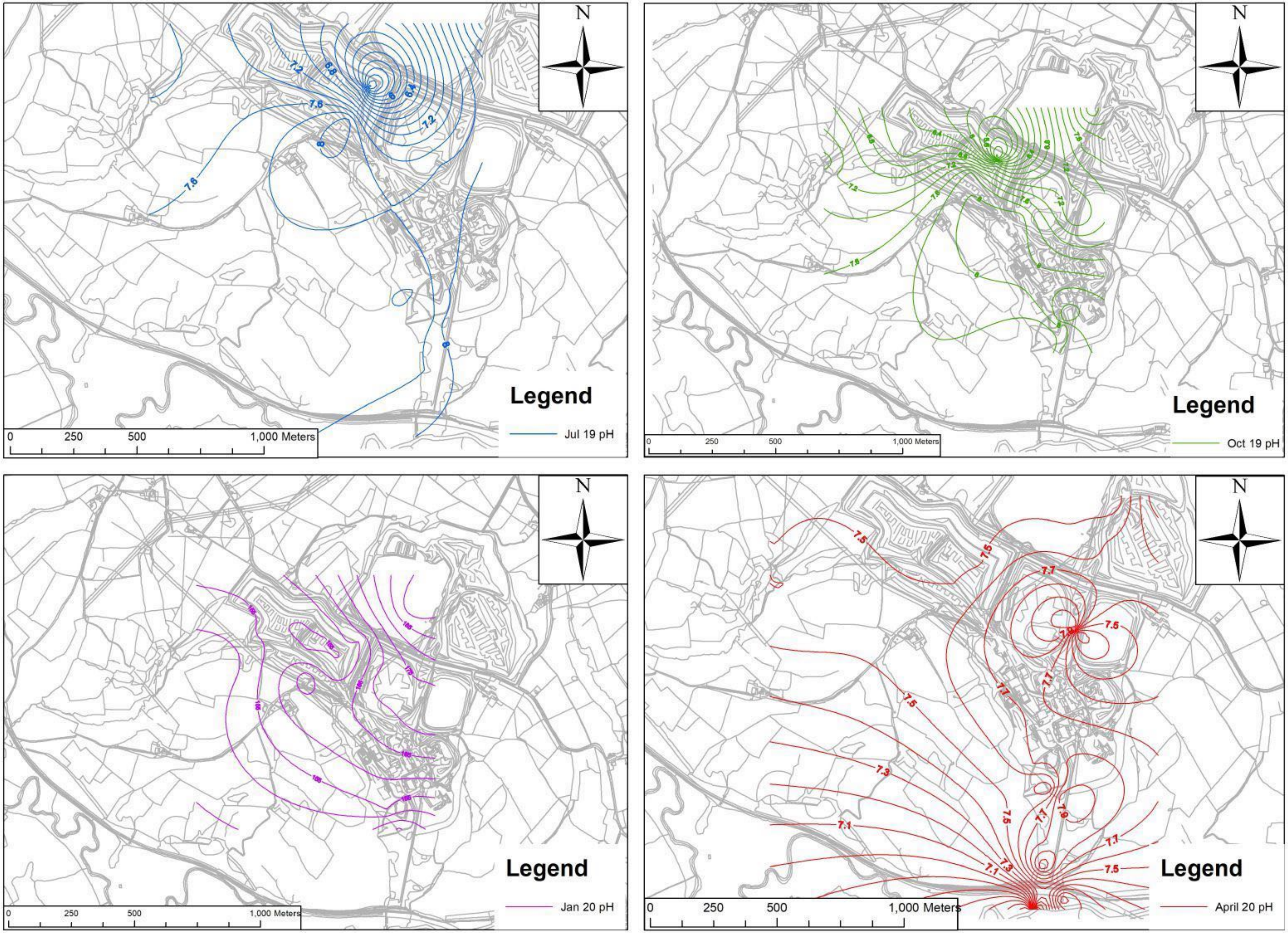
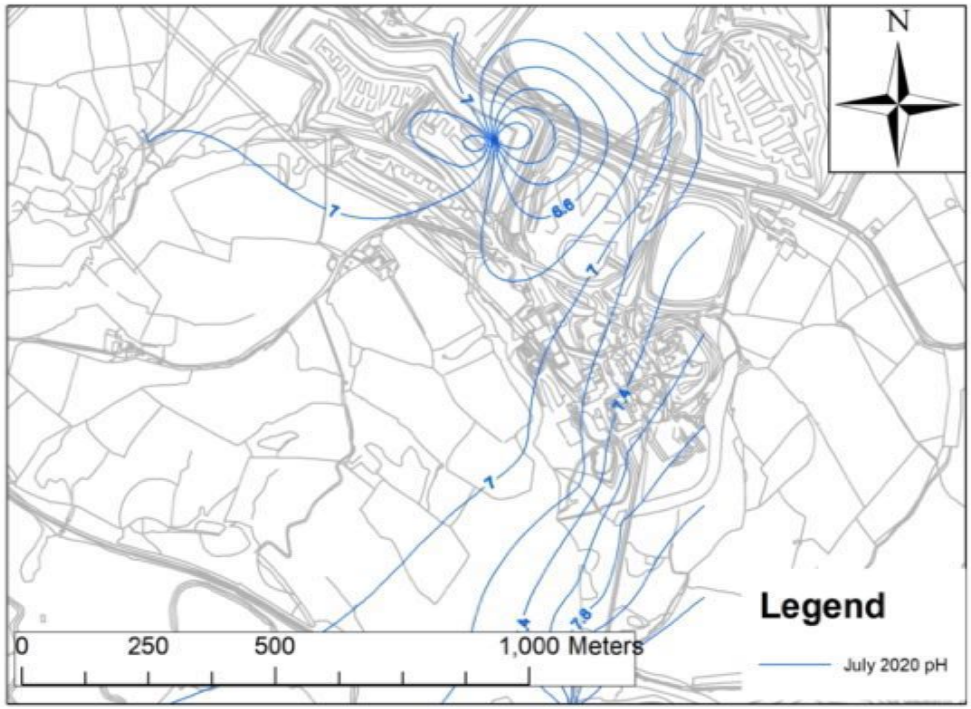
Oct 18 pH


N
Legend
0 250 500 1,000 Meters
Jan 19 pH


N
Legend
0 250 500 1,000 Meters
Apr 19 pH


N
Legend
Jul 19 pH
0 250 500 1,000 Meters
7.2
6.8
6.4
7.6
8
N
Legend
Oct 19 pH
0 250 500 1,000 Meters
7.2
7.6
8
N
Legend
Jan 20 pH
0 250 500 1,000 Meters
N
Legend
April 20 pH
0 250 500 1,000 Meters
7.5
7.7
7.9
7.3
7.1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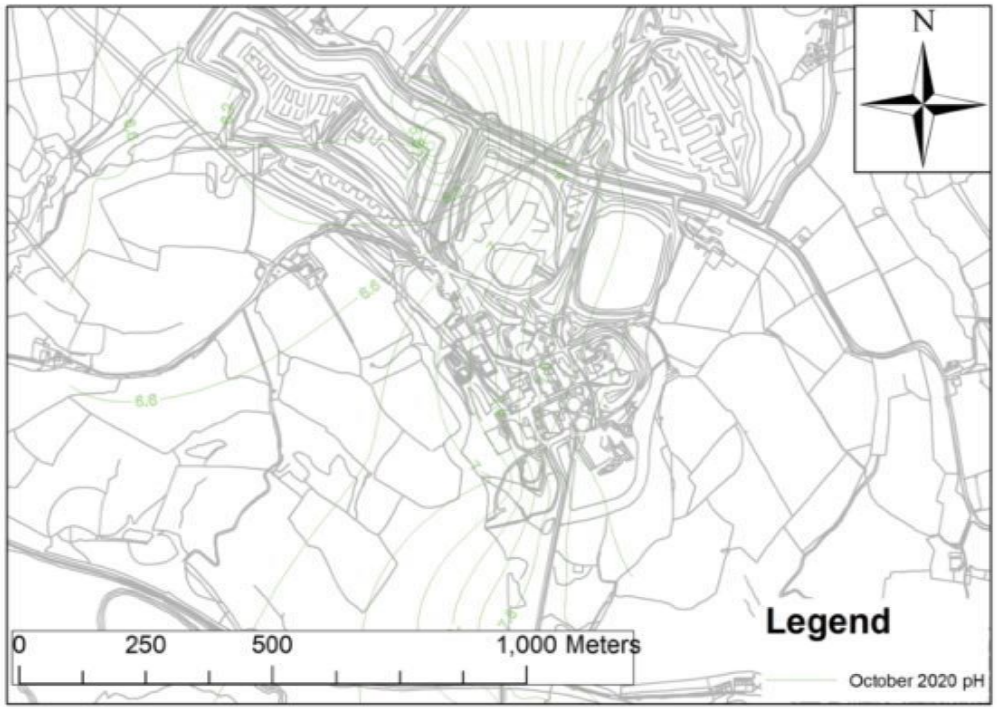
July 2020 pH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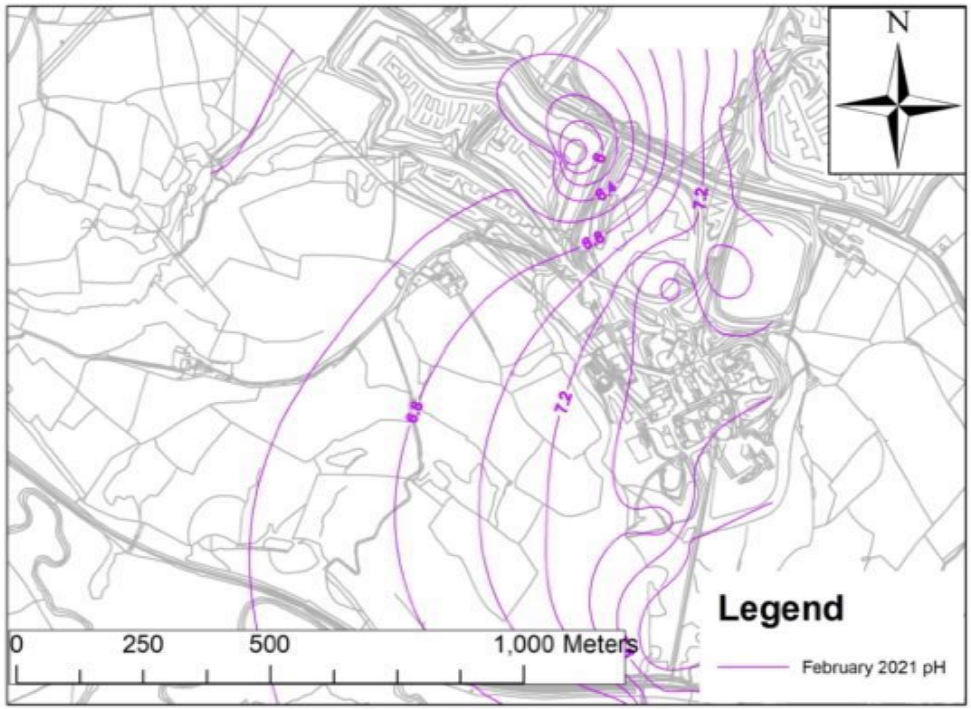
October 2020 pH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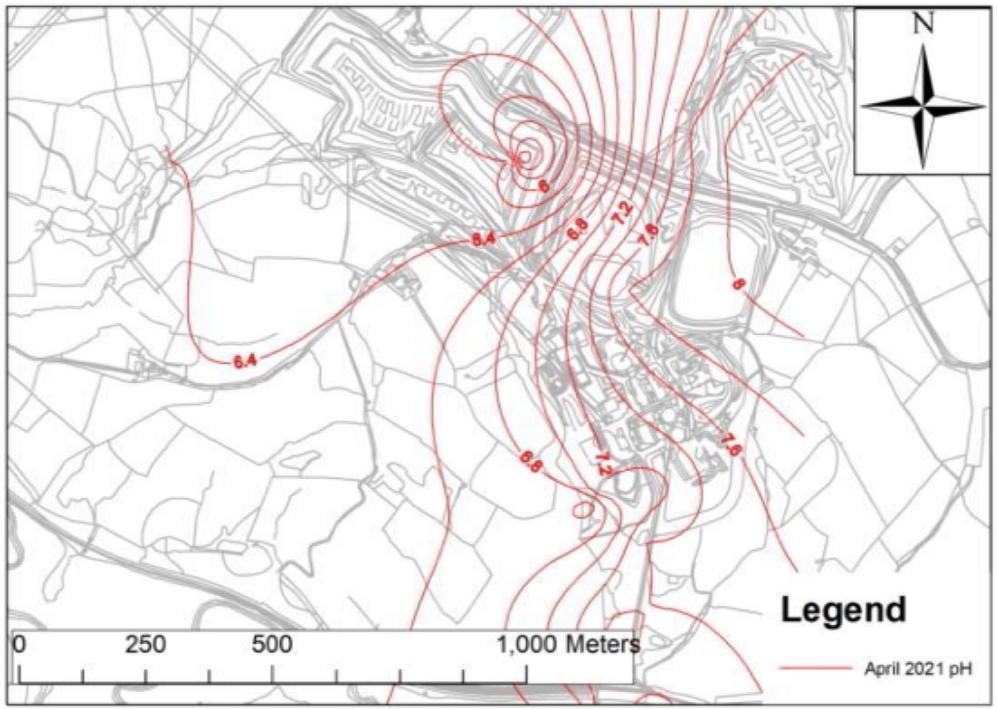
1,000 Meters
Legend
February 2021 pH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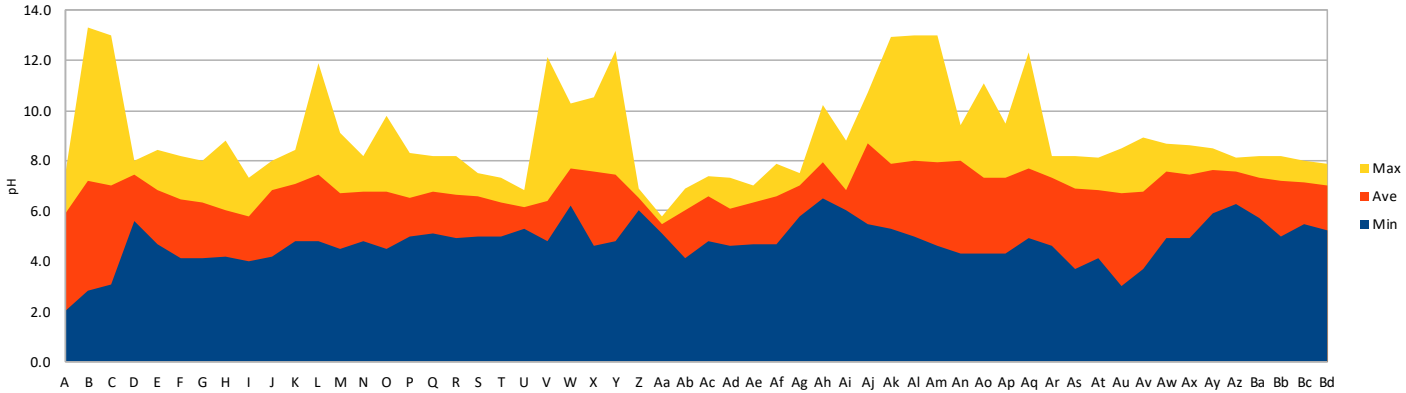
Legend
April 2021 pH

Moneystone Park
Monthly pH readings from December 2010

Fig 3



Visit	A	B	C	D	E	F	G	H	I	J	K	L	M
Date	20/12/10	7/1/11	9/2/11	4/5/11	1/6/11	14/7/11	9/8/11	8/9/11	3/10/11	22/11/11	19/12/11	9/1/12	6/2/12
Min	2.0	2.8	3.1	5.6	4.7	4.1	4.1	4.2	4.0	4.2	4.8	4.8	4.5
Ave	5.9	7.2	7.0	7.5	6.9	6.5	6.3	6.0	5.8	6.8	7.0	7.4	6.7
Max	7.5	13.3	13.0	8.0	8.4	8.2	8.0	8.8	7.3	8.0	8.4	11.9	9.1
STDEV	1.6	1.9	1.4	0.7	1.1	1.3	1.1	1.3	1.0	0.9	1.3	1.6	1.0
No.	13	39	52	12	25	27	24	25	28	47	13	29	33

Visit	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
Date	20/3/12	12/4/12	22/5/12	3/7/12	17/9/12	31/10/12	6/12/12	12/2/13	26/4/13	30/7/13	26/10/13	8/1/14	15/4/14
Min	4.8	4.5	5.0	5.1	4.9	5.0	5.0	5.3	4.8	6.2	4.6	4.8	6.0
Ave	6.8	6.8	6.5	6.7	6.7	6.6	6.4	6.2	6.4	7.7	7.6	7.5	6.5
Max	8.2	9.8	8.3	8.2	8.2	7.5	7.3	6.8	12.1	10.3	10.5	12.4	6.9
STDEV	1.1	1.8	1.1	1.1	0.9	0.9	0.6	0.4	1.4	0.8	1.2	1.7	0.2
No.	21	34	19	29	52	27	39	22	26	28	37	44	19

Visit	Aa	Ab	Ac	Ad	Ae	Af	Ag	Ah	Ai	Aj	Ak	Al	Am
Date	9/7/14	16/9/14	6/10/14	20/1/15	28/04/15	28/07/15	31/10/15	29/01/16	07/04/16	05/07/16	11/11/16	01/12/16	24/01/17
Min	5.1	4.1	4.8	4.6	4.7	4.7	5.8	6.5	6.0	5.5	5.3	5.0	4.6
Ave	5.4	6.0	6.6	6.1	6.3	6.6	7.0	7.9	6.8	8.7	7.9	8.0	7.9
Max	5.8	6.9	7.4	7.3	7.0	7.9	7.5	10.2	8.8	10.7	12.9	13.0	13.0
STDEV	0.3	0.8	0.6	0.7	0.6	0.9	0.5	0.5	0.5	1.2	1.4	1.3	1.4
No.	15	28	25	49	43	43	23	68.0	52.0	55.0	39.0	53	57.0

Visit	An	Ao	Ap	Aq	Ar	As	At	Au	Av	Aw	Ax	Ay	Az
Date	25/4/17	20/07/17	12/10/17	23/01/18	18/05/18	07/08/18	02/10/18	08/01/2019	30/04/2019	16/07/2019	09/10/2019	15/01/2020	08/04/2020
Min	4.3	4.3	4.3	4.9	4.6	3.7	4.1	3.0	3.7	4.9	4.9	5.9	6.3
Ave	8.0	7.3	7.3	7.7	7.3	6.9	6.8	6.7	6.8	7.6	7.4	7.6	7.6
Max	9.4	11.1	9.5	12.3	8.2	8.2	8.1	8.5	8.9	8.7	8.6	8.5	8.1
STDEV	1.0	1.2	1.2	1.2	1.0	1.1	1.2	1.2	1.2	0.9	0.9	0.5	0.4
No.	25.0	39.0	52.0	47.0	20.0	25.0	28.0	34.0	32.0	14.0	21.0	32.0	22.0

Visit	Ba	Bb	Bc	Bd
Date	15/7/20	7/10/20	10/2/21	21/04/2020
Min	5.7	5.0	5.5	5.2
Ave	7.3	7.2	7.1	7.0
Max	8.2	8.2	8.0	7.9
STDEV	0.6	0.8	0.6	0.7
No.	20	24	26	27.0

Appendix 11.4: Biennial Monitoring Report (418040MM/6); dated September 2023

Abbeydale
Building Environment Consultants

BIENNIAL MONITORING REPORT

MONEYSTONE QUARRY, OAKAMOOR

STAFFORDSHIRE

Report: 418040MM/6 **September 2023**

Client:
Bolsterstone plc
36 Bridge Business Centre
Beresford Way
Chesterfield
S41 9FG

Abbeydale Building Environment Consultants Ltd, 4 Neville Street, Wakefield, WF1 5EF,
Tel: 01924 376622 | E-mail: info@abbeydalebec.com | www.abbeydalebec.com
Director: P J Lloyd BSc MSc CGeol FGS | Company Registation No. 06707508 | VAT: 600 2099 91

BIENNIAL MONITORING REPORT
MONEYSTONE QUARRY, STAFFORDSHIRE

Report: 418040MM/6 September 2023

DOCUMENT VERIFICATION SHEET

	Prepared By:	Checked By:
Name:	Glyn Hogg	Peter J Lloyd
Qualifications:	MSci FGS	BSc MSc CGeol FGS
Position:	Engineer	Managing Director
Signature:	G. Hogg	P J Lloyd

SUMMARY

Site Grid Ref:	404400E 345900N	**Site Level (m AOD):**	110-240	**Site Area (ha):**	170

Development proposals:	Holiday park with lodges, lakes and lagoons.
Past site development:	Site was previously a sandstone quarry with tailings lagoons.
Q3 Water Level:	156.103m AOD decreasing to 153.738m AOD.
Groundwater:	Increases and decreases noted across the site.
pH Levels:	pH values ranged between pH 5.2 to pH 8.9 in period, averaging pH 7.2.
Stream Flows:	Decreases in stream A, B and C flows.
Stability of Quarry Faces:	No significant change noted.

BIENNIAL MONITORING REPORT
MONEYSTONE QUARRY, STAFFORDSHIRE

Report: 418040MM/6 April 2023

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APPENDICES

BIENNIAL MONITORING REPORT
MONEYSTONE QUARRY, STAFFORDSHIRE

Report: 418040MM/6 **September 2023**

1. INTRODUCTION

On the instruction of Bolsterstone plc, on behalf of Laver Leisure, quarterly geo-environmental monitoring visits have been undertaken by Abbeydale Building Environment Consultants Ltd in and around the former Moneystone Quarry, off Whiston Eaves Lane, Oakamoor.

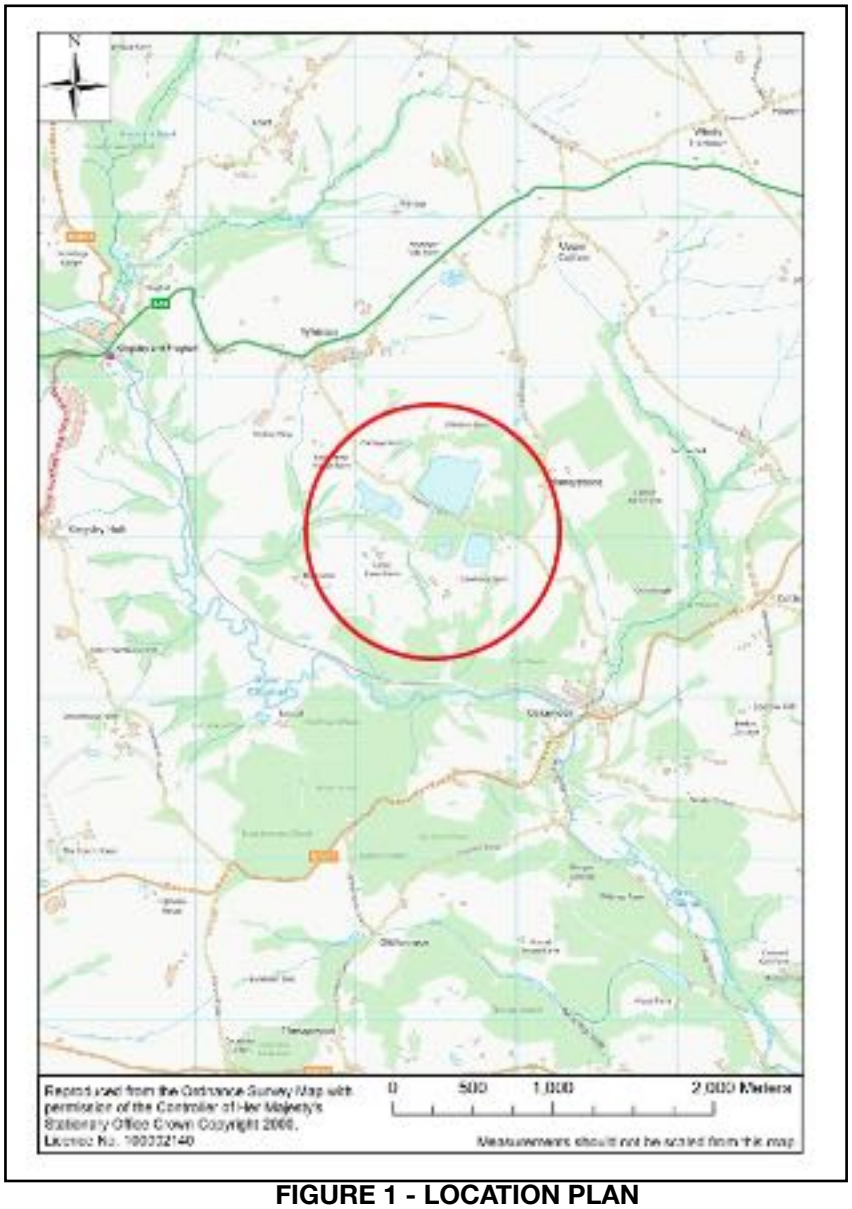

FIGURE 1 - LOCATION PLAN

The site is located between the villages of Whiston and Oakamoor and is centred within National Grid Reference square SK 044 459 between 110m to 240m AOD (See Figure 1), covering an area of approximately 170 hectares.

This report was produced on behalf of our client, Laver Leisure and their advisors and financiers, and should not be relied upon or transferred to any other parties without the express written authorisation of Abbeydale BEC Ltd and our client. If any unauthorised third party comes into possession of this report, they rely on it at their own risk and the authors owe them no duty of care or skill.

Abbeydale BEC have undertaken fifty eight quarterly monitoring visits to date, between the 20th of December 2010 and the 9th of May 2023 for the purpose of monitoring quarry features in and around the site. The monitoring findings have been recorded and presented in monitoring letters following each visit. The comments and recommendations presented in this biennial report are based on the findings of the quarterly visits between April 2021 and May 2023, to provide an overview of available information and ground conditions encountered during each visit. There may be other conditions prevailing on the site which have not been disclosed by these investigations and which have not been taken into account by this report. Responsibility cannot be accepted for conditions not revealed by the investigations.

When writing this report the proposed development was for an activity holiday park with a hotel, lodges, lakes and lagoons. There will be potential to offer water sports including scuba diving, swimming, sailing, canoeing etc along with fishing. The park will also offer other outdoor activities such as mountain biking, nature trails, climbing, clay pigeon shooting etc. If there are changes to these proposals, then some modification to the comments and recommendations given may be required.

2. RECENT HISTORY OF THE SITE

During this period the vegetation has become more predominant over area of previous bare ground, access tracks have become harder to travers and monitoring points more difficult to access or locate. Similarly surface water pond and channels previously created have become overgrown at the edges making monitoring more difficult. A summary of the quarterly findings is given below:

2.1. General

Since the construction of the Solar Farm in 2016-2017 and the site investigation earthworks in 2018 the quarry has increasingly become more naturally rejuvenated with previously bare sand and rock becoming covered with established vegetation. Surface water streams had also become more established with flow running from Q2 through the tunnel pipe into Q1W and then into Q3; however with the diversion of surface water away from Q3 in October 2022 surface water levels in Q3 have significantly reduced.

During the site investigation undertaken in 2018, several sinkholes had been observed along the then newly constructed drainage channels that brings water from L7 in Q2 to L5 in Q1W. Since that time further sinkholes have been identified and included on our site

plan, Figure 2. These sinkholes are caused by the water flowing across the top of the fractured sandstone bedrock and then running into open fractures in the rock. Although some of these sinkholes had been filled with gravel by site operatives, subsequent visits identified that new sinkhole adjacent to infilled holes have occurred, causing flows to continue to disappear into the sandstone bedrock.

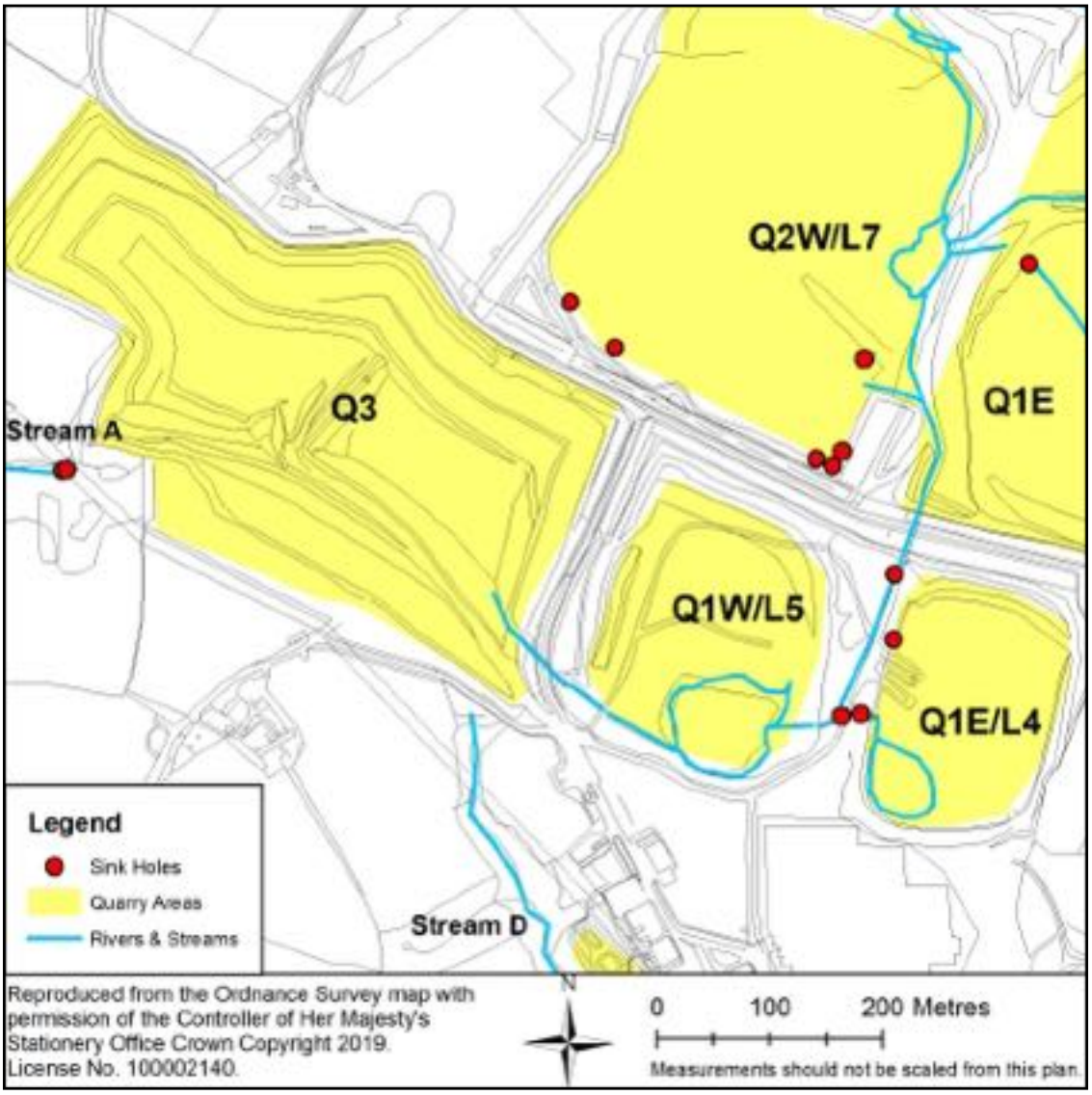

FIGURE 2 - SINKHOLES

2.2. Quarry 1

Along the western edge of L4 within Q1E, three earth bunds were extended out around 30m into L4 in 2018 to allow investigation through the lagoon tailings below. Each bund comprised material taken from different parts of the site to allow an assessment of the suitability of the materials to be used as a capping material at a later date. As part of the subsequent quarterly visits level monitoring of bunds recorded how over time these bunds have settled, as the underlying silts have de-hydrated. Datums were setup on the sandstone landbridge between Q1E and Q1W and a record of the related levels are presented in Table 5 in Appendix A and settlement since 2018 summarised on Figure 3.

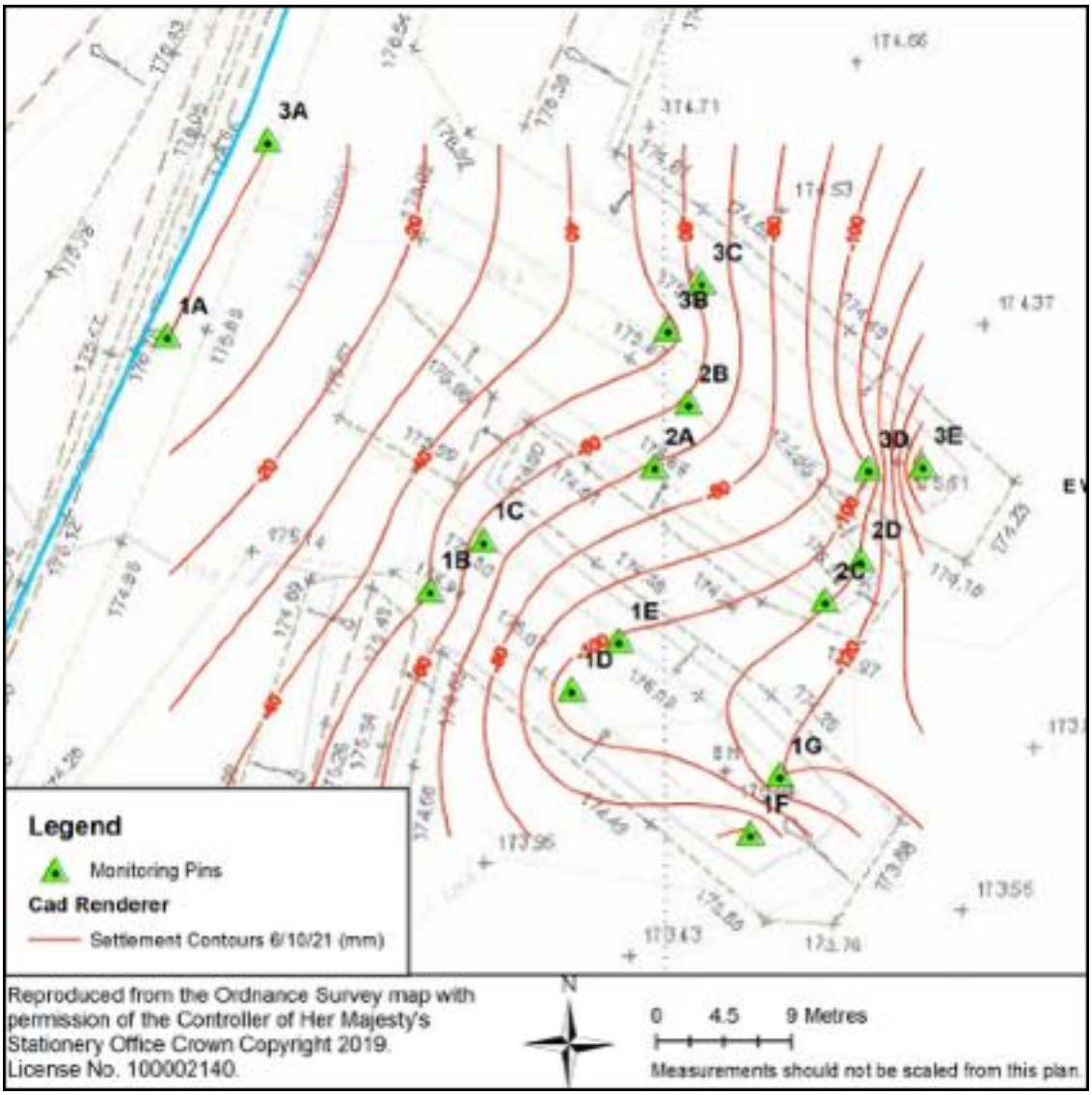

FIGURE 3 - Q1E TOTAL SETTLEMENT CONTOURS (MM)

As many of the level pins have become lost or inexcusable to survey due to increased vegetation, further quarterly pin monitoring is to stop. However, pins remain should future monitoring be required.

The 2018 site investigation access track constructed along the west and north edge of L5 within Q1W continue to be accessible with a 4x4 vehicle . However, the track extended from halfway along the western edge towards the centre of L5 in recent years has only been accessed on foot as during the winter month the surrounding ground floods and it becomes very wet.

To stop surface water from Q1 running into Q3, yet maintain the water level in L5, a trench was excavated in October 2020 draining to the lower ground to the south. Water has since been noted to flow through this trench after periods of heavy rain and drain onto ground on the north side of the weigh bridge as intended.

Since April 2021 birch trees increasingly dominated the vegetation across L4 tailings currently typically ranging between 3-7m in height, generally increasing in height on the higher and dryer areas to the north. With reduced surface water inflow, the previous surface pond in the south has increasingly been seen to be dry and birch has started to colonise where reed and ires has previously dominated. The L5 pond continues to form the main feature in the south of Q1W with reeds dominating its fringe. These are backed by maturing birch woodland which extend back to the access tracks serving Q1W. The area north and west of the tracks have a more mixed vegetation, the birch having been pollarded back and shredded insitu on several occasions in the past.

2.3. Quarry 2

The drying out of the tailing crust of L7 within Q2 has continued since a series of trenches were cut along the northern and eastern edges of L7 in 2018. Groundwater seeping from the bedrock from the higher ground to the north has drained through series of channels to enter a 150mm diameter plastic pipe which extends south through the rock tunnel and deposits the water into a channel that flows into L5.

An earth bund was extended 100m from the southeast corner of L7 in 2018 in a northwest direction towards the centre of L7. Access remains available along this bund although vegetation is starting to encroach. Previously identified cracks continue to form indicating that differential settlement is still occurring. Either side of the bund birch trees have colonised tailings currently typically 6-8m height. A larger variety of plants can now be seen growing in L7, including fir, beech, gorse and evening primrose. Vegetation will continue to become more established provided the surface ponding remains restricted.

The southern central area of L7 have also been seen to start to colonised the previous pond area further south which over the period have become increasingly green with mixed ground cover, including horsetail which is one of the first to grow in the wetter areas. As this vegetating process extends out the tailing crust has become firmer allowing foot access to a point where birch exceed 2m height. However, this still means that areas beyond are a hazard requiring signage to identify the danger of soft ground.

The area east of the access track, Q2E remains part of the solar farm, so is not visited on a regular basis. However, when visited it has been noted the central stream still flows during wetter weather and drains to a sinkhole at its western end. The ground having settled over a metre below the outfall pipe previously installed post quarrying.

2.4. Quarry 3

As part of the site investigation work in 2018, the existing 165m AOD bench around the east side of Q3 was widened and extended by an excavator with breaker in 2018 ~200m along the eastern side of Q3 and then around 20m west from the northeast corner. Increased vegetation on the 155m and 165m AOD bench has caused the north and west sides of Q3 to be inaccessible due to thick gorse and trees. However, areas to the south and east have remained accessible to the Q3 outfall in the south west corner of Q3 to evaluate the hydrology of the headwaters of Stream A within the SSSI and how the outfall will influence this area.

As part of further study of the quarries stability, required to answer concerns raised by the planning review, a further series of slope stability analysis was undertaken to assess the stability of the quarries rock face. A copy of the July 2022 Analyses Notes are provided as Appendix E. The analyses, using parameters previously obtained, re-analysed the slopes around Q3 in accordance with Eurocode 7 and compares them with previous prepared results. Finding in each case stability of the existing and proposed slopes remain above unity.

2.5. Stream D Diversion Channel

Having become very congested with vegetation during previous years, the stream D diversion channel was cleaned out and the north side of the channel cut back and widened in September 2020 to prevent the water ponding, as it had been doing, further up-stream. The concern being that the water table had risen in the tailings behind the L3 dam to such an extent that a relatively strong flow of water down the original stream D had been reestablished which was causing flooding of the ground behind the dam. In the intervening period less ponding behind the dam has been observed and although water continues to flow down the old stream overtopping over the old outfall no longer occurs. Flow again continues to flow down the diversion channel although with continuing vegetation growth on the bank sides further works may need consideration at some future date. Therefore continued inspection of this area is required.

2.6. Silt Ponds

The five tailings ponds located to the south of the site, on the slope down to the River Churnet have seen little change over the period. With the tailings that had filled SP1, having been cleared out in 2019 water again ponds in SP1 before flowing to SP2. Following the collapse of the bund in SP5 in 2016, a reduced pond has formed in the centre of SP5 and the channel through bund has become established. With limited future risk from SP4 and SP5 the monitoring had previously been curtailed to an annual visit when dieback of ground vegetation allows. Similarly the quarterly visit of SP2 and SP3 is similarly considered un-necessary and will be reduced to an annual visit in the next period. However, SP1 and the inspection of the ground along the Churnet should continue as part of the pH assessment.

3. HYDROLOGY

Although a number of the standpipes in the quarry area have been lost the remaining pipes continued to be monitored between April 2021 and April 2023 on a quarterly basis, see Figure 4, showing seasonal increases and decreases in water levels across Moneystone area throughout the period.

3.1. Q1 Water Level

The trench excavated into the western edge of L4 along with a pipe bridge under the access track was cut so L4 lake levels do not to exceed 173.290m AOD. Ponding has rarely reached this level during the April 2021 to April 2023 period, in part due to no water from Q2 draining into L4 and in part the settlement of L4 tailings resulting in a greater volume of ponded water retention needed before overflowing.

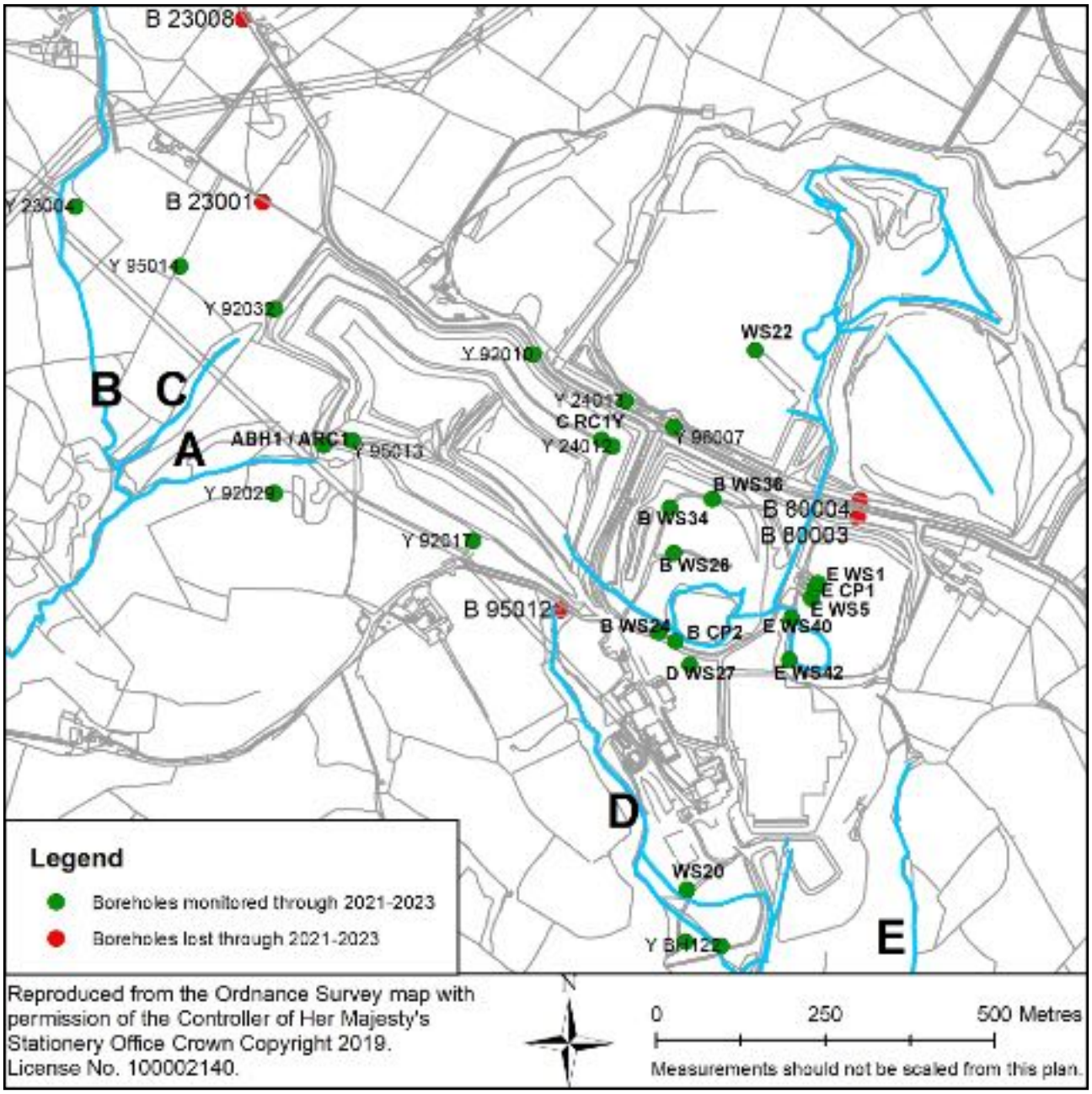

Figure 4 - Water Monitoring Locations

As part of the 2018 earthworks, the trench and pipe bridge from the outfall of L5 were deepened. This was done to help control and lower the water level in L5. Subsequently water flow was diverted away from Q3, without changing the level of L5 outfall. Water levels in L5, shown on Table 5 in Appendix A, have remained between a maximum level of 170.180m AOD and a minimum level of 169.752m AOD throughout the April 2021 to May 2023 period.

3.2. Q2 Water Levels

To assist in the drainage of L7, a series of trenches cut in early 2018 have continued to drain the groundwater seeping from the bedrock forming the higher ground to the north.

Combined with a channel draining the tailings in the southern area maximum level of 195m AOD the water enters a 150mm diameter plastic pipe which extends south through the rock tunnel draining into a channel to L5 pond.

Over this period the flow over the surface of L7 have reduced or become more channelled down towards sinkholes in its SE corner. Although these sinkholes appear to block from time to time, since the 2018 drainage works, ponding on L7 is increasing restricted to a small area in the SE corner. Levels in L7 have only been seen to reach the maximum 195.000m AOD outfall level during the wetter winter period.

3.3. Q3 Lake Level

Following the cessation of quarrying and pumping on the 16th of December 2010, water level in the Q3 lake rose from the base of the quarry at approximately 131m AOD, to a maximum level of 158.3m AOD in August 2014. See Table 3 in Appendix A. However from October 2020 the surface water from L5 has been diverted toward Stream D in an attempt to further reduce water in Q3 and since October 2019 635 m^3/day of water has been syphoned into Stream A. Over the last two years the lake level have reduced from 155.980m AOD in May 2021 to 153.548 AOD in March 2023, See Figure 5.

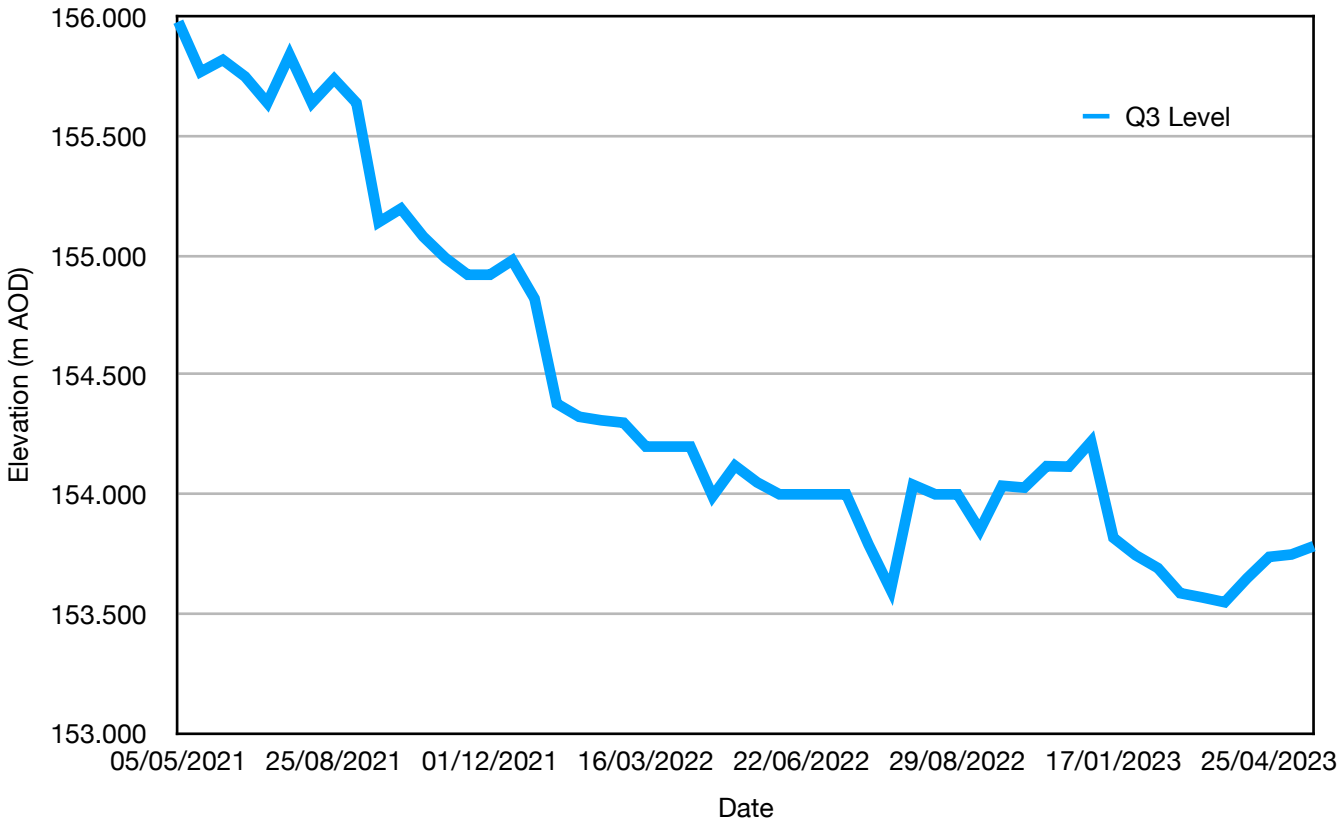

FIGURE 5 - Q3 WATER LEVELS

The lake level in Q3 has often reflected relative changes in other waterbodies on the site, such as L7 and the River Churnet, as following abnormally dry months they have all shown a decrease. However, often Q3 has shown fluctuations which do not match the other waterbodies. A lag in the response time between a change in the water level in L7 and Q3 has previously been suggested. It is anticipated that the blocking and unblocking of underground drainage pathways in the sandstone south of Q3 may influence the water level in Q3.

Over the previous two years, subaquatic vegetation has been further increasing, especially along the northwestern shore, but ground vegetation below the ~158m AOD has noticeably reduced due to past flooding and only during the most recent visits has regrowth been observed to increase.

3.4. Stream Measurements

Previous visits have consistently shown that Streams A, B and C are influenced by the preceding weather conditions. Stream A also appears to be influenced by the lake level in Q3. During February 2021 a hydrology report was carried out (Report Ref: 418057HA) and should be consulted for further detail regarding the hydrology around Stream A.

The flows of Stream A, B and C have been recorded fortnightly as part of monitoring the syphoning of water from Q3 into Stream A. Over the previous two years, Stream A flow has ranged between 220m^3/d and 1043m^3/d, with an average of 677m^3/d across the nine visits. Stream B ranged between 599m^3/d and 4113m^3/d with an average of 1593m^3/d. Stream C has shown little variation, with an average of 84m^3/d and values ranging between 55m^3/d and 305m^3/d.

It is thought that Stream B is fed by surface and groundwater flow from the area to the northwest of Q3. Stream A had previously lost its catchment with the excavation of Q3. To recover flow to the head of the stream two syphons were installed in July and October 2019 drawing water from Q3 lake. On 30 of the previous 52 visits over the past two years, both syphons have been operational, leading to an average drawdown from Q3 of 443 m^3/day over the period. As the water level in Q3 has reduced, the syphons had to be extended to reach the new lake level in Q3. This has been reflected in the flows measured at Stream A, V notch approximately 190m down stream. During drier periods it has been noted that flows at the V notch have been less than the syphon flow whilst during wetter periods of the year supplementary flows from various springs mainly on the south side of the stream have been noted.

No flow monitoring has been undertaken for Stream D or E. When the quarry was operational Stream D acted as the overflow from the Production Area. A series of silt ponds, SP1, 2 and 3, were regularly maintained to prevent silt reaching the River Churnet. Since the cessation of quarry production the ponds and Stream D have continued to take the natural run-off flows, and had become increasingly vegetated around their margins requiring the 2020 diversion earthworks previously mentioned in Section 2.5. From visual assessments during the post production monitoring visits the flow down Stream D does not appear to have shown significant variation, possibly as a result of infiltration into the underlying tailings of L3. Since the clearing and re-profiling of the diversion of the Stream D the flow through stream D and over the L3 spillway has reduced. At the present time it

is anticipated that the majority of Area E is drained by Stream D, with the eastern most areas being drained down Stream E.

3.5. Syphon Measurements

Since the start of pumping from Q3 the Syphons have been monitored on a biweekly basis, recording the rate of flow from both syphons, pH and the flow volumes at the installed V notches in streams A, B and C. An average volume of 443 m^3/day of water was drawn out of Q3 via the syphons over the period. The minimum volume being drawn by the syphons was recorded as 0 m^3/day over a six week period between October and November 2022 when both syphons stopped working. It should be noted that syphon drawdowns where very consistent across the course of the monitoring and that the main cause in variation was the discontinuation of drawing water from one of the syphons which would then require restarting. Figure 6 shows the relation between the syphon draw drown and the volume of flow recorded going through the Stream A, V-notch.

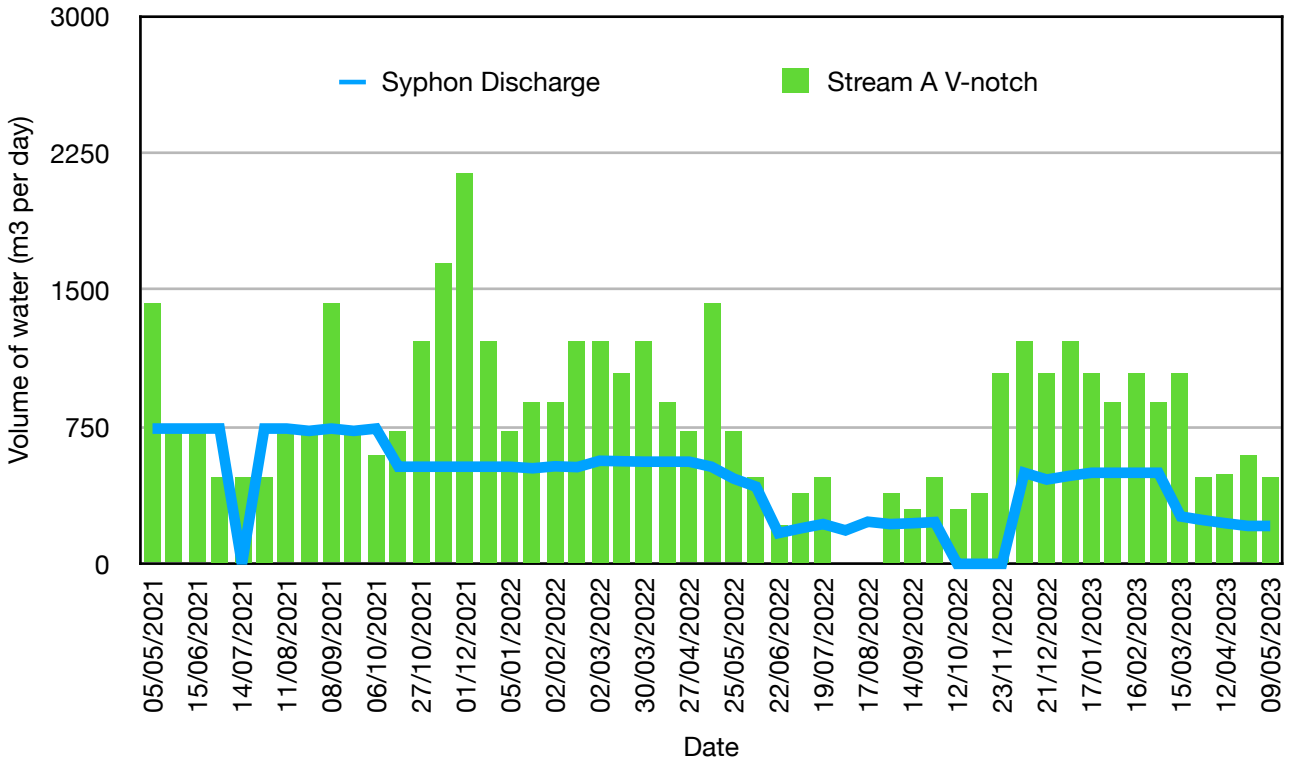

FIGURE 6 - DISCHARGE INTO STREAM A VS VOLUME OF FLOW AT STREAM A V-NOTCH

3.6. Moneystone Ground Water Measurements

Throughout the monitoring period, the boreholes have shown varying rates of change. Using the groundwater monitoring data obtained we have produced groundwater contour plots to indicate changes in the area. See Appendix C and Appendix A Table 1. The visits indicate level changes across boreholes within the quarry area are variable when compared to surface water observations. The standpipes in the quarry area, see Figure 4, showed both frequent increases and decreases in water levels between visits with no overall observable trend.

The standpipes in the L3 dam BH121(13m) has showed a significant decrease in water level over the period from 147.53m AOD in April 2021 to 141.60m AOD in June 2022. Prior to Stream D being diverted, consistently large water level changes were recorded in BH121. Between 2019-2021 standing water was recovering, and fluctuations in the borehole levels again were seen to be occurring. However during this period water levels have remained relatively consistent.

The groundwater contour plots over the last period showed a similar pattern across visits. The groundwater in BH92017 is again seen to be higher than in the surrounding area; this is due to perched water in the mudstone bedrock and in following reports will be omitted from contour plots to more accurately display ground water levels within the sandstone across the site.

SP1 has had the silt removed previously, resulting in water being allowed to pond before draining into SP2. Below SP3 the stream runs through the railway culvert and across water meadows to the river and then enters the river as a number of riverlets just upstream of the pump station. The SP5 bund was noted to have collapsed on the April 2017 visit and now only retains a small volume in the base of the former pond.

At the EA monitoring station the channel which Stream E flows through has cleared itself over time and the stream now flows beneath the monitoring station as it did before the flooding during the previous period.

4. pH WITHIN THE QUARRY AND SURROUNDING AREA

The Environmental Assessment Desk Study Report (Ref: 418040EA) was prepared in March 2011. This found that although contamination will have been present, from the result of producing sand, the environmental legacy to human and environmental receptors are limited to the high and low pH present. Consequently the pH of streams and water bodies have been monitored since cessation of quarrying.

The pH levels have been recorded on previous monitoring visits from all main surface water bodies (including lagoons, streams and the River Churnet) along with groundwater seepages where present. The monitoring locations have remained relatively constant around accessible water bodies, although variations have been possible/necessary where site works or changing conditions have made other parts of the quarry available. The results of the pH monitoring are recorded in Table 2 in Appendix A and with contour plots of pH shown in Appendix D.

Throughout the course of the monitoring it has become apparent that the extremes of pH across the site are reducing. See Appendix B and Table 2 in Appendix A. However, our monitoring visits on occasion have continued to identify localised areas of high and low pH. These have been most noticeable when restoration and site works result in freshly exposed ground and suggests further legacy sources remain.

During the previous two years, the minimum pH across the site has increased while the average and maximum have decreased. The lowest minimum pH values were recorded

on both the April and June 2021 visits with a value of 5.2 pH. A highest minimum pH of 7.1 was recorded during the October 2022 visit. In general the main area of persistent low pH is a groundwater seepage into the north-eastern corner of Q3, presumed to be related to the continuing consolidation of the L7 tailings.

The maximum pH has generally decreased, although some of the recorded values remained high. The maximum pH value over the previous two years was recorded in August 2022 at 8.9. The highest pH values were generally recorded in the L7 excavation over the recent period. The area had previously been used to add lime to increase the pH of the production water before entering L7 lagoon.

The average pH has decreased slightly over the previous two years, falling from an average of pH 7.3 over the January 2019 to April 2021 period to a value of pH 7.2 over the most recent period. The highest average pH across this period was pH 7.7 recorded in October 2022.

Monitoring of Streams A to E has been undertaken since Q3 formed. In general Stream A, B and C follow similar trends with variations in pH occurring at the same time. This would tend to indicate these are influenced by the weather in much the same way as L7. As expected, with distance from sources of low pH, the pH levels generally increase to the west and southwest of Q3 in the direction of the streams. Given the proximity of Stream A and C to Q3 this effect is slightly less pronounced than that for Stream B. This is likely due to percolation from Q3 through the bedrock land bridge in these areas. It should be noted that the majority of values for Streams A to C have remained within EU bathing water limits of pH 6.5 and 8.5, with the percentage of values within the limits over the previous two years at 79%.

4.1. River Churnet

The river water was found to generally be within EU bathing water limits above the acidic discharges. The average pH of the river has been within EU bathing water limits since the January 2019 visit. The acidic seepages from the bank seen during the previous period were not visible over the most recent period due to increased vegetation along the banks, primarily of Himalayan Balsam.

4.2. Water In Q3 Lake

Following the decreases in the level of Q3, the 155m AOD bench is now above the lake level for most of its length, other than near the overflow where the bench dips to a lower elevation.

The pH of Q3 was generally recorded to range from pH ~5.7 in the eastern corner adjacent to the seepage, to pH ~7.4 at the base of the the outfall. The acidic seepage was recorded to have a pH of <pH 6.0 on several visits. As was observed in past monitoring visits, there was an increase in pH with distance from the seepage in the eastern corner. It has previously been anticipated that as lake volumes increase the variability in pH would decrease from greater mixing and dilution, though more data would be required to confirm this.

4.3. Water In L7 Lake

Previous visits have noted the surface water pH to be generally in keeping with the rest of the quarry between pH 6 and pH 8. The pH measured over the previous two years was generally between pH 7.0-8.1.

The pH appeared to have been affected by the excavations into the tailings which occurred between August and November 2016. Prior to the excavations the pH in L7 showed some variation between pH 10 and 6. This is thought to be due to the uncovering of pockets of high pH lime which were previously buried. However the minimum, maximum and average for each individual visit were over a small range. Over time it is anticipated that the pH values will decrease towards more neutral levels, however this shows that the potential for high fluctuations in pH in L7 remains whilst the tailings remain exposed and/or are disturbed.

5. ENGINEERING

5.1. Quarry Faces

As part of the monitoring visits, visual inspections of the exposed faces have been undertaken. There has been evidence that blocks have fallen in the past around the eastern edge of Q1 with several smaller falls recorded approaching the tunnel portal.

In Q2 several areas of concern have been noted, in particular a large rock fall recorded on the western edge of L7 and having initially failed between December 2012 and April 2013. The initial fall debris was noted to have sunk into the tailings indicating the very soft state. However, more recent visits have indicated additional falls in the same location suggesting a progressive failure of the face. The more recent falls appear to be resting on the surface of the tailings which would appear to confirm that the tailings around the edge are now firm. Although access to inspect the face is restricted it appears as though additional loose, highly weathered blocks are evident to the south of the main fall. Similar loose blocks have been previously recorded along the exposed rock at the southeast of the quarry. The orientation of the jointing evident in the rest of the exposed quarry faces indicates a potential failure plane and suggests that further falls may be anticipated in the future along the western edge of Q2.

The amount of trees and vegetation growing against the faces of Q1 has increased, obscuring parts of the rock face. However, this also highlights any areas of collapse as the vegetation coverage is taken out by the rockfall leaving a bare face. Comparing the recent quarry face to the quarry face in 2021 shows no new bare areas, suggesting no major collapses have taken place since 2021. When the site is developed, 6m natural barriers should be considered at the top and bottom of the quarry faces in Q1.

Several small slips have historically been recorded in the 155m bench around Q3 which were considered in part to be due to a rising water level. The wave action created by the water's surface will erode the bench and result in washing out of the finer material. The exposed faces around Q3 also show a significant degree of fracturing and weathering, particularly at the western end where the quarrymen found the sandstone to be heavily weathered.

In October 2018 an 'Overview site investigation' report concluded that when lake levels reduced in 2015 and 2016, evidence of weakening of the sandstones rock mass strength was found in the previously saturated rock. However, the strength loss was not found to be sufficient to cause a mass failure of the quarry faces, although minor surface failures might still be anticipated.

As previously reported the risk of toppling failures is not as great in Q3 as it is in Q2 or Q1 due to the inclined faces with the main areas of concern currently being the exposed faces along the eastern and southern sides of Q3. There does however remain the risk of future rock failures, particularly at the western end, where the mass strength of the sandstone was previously found by the quarrymen to be reduced.

Due to the limited site access the currently noted falls do not present a significant risk of harm and will continue to be monitored for future movement concerns. As development of the site progresses it would be considered prudent to undertake a more detailed assessment and inspection of all exposed rock faces to identify potential areas of concern and possible remedial solutions.

The sandstone quarry faces exposed in Q3 during the early 2018 access work have shown to be prone to surface spoiling in a number of locations, fracturing to gravel and cobble sized fragments, and then reducing to sand. Over time, vegetation has grown on the exposed slopes and benches helping to protect the rock face however access along the benches has become increasingly difficult as vegetation continues to established.

5.2. Tunnel

Prior to the visit in July 2016 a 'Tunnel Stability Assessment' report was submitted, dated June 2016. The report concluded that the tunnel in its present condition is stable. No changes to the state of the interior of the tunnel were observed. However, before public access is allowed through the rock tunnel a full study and testing will be required. On a previous visit, at the north end of the tunnel a section of the protective canopy had fallen away and other sections appear to be on the verge of falling.

Due to restricted visitor access to the site and minimal traffic using the tunnel at present the potential risks posed by the tunnel are minimal. However, when the park is developed and the number of site users increases a further analysis of the stability of the tunnel will be required to inform detailed design requirements.

5.3. Q3 Outfall

In mid July 2019, a syphon was set up adjacent to the original outfall in Q3 which drains water into the top of Stream A. The purpose of the syphon was to temporarily reduce the water level in Q3 to around 153.00m AOD and allow a new outfall to be constructed at a lower level (156.00m AOD). To aid in lowering the water level in Q3, a second syphon was installed adjacent to the first syphon in October 2019. Both syphons are maintained with a fortnightly cycle of monitoring. During the most recent period between April 2021 and May 2023 an estimated 352,162m^3 (443m^3/day) drained from Q3 into Stream A.

In late January 2021 an assessment of the hydrology of the headwaters of Stream A and how the outfall will influence the SSSI area was undertaken. The purpose to assess the potential of water seeping from the sandstone into the valley of Stream A; and to determine the flow path through the SSSI of the overflowing water. As part of the assessment in-situ soakaway testing to determine the soakaway performance in the area of the outfall. The soakaway and flow testing at the proposed outfall location indicated flow rates of at least 4320m^3/day have been shown to flow through the original stream beds and sinkholes within the headwater of Stream A.

A hydrological impact report was prepared by JBA Consulting, dated July 2021. The report modified previous assessments of catchment and summarised that the current catchment area for Stream A has reduced from a pre quarry area of 0.86km^2 to 0.63km^2. The catchment area lost by Stream A was gained by Stream D. With stream modelling JBA predict that with the increased catchment area proposed for Stream A the surface drainage for the development will cause a 20-30mm rise in stream levels across the Q95 and Q20 flow ranges, so remaining below current Stream A bank levels.

5.4. Q1E Capping Bunds

In 2018, along the western edge of L4, three earth bunds were extended out around 30m into L4 to allow investigation through the lagoon tailings below. Each bund comprised material taken from different parts of the site to allow an assessment of the suitability of the materials to be used as a capping material at a later date. This included some of the bund at the south side of the solar panels which was removed for this use. A Geo-Grid was placed on the surface of the western half of the southern bund, and covered with an additional half metre of material to allow assessment to be made of the benefits of incorporating a Geo-Grid into any future capping of L4.

The quarterly monitoring visits include monitoring of the three bunds to measure the amount of settlement which is occurring. The results are presented in Table 5 in Appendix A. The raw data was collected up until January 2021 at which point only five out of the original sixteen pins could be located, and monitoring was not carried out on subsequent visits. The last visit with enough data collected to enable analysis of the results was in October 2021.

The culmination of the monitoring in January 2021 shows that the three bunds have settled 80 to 174mm since monitoring began. Generally, the amount of settlement increases with distance out into the lagoon, which reflects the increasing thickness of tailings. See Table 5 and Figure 3. The results show that the northern bund has settled the most, with changes of 97mm to 174mm recorded at the eastern end. The northern bund and southern bund have settled at similar rates. The western end of the southern bund has settled the least, by 50-65mm. This is where the Geo-Grid was installed during the construction of the bunds.

With pins settling at uniform rates and the loss of the monitoring pins caused by increased vegetation and animal activity on the bunds, no further monitoring of the bund is proposed.

5.5. L3 Dam

As previously reported the significant variations in groundwater level in the L3 dam and tailings have raised concerns regarding potential instability. The 2012 investigation recorded several soft zones within the dam construction suggesting localised weakening of the dam material. At the time it was also reported that moisture contents in the dam increased with depth. Although some seepage will occur in an embankment or earth dam, the increase with depth suggests a potential for stability issues. This situation was realised in the mid-1960's when records indicate the dam came close to failing and consequently a rock blanket was installed at the base.

In 2018 Stream D was diverted away from the dam to drain surface water and flow down the spillway to the eastern end of the dam to reduce the amount of water flowing across the back face of the dam. This reduced the amount of water percolating through the tailings and so reaching the dam. This had led to a drop in water level in the standpipe within the tailings, and less water flowing down the spillway as well as a visual decrease in surface ponding. In September 2020 the Stream D diversion channel was cleaned of vegetation and the north side of the channel cut back and widened to prevent the water ponding, as it had been doing, further up-stream. This has had the desired effect, as over the last two years flow down the old Stream D has been minimal, with the majority of the flow being diverted down the diversion and channelled down the incline into SP1.

5.6. L5 Outfall Modifications

A trench was excavated in September 2020 so that water from L5 was diverted above the Q1W pipe bridge track to drain onto the ground on the north side of the weigh bridge. This was to temporarily reduce the water flow into Q3, as well as to maintain the current water level in L5. Following periods of heavy rain, water has been observed to flow through the new L5 diversion trench before meeting the road and flowing towards the site buildings.

6. CONCLUSIONS AND ACTIONS

The quarterly monitoring has been carried out throughout the April 2021 to May 2023 period with additional fortnightly outfall monitoring visits. We would recommend that the monitoring is continued in a similar manner. However, as development progresses additional visits will need to be considered as part of the monitoring program.

- The modified L5 outfall will remain in place to divert surface water from L5 and prevent it running down into Q3 until construction works have been competed.

- While both syphons have been operational, the amount of water pumped out of Q3 equates to an average of 414 m^3/day since its inception. As per the agreement with the EA monitoring for pH and turbidity have been carried out all parameters have constantly been within the determined limits which were agreed. Monitoring of the Outfall will continue on a bi-weekly basis whilst syphoning of water into Stream A continues.

- At this stage, prior to development, we would recommend that monitoring continues on the current three monthly basis. However, as development progresses at the site we

would recommend the monitoring is returned to monthly visits. As part of the monitoring we will continue to monitor ground and surface water levels along with pH of accessible water bodies. The rockfalls recorded and exposed faces will continue to be monitored for signs of future instability.

- Following the loss of the majority of the monitoring pins, level monitoring of the bunds in Q1E will no longer be carried out. However, pins remain should future monitoring be required.

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APPENDIX A - TABLES

Moneystone Table 1

					95013 BH surface level reduced because of quarrying (previously 161.61)														
									South of road	North of road									
BOREHOLE NUMBER	**92010**	**92017**	**92029**	**92032**	**95013**	**95014**	**23001**	**23004**	**24012**	**24013**	**BH122**	**BH121 (28m)**	**BH121 (13m)**	C.RC1	ABH-1	B-CP2 tall	E-WS5	E-WS42	I-WS22
NORTHING	**346297**	**346022**	**346092**	**346364**	**346170**	**346427**	**346522**	**346515**	**346162**	**346229**	**345425**	**345430**	**345430**	**346179**	**346169**	**345874**	**345937**	**345846**	**346302**
EASTING	**404295**	**404206**	**403898**	**403914**	**404029**	**403774**	**403897**	**403620**	**404412**	**404430**	**404572**	**404521**	**404521**	**404380**	**403990**	**404506**	**404706**	**404673**	**404624**
SURFACE LEVEL (m.AOD)																			
	188.01	**181.19**	**166.55**	**170.38**	**159.00**	**171.69**	**183.73**	**166.60**	**174.93**	**192.70**	**151**	**149**	**149**	**172**	**158**	**172**	**176**	**175**	**195**
Base of Sandstone	158.00	142.00	120.00	139.00	136.00	138.00	151.00	137.00	158.00	164.00	132								
Date read :																			
21/04/2021	164.25	166.77	148.63	159.39	157.80	160.40	159.15	161.38	163.18	Dry@25.0	138.98	145.04	147.53	161.99	152.62	163.77	173.39	169.95	193.90
30/06/2021	163.39	167.21	148.21	158.69	157.80	159.50	159.81	161.82	163.90	Dry@25.1		147.35	147.55	161.78	152.36	167.54	173.16	169.95	191.39
06/10/2021	162.05	167.28	146.97	157.35	157.80	157.72	159.26	166.60	162.96	167.80	142.16	146.18	148.30	161.02	151.32	162.75	172.70	171.69	192.02
02/02/2022	171.76	167.27	146.26	157.43	157.80	158.24		166.60	163.50	167.80	142.47		148.49	161.34	150.86	161.93	173.47	171.85	192.89
27/04/2022	164.59	167.23	145.97	157.15	157.80				162.95	167.80	142.49		148.27	161.96	150.47		172.92	171.53	192.98
22/06/2022	163.67		146.50	157.48		158.33		159.05	163.58				141.60	161.55	150.84	161.84	172.90		191.36
26/10/2022	161.16	167.57	144.45	156.53					163.37				141.72	161.63	150.29	161.42	172.66	171.49	191.13
17/01/2023	161.33	167.74	144.46	157.41					163.65				141.88	161.78	150.09	161.82	172.78	171.42	191.52
09/05/2023	162.66	166.69	145.65	156.55	Dry				162.13				142.65	161.39	149.97	162.04	173.25	171.93	192.66
Tip Set at : (m.A.O.D)	157.51	157.95	134.90	143.88	137.76	137.27	158.63	146.88	156.39	163.70	121.50	121.00	136.00	154.70	146.00		170.90	169.95	190.00
Water Levels are m.AOD																			

Date	Visit	Number	Location	pH	Material	Comment
07/10/2020	Bb	24	Stream F	8.2	W	Pipe Bridge
10/02/2021	Bc	1	Q3	6.5	W	Outfall
10/02/2021	Bc	2	V Notch	6.4	W	Stream A
10/02/2021	Bc	3	V Notch	6.6	W	Stream B
10/02/2021	Bc	4	V Notch	6.7	W	Stream C
10/02/2021	Bc	5	Q3	6.5	W	South Side
10/02/2021	Bc	6	Q3	6.6	W	Ramp
10/02/2021	Bc	7	Q3	6.5	W	NE Corner
10/02/2021	Bc	8	Q3	5.5	W	NE Seepage
10/02/2021	Bc	9	D diversion	7.5	W	Pipe bridge
10/02/2021	Bc	10	D diversion	7.6	W	Incline
10/02/2021	Bc	11	Old Stream D	7.3	W	Top of spilway
10/02/2021	Bc	12	SP1	7.8	W	pond
10/02/2021	Bc	13	SP2	7.9	W	pond
10/02/2021	Bc	14	SP3	8	W	pond
10/02/2021	Bc	15	River C	7.7	W	By Pumphouse
10/02/2021	Bc	16	River C	6.4	W	Orange Seepage from Bank
10/02/2021	Bc	17	Stream	6.7	W	EA Station
10/02/2021	Bc	18	River C	7.3	W	Near EA Station
10/02/2021	Bc	19	L4	7	W	Outfall
10/02/2021	Bc	20	L4/5	7.4	W	Central Stream
10/02/2021	Bc	21	L5	7.7	W	Pond
10/02/2021	Bc	22	L7	7.4	W	Excavation Outfall
10/02/2021	Bc	23	L7	7.5	W	Outfall
10/02/2021	Bc	24	L7	8	W	Stream
10/02/2021	Bc	25	L7	7.6	W	Excavation
10/02/2021	Bc	26	Q1E	7.2	W	L5 Trench
21/04/2021	Bd	1	Q3	6.2	W	Bucket
21/04/2021	Bd	2	Q3	6.3	W	Outfall
21/04/2021	Bd	3	Q3	6.3	W	South Bank
21/04/2021	Bd	4	Q3	6.3	W	Ramp
21/04/2021	Bd	5	Q3	6.2	W	NW Corner
21/04/2021	Bd	6	Q3	5.2	W	NW Seepage
21/04/2021	Bd	7	Stream D	6.5	W	Old Stream D
21/04/2021	Bd	8	Dam Outfall	7	W	Dam
21/04/2021	Bd	9	Stream D diversion Mouth	7.1	W	D Diversion
21/04/2021	Bd	10	Stream D diversion Pipe	7.2	W	D Diversion
21/04/2021	Bd	11	SP1	7.4	W	SP1
21/04/2021	Bd	12	SP2	7.4	W	SP2
21/04/2021	Bd	13	SP3	7.5	W	SP3
21/04/2021	Bd	14	River C	7.7	W	Pump House
21/04/2021	Bd	15	River C	6.8	W	Seepage
21/04/2021	Bd	16	EA Station	7.1	W	River C
21/04/2021	Bd	17	River EA	7.2	W	River C

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pH MONITORING RECORDS

Client: Laver Leisure

Project: Moneystone Quarry, Oakamoor

Number: 418050

TABLE 2

Date	Visit	Number	Location	pH	Material	Comment
21/04/2021	Bd	18	L4	7.8	W	L4
21/04/2021	Bd	19	Tunnel Pipe	7.8	W	Tunnel
21/04/2021	Bd	20	North of Tunnel	7.9	W	Tunnel
21/04/2021	Bd	21	Q2 Excavation	7.6	W	Q2 Excavation
21/04/2021	Bd	22	Stream F Pipe	7.8	W	Stream F
21/04/2021	Bd	23	A	6.4	W	A
21/04/2021	Bd	24	B	6.5	W	B
21/04/2021	Bd	25	C	6.4	W	C
21/04/2021	Bd	26	SP4	7.3	W	SP4
21/04/2021	Bd	27	Stream F North	7.9	W	Stream F North
30/06/2021	Be	1	Q3	6.7	W	Ramp
30/06/2021	Be	2	Q3	6.8	W	Outfall
30/06/2021	Be	3	Syphon	6.6	W	At Stream A
30/06/2021	Be	4	Stream A	6.5	W	Upstream of Syphon
30/06/2021	Be	5	Q3	5.2	W	Seepage
30/06/2021	Be	6	Q3	5.9	W	NE Corner
30/06/2021	Be	7	Stream D Diversion	6.7	W	Pipe Bridge
30/06/2021	Be	8	Old Stream D	6.9	W	Above Spillway
30/06/2021	Be	9	Stream D Diversion	7.8	W	At Incline
30/06/2021	Be	10	SP1	7.8	W	Pond
30/06/2021	Be	11	SP2	7.4	W	Pond
30/06/2021	Be	12	SP3	7.6	W	Pond
30/06/2021	Be	13	River Churnet	7.7	W	Pumphouse
30/06/2021	Be	14	Stream E	7.4	W	EA Station
30/06/2021	Be	15	L5	7.7	W	Shore
30/06/2021	Be	16	L7	7	W	Stream F
30/06/2021	Be	17	L7	8.1	W	Excavation
30/06/2021	Be	18	Stream A	7.6	W	V - Notch
30/06/2021	Be	19	Stream B	7.5	W	V - Notch
30/06/2021	Be	20	Stream C	7.4	W	V - Notch
06/10/2021	Bf	1	Q3	7	W	Ramp
06/10/2021	Bf	2	Q3	7.5	W	Outfall
06/10/2021	Bf	3	Syphon	7.5	W	At Stream A
06/10/2021	Bf	4	Stream A	7.5	W	Upstream of Syphon
06/10/2021	Bf	5	Q3	5.8	W	Seepage
06/10/2021	Bf	6	Q3	7.6	W	NE Corner
06/10/2021	Bf	7	Stream D Diversion	7.6	W	Pipe Bridge
06/10/2021	Bf	8	Old Stream D	5.7	W	Above Spillway
06/10/2021	Bf	9	Stream D Diversion	7.7	W	At Incline
06/10/2021	Bf	10	SP1	7.5	W	Pond
06/10/2021	Bf	11	SP2	7.2	W	Pond
06/10/2021	Bf	12	SP3	7.4	W	Pond
06/10/2021	Bf	13	River Churnet	7.4	W	Pumphouse
06/10/2021	Bf	14	Stream E	6.9	W	EA Station

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pH MONITORING RECORDS

Client: Laver Leisure

Project: Moneystone Quarry, Oakamoor

Number: 418050

TABLE 2

Date	Visit	Number	Location	pH	Material	Comment
06/10/2021	Bf	15	L5	7.6	W	Shore
06/10/2021	Bf	16	L7 pipe bridge	7.7	W	Stream F
06/10/2021	Bf	17	L7	7.7	W	Excavation
06/10/2021	Bf	18	Stream A	7.2	W	V - Notch
06/10/2021	Bf	19	Stream B	7	W	V - Notch
06/10/2021	Bf	20	Stream C	7.3	W	V - Notch
06/10/2021	Bf	21	Stream D Diversion	7.4	W	Mouth to incline
06/10/2021	Bf	22	River Churnet	7.6	W	EA Station
06/10/2021	Bf	23	Q3	7.4	W	south shore
06/10/2021	Bf	24	Tunnel	7.6	W	Tunnel Pipe
06/10/2021	Bf	25	Q2 north	7.8	W	Stream F north
06/10/2021	Bf	26	Far East Bank	7.7	W	River C
02/02/2022	Bg	1	Old stream D	6.8	W	Pipe Bridge
02/02/2022	Bg	2	Old stream D	6.7	W	Overflow
02/02/2022	Bg	3	Stream D diversion	7.3	W	Pipe Bridge
02/02/2022	Bg	4	Top of Incline	7.6	W	Incline
02/02/2022	Bg	5	Stream D diversion	7.3	W	Mouth to incline
02/02/2022	Bg	6	SP1	7.7	W	SP1
02/02/2022	Bg	7	SP2	7.6	W	SP2
02/02/2022	Bg	8	SP3	7.8	W	SP3
02/02/2022	Bg	9	River Churnet	7.6	W	Pump house
02/02/2022	Bg	10	EA Station	7.4	W	Stream E
02/02/2022	Bg	11	Former train line	6.7	W	Pipe in Rock Cutting
02/02/2022	Bg	12	Former train line	5.4	W	Stream on southern bank at the eastern end of train line.
02/02/2022	Bg	13	Q3	5.7	W	Seepage on Beach
02/02/2022	Bg	14	Q3	6.5	W	NE corner
02/02/2022	Bg	15	Q3	6	W	Seepage NE corner
02/02/2022	Bg	16	Q3	6.5	W	Outfall
02/02/2022	Bg	17	Q3	6.5	W	South Bank
02/02/2022	Bg	18	Q3	6.5	W	Ramp
02/02/2022	Bg	19	Syphon	6.6	W	Bucket
02/02/2022	Bg	20	Stream A	6.8	W	Above Syphon
02/02/2022	Bg	21	Stream A	6.9	W	V-Notch
02/02/2022	Bg	22	Stream B	6.9	W	V-Notch
02/02/2022	Bg	23	Stream C	7	W	V-Notch
02/02/2022	Bg	24	North of Tunnel	7.8	W	Trench
02/02/2022	Bg	25	Q2 outfall	7.7	W	Trench
02/02/2022	Bg	26	Stream F	7.8	W	Pipe Bridge
02/02/2022	Bg	27	Excavation	7.7	W	Ramp
02/02/2022	Bg	28	River Churnet	7.6	W	EA Station
02/02/2022	Bg	29	Stream F	7.8	W	Top of Hill
27/04/2022	Bh	1	Q3	6.8	W	Ramp
27/04/2022	Bh	2	Q3	6.8	W	NE Corner
27/04/2022	Bh	3	Q3	5.6	W	NE Corner Seepage

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pH MONITORING RECORDS

Client: Laver Leisure

Project: Moneystone Quarry, Oakamoor

Number: 418050

TABLE 2

Date	Visit	Number	Location	pH	Material	Comment
27/04/2022	Bh	4	Q3	6.7	W	South Bank
27/04/2022	Bh	5	Q3	6.8	W	Outfall
27/04/2022	Bh	6	Syphon	6.8	W	Bucket
27/04/2022	Bh	7	Stream A	7	W	Above syphons
27/04/2022	Bh	8	Stream A	7.1	W	V Notch
27/04/2022	Bh	9	Stream B	7	W	V Notch
27/04/2022	Bh	10	Stream C	6.9	W	V Notch
27/04/2022	Bh	11	L4	6.9	W	Q1E
27/04/2022	Bh	12	Pipe Bridge	6.8	W	Stream D diversion
27/04/2022	Bh	13	Pipe Bridge	6.7	W	Old stream D
27/04/2022	Bh	14	Outfall	6.9	W	Dam
27/04/2022	Bh	15	Mouth	6.8	W	Stream D diversion
27/04/2022	Bh	16	SP1	6.9	W	SP1
27/04/2022	Bh	17	SP2	7	W	SP2
27/04/2022	Bh	18	SP3	7	W	SP3
27/04/2022	Bh	19	River C	6.9	W	Pump House
27/04/2022	Bh	20	Bank Seepage	5.8	W	Pump House
27/04/2022	Bh	21	Pipe	6.4	W	Churnet Valley
27/04/2022	Bh	22	Stream	5.4	W	Churnet Valley
27/04/2022	Bh	23	Q2	7.5	W	Excavation
27/04/2022	Bh	24	Stream F	7.8	W	Pipe bridge
27/04/2022	Bh	25	Stream F	7.8	W	Top of Hill
27/04/2022	Bh	26	Q2	7.3	W	Outfall
27/04/2022	Bh	27	EA Station	6.9	W	EA Station
27/04/2022	Bh	28	EA Station	6.8	W	River C
19/07/2022	Bi	1	Q3	7.6	W	Ramp
19/07/2022	Bi	2	Q3	7.2	W	NE Corner
19/07/2022	Bi	3	Q3	6.1	W	NE Corner Seepage
19/07/2022	Bi	5	Q3	8.1	W	Outfall
19/07/2022	Bi	6	Syphon	8.1	W	Pipe 1
19/07/2022	Bi	7	Syphon	8	W	Pipe 2
19/07/2022	Bi	8	Stream A	6.1	W	Above syphons
19/07/2022	Bi	8	Stream A	6.9	W	V Notch
19/07/2022	Bi	9	Stream B	7.3	W	V Notch
19/07/2022	Bi	10	Stream C	7.3	W	V Notch
19/07/2022	Bi	11	L4	7.6	W	Q1E
19/07/2022	Bi	12	SP1	8.3	W	SP1
19/07/2022	Bi	13	SP2	7.5	W	SP2
19/07/2022	Bi	14	Q2	8.9	W	Excavation
19/07/2022	Bi	15	Stream F	7.1	W	Pipe Bridge
19/07/2022	Bi	16	Stream F	5.5	W	Top of Hill
26/10/2022	Bj	1	D Diversion	7.6	W	Pipe Tunnel
26/10/2022	Bj	2	Incline	7.6	W	Flown Down Incline
26/10/2022	Bj	3	D Diversion	7.5	W	Outfall onto Incline

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pH MONITORING RECORDS

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Project: Moneystone Quarry, Oakamoor

Number: 418050

TABLE 2

Date	Visit	Number	Location	pH	Material	Comment
26/10/2022	Bj	4	SP1	7.7	W	Pond
26/10/2022	Bj	5	SP2	7.5	W	Pond
26/10/2022	Bj	6	SP3	7.6	W	Pond
26/10/2022	Bj	7	River Churnet	7.8	W	At Pumphouse
26/10/2022	Bj	8	Stream E	7.5	W	At EA Station
26/10/2022	Bj	9	River Churnet	7.6	W	At EA Station
26/10/2022	Bj	10	L5	7.7	W	Shore
26/10/2022	Bj	11	L7	8	W	Excavation
26/10/2022	Bj	12	Stream F	7.8	W	Pipe Bridge
26/10/2022	Bj	13	Q3	7.8	W	NE Corner
26/10/2022	Bj	14	Q3	8.3	W	Base of Ramp
26/10/2022	Bj	15	Q3	8.2	W	Outfall
26/10/2022	Bj	16	Stream A	7.7	W	V-Notch
26/10/2022	Bj	17	Stream B	7.1	W	V-Notch
26/10/2022	Bj	18	Stream C	7.5	W	V-Notch
17/01/2023	Bk	1	Stream D Diversion	6.8	W	Pipe Bridge
17/01/2023	Bk	2	Old Stream D	6.9	W	Near Pipe Bridge
17/01/2023	Bk	3	Incline	7.1	W	Flow above Stream D Diversion Outfall
17/01/2023	Bk	4	Stream D Diversion	7	W	Outfall onto Incline
17/01/2023	Bk	5	SP1	7.2	W	Inflow
17/01/2023	Bk	6	SP2	7.3	W	Pond
17/01/2023	Bk	7	SP3	7.2	W	Pond
17/01/2023	Bk	8	River Churnet	7.1	W	Pump House
17/01/2023	Bk	9	River Churnet	7	W	EA Station
17/01/2023	Bk	10	Stream E	6.8	W	EA Station
17/01/2023	Bk	11	L5	7.2	W	Shore
17/01/2023	Bk	12	Pipe from L7	7	W	Near Rock Tunnel
17/01/2023	Bk	13	L7 Outfall	7.1	W	Outfall
17/01/2023	Bk	14	L7 Excavation	7.4	W	Outfall
17/01/2023	Bk	15	L7 Excavation	7.4	W	Excavation
17/01/2023	Bk	16	Stream F	6.7	W	Pipe Bridge
17/01/2023	Bk	17	Q3	6.9	W	Ramp
17/01/2023	Bk	18	Q3	6.5	W	Outfall
17/01/2023	Bk	19	Syphon	6.3	W	Stream A end
17/01/2023	Bk	20	Stream A	6.4	W	V-Notch
17/01/2023	Bk	21	Stream B	6.4	W	V-Notch
17/01/2023	Bk	22	Stream C	6.5	W	V-Notch
09/05/2023	Bl	1	Q3	7.4		North East Corner
09/05/2023	Bl	2	Q3	7.7		Ramp
09/05/2023	Bl	3	Q3	7.5		Outfall
09/05/2023	Bl	4	Syphon	7.4		Stream A
09/05/2023	Bl	5	Stream A	7.2		Above Syphon
09/05/2023	Bl	6	Stream C	7.2		V-Notch
09/05/2023	Bl	7	Stream B	7.2		V-Notch

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pH MONITORING RECORDS

Client: Laver Leisure

Project: Moneystone Quarry, Oakamoor

Number: 418050

TABLE 2

Date	Visit	Number	Location	pH	Material	Comment
09/05/2023	BI	8	Stream A	7		V-Notch
09/05/2023	BI	9	D Diversion	7.5		Pipebridge
09/05/2023	BI	10	Old Stream D	7.2		Pipebridge
09/05/2023	BI	11	Incline	8.2		Above D Diversion
09/05/2023	BI	12	D Diversion	7.6		Outfall Onto Incline
09/05/2023	BI	13	SP1	8.1		Pond
09/05/2023	BI	14	SP2	7.9		Pond
09/05/2023	BI	15	SP3	7.9		Pond
09/05/2023	BI	16	River Churnet	7.3		At Pump House
09/05/2023	BI	17	Stream E	6.8		EA Station
09/05/2023	BI	18	L5	7.4		Shore
09/05/2023	BI	19	SP5	7.5		Outfall
09/05/2023	BI	20	Stream F	7.2		Pipe Bridge
09/05/2023	BI	21	L7	7.8		Excavation

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pH MONITORING RECORDS

Client: Laver Leisure

Project: Moneystone Quarry, Oakamoor

Number: 418050

TABLE 2

Table 3: Observed Q3 Water Levels					Inflow(m3/day)			River Flows (m3/day)		
Date	Days	Q3 Level	L8 Level	Level Rise (mm/day)	Volume	Avg	Period	A	B	C
21-Apr-21	3779d	156.10		5	485867	129	244	878	731	55
30-Jun-21	3849d	155.88		-3	474005	123	-169	483	731	55
6-Oct-21	3947d	155.20		-7	437018	111	-377	599	2135	55
2-Feb-22	4066d	154.33		-7	390002	96	-395	878	2135	<50
27-Apr-22	4150d	153.99		-4	372048	90	-214	731	1424	81
19-Jul-22	4233d	153.60		-5	350912	83	-255	220	4113	<50
8-Nov-22	4345d	154.04		4	374420	86	210	1043	1424	<50
17-Jan-23	4415d	153.82		-3	362666	82	-168	878	1043	305
9-May-23	4527d	153.71		-1	356735	79	-53	382	599	55

Table 4: Stream A, B and C flow rate.								
	A	B	C	A	B	C	River Churnet	
	Head (mm)			Flow (m3/d)			Estimated Flow Speed (m/s)	River Level (m relative to previous visit)
	90º	90º	53º 8'					
	A	B	C	A	B	C		
21/04/2021	140	130	60	878	731	55	1.7	-0.09
05/05/2021	170	180	60	1424	1642	55		
30/06/2021	110	130	50	483	731			
14/07/2021	110	130	50	483	731			
28/07/2021	110	90	50	483	295			
11/08/2021	130	110	60	731	483	55		
25/08/2021	160	170	70	1224	1424	81		
08/09/2021	170	170	60	1424	1424	55		
22/09/2021	130	90	40	731	295			
06/10/2021	120	200	60	599	2135	55	1	0.75
20/10/2021	130	150	60	731	1043	55		
27/10/2021	160	170	60	1224	1424	55		
17/11/2021	180	170	70	1642	1424	81		
01/12/2021	200	210	90	2135	2412	150		
15/12/2021	160	160	80	1224	1224	112		
05/01/2022	130	170	60	731	1424	55		
18/01/2022	140	120	50	878	599			
02/02/2022	140	200	50	878	2135		0.83	-0.58
16/02/2022	160	180	60	1224	1642	55		
02/03/2022	160	180	70	1224	1642	81		
16/03/2022	150	160	60	1043	1224	55		
30/03/2022	160	170	80	1224	1424	112		
13/04/2022	140	150	60	878	1043	55		
27/04/2022	130	170	70	731	1424	81	0.35	-0.17
19/07/2022	80	260	30	220	4113			
26/10/2022	140	130	50	1043	1424	55	0.47	0.10
17/01/2023	140	150	120	483	483	55	1	0.15
01/02/2023	150	140	100	483	483	55		
16/02/2023	140	120	90	878	599	150		
28/02/2023	150	130	80	1043	731	112		
15/03/2023	110	230	120	483	3027	305		
28/03/2023	110	140	80	483	878	112		
12/04/2023	120	170	90	599	1424	150		
25/04/2023	110	110	50	483	483	55		
09/05/2023	100	120	60	382	599	55		

Table 5 - Level Monitoring of Trial Bunds on L4 at Moneystone Quarry Q1E.

Date	1A	1B	1C	1D	1E	1F	1G	2A	2B	2C	2D	3A	3B	3C	3D	3E	L5 Water Level	REMARKS
18/07/18	175.560	175.820	176.020	175.715	175.810	175.485	175.595	175.395	175.570	174.995	174.955	175.880	175.460	175.600	175.175	175.255		All levels relative to the two points on bedrock (1A, 3A), assumed not to have moved
07/08/18	175.560	175.820	176.015	175.700	175.800	175.470	175.580	175.380	175.555	174.975	174.935	175.880	175.450	175.595	175.160	175.240	170.085	All levels relative to the top of the pipe under the road.
02/10/18	175.565	175.815	176.005	175.680	175.775	175.440	175.545	175.370	175.545	174.945	174.900	175.890	175.440	175.585	175.215	CNL	170.190	All levels relative to the top of the pipe under the road.
08/01/19	175.560	175.800	175.990	175.660	175.750	175.420	175.525	175.350	175.530	174.925	174.875	175.885	175.420	175.565	175.110	175.200	170.565	All levels relative to the top of the pipe under the road.
30/04/19	175.555	175.800	175.985	175.655	175.745	175.420	175.520	175.345	175.525	174.915	174.880	175.885	175.420	175.565	175.110	175.195	170.185	All levels relative to the top of the pipe under the road.
16/07/19	175.555	175.800	175.980	175.655	175.745	175.425	CNL	175.345	175.520	CNL	174.870	175.885	175.415	175.560	175.105	175.190	171.380	All levels relative to the top of the pipe under the road.
09/10/19	175.265	175.410	175.595	175.260	175.160	175.020	175.130	175.005	175.135	CNL	174.475	175.495	175.020	175.110	174.715	174.750	169.535	All levels relative to the top of the pipe under the road.
15/01/20	175.560	175.800	175.980	175.655	175.745	175.410	175.515	175.345	175.525	174.870	CNL	175.885	175.415	175.565	175.105	175.130	170.275	All levels relative to the top of the pipe under the road.
08/04/20	175.560	175.800	175.975	175.655	175.750	175.410	175.520	175.345	175.520	CNL	174.875	175.885	175.415	175.560	175.105	175.135	169.295	All levels relative to the top of the pipe under the road.
15/07/20	175.555	175.745	175.965	175.640	175.735	175.395	175.505	175.320	175.500	CNL	174.850	175.880	175.405	175.550	175.085	175.120	N/A	All levels relative to the top of the pipe under the road.
7/10/20	175.550	175.785	CNL	175.630	175.720	175.385	175.485	175.330	175.510	CNL	174.845	175.885	175.415	CNL	175.080	175.110	169.850	All levels relative to the top of the pipe under the road.
28/01/2021	175.560	175.791	CNL	175.640	175.730	175.393	175.493	175.333	175.513	CNL	174.847	175.888	175.412	CNL	175.082	175.114	170.272	All levels relative to the top of the pipe under the road.
30/6/21	175.555	175.805	CNL	175.645	175.740	175.400	175.510	175.325	175.510	CNL	CNL	175.885	175.400	CNL	175.075	175.110	N/A	All levels relative to the top of the pipe under the road.
6/10/21	175.545	175.770	175.955	175.608	175.708	175.410	175.475	175.323	175.508	175.845	174.845	175.873	175.413	175.536	175.078	175.081	169.752	All levels relative to the top of the pipe under the road.

Movement since last reading

	1A	1B	1C	1D	1E	1F	1G	2A	2B	2C	2D	3A	3B	3C	3D	3E		
07/08/18	0	0	-5	-15	-10	-15	-15	-15	-15	-20	-20	0	-10	-5	-15	-15		
02/10/18	5	-5	-10	-20	-25	-30	-35	-10	-10	-30	-35	10	-10	-10	55			
08/01/19	-5	-15	-15	-20	-25	-20	-20	-20	-15	-20	-25	-5	-20	-20	-105			
30/04/19	-5	0	-5	-5	-5	0	-5	-5	-5	-10	5	0	0	0	0	-5		
16/07/19	0	0	-5	0	0	5		0	-5		-10	0	-5	-5	-5	-5		
08/04/20	0	0	-5	0	5	0	5	0	-5			0	0	-5	0	5		
15/07/20	-5	-55	-10	-15	-15	-15	-15	-25	-20		-25	-5	-10	-10	-20	-15		
7/10/20	-5	40		-10	-15	-10	-20	10	10		-5	5	10		-5	-10		
28/01/2021	10	6		10	10	8	8	3	3		2	3	-3		2	4		
30/6/21	-5	14		5	10	7	17	-8	-3			-3	-12		-7	-4		
06/10/2021	-10	-35		-37	-32	10	-35	-2	-2			-12	13		3	-29		

Movement since first reading

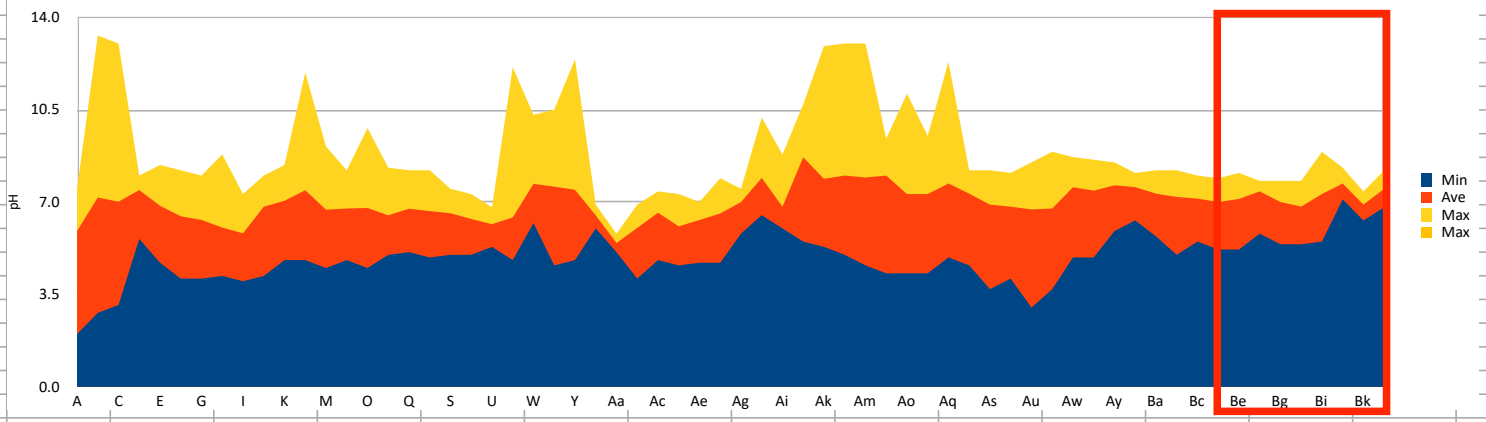
	1A	1B	1C	1D	1E	1F	1G	2A	2B	2C	2D	3A	3B	3C	3D	3E		
07/08/18	0	0	-5	-15	-10	-15	-15	-15	-15	-20	-20	0	-10	-5	-15			
07/08/18	0	0	-5	-15	-10	-15	-15	-15	-15	-20	-20	0	-10	-5	-15	-15		
02/10/18	5	-5	-15	-35	-35	-45	-50	-25	-25	-50	-55	10	-20	-15	40			
08/01/19	0	-20	-30	-55	-60	-65	-70	-45	-40	-70	-80	5	-40	-35	-65	-55		
30/04/19	-5	-20	-35	-60	-65	-65	-75	-50	-45	-80	-75	5	-40	-35	-65	-60		
16/07/19	-5	-20	-40	-60	-65	-60		-50	-50		-85	5	-45	-40	-70	-65		
15/01/20	0	-20	-40	-60	-65	-75	-80	-50	-45	-125		5	-45	-35	-70	-125		
08/04/20	0	-20	-45	-60	-60	-75	-75	-50	-50		-80	5	-45	-40	-70	-120		
15/07/20	-5	-75	-55	-75	-75	-90	-90	-75	-70		-105	0	-55	-50	-90	-135		
7/10/20	-10	-35		-85	-90	-100	-110	-65	-60		-110	5	-45		-95	-145		
28/01/2021	0	-29		-75	-80	-92	-102	-62	-57		-108	8	-48		-93	-141		
30/6/21	-5	-15		-70	-70	-85	-85	-70	-60			5	-60		-100	-145		
06/10/2021	-15	-50	-65	-107	-102	-75	-120	-72	-62		-110	-7	-47	-64	-97	-174		

APPENDIX B - pH SUMMARY PLOT

Moneystone Park

Monthly pH readings from December 2010

Fig 3



Visit	A	B	C	D	E	F	G	H	I	J	K	L	M
Date	20/12/10	7/1/11	9/2/11	4/5/11	1/6/11	14/7/11	9/8/11	8/9/11	3/10/11	22/11/11	19/12/11	9/1/12	6/2/12
Min	2.0	2.8	3.1	5.6	4.7	4.1	4.1	4.2	4.0	4.2	4.8	4.8	4.5
Ave	5.9	7.2	7.0	7.5	6.9	6.5	6.3	6.0	5.8	6.8	7.0	7.4	6.7
Max	7.5	13.3	13.0	8.0	8.4	8.2	8.0	8.8	7.3	8.0	8.4	11.9	9.1
STDEV	1.6	1.9	1.4	0.7	1.1	1.3	1.1	1.3	1.0	0.9	1.3	1.6	1.0
No.	13	39	52	12	25	27	24	25	28	47	13	29	33

Visit	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
Date	20/3/12	12/4/12	22/5/12	3/7/12	17/9/12	31/10/12	6/12/12	12/2/13	26/4/13	30/7/13	26/10/13	8/1/14	15/4/14
Min	4.8	4.5	5.0	5.1	4.9	5.0	5.0	5.3	4.8	6.2	4.6	4.8	6.0
Ave	6.8	6.8	6.5	6.7	6.7	6.6	6.4	6.2	6.4	7.7	7.6	7.5	6.5
Max	8.2	9.8	8.3	8.2	8.2	7.5	7.3	6.8	12.1	10.3	10.5	12.4	6.9
STDEV	1.1	1.8	1.1	1.1	0.9	0.9	0.6	0.4	1.4	0.8	1.2	1.7	0.2
No.	21	34	19	29	52	27	39	22	26	28	37	44	19

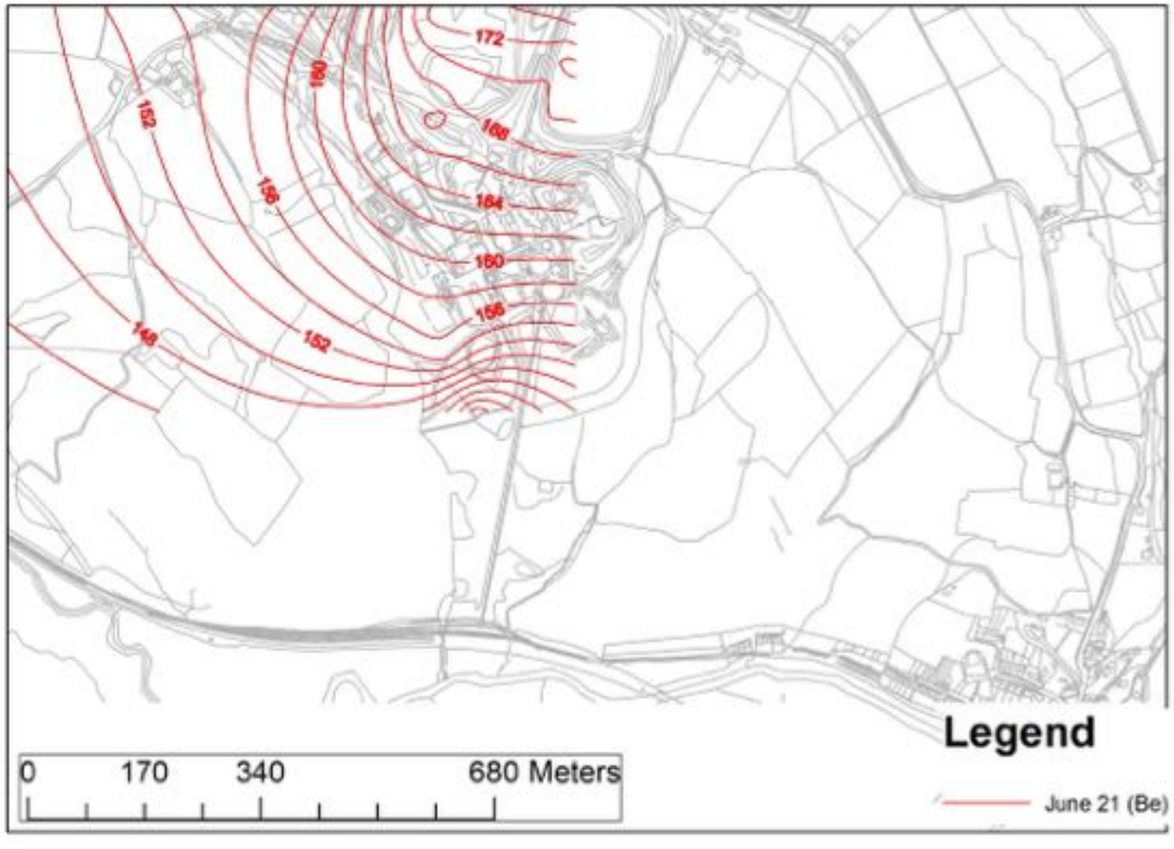
Visit	Aa	Ab	Ac	Ad	Ae	Af	Ag	Ah	Ai	Aj	Ak	Al	Am
Date	9/7/14	16/9/14	6/10/14	20/1/15	28/04/15	28/07/15	31/10/15	29/01/16	07/04/16	05/07/16	11/11/16	01/12/16	24/01/17
Min	5.1	4.1	4.8	4.6	4.7	4.7	5.8	6.5	6.0	5.5	5.3	5.0	4.6
Ave	5.4	6.0	6.6	6.1	6.3	6.6	7.0	7.9	6.8	8.7	7.9	8.0	7.9
Max	5.8	6.9	7.4	7.3	7.0	7.9	7.5	10.2	8.8	10.7	12.9	13.0	13.0
STDEV	0.3	0.8	0.6	0.7	0.6	0.9	0.5	0.5	0.5	1.2	1.4	1.3	1.4
No.	15	28	25	49	43	43	23	68.0	52.0	55.0	39.0	53	57.0

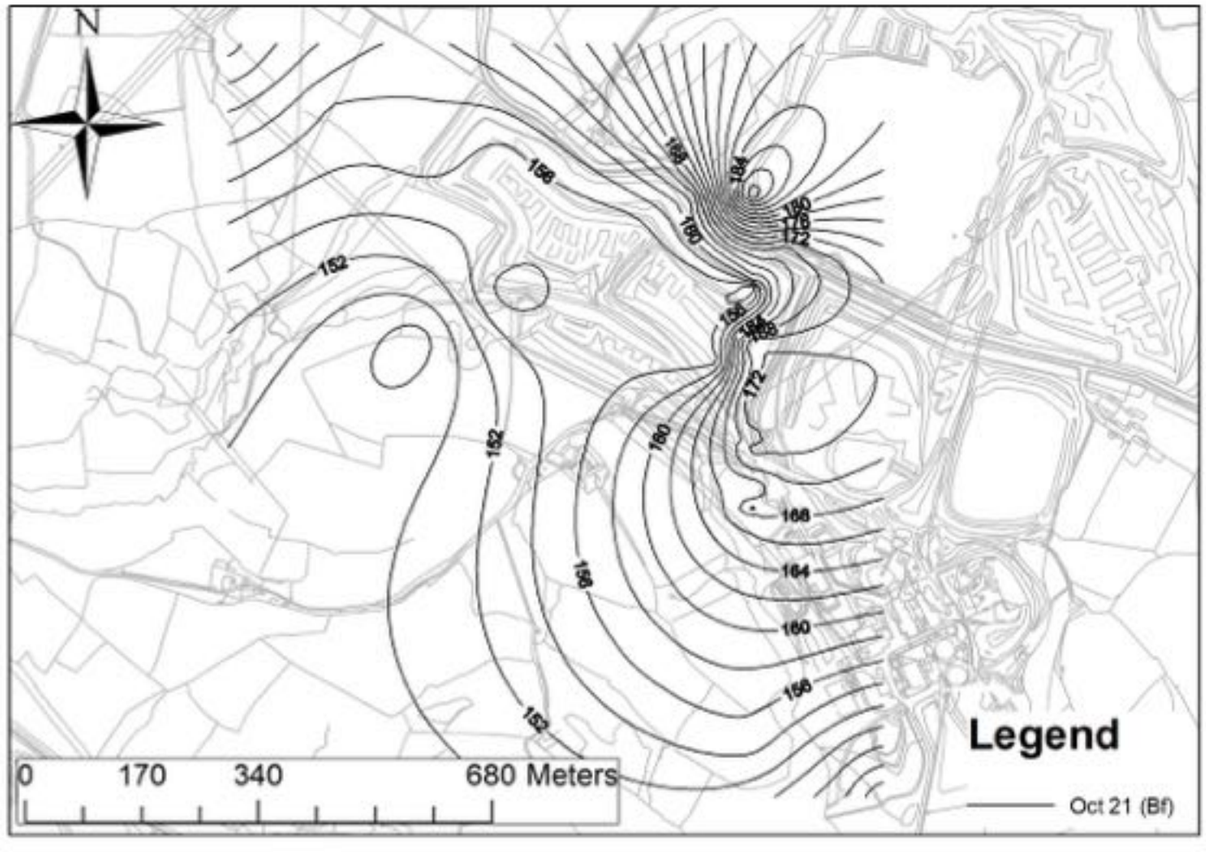
Visit	An	Ao	Ap	Aq	Ar	As	At	Au	Av	Aw	Ax	Ay	Az
Date	25/4/17	20/07/17	12/10/17	23/01/18	18/05/18	07/08/18	02/10/18	1/8/19	4/30/19	7/16/19	10/9/19	1/15/20	4/8/20
Min	4.3	4.3	4.3	4.9	4.6	3.7	4.1	3.0	3.7	4.9	4.9	5.9	6.3
Ave	8.0	7.3	7.3	7.7	7.3	6.9	6.8	6.7	6.8	7.6	7.4	7.6	7.6
Max	9.4	11.1	9.5	12.3	8.2	8.2	8.1	8.5	8.9	8.7	8.6	8.5	8.1
STDEV	1.0	1.2	1.2	1.2	1.0	1.1	1.2	1.2	1.2	0.9	0.9	0.5	0.4
No.	25.0	39.0	52.0	47.0	20.0	25.0	28.0	34.0	32.0	14.0	21.0	32.0	22.0

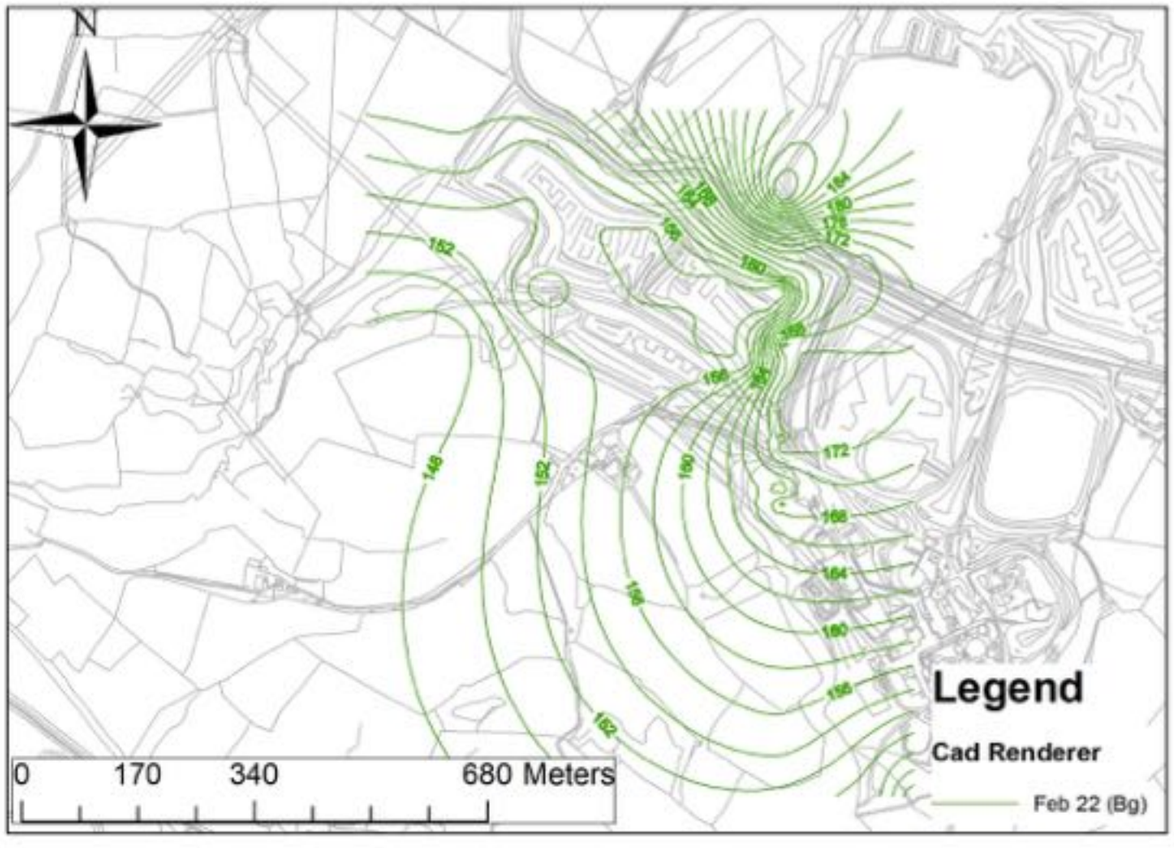
Visit	Ba	Bb	Bc	Bd	Be	Bf	Bg	Bh	Bi	Bj	Bk	Bl
Date	15/7/20	7/10/20	10/2/21	4/21/20	6/30/21	10/6/21	2/2/21	27/4/22	19/8/22	26/10/22	17/1/23	9/5/23
Min	5.7	5.0	5.5	5.2	5.2	5.8	5.4	5.4	5.5	7.1	6.3	6.8
Ave	7.3	7.2	7.1	7.0	7.1	7.4	7.0	6.8	7.3	7.7	6.9	7.5
Max	8.2	8.2	8.0	7.9	8.1	7.8	7.8	7.8	8.9	8.3	7.4	8.2
STDEV	0.6	0.8	0.6	0.7	0.7	0.4	0.7	0.5	0.5	0.3	0.3	0.4
No.	20	24	26	27.0	20.0	25.0	29.0	28.0	16.0	18.0	22.0	21.0

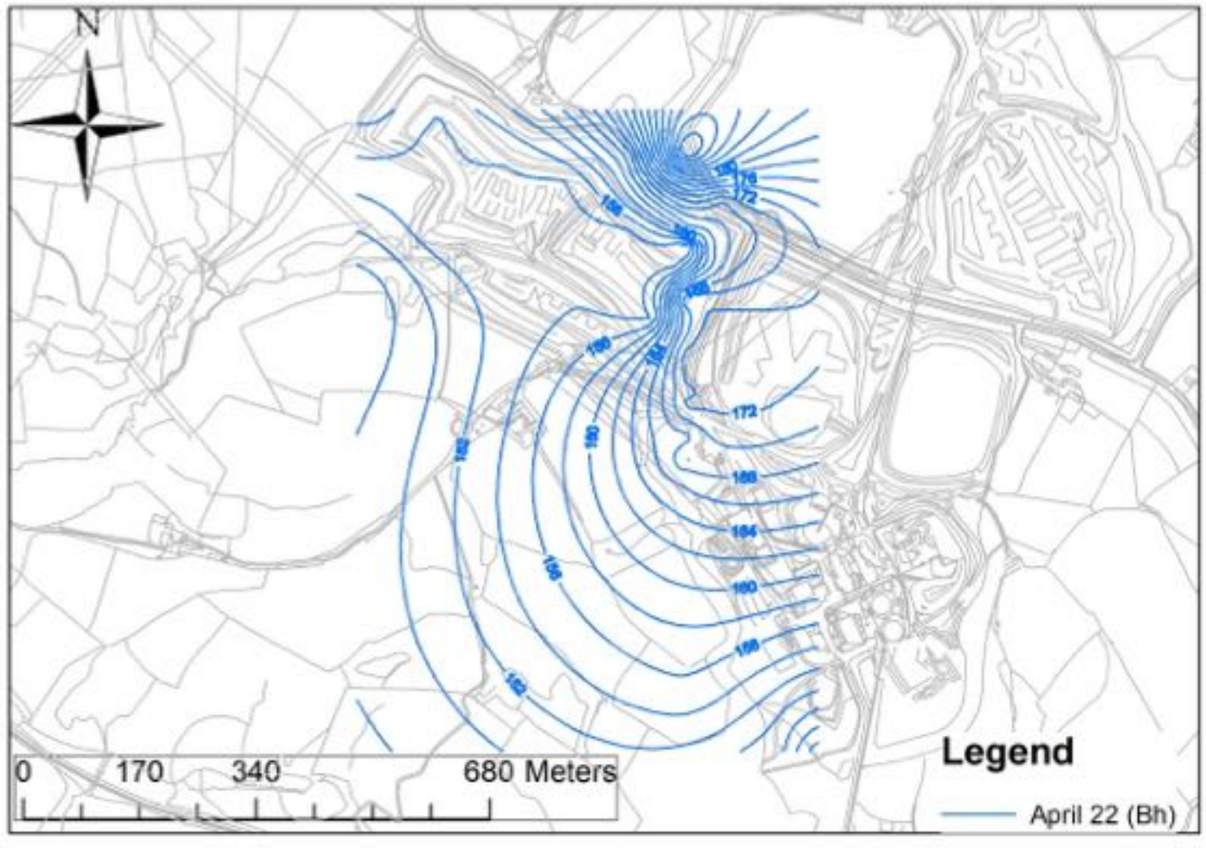
= Period covered by this report

APPENDIX C - GROUNDWATER CONTOURS


172
152
160
168
164
160
156
148
152
Legend
0 170 340 680 Meters
June 21 (Be)


N
158
160
152
172
160
168
164
160
156
152
Legend
0 170 340 680 Meters
Oct 21 (Bf)


N
152
148
152
160
172
168
164
160
156
152
Legend
Cad Renderer
0 170 340 680 Meters
Feb 22 (Bg)


N
172
160
172
168
164
160
156
152
Legend
0 170 340 680 Meters
April 22 (Bh)

N

1:12,500

Legend

Jul 20 (Ba)

N

1:12,500

Legend

Sep 20 (Bb)

N

1:12,500

Legend

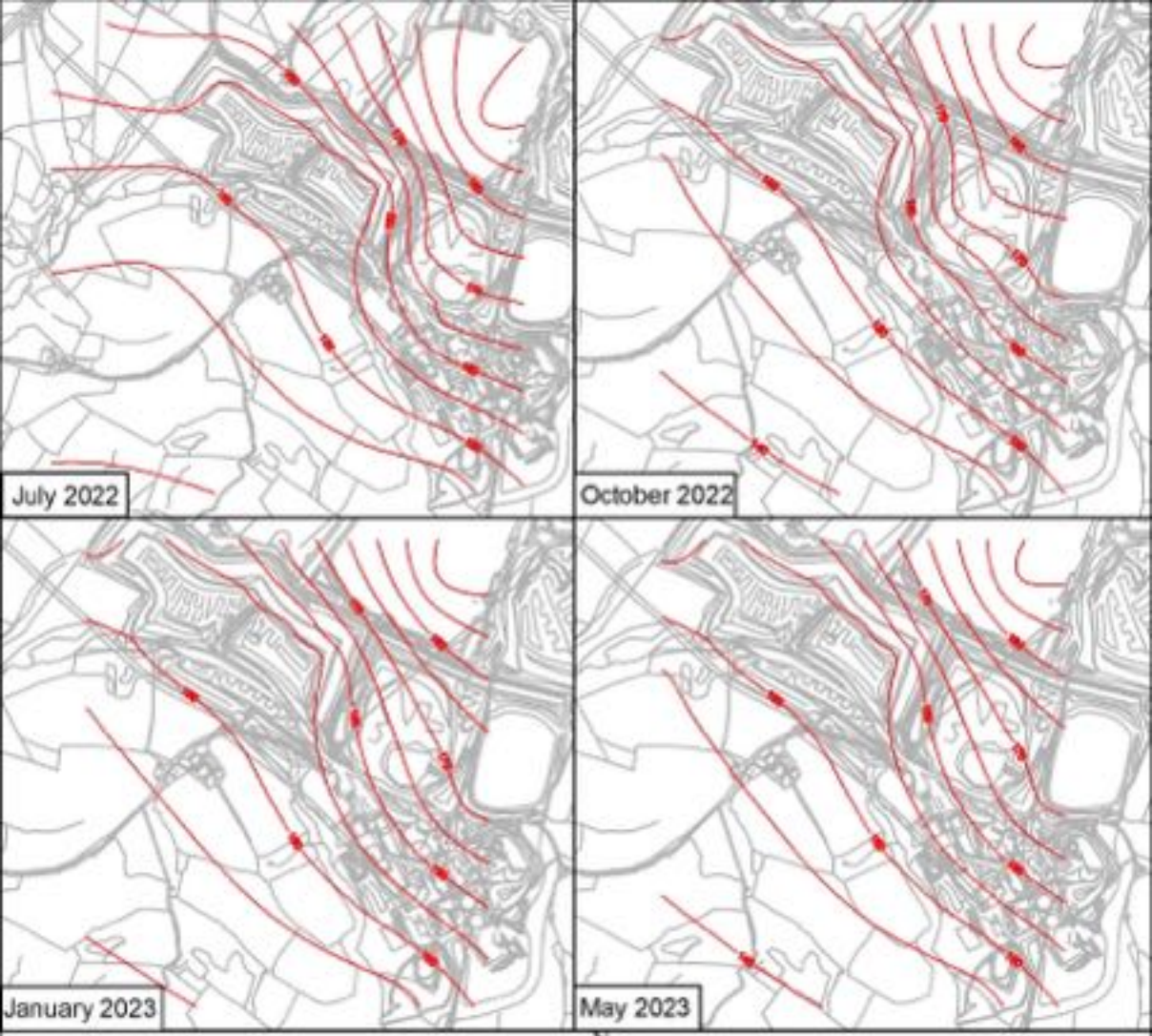
Jan 21 (Bc)

N

1:12,500

Legend

Apr 21 (Bd)

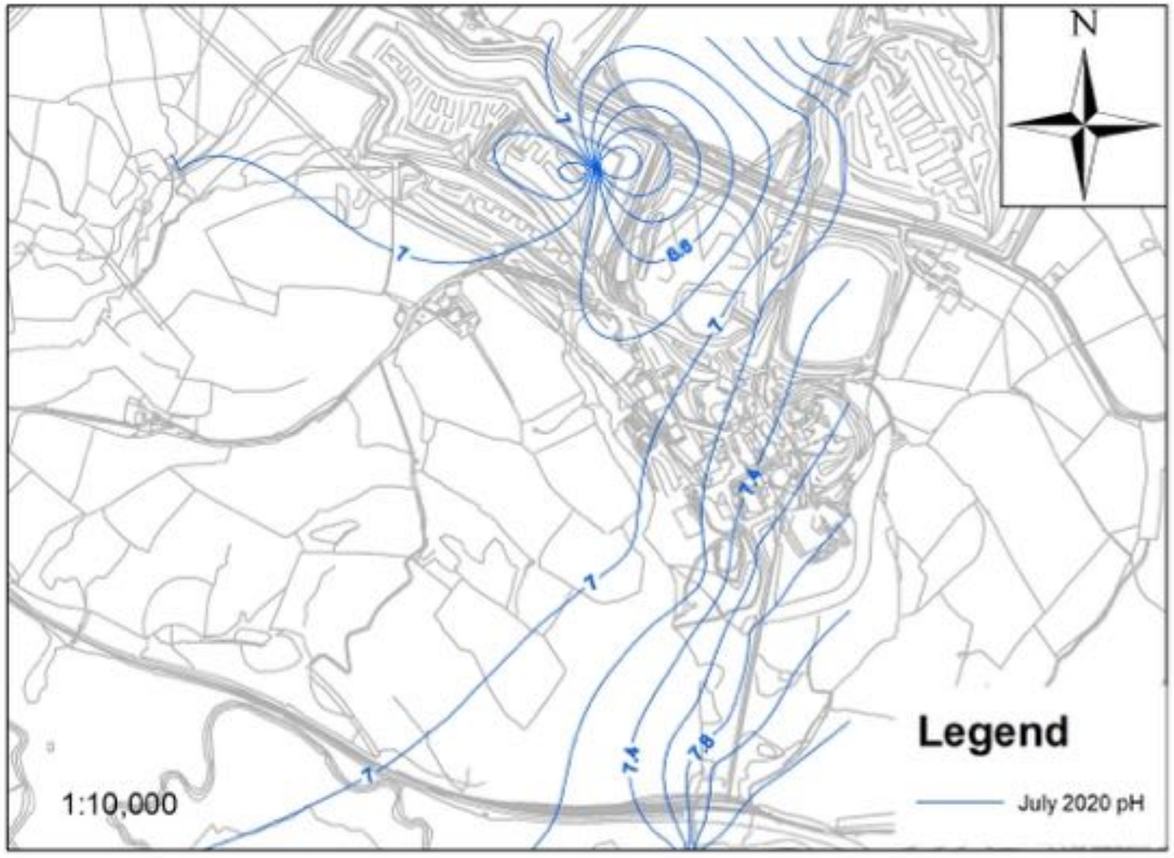


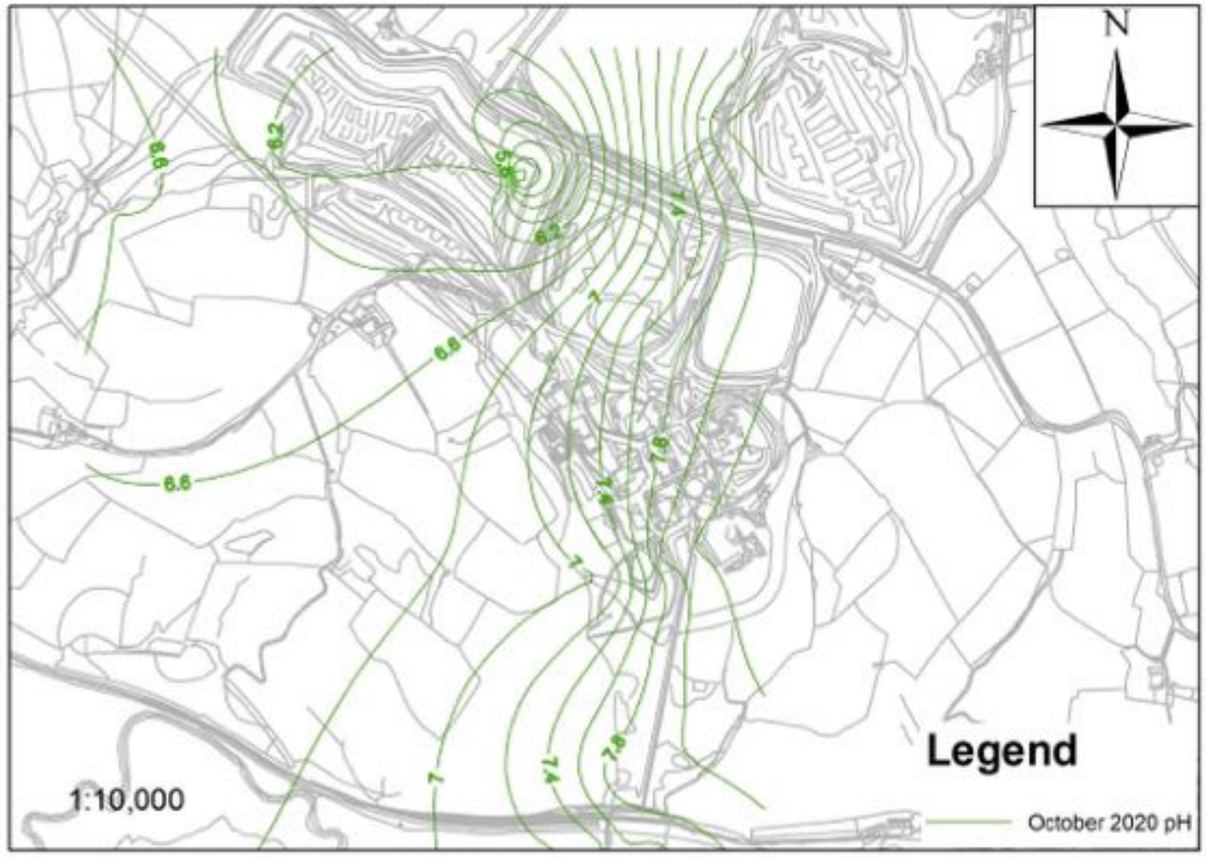
N

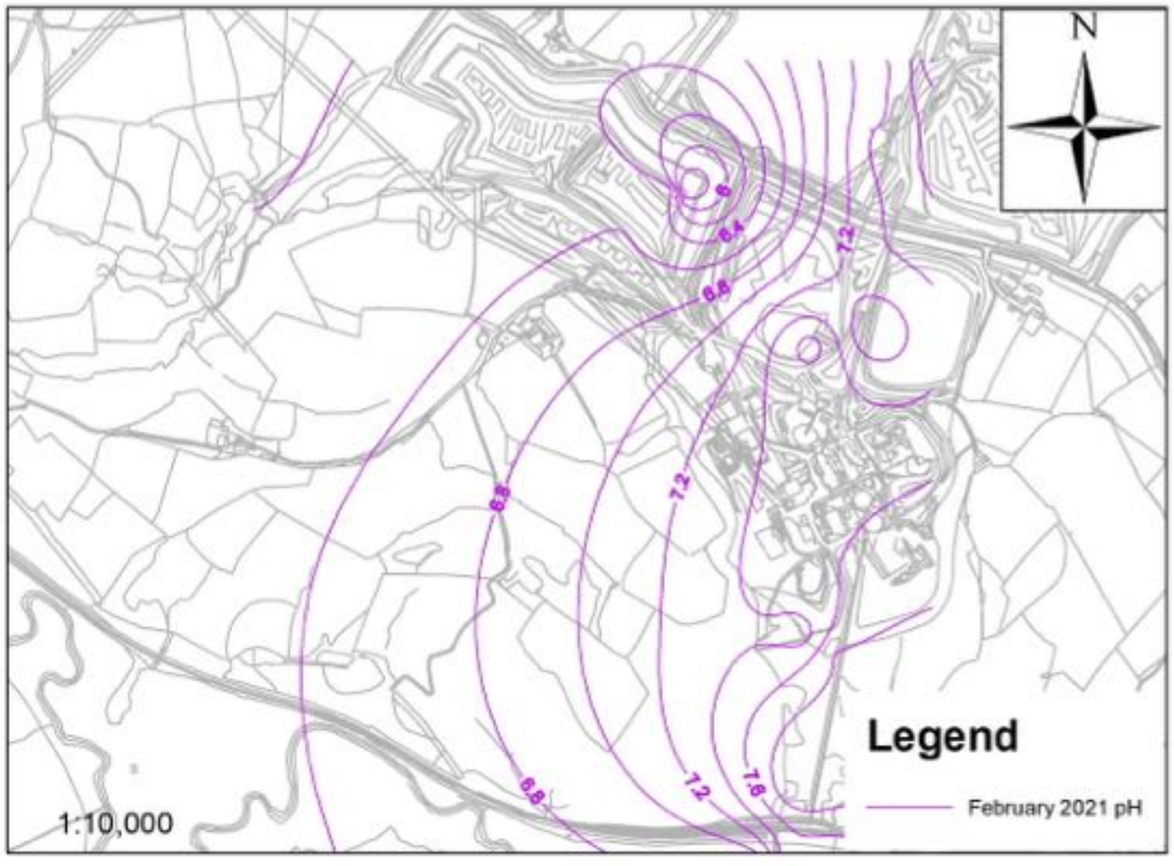
0 375 750 Metres

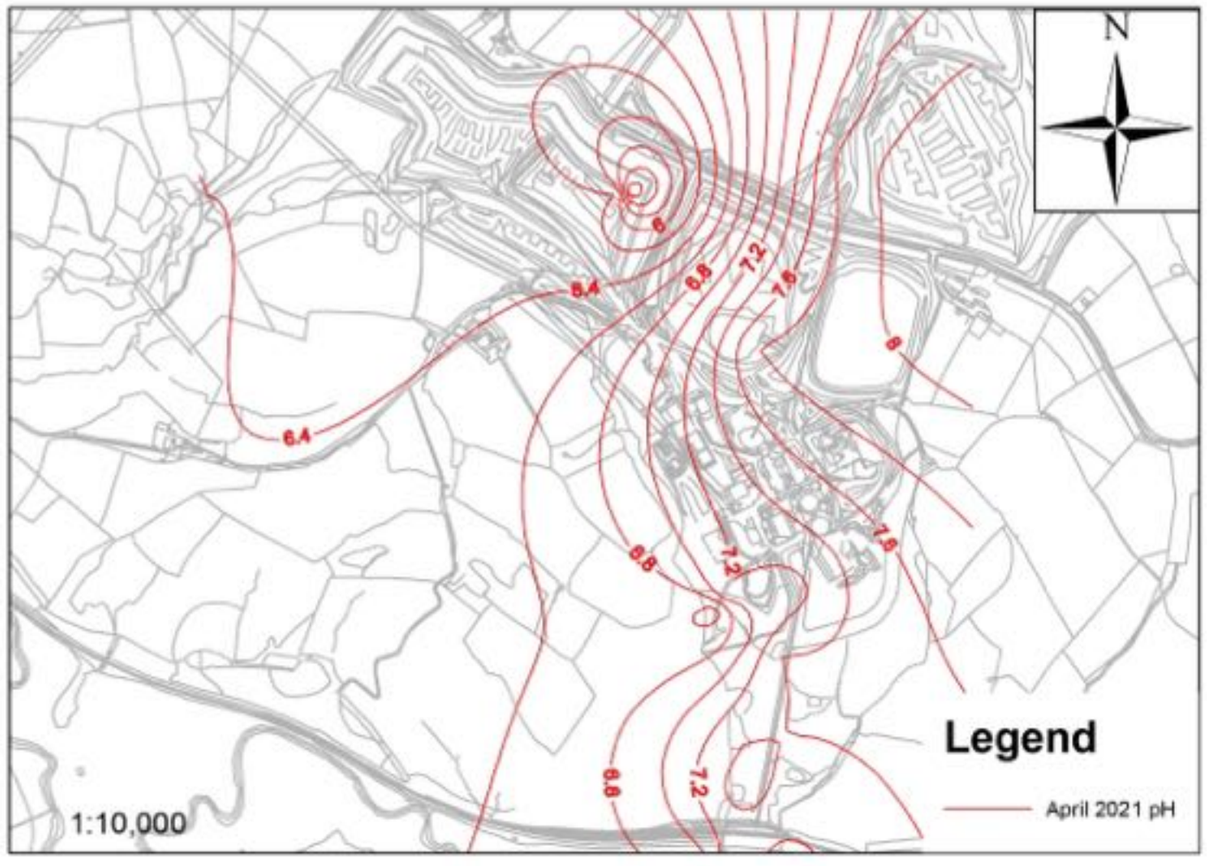
Measurements should not be scaled from this plan.

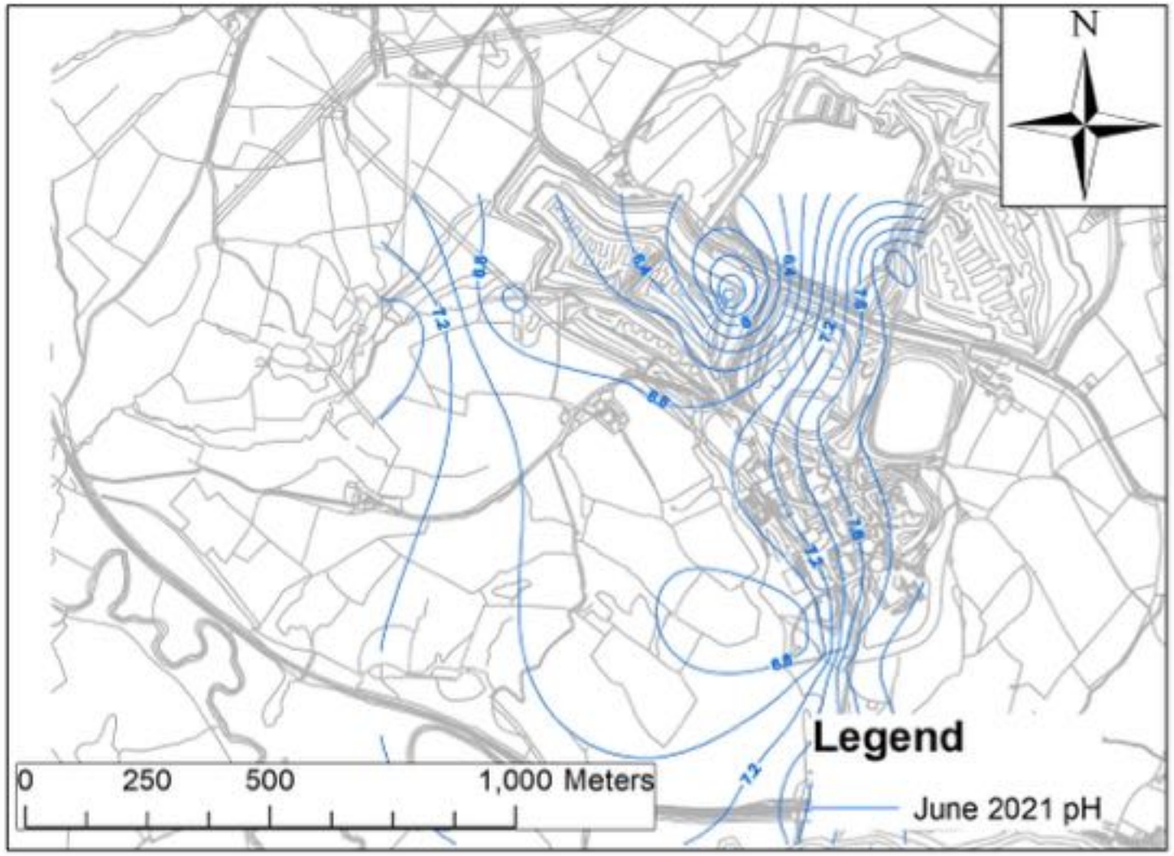
APPENDIX D - pH CONTOURS

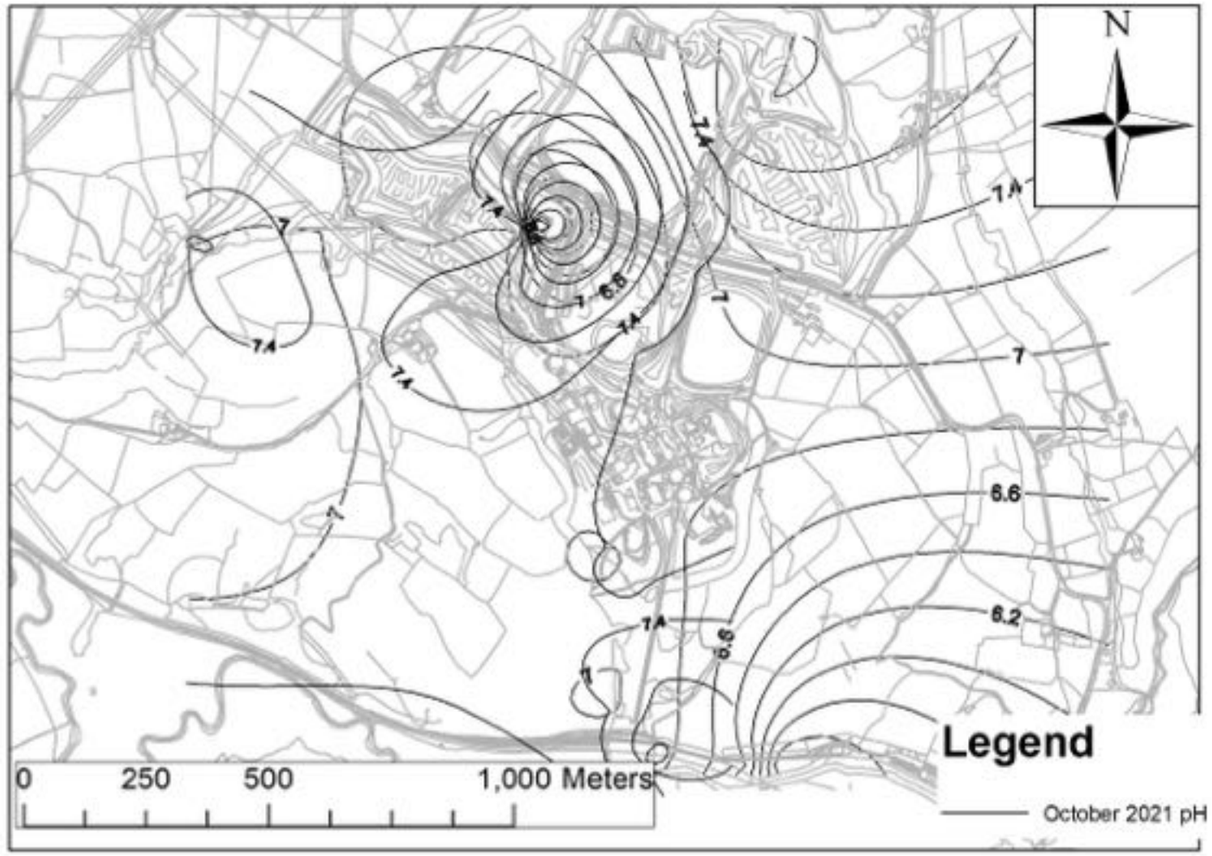

N
7
6.8
7
7
7.4
7.8
7
7.4
Legend
July 2020 pH
1:10,000

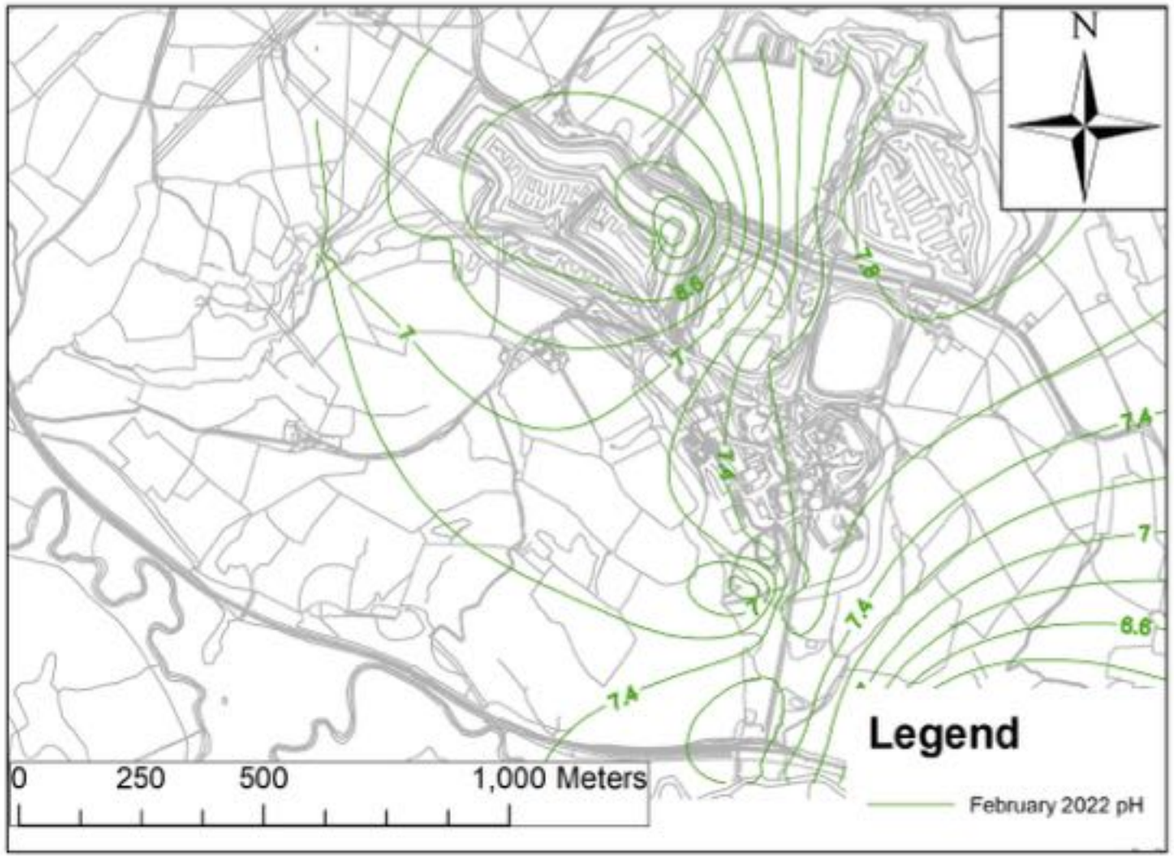

N
6.6
6.2
6.2
7.4
7
6.8
6.6
7.6
7.4
7.7
7
7.4
7.8
Legend
October 2020 pH
1:10,000

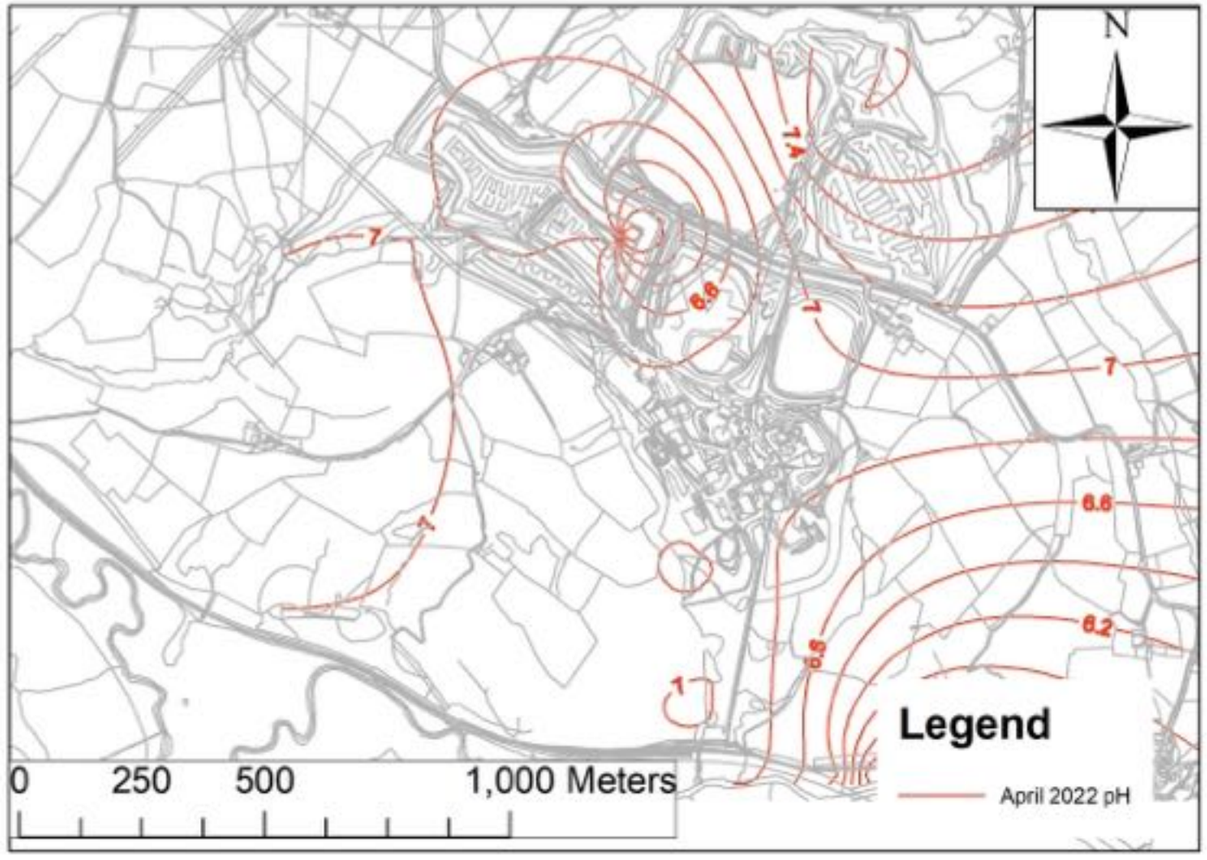

N
6
6.4
6.8
7.2
6.8
7.2
7.6
6.8
7.2
Legend
February 2021 pH
1:10,000

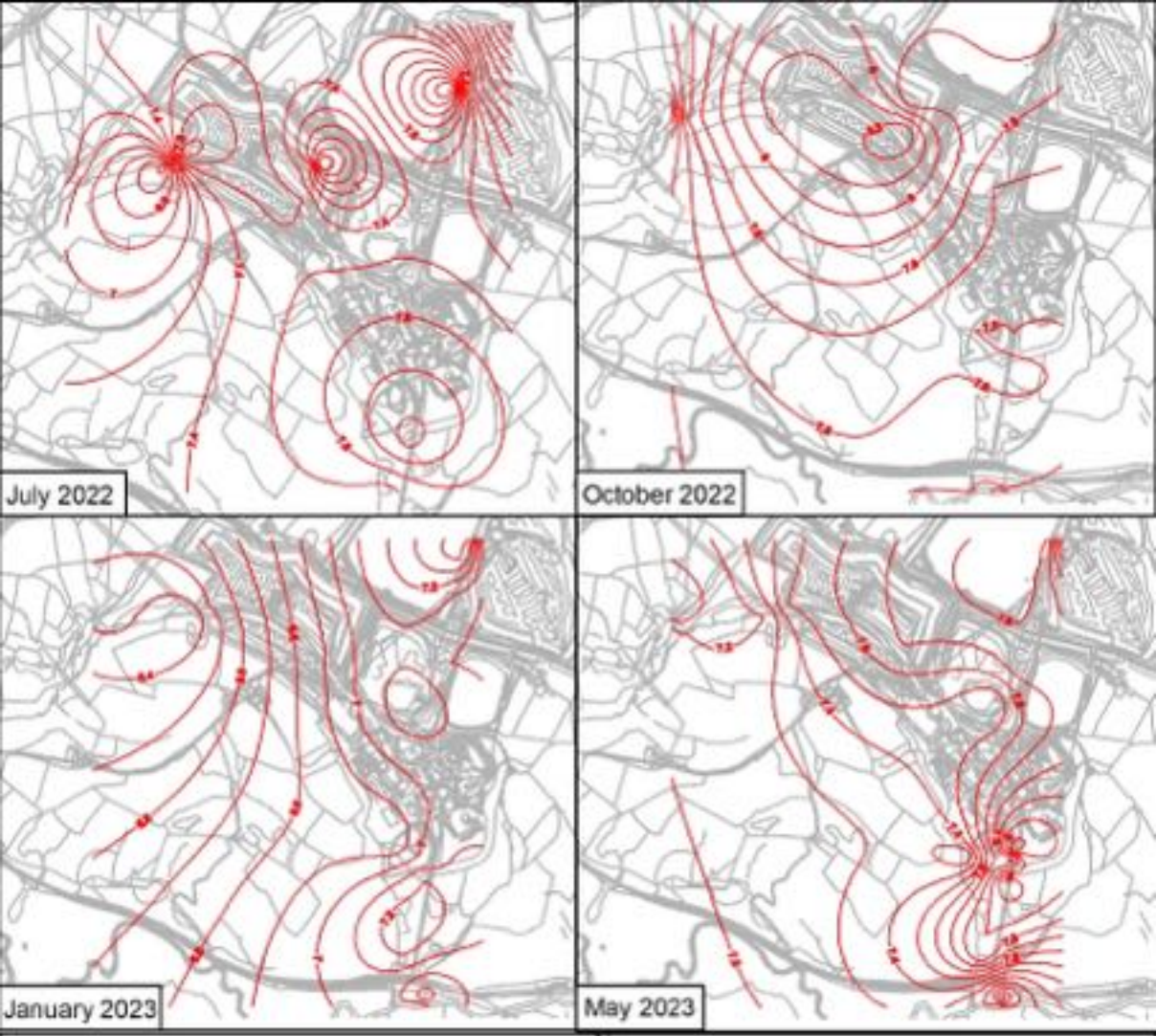

N
6
6.4
6.8
7.2
7.6
6.4
8
6.8
7.2
7.6
6.8
7.2
Legend
April 2021 pH
1:10,000


N
Legend
June 2021 pH
0 250 500 1,000 Meters


N
Legend
October 2021 pH
0 250 500 1,000 Meters


N
Legend
February 2022 pH
0 250 500 1,000 Meters


N
Legend
April 2022 pH
0 250 500 1,000 Meters



N

0 375 750 Metres

Measurements should not be scaled from this plan.

APPENDIX E - JULY 2022 ANALYSES NOTES

- Working on Slide2 rather than Slide we have first attempted to reproduce Section 2H-1 where lake level was set at 153.5m AOD. The FoS whilst slightly lower than results obtained from Side, confirm that a FoS of >1 exists.
- A similar approach has been taken for 2H-2 which was previously undertaken to show the effect of raising lake level to 156m AOD. This again shows a modest increase in the FoS when lake levels are raised.
- Section 2H-3 has been undertaken to show the sensitivity of the shale. The shear box tests in Q2 found the shale found a phi'= 22.5 degrees. However, the test was reversed and a residual phi' = 12.5 degrees was found. With no more recent testing available the weaker residual strength has been previously used in our analysis. However, by using a phi' =22 degrees the stability of the north slope of Q3 is shown in Section 2H-3 to have a FoS in excess of 1.5, having >20% improvement in stability when compared with the analysis using a phi' =12.5.
- WA might also have issues regarding the simplicity of the sections used. They have mentioned that lodge and vehicle loadings have not been considered. It is our argument that the loadings are going to be less than the material being excavated and although localised stability might be an issue for detailed design, overall stability is not going to be significantly affected. However, to counter such argument 2H-4 has been analysed with a 30kN/m2 loading placed on the bench where the access track and lodges are proposed. Interestingly it shows an improvement in the FoS. At the top of the slopes the noise bund and superficial materials present are not defined in the models used. However, had the sandstone used been replaced by these lighter materials, lesser slope loading would occur resulting in an improvement in the overall stability.
- We will now consider what FoS is acceptable. It has been our experience that a FoS of 1.2 is acceptable for embankments, 1.3 where structures are involved and 1.5 where sensitive structures such as railways are affected. We note a FoS of 1.5 is suggested in the more recent addition of Hoek & Bray, but recent regulatory references to FoS are silent. This is probably due to the introduction of EC7, and the use of partial factors on the actions and parameters used.
- To compare our previous approach to that set out in Eurocode 7 we have re-analysed the four models considered above using the Slide2 pre-set partial factors for EC7 Design Approach 1, Combination 1 and again using Combination 2.

Slide2	Lake WL (m AOD)	FoS	EC7 risk factor DA1 C1	EC7 risk factor DA1 C2	Comment
2H-1	153.5	1.305	1.280	1.045	Lowest WL proposed
2H-2	156	1.342	1.241	1.011	156 weir level WL

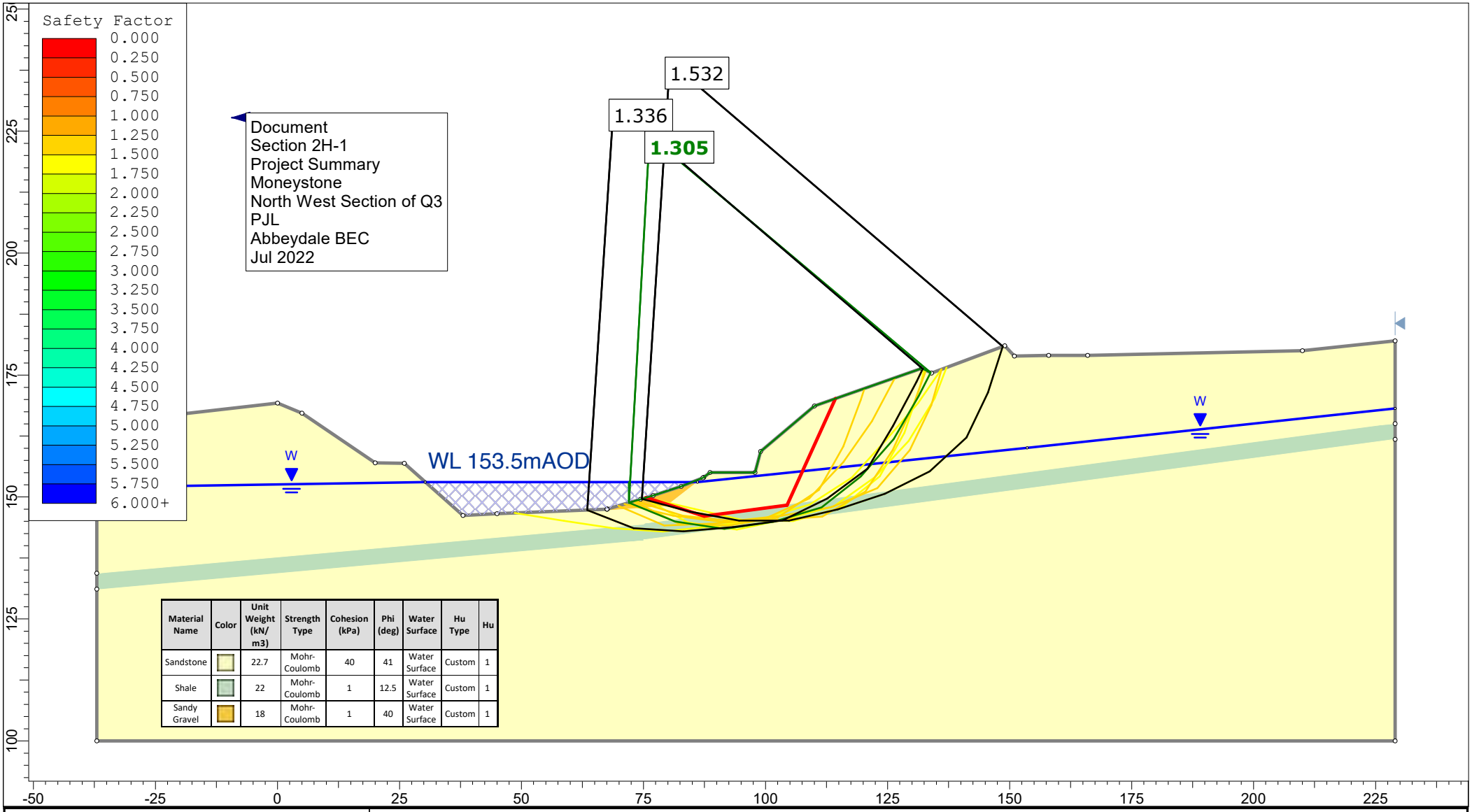
Slide2	Lake WL (m AOD)	FoS	EC7 risk factor DA1 C1	EC7 risk factor DA1 C2	Comment
2H-3	156	1.524	1.524	1.219	Shale Phi'=22
2H-4	156	1.533	1.534	1.229	30kN/m3 loading

As shown by the above table all four analyses record EC7 risk factors to be in excess of unity. Whilst we would not recommend any reductions in the level of stability being proposed, the EC7 analysis is showing a degree of over design, even when the weaker residual parameters for the shale are applied. More importantly it confirms that our previous assessment shows that the slopes as proposed are adequately stable.

To try and preempt questions about the stability of the remaining quarry slopes we have similarly re-analysed Sections 1, the Q2 to Q3 landbridge and Section 3, Steepest Southern Slope. As before the concern remains the weaker shale layer forming the base of the quarried sandstone.

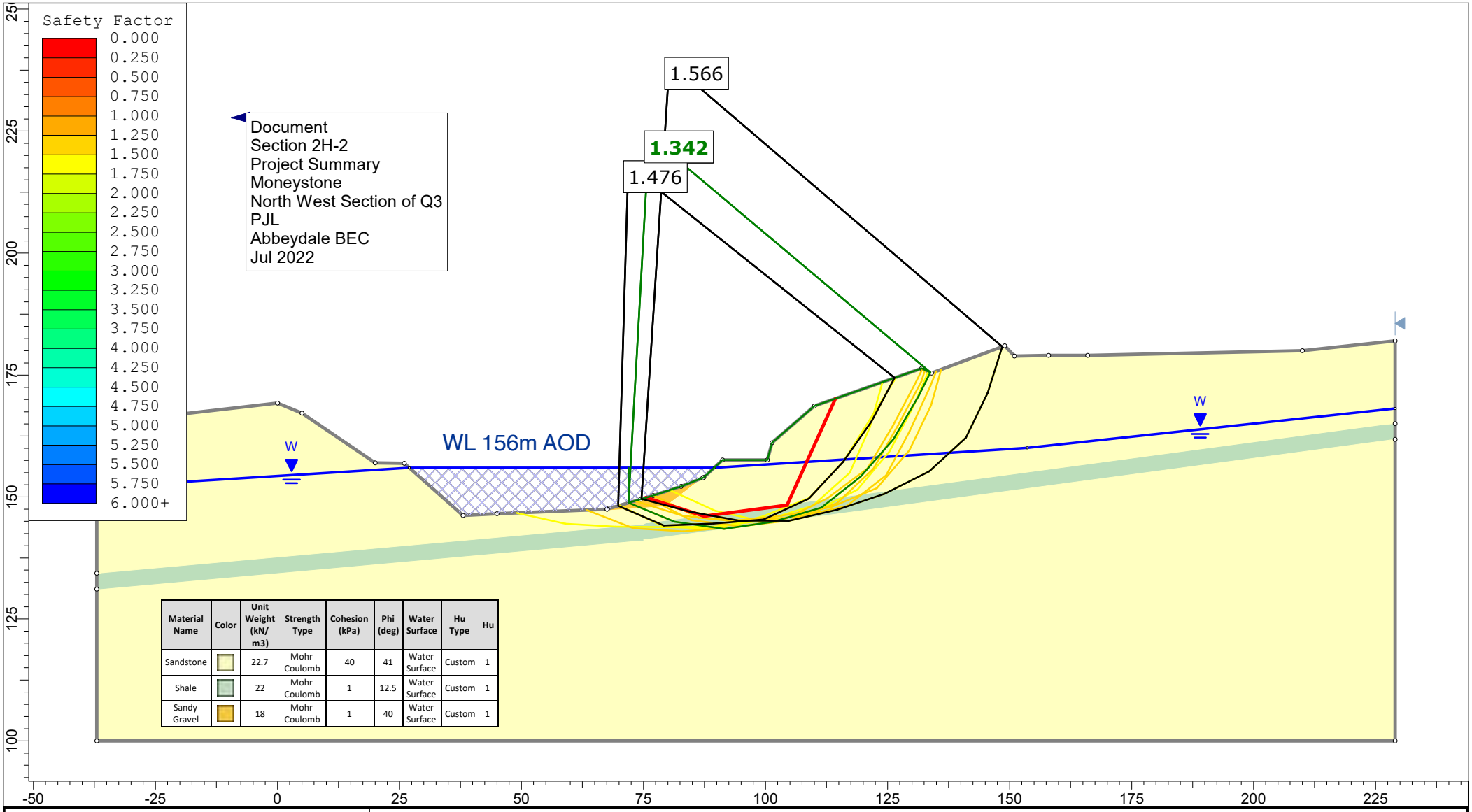
Slide2	Lake WL (m AOD)	FoS	EC7 risk factor DA1 C1	EC7 risk factor DA1 C2	Comment
1F-1	156	1.436	1.328	1.148	Highest GWL used
3C-2	156	1.519	1.527	1.214	156 weir level WL

The analysis as before shows the stability of Section 1 and 3 to be greater than that found for Section 2. The EC7 analysis showing the stability of the slopes to be well above the required unity.



Abbeydale	*Project*	Moneystone	
	Group	Section 2H-1.slim	*Scenario* Section 2H-1.slim
	Drawn By	PJL	*Company* Abbeydale BEC
	Date	Jul 2022	*File Name* Section 2H-1.slim

SLIDEINTERPRET 9.023



Abbeydale	*Project*	Moneystone	
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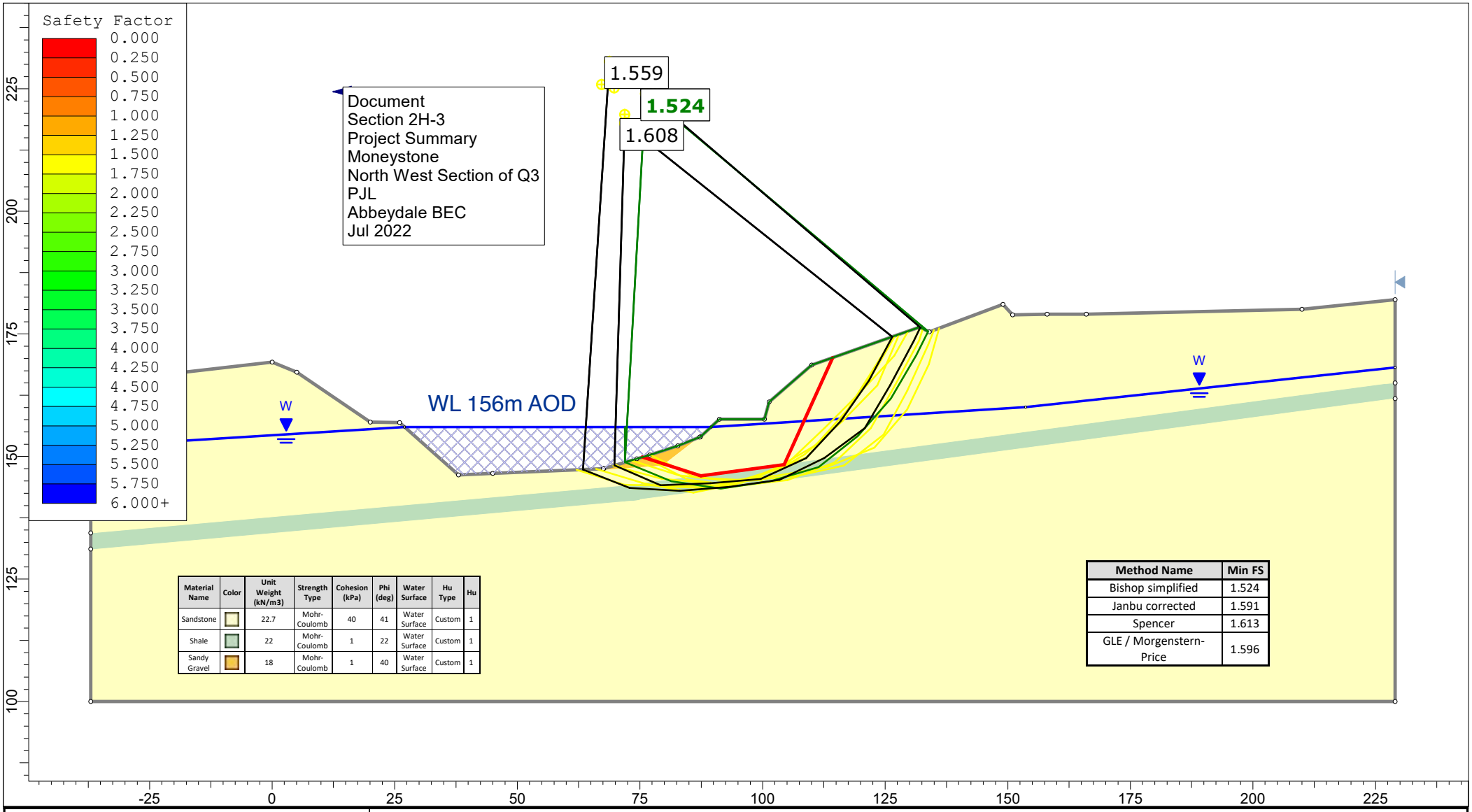
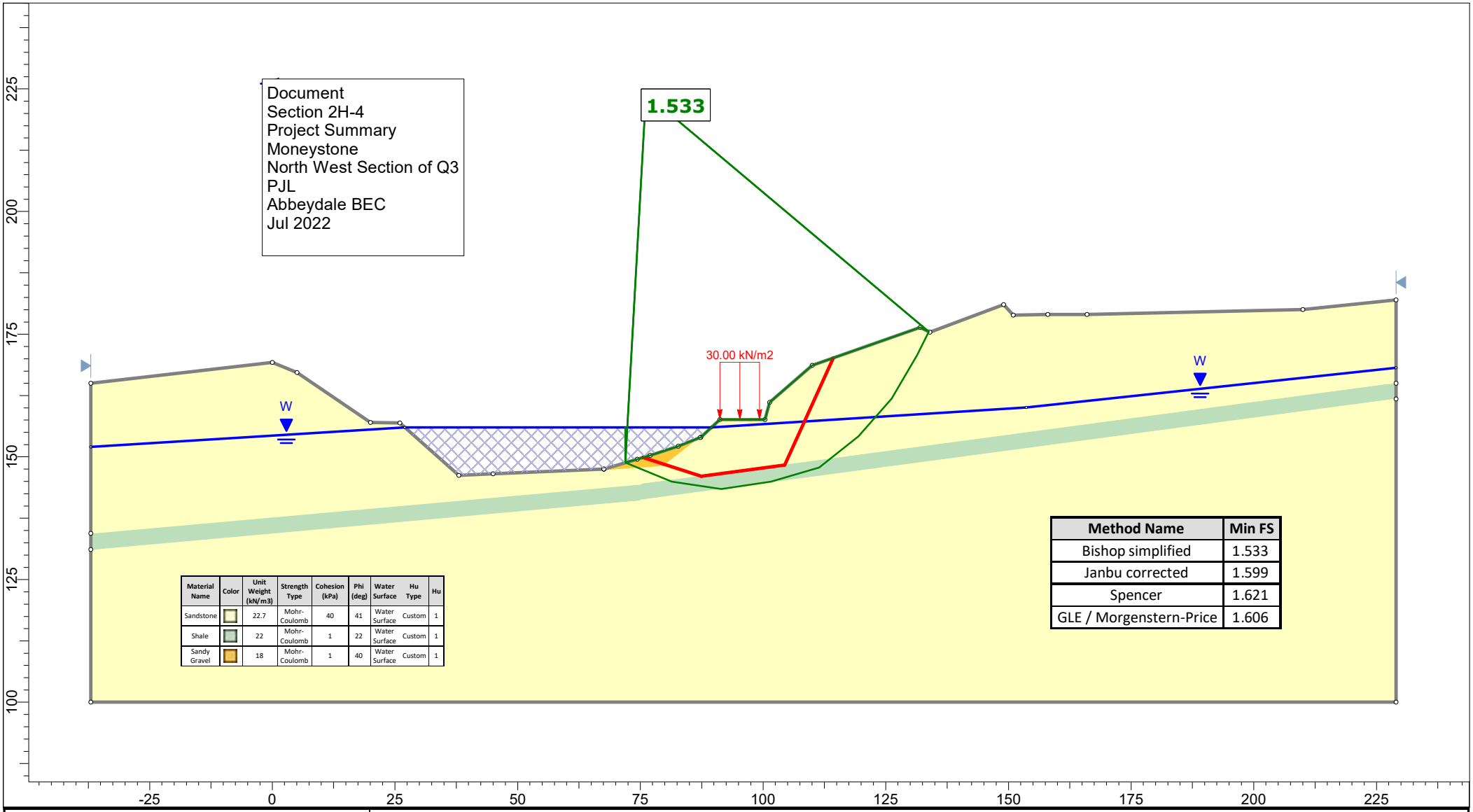
	Drawn By	PJL	*Company* Abbeydale BEC
	Date	Jul 2022	*File Name* Section 2H-2.slim

SLIDEINTERPRET 9.023



Abbeydale Building Environment Consultants	*Project*	Moneystone	
	Group	Section 2H-3.slim	*Scenario* Section 2H-3.slim
	Drawn By	PJL	*Company* Abbeydale BEC
	Date	Jul 2022	*File Name* Section 2H-3.slim

SLIDEINTERPRET 9.023



Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	Water Surface	Hu Type	Hu
Sandstone		22.7	Mohr-Coulomb	40	41	Water Surface	Custom	1
Shale		22	Mohr-Coulomb	1	22	Water Surface	Custom	1
Sandy Gravel		18	Mohr-Coulomb	1	40	Water Surface	Custom	1

Method Name	Min FS
Bishop simplified	1.533
Janbu corrected	1.599
Spencer	1.621
GLE / Morgenstern-Price	1.606

Abbeydale
Building Environment Consultants

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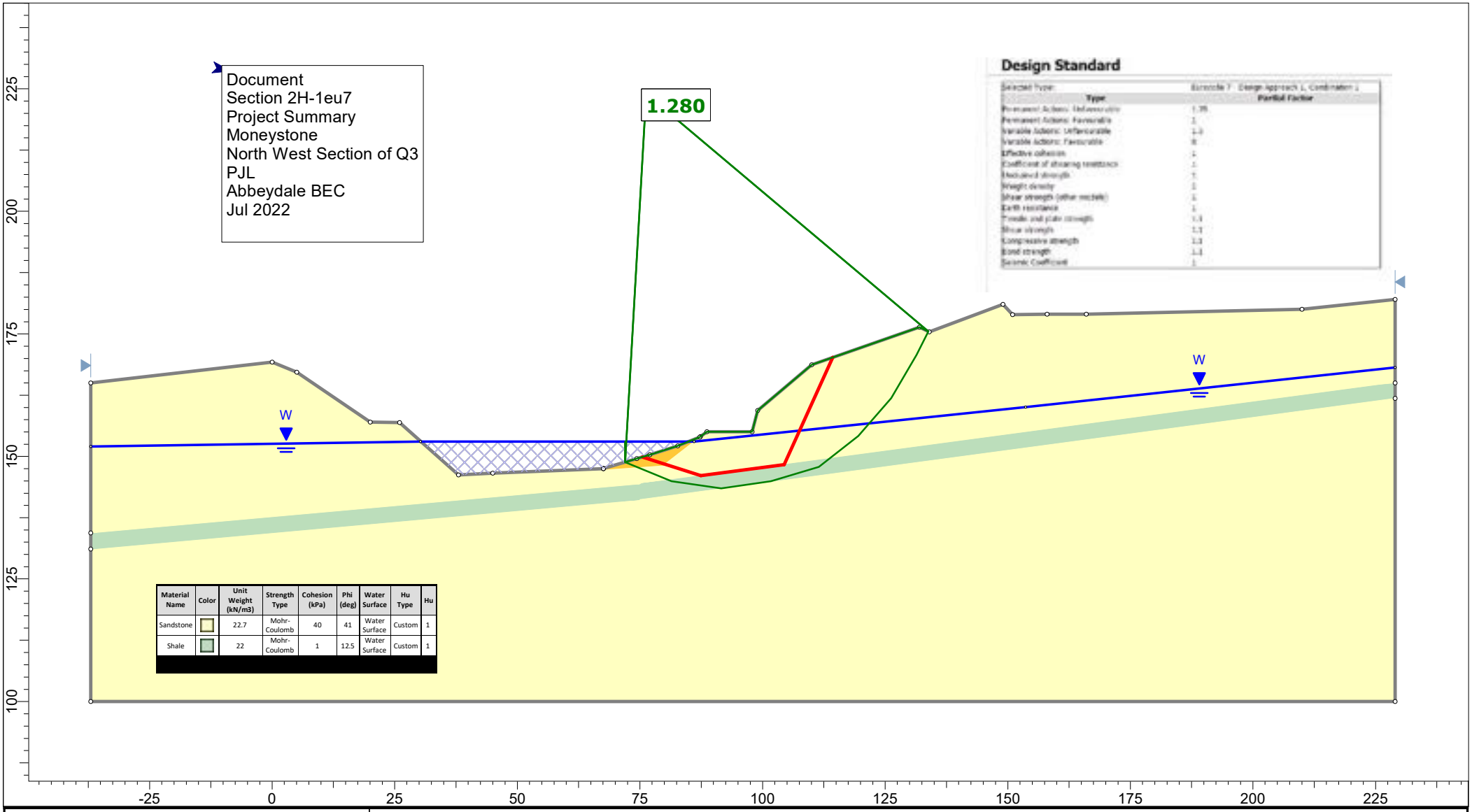
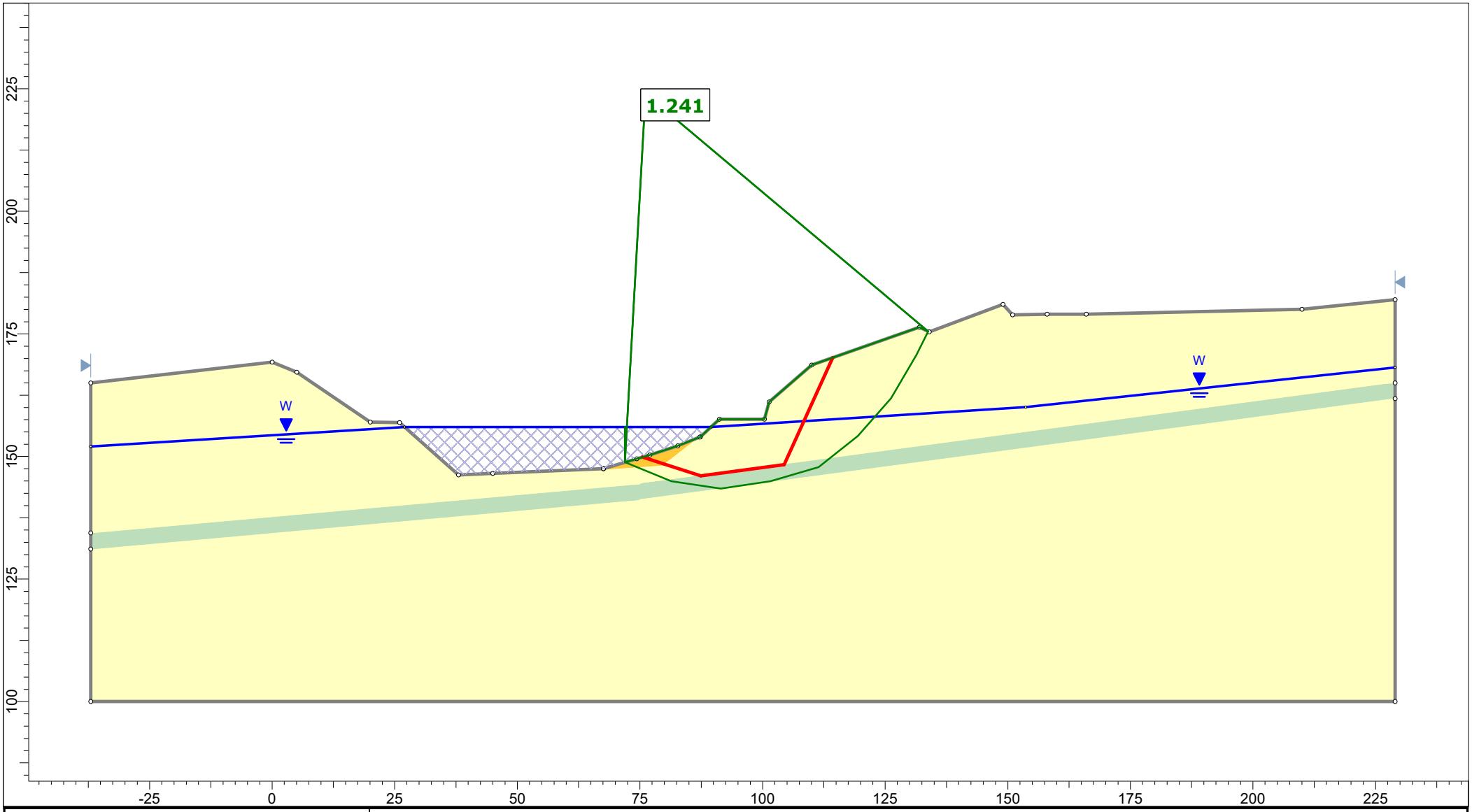
Project	Moneystone		
Group	Section 2H-4.slim	*Scenario*	Section 2H-4.slim
Drawn By	PJL	*Company*	Abbeydale BEC
Date	Jul 2022	*File Name*	Section 2H-4.slim



Abbeydale Building Environment Consultants	*Project*	Moneystone	
	Group	Section 2H-1eu7.slim	*Scenario* Section 2H-1eu7.slim
	Drawn By	PJL	*Company* Abbeydale BEC
	Date	Jul 2022	*File Name* Section 2H-1eu7.slim

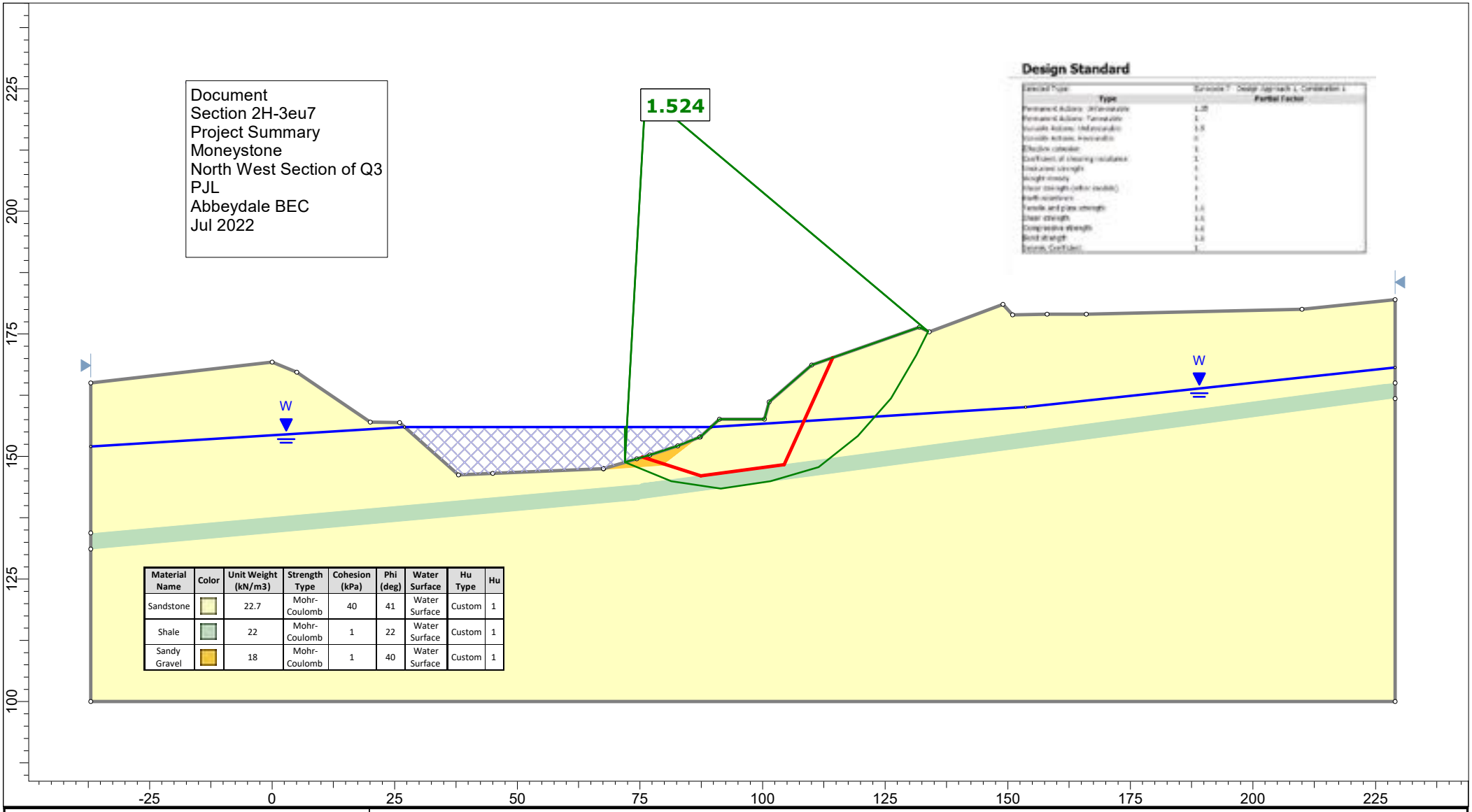
SLIDEINTERPRET 9.023



Abbeydale Building Environment Consultants	*Project*	Moneystone	
	Group	Section 2H-2eu7.slim	*Scenario* Section 2H-2eu7.slim
	Drawn By	PJL	*Company* Abbeydale BEC
	Date	Jul 2022	*File Name* Section 2H-2eu7.slim

SLIDEINTERPRET 9.023

Document
Section 2H-3eu7
Project Summary
Moneystone
North West Section of Q3
PJL
Abbeydale BEC
Jul 2022



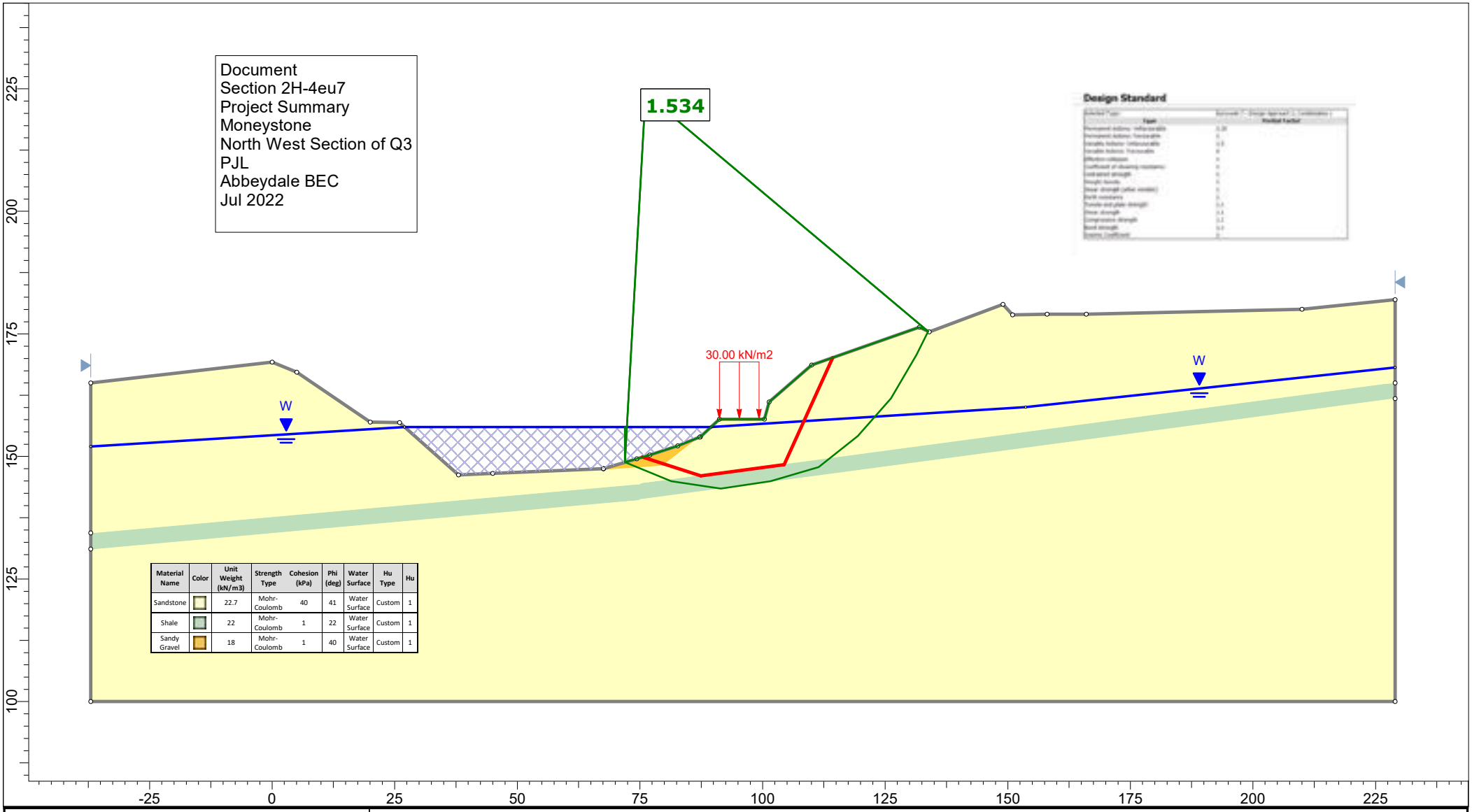
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	Water Surface	Hu Type	Hu
Sandstone		22.7	Mohr-Coulomb	40	41	Water Surface	Custom	1
Shale		22	Mohr-Coulomb	1	22	Water Surface	Custom	1
Sandy Gravel		18	Mohr-Coulomb	1	40	Water Surface	Custom	1

Abbeydale
Building Environment Consultants

SLIDEINTERPRET 9.023

Project	Moneystone		
Group	Section 2H-3eu7.slim	*Scenario*	Section 2H-3eu7.slim
Drawn By	PJL	*Company*	Abbeydale BEC
Date	Jul 2022	*File Name*	Section 2H-3eu7.slim

Document
Section 2H-4eu7
Project Summary
Moneystone
North West Section of Q3
PJL
Abbeydale BEC
Jul 2022

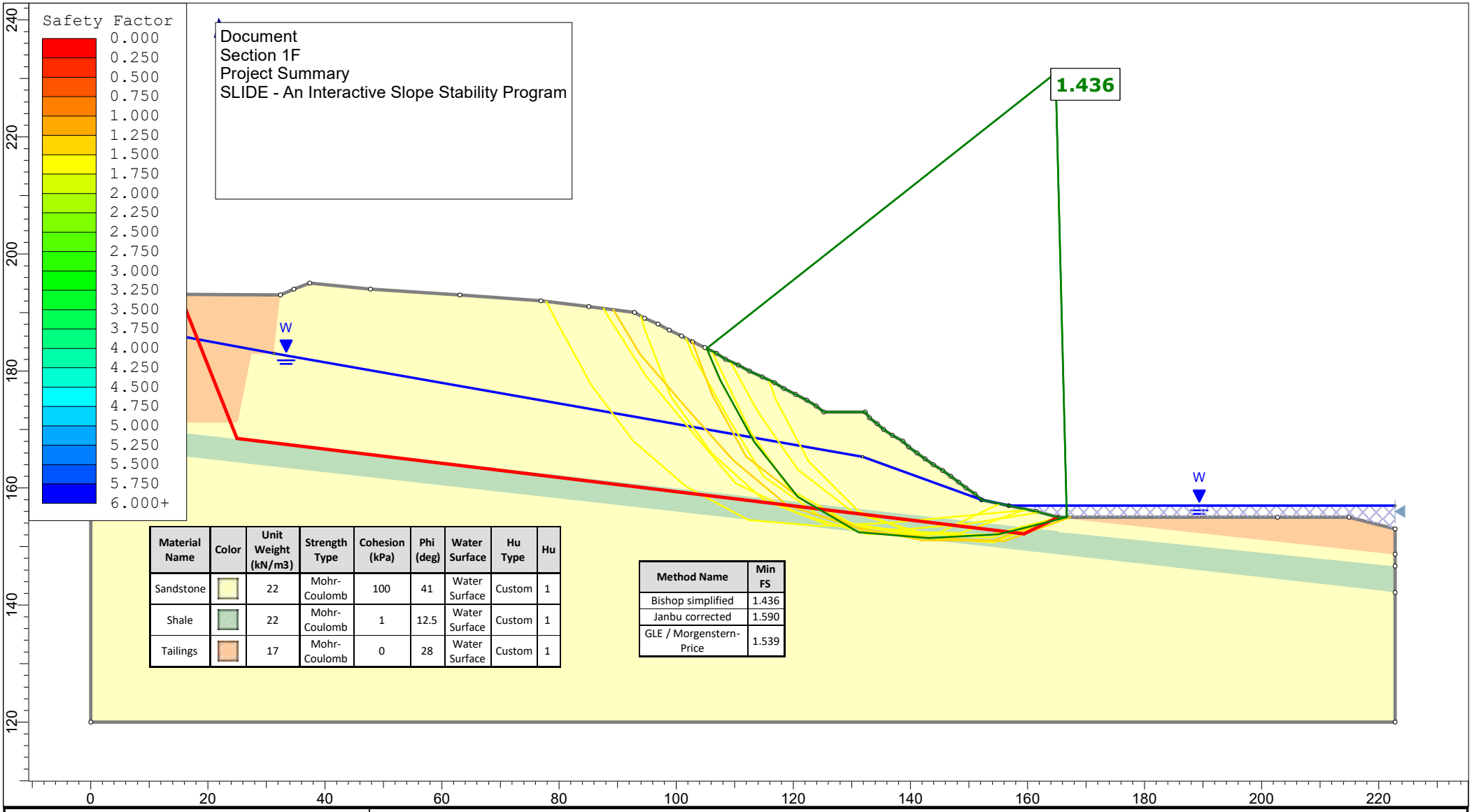


Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	Water Surface	Hu Type	Hu
Sandstone		22.7	Mohr-Coulomb	40	41	Water Surface	Custom	1
Shale		22	Mohr-Coulomb	1	22	Water Surface	Custom	1
Sandy Gravel		18	Mohr-Coulomb	1	40	Water Surface	Custom	1

Abbeydale
Building Environment Consultants

SLIDEINTERPRET 9.023

Project	Moneystone		
Group	Section 2H-4eu7.slim	*Scenario*	Section 2H-4eu7.slim
Drawn By	PJL	*Company*	Abbeydale BEC
Date	Jul 2022	*File Name*	Section 2H-4eu7.slim



Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	Water Surface	Hu Type	Hu
Sandstone		22	Mohr-Coulomb	100	41	Water Surface	Custom	1
Shale		22	Mohr-Coulomb	1	12.5	Water Surface	Custom	1
Tailings		17	Mohr-Coulomb	0	28	Water Surface	Custom	1

Method Name	Min FS
Bishop simplified	1.436
Janbu corrected	1.590
GLE / Morgenstern-Price	1.539

Abbeydale
Building Environment Consultants

SLIDEINTERPRET 9.023

Project	SLIDE - An Interactive Slope Stability Program		
Group	Section 1F.slim	*Scenario*	Section 1F.slim
Drawn By		*Company*	
Date		*File Name*	Section 1F.slim

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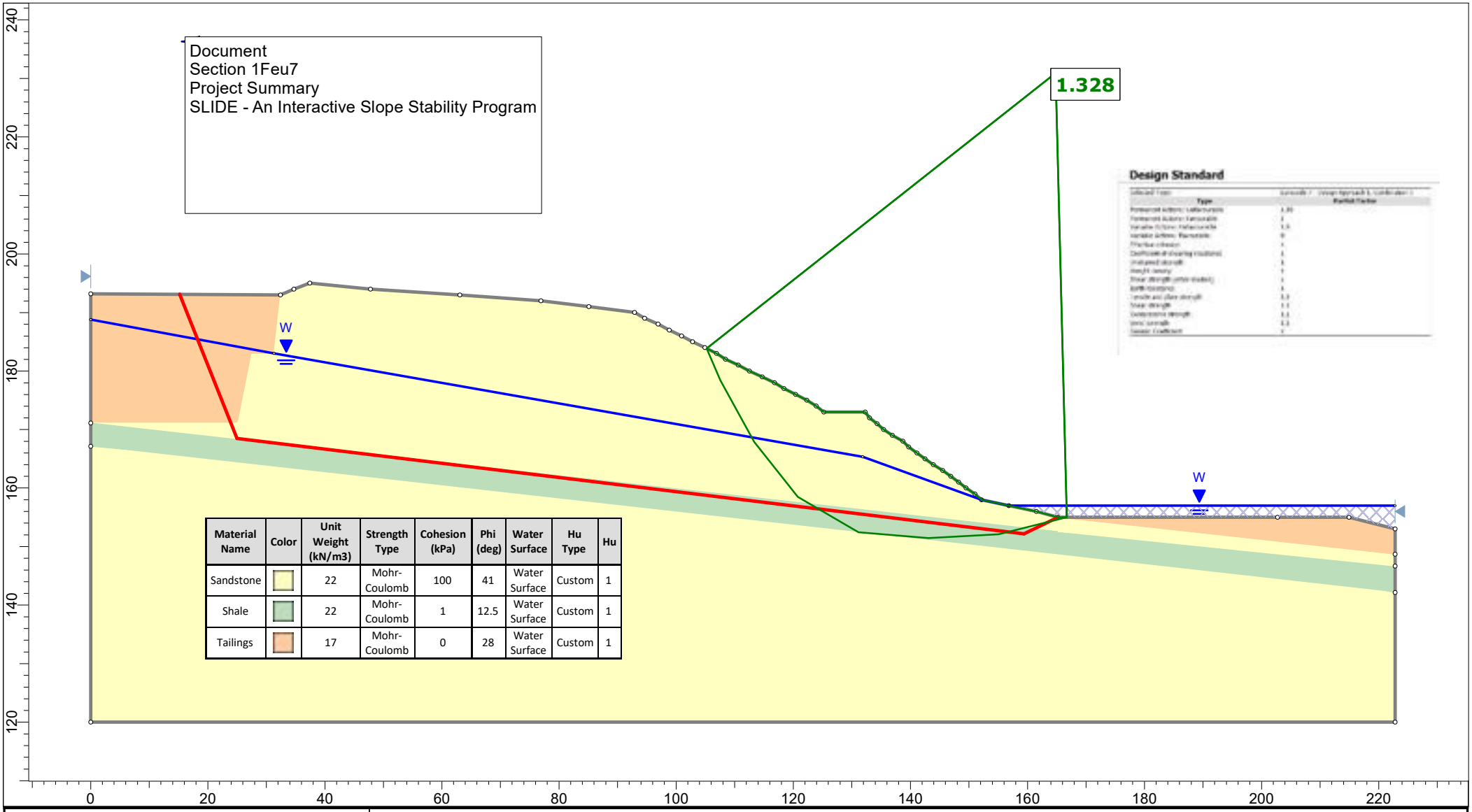
Section 1Feu7
Project Summary
SLIDE - An Interactive Slope Stability Program



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Sandstone		22	Mohr-Coulomb	100	41	Water Surface	Custom	1
Shale		22	Mohr-Coulomb	1	12.5	Water Surface	Custom	1
Tailings		17	Mohr-Coulomb	0	28	Water Surface	Custom	1

Abbeydale
Building Environment Consultants

SLIDEINTERPRET 9.023

Project	SLIDE - An Interactive Slope Stability Program		
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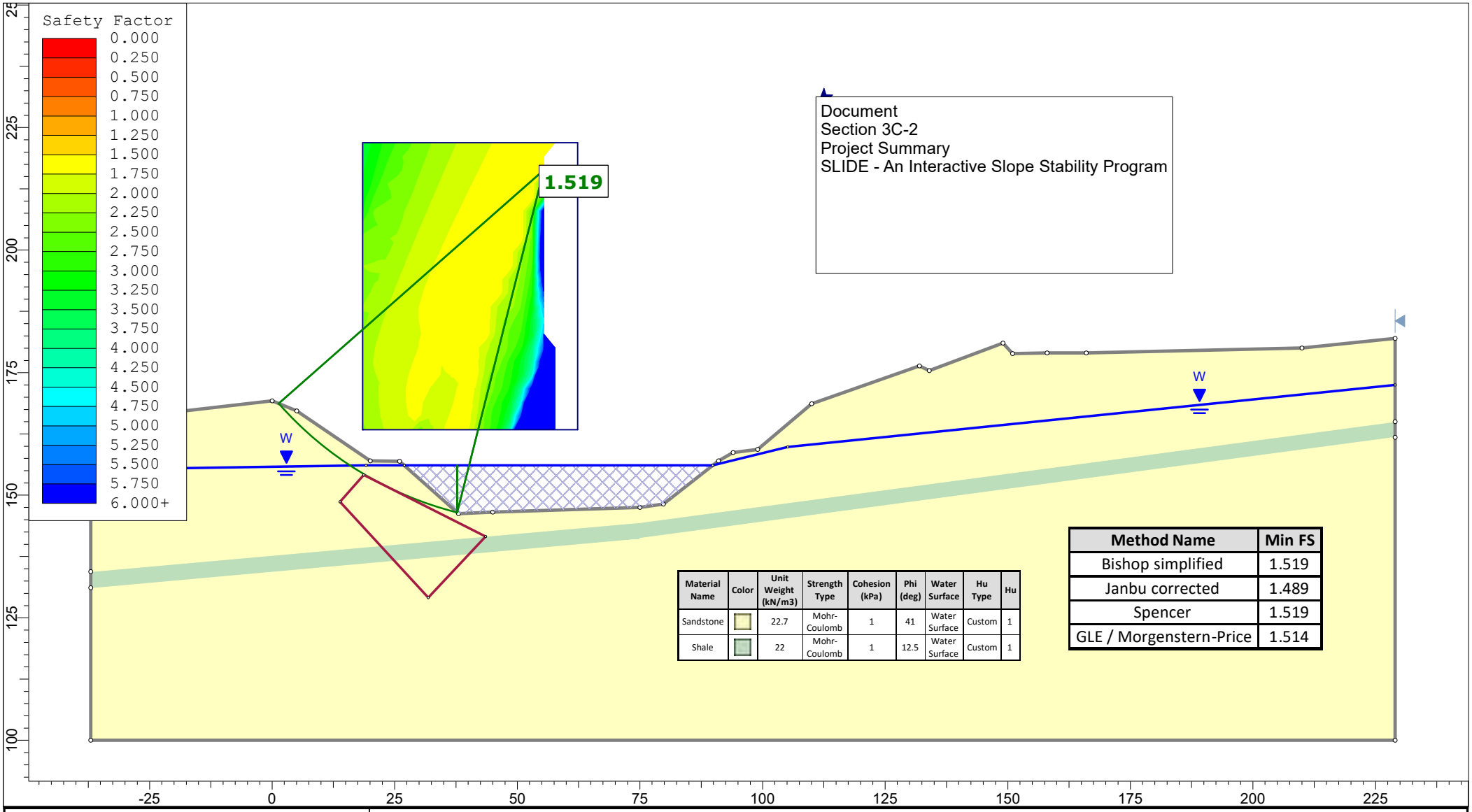
Drawn By		*Company*	
Date		*File Name*	Section 1Feu7.slim



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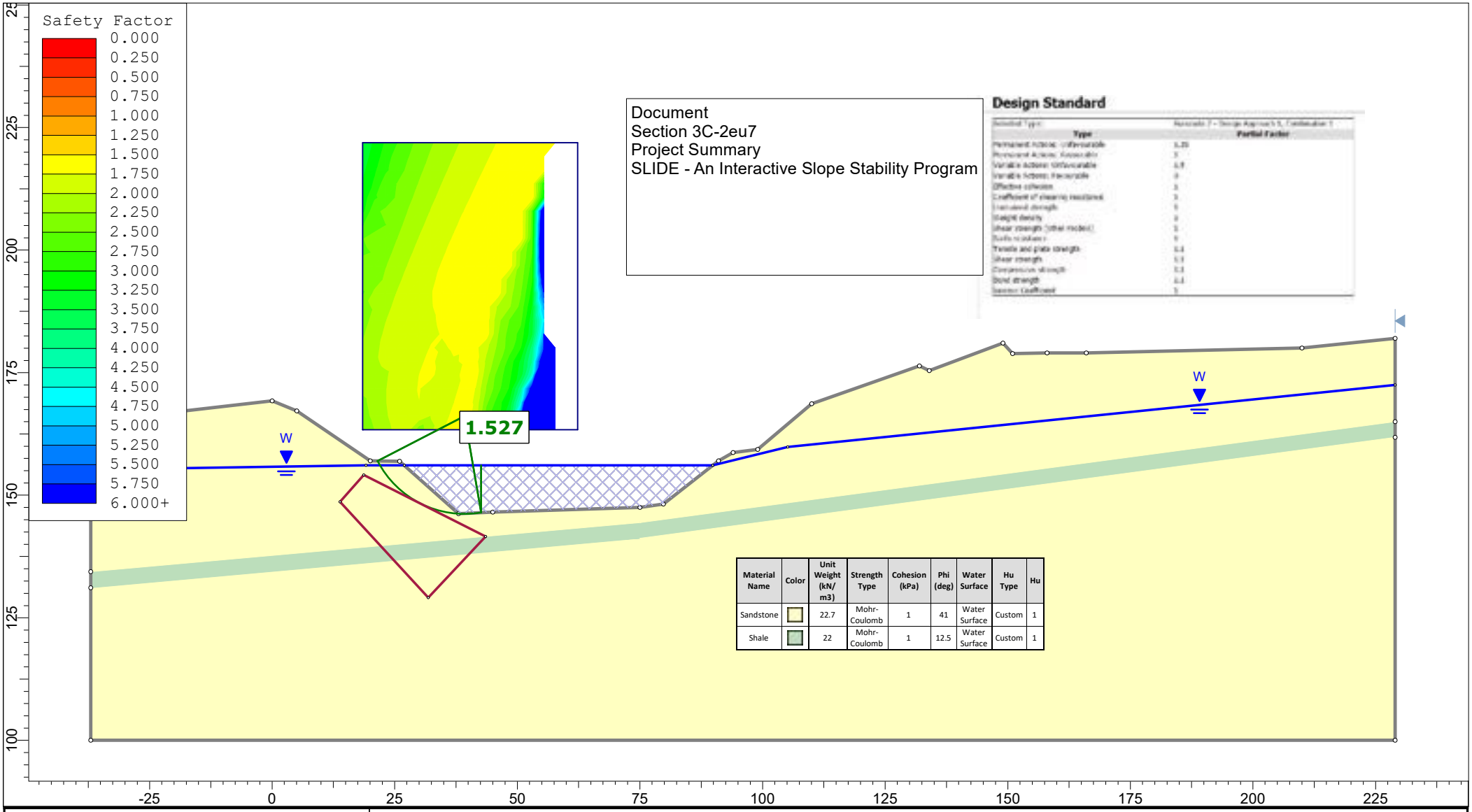

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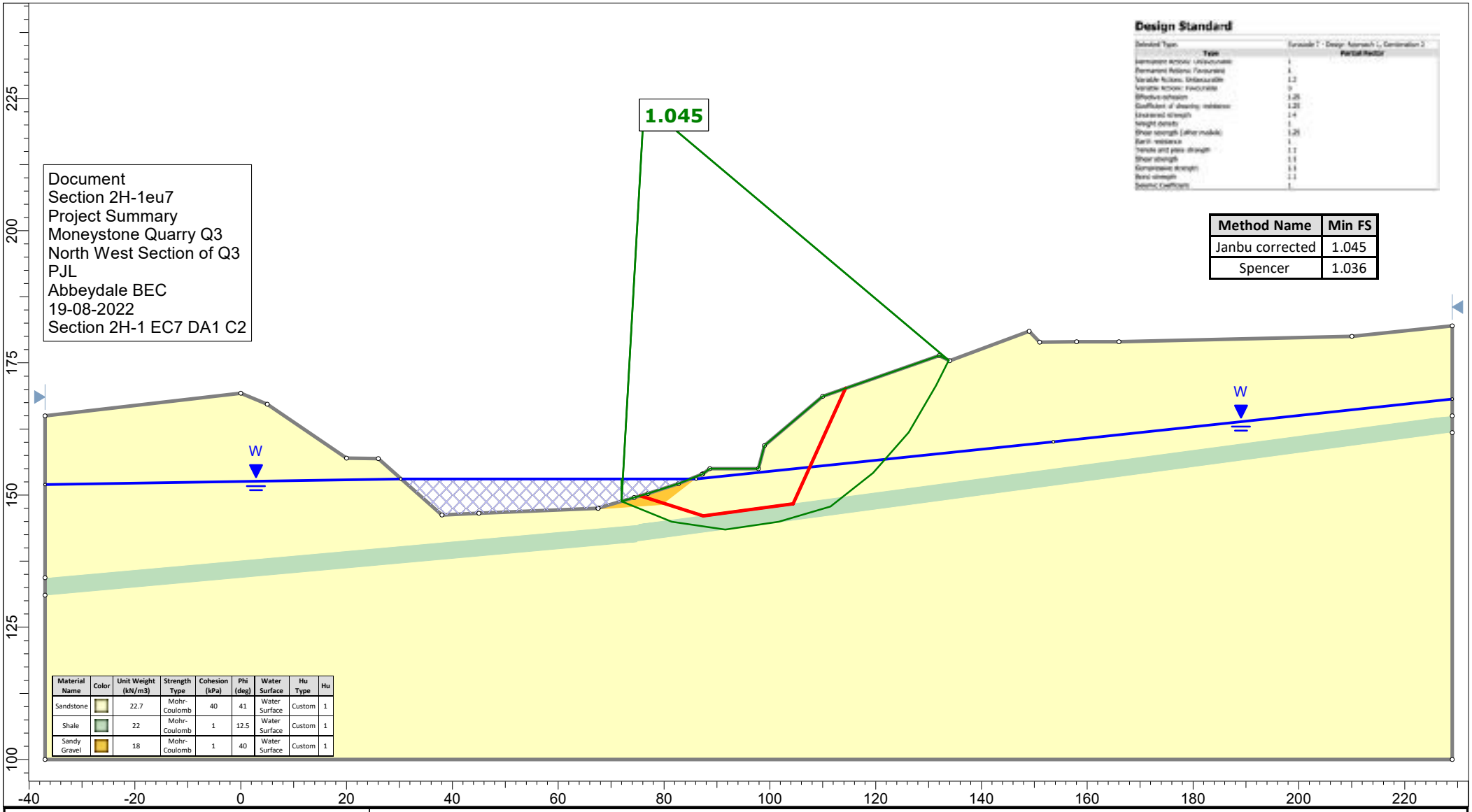

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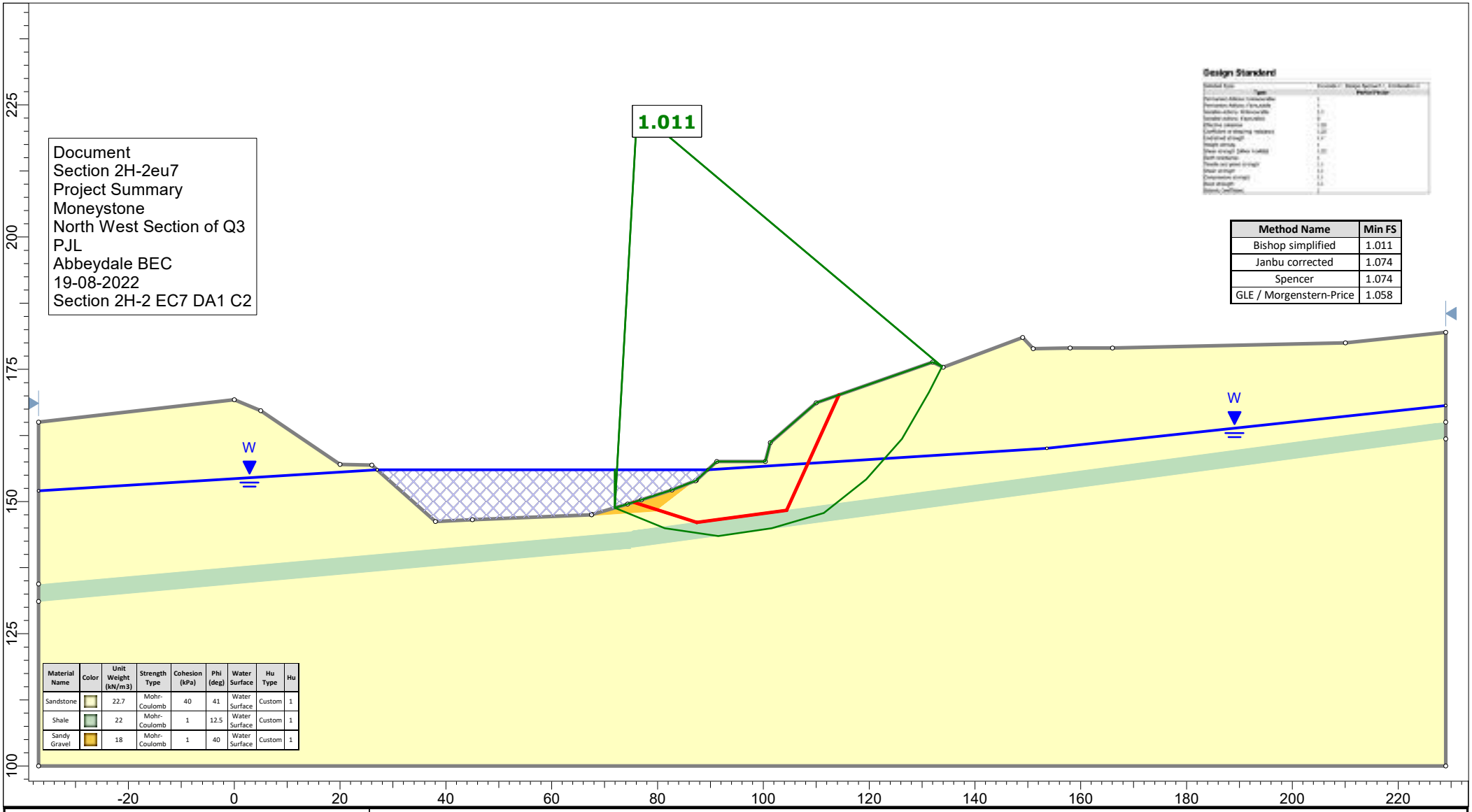
	Date	19-08-2022	File Name: Section 2H-1eu7.slim

SLIDEINTERPRET 9.023



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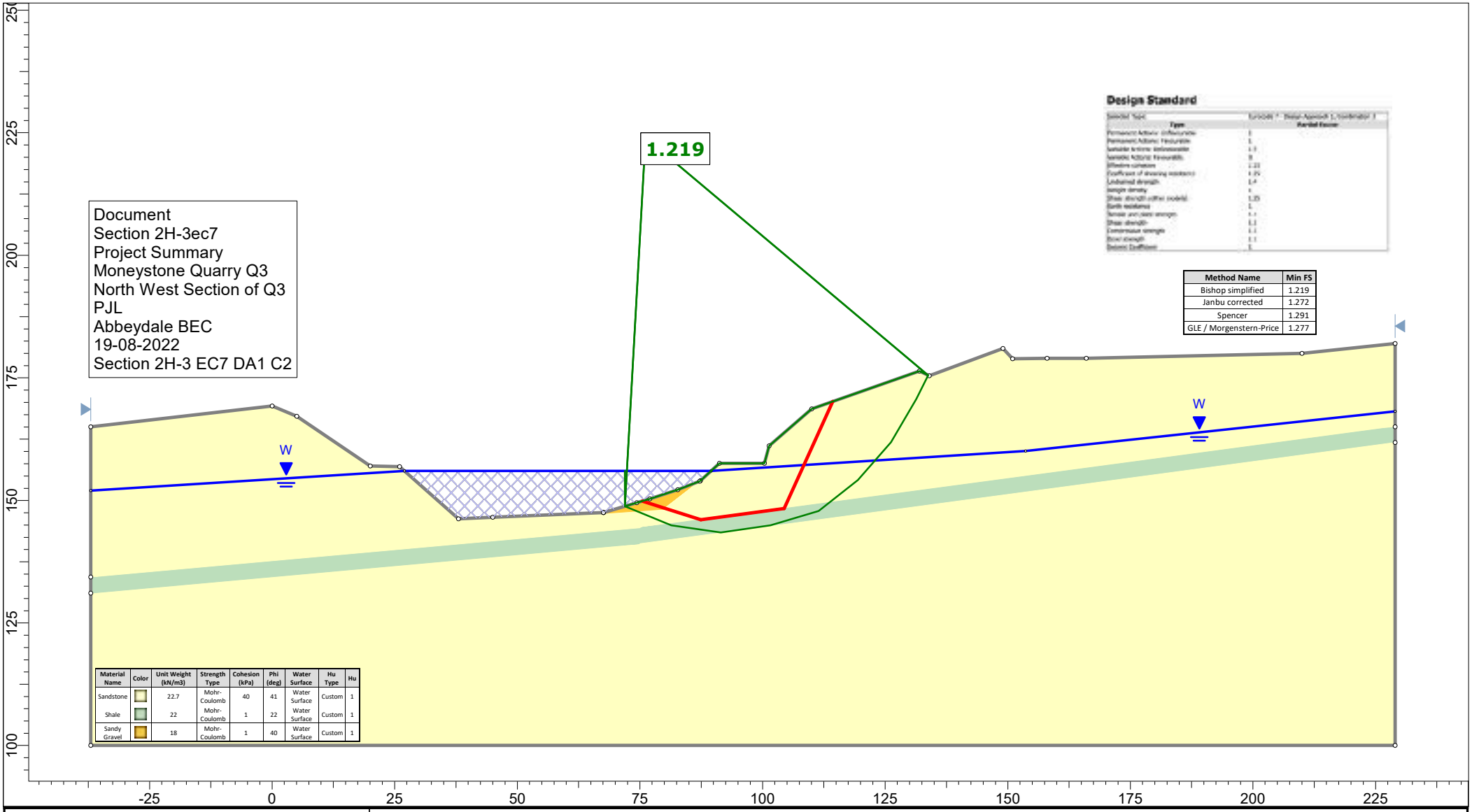
	Date	19-08-2022	*File Name* Section 2H-2eu7.slim

SLIDEINTERPRET 9.023



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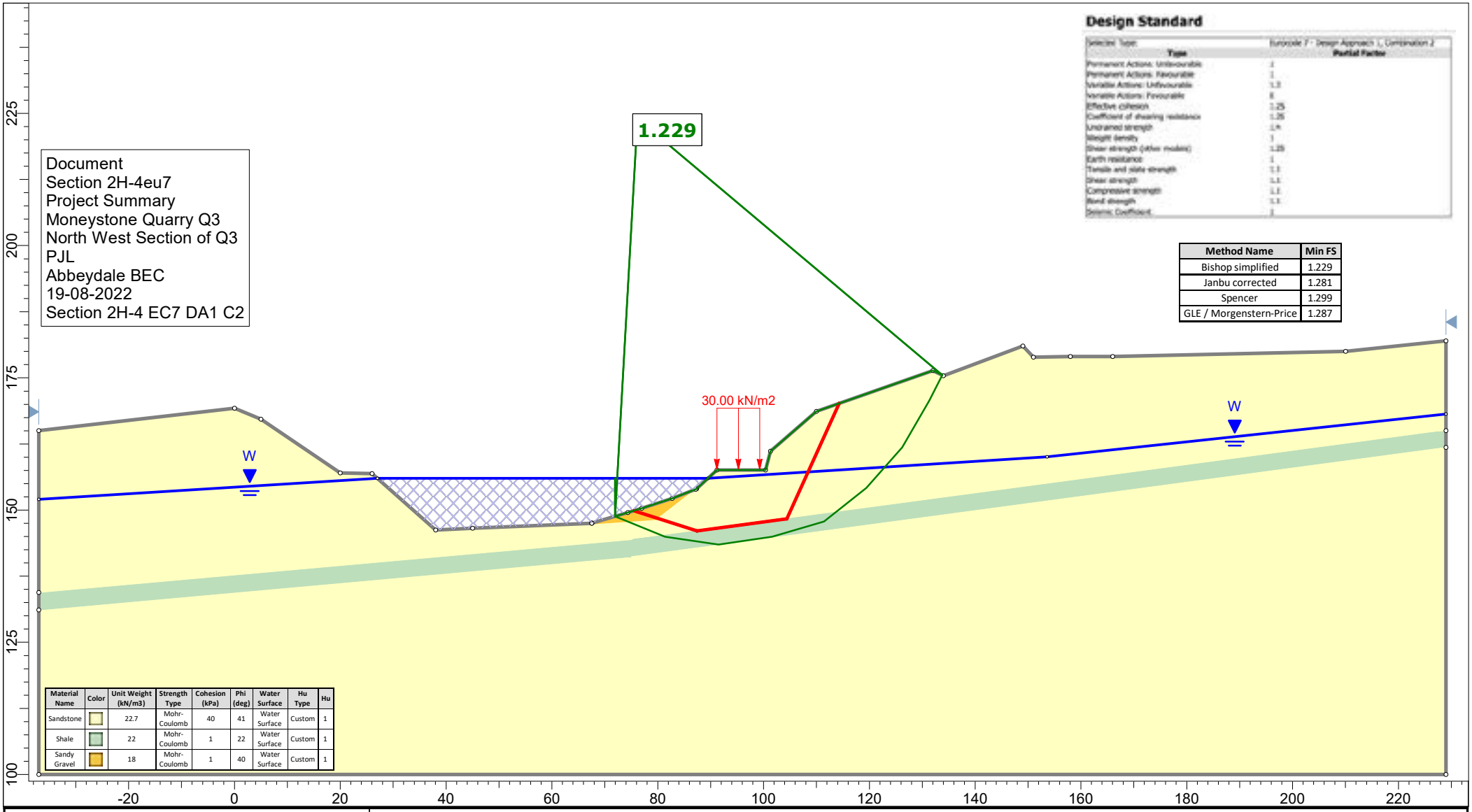
	Date	19-08-2022	*File Name* Section 2H-3ec7.slim

SLIDEINTERPRET 9.023

Document
Section 2H-4eu7
Project Summary
Moneystone Quarry Q3
North West Section of Q3
PJL
Abbeydale BEC
19-08-2022
Section 2H-4 EC7 DA1 C2



Design Standard

Selected Type:	Eurocode 7 - Design Approach 1, Combination 2
Type	Partial Factor
Permanent Actions: Unfavourable	1
Permanent Actions: Favourable	1
Variable Actions: Unfavourable	1.3
Variable Actions: Favourable	0
Effective cohesion	1.25
Coefficient of shearing resistance	1.25
Undrained strength	1.4
Weight density	1
Shear strength (drive models)	1.25
Earth resistance	1
Tensile and slide strength	1.1
Shear strength	1.1
Compressive strength	1.1
Bond strength	1.1
Seismic Coefficient	1

Method Name	Min FS
Bishop simplified	1.229
Janbu corrected	1.281
Spencer	1.299
GLE / Morgenstern-Price	1.287

Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	Water Surface	Hu Type	Hu
Sandstone		22.7	Mohr-Coulomb	40	41	Water Surface	Custom	1
Shale		22	Mohr-Coulomb	1	22	Water Surface	Custom	1
Sandy Gravel		18	Mohr-Coulomb	1	40	Water Surface	Custom	1

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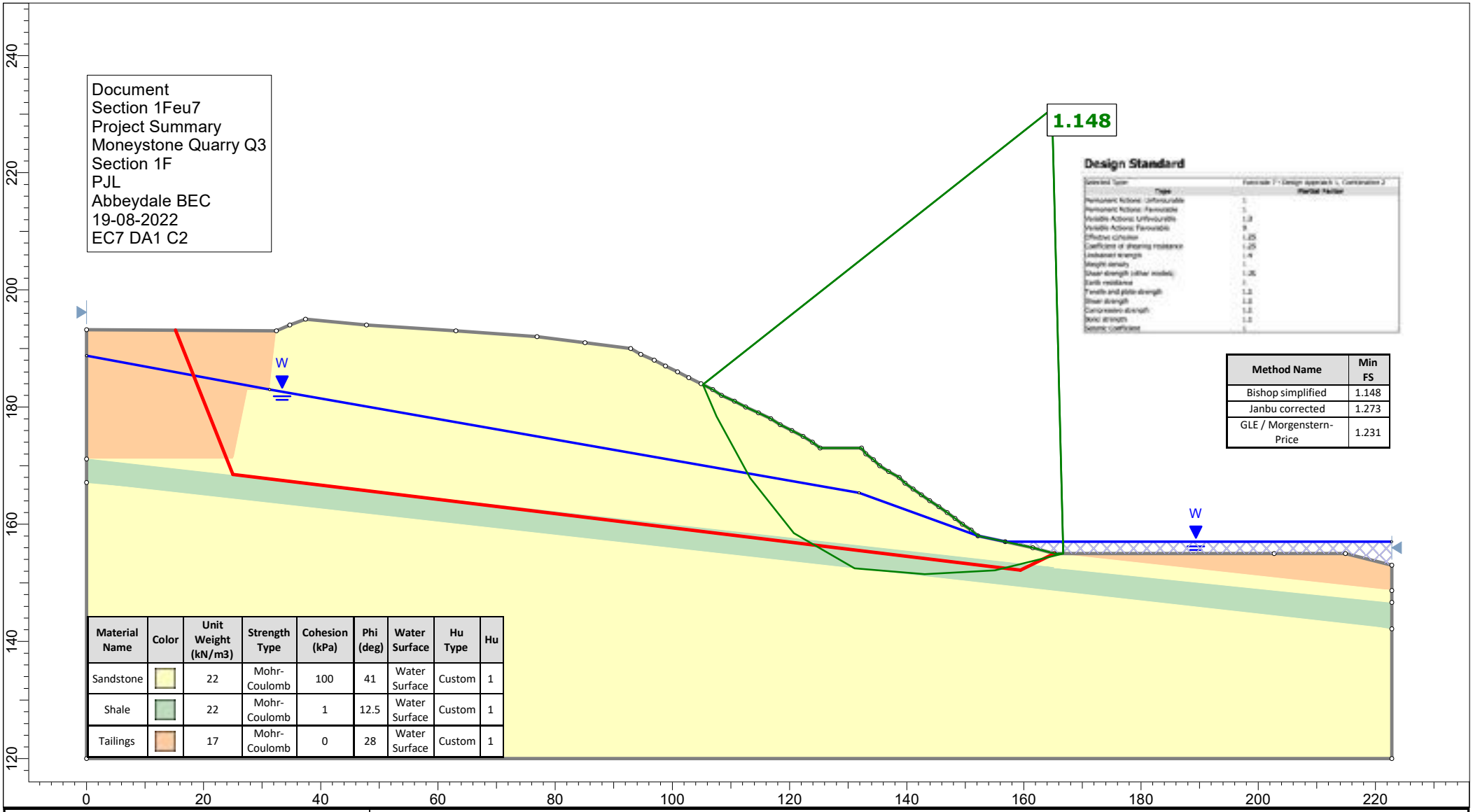
Project	Moneystone Quarry Q3		
Group	Section 2H-4eu7.slim	*Scenario*	Section 2H-4eu7.slim
Drawn By	PJL	*Company*	Abbeydale BEC
Date	19-08-2022	*File Name*	Section 2H-4eu7.slim

Document
Section 1Feu7
Project Summary
Moneystone Quarry Q3
Section 1F
PJL
Abbeydale BEC
19-08-2022
EC7 DA1 C2



Method Name	Min FS
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Janbu corrected	1.273
GLE / Morgenstern-Price	1.231

Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	Water Surface	Hu Type	Hu
Sandstone		22	Mohr-Coulomb	100	41	Water Surface	Custom	1
Shale		22	Mohr-Coulomb	1	12.5	Water Surface	Custom	1
Tailings		17	Mohr-Coulomb	0	28	Water Surface	Custom	1

Abbeydale
Building Environmental Consultancy

SLIDEINTERPRET 9.023

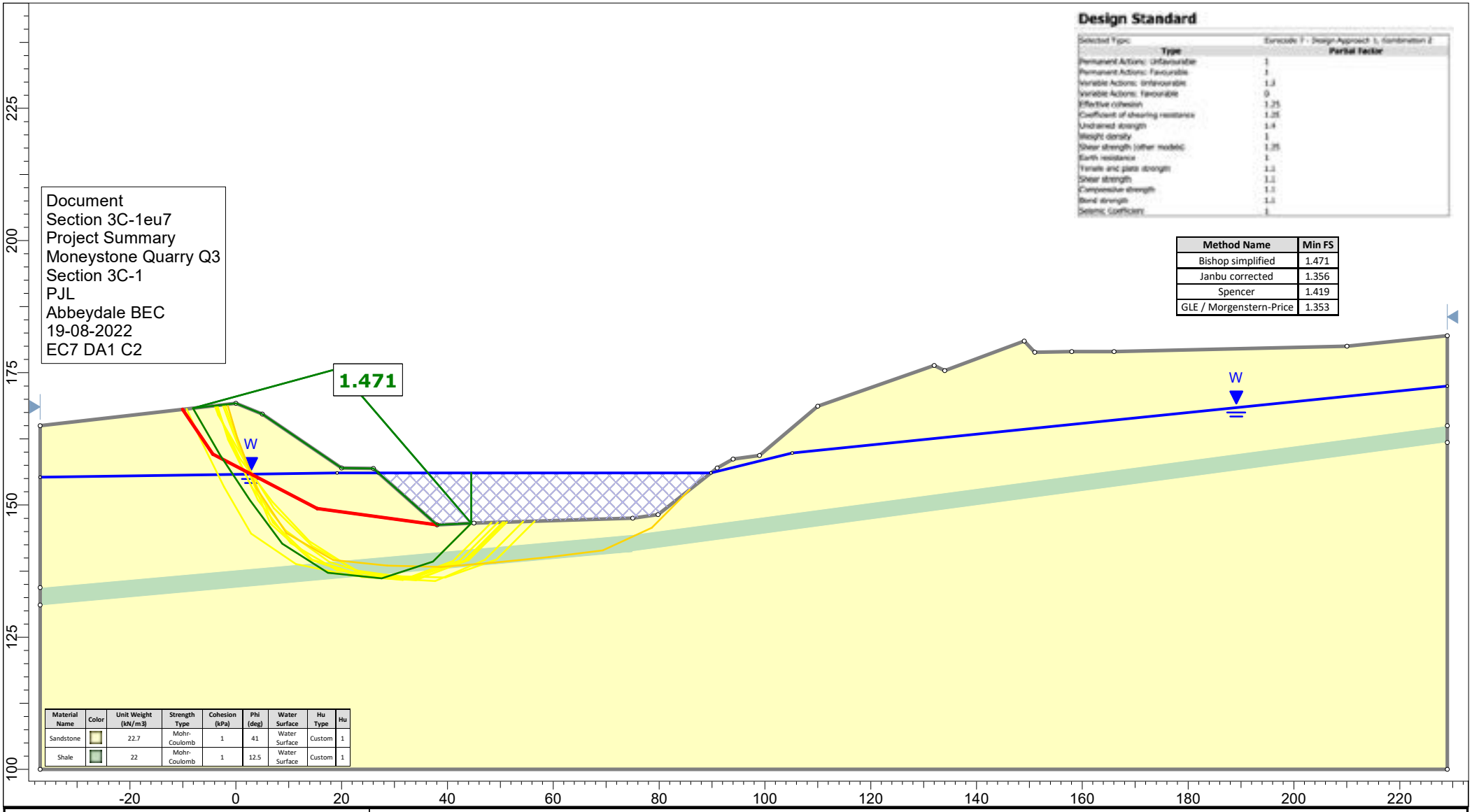
Project	Moneystone Quarry Q3		
Group	Section 1Feu7.slim	*Scenario*	Section 1Feu7.slim
Drawn By	PJL	*Company*	Abbeydale BEC
Date	19-08-2022	*File Name*	Section 1Feu7.slim

Document
Section 3C-1eu7
Project Summary
Moneystone Quarry Q3
Section 3C-1
PJL
Abbeydale BEC
19-08-2022
EC7 DA1 C2

Design Standard

Type	Partial Factor
Permanent Actions: Unfavourable	1
Permanent Actions: Favourable	1
Variable Actions: Unfavourable	1.3
Variable Actions: Favourable	0
Effective cohesion	1.25
Coefficient of shearing resistance	1.25
Undrained strength	1.4
Weight density	1
Shear strength (other models)	1.25
Earth resistance	1
Tensile and plate strength	1.1
Shear strength	1.1
Compressive strength	1.1
Bond strength	1.1
Seismic Coefficient	1

Method Name	Min FS
Bishop simplified	1.471
Janbu corrected	1.356
Spencer	1.419
GLE / Morgenstern-Price	1.353

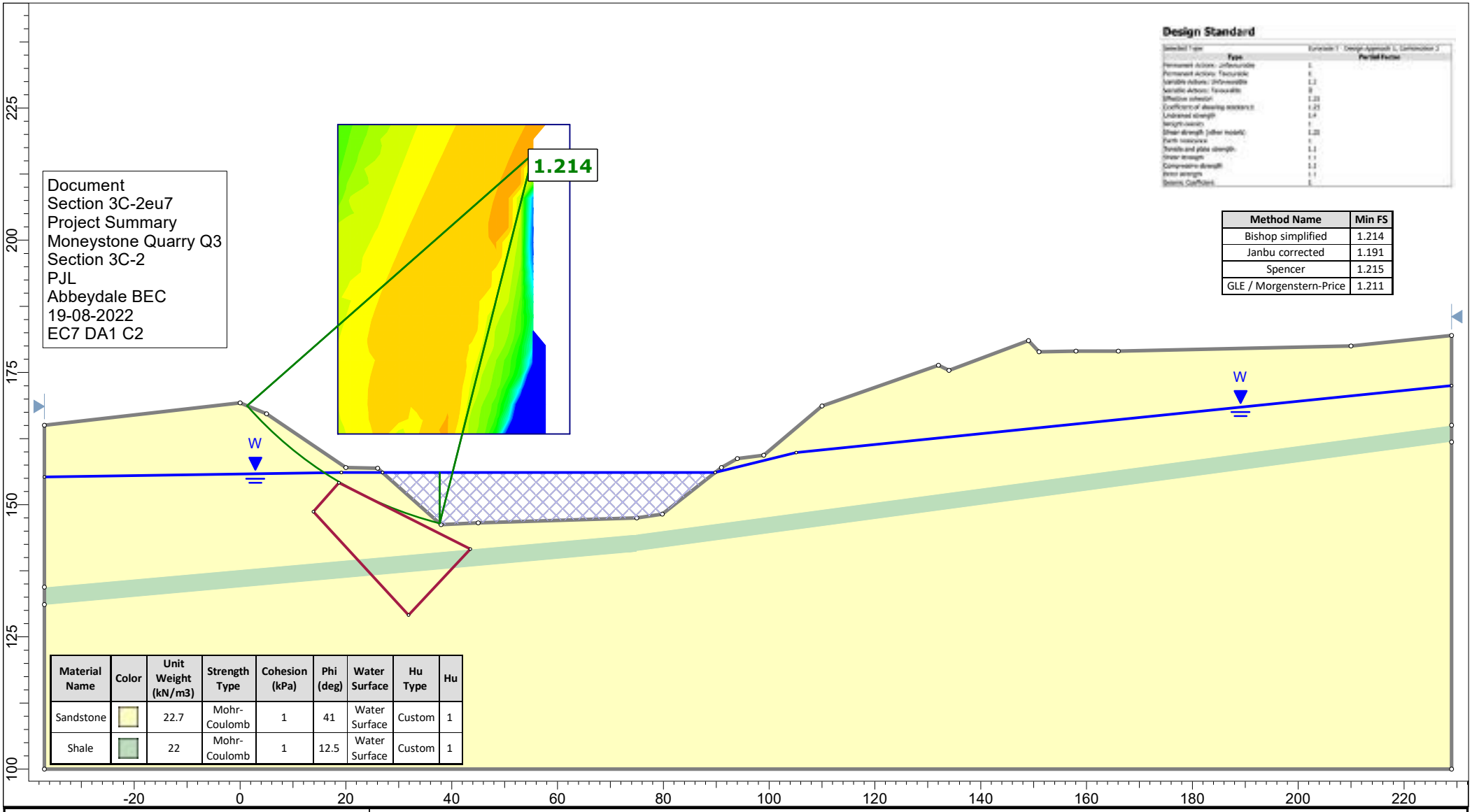


Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	Water Surface	Hu Type	Hu
Sandstone		22.7	Mohr-Coulomb	1	41	Water Surface	Custom	1
Shale		22	Mohr-Coulomb	1	12.5	Water Surface	Custom	1

Abbeydale
Building Environmental Consultancy

SLIDEINTERPRET 9.023

Project	Moneystone Quarry Q3		
Group	Section 3C-1eu7.slim	*Scenario*	Section 3C-1eu7.slim
Drawn By	PJL	*Company*	Abbeydale BEC
Date	19-08-2022	*File Name*	Section 3C-1eu7.slim



Method Name	Min FS
Bishop simplified	1.214
Janbu corrected	1.191
Spencer	1.215
GLE / Morgenstern-Price	1.211

Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	Water Surface	Hu Type	Hu
Sandstone		22.7	Mohr-Coulomb	1	41	Water Surface	Custom	1
Shale		22	Mohr-Coulomb	1	12.5	Water Surface	Custom	1

SLIDEINTERPRET 9.023

Project	Moneystone Quarry Q3		
Group	Section 3C-2eu7.slim	*Scenario*	Section 3C-2eu7.slim
Drawn By	PJL	*Company*	Abbeydale BEC
Date	19-08-2022	*File Name*	Section 3C-2eu7.slim

Appendix 13.1: Transport Technical Note

TECHNICAL NOTE

Job Name:	Moneystone Quarry
Job No:	332611449
Note No:	TN01
Date:	May 2024
Prepared By:	Alice Lister
Reviewed By:	Mark Loveridge
Approved By:	Brian Laird
Subject:	**Moneystone Park Leisure Development, Staffordshire** **2024 Traffic Flow Comparison**

1. Introduction

1.1. Stantec UK Limited (Stantec) has been appointed by Laver Leisure (Oakmoor) Limited to provide a traffic flow comparison for the proposed redevelopment and regeneration of the former Moneystone Quarry site located off Whiston Eaves Lane, between Whiston and Oakamoor in Staffordshire.

1.2. An outline planning application was submitted in June 2016 for a high-quality leisure development (Planning reference: SMD/2016/0378). For that application a Trasport Assessment (TA), Travel Plan (TP) and Environment Statement (ES) access chapter were produced by Royal Haskoning DHV in support of the proposed development. The outline planning permission was subsequently approved in October 2016.

1.3. A reserved matters planning application was submitted for phase 1 of the leisure development in October 2019 (Planning reference: SMD/2019/0646). The reserved matter application was refused in November 2023.

1.4. This Technical Note (TN) has been produced to provide a comparison between the traffic flow data submitted for the 2016 application with recorded 2024 traffic flows to inform whether any additional highway assessment would be required for the proposed development.

2. 2016 Traffic Flows

2.1. As stated in **Section 1** an outline planning application was submitted for a tourism and leisure development on the site in June 2016. For that application a Trasport Assessment (TA), Travel Plan (TP) and Environment Statement (ES) and Access chapter were produced by Royal Haskoning DHV in support of the proposed development, which were based on 2016 traffic surveys.

2.2. For the previously submitted TA, Automatic Traffic Count (ATC) surveys were undertaken at a number of highway links within the vicinity of the site in May 2016. The ATC surveys were carried out from Wednesday 18th of May to Tuesday 24th of May 2016 and recorded vehicle volume and speeds.

2.3. In order to provide a comparison of traffic flows, the following highway links have been assessed:

- Link 1 - A52 (West of Whiston Eaves Lane); and
- Link 2 - Carr Bank (North of the B5417)

2.4. **Figure 1** shows the location of the surveys, and the results of the 2016 surveys are included as **Appendix A** and the Annual Average Daily Traffic (AADT) flows for each link are summarised in **Table 1** and **Table 2**.

Table 1: A52 (West of Whiston Eaves Lane) 2016 Traffic Flows

Direction	2016 Traffic Flows
Eastbound	1100
Westbound	1114
Total	**2214**

Table 2: Carr Bank (North of the B5417) 2016 Traffic Flows

Direction	2016 Traffic Flows
Northbound	339
Southbound	373
Total	**712**

3. Factored 2016 Traffic Flows

3.1. To undertake a comparison of the 2016 with 2024 traffic flows, a factor has been applied to the 2016 traffic flows. To factor up the 2016 traffic flows, a TEMPro (Version 7.2) factor has been applied, which is a recognised industry standard method for factoring traffic flows for future year assessments. The TEMPro factor is summarised in **Table 3**.

Table 3: TEMPro Factor

Year	Factor
2016 to 2024	1.0863

3.2. The 2024 factored traffic flows for each link are summarised in **Table 4** and **Table 5**.

Table 4: A52 (West of Whiston Eaves Lane) 2024 Factored Traffic Flows

Direction	2024 Factored Traffic Flows
Eastbound	1195
Westbound	1210
Total	**2405**

Table 5: Carr Bank (North of the B5417) 2024 Factored Traffic Flows

Direction	2024 Factored Traffic Flows
Northbound	368
Southbound	405
Total	**773**

4. 2024 Traffic Flows

4.1. In order to provide a comparison between the 2016 traffic flows with 2024 traffic flows, new ATC surveys were undertaken at the following highway links:

- Link 1 - A52 (West of Whiston Eaves Lane); and
- Link 2 - Carr Bank (North of the B5417)

4.2. The surveys were carried out from 18th of April 2024 to 24th of April 2024 and recorded the volume and speed of traffic. **Figure 1** shows the location of the surveys, and the results of the 2024 surveys are included as **Appendix B**.

4.3. It has been noted that vehicle parking over the ATC tubes (apparatus to record vehicle numbers) occurred at the Carr Bank survey, from 5pm on the 22nd of April to 6pm on the 23rd of April, leading to a discrepancy in the data. Therefore, in order to provide a robust assessment, the data which had been affected by parking has been discounted from the assessment.

4.4. The AADT flows for each link are summarised in **Table 6** and **Table 7**.

Table 6: A52 (West of Whiston Eaves Lane) 2024 Traffic Flows

Date	Direction		
	Eastbound	Westbound	Total
18th April	1292	1309	2601
19th April	1234	1263	2497
20th April	1324	1288	2612
21st April	1223	1217	2440
22nd April	1158	1143	2301
23rd April	1296	1315	2611
24th April	1341	1362	2703
AADT	**1276**	**1271**	**2538**

Table 7: Carr Bank (North of the B5417) 2024 Traffic Flows

Date	Direction		
	Northbound	Southbound	Total
18th April	357	361	718
19th April	386	371	757
20th April	294	288	582
21st April	269	277	546
22nd April	*	*	*
23rd April	*	*	*
24th April	358	373	731
AADT	**333**	**334**	**667**

**Data Removed from Assessment Due to Parking*

5. Traffic Flow Comparison

5.1. **Table 8** provides a comparison of the factored 2024 traffic flows with the recorded 2024 traffic flows.

Table 8: A52 (West of Whiston Eaves Lane) Traffic Flow Comparison

Direction	2024 Factored Traffic Flows	2024 Traffic Flows	Percentage Difference
Eastbound	1195	1267	+6%
Westbound	1210	1271	+5%
Total	**2405**	**2538**	**+6%**

5.2. As can be seen in **Table 8**, the recorded 2024 traffic flows show a higher level of traffic recorded in both directions over the course of the week. The recorded 2024 traffic flows show a 6% increase in traffic flows in both directions when compared with the observed 2016 traffic flows, which is within a 10% variance.

5.3. A variance of 10% is considered typical for a typical week. Differences in traffic flows of less than 10% would not have a material impact on the traffic assessment carried out in the 2016 TA.

5.4. **Table 9** provides a comparison of the factored 2024 traffic flows with the recorded 2024 traffic flows.

Table 9: Carr Bank (North of the B5417) Traffic Flow Comparison

Direction	2024 Factored Traffic Flows	2024 Traffic Flows	Percentage Difference
Northbound	368	333	-10%
Southbound	405	334	-18%
Total	**773**	**667**	**-14%**

5.5. As can be seen in **Table 9**, the factored 2024 traffic flows show a higher level of traffic recorded in both directions over the course of the week. The recorded 2024 traffic flows show a 14% reduction in traffic flows in both direction when compared with the factored 2024 traffic flows.

5.6. The traffic assessment carried out within the 2016 TA is therefore considered to be robust.

6. Committed Development

6.1. In order to provide a robust assessment, the 2016 TA included the Bolton Copperworks site in Froghall, which was identified in the Churnet Valley Masterplan (March 2014) as committed development. The Bolton Copperworks site is located approximately 1.2km west of Whiston and is accessed directly from the A52.

6.2. An outline planning application was submitted in March 2005 for a mixed use development comprising employment, residential, leisure/tourism uses, hotel, nursing home and public open space (planning reference SMD/2005/0137). The planning application was subsequently withdrawn in December 2005.

6.3. Following the 2005 planning application, the Bolton Copperworks site was subject to an Environmental Impact Assessment (EIA) scoping request in October 2014. Although no planning application had been submitted for the site at the time of writing the 2016 TA, it was envisaged that the maximum quantum of development could comprise of:

- 215 residential dwellings;
- Employment park, circa 2,250sqm gross floor area;
- Visitor centre, circa 2,500sqm gross floor area;
- 50 bedroom hotel; and
- Outdoor activity centre.

6.4. It should be noted that following the submission of the 2016 TA, no development has commenced on The Bolton Copperwork site to date and no further planning application has been submitted on the site. Omitting the traffic flows associated with the committed development would significantly reduce the traffic which has been assessed within the 2016 TA.

6.5. The traffic assessment carried out within the 2016 TA is therefore considered to be robust as it includes a committed development site which has not been brought forward. As the development has not been progressed through the planning system it would be discounted if any further assessment was to be carried out.

7. Summary and Conclusions

7.1. Stantec UK Limited has been appointed by Laver Leisure (Oakmoor) Limited to provide a traffic flow comparison for the proposed redevelopment and regeneration of the former Moneystone Quarry site located off Whiston Eaves Lane, between Whiston and Oakamoor in Staffordshire.

7.2. The traffic flow comparison has demonstrated that although the recorded 2024 traffic flows show an increase in traffic on the A52 in both directions when compared with the factored 2024 traffic flows, the increase is within a 10% variance of the factored 2024 traffic flows and therefore would not have a material impact on the traffic assessment carried out in the 2016 TA.

7.3. The traffic flow comparison has also demonstrated that the factored 2024 traffic flows show a higher level of traffic on Carr Bank in both directions when compared with the recorded 2024 traffic flows. The recorded 2024 traffic flows show a significant reduction in traffic flows in both direction when compared with the factored 2024 traffic flows. The factored 2024 traffic flows are therefore considered to be robust.

7.4. In order to provide a robust assessment, the 2016 TA included the Bolton Copperworks site in Froghall as committed development. Following the submission of the 2016 TA, no development has commenced on The Bolton Copperwork site to date and no further planning application has been submitted on the site.

7.5. Omitting the traffic flows associated with the committed development would significantly reduce the traffic which has been assessed within the 2016 TA. The traffic assessment carried out within the 2016 TA is therefore considered to be robust as it includes a committed development site which has not been brought forward.

7.6. In conclusion, a comparison between the factored 2024 traffic flows with the recorded 2024 traffic flows has demonstrated that the traffic assessment carried out within the 2016 TA is considered to be robust and therefore no further highway assessment is required.

Figures

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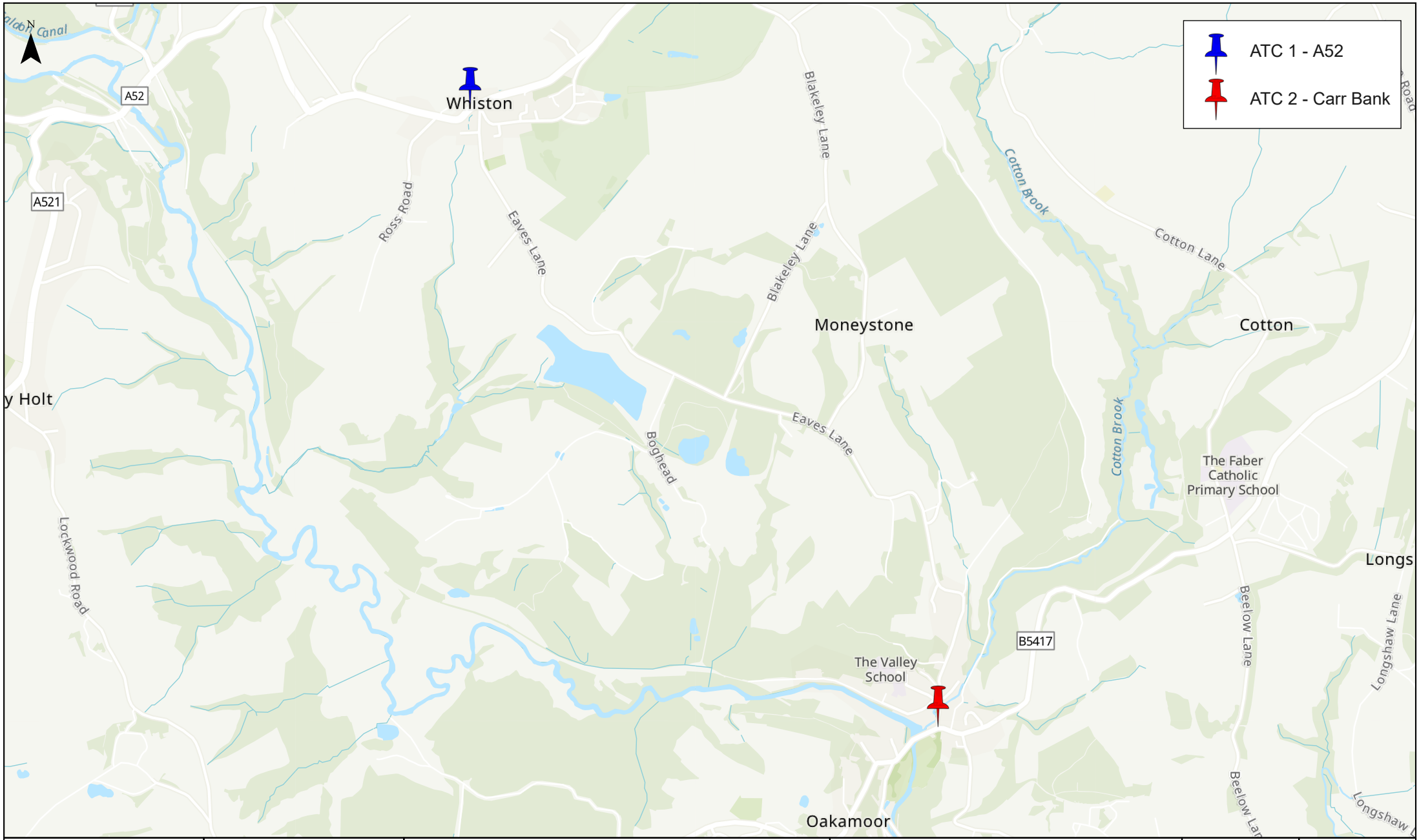

Stantec

Client

Laver Leisure Holiday Home Parks

MONEYSTONE PARK LEISURE DEVELOPMENT, STAFFORDSHIRE

Figure 1: ATC Survey Locations

World Topographic Map: Esri Community Maps Contributors, Esri UK, Esri, TomTom, Garmin, Foursquare, GeoTechnologies, Inc, METI/NASA, USGS

0 0.25 0.5 1 Km

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Drawn: IG	Checked: BL
Figure 1	

Appendices

Appendix A 2016 Traffic Surveys

Automatic Classified Counts, Oakamoor & Whiston ATC

LOCATION: A52 (WESTERN SITE)

Direction : EASTBOUND

Wednesday 18/05/2016	VEHICLE CLASSIFICATION													TOTAL
Hr Ending	1	2	3	4	5	6	7	8	9	10	11	12	13	
1	1	0	0	0	0	0	0	0	0	0	0	0	0	1
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	2	0	0	0	0	0	0	0	0	0	0	0	0	2
4	1	0	0	0	0	0	0	0	0	0	0	0	0	1
5	8	0	0	0	0	0	0	0	0	0	0	0	0	8
6	10	2	0	0	0	0	0	0	2	0	0	0	0	14
7	38	2	0	0	0	0	0	2	0	0	0	0	0	42
8	81	5	0	0	0	0	0	2	0	0	0	1	0	89
9	71	4	0	0	0	0	0	2	0	0	0	0	0	77
10	54	4	0	0	0	0	0	2	5	0	0	2	0	67
11	49	3	0	0	0	0	0	1	1	0	1	0	0	55
12	49	4	0	1	0	0	0	0	1	0	0	1	0	56
13	54	4	0	0	1	0	0	1	2	0	0	1	0	63
14	52	4	0	0	0	0	0	0	4	0	0	0	0	60
15	47	2	0	0	0	0	0	0	2	0	1	0	0	52
16	54	4	0	0	1	0	0	1	1	0	1	1	0	63
17	71	3	0	2	0	0	0	0	3	0	0	0	0	79
18	95	2	0	0	0	0	0	0	2	0	0	1	0	100
19	64	3	0	0	0	0	0	0	2	0	0	0	0	69
20	39	2	0	0	0	0	0	0	0	0	0	0	0	41
21	27	0	0	0	0	0	0	0	0	0	0	0	0	27
22	19	0	0	0	0	0	0	0	0	0	0	0	0	19
23	14	2	0	0	0	0	0	0	0	0	0	0	0	16
24	4	0	0	0	0	0	0	1	0	0	0	0	0	5
7-19	741	42	0	3	2	0	0	9	23	0	3	7	0	830
6-22	864	46	0	3	2	0	0	11	23	0	3	7	0	959
6-24	882	48	0	3	2	0	0	12	23	0	3	7	0	980
0-24	904	50	0	3	2	0	0	12	25	0	3	7	0	1006

Direction : WESTBOUND

Wednesday 18/05/2016	VEHICLE CLASSIFICATION													TOTAL
Hr Ending	1	2	3	4	5	6	7	8	9	10	11	12	13	
1	2	0	0	0	0	0	0	0	0	0	0	0	0	2
2	2	0	0	0	0	0	0	0	0	0	0	0	0	2
3	1	0	0	0	0	0	0	0	0	0	0	0	0	1
4	1	0	0	0	0	0	0	0	0	0	0	0	0	1
5	3	0	0	0	0	0	0	0	0	0	0	0	0	3
6	2	0	0	0	0	0	0	0	0	0	1	0	0	3
7	36	2	0	1	0	0	0	2	0	0	0	0	0	41
8	80	3	0	0	0	0	0	1	0	0	1	0	0	85
9	70	4	0	0	0	0	0	1	0	0	1	1	0	77
10	52	2	0	1	0	0	0	2	0	0	1	0	0	58
11	46	3	0	0	0	0	0	0	0	0	0	1	0	50
12	47	4	0	0	0	0	0	0	3	0	0	0	0	54
13	49	4	0	1	0	0	0	1	1	0	1	0	0	57
14	38	3	0	0	0	0	0	1	2	0	0	1	0	45
15	50	5	1	0	0	0	0	0	0	0	0	0	0	56
16	74	2	0	1	0	0	0	1	0	0	3	0	0	81
17	90	4	0	0	0	0	0	0	0	0	1	2	0	97
18	92	3	0	0	0	0	0	0	0	0	1	1	0	97
19	64	3	0	1	0	0	0	0	0	0	0	0	0	68
20	30	0	0	0	0	0	0	0	0	0	0	0	0	30
21	18	2	0	0	0	0	0	0	1	0	0	0	0	21
22	18	0	0	0	0	0	0	0	0	0	0	0	0	18
23	14	0	0	0	0	0	0	0	0	0	0	0	0	14
24	4	0	0	0	0	0	0	0	0	0	0	0	0	4
7-19	752	40	1	4	0	0	0	7	6	0	9	6	0	825
6-22	854	44	1	5	0	0	0	9	7	0	9	6	0	935
6-24	872	44	1	5	0	0	0	9	7	0	9	6	0	953
0-24	883	44	1	5	0	0	0	9	7	0	10	6	0	965

Automatic Classified Counts, Oakamoor & Whiston ATC

LOCATION: A52 (WESTERN SITE)

Direction : EASTBOUND

Thursday 19/05/2016	VEHICLE CLASSIFICATION													TOTAL
Hr Ending	1	2	3	4	5	6	7	8	9	10	11	12	13	
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	3	0	0	0	0	0	0	0	0	0	0	0	0	3
5	6	0	0	0	0	0	0	0	0	0	0	0	0	6
6	15	2	0	0	0	0	0	0	0	0	0	0	0	17
7	48	3	0	0	0	0	0	2	1	0	0	1	0	55
8	88	2	0	0	0	0	0	0	2	0	0	1	0	93
9	100	6	2	1	0	0	0	1	1	0	0	0	0	111
10	99	4	1	1	0	0	0	1	4	0	0	2	0	112
11	78	4	0	1	1	0	0	0	3	0	0	3	0	90
12	59	4	0	0	0	0	0	0	1	0	2	1	0	67
13	52	4	0	0	0	0	0	0	0	0	0	1	0	57
14	56	3	0	0	0	0	0	1	2	0	0	2	0	64
15	59	2	0	0	0	0	0	0	2	0	3	0	0	66
16	61	2	0	1	0	0	0	0	0	0	0	1	0	65
17	75	4	0	0	0	0	0	0	2	0	1	0	0	82
18	102	3	0	0	0	0	0	0	0	0	0	4	0	109
19	63	4	0	0	0	0	0	1	0	0	0	0	0	68
20	38	2	0	0	0	0	0	0	0	0	0	0	0	40
21	22	0	0	0	0	0	0	1	0	0	0	0	0	23
22	26	0	0	0	0	0	0	0	0	0	0	0	0	26
23	13	0	0	0	0	0	0	0	0	0	0	0	0	13
24	2	0	0	0	0	0	0	0	0	0	0	0	0	2
7-19	892	42	3	4	1	0	0	4	17	0	6	15	0	984
6-22	1026	47	3	4	1	0	0	7	18	0	6	16	0	1128
6-24	1041	47	3	4	1	0	0	7	18	0	6	16	0	1143
0-24	1065	49	3	4	1	0	0	7	18	0	6	16	0	1169

Direction : WESTBOUND

Thursday 19/05/2016	VEHICLE CLASSIFICATION													TOTAL
Hr Ending	1	2	3	4	5	6	7	8	9	10	11	12	13	
1	5	0	0	0	0	0	0	0	0	0	0	0	0	5
2	1	0	0	0	0	0	0	0	0	0	0	0	0	1
3	2	0	0	0	0	0	0	0	0	0	0	0	0	2
4	4	0	0	0	0	0	0	0	0	0	0	0	0	4
5	2	0	0	0	0	0	0	1	0	0	1	0	0	4
6	8	0	0	0	0	0	0	0	0	0	0	0	0	8
7	39	2	0	0	0	0	0	0	1	0	0	0	0	42
8	99	3	0	1	0	0	0	1	0	0	1	2	0	107
9	77	4	0	0	0	0	0	0	0	0	1	0	0	82
10	67	2	0	1	0	0	0	0	0	0	0	0	0	70
11	57	2	1	1	0	0	0	0	1	0	1	1	0	64
12	56	2	0	0	0	0	0	1	0	0	3	0	0	62
13	61	3	0	0	0	0	0	1	0	0	2	1	0	68
14	60	3	0	0	0	0	0	0	0	0	3	1	0	67
15	91	4	0	0	0	0	0	1	1	0	0	1	0	98
16	105	4	1	0	0	0	0	0	0	0	0	2	0	112
17	141	4	0	0	0	0	0	1	0	0	0	1	0	147
18	103	3	0	0	0	0	0	0	0	0	1	5	0	112
19	93	2	0	0	0	0	0	0	0	0	0	1	0	96
20	38	1	0	0	0	0	0	0	1	0	0	0	0	40
21	36	0	0	0	0	0	0	0	0	0	0	0	0	36
22	19	0	0	0	0	0	0	0	0	0	0	1	0	20
23	14	0	0	0	0	0	0	0	0	0	0	0	0	14
24	7	0	0	0	0	0	0	0	0	0	0	0	0	7
7-19	1010	36	2	3	0	0	0	5	2	0	12	15	0	1085
6-22	1142	39	2	3	0	0	0	5	4	0	12	16	0	1223
6-24	1163	39	2	3	0	0	0	5	4	0	12	16	0	1244
0-24	1185	39	2	3	0	0	0	6	4	0	13	16	0	1268

Automatic Classified Counts, Oakamoor & Whiston ATC

LOCATION: A52 (WESTERN SITE)

Direction : EASTBOUND

Friday 20/05/2016	VEHICLE CLASSIFICATION													TOTAL
Hr Ending	1	2	3	4	5	6	7	8	9	10	11	12	13	
1	2	0	0	0	0	0	0	0	0	0	0	0	0	2
2	1	0	0	0	0	0	0	0	0	0	0	0	0	1
3	2	0	0	0	0	0	0	0	0	0	0	0	0	2
4	2	0	0	0	0	0	0	1	0	0	0	0	0	3
5	6	0	0	0	0	0	0	0	0	0	0	1	0	7
6	15	0	0	0	0	0	0	2	0	0	0	0	0	17
7	41	2	0	0	0	0	0	0	0	0	0	0	0	43
8	89	4	0	0	0	0	0	0	2	0	0	1	0	96
9	100	2	0	1	0	0	0	2	0	0	0	0	0	105
10	75	4	1	1	0	0	0	1	2	0	0	1	0	85
11	78	2	0	2	0	0	0	0	1	0	2	3	0	88
12	75	2	0	1	0	0	0	1	2	0	0	1	0	82
13	52	1	0	1	0	0	0	0	1	0	2	0	0	57
14	65	2	0	0	0	0	0	1	1	0	0	3	0	72
15	66	2	0	0	0	0	0	0	1	0	0	1	0	70
16	76	3	0	1	0	0	0	1	1	0	0	1	0	83
17	90	3	0	0	0	0	0	0	2	0	1	1	0	97
18	83	1	0	0	0	0	0	1	1	0	0	2	0	88
19	52	2	0	0	0	0	0	0	1	0	0	0	0	55
20	44	2	0	0	0	0	0	1	1	0	0	0	0	48
21	36	0	0	0	0	0	0	0	0	0	0	1	0	37
22	21	0	0	0	0	0	0	0	0	0	0	0	0	21
23	12	0	0	0	0	0	0	0	0	0	0	0	0	12
24	21	0	0	0	0	0	0	0	0	0	0	0	0	21
7-19	901	28	1	7	0	0	0	7	15	0	5	14	0	978
6-22	1043	32	1	7	0	0	0	8	16	0	5	15	0	1127
6-24	1076	32	1	7	0	0	0	8	16	0	5	15	0	1160
0-24	1104	32	1	7	0	0	0	11	16	0	5	16	0	1192

Direction : WESTBOUND

Friday 20/05/2016	VEHICLE CLASSIFICATION													TOTAL
Hr Ending	1	2	3	4	5	6	7	8	9	10	11	12	13	
1	5	0	0	0	0	0	0	0	0	0	0	0	0	5
2	2	0	0	0	0	0	0	0	0	0	0	0	0	2
3	3	0	0	0	0	0	0	0	0	0	0	0	0	3
4	4	0	0	0	0	0	0	0	0	0	0	0	0	4
5	4	0	0	0	0	0	0	0	0	0	0	1	0	5
6	5	0	0	0	0	0	0	1	1	0	0	0	0	7
7	27	1	0	0	0	0	0	2	0	0	1	0	0	31
8	89	2	0	0	0	0	0	2	1	0	1	2	0	97
9	71	3	0	0	0	0	0	1	0	0	1	2	0	78
10	75	2	0	3	0	0	0	0	0	0	1	0	0	81
11	60	2	1	0	0	0	0	0	1	0	0	4	0	68
12	72	3	0	1	0	0	0	0	0	0	1	1	0	78
13	69	3	0	1	0	0	0	0	0	0	0	0	0	73
14	55	2	0	1	0	0	0	2	0	0	0	0	0	60
15	79	2	0	0	0	0	0	0	2	0	0	0	0	83
16	102	3	0	0	0	0	0	1	1	0	0	1	0	108
17	113	2	0	1	0	0	0	0	1	0	0	1	0	118
18	95	2	0	0	0	0	0	0	0	0	3	0	0	100
19	77	1	0	0	0	0	0	0	1	0	2	0	0	81
20	50	1	0	0	0	0	0	0	2	0	1	0	0	54
21	27	0	0	0	0	0	0	0	0	0	0	0	0	27
22	14	0	0	0	0	0	0	0	0	0	0	0	0	14
23	21	0	0	0	0	0	0	0	0	0	0	0	0	21
24	10	0	0	0	0	0	0	0	0	0	0	0	0	10
7-19	957	27	1	7	0	0	0	6	7	0	9	11	0	1025
6-22	1075	29	1	7	0	0	0	8	9	0	11	11	0	1151
6-24	1106	29	1	7	0	0	0	8	9	0	11	11	0	1182
0-24	1129	29	1	7	0	0	0	9	10	0	11	12	0	1208

Automatic Classified Counts, Oakamoor & Whiston ATC

LOCATION: A52 (WESTERN SITE)

Direction : EASTBOUND

Saturday 21/05/2016	VEHICLE CLASSIFICATION													TOTAL
Hr Ending	1	2	3	4	5	6	7	8	9	10	11	12	13	
1	5	0	0	0	0	0	0	0	0	0	0	0	0	5
2	4	0	0	0	0	0	0	0	0	0	0	0	0	4
3	5	0	0	0	0	0	0	0	0	0	0	0	0	5
4	1	0	0	0	0	0	0	0	0	0	0	0	0	1
5	3	0	0	0	0	0	0	0	0	0	0	0	0	3
6	13	0	0	0	0	0	0	0	2	0	0	0	0	15
7	16	1	0	0	0	0	0	1	1	0	0	0	0	19
8	31	1	0	0	0	0	0	0	2	0	0	1	0	35
9	55	1	0	0	0	0	0	0	1	1	0	1	0	59
10	88	2	0	0	0	0	0	0	1	0	0	1	0	92
11	112	3	0	0	0	0	0	0	0	0	0	1	0	116
12	94	2	0	0	0	0	0	0	0	0	0	2	0	98
13	62	2	0	0	0	0	0	0	0	0	0	0	0	64
14	60	1	0	0	0	0	0	0	0	0	0	1	0	62
15	73	1	0	0	0	0	0	0	0	0	0	0	0	74
16	59	1	0	0	0	0	0	0	0	0	0	0	0	60
17	61	1	0	0	0	0	0	0	0	0	0	1	0	63
18	54	1	0	0	0	0	0	0	0	0	0	1	0	56
19	44	1	0	0	0	0	0	0	0	0	0	0	0	45
20	34	0	0	0	0	0	0	0	0	0	0	0	0	34
21	28	0	0	0	0	0	0	0	0	0	0	1	0	29
22	18	0	0	0	0	0	0	0	0	0	0	2	0	20
23	18	0	0	0	0	0	0	0	0	0	0	0	0	18
24	9	0	0	0	0	0	0	0	0	0	0	0	0	9
7-19	793	17	0	0	0	0	0	0	4	1	0	9	0	824
6-22	889	18	0	0	0	0	0	1	5	1	0	12	0	926
6-24	916	18	0	0	0	0	0	1	5	1	0	12	0	953
0-24	947	18	0	0	0	0	0	1	7	1	0	12	0	986

Direction : WESTBOUND

Saturday 21/05/2016	VEHICLE CLASSIFICATION													TOTAL
Hr Ending	1	2	3	4	5	6	7	8	9	10	11	12	13	
1	13	0	0	0	0	0	0	0	0	0	0	0	0	13
2	7	0	0	0	0	0	0	0	0	0	0	0	0	7
3	1	0	0	0	0	0	0	0	0	0	0	0	0	1
4	2	0	0	0	0	0	0	0	0	0	0	0	0	2
5	4	0	0	0	0	0	0	0	0	0	0	1	0	5
6	4	0	0	0	0	0	0	0	0	0	0	0	0	4
7	5	0	0	0	0	0	0	0	0	0	2	1	0	8
8	13	1	0	0	0	0	0	0	0	0	1	1	0	16
9	35	1	0	0	0	0	0	0	0	0	0	0	0	36
10	55	1	0	0	0	0	0	0	0	0	1	0	0	57
11	70	1	0	0	0	0	0	0	1	0	0	1	0	73
12	63	2	0	0	0	0	0	0	0	0	0	0	0	65
13	80	2	0	2	0	0	0	0	0	0	0	0	0	84
14	74	1	0	0	0	0	0	0	0	0	0	1	0	76
15	68	1	0	0	0	0	0	0	0	0	0	0	0	69
16	84	1	0	0	0	0	0	0	0	0	0	0	0	85
17	80	1	0	0	0	0	0	0	0	0	0	0	0	81
18	88	1	0	0	0	0	0	0	0	0	0	1	0	90
19	85	1	0	0	0	0	0	0	0	0	0	1	0	87
20	46	0	0	0	0	0	0	0	0	0	0	0	0	46
21	26	1	0	0	0	0	0	0	0	0	0	0	0	27
22	20	0	0	0	0	0	0	0	0	0	0	0	0	20
23	24	0	0	0	0	0	0	0	0	0	0	0	0	24
24	12	0	0	0	0	0	0	0	0	0	0	0	0	12
7-19	795	14	0	2	0	0	0	0	1	0	2	5	0	819
6-22	892	15	0	2	0	0	0	0	1	0	4	6	0	920
6-24	928	15	0	2	0	0	0	0	1	0	4	6	0	956
0-24	959	15	0	2	0	0	0	0	1	0	4	7	0	988

Automatic Classified Counts, Oakamoor & Whiston ATC

LOCATION: A52 (WESTERN SITE)

Direction : EASTBOUND

Sunday 22/05/2016	VEHICLE CLASSIFICATION													TOTAL
Hr Ending	1	2	3	4	5	6	7	8	9	10	11	12	13	
1	3	0	0	0	0	0	0	0	0	0	0	0	0	3
2	5	0	0	0	0	0	0	0	0	0	0	0	0	5
3	4	0	0	0	0	0	0	0	0	0	0	0	0	4
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	4	0	0	0	0	0	0	0	0	0	0	0	0	4
7	18	0	0	0	0	0	0	0	0	0	0	0	0	18
8	35	0	0	0	0	0	0	0	0	0	0	0	0	35
9	59	1	0	0	0	0	0	0	0	0	0	0	0	60
10	104	1	0	0	0	0	0	0	0	0	0	0	0	105
11	112	2	0	1	0	0	0	1	0	0	0	1	0	117
12	96	2	0	0	0	0	0	1	0	0	1	0	0	100
13	92	1	0	0	0	0	0	0	0	0	0	0	0	93
14	81	2	0	0	0	0	0	1	0	0	0	0	0	84
15	76	1	0	1	0	0	0	1	0	0	0	0	0	79
16	52	1	0	0	0	0	0	0	0	0	0	0	0	53
17	60	1	0	0	0	0	0	0	0	0	0	0	0	61
18	41	1	0	0	0	0	0	0	0	0	0	2	0	44
19	47	1	0	0	0	0	0	1	0	0	0	0	0	49
20	34	0	0	0	0	0	0	2	0	0	0	1	0	37
21	19	1	0	0	0	0	0	0	0	0	0	0	0	20
22	13	1	0	0	0	0	0	0	0	0	0	0	0	14
23	10	0	0	0	0	0	0	0	0	0	0	0	0	10
24	7	0	0	0	0	0	0	0	0	0	0	0	0	7
7-19	855	14	0	2	0	0	0	5	0	0	1	3	0	880
6-22	939	16	0	2	0	0	0	7	0	0	1	4	0	969
6-24	956	16	0	2	0	0	0	7	0	0	1	4	0	986
0-24	972	16	0	2	0	0	0	7	0	0	1	4	0	1002

Direction : WESTBOUND

Sunday 22/05/2016	VEHICLE CLASSIFICATION													TOTAL
Hr Ending	1	2	3	4	5	6	7	8	9	10	11	12	13	
1	11	0	0	0	0	0	0	0	0	0	0	0	0	11
2	2	0	0	0	0	0	0	0	0	0	1	0	0	3
3	3	0	0	0	0	0	0	0	0	0	0	0	0	3
4	2	0	0	0	0	0	0	0	0	0	0	0	0	2
5	2	0	0	0	0	0	0	0	0	0	0	1	0	3
6	1	0	0	0	0	0	0	0	0	0	0	0	0	1
7	3	0	0	0	0	0	0	0	0	0	0	1	0	4
8	11	0	0	0	0	0	0	1	0	0	0	0	0	12
9	18	0	0	0	0	0	0	0	0	0	0	0	0	18
10	40	1	0	2	0	0	0	2	0	0	0	0	0	45
11	81	1	0	1	0	0	0	0	0	0	0	1	0	84
12	77	1	0	0	0	0	0	0	0	0	0	0	0	78
13	84	2	0	0	0	0	0	1	0	0	0	0	0	87
14	68	1	0	1	0	0	0	0	0	0	0	0	0	70
15	105	1	0	0	0	0	0	0	0	0	0	0	0	106
16	118	2	0	1	0	0	0	0	0	0	0	0	0	121
17	94	1	0	0	0	0	0	0	0	0	0	0	0	95
18	89	2	0	0	0	0	0	0	0	0	0	0	0	91
19	71	2	0	0	0	0	0	0	0	0	0	1	0	74
20	45	0	0	0	0	0	0	0	0	0	0	0	0	45
21	26	0	0	0	0	0	0	0	0	0	0	0	0	26
22	25	0	0	0	0	0	0	0	0	0	0	0	0	25
23	14	0	0	0	0	0	0	0	0	0	0	0	0	14
24	9	0	0	0	0	0	0	0	0	0	0	0	0	9
7-19	856	14	0	5	0	0	0	4	0	0	0	2	0	881
6-22	955	14	0	5	0	0	0	4	0	0	0	3	0	981
6-24	978	14	0	5	0	0	0	4	0	0	0	3	0	1004
0-24	999	14	0	5	0	0	0	4	0	0	1	4	0	1027

Automatic Classified Counts, Oakamoor & Whiston ATC

LOCATION: A52 (WESTERN SITE)

Direction : EASTBOUND

Monday 23/05/2016	VEHICLE CLASSIFICATION													TOTAL
Hr Ending	1	2	3	4	5	6	7	8	9	10	11	12	13	
1	2	0	0	0	0	0	0	0	0	0	1	0	0	3
2	2	0	0	0	0	0	0	0	0	0	0	0	0	2
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	1	0	0	0	0	0	0	0	0	0	0	0	0	1
5	5	0	0	0	0	0	0	0	0	0	0	0	0	5
6	18	1	0	0	0	0	0	2	3	0	1	0	0	25
7	29	1	0	0	0	0	0	0	1	0	0	0	0	31
8	95	5	0	0	0	0	0	1	0	0	0	2	0	103
9	102	3	0	0	0	0	0	2	3	0	1	3	0	114
10	74	3	0	0	0	0	0	0	0	0	0	0	0	77
11	80	4	0	2	1	0	0	2	1	0	1	1	0	92
12	84	2	0	1	0	0	0	0	1	0	0	1	0	89
13	57	1	0	1	0	0	0	1	2	0	2	1	0	65
14	37	2	0	1	0	0	0	1	2	0	2	2	0	47
15	57	1	0	0	0	0	0	0	2	0	2	1	0	63
16	66	0	0	1	0	0	0	1	4	0	2	1	0	75
17	59	2	0	2	0	0	0	0	2	0	0	2	0	67
18	103	1	0	0	0	0	0	0	3	0	0	1	0	108
19	70	1	0	0	0	0	0	0	0	0	0	0	0	71
20	44	1	0	0	0	0	0	0	1	0	0	0	0	46
21	24	1	0	1	0	0	0	0	0	0	0	0	0	26
22	26	2	0	0	0	0	0	0	0	0	0	0	0	28
23	7	0	0	0	0	0	0	0	0	0	0	0	0	7
24	5	0	0	0	0	0	0	0	0	0	0	0	0	5
7-19	884	25	0	8	1	0	0	8	20	0	10	15	0	971
6-22	1007	30	0	9	1	0	0	8	22	0	10	15	0	1102
6-24	1019	30	0	9	1	0	0	8	22	0	10	15	0	1114
0-24	1047	31	0	9	1	0	0	10	25	0	12	15	0	1150

Direction : WESTBOUND

Monday 23/05/2016	VEHICLE CLASSIFICATION													TOTAL
Hr Ending	1	2	3	4	5	6	7	8	9	10	11	12	13	
1	4	0	0	0	0	0	0	0	0	0	0	1	0	5
2	3	0	0	0	0	0	0	0	0	0	0	0	0	3
3	1	0	0	0	0	0	0	0	0	0	0	0	0	1
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	3	0	0	0	0	0	0	0	0	0	0	1	0	4
6	3	0	0	0	0	0	0	1	0	0	1	0	0	5
7	32	1	0	1	0	0	0	0	0	0	1	0	0	35
8	96	2	0	1	0	0	0	2	1	0	1	1	0	104
9	91	3	0	0	0	0	0	1	0	0	1	3	0	99
10	66	3	0	1	0	0	0	1	1	0	3	2	0	77
11	57	3	0	2	0	0	0	1	0	0	0	2	0	65
12	58	2	0	0	0	0	0	1	2	0	1	0	0	64
13	61	2	0	2	0	0	0	0	0	0	2	0	0	67
14	72	2	0	2	0	0	0	1	1	0	0	0	0	78
15	55	2	0	1	0	0	0	2	1	0	0	1	0	62
16	75	3	0	0	0	0	0	0	0	0	1	1	0	80
17	111	5	0	0	0	0	0	0	1	0	0	2	0	119
18	103	2	0	0	0	0	0	0	0	0	0	0	0	105
19	85	2	0	0	0	0	0	0	2	0	2	1	0	92
20	47	1	0	0	0	0	0	0	0	0	1	0	0	49
21	25	0	0	0	0	0	0	0	0	0	0	0	0	25
22	23	1	0	0	0	0	0	0	0	0	0	0	0	24
23	13	0	0	0	0	0	0	0	0	0	0	0	0	13
24	2	0	0	0	0	0	0	0	0	0	0	0	0	2
7-19	930	31	0	9	0	0	0	9	9	0	11	13	0	1012
6-22	1057	34	0	10	0	0	0	9	9	0	13	13	0	1145
6-24	1072	34	0	10	0	0	0	9	9	0	13	13	0	1160
0-24	1086	34	0	10	0	0	0	10	9	0	14	15	0	1178

Automatic Classified Counts, Oakamoor & Whiston ATC

LOCATION: A52 (WESTERN SITE)

Direction : EASTBOUND

Tuesday 24/05/2016	VEHICLE CLASSIFICATION													TOTAL
Hr Ending	1	2	3	4	5	6	7	8	9	10	11	12	13	
1	1	0	0	0	0	0	0	0	0	0	0	0	0	1
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	1	0	0	0	0	0	0	0	0	0	0	0	0	1
5	8	0	0	0	0	0	0	0	0	0	0	0	0	8
6	12	1	0	0	0	0	0	0	1	0	1	0	0	15
7	32	3	0	0	0	0	0	1	2	0	0	0	0	38
8	103	3	0	2	0	0	0	2	1	0	0	2	0	113
9	115	2	0	0	0	0	0	5	0	0	0	3	0	125
10	97	4	0	0	0	0	0	1	3	0	0	2	0	107
11	71	4	0	0	0	0	0	1	3	0	1	2	0	82
12	61	3	0	0	0	0	0	3	0	0	2	1	0	70
13	59	2	0	0	0	0	0	1	2	0	0	3	0	67
14	68	2	0	0	0	0	0	1	1	0	0	1	0	73
15	52	3	0	1	0	0	0	2	2	0	0	2	0	62
16	74	3	0	1	0	0	0	0	0	0	1	1	0	80
17	80	2	0	0	0	0	0	1	2	0	1	1	0	87
18	91	2	0	0	0	0	0	0	0	0	1	2	0	96
19	56	2	0	0	0	0	0	0	1	0	0	1	0	60
20	41	1	0	0	0	0	0	0	1	0	0	0	0	43
21	35	0	0	0	0	0	0	2	0	0	0	0	0	37
22	15	1	0	0	0	0	0	0	0	0	0	0	0	16
23	11	0	0	0	0	0	0	0	0	0	0	0	0	11
24	5	0	0	0	0	0	0	0	0	0	0	0	0	5
7-19	927	32	0	4	0	0	0	17	15	0	6	21	0	1022
6-22	1050	37	0	4	0	0	0	20	18	0	6	21	0	1156
6-24	1066	37	0	4	0	0	0	20	18	0	6	21	0	1172
0-24	1088	38	0	4	0	0	0	20	19	0	7	21	0	1197

Direction : WESTBOUND

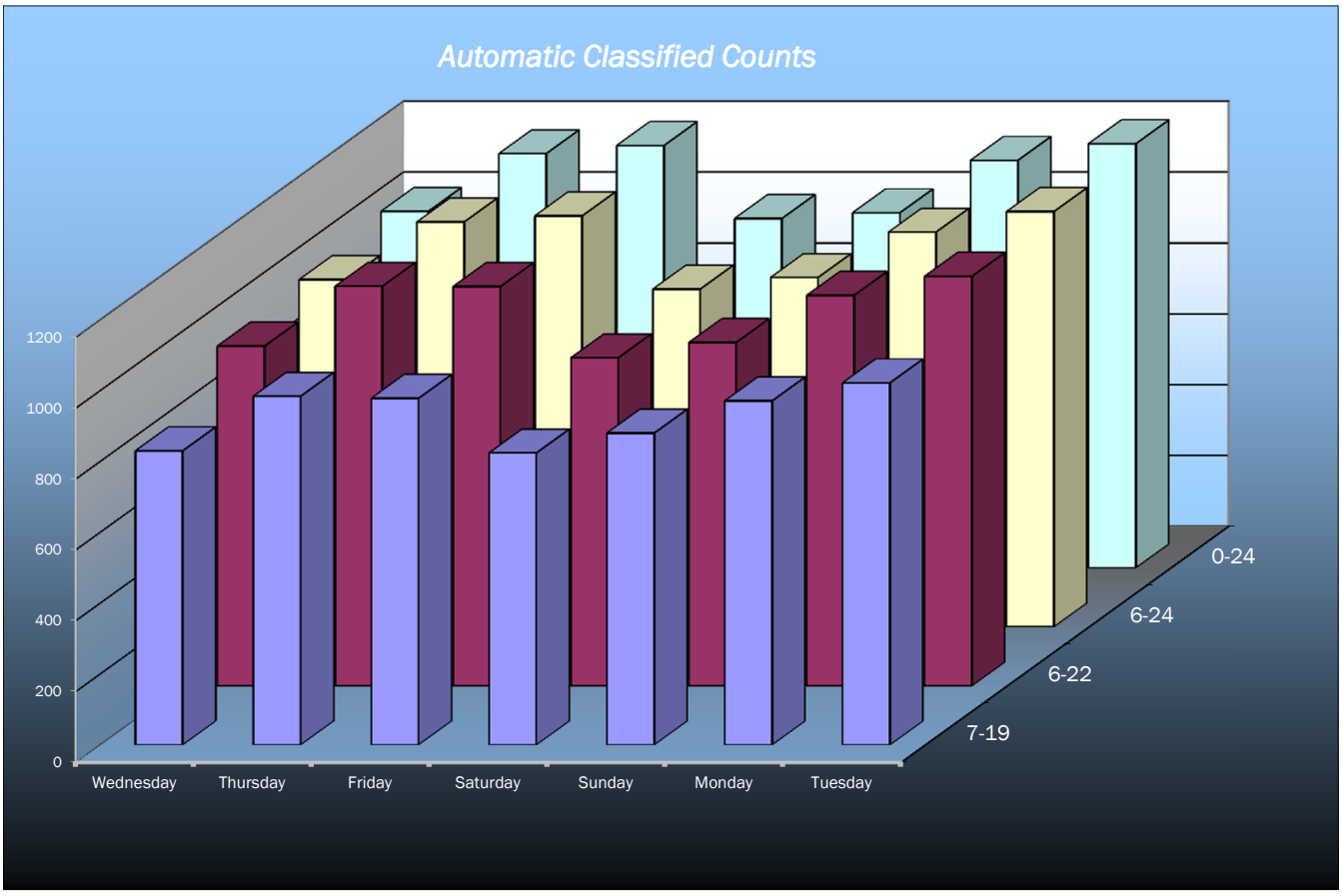
Tuesday 24/05/2016	VEHICLE CLASSIFICATION													TOTAL
Hr Ending	1	2	3	4	5	6	7	8	9	10	11	12	13	
1	2	0	0	0	0	0	0	0	0	0	0	0	0	2
2	2	0	0	0	0	0	0	0	0	0	0	0	0	2
3	1	0	0	0	0	0	0	0	0	0	0	0	0	1
4	1	0	0	0	0	0	0	0	0	0	0	0	0	1
5	3	0	0	0	0	0	0	0	0	0	0	0	0	3
6	8	0	0	0	0	0	0	0	0	0	2	0	0	10
7	36	1	0	0	0	0	0	1	1	0	1	0	0	40
8	76	2	0	1	0	0	0	2	0	0	1	2	0	84
9	80	2	0	0	0	0	0	2	0	0	1	0	0	85
10	60	2	0	1	0	0	0	3	2	0	0	1	0	69
11	42	2	0	0	0	0	0	1	0	0	1	1	0	47
12	42	3	0	0	0	0	0	0	2	0	2	0	0	49
13	57	3	0	0	0	0	0	3	0	0	1	0	0	64
14	59	4	0	1	0	0	0	1	1	0	1	1	0	68
15	85	3	0	2	0	0	0	1	1	0	0	1	0	93
16	100	3	0	0	0	0	0	0	0	0	3	1	0	107
17	129	5	0	0	0	0	0	0	0	0	3	3	0	140
18	110	1	0	0	0	0	0	0	0	0	0	0	0	111
19	73	2	0	0	0	0	0	0	2	0	0	1	0	78
20	38	1	0	0	0	0	0	0	0	0	0	0	0	39
21	18	0	0	0	0	0	0	0	1	0	0	1	0	20
22	21	0	0	0	0	0	0	0	0	0	0	0	0	21
23	22	0	0	0	0	0	0	0	0	0	0	0	0	22
24	6	0	0	0	0	0	0	0	0	0	0	0	0	6
7-19	913	32	0	5	0	0	0	13	8	0	13	11	0	995
6-22	1026	34	0	5	0	0	0	14	10	0	14	12	0	1115
6-24	1054	34	0	5	0	0	0	14	10	0	14	12	0	1143
0-24	1071	34	0	5	0	0	0	14	10	0	16	12	0	1162

Automatic Classified Counts, Oakamoor & Whiston ATC

LOCATION: A52 (WESTERN SITE)

Direction : EASTBOUND

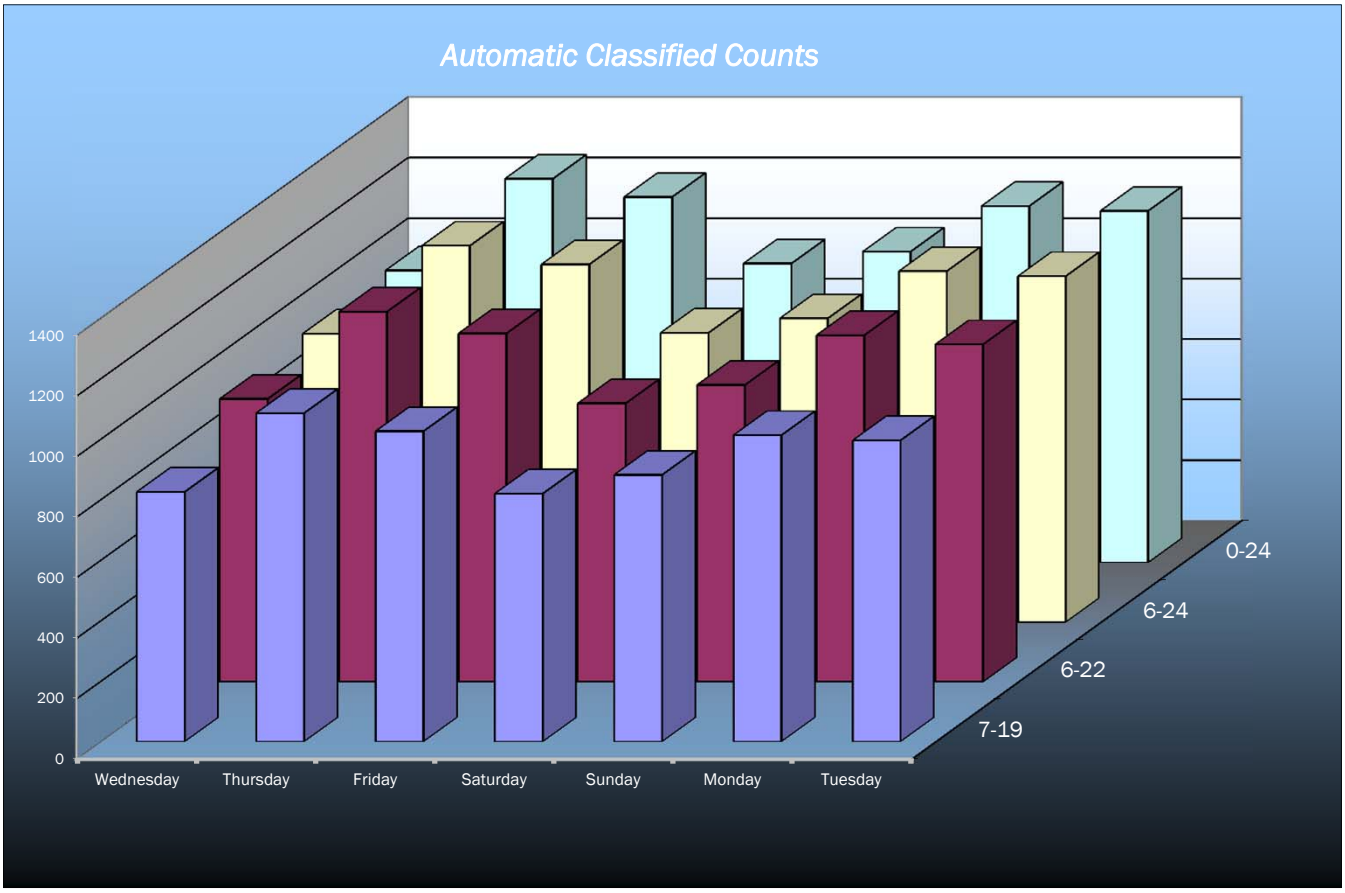
VEHICLE FLOWS									
Hr Ending	Wednesday 18-May-16	Thursday 19-May-16	Friday 20-May-16	Saturday 21-May-16	Sunday 22-May-16	Monday 23-May-16	Tuesday 24-May-16	WEEKDAY AVERAGE	WEEK AVERAGE
1	1	0	2	5	3	3	1	1	2
2	0	0	1	4	5	2	0	1	2
3	2	0	2	5	4	0	0	1	2
4	1	3	3	1	0	1	1	2	1
5	8	6	7	3	0	5	8	7	5
6	14	17	17	15	4	25	15	18	15
7	42	55	43	19	18	31	38	42	35
8	89	93	96	35	35	103	113	99	81
9	77	111	105	59	60	114	125	106	93
10	67	112	85	92	105	77	107	90	92
11	55	90	88	116	117	92	82	81	91
12	56	67	82	98	100	89	70	73	80
13	63	57	57	64	93	65	67	62	67
14	60	64	72	62	84	47	73	63	66
15	52	66	70	74	79	63	62	63	67
16	63	65	83	60	53	75	80	73	68
17	79	82	97	63	61	67	87	82	77
18	100	109	88	56	44	108	96	100	86
19	69	68	55	45	49	71	60	65	60
20	41	40	48	34	37	46	43	44	41
21	27	23	37	29	20	26	37	30	28
22	19	26	21	20	14	28	16	22	21
23	16	13	12	18	10	7	11	12	12
24	5	2	21	9	7	5	5	8	8
7-19	830	984	978	824	880	971	1022	957	927
6-22	959	1128	1127	926	969	1102	1156	1094	1052
6-24	980	1143	1160	953	986	1114	1172	1114	1073
0-24	1006	1169	1192	986	1002	1150	1197	1143	1100



LOCATION: A52 (WESTERN SITE)

Direction : WESTBOUND

WESTBOUND									
Hr Ending	Wednesday 18-May-16	Thursday 19-May-16	Friday 20-May-16	Saturday 21-May-16	Sunday 22-May-16	Monday 23-May-16	Tuesday 24-May-16	WEEKDAY AVERAGE	WEEK AVERAGE
1	2	5	5	13	11	5	2	4	6
2	2	1	2	7	3	3	2	2	3
3	1	2	3	1	3	1	1	2	2
4	1	4	4	2	2	0	1	2	2
5	3	4	5	5	3	4	3	4	4
6	3	8	7	4	1	5	10	7	5
7	41	42	31	8	4	35	40	38	29
8	85	107	97	16	12	104	84	95	72
9	77	82	78	36	18	99	85	84	68
10	58	70	81	57	45	77	69	71	65
11	50	64	68	73	84	65	47	59	64
12	54	62	78	65	78	64	49	61	64
13	57	68	73	84	87	67	64	66	71
14	45	67	60	76	70	78	68	64	66
15	56	98	83	69	106	62	93	78	81
16	81	112	108	85	121	80	107	98	99
17	97	147	118	81	95	119	140	124	114
18	97	112	100	90	91	105	111	105	101
19	68	96	81	87	74	92	78	83	82
20	30	40	54	46	45	49	39	42	43
21	21	36	27	27	26	25	20	26	26
22	18	20	14	20	25	24	21	19	20
23	14	14	21	24	14	13	22	17	17
24	4	7	10	12	9	2	6	6	7
7-19	825	1085	1025	819	881	1012	995	988	949
6-22	935	1223	1151	920	981	1145	1115	1114	1067
6-24	953	1244	1182	956	1004	1160	1143	1136	1092
0-24	965	1268	1208	988	1027	1178	1162	1156	1114



Automatic Classified Counts, Oakamoor & Whiston ATC

LOCATION: CARR BANK

Direction : NORTHBOUND

Wednesday 18/05/2016	VEHICLE CLASSIFICATION													TOTAL
Hr Ending	1	2	3	4	5	6	7	8	9	10	11	12	13	
1	3	0	0	0	0	0	0	0	0	0	0	0	0	3
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	2	0	0	0	0	0	0	0	0	0	0	0	0	2
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	2	0	0	0	0	0	0	0	0	0	0	0	0	2
8	11	0	0	0	0	0	0	0	0	0	0	0	0	11
9	22	2	0	0	0	0	0	0	0	0	0	0	0	24
10	16	0	0	0	0	0	0	0	0	0	0	0	0	16
11	22	0	0	0	0	0	0	0	0	0	0	0	0	22
12	13	2	0	0	0	0	0	0	0	0	0	0	0	15
13	15	2	0	0	0	0	0	0	0	0	0	0	0	17
14	18	3	0	0	0	0	0	0	0	0	0	0	0	21
15	17	2	0	0	0	0	0	0	0	0	0	0	0	19
16	27	2	0	0	0	0	0	0	0	0	0	0	0	29
17	40	2	0	0	0	0	0	0	0	0	0	0	0	42
18	29	2	0	0	0	0	0	0	0	0	0	0	0	31
19	28	2	0	0	0	0	0	0	0	0	0	0	0	30
20	25	0	0	0	0	0	0	0	0	0	0	0	0	25
21	16	2	0	0	0	0	0	0	0	0	0	0	0	18
22	9	0	0	0	0	0	0	0	0	0	0	0	0	9
23	14	0	0	0	0	0	0	0	1	0	0	0	0	15
24	1	0	0	0	0	0	0	0	0	0	0	0	0	1
7-19	258	19	0	0	0	0	0	0	0	0	0	0	0	277
6-22	310	21	0	0	0	0	0	0	0	0	0	0	0	331
6-24	325	21	0	0	0	0	0	0	1	0	0	0	0	347
0-24	330	21	0	0	0	0	0	0	1	0	0	0	0	352

Direction : SOUTHBOUND

Wednesday 18/05/2016	VEHICLE CLASSIFICATION													TOTAL
Hr Ending	1	2	3	4	5	6	7	8	9	10	11	12	13	
1	1	0	0	0	0	0	0	0	0	0	0	0	0	1
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	1	0	0	0	0	0	0	0	0	0	0	0	0	1
6	6	0	0	0	0	0	0	0	0	0	0	0	0	6
7	11	0	0	0	0	0	0	0	0	0	0	0	0	11
8	31	0	0	0	0	0	0	0	0	0	0	0	0	31
9	43	0	0	0	0	0	0	0	0	0	0	0	0	43
10	28	2	0	0	0	0	0	0	0	0	0	0	0	30
11	19	2	0	0	0	0	0	0	0	0	0	0	0	21
12	25	2	0	0	0	0	0	0	0	0	0	0	0	27
13	20	2	0	0	0	0	0	0	0	0	0	0	0	22
14	26	0	0	0	0	0	0	0	0	0	0	0	0	26
15	16	2	0	0	0	0	0	0	0	0	0	0	0	18
16	21	2	0	0	0	0	0	0	0	0	0	0	0	23
17	28	2	0	0	0	0	0	0	0	0	0	0	0	30
18	27	1	0	0	0	0	0	0	0	0	0	0	0	28
19	26	0	0	0	0	0	0	0	0	0	0	0	0	26
20	13	0	0	0	0	0	0	0	0	0	0	0	0	13
21	11	0	0	0	0	0	0	0	0	0	0	0	0	11
22	3	0	0	0	0	0	0	0	0	0	0	0	0	3
23	5	0	0	0	0	0	0	0	0	0	0	0	0	5
24	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7-19	310	15	0	0	0	0	0	0	0	0	0	0	0	325
6-22	348	15	0	0	0	0	0	0	0	0	0	0	0	363
6-24	353	15	0	0	0	0	0	0	0	0	0	0	0	368
0-24	361	15	0	0	0	0	0	0	0	0	0	0	0	376

Automatic Classified Counts, Oakamoor & Whiston ATC

LOCATION: CARR BANK

Direction : NORTHBOUND

Thursday 19/05/2016	VEHICLE CLASSIFICATION													TOTAL
Hr Ending	1	2	3	4	5	6	7	8	9	10	11	12	13	
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	1	0	0	0	0	0	0	0	0	0	0	0	0	1
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	1	0	0	0	0	0	0	0	0	0	0	0	0	1
6	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	5	0	0	0	0	0	0	0	0	0	0	0	0	5
8	14	1	0	0	0	0	0	0	0	0	0	1	0	16
9	23	0	0	0	0	0	0	0	0	0	0	0	0	23
10	25	1	0	0	0	0	0	0	0	0	0	1	0	27
11	14	1	0	0	0	0	0	0	0	0	0	0	0	15
12	15	1	0	0	0	0	0	0	0	0	0	0	0	16
13	13	1	0	0	0	0	0	0	0	0	0	0	0	14
14	19	1	0	0	0	0	0	0	0	0	0	0	0	20
15	21	1	0	0	0	0	0	0	0	0	0	0	0	22
16	28	1	0	0	0	0	0	0	0	0	0	0	0	29
17	33	2	0	0	0	0	0	0	0	0	0	0	0	35
18	36	2	0	0	0	0	0	0	0	0	0	0	0	38
19	24	0	0	0	0	0	0	0	0	0	0	0	0	24
20	20	0	0	0	0	0	0	0	0	0	0	0	0	20
21	15	1	0	0	0	0	0	0	0	0	0	0	0	16
22	11	1	0	0	0	0	0	0	0	0	0	0	0	12
23	8	0	0	0	0	0	0	0	0	0	0	0	0	8
24	4	0	0	0	0	0	0	0	0	0	0	0	0	4
7-19	265	12	0	0	0	0	0	0	0	0	0	2	0	279
6-22	316	14	0	0	0	0	0	0	0	0	0	2	0	332
6-24	328	14	0	0	0	0	0	0	0	0	0	2	0	344
0-24	330	14	0	0	0	0	0	0	0	0	0	2	0	346

Direction : SOUTHBOUND

Thursday 19/05/2016	VEHICLE CLASSIFICATION													TOTAL
Hr Ending	1	2	3	4	5	6	7	8	9	10	11	12	13	
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	1	0	0	0	0	0	0	0	0	0	0	0	0	1
6	6	0	0	0	0	0	0	0	0	0	0	0	0	6
7	9	1	0	0	0	0	0	0	0	0	0	0	0	10
8	40	0	0	0	0	0	0	0	0	0	0	0	0	40
9	33	1	0	0	0	0	0	1	0	0	0	0	0	35
10	30	1	0	0	0	0	0	0	0	0	0	0	0	31
11	24	0	0	0	0	0	0	0	0	0	0	0	0	24
12	27	0	0	0	0	0	0	0	0	0	0	0	0	27
13	22	1	0	0	0	0	0	0	0	0	0	0	0	23
14	14	0	0	0	0	0	0	0	0	0	0	0	0	14
15	18	1	0	0	0	0	0	0	0	0	0	0	0	19
16	26	0	0	0	0	0	0	0	0	0	0	0	0	26
17	20	0	0	0	0	0	0	0	0	0	0	0	0	20
18	27	0	0	0	0	0	0	0	0	0	0	0	0	27
19	14	0	0	0	0	0	0	0	0	0	0	0	0	14
20	11	0	0	0	0	0	0	0	0	0	0	0	0	11
21	8	0	0	0	0	0	0	0	0	0	0	0	0	8
22	6	0	0	0	0	0	0	0	0	0	0	0	0	6
23	3	0	0	0	0	0	0	0	0	0	0	0	0	3
24	2	0	0	0	0	0	0	0	0	0	0	0	0	2
7-19	295	4	0	0	0	0	0	1	0	0	0	0	0	300
6-22	329	5	0	0	0	0	0	1	0	0	0	0	0	335
6-24	334	5	0	0	0	0	0	1	0	0	0	0	0	340
0-24	341	5	0	0	0	0	0	1	0	0	0	0	0	347

Automatic Classified Counts, Oakamoor & Whiston ATC

LOCATION: CARR BANK

Direction : NORTHBOUND

Friday 20/05/2016	VEHICLE CLASSIFICATION													TOTAL
Hr Ending	1	2	3	4	5	6	7	8	9	10	11	12	13	
1	1	0	0	0	0	0	0	0	0	0	0	0	0	1
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	2	0	0	0	0	0	0	0	0	0	0	0	0	2
8	12	0	0	0	0	0	0	0	0	0	0	0	0	12
9	21	0	0	0	0	0	0	0	0	0	0	0	0	21
10	17	2	0	0	0	0	0	0	0	0	0	0	0	19
11	16	1	0	0	0	0	0	0	0	0	0	0	0	17
12	13	1	0	0	0	0	0	0	0	0	0	0	0	14
13	13	1	0	0	0	0	0	0	0	0	0	0	0	14
14	13	0	0	0	0	0	0	0	0	0	0	0	0	13
15	24	0	0	0	0	0	0	0	0	0	0	1	0	25
16	38	2	0	0	0	0	0	0	0	0	0	0	0	40
17	30	1	0	0	0	0	0	0	0	0	0	0	0	31
18	38	1	0	0	0	0	0	0	0	0	0	0	0	39
19	32	1	0	0	0	0	0	0	0	0	0	0	0	33
20	10	0	0	0	0	0	0	0	0	0	0	0	0	10
21	17	0	0	0	0	0	0	0	0	0	0	0	0	17
22	17	0	0	0	0	0	0	0	0	0	0	0	0	17
23	11	0	0	0	0	0	0	0	0	0	0	0	0	11
24	8	0	0	0	0	0	0	0	0	0	0	0	0	8
7-19	267	10	0	0	0	0	0	0	0	0	0	1	0	278
6-22	313	10	0	0	0	0	0	0	0	0	0	1	0	324
6-24	332	10	0	0	0	0	0	0	0	0	0	1	0	343
0-24	333	10	0	0	0	0	0	0	0	0	0	1	0	344

Direction : SOUTHBOUND

Friday 20/05/2016	VEHICLE CLASSIFICATION													TOTAL
Hr Ending	1	2	3	4	5	6	7	8	9	10	11	12	13	
1	1	0	0	0	0	0	0	0	0	0	0	0	0	1
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	1	0	0	0	0	0	0	0	0	0	0	0	0	1
5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	8	0	0	0	0	0	0	0	0	0	0	0	0	8
7	15	0	0	0	0	0	0	0	0	0	0	0	0	15
8	35	0	0	0	0	0	0	0	0	0	0	0	0	35
9	35	0	0	0	0	0	0	0	0	0	0	0	0	35
10	31	1	0	0	0	0	0	0	0	0	0	0	0	32
11	25	1	1	0	0	0	0	0	0	0	0	0	0	27
12	15	0	0	0	0	0	0	0	0	0	0	0	0	15
13	25	1	0	0	0	0	0	0	0	0	0	0	0	26
14	31	0	0	0	0	0	0	0	0	0	0	0	0	31
15	18	1	0	0	0	0	0	0	0	0	0	0	0	19
16	26	1	0	0	0	0	0	0	0	0	0	0	0	27
17	27	1	0	0	0	0	0	0	0	0	0	0	0	28
18	18	0	0	0	0	0	0	0	0	0	0	0	0	18
19	22	0	0	0	0	0	0	0	0	0	0	0	0	22
20	15	0	0	0	0	0	0	0	0	0	0	0	0	15
21	10	0	0	0	0	0	0	0	0	0	0	0	0	10
22	9	0	0	0	0	0	0	0	0	0	0	0	0	9
23	4	0	0	0	0	0	0	0	0	0	0	0	0	4
24	3	0	0	0	0	0	0	0	0	0	0	0	0	3
7-19	308	6	1	0	0	0	0	0	0	0	0	0	0	315
6-22	357	6	1	0	0	0	0	0	0	0	0	0	0	364
6-24	364	6	1	0	0	0	0	0	0	0	0	0	0	371
0-24	374	6	1	0	0	0	0	0	0	0	0	0	0	381

Automatic Classified Counts, Oakamoor & Whiston ATC

LOCATION: CARR BANK

Direction : NORTHBOUND

Saturday 21/05/2016	VEHICLE CLASSIFICATION													TOTAL
Hr Ending	1	2	3	4	5	6	7	8	9	10	11	12	13	
1	5	0	0	0	0	0	0	0	0	0	0	0	0	5
2	2	0	0	0	0	0	0	0	0	0	0	0	0	2
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	1	0	0	0	0	0	0	0	0	0	0	0	0	1
6	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	1	0	0	0	0	0	0	0	0	0	0	0	0	1
8	2	0	0	0	0	0	0	0	0	0	0	0	0	2
9	8	0	0	0	0	0	0	0	0	0	0	0	0	8
10	9	1	0	0	0	0	0	0	0	0	0	0	0	10
11	11	0	0	0	0	0	0	0	0	0	0	0	0	11
12	28	1	0	0	0	0	0	0	0	0	0	0	0	29
13	22	0	0	0	0	0	0	0	0	0	0	0	0	22
14	21	1	0	0	0	0	0	0	0	0	0	0	0	22
15	22	1	0	0	0	0	0	0	0	0	0	0	0	23
16	23	0	0	0	0	0	0	0	0	0	0	0	0	23
17	27	1	0	0	0	0	0	0	0	0	0	0	0	28
18	19	0	0	0	0	0	0	0	0	0	0	0	0	19
19	27	0	0	0	0	0	0	0	0	0	0	0	0	27
20	21	1	0	0	0	0	0	0	0	0	0	0	0	22
21	16	0	0	0	0	0	0	0	0	0	0	0	0	16
22	12	0	0	0	0	0	0	0	0	0	0	0	0	12
23	17	0	0	0	0	0	0	0	0	0	0	0	0	17
24	6	0	0	0	0	0	0	0	0	0	0	0	0	6
7-19	219	5	0	0	0	0	0	0	0	0	0	0	0	224
6-22	269	6	0	0	0	0	0	0	0	0	0	0	0	275
6-24	292	6	0	0	0	0	0	0	0	0	0	0	0	298
0-24	300	6	0	0	0	0	0	0	0	0	0	0	0	306

Direction : SOUTHBOUND

Saturday 21/05/2016	VEHICLE CLASSIFICATION													TOTAL
Hr Ending	1	2	3	4	5	6	7	8	9	10	11	12	13	
1	2	0	0	0	0	0	0	0	0	0	0	0	0	2
2	1	0	0	0	0	0	0	0	0	0	0	0	0	1
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	2	0	0	0	0	0	0	0	0	0	0	0	0	2
6	5	0	0	0	0	0	0	0	0	0	0	0	0	5
7	9	0	0	0	0	0	0	0	0	0	0	0	0	9
8	10	0	0	0	0	0	0	0	0	0	0	0	0	10
9	25	0	0	0	0	0	0	0	0	0	0	0	0	25
10	23	1	0	0	0	0	0	0	0	0	0	0	0	24
11	37	0	0	0	0	0	0	0	0	0	0	0	0	37
12	33	0	0	0	0	0	0	0	0	0	0	0	0	33
13	18	0	0	0	0	0	0	0	0	0	0	0	0	18
14	25	0	0	0	0	0	0	0	0	0	0	0	0	25
15	13	0	0	0	0	0	0	0	0	0	0	0	0	13
16	17	0	0	0	0	0	0	0	0	0	0	0	0	17
17	19	0	0	0	0	0	0	0	0	0	0	0	0	19
18	20	0	0	0	0	0	0	0	0	0	0	0	0	20
19	21	0	0	0	0	0	0	0	0	0	0	0	0	21
20	35	0	0	0	0	0	0	0	0	0	0	0	0	35
21	16	0	0	0	0	0	0	0	0	0	0	0	0	16
22	5	0	0	0	0	0	0	0	0	0	0	0	0	5
23	4	0	0	0	0	0	0	0	0	0	0	0	0	4
24	3	0	0	0	0	0	0	0	0	0	0	0	0	3
7-19	261	1	0	0	0	0	0	0	0	0	0	0	0	262
6-22	326	1	0	0	0	0	0	0	0	0	0	0	0	327
6-24	333	1	0	0	0	0	0	0	0	0	0	0	0	334
0-24	343	1	0	0	0	0	0	0	0	0	0	0	0	344

Automatic Classified Counts, Oakamoor & Whiston ATC

LOCATION: CARR BANK

Direction : NORTHBOUND

Sunday 22/05/2016	VEHICLE CLASSIFICATION													TOTAL
Hr Ending	1	2	3	4	5	6	7	8	9	10	11	12	13	
1	4	0	0	0	0	0	0	0	0	0	0	0	0	4
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	1	0	0	0	0	0	0	0	0	0	0	0	0	1
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	2	0	0	0	0	0	0	0	0	0	0	0	0	2
8	6	0	0	0	0	0	0	0	0	0	0	0	0	6
9	6	0	0	0	0	0	0	0	0	0	0	0	0	6
10	10	0	0	0	0	0	0	0	0	0	0	0	0	10
11	27	1	0	0	0	0	0	0	0	0	0	0	0	28
12	23	0	0	0	0	0	0	0	0	0	0	0	0	23
13	20	1	0	0	0	0	0	0	0	0	0	0	0	21
14	29	1	0	0	0	0	0	0	0	0	0	0	0	30
15	35	1	0	0	0	0	0	0	0	0	0	0	0	36
16	20	0	0	0	0	0	0	0	0	0	0	0	0	20
17	32	0	0	0	0	0	0	0	0	0	0	0	0	32
18	16	1	0	0	0	0	0	0	0	0	0	0	0	17
19	15	1	0	0	0	0	0	0	0	0	0	0	0	16
20	22	1	0	0	0	0	0	0	0	0	0	0	0	23
21	16	0	0	0	0	0	0	0	0	0	0	0	0	16
22	8	0	0	0	0	0	0	0	0	0	0	0	0	8
23	2	0	0	0	0	0	0	0	0	0	0	0	0	2
24	3	0	0	0	0	0	0	0	0	0	0	0	0	3
7-19	239	6	0	0	0	0	0	0	0	0	0	0	0	245
6-22	287	7	0	0	0	0	0	0	0	0	0	0	0	294
6-24	292	7	0	0	0	0	0	0	0	0	0	0	0	299
0-24	297	7	0	0	0	0	0	0	0	0	0	0	0	304

Direction : SOUTHBOUND

Sunday 22/05/2016	VEHICLE CLASSIFICATION													TOTAL
Hr Ending	1	2	3	4	5	6	7	8	9	10	11	12	13	
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	2	0	0	0	0	0	0	0	0	0	0	0	0	2
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	1	0	0	0	0	0	0	0	0	0	0	0	0	1
6	2	0	0	0	0	0	0	0	0	0	0	0	0	2
7	4	0	0	0	0	0	0	0	0	0	0	0	0	4
8	8	0	0	0	0	0	0	0	0	0	0	0	0	8
9	12	0	0	0	0	0	0	0	0	0	0	0	0	12
10	20	0	0	0	0	0	0	0	0	0	0	0	0	20
11	44	1	0	0	0	0	0	0	0	0	0	0	0	45
12	24	0	0	0	0	0	0	0	0	0	0	0	0	24
13	33	0	0	0	0	0	0	0	0	0	0	0	0	33
14	27	1	0	0	0	0	0	0	0	0	0	0	0	28
15	28	0	0	0	0	0	0	0	0	0	0	0	0	28
16	22	0	0	0	0	0	0	0	0	0	0	0	0	22
17	19	0	0	0	0	0	0	0	0	0	0	0	0	19
18	22	0	0	0	0	0	0	0	0	0	0	0	0	22
19	19	0	0	0	0	0	0	0	0	0	0	0	0	19
20	15	0	0	0	0	0	0	0	0	0	0	0	0	15
21	13	0	0	0	0	0	0	0	0	0	0	0	0	13
22	4	0	0	0	0	0	0	0	0	0	0	0	0	4
23	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24	1	0	0	0	0	0	0	0	0	0	0	0	0	1
7-19	278	2	0	0	0	0	0	0	0	0	0	0	0	280
6-22	314	2	0	0	0	0	0	0	0	0	0	0	0	316
6-24	315	2	0	0	0	0	0	0	0	0	0	0	0	317
0-24	320	2	0	0	0	0	0	0	0	0	0	0	0	322

Automatic Classified Counts, Oakamoor & Whiston ATC

LOCATION: CARR BANK

Direction : NORTHBOUND

Monday 23/05/2016	VEHICLE CLASSIFICATION													TOTAL
Hr Ending	1	2	3	4	5	6	7	8	9	10	11	12	13	
1	1	0	0	0	0	0	0	0	0	0	0	0	0	1
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	1	0	0	0	0	0	0	0	0	0	0	0	0	1
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	1	0	0	0	0	0	0	0	0	0	0	0	0	1
7	3	0	0	0	0	0	0	0	0	0	0	0	0	3
8	10	1	0	0	0	0	0	0	0	0	0	0	0	11
9	28	3	0	0	0	0	0	0	0	0	0	0	0	31
10	20	2	0	0	0	0	0	0	0	0	0	1	0	23
11	14	2	0	0	0	0	0	0	0	0	0	1	0	17
12	15	1	0	0	0	0	0	0	0	0	0	0	0	16
13	17	0	0	0	0	0	0	0	0	0	0	0	0	17
14	18	0	0	0	0	0	0	0	0	0	0	0	0	18
15	48	2	0	0	0	0	0	0	0	0	0	0	0	50
16	28	2	0	0	0	0	0	0	0	0	0	1	0	31
17	36	3	0	0	0	0	0	0	0	0	0	0	0	39
18	30	1	0	0	0	0	0	0	0	0	0	0	0	31
19	32	2	0	0	0	0	0	0	0	0	0	0	0	34
20	17	0	0	0	0	0	0	0	0	0	0	0	0	17
21	16	0	0	0	0	0	0	0	0	0	0	0	0	16
22	18	0	0	0	0	0	0	0	0	0	0	0	0	18
23	6	0	0	0	0	0	0	0	0	0	0	0	0	6
24	1	0	0	0	0	0	0	0	0	0	0	0	0	1
7-19	296	19	0	0	0	0	0	0	0	0	0	3	0	318
6-22	350	19	0	0	0	0	0	0	0	0	0	3	0	372
6-24	357	19	0	0	0	0	0	0	0	0	0	3	0	379
0-24	360	19	0	0	0	0	0	0	0	0	0	3	0	382

Direction : SOUTHBOUND

Monday 23/05/2016	VEHICLE CLASSIFICATION													TOTAL
Hr Ending	1	2	3	4	5	6	7	8	9	10	11	12	13	
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	1	0	0	0	0	0	0	0	0	0	0	0	0	1
5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	8	0	0	0	0	0	0	0	0	0	0	0	0	8
7	14	0	0	0	0	0	0	0	0	0	0	0	0	14
8	36	1	0	0	0	0	0	0	0	0	0	0	0	37
9	41	1	0	0	0	0	0	0	0	0	0	0	0	42
10	32	1	0	0	0	0	0	0	0	0	0	0	0	33
11	16	2	0	0	0	0	0	0	0	0	0	1	0	19
12	22	2	0	0	0	0	0	0	0	0	0	0	0	24
13	20	0	0	0	0	0	0	0	0	0	0	0	0	20
14	24	1	0	0	0	0	0	0	0	0	0	0	0	25
15	27	0	0	0	0	0	0	0	0	0	0	0	0	27
16	32	1	0	0	0	0	0	0	0	0	0	0	0	33
17	34	1	0	0	0	0	0	0	0	0	0	0	0	35
18	49	1	0	0	0	0	0	0	0	0	0	0	0	50
19	28	0	0	0	0	0	0	0	0	0	0	0	0	28
20	17	0	0	0	0	0	0	0	0	0	0	0	0	17
21	7	0	0	0	0	0	0	0	0	0	0	0	0	7
22	4	0	0	0	0	0	0	0	0	0	0	0	0	4
23	7	0	0	0	0	0	0	0	0	0	0	0	0	7
24	1	0	0	0	0	0	0	0	0	0	0	0	0	1
7-19	361	11	0	0	0	0	0	0	0	0	0	1	0	373
6-22	403	11	0	0	0	0	0	0	0	0	0	1	0	415
6-24	411	11	0	0	0	0	0	0	0	0	0	1	0	423
0-24	420	11	0	0	0	0	0	0	0	0	0	1	0	432

Automatic Classified Counts, Oakamoor & Whiston ATC

LOCATION: CARR BANK

Direction : NORTHBOUND

Tuesday 24/05/2016	VEHICLE CLASSIFICATION													TOTAL
Hr Ending	1	2	3	4	5	6	7	8	9	10	11	12	13	
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	1	0	0	0	0	0	0	0	0	0	0	0	0	1
6	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	3	0	0	0	0	0	0	0	0	0	0	0	0	3
8	13	1	0	0	0	0	0	0	0	0	0	0	0	14
9	22	1	0	0	0	0	0	0	0	0	0	1	0	24
10	24	1	0	0	0	0	0	0	0	0	0	0	0	25
11	9	1	0	0	0	0	0	0	0	0	0	0	0	10
12	14	1	0	0	0	0	0	0	0	0	0	0	0	15
13	11	1	0	0	0	0	0	0	0	0	0	0	0	12
14	12	1	0	0	0	0	0	0	0	0	0	1	0	14
15	13	1	0	0	0	0	0	0	0	0	0	0	0	14
16	26	2	0	0	0	0	0	0	0	0	0	0	0	28
17	39	2	0	0	0	0	0	0	0	0	0	0	0	41
18	36	3	0	0	0	0	0	0	0	0	0	0	0	39
19	28	0	0	0	0	0	0	0	0	0	0	0	0	28
20	10	1	0	0	0	0	0	0	0	0	0	0	0	11
21	28	0	0	0	0	0	0	0	0	0	0	0	0	28
22	17	1	0	0	0	0	0	0	0	0	0	0	0	18
23	11	0	0	0	0	0	0	0	0	0	0	0	0	11
24	3	0	0	0	0	0	0	0	0	0	0	0	0	3
7-19	247	15	0	0	0	0	0	0	0	0	0	2	0	264
6-22	305	17	0	0	0	0	0	0	0	0	0	2	0	324
6-24	319	17	0	0	0	0	0	0	0	0	0	2	0	338
0-24	320	17	0	0	0	0	0	0	0	0	0	2	0	339

Direction : SOUTHBOUND

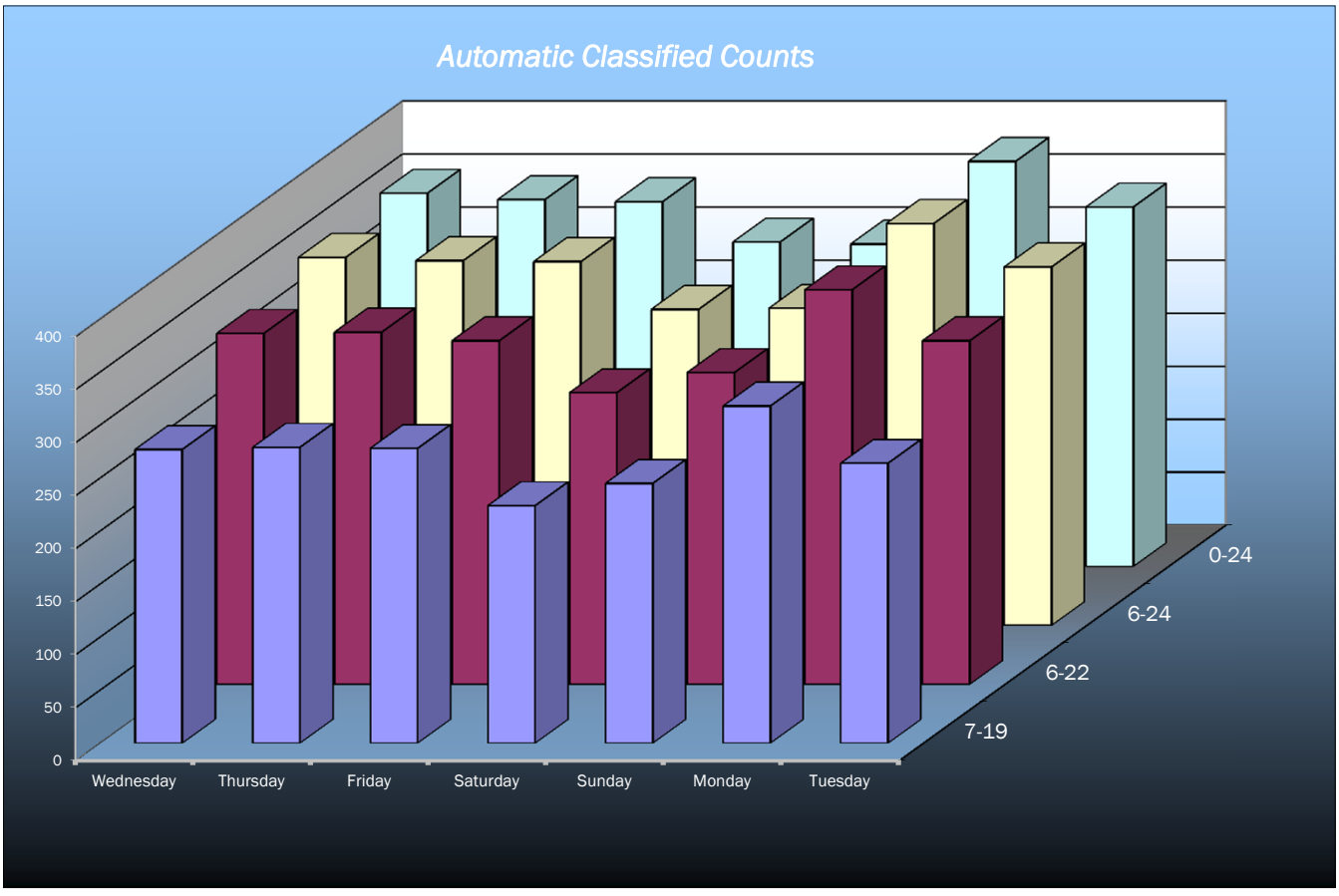
Tuesday 24/05/2016	VEHICLE CLASSIFICATION													TOTAL
Hr Ending	1	2	3	4	5	6	7	8	9	10	11	12	13	
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	1	0	0	0	0	0	0	0	0	0	0	0	0	1
6	4	0	0	0	0	0	0	0	0	0	0	0	0	4
7	12	0	0	0	0	0	0	0	0	0	0	0	0	12
8	38	2	0	0	0	0	0	0	0	0	0	0	0	40
9	46	0	0	0	0	0	0	0	0	0	0	0	0	46
10	32	0	0	0	0	0	0	0	0	0	0	0	0	32
11	22	1	0	0	0	0	0	0	0	0	0	0	0	23
12	10	1	0	0	0	0	0	0	0	0	0	0	0	11
13	25	0	0	0	0	0	0	0	0	0	0	1	0	26
14	18	1	0	0	0	0	0	0	0	0	0	0	0	19
15	23	1	0	0	0	0	0	0	0	0	0	0	0	24
16	36	1	0	0	0	0	0	0	0	0	0	0	0	37
17	27	0	0	0	0	0	0	0	0	0	0	0	0	27
18	37	1	0	0	0	0	0	0	0	0	0	0	0	38
19	21	0	0	0	0	0	0	0	0	0	0	0	0	21
20	6	0	0	0	0	0	0	0	0	0	0	0	0	6
21	21	1	0	0	0	0	0	0	0	0	0	0	0	22
22	12	0	0	0	0	0	0	0	0	0	0	0	0	12
23	8	0	0	0	0	0	0	0	0	0	0	0	0	8
24	1	0	0	0	0	0	0	0	0	0	0	0	0	1
7-19	335	8	0	0	0	0	0	0	0	0	0	1	0	344
6-22	386	9	0	0	0	0	0	0	0	0	0	1	0	396
6-24	395	9	0	0	0	0	0	0	0	0	0	1	0	405
0-24	400	9	0	0	0	0	0	0	0	0	0	1	0	410

Automatic Classified Counts, Oakamoor & Whiston ATC

LOCATION: CARR BANK

Direction : NORTHBOUND

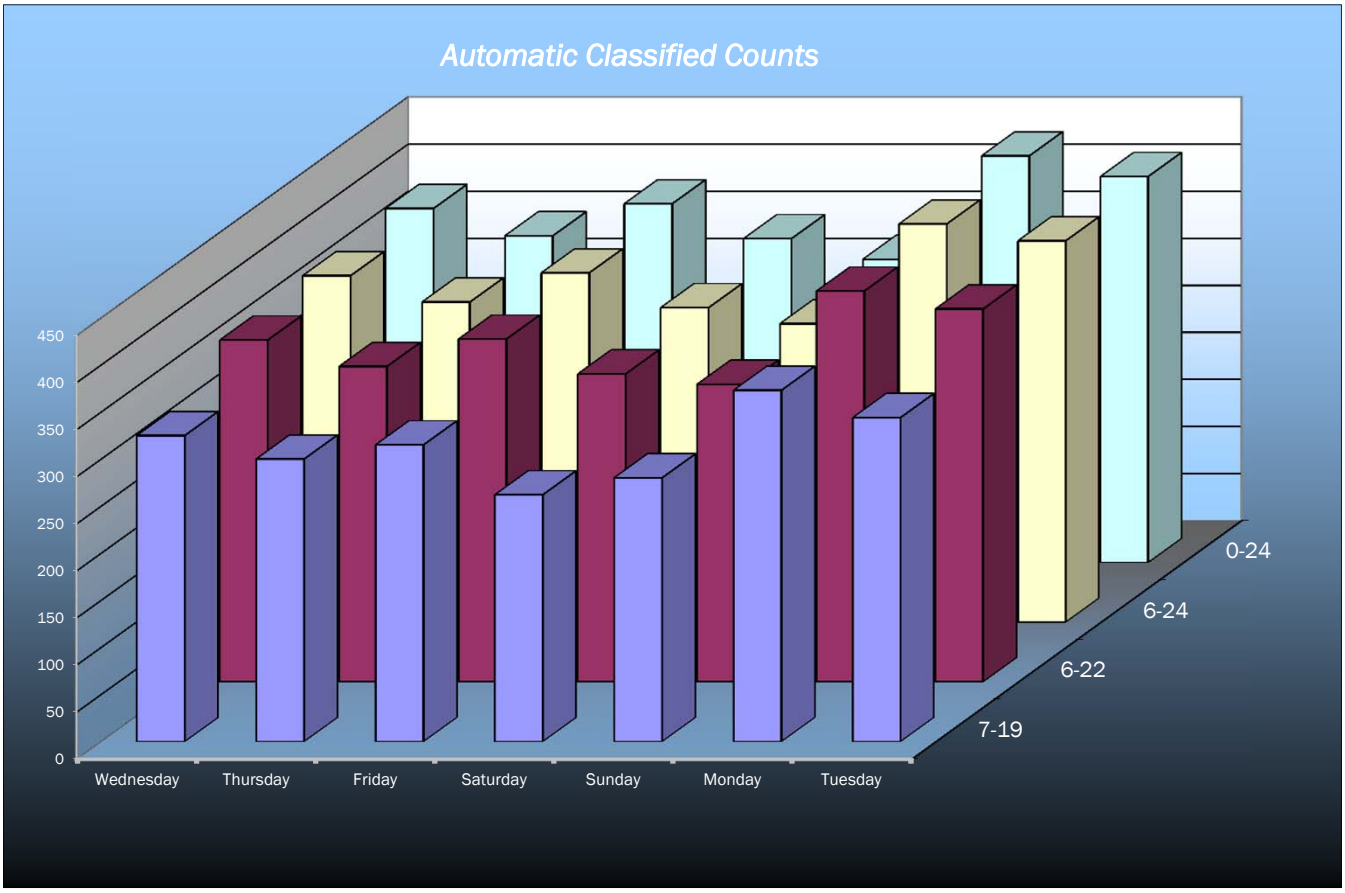
VEHICLE FLOWS									
Hr Ending	Wednesday 18-May-16	Thursday 19-May-16	Friday 20-May-16	Saturday 21-May-16	Sunday 22-May-16	Monday 23-May-16	Tuesday 24-May-16	WEEKDAY AVERAGE	WEEK AVERAGE
1	3	0	1	5	4	1	0	1	2
2	0	0	0	2	0	0	0	0	0
3	2	1	0	0	1	1	0	1	1
4	0	0	0	0	0	0	0	0	0
5	0	1	0	1	0	0	1	0	0
6	0	0	0	0	0	1	0	0	0
7	2	5	2	1	2	3	3	3	3
8	11	16	12	2	6	11	14	13	10
9	24	23	21	8	6	31	24	25	20
10	16	27	19	10	10	23	25	22	19
11	22	15	17	11	28	17	10	16	17
12	15	16	14	29	23	16	15	15	18
13	17	14	14	22	21	17	12	15	17
14	21	20	13	22	30	18	14	17	20
15	19	22	25	23	36	50	14	26	27
16	29	29	40	23	20	31	28	31	29
17	42	35	31	28	32	39	41	38	35
18	31	38	39	19	17	31	39	36	31
19	30	24	33	27	16	34	28	30	27
20	25	20	10	22	23	17	11	17	18
21	18	16	17	16	16	16	28	19	18
22	9	12	17	12	8	18	18	15	13
23	15	8	11	17	2	6	11	10	10
24	1	4	8	6	3	1	3	3	4
7-19	277	279	278	224	245	318	264	283	269
6-22	331	332	324	275	294	372	324	337	322
6-24	347	344	343	298	299	379	338	350	335
0-24	352	346	344	306	304	382	339	353	339



LOCATION: CARR BANK

Direction : SOUTHBOUND

SOUTHBOUND									
Hr Ending	Wednesday 18-May-16	Thursday 19-May-16	Friday 20-May-16	Saturday 21-May-16	Sunday 22-May-16	Monday 23-May-16	Tuesday 24-May-16	WEEKDAY AVERAGE	WEEK AVERAGE
1	1	0	1	2	0	0	0	0	1
2	0	0	0	1	0	0	0	0	0
3	0	0	0	0	2	0	0	0	0
4	0	0	1	0	0	1	0	0	0
5	1	1	0	2	1	0	1	1	1
6	6	6	8	5	2	8	4	6	6
7	11	10	15	9	4	14	12	12	11
8	31	40	35	10	8	37	40	37	29
9	43	35	35	25	12	42	46	40	34
10	30	31	32	24	20	33	32	32	29
11	21	24	27	37	45	19	23	23	28
12	27	27	15	33	24	24	11	21	23
13	22	23	26	18	33	20	26	23	24
14	26	14	31	25	28	25	19	23	24
15	18	19	19	13	28	27	24	21	21
16	23	26	27	17	22	33	37	29	26
17	30	20	28	19	19	35	27	28	25
18	28	27	18	20	22	50	38	32	29
19	26	14	22	21	19	28	21	22	22
20	13	11	15	35	15	17	6	12	16
21	11	8	10	16	13	7	22	12	12
22	3	6	9	5	4	4	12	7	6
23	5	3	4	4	0	7	8	5	4
24	0	2	3	3	1	1	1	1	2
7-19	325	300	315	262	280	373	344	331	314
6-22	363	335	364	327	316	415	396	375	359
6-24	368	340	371	334	317	423	405	381	365
0-24	376	347	381	344	322	432	410	389	373



Appendix B 2024 Traffic Surveys


1834 A52, Whiston, Stoke-on-Trent ST10 2BF, UK
233°SW (T) 53.022064, -1.94557 ±10m ▲ 258m
Oakamoor
SLOW
WHISTON HALL GC
& WEDDING VENUE

MetroCount Traffic Executive	
Default SES (modified)	
CustomList-619 -- English (ENG)	
Datasets:	
Site:	[TTS-1722-002] A52, Whiston <40m>
Attribute:	sign
Direction:	8 - East bound A>B, West bound B>A. Lane: 0
Survey Duration:	11:15 17 April 2024 => 12:48 25 April 2024,
Zone:	
File:	TTS-1722-002 0 2024-04-25 1248.EC0 (Plus)
Identifier:	XD963MJH MC5900-X13 (c)MetroCount 09Nov16
Algorithm:	Factory default axle (v5.06)
Data type:	Axle sensors - Paired (Class/Speed/Count)
Profile:	
Filter time:	00:00 18 April 2024 => 00:00 25 April 2024 (7)
Included classes:	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11
Speed range:	5 - 100 mph.
Direction:	East (bound), P = East, Lane = 0-16
Separation:	Headway > 0 sec, Span 0 - 100 metre
Name:	Default Profile
Scheme:	Vehicle classification (DfT-UK)
Units:	Part metric (metre, mi, m/s, mph, kg, tonne)
Column Legend:	
0 [Time]	24-hour time (0000 - 2359)
1 [Total]	Number in time step
2 [Cls]	Class totals
3 [Vbin]	Speed bin totals
4 [Mean]	Average speed
5 [Vpp]	Percentile speed
6 [>PSL]	Number exceeding Posted Speed Limit
7 [>PSL%]	Percent exceeding Posted Speed Limit
8 [>SL1]	Number exceeding Speed Limit 1
9 [>SL1%]	Percent exceeding Speed Limit 1
10 [>SL2]	Number exceeding Speed Limit 2
11 [>SL2%]	Percent exceeding Speed Limit 2
12 [Mean]	Average speed
13 [Vpp]	Percentile speed

* 18 April 2024	Classifications												Speeds																								
Time	Total	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Mean	Vpp	>PSL	>PSL%	>SL1	>SL1%	>SL2	>SL2%	Mean	Vpp
<--		1	2	3	4	5	6	7	8	9	10	11	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75		85	40	40	40	40	40	40		85
													10	15	20	25	30	35	40	45	50	55	60	65	70	75	80										
0000	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	38	-	0	0	0	0	0	0	38	-
0100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
0200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
0300	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	38	-	0	0	0	0	0	0	38	-
0400	9	0	0	3	6	0	0	0	0	0	0	0	0	0	0	0	0	0	6	3	0	0	0	0	0	0	0	39.4	-	3	33.33	3	33.33	3	33.33	39.4	-
0500	23	0	0	9	11	2	0	0	0	0	1	0	0	0	0	0	0	4	9	9	1	0	0	0	0	0	0	38.6	42	10	43.48	10	43.48	10	43.48	38.6	42
0600	53	0	1	24	25	1	1	1	0	0	0	0	0	0	0	1	2	11	33	4	2	0	0	0	0	0	0	36.2	39.7	6	11.32	6	11.32	6	11.32	36.2	39.7
0700	94	0	0	42	49	1	2	0	0	0	0	0	0	1	1	2	6	32	44	8	0	0	0	0	0	0	0	34.8	38.6	8	8.511	8	8.511	8	8.511	34.8	38.6
0800	123	0	0	61	57	5	0	0	0	0	0	0	0	0	0	7	11	37	49	18	1	0	0	0	0	0	0	35.1	40.1	19	15.45	19	15.45	19	15.45	35.1	40.1
0900	105	0	7	44	48	1	2	0	1	0	2	0	0	2	7	15	22	36	15	7	1	0	0	0	0	0	0	30.3	37.4	8	7.619	8	7.619	8	7.619	30.3	37.4
1000	91	0	3	36	49	1	0	0	0	0	2	0	0	0	3	17	7	45	15	2	1	0	1	0	0	0	0	31.4	36.1	4	4.396	4	4.396	4	4.396	31.4	36.1
1100	106	0	3	35	60	6	0	0	0	0	2	0	0	0	1	15	25	39	25	1	0	0	0	0	0	0	0	31.1	36.6	1	0.943	1	0.943	1	0.943	31.1	36.6
1200	62	0	2	28	26	5	1	0	0	0	0	0	0	2	9	10	6	24	8	3	0	0	0	0	0	0	0	28.6	35.9	3	4.839	3	4.839	3	4.839	28.6	35.9
1300	72	0	0	26	37	4	0	0	3	0	1	1	0	0	2	12	13	24	18	3	0	0	0	0	0	0	0	31.4	38.5	3	4.167	3	4.167	3	4.167	31.4	38.5
1400	60	0	3	18	33	6	0	0	0	0	0	0	0	1	6	10	5	20	15	3	0	0	0	0	0	0	0	30.3	38	3	5	3	5	3	5	30.3	38
1500	94	0	1	33	52	5	0	0	2	0	1	0	0	1	9	12	17	30	22	2	1	0	0	0	0	0	0	30.1	36.2	3	3.191	3	3.191	3	3.191	30.1	36.2
1600	99	0	0	38	52	4	1	0	1	0	1	2	0	0	4	21	6	47	18	3	0	0	0	0	0	0	0	30.7	36.2	3	3.03	3	3.03	3	3.03	30.7	36.2
1700	111	0	0	51	55	2	1	0	1	0	1	0	0	0	4	16	15	39	31	6	0	0	0	0	0	0	0	31.9	37.2	6	5.405	6	5.405	6	5.405	31.9	37.2
1800	66	0	0	17	43	2	1	0	1	0	1	1	0	0	2	11	7	20	21	4	1	0	0	0	0	0	0	32.4	37.8	5	7.576	5	7.576	5	7.576	32.4	37.8
1900	40	0	0	13	26	1	0	0	0	0	0	0	0	0	6	8	3	5	11	6	0	1	0	0	0	0	0	31	40	7	17.5	7	17.5	7	17.5	31	40
2000	35	0	0	12	22	1	0	0	0	0	0	0	0	0	1	2	3	16	11	2	0	0	0	0	0	0	0	33.5	39.6	2	5.714	2	5.714	2	5.714	33.5	39.6
2100	20	0	1	9	9	1	0	0	0	0	0	0	0	0	1	1	1	11	3	2	1	0	0	0	0	0	0	33.9	40.2	3	15	3	15	3	15	33.9	40.2
2200	17	0	0	9	7	1	0	0	0	0	0	0	0	0	1	3	3	8	2	0	0	0	0	0	0	0	0	29.4	34.9	0	0	0	0	0	0	29.4	34.9
2300	9	0	1	3	5	0	0	0	0	0	0	0	0	0	1	2	4	1	1	0	0	0	0	0	0	0	0	27.3	-	0	0	0	0	0	0	27.3	-
07-19 12hr	1083	0	19	429	561	42	8	0	9	0	11	4	0	7	48	148	140	393	281	60	5	0	1	0	0	0	0	31.7	37.6	66	6.094	66	6.094	66	6.094	31.7	37.6
06-22 16hr	15-May	0	21	487	643	46	9	1	9	0	11	4	0	7	56	160	149	436	339	74	8	1	1	0	0	0	0	31.9	37.8	84	6.824	84	6.824	84	6.824	31.9	37.8
06-00 18hr	1257	0	22	499	655	47	9	1	9	0	11	4	0	7	58	165	156	445	342	74	8	1	1	0	0	0	0	31.9	37.8	84	6.683	84	6.683	84	6.683	31.9	37.8
00-00 24hr	1292	0	22	514	672	49	9	1	9	0	12	4	0	7	58	165	156	449	360	86	9	1	1	0	0	0	0	32.1	38	97	7.508	97	7.508	97	7.508	32.1	38

Vehicles = 1292
Posted speed limit = 40 mph, Exceeding = 97 (7.508%), Mean Exceeding = 42.30 mph
Maximum = 58.9 mph, Minimum = 10.7 mph, Mean = 32.1 mph
85% Speed = 38.03 mph, 95% Speed = 40.75 mph, Median = 33.22 mph
10 mph Pace = 29 - 39, Number in Pace = 816 (63.16%)
Variance = 41.54, Standard Deviation = 6.45 mph

* 19 April 2024																																					
Time	Total	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Mean	Vpp	>PSL	>PSL%	>SL1	>SL1%	>SL2	>SL2%	Mean	Vpp
<--		1	2	3	4	5	6	7	8	9	10	11	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75		85	40	40	40	40	40	40		85
													10	15	20	25	30	35	40	45	50	55	60	65	70	75	80										
0000	2	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	32.6	-	0	0	0	0	0	0	32.6	-
0100	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	26.8	-	0	0	0	0	0	0	26.8	-
0200	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	29.7	-	0	0	0	0	0	0	29.7	-
0300	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
0400	6	0	0	2	4	0	0	0	0	0	0	0	0	0	0	0	0	2	3	1	0	0	0	0	0	0	0	36.6	-	1	16.67	1	16.67	1	16.67	36.6	-
0500	30	0	0	9	19	0	0	1	1	0	0	0	0	0	0	1	1	2	18	6	1	1	0	0	0	0	0	37.7	42	8	26.67	8	26.67	8	26.67	37.7	42
0600	42	0	0	17	19	3	2	0	1	0	0	0	0	0	0	3	2	14	21	2	0	0	0	0	0	0	0	34.4	38.6	2	4.762	2	4.762	2	4.762	34.4	38.6
0700	75	0	1	31	41	2	0	0	0	0	0	0	0	0	0	0	5	25	37	7	1	0	0	0	0	0	0	35.7	39.3	8	10.67	8	10.67	8	10.67	35.7	39.3
0800	96	0	0	44	46	4	1	0	0	0	1	0	0	0	3	4	6	40	36	6	1	0	0	0	0	0	0	34.1	38.7	7	7.292	7	7.292	7	7.292	34.1	38.7
0900	100	0	1	46	48	2	0	0	3	0	0	0	0	1	4	13	25	35	20	2	0	0	0	0	0	0	0	30.6	36.2	2	2	2	2	2	2	30.6	36.2
1000	79	0	0	25	49	2	1	0	1	1	0	0	0	0	3	13	13	35	14	1	0	0	0	0	0	0	0	30.7	36.2	1	1.266	1	1.266	1	1.266	30.7	36.2
1100	97	0	0	28	57	7	1	0	3	0	0	1	0	0	6	17	18	33	20	3	0	0	0	0	0	0	0	30	35.9	3	3.093	3	3.093	3	3.093	30	35.9
1200	81	0	1	23	53	2	0	0	0	0	2	0	0	0	4	9	15	21	26	5	1	0	0	0	0	0	0	32	37.8	6	7.407	6	7.407	6	7.407	32	37.8
1300	85	0	0	31	45	5	2	0	1	0	1	0	0	3	3	16	13	24	23	3	0	0	0	0	0	0	0	30.4	37.7	3	3.529	3	3.529	3	3.529	30.4	37.7
1400	67	0	1	19	40	6	0	0	0	0	1	0	0	0	3	2	8	33	15	5	1	0	0	0	0	0	0	32.7	37	6	8.955	6	8.955	6	8.955	32.7	37
1500	100	0	2	34	61	2	0	0	1	0	0	0	0	0	8	14	11	29	30	7	0	1	0	0	0	0	0	31.7	37.7	8	8	8	8	8	8	31.7	37.7
1600	88	0	0	22	60	3	0	0	2	0	0	1	0	0	3	9	12	27	29	7	1	0	0	0	0	0	0	32.9	39.2	8	9.091	8	9.091	8	9.091	32.9	39.2
1700	95	0	0	38	54	1	0	0	0	0	1	1	0	0	8	16	13	26	26	6	0	0	0	0	0	0	0	31	38.4	6	6.316	6	6.316	6	6.316	31	38.4
1800	70	0	0	27	40	3	0	0	0	0	0	0	0	0	5	8	6	24	24	2	1	0	0	0	0	0	0	31.9	37.4	3	4.286	3	4.286	3	4.286	31.9	37.4
1900	34	0	0	10	20	3	0	0	1	0	0	0	0	0	2	1	6	10	11	4	0	0	0	0	0	0	0	33.1	38.6	4	11.76	4	11.76	4	11.76	33.1	38.6
2000	34	0	0	12	20	0	1	0	0	0	1	0	0	0	2	5	4	12	10	1	0	0	0	0	0	0	0	31.3	37	1	2.941	1	2.941	1	2.941	31.3	37
2100	17	0	0	8	9	0	0	0	0	0	0	0	0	0	1	1	1	7	2	5	0	0	0	0	0	0	0	33.5	41.1	5	29.41	5	29.41	5	29.41	33.5	41.1
2200	20	0	0	12	7	1	0	0	0	0	0	0	0	1	0	2	5	6	5	0	0	1	0	0	0	0	0	31	36.5	1	5	1	5	1	5	31	36.5
2300	13	0	0	9	4	0	0	0	0	0	0	0	0	0	1	0	3	2	6	0	1	0	0	0	0	0	0	33.6	39.1	1	7.692	1	7.692	1	7.692	33.6	39.1
07-19 12hr	1033	0	6	368	594	39	5	0	11	1	6	3	0	4	50	121	145	352	300	54	6	1	0	0	0	0	0	31.9	37.6	61	5.905	61	5.905	61	5.905	31.9	37.6
06-22 16hr	1160	0	6	415	662	45	8	0	13	1	7	3	0	4	55	131	158	395	344	66	6	1	0	0	0	0	0	32	37.7	73	6.293	73	6.293	73	6.293	32	37.7
06-00 18hr	1193	0	6	436	673	46	8	0	13	1	7	3	0	5	56	133	166	403	355	66	7	2	0	0	0	0	0	32	37.7	75	6.287	75	6.287	75	6.287	32	37.7
00-00 24hr	1234	0	6	450	698	46	8	1	14	1	7	3	0	5	56	134	170	409	376	73	8	3	0	0	0	0	0	32.2	37.8	84	6.807	84	6.807	84	6.807	32.2	37.8

Vehicles = 1234
Posted speed limit = 40 mph, Exceeding = 84 (6.807%), Mean Exceeding = 42.23 mph
Maximum = 51.9 mph, Minimum = 10.5 mph, Mean = 32.2 mph
85% Speed = 37.80 mph, 95% Speed = 40.74 mph, Median = 33.33 mph
10 mph Pace = 29 - 39, Number in Pace = 800 (64.83%)
Variance = 38.96, Standard Deviation = 6.24 mph

* 20 April 2024																																					
Time	Total	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Mean	Vpp	>PSL	>PSL%	>SL1	>SL1%	>SL2	>SL2%	Mean	Vpp
<--		1	2	3	4	5	6	7	8	9	10	11	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75		85	40	40	40	40	40	40		85
													10	15	20	25	30	35	40	45	50	55	60	65	70	75	80										
0000	5	0	0	2	2	1	0	0	0	0	0	0	0	0	0	0	0	2	0	2	1	0	0	0	0	0	0	38.4	-	3	60	3	60	3	60	38.4	-
0100	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	29.7	-	0	0	0	0	0	0	29.7	-
0200	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	32.9	-	0	0	0	0	0	0	32.9	-
0300	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	33.2	-	0	0	0	0	0	0	33.2	-
0400	4	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	2	1	1	0	0	0	0	0	0	0	37.8	-	1	25	1	25	1	25	37.8	-
0500	9	0	0	5	4	0	0	0	0	0	0	0	0	0	0	1	0	0	4	4	0	0	0	0	0	0	0	38.2	-	4	44.44	4	44.44	4	44.44	38.2	-
0600	23	0	0	8	15	0	0	0	0	0	0	0	0	0	0	1	1	5	12	3	1	0	0	0	0	0	0	36.6	41.4	4	17.39	4	17.39	4	17.39	36.6	41.4
0700	57	0	0	36	19	2	0	0	0	0	0	0	0	0	1	7	5	22	17	5	0	0	0	0	0	0	0	32.7	38.7	5	8.772	5	8.772	5	8.772	32.7	38.7
0800	92	0	0	48	42	1	0	0	1	0	0	0	1	0	0	3	1	25	52	9	1	0	0	0	0	0	0	36	39.5	10	10.87	10	10.87	10	10.87	36	39.5
0900	106	0	3	49	52	1	1	0	0	0	0	0	0	0	1	7	18	59	18	3	0	0	0	0	0	0	0	31.9	35.8	3	2.83	3	2.83	3	2.83	31.9	35.8
1000	128	0	2	53	70	1	0	2	0	0	0	0	0	0	6	14	22	49	31	6	0	0	0	0	0	0	0	31.6	37	6	4.688	6	4.688	6	4.688	31.6	37
1100	124	0	4	42	76	2	0	0	0	0	0	0	0	0	1	10	19	69	24	0	0	1	0	0	0	0	0	31.8	35.8	1	0.806	1	0.806	1	0.806	31.8	35.8
1200	121	0	11	34	74	0	0	0	2	0	0	0	0	1	3	16	19	41	33	7	1	0	0	0	0	0	0	31.7	37.5	8	6.612	8	6.612	8	6.612	31.7	37.5
1300	130	0	5	49	70	5	0	0	1	0	0	0	0	1	12	25	10	57	24	1	0	0	0	0	0	0	0	29.5	36.1	1	0.769	1	0.769	1	0.769	29.5	36.1
1400	100	0	12	37	49	1	0	1	0	0	0	0	0	0	6	9	14	43	22	3	1	2	0	0	0	0	0	32.1	37.8	6	6	6	6	6	6	32.1	37.8
1500	82	0	2	29	48	1	0	1	0	0	1	0	0	0	4	8	15	38	13	4	0	0	0	0	0	0	0	31.1	36.2	4	4.878	4	4.878	4	4.878	31.1	36.2
1600	78	0	1	35	39	1	0	0	1	0	0	1	1	0	6	9	13	26	20	3	0	0	0	0	0	0	0	30.9	37.6	3	3.846	3	3.846	3	3.846	30.9	37.6
1700	77	0	2	34	40	0	0	0	1	0	0	0	0	0	4	9	11	35	13	3	2	0	0	0	0	0	0	31.3	36.5	5	6.494	5	6.494	5	6.494	31.3	36.5
1800	69	0	5	22	42	0	0	0	0	0	0	0	0	0	2	4	9	27	13	10	2	2	0	0	0	0	0	34.4	42.2	14	20.29	14	20.29	14	20.29	34.4	42.2
1900	37	0	1	13	22	1	0	0	0	0	0	0	0	0	6	6	2	8	11	3	0	1	0	0	0	0	0	31.2	39.5	4	10.81	4	10.81	4	10.81	31.2	39.5
2000	31	0	1	9	19	1	0	0	0	0	1	0	0	0	2	8	6	8	6	0	1	0	0	0	0	0	0	29.1	36.9	1	3.226	1	3.226	1	3.226	29.1	36.9
2100	31	0	1	8	21	1	0	0	0	0	0	0	0	0	2	3	2	15	7	2	0	0	0	0	0	0	0	31.6	36.4	2	6.452	2	6.452	2	6.452	31.6	36.4
2200	5	0	0	1	4	0	0	0	0	0	0	0	0	0	1	0	0	3	1	0	0	0	0	0	0	0	0	31.1	-	0	0	0	0	0	0	31.1	-
2300	9	0	0	4	5	0	0	0	0	0	0	0	0	0	1	1	1	3	2	1	0	0	0	0	0	0	0	31.5	-	1	11.11	1	11.11	1	11.11	31.5	-
07-19 12hr	1164	0	47	468	621	15	1	4	6	0	1	1	2	2	46	121	156	491	280	54	7	5	0	0	0	0	0	31.9	37.4	66	5.67	66	5.67	66	5.67	31.9	37.4
06-22 16hr	1286	0	50	506	698	18	1	4	6	0	2	1	2	2	56	139	167	527	316	62	9	6	0	0	0	0	0	31.9	37.5	77	5.988	77	5.988	77	5.988	31.9	37.5
06-00 18hr	1300	0	50	511	707	18	1	4	6	0	2	1	2	2	58	140	168	533	319	63	9	6	0	0	0	0	0	31.9	37.5	78	6	78	6	78	6	31.9	37.5
00-00 24hr	1324	0	50	520	721	19	1	4	6	0	2	1	2	2	58	141	171	538	326	70	10	6	0	0	0	0	0	32	37.8	86	6.495	86	6.495	86	6.495	32	37.8

Vehicles = 1324
Posted speed limit = 40 mph, Exceeding = 86 (6.495%), Mean Exceeding = 43.02 mph
Maximum = 52.7 mph, Minimum = 5.9 mph, Mean = 32.0 mph
85% Speed = 37.80 mph, 95% Speed = 40.60 mph, Median = 32.66 mph
10 mph Pace = 30 - 40, Number in Pace = 873 (65.94%)
Variance = 39.04, Standard Deviation = 6.25 mph

* 21 April 2024																																					
Time	Total	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Mean	Vpp	>PSL	>PSL%	>SL1	>SL1%	>SL2	>SL2%	Mean	Vpp
<--		1	2	3	4	5	6	7	8	9	10	11	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75		85	40	40	40	40	40	40		85
													10	15	20	25	30	35	40	45	50	55	60	65	70	75	80										
0000	8	0	0	3	4	0	0	0	0	0	0	1	0	0	1	0	0	6	0	1	0	0	0	0	0	0	0	32	-	1	12.5	1	12.5	1	12.5	32	-
0100	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	38.9	-	0	0	0	0	0	0	38.9	-
0200	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	32.3	-	0	0	0	0	0	0	32.3	-
0300	3	0	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	41.9	-	3	100	3	100	3	100	41.9	-
0400	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	34.8	-	0	0	0	0	0	0	34.8	-
0500	2	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	41.7	-	1	50	1	50	1	50	41.7	-
0600	21	0	0	7	14	0	0	0	0	0	0	0	0	0	0	1	0	4	11	4	1	0	0	0	0	0	0	37	41.8	5	23.81	5	23.81	5	23.81	37	41.8
0700	38	0	0	17	21	0	0	0	0	0	0	0	0	0	1	10	2	13	12	0	0	0	0	0	0	0	0	30.7	36.8	0	0	0	0	0	0	30.7	36.8
0800	70	0	0	32	35	3	0	0	0	0	0	0	0	0	4	9	4	22	26	5	0	0	0	0	0	0	0	32.5	38.2	5	7.143	5	7.143	5	7.143	32.5	38.2
0900	99	0	2	35	61	1	0	0	0	0	0	0	0	0	4	11	6	47	25	5	1	0	0	0	0	0	0	32.3	37.5	6	6.061	6	6.061	6	6.061	32.3	37.5
1000	128	0	7	36	84	0	0	0	1	0	0	0	0	0	8	13	17	54	32	4	0	0	0	0	0	0	0	31.2	36.3	4	3.125	4	3.125	4	3.125	31.2	36.3
1100	109	0	6	32	69	1	0	0	1	0	0	0	0	0	4	12	16	43	30	3	1	0	0	0	0	0	0	31.7	36.1	4	3.67	4	3.67	4	3.67	31.7	36.1
1200	110	0	12	33	62	2	0	0	1	0	0	0	0	4	6	14	14	41	20	10	1	0	0	0	0	0	0	31.1	38.1	11	10	11	10	11	10	31.1	38.1
1300	115	0	13	31	66	4	0	0	1	0	0	0	0	0	8	12	19	42	25	7	2	0	0	0	0	0	0	31.5	37.2	9	7.826	9	7.826	9	7.826	31.5	37.2
1400	117	0	6	33	76	0	0	0	2	0	0	0	0	0	4	15	22	38	28	10	0	0	0	0	0	0	0	31.9	37.9	10	8.547	10	8.547	10	8.547	31.9	37.9
1500	112	0	6	29	76	0	0	0	1	0	0	0	0	0	3	15	14	44	29	5	0	2	0	0	0	0	0	32.1	38.2	7	6.25	7	6.25	7	6.25	32.1	38.2
1600	83	0	2	29	51	1	0	0	0	0	0	0	0	0	5	12	10	33	15	4	3	0	0	0	1	0	0	31.8	37.7	8	9.639	8	9.639	8	9.639	31.8	37.7
1700	74	0	1	30	41	2	0	0	0	0	0	0	0	1	7	12	12	24	16	2	0	0	0	0	0	0	0	29.8	37.1	2	2.703	2	2.703	2	2.703	29.8	37.1
1800	51	0	2	15	32	2	0	0	0	0	0	0	0	0	1	15	1	20	10	2	1	1	0	0	0	0	0	31.2	38.1	4	7.843	4	7.843	4	7.843	31.2	38.1
1900	24	0	0	11	13	0	0	0	0	0	0	0	0	0	0	6	5	3	5	5	0	0	0	0	0	0	0	32.1	40.5	5	20.83	5	20.83	5	20.83	32.1	40.5

2000	19	0	0	9	9	0	0	0	0	0	1	0	0	0	2	3	4	5	5	0	0	0	0	0	0	0	0	29.7	38.1	0	0	0	0	0	0	29.7	38.1
2100	19	0	2	7	10	0	0	0	0	0	0	0	0	0	2	3	3	3	7	0	0	1	0	0	0	0	0	31.2	36.7	1	5.263	1	5.263	1	5.263	31.2	36.7
2200	10	0	0	4	6	0	0	0	0	0	0	0	0	0	0	1	0	5	2	1	0	1	0	0	0	0	0	35.3	-	2	20	2	20	2	20	35.3	-
2300	6	0	0	1	4	0	0	0	0	0	0	1	0	0	0	0	0	4	1	0	0	0	1	0	0	0	0	37.1	-	1	16.67	1	16.67	1	16.67	37.1	-
07-19 12hr	1106	0	57	352	674	16	0	0	7	0	0	0	0	5	55	150	137	421	268	57	9	3	0	0	1	0	0	31.6	37.2	70	6.329	70	6.329	70	6.329	31.6	37.2
06-22 16hr	1189	0	59	386	720	16	0	0	7	0	1	0	0	5	59	163	149	436	296	66	10	4	0	0	1	0	0	31.6	37.4	81	6.812	81	6.812	81	6.812	31.6	37.4
06-00 18hr	1205	0	59	391	730	16	0	0	7	0	1	1	0	5	59	164	149	445	299	67	10	5	1	0	1	0	0	31.7	37.4	84	6.971	84	6.971	84	6.971	31.7	37.4
00-00 24hr	1223	0	60	395	742	16	0	0	7	0	1	2	0	5	60	164	149	454	302	71	11	5	1	0	1	0	0	31.7	37.5	89	7.277	89	7.277	89	7.277	31.7	37.5

Vehicles = 1223
Posted speed limit = 40 mph, Exceeding = 89 (7.277%), Mean Exceeding = 43.35 mph
Maximum = 65.1 mph, Minimum = 10.3 mph, Mean = 31.7 mph
85% Speed = 37.47 mph, 95% Speed = 41.03 mph, Median = 32.88 mph
10 mph Pace = 29 - 39, Number in Pace = 769 (62.88%)
Variance = 44.34, Standard Deviation = 6.66 mph

* 22 April 2024

Time	Total	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Mean	Vpp	>PSL	>PSL%	>SL1	>SL1%	>SL2	>SL2%	Mean	Vpp
<--		1	2	3	4	5	6	7	8	9	10	11	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75		85	40	40	40	40	40	40		85
													10	15	20	25	30	35	40	45	50	55	60	65	70	75	80										
0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
0100	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	37	-	0	0	0	0	0	0	37	-
0200	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	31.9	-	0	0	0	0	0	0	31.9	-
0300	2	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	37.9	-	0	0	0	0	0	0	37.9	-
0400	11	0	0	2	9	0	0	0	0	0	0	0	0	0	0	1	0	1	5	4	0	0	0	0	0	0	0	37.4	41.4	4	36.36	4	36.36	4	36.36	37.4	41.4
0500	18	0	0	7	10	0	0	0	1	0	0	0	0	0	0	1	0	7	6	4	0	0	0	0	0	0	0	35.8	41.3	4	22.22	4	22.22	4	22.22	35.8	41.3
0600	49	0	0	16	32	1	0	0	0	0	0	0	0	0	1	1	2	17	26	1	1	0	0	0	0	0	0	35	39.1	2	4.082	2	4.082	2	4.082	35	39.1
0700	96	0	0	31	56	4	1	1	1	0	2	0	0	0	1	1	14	39	34	6	1	0	0	0	0	0	0	34.1	38.4	7	7.292	7	7.292	7	7.292	34.1	38.4
0800	110	1	0	44	57	6	1	0	1	0	0	0	0	0	2	3	16	44	34	9	2	0	0	0	0	0	0	33.9	38.6	11	10	11	10	11	10	33.9	38.6
0900	100	0	0	39	46	11	2	0	0	0	2	0	0	0	3	16	15	42	22	2	0	0	0	0	0	0	0	31	36.1	2	2	2	2	2	2	31	36.1
1000	72	0	0	35	35	1	0	0	0	0	1	0	0	0	1	2	23	40	5	1	0	0	0	0	0	0	0	31.1	33.9	1	1.389	1	1.389	1	1.389	31.1	33.9
1100	74	0	0	38	31	3	1	0	0	0	1	0	0	0	1	12	8	32	20	1	0	0	0	0	0	0	0	31.7	37.9	1	1.351	1	1.351	1	1.351	31.7	37.9
1200	53	0	0	29	18	5	0	0	1	0	0	0	0	0	1	2	20	20	9	1	0	0	0	0	0	0	0	31.1	36	1	1.887	1	1.887	1	1.887	31.1	36
1300	61	0	0	23	33	2	0	0	0	0	2	1	0	0	3	4	17	18	13	6	0	0	0	0	0	0	0	31.8	38.6	6	9.836	6	9.836	6	9.836	31.8	38.6
1400	68	0	0	27	33	4	1	1	1	0	1	0	0	1	1	18	14	19	14	1	0	0	0	0	0	0	0	29.7	36.6	1	1.471	1	1.471	1	1.471	29.7	36.6
1500	90	0	0	40	41	6	1	0	1	0	1	0	1	1	7	12	21	31	13	4	0	0	0	0	0	0	0	29.3	35.9	4	4.444	4	4.444	4	4.444	29.3	35.9
1600	79	0	0	33	41	3	0	0	1	0	1	0	0	1	8	15	8	19	25	3	0	0	0	0	0	0	0	30.3	37.6	3	3.797	3	3.797	3	3.797	30.3	37.6
1700	109	0	0	53	54	2	0	0	0	0	0	0	0	0	5	14	24	33	29	3	1	0	0	0	0	0	0	31	36.7	4	3.67	4	3.67	4	3.67	31	36.7
1800	72	0	0	23	47	1	1	0	0	0	0	0	0	3	9	5	9	21	19	6	0	0	0	0	0	0	0	30.9	37.6	6	8.333	6	8.333	6	8.333	30.9	37.6
1900	46	0	1	20	25	0	0	0	0	0	0	0	0	0	7	5	8	16	10	0	0	0	0	0	0	0	0	29.4	36.2	0	0	0	0	0	0	29.4	36.2
2000	17	0	0	7	10	0	0	0	0	0	0	0	0	0	2	2	1	7	3	2	0	0	0	0	0	0	0	31.4	38.8	2	11.76	2	11.76	2	11.76	31.4	38.8
2100	20	0	0	9	11	0	0	0	0	0	0	0	0	0	1	4	2	4	7	1	1	0	0	0	0	0	0	32.5	39.6	2	10	2	10	2	10	32.5	39.6
2200	4	0	0	3	1	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	1	0	0	0	0	0	0	33.1	-	2	50	2	50	2	50	33.1	-
2300	5	0	0	2	3	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	23	-	0	0	0	0	0	0	23	-
07-19 12hr	984	1	0	415	492	48	8	2	6	0	11	1	1	6	42	104	189	358	237	43	4	0	0	0	0	0	0	31.4	37.2	47	4.776	47	4.776	47	4.776	31.4	37.2
06-22 16hr	1116	1	1	467	570	49	8	2	6	0	11	1	1	6	53	116	202	402	283	47	6	0	0	0	0	0	0	31.5	37.2	53	4.749	53	4.749	53	4.749	31.5	37.2
06-00 18hr	1125	1	1	472	574	49	8	2	6	0	11	1	1	6	53	123	202	402	283	48	7	0	0	0	0	0	0	31.5	37.3	55	4.889	55	4.889	55	4.889	31.5	37.3
00-00 24hr	1158	1	1	483	595	49	8	2	7	0	11	1	1	6	53	125	202	411	297	56	7	0	0	0	0	0	0	31.6	37.5	63	5.44	63	5.44	63	5.44	31.6	37.5

Vehicles = 1158
Posted speed limit = 40 mph, Exceeding = 63 (5.440%), Mean Exceeding = 42.46 mph
Maximum = 48.3 mph, Minimum = 8.3 mph, Mean = 31.6 mph
85% Speed = 37.49 mph, 95% Speed = 40.27 mph, Median = 32.66 mph
10 mph Pace = 28 - 38, Number in Pace = 730 (63.04%)
Variance = 38.92, Standard Deviation = 6.24 mph

* 23 April 2024

Time	Total	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Mean	Vpp	>PSL	>PSL%	>SL1	>SL1%	>SL2	>SL2%	Mean	Vpp
<--		1	2	3	4	5	6	7	8	9	10	11	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75		85	40	40	40	40	40	40		85
													10	15	20	25	30	35	40	45	50	55	60	65	70	75	80										
0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
0100	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	22.5	-	0	0	0	0	0	0	22.5	-
0200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
0300	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	35.3	-	0	0	0	0	0	0	35.3	-
0400	7	0	0	2	5	0	0	0	0	0	0	0	0	0	0	0	0	2	3	1	1	0	0	0	0	0	0	39.1	-	2	28.57	2	28.57	2	28.57	39.1	-
0500	23	0	0	8	13	1	0	1	0	0	0	0	0	0	1	0	1	6	10	4	1	0	0	0	0	0	0	36.4	42.1	5	21.74	5	21.74	5	21.74	36.4	42.1
0600	63	0	0	23	39	1	0	0	0	0	0	0	0	0	1	1	5	19	28	8	1	0	0	0	0	0	0	35.2	40	9	14.29	9	14.29	9	14.29	35.2	40
0700	120	0	0	48	64	7	0	0	0	0	1	0	0	1	3	5	9	43	51	8	0	0	0	0	0	0	0	33.9	38.8	8	6.667	8	6.667	8	6.667	33.9	38.8
0800	132	0	0	55	69	5	0	1	1	0	1	0	1	3	4	13	9	41	50	10	1	0	0	0	0	0	0	32.7	38.7	11	8.333	11	8.333	11	8.333	32.7	38.7
0900	97	0	1	40	50	4	0	1	0	0	1	0	0	1	2	7	18	43	21	4	1	0	0	0	0	0	0	31.9	36.9	5	5.155	5	5.155	5	5.155	31.9	36.9
1000	81	0	2	25	51	2	1	0	0	0	0	0	0	0	8	7	7	30	24	5	0	0	0	0	0	0	0	31.8	37.4	5	6.173	5	6.173	5	6.173	31.8	37.4
1100	78	0	2	32	38	4	0	0	2	0	0	0	0	0	5	17	14	22	17	3	0	0	0	0	0	0	0	30	35.8	3	3.846	3	3.846	3	3.846	30	35.8
1200	69	0	0	27	36	3	0	0	1	0	1	1	1	1	3	16	15	19	13	1	0	0	0	0	0	0	0	28.7	36.5	1	1.449	1	1.449	1	1.449	28.7	36.5
1300	77	0	2	28	42	3	2	0	0	0	0	0	1	1	11	14	21	21	6	2	0	0	0	0	0	0	0	27.2	33.6	2	2.597	2	2.597	2	2.597	27.2	33.6
1400	63	0	1	27	29	3	0	0	2	0	1	0	0	0	4	9	17	20	10	3	0	0	0	0	0	0	0	30	36.8	3	4.762	3	4.762	3	4.762	30	36.8
1500	84	0	1	25	50	3	0	0	0	0	3	2	0	0	9	12	15	29	18	1	0	0	0	0	0	0	0	29.7	36.1	1	1.19	1	1.19	1	1.19	29.7	36.1
1600	96	0	0	40	49	5	0	0	0	0	1	1	0	0	7	22	16	21	27	3	0	0	0	0	0	0	0	30	36.8	3	3.125	3	3.125	3	3.125	30	36.8
1700	117	0	0	39	73	4	0	0	1	0	0	0	0	4	6	17	11	35	40	3	1	0	0	0	0	0	0	31.5	38.8	4	3.419	4	3.419	4	3.419	31.5	38.8
1800	71	0	0	24	40	5	0	0	0	0	2	0	0	1	6	11	14	19	14	5	1	0	0	0	0	0	0	30.3	37.1	6	8.451	6	8.451	6	8.451	30.3	37.1
1900	43	0	1	17	24	1	0	0	0	0	0	0	1	0	5	6	2	12	11	6	0	0	0	0	0	0	0	31.2	38.9	6	13.95	6	13.95	6	13.95	31.2	38.9
2000	36	0	0	14	21	0	0	0	1	0	0	0	0	1	4	1	2	8	15	5	0	0	0	0	0	0	0	32.9	39.1	5	13.89	5	13.89	5	13.89	32.9	39.1
2100	22	0	0	11	11	0	0	0	0	0	0	0	0	0	0	3	1	8	7	3	0	0	0	0	0	0	0	34.2	39.9	3	13.64	3	13.64	3	13.64	34.2	39.9
2200	10	0	0	3	7	0	0	0	0	0	0	0	0	0	0	0	2	0	8	0	0	0	0	0	0	0	0	35.7	-	0	0	0	0	0	0	35.7	-
2300	5	0	0	2	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3	2	0	0	0	0	0	0	0	38.9	-	2	40	2	40	2	40	38.9	-
07-19 12hr	1085	0	9	410	591	48	3	2	7	0	11	4	3	12	68	150	166	343	291	48	4	0	0	0	0	0	0	30.9	37.4	52	4.793	52	4.793	52	4.793	30.9	37.4
06-22 16hr	1249	0	10	475	686	50	3	2	8	0	11	4	4	13	78	161	176	390	352	70	5	0	0	0	0	0	0	31.3	37.6	75	6.005	75	6.005	75	6.005	31.3	37.6
06-00 18hr	1264	0	10	480	696	50	3	2	8	0	11	4	4	13	78	161	178	390	363	72	5	0	0	0	0	0	0	31.3	37.7	77	6.092	77	6.092	77	6.092	31.3	37.7
00-00 24hr	1296	0	10	492	714	51	3	3	8	0	11	4	4	13	79	162	179	398	377	77	7	0	0	0	0	0	0	31.5	37.9	84	6.481	84	6.481	84	6.481	31.5	37.9

Vehicles = 1296
Posted speed limit = 40 mph, Exceeding = 84 (6.481%), Mean Exceeding = 41.97 mph
Maximum = 48.3 mph, Minimum = 7.5 mph, Mean = 31.5 mph
85% Speed = 37.85 mph, 95% Speed = 40.28 mph, Median = 32.88 mph
10 mph Pace = 29 - 39, Number in Pace = 782 (60.34%)
Variance = 46.52, Standard Deviation = 6.82 mph

* 24 April 2024

Time	Total	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Mean	Vpp	>PSL	>PSL%	>SL1	>SL1%	>SL2	>SL2%	Mean	Vpp
<--		1	2	3	4	5	6	7	8	9	10	11	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75		85	40	40	40	40	40	40		85
													10	15	20	25	30	35	40	45	50	55	60	65	70	75	80										
0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
0100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
0200	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	32.6	-	0	0	0	0	0	0	32.6	-
0300	2	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	36	-	0	0	0	0	0	0	36	-
0400	7	0	0	1	5	0	0	0	1	0	0	0	0	0	0	0	0	2	4	1	0	0	0	0	0	0	0	36.6	-	1	14.29	1	14.29	1	14.29	36.6	-
0500	22	0	0	8	13	1	0	0	0	0	0	0	0	0	0	0	1	6	9	6	0	0	0	0	0	0	0	37.1	41.5	6	27.27	6	27.27	6	27.27	37.1	41.5
0600	56	0	0	22	31	0	1	1	1	0	0	0	0	0	0	1	6	13	25	9	2	0	0	0	0	0	0	35.8	40.8	11	19.64	11	19.64	11	19.64	35.8	40.8
0700	103	0	2	38	59	4	0	0	0	0	0	0	0	0	3	5	9	32	41	11	2	0	0	0	0	0	0	34.5	39.6	13	12.62	13	12.62	13	12.62	34.5	39.6
0800	112	1	0	63	43	4	0	0	1	0	0	0	0	0	4	6	20	44	30	8	0	0	0	0	0	0	0	32.7	38.3	8	7.143	8	7.143	8	7.143	32.7	38.3
0900	105	0	0	44	55	5	1	0	0	0	0	0	0	1	1	11	10	51	29	2	0	0	0	0	0	0	0	32.4	37.7	2	1.905	2	1.905	2	1.905	32.4	37.7
1000	98	0	6	30	52	6	1	0	2	0	1	0	0	1	3	15	11	50	18	0	0	0	0	0	0	0	0	30.6	35.1	0	0	0	0	0	0	30.6	35.1
1100	70	0	2	35	28	2	0	0	1	0	2	0	0	0	0	14	18	27	10	1	0	0	0	0	0	0	0	30.5	35.2	1	1.429	1	1.429	1	1.429	30.5	35.2
1200	84	0	5	38	32	3	1	0	5	0	0	0	0	0	3	12	15	41	12	1	0	0	0	0	0	0	0	30.5	35.5	1	1.19	1	1.19	1	1.19	30.5	35.5
1300	87	0	1	31	45	7	1	0	0	0	2	0	0	1	11	13	11	33	16	1	1	0	0	0	0	0	0	29.7	35.8	2	2.299	2	2.299	2	2.299	29.7	35.8
1400	64	0	0	18	36	5	0	0	2	0	3	0	0	0	9	3	5	27	16	3	1	0	0	0	0	0	0	31.3	36.9	4	6.25	4	6.25	4	6.25	31.3	36.9
1500	92	0	0	35	50	3	1	0	0	0	2	1	0	0	6	19	20	29	15	3	0	0	0	0	0	0	0	29.6	36.8	3	3.261	3	3.261	3	3.261	29.6	36.8
1600	90	0	0	32	49	4	0	0	2	0	1	2	0	0	4	12	19	22	18	14	0	1	0	0	0	0	0	32.3	40.4	15	16.67	15	16.67	15	16.67	32.3	40.4
1700	139	0	6	47	79	6	0	1	0	0	0	0	0	0	7	38	18	34	34	6	2	0	0	0	0	0	0	30.3	38	8	5.755	8	5.755	8	5.755	30.3	38
1800	58	0	4	21	30	3	0	0	0	0	0	0	0	0	5	7	4	19	17	3	1	0	1	1	0	0	0	32.9	39	6	10.34	6	10.34	6	10.34	32.9	39
1900	61	0	3	24	33	0	0	0	1	0	0	0	0	0	6	7	6	10	21	11	0	0	0	0	0	0	0	33	40.5	11	18.03	11	18.03	11	18.03	33	40.5
2000	39	0	0	22	14	1	1	0	0	0	0	1	0	0	2	2	2	16	15	2	0	0	0	0	0	0	0	33.3	37.2	2	5.128	2	5.128	2	5.128	33.3	37.2
2100	25	0	0	10	14	0	0	0	0	0	1	0	0	0	0	5	3	6	5	6	0	0	0	0	0	0	0	34	42.5	6	24	6	24	6	24	34	42.5
2200	13	0	0	4	9	0	0	0	0	0	0	0	0	0	0	2	2	2	7	0	0	0	0	0	0	0	0	33.6	39.1	0	0	0	0	0	0	33.6	39.1
2300	12	0	0	4	7	1	0	0	0	0	0	0	0	0	0	2	0	7	1	2	0	0	0	0	0	0	0	32.3	40.7	2	16.67	2	16.67	2	16.67	32.3	40.7
07-19 12hr	1102	1	26	432	558	52	5	1	13	0	11	3	0	3	56	155	160	409	256	53	7	1	1	1	0	0	0	31.5	37.5	63	5.717	63	5.717	63	5.717	31.5	37.5
06-22 16hr	1283	1	29	510	650	53	7	2	15	0	12	4	0	3	64	170	177	454	322	81	9	1	1	1	0	0	0	31.8	37.8	93	7.249	93	7.249	93	7.249	31.8	37.8
06-00 18hr	1308	1	29	518	666	54	7	2	15	0	12	4	0	3	64	174	179	463	330	83	9	1	1	1	0	0	0	31.8	37.9	95	7.263	95	7.263	95	7.263	31.8	37.9
00-00 24hr	1341	1	29	528	687	55	7	2	16	0	12	4	0	3	64	174	181	472	345	90	9	1	1	1	0	0	0	32	37.9	102	7.606	102	7.606	102	7.606	32	37.9

Vehicles = 1341
Posted speed limit = 40 mph, Exceeding = 102 (7.606%), Mean Exceeding = 42.70 mph
Maximum = 62.6 mph, Minimum = 11.4 mph, Mean = 32.0 mph
85% Speed = 37.92 mph, 95% Speed = 41.27 mph, Median = 32.88 mph
10 mph Pace = 29 - 39, Number in Pace = 850 (63.39%)
Variance = 40.95, Standard Deviation = 6.40 mph

*** Virtual Week (1)**

Time	**Total**	**Cls**	**Cls**	**Cls**	**Cls**	**Cls**	**Cls**	**Cls**	**Cls**	**Cls**	**Cls**	**Cls**	**Vbin**	**Vbin**	**Vbin**	**Vbin**	**Vbin**	**Vbin**	**Vbin**	**Vbin**	**Vbin**	**Vbin**	**Vbin**	**Vbin**	**Vbin**	**Vbin**	**Vbin**	**Mean**	**Vpp**	**>PSL**	**>PSL%**	**>SL1**	**>SL1%**	**>SL2**	**>SL2%**	**Mean**	**Vpp**
<--		1	2	3	4	5	6	7	8	9	10	11	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75		85	40	40	40	40	40	40		85
													10	15	20	25	30	35	40	45	50	55	60	65	70	75	80										
Mon	1158	1	1	483	595	49	8	2	7	0	11	1	1	6	53	125	202	411	297	56	7	0	0	0	0	0	0	31.6	37.5	63	5.44	63	5.44	63	5.44	31.6	37.5
Tue	1296	0	10	492	714	51	3	3	8	0	11	4	4	13	79	162	179	398	377	77	7	0	0	0	0	0	0	31.5	37.9	84	6.481	84	6.481	84	6.481	31.5	37.9
Wed	1341	1	29	528	687	55	7	2	16	0	12	4	0	3	64	174	181	472	345	90	9	1	1	1	0	0	0	32	37.9	102	7.606	102	7.606	102	7.606	32	37.9
Thu	1292	0	22	514	672	49	9	1	9	0	12	4	0	7	58	165	156	449	360	86	9	1	1	0	0	0	0	32.1	38	97	7.508	97	7.508	97	7.508	32.1	38
Fri	1234	0	6	450	698	46	8	1	14	1	7	3	0	5	56	134	170	409	376	73	8	3	0	0	0	0	0	32.2	37.8	84	6.807	84	6.807	84	6.807	32.2	37.8
|Sat	1324	0	50	520	721	19	1	4	6	0	2	1	2	2	58	141	171	538	326	70	10	6	0	0	0	0	0	32	37.8	86	6.495	86	6.495	86	6.495	32	37.8
|Sun	1223	0	60	395	742	16	0	0	7	0	1	2	0	5	60	164	149	454	302	71	11	5	1	0	1	0	0	31.7	37.5	89	7.277	89	7.277	89	7.277	31.7	37.5
--	**8868**	**2**	**178**	**3382**	**4829**	**285**	**36**	**13**	**67**	**1**	**56**	**19**	**7**	**41**	**428**	**1065**	**1208**	**3131**	**2383**	**523**	**61**	**16**	**3**	**1**	**1**	**0**	**0**	**31.9**	**37.8**	**605**	**6.822**	**605**	**6.822**	**605**	**6.822**	**31.9**	**37.8**

Vehicles = 8868
Posted speed limit = 40 mph, Exceeding = 605 (6.822%), Mean Exceeding = 42.58 mph
Maximum = 65.1 mph, Minimum = 5.9 mph, Mean = 31.9 mph
85% Speed = 37.80 mph, 95% Speed = 40.71 mph, Median = 32.88 mph
10 mph Pace = 30 - 40, Number in Pace = 5581 (62.93%)
Variance = 41.52, Standard Deviation = 6.44 mph

*** Grand Total**

Time	**Total**	**Cls**	**Cls**	**Cls**	**Cls**	**Cls**	**Cls**	**Cls**	**Cls**	**Cls**	**Cls**	**Cls**	**Vbin**	**Vbin**	**Vbin**	**Vbin**	**Vbin**	**Vbin**	**Vbin**	**Vbin**	**Vbin**	**Vbin**	**Vbin**	**Vbin**	**Vbin**	**Vbin**	**Vbin**	**Mean**	**Vpp**	**>PSL**	**>PSL%**	**>SL1**	**>SL1%**	**>SL2**	**>SL2%**	**Mean**	**Vpp**
<--		1	2	3	4	5	6	7	8	9	10	11	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75		85	40	40	40	40	40	40		85
													10	15	20	25	30	35	40	45	50	55	60	65	70	75	80										
--	**8868**	**2**	**178**	**3382**	**4829**	**285**	**36**	**13**	**67**	**1**	**56**	**19**	**7**	**41**	**428**	**1065**	**1208**	**3131**	**2383**	**523**	**61**	**16**	**3**	**1**	**1**	**0**	**0**	**31.9**	**37.8**	**605**	**6.822**	**605**	**6.822**	**605**	**6.822**	**31.9**	**37.8**

Vehicles = 8868
Posted speed limit = 40 mph, Exceeding = 605 (6.822%), Mean Exceeding = 42.58 mph
Maximum = 65.1 mph, Minimum = 5.9 mph, Mean = 31.9 mph
85% Speed = 37.80 mph, 95% Speed = 40.71 mph, Median = 32.88 mph
10 mph Pace = 30 - 40, Number in Pace = 5581 (62.93%)
Variance = 41.52, Standard Deviation = 6.44 mph

In profile: Vehicles = 8868 / 21166 (41.90%)

MetroCount Traffic Executive
Default SES (modified)

CustomList-620 -- English (ENG)

Datasets:	
Site:	[TTS-1722-002] A52, Whiston <40m>
Attribute:	sign
Direction:	8 - East bound A>B, West bound B>A. Lane: 0
Survey Duration:	11:15 17 April 2024 => 12:48 25 April 2024,
Zone:	
File:	TTS-1722-002 0 2024-04-25 1248.EC0 (Plus)
Identifier:	XD963MJH MC5900-X13 (c)MetroCount 09Nov16
Algorithm:	Factory default axle (v5.06)
Data type:	Axle sensors - Paired (Class/Speed/Count)
Profile:	
Filter time:	00:00 18 April 2024 => 00:00 25 April 2024 (7)
Included classes:	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11
Speed range:	5 - 100 mph.
Direction:	West (bound), P = East, Lane = 0-16
Separation:	Headway > 0 sec, Span 0 - 100 metre
Name:	Default Profile
Scheme:	Vehicle classification (DfT-UK)
Units:	Part metric (metre, mi, m/s, mph, kg, tonne)
Column Legend:	
0 [Time]	24-hour time (0000 - 2359)
1 [Total]	Number in time step
2 [Cls]	Class totals
3 [Vbin]	Speed bin totals
4 [Mean]	Average speed
5 [Vpp]	Percentile speed
6 [>PSL]	Number exceeding Posted Speed Limit
7 [>PSL%]	Percent exceeding Posted Speed Limit
8 [>SL1]	Number exceeding Speed Limit 1
9 [>SL1%]	Percent exceeding Speed Limit 1
10 [>SL2]	Number exceeding Speed Limit 2
11 [>SL2%]	Percent exceeding Speed Limit 2
12 [Mean]	Average speed
13 [Vpp]	Percentile speed

* 18 April 2024	Classifications												Speeds																								
Time	Total	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Mean	Vpp	>PSL	>PSL%	>SL1	>SL1%	>SL2	>SL2%	Mean	Vpp
<--		1	2	3	4	5	6	7	8	9	10	11	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75		85	40	40	40	40	40	40		85
													10	15	20	25	30	35	40	45	50	55	60	65	70	75	80										
0000	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	38	-	0	0	0	0	0	0	38	-
0100	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	37.9	-	0	0	0	0	0	0	37.9	-
0200	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	41.9	-	2	100	2	100	2	100	41.9	-
0300	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	40.8	-	2	100	2	100	2	100	40.8	-
0400	5	0	0	2	1	0	0	0	1	0	1	0	0	0	0	0	1	0	2	2	0	0	0	0	0	0	0	37.4	-	2	40	2	40	2	40	37.4	-
0500	14	0	0	9	4	1	0	0	0	0	0	0	0	0	0	0	0	2	7	5	0	0	0	0	0	0	0	38.1	41.4	5	35.71	5	35.71	5	35.71	38.1	41.4
0600	42	0	0	21	17	2	0	0	1	0	1	0	0	1	2	2	2	13	15	2	5	0	0	0	0	0	0	34.6	42.2	7	16.67	7	16.67	7	16.67	34.6	42.2
0700	114	0	0	51	56	4	0	0	0	0	3	0	0	8	9	3	13	23	36	17	5	0	0	0	0	0	0	32.7	40.7	22	19.3	22	19.3	22	19.3	32.7	40.7
0800	107	0	1	50	49	1	2	1	1	0	1	1	0	6	9	5	7	27	41	11	1	0	0	0	0	0	0	32.4	39.3	12	11.21	12	11.21	12	11.21	32.4	39.3
0900	76	0	0	39	29	5	1	0	0	0	2	0	0	6	4	4	15	24	18	5	0	0	0	0	0	0	0	30.1	37.2	5	6.579	5	6.579	5	6.579	30.1	37.2
1000	62	0	1	34	24	2	0	0	0	0	1	0	1	6	8	1	6	24	11	5	0	0	0	0	0	0	0	29.4	37.8	5	8.065	5	8.065	5	8.065	29.4	37.8
1100	82	0	1	33	37	8	1	0	1	0	1	0	0	4	8	4	20	31	11	4	0	0	0	0	0	0	0	29.6	36	4	4.878	4	4.878	4	4.878	29.6	36
1200	108	0	3	48	52	3	0	0	1	0	1	0	0	10	20	4	9	35	22	6	2	0	0	0	0	0	0	29	37.8	8	7.407	8	7.407	8	7.407	29	37.8
1300	68	0	5	30	26	6	1	0	0	0	0	0	0	6	10	2	4	25	18	3	0	0	0	0	0	0	0	29.8	38.5	3	4.412	3	4.412	3	4.412	29.8	38.5
1400	75	0	0	42	28	3	0	0	1	0	1	0	0	7	5	3	13	19	20	6	2	0	0	0	0	0	0	31	38.9	8	10.67	8	10.67	8	10.67	31	38.9
1500	121	0	0	56	57	7	0	0	0	0	0	1	0	9	8	3	15	45	27	13	1	0	0	0	0	0	0	31.3	39.3	14	11.57	14	11.57	14	11.57	31.3	39.3
1600	116	0	0	57	55	3	0	0	1	0	0	0	0	5	2	2	13	30	48	16	0	0	0	0	0	0	0	34.2	39.8	16	13.79	16	13.79	16	13.79	34.2	39.8
1700	119	0	0	71	44	1	1	0	2	0	0	0	0	3	9	2	6	33	50	14	2	0	0	0	0	0	0	34	39.9	16	13.45	16	13.45	16	13.45	34	39.9
1800	71	0	0	27	40	2	0	0	1	0	1	0	0	4	8	0	3	10	21	19	6	0	0	0	0	0	0	34.9	42.1	25	35.21	25	35.21	25	35.21	34.9	42.1
1900	52	1	0	24	24	3	0	0	0	0	0	0	0	4	2	3	8	16	13	5	1	0	0	0	0	0	0	31.7	39	6	11.54	6	11.54	6	11.54	31.7	39
2000	22	0	0	4	15	2	0	0	0	0	1	0	0	0	0	0	6	6	7	3	0	0	0	0	0	0	0	34.3	40	3	13.64	3	13.64	3	13.64	34.3	40
2100	17	0	1	9	7	0	0	0	0	0	0	0	0	4	4	0	2	4	3	0	0	0	0	0	0	0	0	24.7	36.9	0	0	0	0	0	0	24.7	36.9
2200	22	0	1	10	11	0	0	0	0	0	0	0	0	0	1	0	1	4	7	9	0	0	0	0	0	0	0	37.2	42.1	9	40.91	9	40.91	9	40.91	37.2	42.1
2300	9	0	0	4	5	0	0	0	0	0	0	0	0	1	0	0	1	1	3	3	0	0	0	0	0	0	0	34.7	-	3	33.33	3	33.33	3	33.33	34.7	-
07-19 12hr	1119	0	11	538	497	45	6	1	8	0	11	2	1	74	100	33	124	326	323	119	19	0	0	0	0	0	0	31.7	39.6	138	12.33	138	12.33	138	12.33	31.7	39.6
06-22 16hr	05-Jun	1	12	596	560	52	6	1	9	0	13	2	1	83	108	38	142	365	361	129	25	0	0	0	0	0	0	31.8	39.5	154	12.3	154	12.3	154	12.3	31.8	39.5
06-00 18hr	1283	1	13	610	576	52	6	1	9	0	13	2	1	84	109	38	144	370	371	141	25	0	0	0	0	0	0	31.9	39.6	166	12.94	166	12.94	166	12.94	31.9	39.6
00-00 24hr	1309	1	13	625	584	53	6	1	10	0	14	2	1	84	109	38	145	372	383	152	25	0	0	0	0	0	0	32	39.7	177	13.52	177	13.52	177	13.52	32	39.7

Vehicles = 1309
Posted speed limit = 40 mph, Exceeding = 177 (13.52%), Mean Exceeding = 42.44 mph
Maximum = 49.3 mph, Minimum = 9.9 mph, Mean = 32.0 mph
85% Speed = 39.71 mph, 95% Speed = 42.28 mph, Median = 33.89 mph
10 mph Pace = 30 - 40, Number in Pace = 760 (58.06%)
Variance = 70.91, Standard Deviation = 8.42 mph

* 19 April 2024

Time	Total	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Mean	Vpp	>PSL	>PSL%	>SL1	>SL1%	>SL2	>SL2%	Mean	Vpp
<--		1	2	3	4	5	6	7	8	9	10	11	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75		85	40	40	40	40	40	40		85
													10	15	20	25	30	35	40	45	50	55	60	65	70	75	80										
0000	3	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0	1	0	2	0	0	0	0	0	0	0	0	33.6	-	0	0	0	0	0	0	33.6	-
0100	2	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	35.2	-	0	0	0	0	0	0	35.2	-
0200	4	0	0	1	2	0	0	0	0	0	1	0	0	0	1	0	0	1	0	1	1	0	0	0	0	0	0	34.7	-	2	50	2	50	2	50	34.7	-
0300	2	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	38.7	-	1	50	1	50	1	50	38.7	-
0400	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	31.8	-	0	0	0	0	0	0	31.8	-
0500	19	0	0	9	7	1	0	0	1	0	1	0	0	0	1	0	0	4	9	5	0	0	0	0	0	0	0	36.4	41.7	5	26.32	5	26.32	5	26.32	36.4	41.7
0600	35	0	0	17	16	1	0	0	0	0	1	0	0	0	3	2	3	3	13	8	3	0	0	0	0	0	0	35.8	43.5	11	31.43	11	31.43	11	31.43	35.8	43.5
0700	101	0	1	42	54	1	1	0	1	0	1	0	0	6	12	4	4	31	28	12	4	0	0	0	0	0	0	32	40.3	16	15.84	16	15.84	16	15.84	32	40.3
0800	86	0	0	32	47	3	0	0	3	0	0	1	0	8	5	0	10	16	32	12	2	1	0	0	0	0	0	32.8	40.9	15	17.44	15	17.44	15	17.44	32.8	40.9
0900	53	0	0	20	24	5	0	0	2	0	1	1	0	7	3	1	8	21	9	4	0	0	0	0	0	0	0	29.5	37.2	4	7.547	4	7.547	4	7.547	29.5	37.2
1000	68	0	0	25	30	8	0	0	1	0	2	2	0	3	11	7	7	23	10	4	3	0	0	0	0	0	0	29.7	38.1	7	10.29	7	10.29	7	10.29	29.7	38.1
1100	75	0	0	30	30	10	0	0	0	0	5	0	0	6	11	3	13	21	15	6	0	0	0	0	0	0	0	29.2	38.1	6	8	6	8	6	8	29.2	38.1
1200	61	0	1	22	32	2	0	0	2	0	2	0	1	4	5	2	7	10	23	7	2	0	0	0	0	0	0	32	40	9	14.75	9	14.75	9	14.75	32	40
1300	72	0	0	35	29	5	1	0	1	0	1	0	0	3	11	1	3	28	20	6	0	0	0	0	0	0	0	31.3	38.8	6	8.333	6	8.333	6	8.333	31.3	38.8
1400	100	2	0	36	55	3	0	0	2	0	0	2	0	8	9	3	11	29	24	13	3	0	0	0	0	0	0	31.4	40.2	16	16	16	16	16	16	31.4	40.2
1500	129	0	1	55	68	3	0	0	1	0	1	0	1	8	10	7	6	42	39	14	2	0	0	0	0	0	0	32.2	39.4	16	12.4	16	12.4	16	12.4	32.2	39.4
1600	142	0	0	72	62	4	0	0	2	0	1	1	0	4	13	1	18	39	47	14	5	1	0	0	0	0	0	33	39.9	20	14.08	20	14.08	20	14.08	33	39.9
1700	125	0	0	72	50	3	0	0	0	0	0	0	0	4	9	0	3	33	49	23	4	0	0	0	0	0	0	34.9	40.8	27	21.6	27	21.6	27	21.6	34.9	40.8
1800	70	0	2	32	32	3	0	0	0	0	0	1	0	4	7	2	7	19	17	10	4	0	0	0	0	0	0	32.6	42.2	14	20	14	20	14	20	32.6	42.2
1900	41	0	0	20	21	0	0	0	0	0	0	0	0	1	5	2	3	6	13	11	0	0	0	0	0	0	0	33.7	41	11	26.83	11	26.83	11	26.83	33.7	41
2000	33	0	0	11	22	0	0	0	0	0	0	0	0	4	7	0	0	9	10	3	0	0	0	0	0	0	0	29	38.5	3	9.091	3	9.091	3	9.091	29	38.5
2100	12	0	0	6	6	0	0	0	0	0	0	0	0	1	1	0	1	4	3	1	1	0	0	0	0	0	0	32.6	42	2	16.67	2	16.67	2	16.67	32.6	42
2200	21	0	1	11	9	0	0	0	0	0	0	0	0	1	0	0	3	3	7	6	1	0	0	0	0	0	0	36.5	43.5	7	33.33	7	33.33	7	33.33	36.5	43.5
2300	8	0	0	5	3	0	0	0	0	0	0	0	0	0	1	0	0	4	2	0	1	0	0	0	0	0	0	33.3	-	1	12.5	1	12.5	1	12.5	33.3	-
07-19 12hr	1082	2	5	473	513	50	2	0	15	0	14	8	2	65	106	31	97	312	313	125	29	2	0	0	0	0	0	32	39.9	156	14.42	156	14.42	156	14.42	32	39.9
06-22 16hr	1203	2	5	527	578	51	2	0	15	0	15	8	2	71	122	35	104	334	352	148	33	2	0	0	0	0	0	32.1	40	183	15.21	183	15.21	183	15.21	32.1	40
06-00 18hr	1232	2	6	543	590	51	2	0	15	0	15	8	2	72	123	35	107	341	361	154	35	2	0	0	0	0	0	32.2	40.2	191	15.5	191	15.5	191	15.5	32.2	40.2
00-00 24hr	1263	2	6	556	602	52	2	0	16	0	19	8	2	72	125	35	108	349	373	161	36	2	0	0	0	0	0	32.3	40.2	199	15.76	199	15.76	199	15.76	32.3	40.2

Vehicles = 1263
Posted speed limit = 40 mph, Exceeding = 199 (15.76%), Mean Exceeding = 42.86 mph
Maximum = 51.8 mph, Minimum = 9.7 mph, Mean = 32.3 mph
85% Speed = 40.15 mph, 95% Speed = 43.62 mph, Median = 34.23 mph
10 mph Pace = 31 - 41, Number in Pace = 726 (57.48%)
Variance = 76.80, Standard Deviation = 8.76 mph

* 20 April 2024

Time	Total	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Mean	Vpp	>PSL	>PSL%	>SL1	>SL1%	>SL2	>SL2%	Mean	Vpp
<--		1	2	3	4	5	6	7	8	9	10	11	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75		85	40	40	40	40	40	40		85
													10	15	20	25	30	35	40	45	50	55	60	65	70	75	80										
0000	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	32.3	-	0	0	0	0	0	0	32.3	-
0100	3	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	2	0	1	0	0	0	0	0	0	0	35.2	-	1	33.33	1	33.33	1	33.33	35.2	-
0200	3	0	0	0	2	1	0	0	0	0	0	0	0	0	0	0	1	0	0	2	0	0	0	0	0	0	0	37.8	-	2	66.67	2	66.67	2	66.67	37.8	-
0300	1	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	14.3	-	0	0	0	0	0	0	14.3	-
0400	3	0	0	3	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	1	0	0	0	0	0	31.4	-	1	33.33	1	33.33	1	33.33	31.4	-
0500	4	0	0	3	1	0	0	0	0	0	0	0	0	0	0	1	1	0	1	1	0	0	0	0	0	0	0	32.1	-	1	25	1	25	1	25	32.1	-
0600	21	1	0	5	14	0	0	0	0	0	1	0	0	2	1	0	0	3	6	7	2	0	0	0	0	0	0	36.3	43.8	9	42.86	9	42.86	9	42.86	36.3	43.8
0700	31	0	1	20	10	0	0	0	0	0	0	0	0	0	3	2	2	9	10	4	1	0	0	0	0	0	0	33.5	40.3	5	16.13	5	16.13	5	16.13	33.5	40.3
0800	49	0	1	24	19	4	0	0	1	0	0	0	3	4	5	3	7	14	10	3	0	0	0	0	0	0	0	28.2	37.5	3	6.122	3	6.122	3	6.122	28.2	37.5
0900	70	1	0	45	20	2	2	0	0	0	0	0	1	2	3	3	6	28	22	5	0	0	0	0	0	0	0	32.3	38.3	5	7.143	5	7.143	5	7.143	32.3	38.3
1000	64	0	0	34	25	3	1	0	1	0	0	0	0	2	4	5	9	23	16	4	1	0	0	0	0	0	0	31.7	37.9	5	7.813	5	7.813	5	7.813	31.7	37.9
1100	76	1	1	40	31	3	0	0	0	0	0	0	0	8	13	3	5	19	24	4	0	0	0	0	0	0	0	29	38	4	5.263	4	5.263	4	5.263	29	38
1200	105	0	3	56	44	2	0	0	0	0	0	0	0	9	10	0	7	38	30	11	0	0	0	0	0	0	0	31.3	38.2	11	10.48	11	10.48	11	10.48	31.3	38.2
1300	96	0	2	60	34	0	0	0	0	0	0	0	0	11	1	1	9	37	31	6	0	0	0	0	0	0	0	31.9	38.3	6	6.25	6	6.25	6	6.25	31.9	38.3
1400	82	0	4	43	33	1	0	0	0	0	0	1	1	1	8	1	9	31	26	3	2	0	0	0	0	0	0	32.1	38.3	5	6.098	5	6.098	5	6.098	32.1	38.3
1500	141	0	9	64	66	2	0	0	0	0	0	0	0	7	9	8	14	51	38	14	0	0	0	0	0	0	0	31.9	38.7	14	9.929	14	9.929	14	9.929	31.9	38.7
1600	108	0	2	56	48	2	0	0	0	0	0	0	0	5	9	3	15	32	35	9	0	0	0	0	0	0	0	31.9	38.2	9	8.333	9	8.333	9	8.333	31.9	38.2
1700	124	0	5	63	52	4	0	0	0	0	0	0	0	3	4	2	15	41	48	9	2	0	0	0	0	0	0	33.5	38.6	11	8.871	11	8.871	11	8.871	33.5	38.6
1800	110	0	4	57	48	1	0	0	0	0	0	0	0	6	5	3	3	12	59	19	3	0	0	0	0	0	0	34.9	40.9	22	20	22	20	22	20	34.9	40.9
1900	74	0	1	32	40	1	0	0	0	0	0	0	0	2	6	1	8	9	33	10	4	0	1	0	0	0	0	34.6	41	15	20.27	15	20.27	15	20.27	34.6	41
2000	49	0	3	23	22	1	0	0	0	0	0	0	0	3	4	2	3	10	23	4	0	0	0	0	0	0	0	32.5	39.4	4	8.163	4	8.163	4	8.163	32.5	39.4
2100	23	0	1	13	8	1	0	0	0	0	0	0	0	2	1	2	3	10	4	1	0	0	0	0	0	0	0	29.8	36.1	1	4.348	1	4.348	1	4.348	29.8	36.1
2200	34	0	1	17	16	0	0	0	0	0	0	0	0	1	2	1	4	13	9	3	1	0	0	0	0	0	0	32.9	38.7	4	11.76	4	11.76	4	11.76	32.9	38.7
2300	16	0	0	9	7	0	0	0	0	0	0	0	0	0	1	0	0	4	8	2	1	0	0	0	0	0	0	36.5	43.1	3	18.75	3	18.75	3	18.75	36.5	43.1
07-19 12hr	1056	2	32	562	430	24	3	0	2	0	0	1	5	58	74	34	101	335	349	91	9	0	0	0	0	0	0	32	38.6	100	9.47	100	9.47	100	9.47	32	38.6
06-22 16hr	1223	3	37	635	514	27	3	0	2	0	1	1	5	67	86	39	115	367	415	113	15	0	1	0	0	0	0	32.3	38.9	129	10.55	129	10.55	129	10.55	32.3	38.9
06-00 18hr	1273	3	38	661	537	27	3	0	2	0	1	1	5	68	89	40	119	384	432	118	17	0	1	0	0	0	0	32.3	38.9	136	10.68	136	10.68	136	10.68	32.3	38.9
00-00 24hr	1288	3	38	670	541	29	3	0	2	0	1	1	5	69	90	42	121	387	433	122	17	1	1	0	0	0	0	32.3	39	141	10.95	141	10.95	141	10.95	32.3	39

Vehicles = 1288
Posted speed limit = 40 mph, Exceeding = 141 (10.95%), Mean Exceeding = 42.54 mph
Maximum = 55.7 mph, Minimum = 7.9 mph, Mean = 32.3 mph
85% Speed = 39.03 mph, 95% Speed = 41.94 mph, Median = 34.23 mph
10 mph Pace = 30 - 40, Number in Pace = 823 (63.90%)
Variance = 64.37, Standard Deviation = 8.02 mph

* 21 April 2024

Time	Total	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Mean	Vpp	>PSL	>PSL%	>SL1	>SL1%	>SL2	>SL2%	Mean	Vpp
<--		1	2	3	4	5	6	7	8	9	10	11	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75		85	40	40	40	40	40	40		85
													10	15	20	25	30	35	40	45	50	55	60	65	70	75	80										
0000	10	0	0	4	5	1	0	0	0	0	0	0	0	0	0	1	1	2	4	2	0	0	0	0	0	0	0	35.2	-	2	20	2	20	2	20	35.2	-
0100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
0200	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	36.5	-	0	0	0	0	0	0	36.5	-
0300	4	0	0	2	2	0	0	0	0	0	0	0	0	1	0	0	0	0	2	1	0	0	0	0	0	0	0	31.8	-	1	25	1	25	1	25	31.8	-
0400	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	39.3	-	0	0	0	0	0	0	39.3	-
0500	2	0	0	1	1	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	26.7	-	0	0	0	0	0	0	26.7	-
0600	13	0	0	6	4	1	0	0	0	0	1	1	0	0	2	0	1	2	4	4	0	0	0	0	0	0	0	34.8	43.3	4	30.77	4	30.77	4	30.77	34.8	43.3
0700	13	0	2	6	4	1	0	0	0	0	0	0	0	0	1	1	0	1	7	2	1	0	0	0	0	0	0	36.1	44.8	3	23.08	3	23.08	3	23.08	36.1	44.8
0800	40	0	0	21	16	3	0	0	0	0	0	0	0	5	4	2	7	7	12	3	0	0	0	0	0	0	0	29.5	38.9	3	7.5	3	7.5	3	7.5	29.5	38.9
0900	51	0	0	26	23	1	0	0	1	0	0	0	0	5	7	5	6	10	15	2	1	0	0	0	0	0	0	29.2	38.9	3	5.882	3	5.882	3	5.882	29.2	38.9
1000	72	0	3	33	33	2	0	0	1	0	0	0	0	4	7	1	7	24	24	5	0	0	0	0	0	0	0	31.8	38.3	5	6.944	5	6.944	5	6.944	31.8	38.3
1100	70	0	5	34	27	0	1	0	3	0	0	0	0	5	6	1	6	28	14	9	0	1	0	0	0	0	0	31.7	39.8	10	14.29	10	14.29	10	14.29	31.7	39.8
1200	103	1	9	65	27	1	0	0	0	0	0	0	0	8	20	9	5	21	35	3	2	0	0	0	0	0	0	29.1	38.1	5	4.854	5	4.854	5	4.854	29.1	38.1
1300	95	1	7	47	39	1	0	0	0	0	0	0	1	4	10	4	10	35	24	5	2	0	0	0	0	0	0	30.6	37.2	7	7.368	7	7.368	7	7.368	30.6	37.2
1400	106	1	7	49	46	1	0	0	2	0	0	0	0	9	14	1	3	36	27	12	4	0	0	0	0	0	0	31.6	40.1	16	15.09	16	15.09	16	15.09	31.6	40.1
1500	129	0	7	65	55	2	0	0	0	0	0	0	0	2	7	1	7	47	49	12	3	1	0	0	0	0	0	34.4	39.8	16	12.4	16	12.4	16	12.4	34.4	39.8
1600	126	0	5	65	54	2	0	0	0	0	0	0	0	4	11	2	11	36	46	10	5	1	0	0	0	0	0	33.1	39.6	16	12.7	16	12.7	16	12.7	33.1	39.6
1700	140	0	1	68	69	2	0	0	0	0	0	0	0	2	9	2	10	35	61	20	1	0	0	0	0	0	0	34.3	40	21	15	21	15	21	15	34.3	40
1800	123	0	3	55	64	0	0	0	0	0	1	0	0	6	10	1	4	38	49	10	5	0	0	0	0	0	0	33.7	39.6	15	12.2	15	12.2	15	12.2	33.7	39.6
1900	55	0	9	18	27	1	0	0	0	0	0	0	0	3	5	1	8	13	21	3	1	0	0	0	0	0	0	31.8	38.7	4	7.273	4	7.273	4	7.273	31.8	38.7

2000	30	0	1	20	9	0	0	0	0	0	0	0	0	0	4	2	3	11	9	0	1	0	0	0	0	0	0	31.4	38.3	1	3.333	1	3.333	1	3.333	31.4	38.3
2100	19	0	0	13	5	0	0	0	1	0	0	0	0	1	2	0	1	5	5	5	0	0	0	0	0	0	0	33.6	42.4	5	26.32	5	26.32	5	26.32	33.6	42.4
2200	8	0	0	2	5	0	0	0	0	0	1	0	0	0	0	0	1	1	3	3	0	0	0	0	0	0	0	37.3	-	3	37.5	3	37.5	3	37.5	37.3	-
2300	6	0	0	5	1	0	0	0	0	0	0	0	0	0	0	0	0	1	2	3	0	0	0	0	0	0	0	38.3	-	3	50	3	50	3	50	38.3	-
07-19 12hr	1068	3	49	534	457	16	1	0	7	0	1	0	1	54	106	30	76	318	363	93	24	3	0	0	0	0	0	32.3	39.3	120	11.24	120	11.24	120	11.24	32.3	39.3
06-22 16hr	1185	3	59	591	502	18	1	0	8	0	2	1	1	58	119	33	89	349	402	105	26	3	0	0	0	0	0	32.3	39.3	134	11.31	134	11.31	134	11.31	32.3	39.3
06-00 18hr	1199	3	59	598	508	18	1	0	8	0	3	1	1	58	119	33	90	351	407	111	26	3	0	0	0	0	0	32.3	39.4	140	11.68	140	11.68	140	11.68	32.3	39.4
00-00 24hr	1217	3	59	607	516	19	1	0	8	0	3	1	1	59	120	34	91	353	416	114	26	3	0	0	0	0	0	32.3	39.4	143	11.75	143	11.75	143	11.75	32.3	39.4

Vehicles = 1217
Posted speed limit = 40 mph, Exceeding = 143 (11.75%), Mean Exceeding = 42.95 mph
Maximum = 53.5 mph, Minimum = 5.0 mph, Mean = 32.3 mph
85% Speed = 39.37 mph, 95% Speed = 42.74 mph, Median = 34.45 mph
10 mph Pace = 30 - 40, Number in Pace = 767 (63.02%)
Variance = 69.08, Standard Deviation = 8.31 mph

* 22 April 2024

Time	Total	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Mean	Vpp	>PSL	>PSL%	>SL1	>SL1%	>SL2	>SL2%	Mean	Vpp
<--		1	2	3	4	5	6	7	8	9	10	11	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75		85	40	40	40	40	40	40		85
													10	15	20	25	30	35	40	45	50	55	60	65	70	75	80										
0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
0100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
0200	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	42.8	-	1	100	1	100	1	100	42.8	-
0300	5	0	0	2	3	0	0	0	0	0	0	0	0	0	0	1	0	0	3	1	0	0	0	0	0	0	0	34	-	1	20	1	20	1	20	34	-
0400	6	0	0	2	2	0	0	0	0	0	2	0	0	0	0	0	0	1	4	1	0	0	0	0	0	0	0	37.2	-	1	16.67	1	16.67	1	16.67	37.2	-
0500	14	0	0	6	3	1	0	0	1	0	3	0	0	0	0	0	2	3	5	3	1	0	0	0	0	0	0	36.8	41.3	4	28.57	4	28.57	4	28.57	36.8	41.3
0600	36	0	0	17	16	1	0	0	1	0	1	0	0	0	5	1	6	7	4	11	2	0	0	0	0	0	0	33.9	42	13	36.11	13	36.11	13	36.11	33.9	42
0700	83	0	0	37	40	6	0	0	0	0	0	0	0	6	9	1	11	22	29	5	0	0	0	0	0	0	0	31	38.6	5	6.024	5	6.024	5	6.024	31	38.6
0800	92	0	0	32	53	4	0	0	1	0	2	0	0	1	6	2	12	19	43	8	1	0	0	0	0	0	0	33.4	38.5	9	9.783	9	9.783	9	9.783	33.4	38.5
0900	69	0	0	35	27	4	0	0	1	0	1	1	0	5	7	2	8	29	14	2	2	0	0	0	0	0	0	30.4	37.5	4	5.797	4	5.797	4	5.797	30.4	37.5
1000	66	0	0	32	25	6	0	0	2	0	1	0	0	8	5	8	12	22	10	0	1	0	0	0	0	0	0	28.1	36.2	1	1.515	1	1.515	1	1.515	28.1	36.2
1100	69	0	1	27	27	10	1	0	1	0	2	0	0	3	3	6	3	25	27	2	0	0	0	0	0	0	0	32.3	38.1	2	2.899	2	2.899	2	2.899	32.3	38.1
1200	74	0	0	31	34	5	0	0	2	0	2	0	0	3	8	2	13	24	18	4	1	1	0	0	0	0	0	30.9	37.8	6	8.108	6	8.108	6	8.108	30.9	37.8
1300	71	0	0	34	29	6	1	0	0	0	0	1	0	10	7	2	11	23	16	2	0	0	0	0	0	0	0	28.6	36.4	2	2.817	2	2.817	2	2.817	28.6	36.4
1400	65	0	0	32	30	1	1	0	0	0	1	0	0	2	2	2	11	26	15	6	0	1	0	0	0	0	0	32.6	39.3	7	10.77	7	10.77	7	10.77	32.6	39.3
1500	93	0	0	46	40	4	0	0	2	0	0	1	0	3	5	7	5	31	32	6	4	0	0	0	0	0	0	33.1	39.2	10	10.75	10	10.75	10	10.75	33.1	39.2
1600	116	0	0	53	59	3	0	0	1	0	0	0	0	4	4	1	9	38	43	14	3	0	0	0	0	0	0	34	40	17	14.66	17	14.66	17	14.66	34	40
1700	110	0	0	64	45	1	0	0	0	0	0	0	0	8	10	1	8	30	30	19	4	0	0	0	0	0	0	32.8	40.9	23	20.91	23	20.91	23	20.91	32.8	40.9
1800	78	0	0	42	34	1	0	0	0	0	0	1	0	5	7	1	4	21	29	9	0	2	0	0	0	0	0	33	39.9	11	14.1	11	14.1	11	14.1	33	39.9
1900	43	0	0	24	18	1	0	0	0	0	0	0	0	5	8	0	1	9	12	7	1	0	0	0	0	0	0	30.4	40.3	8	18.6	8	18.6	8	18.6	30.4	40.3
2000	22	0	0	9	13	0	0	0	0	0	0	0	0	1	4	1	0	9	4	2	1	0	0	0	0	0	0	30.5	40.9	3	13.64	3	13.64	3	13.64	30.5	40.9
2100	10	0	0	6	4	0	0	0	0	0	0	0	0	0	1	0	2	3	1	3	0	0	0	0	0	0	0	33.8	-	3	30	3	30	3	30	33.8	-
2200	14	0	0	7	7	0	0	0	0	0	0	0	0	0	0	0	3	4	6	1	0	0	0	0	0	0	0	34.8	39.2	1	7.143	1	7.143	1	7.143	34.8	39.2
2300	6	0	0	3	2	0	0	0	0	0	1	0	0	0	1	0	0	2	2	1	0	0	0	0	0	0	0	33.9	-	1	16.67	1	16.67	1	16.67	33.9	-
07-19 12hr	986	0	1	465	443	51	3	0	10	0	9	4	0	58	73	35	107	310	306	77	16	4	0	0	0	0	0	31.9	38.8	97	9.838	97	9.838	97	9.838	31.9	38.8
06-22 16hr	1097	0	1	521	494	53	3	0	11	0	10	4	0	64	91	37	116	338	327	100	20	4	0	0	0	0	0	31.9	39.1	124	11.3	124	11.3	124	11.3	31.9	39.1
06-00 18hr	1117	0	1	531	503	53	3	0	11	0	11	4	0	64	92	37	119	344	335	102	20	4	0	0	0	0	0	32	39.1	126	11.28	126	11.28	126	11.28	32	39.1
00-00 24hr	1143	0	1	541	512	54	3	0	12	0	16	4	0	64	92	38	121	348	347	108	21	4	0	0	0	0	0	32.1	39.3	133	11.64	133	11.64	133	11.64	32.1	39.3

Vehicles = 1143
Posted speed limit = 40 mph, Exceeding = 133 (11.64%), Mean Exceeding = 42.79 mph
Maximum = 52.1 mph, Minimum = 10.2 mph, Mean = 32.1 mph
85% Speed = 39.26 mph, 95% Speed = 42.28 mph, Median = 34.00 mph
10 mph Pace = 30 - 40, Number in Pace = 694 (60.72%)
Variance = 66.78, Standard Deviation = 8.17 mph

* 23 April 2024

Time	Total	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Mean	Vpp	>PSL	>PSL%	>SL1	>SL1%	>SL2	>SL2%	Mean	Vpp
<--		1	2	3	4	5	6	7	8	9	10	11	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75		85	40	40	40	40	40	40		85
													10	15	20	25	30	35	40	45	50	55	60	65	70	75	80										
0000	4	0	0	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	42.8	-	4	100	4	100	4	100	42.8	-
0100	2	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	29.8	-	0	0	0	0	0	0	29.8	-
0200	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	42.9	-	1	100	1	100	1	100	42.9	-
0300	2	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	39.8	-	1	50	1	50	1	50	39.8	-
0400	5	0	0	1	2	1	0	0	0	0	1	0	0	0	0	1	0	1	3	0	0	0	0	0	0	0	0	33.6	-	0	0	0	0	0	0	33.6	-
0500	12	0	0	6	4	0	0	0	2	0	0	0	0	0	1	1	0	1	9	0	0	0	0	0	0	0	0	34.3	38.6	0	0	0	0	0	0	34.3	38.6
0600	57	0	0	33	20	1	1	0	1	0	1	0	0	1	5	1	2	14	19	10	4	1	0	0	0	0	0	35.2	42.9	15	26.32	15	26.32	15	26.32	35.2	42.9
0700	111	0	0	59	45	4	1	0	1	0	0	1	0	8	13	3	8	41	29	8	1	0	0	0	0	0	0	31	37.7	9	8.108	9	8.108	9	8.108	31	37.7
0800	124	0	0	54	61	4	1	0	2	0	2	0	0	3	8	5	12	37	46	11	2	0	0	0	0	0	0	33	39.4	13	10.48	13	10.48	13	10.48	33	39.4
0900	73	0	0	38	24	4	2	1	1	0	1	2	0	7	2	2	12	32	16	1	1	0	0	0	0	0	0	30.7	36.8	2	2.74	2	2.74	2	2.74	30.7	36.8
1000	52	0	0	27	18	3	0	0	2	0	1	1	0	2	6	2	2	16	17	6	1	0	0	0	0	0	0	32.4	39.7	7	13.46	7	13.46	7	13.46	32.4	39.7
1100	62	1	1	26	26	2	1	1	1	0	3	0	0	6	9	4	8	19	15	1	0	0	0	0	0	0	0	28.3	36.6	1	1.613	1	1.613	1	1.613	28.3	36.6
1200	83	0	1	35	37	2	2	0	2	0	3	1	2	6	11	5	10	26	18	4	1	0	0	0	0	0	0	29.1	37.4	5	6.024	5	6.024	5	6.024	29.1	37.4
1300	77	0	0	35	36	3	0	0	0	0	3	0	0	4	7	3	14	28	18	2	1	0	0	0	0	0	0	30.4	37	3	3.896	3	3.896	3	3.896	30.4	37
1400	92	0	1	38	48	1	2	0	0	0	1	1	1	8	4	1	9	34	28	6	1	0	0	0	0	0	0	31.7	38.9	7	7.609	7	7.609	7	7.609	31.7	38.9
1500	124	0	1	58	57	4	0	0	1	0	3	0	0	5	6	1	22	33	38	16	3	0	0	0	0	0	0	33.2	40.3	19	15.32	19	15.32	19	15.32	33.2	40.3
1600	140	0	0	76	58	6	0	0	0	0	0	0	0	7	8	3	9	41	48	22	1	1	0	0	0	0	0	33.9	40.5	24	17.14	24	17.14	24	17.14	33.9	40.5
1700	115	0	1	55	55	3	0	0	0	0	0	1	0	2	12	2	5	33	42	16	3	0	0	0	0	0	0	33.8	40.2	19	16.52	19	16.52	19	16.52	33.8	40.2
1800	72	0	4	31	34	2	0	0	0	0	0	1	0	3	8	2	9	11	23	16	0	0	0	0	0	0	0	33	40.9	16	22.22	16	22.22	16	22.22	33	40.9
1900	44	0	0	28	15	0	1	0	0	0	0	0	1	1	3	3	9	7	15	4	1	0	0	0	0	0	0	32	38.9	5	11.36	5	11.36	5	11.36	32	38.9
2000	16	0	0	8	8	0	0	0	0	0	0	0	0	0	0	0	0	7	8	1	0	0	0	0	0	0	0	35.6	39.3	1	6.25	1	6.25	1	6.25	35.6	39.3
2100	27	0	1	15	11	0	0	0	0	0	0	0	0	1	3	0	2	4	13	4	0	0	0	0	0	0	0	33.6	40.8	4	14.81	4	14.81	4	14.81	33.6	40.8
2200	13	0	0	6	7	0	0	0	0	0	0	0	0	0	0	0	0	1	4	5	3	0	0	0	0	0	0	40.9	45.7	8	61.54	8	61.54	8	61.54	40.9	45.7
2300	7	0	0	6	1	0	0	0	0	0	0	0	0	0	0	0	0	2	3	2	0	0	0	0	0	0	0	37.1	-	2	28.57	2	28.57	2	28.57	37.1	-
07-19 12hr	1125	1	9	532	499	38	9	2	10	0	17	8	3	61	94	33	120	351	338	109	15	1	0	0	0	0	0	32	39.1	125	11.11	125	11.11	125	11.11	32	39.1
06-22 16hr	1269	1	10	616	553	39	11	2	11	0	18	8	4	64	105	37	133	383	393	128	20	2	0	0	0	0	0	32.2	39.4	150	11.82	150	11.82	150	11.82	32.2	39.4
06-00 18hr	1289	1	10	628	561	39	11	2	11	0	18	8	4	64	105	37	133	386	400	135	23	2	0	0	0	0	0	32.3	39.5	160	12.41	160	12.41	160	12.41	32.3	39.5
00-00 24hr	1315	1	10	638	572	40	11	2	14	0	19	8	4	64	106	40	133	388	414	141	23	2	0	0	0	0	0	32.4	39.5	166	12.62	166	12.62	166	12.62	32.4	39.5

Vehicles = 1315
Posted speed limit = 40 mph, Exceeding = 166 (12.62%), Mean Exceeding = 42.77 mph
Maximum = 50.2 mph, Minimum = 8.3 mph, Mean = 32.4 mph
85% Speed = 39.48 mph, 95% Speed = 42.95 mph, Median = 34.23 mph
10 mph Pace = 30 - 40, Number in Pace = 798 (60.68%)
Variance = 67.05, Standard Deviation = 8.19 mph

* 24 April 2024

Time	Total	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Mean	Vpp	>PSL	>PSL%	>SL1	>SL1%	>SL2	>SL2%	Mean	Vpp
<--		1	2	3	4	5	6	7	8	9	10	11	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75		85	40	40	40	40	40	40		85
													10	15	20	25	30	35	40	45	50	55	60	65	70	75	80										
0000	3	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2	0	0	0	0	0	0	43.2	-	2	66.67	2	66.67	2	66.67	43.2	-
0100	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	44.9	-	1	100	1	100	1	100	44.9	-
0200	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	38.8	-	0	0	0	0	0	0	38.8	-
0300	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	32.3	-	0	0	0	0	0	0	32.3	-
0400	5	0	0	1	3	0	0	0	0	0	1	0	0	0	0	0	0	1	4	0	0	0	0	0	0	0	0	36.8	-	0	0	0	0	0	0	36.8	-
0500	12	0	0	5	6	0	0	0	1	0	0	0	0	0	0	1	1	0	7	2	0	0	1	0	0	0	0	37.4	41.9	3	25	3	25	3	25	37.4	41.9
0600	43	0	0	23	15	0	0	1	2	0	2	0	0	3	4	1	5	9	13	7	1	0	0	0	0	0	0	32.2	41.2	8	18.6	8	18.6	8	18.6	32.2	41.2
0700	104	1	0	51	45	5	0	0	1	0	1	0	2	5	11	2	3	30	35	11	5	0	0	0	0	0	0	32.5	40.2	16	15.38	16	15.38	16	15.38	32.5	40.2
0800	135	0	0	80	48	4	1	0	1	0	1	0	0	3	9	4	18	43	48	9	1	0	0	0	0	0	0	32.6	38	10	7.407	10	7.407	10	7.407	32.6	38
0900	68	0	1	38	24	2	1	1	0	0	0	1	0	3	5	0	11	32	13	4	0	0	0	0	0	0	0	31.1	37.5	4	5.882	4	5.882	4	5.882	31.1	37.5
1000	50	0	2	28	17	3	0	0	0	0	0	0	0	2	9	2	4	19	12	1	1	0	0	0	0	0	0	29.9	37.2	2	4	2	4	2	4	29.9	37.2
1100	78	0	1	42	25	4	1	1	0	0	4	0	0	6	8	9	10	28	12	5	0	0	0	0	0	0	0	29	36.4	5	6.41	5	6.41	5	6.41	29	36.4
1200	94	1	2	51	34	4	0	1	0	0	1	0	2	4	5	5	16	31	23	6	2	0	0	0	0	0	0	31.2	38	8	8.511	8	8.511	8	8.511	31.2	38
1300	78	1	0	42	26	7	0	0	0	0	2	0	0	5	5	3	8	24	28	5	0	0	0	0	0	0	0	31.8	38.1	5	6.41	5	6.41	5	6.41	31.8	38.1
1400	73	0	1	39	24	5	0	0	1	0	2	1	0	5	9	3	11	21	17	5	1	1	0	0	0	0	0	30.5	39.3	7	9.589	7	9.589	7	9.589	30.5	39.3
1500	114	0	3	52	49	7	0	0	2	0	1	0	0	3	3	0	11	34	48	13	2	0	0	0	0	0	0	34.6	39.6	15	13.16	15	13.16	15	13.16	34.6	39.6
1600	153	0	1	79	70	2	0	0	0	0	1	0	0	6	4	17	14	46	45	19	2	0	0	0	0	0	0	32.7	39.1	21	13.73	21	13.73	21	13.73	32.7	39.1
1700	120	0	2	66	45	4	1	1	0	0	1	0	0	4	11	1	13	21	48	17	5	0	0	0	0	0	0	33.8	41.4	22	18.33	22	18.33	22	18.33	33.8	41.4
1800	86	0	0	33	44	6	0	0	1	0	2	0	0	3	7	1	3	25	28	19	0	0	0	0	0	0	0	34.3	41.5	19	22.09	19	22.09	19	22.09	34.3	41.5
1900	46	0	1	24	20	0	0	0	0	0	1	0	0	3	3	3	5	9	16	6	1	0	0	0	0	0	0	32.3	40.3	7	15.22	7	15.22	7	15.22	32.3	40.3
2000	51	0	8	31	12	0	0	0	0	0	0	0	0	2	8	2	5	17	7	8	1	1	0	0	0	0	0	31.3	40.8	10	19.61	10	19.61	10	19.61	31.3	40.8
2100	30	0	0	18	11	1	0	0	0	0	0	0	0	1	2	5	3	2	7	8	2	0	0	0	0	0	0	33.2	42.2	10	33.33	10	33.33	10	33.33	33.2	42.2
2200	8	0	1	3	4	0	0	0	0	0	0	0	0	0	0	1	0	3	2	2	0	0	0	0	0	0	0	35.1	-	2	25	2	25	2	25	35.1	-
2300	7	0	0	4	3	0	0	0	0	0	0	0	0	0	1	0	0	2	1	1	2	0	0	0	0	0	0	36.2	-	3	42.86	3	42.86	3	42.86	36.2	-
07-19 12hr	1153	3	13	601	451	53	4	4	6	0	16	2	4	49	86	47	122	354	357	114	19	1	0	0	0	0	0	32.3	39	134	11.62	134	11.62	134	11.62	32.3	39
06-22 16hr	1323	3	22	697	509	54	4	5	8	0	19	2	4	58	103	58	140	391	400	143	24	2	0	0	0	0	0	32.3	39.4	169	12.77	169	12.77	169	12.77	32.3	39.4
06-00 18hr	1338	3	23	704	516	54	4	5	8	0	19	2	4	58	104	59	140	396	403	146	26	2	0	0	0	0	0	32.3	39.4	174	13	174	13	174	13	32.3	39.4
00-00 24hr	1362	3	23	714	527	55	4	5	9	0	20	2	4	58	104	60	142	397	417	149	28	2	1	0	0	0	0	32.4	39.5	180	13.22	180	13.22	180	13.22	32.4	39.5

Vehicles = 1362
Posted speed limit = 40 mph, Exceeding = 180 (13.22%), Mean Exceeding = 42.81 mph
Maximum = 58.7 mph, Minimum = 9.1 mph, Mean = 32.4 mph
85% Speed = 39.48 mph, 95% Speed = 42.84 mph, Median = 34.11 mph
10 mph Pace = 29 - 39, Number in Pace = 818 (60.06%)
Variance = 65.22, Standard Deviation = 8.08 mph

*** Virtual Week (1)**

Time	Total	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Mean	Vpp	>PSL	>PSL%	>SL1	>SL1%	>SL2	>SL2%	Mean	Vpp
<--		1	2	3	4	5	6	7	8	9	10	11	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75		85	40	40	40	40	40	40		85
													10	15	20	25	30	35	40	45	50	55	60	65	70	75	80										
Mon	1143	0	1	541	512	54	3	0	12	0	16	4	0	64	92	38	121	348	347	108	21	4	0	0	0	0	0	32.1	39.3	133	11.64	133	11.64	133	11.64	32.1	39.3
Tue	1315	1	10	638	572	40	11	2	14	0	19	8	4	64	106	40	133	388	414	141	23	2	0	0	0	0	0	32.4	39.5	166	12.62	166	12.62	166	12.62	32.4	39.5
Wed	1362	3	23	714	527	55	4	5	9	0	20	2	4	58	104	60	142	397	417	149	28	2	1	0	0	0	0	32.4	39.5	180	13.22	180	13.22	180	13.22	32.4	39.5
Thu	1309	1	13	625	584	53	6	1	10	0	14	2	1	84	109	38	145	372	383	152	25	0	0	0	0	0	0	32	39.7	177	13.52	177	13.52	177	13.52	32	39.7
Fri	1263	2	6	556	602	52	2	0	16	0	19	8	2	72	125	35	108	349	373	161	36	2	0	0	0	0	0	32.3	40.2	199	15.76	199	15.76	199	15.76	32.3	40.2
|Sat	1288	3	38	670	541	29	3	0	2	0	1	1	5	69	90	42	121	387	433	122	17	1	1	0	0	0	0	32.3	39	141	10.95	141	10.95	141	10.95	32.3	39
|Sun	1217	3	59	607	516	19	1	0	8	0	3	1	1	59	120	34	91	353	416	114	26	3	0	0	0	0	0	32.3	39.4	143	11.75	143	11.75	143	11.75	32.3	39.4
--	8897	13	150	4351	3854	302	30	8	71	0	92	26	17	470	746	287	861	2594	2783	947	176	14	2	0	0	0	0	32.3	39.5	1139	12.8	1139	12.8	1139	12.8	32.3	39.5

Vehicles = 8897
Posted speed limit = 40 mph, Exceeding = 1139 (12.80%), Mean Exceeding = 42.74 mph
Maximum = 58.7 mph, Minimum = 5.0 mph, Mean = 32.3 mph
85% Speed = 39.48 mph, 95% Speed = 42.73 mph, Median = 34.11 mph
10 mph Pace = 30 - 40, Number in Pace = 5362 (60.27%)
Variance = 68.55, Standard Deviation = 8.28 mph

*** Grand Total**

Time	Total	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Mean	Vpp	>PSL	>PSL%	>SL1	>SL1%	>SL2	>SL2%	Mean	Vpp
<--		1	2	3	4	5	6	7	8	9	10	11	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75		85	40	40	40	40	40	40		85
													10	15	20	25	30	35	40	45	50	55	60	65	70	75	80										
--	8897	13	150	4351	3854	302	30	8	71	0	92	26	17	470	746	287	861	2594	2783	947	176	14	2	0	0	0	0	32.3	39.5	1139	12.8	1139	12.8	1139	12.8	32.3	39.5

Vehicles = 8897
Posted speed limit = 40 mph, Exceeding = 1139 (12.80%), Mean Exceeding = 42.74 mph
Maximum = 58.7 mph, Minimum = 5.0 mph, Mean = 32.3 mph
85% Speed = 39.48 mph, 95% Speed = 42.73 mph, Median = 34.11 mph
10 mph Pace = 30 - 40, Number in Pace = 5362 (60.27%)
Variance = 68.55, Standard Deviation = 8.28 mph

In profile: Vehicles = 8897 / 21166 (42.03%)


Address not found!
358°N (T) 53.001483, -1.920264 ±6m ▲ 160m
16%
For
3/4 mile

MetroCount Traffic Executive
Default SES (modified)

CustomList-617 -- English (ENG)

Datasets:	
Site:	[TTS-1722-001] Starwood Terrace, Oakamoor <30m>
Attribute:	Sign
Direction:	7 - North bound A>B, South bound B>A. Lane: 0
Survey Duration:	11:46 17 April 2024 => 12:31 25 April 2024,
Zone:	
File:	TTS-1722-001 0 2024-04-25 1232.EC0 (Plus)
Identifier:	XD99JX25 MC5900-X13 (c)MetroCount 09Nov16
Algorithm:	Factory default axle (v5.06)
Data type:	Axle sensors - Paired (Class/Speed/Count)
Profile:	
Filter time:	11:47 17 April 2024 => 12:31 25 April 2024 (8.0311)
Included classes:	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11
Speed range:	5 - 100 mph.
Direction:	North (bound), P = North, Lane = 0-16
Separation:	Headway > 0 sec, Span 0 - 100 metre
Name:	Default Profile
Scheme:	Vehicle classification (DfT-UK)
Units:	Part metric (metre, mi, m/s, mph, kg, tonne)
Column Legend:	
0 [Time]	24-hour time (0000 - 2359)
1 [Total]	Number in time step
2 [Cls]	Class totals
3 [Vbin]	Speed bin totals
4 [Mean]	Average speed
5 [Vpp]	Percentile speed
6 [>PSL]	Number exceeding Posted Speed Limit
7 [>PSL%]	Percent exceeding Posted Speed Limit
8 [>SL1]	Number exceeding Speed Limit 1
9 [>SL1%]	Percent exceeding Speed Limit 1
10 [>SL2]	Number exceeding Speed Limit 2
11 [>SL2%]	Percent exceeding Speed Limit 2
12 [Mean]	Average speed
13 [Vpp]	Percentile speed

?

*** 17 April 2024** — **Classifications** — **Speeds**

Time	Total	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Mean	Vpp	>PSL	>PSL%	>SL1	>SL1%	>SL2	>SL2%	Mean	Vpp
<--		1	2	3	4	5	6	7	8	9	10	11	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75		85	30	30	30	30	30	30		85
													10	15	20	25	30	35	40	45	50	55	60	65	70	75	80										
1100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
1200	21	0	1	4	15	1	0	0	0	0	0	0	3	7	9	2	0	0	0	0	0	0	0	0	0	0	0	15.4	19.6	0	0	0	0	0	0	15.4	19.6
1300	23	0	1	6	14	2	0	0	0	0	0	0	0	8	12	3	0	0	0	0	0	0	0	0	0	0	0	16.8	20	0	0	0	0	0	0	16.8	20
1400	22	1	0	5	16	0	0	0	0	0	0	0	2	4	14	2	0	0	0	0	0	0	0	0	0	0	0	15.9	19	0	0	0	0	0	0	15.9	19
1500	33	1	1	8	23	0	0	0	0	0	0	0	3	6	18	5	1	0	0	0	0	0	0	0	0	0	0	16.5	20.2	0	0	0	0	0	0	16.5	20.2
1600	44	1	0	10	31	2	0	0	0	0	0	0	12	15	15	2	0	0	0	0	0	0	0	0	0	0	0	13.7	18.8	0	0	0	0	0	0	13.7	18.8
1700	34	0	0	6	27	1	0	0	0	0	0	0	1	17	15	1	0	0	0	0	0	0	0	0	0	0	0	15.1	18.7	0	0	0	0	0	0	15.1	18.7
1800	31	1	1	7	22	0	0	0	0	0	0	0	3	12	14	2	0	0	0	0	0	0	0	0	0	0	0	15.1	18	0	0	0	0	0	0	15.1	18
1900	15	0	0	2	13	0	0	0	0	0	0	0	0	6	9	0	0	0	0	0	0	0	0	0	0	0	0	15.2	18.6	0	0	0	0	0	0	15.2	18.6
2000	14	0	1	3	10	0	0	0	0	0	0	0	0	6	6	2	0	0	0	0	0	0	0	0	0	0	0	15.8	19.9	0	0	0	0	0	0	15.8	19.9
2100	9	0	0	2	7	0	0	0	0	0	0	0	0	4	4	1	0	0	0	0	0	0	0	0	0	0	0	16.1	-	0	0	0	0	0	0	16.1	-
2200	9	0	0	5	4	0	0	0	0	0	0	0	1	5	3	0	0	0	0	0	0	0	0	0	0	0	0	13.5	-	0	0	0	0	0	0	13.5	-
2300	2	0	0	0	1	1	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	12.4	-	0	0	0	0	0	0	12.4	-
07-19 12hr	208	4	4	46	148	6	0	0	0	0	0	0	24	69	97	17	1	0	0	0	0	0	0	0	0	0	0	15.3	19.3	0	0	0	0	0	0	15.3	19.3
06-22 16hr	246	4	5	53	178	6	0	0	0	0	0	0	24	85	116	20	1	0	0	0	0	0	0	0	0	0	0	15.4	19.2	0	0	0	0	0	0	15.4	19.2
06-00 18hr	257	4	5	58	183	7	0	0	0	0	0	0	26	90	120	20	1	0	0	0	0	0	0	0	0	0	0	15.3	19	0	0	0	0	0	0	15.3	19
00-00 24hr	257	4	5	58	183	7	0	0	0	0	0	0	26	90	120	20	1	0	0	0	0	0	0	0	0	0	0	15.3	19	0	0	0	0	0	0	15.3	19

Vehicles = 257
Posted speed limit = 30 mph, Exceeding = 0 (0.000%), Mean Exceeding = 0.00 mph
Maximum = 25.7 mph, Minimum = 5.4 mph, Mean = 15.3 mph
85% Speed = 18.97 mph, 95% Speed = 20.83 mph, Median = 15.43 mph
10 mph Pace = 11 - 21, Number in Pace = 215 (83.66%)
Variance = 12.97, Standard Deviation = 3.60 mph

* 18 April 2024

Time	Total	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Mean	Vpp	>PSL	>PSL%	>SL1	>SL1%	>SL2	>SL2%	Mean	Vpp
<--		1	2	3	4	5	6	7	8	9	10	11	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75		85	30	30	30	30	30	30		85
													10	15	20	25	30	35	40	45	50	55	60	65	70	75	80										
0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
0100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
0200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
0300	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
0400	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
0500	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	21.8	-	0	0	0	0	0	0	21.8	-
0600	2	0	0	2	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	16.5	-	0	0	0	0	0	0	16.5	-
0700	17	0	0	3	14	0	0	0	0	0	0	0	1	3	11	2	0	0	0	0	0	0	0	0	0	0	0	16.5	19.6	0	0	0	0	0	0	16.5	19.6
0800	39	1	0	12	25	0	0	0	1	0	0	0	0	3	30	6	0	0	0	0	0	0	0	0	0	0	0	17.9	20.2	0	0	0	0	0	0	17.9	20.2
0900	25	0	0	6	15	3	0	0	1	0	0	0	0	6	11	8	0	0	0	0	0	0	0	0	0	0	0	17.7	21.4	0	0	0	0	0	0	17.7	21.4
1000	15	0	1	3	11	0	0	0	0	0	0	0	0	5	8	2	0	0	0	0	0	0	0	0	0	0	0	17.2	20.7	0	0	0	0	0	0	17.2	20.7
1100	26	0	1	8	15	2	0	0	0	0	0	0	0	4	19	3	0	0	0	0	0	0	0	0	0	0	0	17.3	19.9	0	0	0	0	0	0	17.3	19.9
1200	9	0	0	2	6	1	0	0	0	0	0	0	1	3	5	0	0	0	0	0	0	0	0	0	0	0	0	15.6	-	0	0	0	0	0	0	15.6	-
1300	24	0	0	8	15	1	0	0	0	0	0	0	1	12	9	2	0	0	0	0	0	0	0	0	0	0	0	15.4	19.3	0	0	0	0	0	0	15.4	19.3
1400	24	1	0	9	13	1	0	0	0	0	0	0	3	8	11	2	0	0	0	0	0	0	0	0	0	0	0	15.1	19.1	0	0	0	0	0	0	15.1	19.1
1500	40	0	2	12	26	0	0	0	0	0	0	0	0	17	22	1	0	0	0	0	0	0	0	0	0	0	0	15.6	18.7	0	0	0	0	0	0	15.6	18.7
1600	40	0	0	11	27	2	0	0	0	0	0	0	6	13	19	2	0	0	0	0	0	0	0	0	0	0	0	15	18.1	0	0	0	0	0	0	15	18.1
1700	38	0	1	5	32	0	0	0	0	0	0	0	3	11	22	2	0	0	0	0	0	0	0	0	0	0	0	15.8	19	0	0	0	0	0	0	15.8	19
1800	23	0	0	8	14	1	0	0	0	0	0	0	0	7	13	3	0	0	0	0	0	0	0	0	0	0	0	16.8	20	0	0	0	0	0	0	16.8	20
1900	14	0	0	3	11	0	0	0	0	0	0	0	0	5	8	1	0	0	0	0	0	0	0	0	0	0	0	16.2	19.1	0	0	0	0	0	0	16.2	19.1
2000	9	0	0	2	7	0	0	0	0	0	0	0	0	5	4	0	0	0	0	0	0	0	0	0	0	0	0	15	-	0	0	0	0	0	0	15	-
2100	5	0	0	1	3	1	0	0	0	0	0	0	0	1	2	2	0	0	0	0	0	0	0	0	0	0	0	17.7	-	0	0	0	0	0	0	17.7	-
2200	4	0	0	1	3	0	0	0	0	0	0	0	0	3	1	0	0	0	0	0	0	0	0	0	0	0	0	15.5	-	0	0	0	0	0	0	15.5	-
2300	2	0	0	0	2	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	11.8	-	0	0	0	0	0	0	11.8	-
07-19 12hr	320	2	5	87	213	11	0	0	2	0	0	0	15	92	180	33	0	0	0	0	0	0	0	0	0	0	0	16.3	19.2	0	0	0	0	0	0	16.3	19.2
06-22 16hr	350	2	5	95	234	12	0	0	2	0	0	0	15	104	195	36	0	0	0	0	0	0	0	0	0	0	0	16.3	19.2	0	0	0	0	0	0	16.3	19.2
06-00 18hr	356	2	5	96	239	12	0	0	2	0	0	0	15	109	196	36	0	0	0	0	0	0	0	0	0	0	0	16.2	19.2	0	0	0	0	0	0	16.2	19.2
00-00 24hr	357	2	5	96	240	12	0	0	2	0	0	0	15	109	196	37	0	0	0	0	0	0	0	0	0	0	0	16.3	19.2	0	0	0	0	0	0	16.3	19.2

Vehicles = 357
Posted speed limit = 30 mph, Exceeding = 0 (0.000%), Mean Exceeding = 0.00 mph
Maximum = 24.7 mph, Minimum = 7.5 mph, Mean = 16.3 mph
85% Speed = 19.24 mph, 95% Speed = 21.60 mph, Median = 16.44 mph
10 mph Pace = 12 - 22, Number in Pace = 318 (89.08%)
Variance = 10.35, Standard Deviation = 3.22 mph

* 19 April 2024

Time	Total	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Mean	Vpp	>PSL	>PSL%	>SL1	>SL1%	>SL2	>SL2%	Mean	Vpp
<--		1	2	3	4	5	6	7	8	9	10	11	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75		85	30	30	30	30	30	30		85
													10	15	20	25	30	35	40	45	50	55	60	65	70	75	80										
0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
0100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
0200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
0300	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
0400	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	19	-	0	0	0	0	0	0	19	-
0500	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	23.6	-	0	0	0	0	0	0	23.6	-
0600	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
0700	9	0	0	3	6	0	0	0	0	0	0	0	0	2	7	0	0	0	0	0	0	0	0	0	0	0	0	16.6	-	0	0	0	0	0	0	16.6	-
0800	39	0	0	11	28	0	0	0	0	0	0	0	0	14	18	7	0	0	0	0	0	0	0	0	0	0	0	16.5	20.1	0	0	0	0	0	0	16.5	20.1
0900	23	0	0	3	19	1	0	0	0	0	0	0	1	4	14	4	0	0	0	0	0	0	0	0	0	0	0	16.9	20.8	0	0	0	0	0	0	16.9	20.8
1000	23	0	0	3	19	1	0	0	0	0	0	0	2	8	12	1	0	0	0	0	0	0	0	0	0	0	0	14.8	19	0	0	0	0	0	0	14.8	19
1100	29	0	1	11	15	2	0	0	0	0	0	0	2	10	15	2	0	0	0	0	0	0	0	0	0	0	0	15.6	19.1	0	0	0	0	0	0	15.6	19.1
1200	25	0	1	3	20	1	0	0	0	0	0	0	2	10	10	3	0	0	0	0	0	0	0	0	0	0	0	14.9	18.7	0	0	0	0	0	0	14.9	18.7
1300	24	0	0	5	16	2	0	0	1	0	0	0	1	11	10	2	0	0	0	0	0	0	0	0	0	0	0	15.3	18.7	0	0	0	0	0	0	15.3	18.7
1400	24	0	1	3	19	1	0	0	0	0	0	0	1	8	14	1	0	0	0	0	0	0	0	0	0	0	0	15.2	18.1	0	0	0	0	0	0	15.2	18.1
1500	46	0	0	12	34	0	0	0	0	0	0	0	3	10	29	4	0	0	0	0	0	0	0	0	0	0	0	16.2	19.3	0	0	0	0	0	0	16.2	19.3
1600	37	0	1	15	21	0	0	0	0	0	0	0	1	10	23	2	1	0	0	0	0	0	0	0	0	0	0	16.3	18.1	0	0	0	0	0	0	16.3	18.1
1700	30	0	1	8	21	0	0	0	0	0	0	0	2	8	18	2	0	0	0	0	0	0	0	0	0	0	0	16.2	19.7	0	0	0	0	0	0	16.2	19.7
1800	25	0	0	5	19	1	0	0	0	0	0	0	0	7	15	3	0	0	0	0	0	0	0	0	0	0	0	16.5	19	0	0	0	0	0	0	16.5	19
1900	16	0	1	2	13	0	0	0	0	0	0	0	3	5	5	3	0	0	0	0	0	0	0	0	0	0	0	14.8	20.3	0	0	0	0	0	0	14.8	20.3
2000	16	0	0	7	9	0	0	0	0	0	0	0	0	8	7	1	0	0	0	0	0	0	0	0	0	0	0	15	18.6	0	0	0	0	0	0	15	18.6
2100	8	0	0	1	7	0	0	0	0	0	0	0	0	6	2	0	0	0	0	0	0	0	0	0	0	0	0	13.8	-	0	0	0	0	0	0	13.8	-
2200	8	0	0	2	6	0	0	0	0	0	0	0	1	6	1	0	0	0	0	0	0	0	0	0	0	0	0	13	-	0	0	0	0	0	0	13	-
2300	2	0	0	1	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	14.8	-	0	0	0	0	0	0	14.8	-
07-19 12hr	334	0	5	82	237	9	0	0	1	0	0	0	15	102	185	31	1	0	0	0	0	0	0	0	0	0	0	15.9	19.3	0	0	0	0	0	0	15.9	19.3
06-22 16hr	374	0	6	92	266	9	0	0	1	0	0	0	18	121	199	35	1	0	0	0	0	0	0	0	0	0	0	15.8	19.3	0	0	0	0	0	0	15.8	19.3
06-00 18hr	384	0	6	95	273	9	0	0	1	0	0	0	19	128	201	35	1	0	0	0	0	0	0	0	0	0	0	15.7	19.3	0	0	0	0	0	0	15.7	19.3
00-00 24hr	386	0	6	96	274	9	0	0	1	0	0	0	19	128	202	36	1	0	0	0	0	0	0	0	0	0	0	15.8	19.3	0	0	0	0	0	0	15.8	19.3

Vehicles = 386
Posted speed limit = 30 mph, Exceeding = 0 (0.000%), Mean Exceeding = 0.00 mph
Maximum = 26.0 mph, Minimum = 5.6 mph, Mean = 15.8 mph
85% Speed = 19.34 mph, 95% Speed = 21.10 mph, Median = 15.77 mph
10 mph Pace = 11 - 21, Number in Pace = 337 (87.31%)
Variance = 11.42, Standard Deviation = 3.38 mph

* 20 April 2024

Time	Total	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Mean	Vpp	>PSL	>PSL%	>SL1	>SL1%	>SL2	>SL2%	Mean	Vpp
<--		1	2	3	4	5	6	7	8	9	10	11	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75		85	30	30	30	30	30	30		85
													10	15	20	25	30	35	40	45	50	55	60	65	70	75	80										
0000	2	0	0	1	1	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	20.6	-	0	0	0	0	0	0	20.6	-
0100	1	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	19	-	0	0	0	0	0	0	19	-
0200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
0300	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
0400	1	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	15.3	-	0	0	0	0	0	0	15.3	-
0500	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
0600	5	0	1	2	2	0	0	0	0	0	0	0	0	0	3	2	0	0	0	0	0	0	0	0	0	0	0	18.5	-	0	0	0	0	0	0	18.5	-
0700	4	0	0	3	1	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	19.3	-	0	0	0	0	0	0	19.3	-
0800	10	0	0	1	9	0	0	0	0	0	0	0	0	3	7	0	0	0	0	0	0	0	0	0	0	0	0	15.5	-	0	0	0	0	0	0	15.5	-
0900	12	0	0	2	10	0	0	0	0	0	0	0	0	4	5	3	0	0	0	0	0	0	0	0	0	0	0	17	21.1	0	0	0	0	0	0	17	21.1
1000	21	0	1	4	15	1	0	0	0	0	0	0	1	3	15	2	0	0	0	0	0	0	0	0	0	0	0	17.1	19.5	0	0	0	0	0	0	17.1	19.5
1100	23	0	0	3	18	1	0	0	1	0	0	0	0	6	14	3	0	0	0	0	0	0	0	0	0	0	0	17.5	20.1	0	0	0	0	0	0	17.5	20.1
1200	30	0	1	8	21	0	0	0	0	0	0	0	3	14	13	0	0	0	0	0	0	0	0	0	0	0	0	14.7	18.5	0	0	0	0	0	0	14.7	18.5
1300	21	0	2	3	16	0	0	0	0	0	0	0	1	7	13	0	0	0	0	0	0	0	0	0	0	0	0	15.3	18.3	0	0	0	0	0	0	15.3	18.3
1400	22	0	0	7	15	0	0	0	0	0	0	0	1	8	12	1	0	0	0	0	0	0	0	0	0	0	0	15.2	19.1	0	0	0	0	0	0	15.2	19.1
1500	23	0	1	5	16	1	0	0	0	0	0	0	1	9	11	2	0	0	0	0	0	0	0	0	0	0	0	15.8	18.5	0	0	0	0	0	0	15.8	18.5
1600	23	0	0	7	15	0	0	0	1	0	0	0	2	12	8	1	0	0	0	0	0	0	0	0	0	0	0	14.4	17.6	0	0	0	0	0	0	14.4	17.6
1700	23	0	1	3	18	1	0	0	0	0	0	0	1	10	11	0	1	0	0	0	0	0	0	0	0	0	0	15.7	18.5	0	0	0	0	0	0	15.7	18.5
1800	20	0	1	4	15	0	0	0	0	0	0	0	0	5	12	3	0	0	0	0	0	0	0	0	0	0	0	16.5	20.4	0	0	0	0	0	0	16.5	20.4
1900	22	0	1	5	15	1	0	0	0	0	0	0	0	10	8	4	0	0	0	0	0	0	0	0	0	0	0	15.8	20.5	0	0	0	0	0	0	15.8	20.5
2000	13	0	0	4	8	1	0	0	0	0	0	0	1	4	7	1	0	0	0	0	0	0	0	0	0	0	0	15.6	18.6	0	0	0	0	0	0	15.6	18.6
2100	6	0	0	1	5	0	0	0	0	0	0	0	1	3	2	0	0	0	0	0	0	0	0	0	0	0	0	13.7	-	0	0	0	0	0	0	13.7	-
2200	9	0	0	3	6	0	0	0	0	0	0	0	0	5	3	1	0	0	0	0	0	0	0	0	0	0	0	14.9	-	0	0	0	0	0	0	14.9	-
2300	3	0	0	0	3	0	0	0	0	0	0	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	15.5	-	0	0	0	0	0	0	15.5	-
07-19 12hr	232	0	7	50	169	4	0	0	2	0	0	0	10	81	123	17	1	0	0	0	0	0	0	0	0	0	0	15.8	19	0	0	0	0	0	0	15.8	19
06-22 16hr	278	0	9	62	199	6	0	0	2	0	0	0	12	98	143	24	1	0	0	0	0	0	0	0	0	0	0	15.8	19.1	0	0	0	0	0	0	15.8	19.1
06-00 18hr	290	0	9	65	208	6	0	0	2	0	0	0	12	105	147	25	1	0	0	0	0	0	0	0	0	0	0	15.8	19.1	0	0	0	0	0	0	15.8	19.1
00-00 24hr	294	0	9	66	211	6	0	0	2	0	0	0	12	105	150	26	1	0	0	0	0	0	0	0	0	0	0	15.8	19.1	0	0	0	0	0	0	15.8	19.1

Vehicles = 294
Posted speed limit = 30 mph, Exceeding = 0 (0.000%), Mean Exceeding = 0.00 mph

Maximum = 27.8 mph, Minimum = 5.2 mph, Mean = 15.8 mph
85% Speed = 19.13 mph, 95% Speed = 20.86 mph, Median = 16.11 mph
10 mph Pace = 11 - 21, Number in Pace = 263 (89.46%)
Variance = 10.76, Standard Deviation = 3.28 mph

* 21 April 2024

Time	Total	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Mean	Vpp	>PSL	>PSL%	>SL1	>SL1%	>SL2	>SL2%	Mean	Vpp
<--		1	2	3	4	5	6	7	8	9	10	11	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75		85	30	30	30	30	30	30		85
													10	15	20	25	30	35	40	45	50	55	60	65	70	75	80										
0000	3	0	0	1	2	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	14.1	-	0	0	0	0	0	0	14.1	-
0100	1	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	13.2	-	0	0	0	0	0	0	13.2	-
0200	1	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	14.5	-	0	0	0	0	0	0	14.5	-
0300	1	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6.1	-	0	0	0	0	0	0	6.1	-
0400	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
0500	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
0600	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
0700	2	0	0	1	1	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	18.4	-	0	0	0	0	0	0	18.4	-
0800	8	0	0	2	6	0	0	0	0	0	0	0	1	3	4	0	0	0	0	0	0	0	0	0	0	0	0	14.8	-	0	0	0	0	0	0	14.8	-
0900	18	0	0	1	17	0	0	0	0	0	0	0	1	4	8	5	0	0	0	0	0	0	0	0	0	0	0	16.7	20.8	0	0	0	0	0	0	16.7	20.8
1000	18	0	3	4	11	0	0	0	0	0	0	0	5	5	8	0	0	0	0	0	0	0	0	0	0	0	0	13.4	18.5	0	0	0	0	0	0	13.4	18.5
1100	26	0	0	8	18	0	0	0	0	0	0	0	1	11	12	2	0	0	0	0	0	0	0	0	0	0	0	15.6	19	0	0	0	0	0	0	15.6	19
1200	28	0	0	7	20	0	0	0	1	0	0	0	1	14	13	0	0	0	0	0	0	0	0	0	0	0	0	15.2	18.4	0	0	0	0	0	0	15.2	18.4
1300	23	0	0	5	17	1	0	0	0	0	0	0	1	12	8	2	0	0	0	0	0	0	0	0	0	0	0	15.2	18.9	0	0	0	0	0	0	15.2	18.9
1400	18	2	2	4	10	0	0	0	0	0	0	0	3	9	5	1	0	0	0	0	0	0	0	0	0	0	0	14.2	19.2	0	0	0	0	0	0	14.2	19.2
1500	26	1	1	7	17	0	0	0	0	0	0	0	1	6	16	3	0	0	0	0	0	0	0	0	0	0	0	16.1	18.9	0	0	0	0	0	0	16.1	18.9
1600	32	0	0	9	23	0	0	0	0	0	0	0	2	12	16	2	0	0	0	0	0	0	0	0	0	0	0	15.5	18.8	0	0	0	0	0	0	15.5	18.8
1700	16	0	1	3	12	0	0	0	0	0	0	0	1	6	5	4	0	0	0	0	0	0	0	0	0	0	0	15.9	20.6	0	0	0	0	0	0	15.9	20.6
1800	15	0	1	5	8	1	0	0	0	0	0	0	0	4	9	2	0	0	0	0	0	0	0	0	0	0	0	17.1	20	0	0	0	0	0	0	17.1	20
1900	18	0	0	5	13	0	0	0	0	0	0	0	0	7	10	1	0	0	0	0	0	0	0	0	0	0	0	15.8	18.3	0	0	0	0	0	0	15.8	18.3
2000	4	0	0	0	3	1	0	0	0	0	0	0	0	3	1	0	0	0	0	0	0	0	0	0	0	0	0	14.9	-	0	0	0	0	0	0	14.9	-
2100	6	0	0	2	4	0	0	0	0	0	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0	14.8	-	0	0	0	0	0	0	14.8	-
2200	3	0	0	0	3	0	0	0	0	0	0	0	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	16.3	-	0	0	0	0	0	0	16.3	-
2300	2	0	0	2	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	14.7	-	0	0	0	0	0	0	14.7	-
07-19 12hr	230	3	8	56	160	2	0	0	1	0	0	0	17	86	106	21	0	0	0	0	0	0	0	0	0	0	0	15.5	19.1	0	0	0	0	0	0	15.5	19.1
06-22 16hr	258	3	8	63	180	3	0	0	1	0	0	0	17	99	120	22	0	0	0	0	0	0	0	0	0	0	0	15.5	19	0	0	0	0	0	0	15.5	19
06-00 18hr	263	3	8	65	183	3	0	0	1	0	0	0	17	102	122	22	0	0	0	0	0	0	0	0	0	0	0	15.5	18.9	0	0	0	0	0	0	15.5	18.9
00-00 24hr	269	4	8	66	187	3	0	0	1	0	0	0	18	107	122	22	0	0	0	0	0	0	0	0	0	0	0	15.4	18.9	0	0	0	0	0	0	15.4	18.9

Vehicles = 269
Posted speed limit = 30 mph, Exceeding = 0 (0.000%), Mean Exceeding = 0.00 mph
Maximum = 24.6 mph, Minimum = 5.4 mph, Mean = 15.4 mph
85% Speed = 18.90 mph, 95% Speed = 20.58 mph, Median = 15.21 mph
10 mph Pace = 11 - 21, Number in Pace = 236 (87.73%)
Variance = 11.62, Standard Deviation = 3.41 mph

* 22 April 2024

Time	Total	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Mean	Vpp	>PSL	>PSL%	>SL1	>SL1%	>SL2	>SL2%	Mean	Vpp
<--		1	2	3	4	5	6	7	8	9	10	11	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75		85	30	30	30	30	30	30		85
													10	15	20	25	30	35	40	45	50	55	60	65	70	75	80										
0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
0100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
0200	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	15.2	-	0	0	0	0	0	0	15.2	-
0300	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
0400	1	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	16.5	-	0	0	0	0	0	0	16.5	-
0500	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
0600	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	23.6	-	0	0	0	0	0	0	23.6	-
0700	15	0	0	3	12	0	0	0	0	0	0	0	1	2	11	1	0	0	0	0	0	0	0	0	0	0	0	16.7	19.3	0	0	0	0	0	0	16.7	19.3
0800	34	0	0	11	23	0	0	0	0	0	0	0	3	5	21	5	0	0	0	0	0	0	0	0	0	0	0	16.4	20.5	0	0	0	0	0	0	16.4	20.5
0900	15	1	0	0	12	2	0	0	0	0	0	0	2	6	7	0	0	0	0	0	0	0	0	0	0	0	0	14.7	19	0	0	0	0	0	0	14.7	19
1000	28	1	0	7	17	3	0	0	0	0	0	0	2	9	14	3	0	0	0	0	0	0	0	0	0	0	0	15.5	19.3	0	0	0	0	0	0	15.5	19.3
1100	15	0	0	2	12	1	0	0	0	0	0	0	0	9	6	0	0	0	0	0	0	0	0	0	0	0	0	15.2	18.7	0	0	0	0	0	0	15.2	18.7
1200	19	0	1	10	7	1	0	0	0	0	0	0	1	4	12	2	0	0	0	0	0	0	0	0	0	0	0	16.3	19.7	0	0	0	0	0	0	16.3	19.7
1300	16	0	0	3	11	2	0	0	0	0	0	0	0	3	9	4	0	0	0	0	0	0	0	0	0	0	0	17.7	20.8	0	0	0	0	0	0	17.7	20.8
1400	17	0	0	6	11	0	0	0	0	0	0	0	0	7	9	1	0	0	0	0	0	0	0	0	0	0	0	15.3	18.5	0	0	0	0	0	0	15.3	18.5
1500	40	1	0	10	29	0	0	0	0	0	0	0	1	16	19	4	0	0	0	0	0	0	0	0	0	0	0	15.8	19.6	0	0	0	0	0	0	15.8	19.6
1600	30	0	0	7	22	1	0	0	0	0	0	0	3	9	14	4	0	0	0	0	0	0	0	0	0	0	0	15.5	20	0	0	0	0	0	0	15.5	20
1700	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
1800	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
1900	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
2000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
2100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
2200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
2300	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
07-19 12hr	229	3	1	59	156	10	0	0	0	0	0	0	13	70	122	24	0	0	0	0	0	0	0	0	0	0	0	15.9	19.3	0	0	0	0	0	0	15.9	19.3
06-22 16hr	230	3	1	59	157	10	0	0	0	0	0	0	13	70	122	25	0	0	0	0	0	0	0	0	0	0	0	15.9	19.4	0	0	0	0	0	0	15.9	19.4
06-00 18hr	230	3	1	59	157	10	0	0	0	0	0	0	13	70	122	25	0	0	0	0	0	0	0	0	0	0	0	15.9	19.4	0	0	0	0	0	0	15.9	19.4
00-00 24hr	232	3	1	60	158	10	0	0	0	0	0	0	13	70	124	25	0	0	0	0	0	0	0	0	0	0	0	15.9	19.4	0	0	0	0	0	0	15.9	19.4

Vehicles = 232
Posted speed limit = 30 mph, Exceeding = 0 (0.000%), Mean Exceeding = 0.00 mph
Maximum = 24.9 mph, Minimum = 5.5 mph, Mean = 15.9 mph
85% Speed = 19.36 mph, 95% Speed = 21.29 mph, Median = 16.11 mph
10 mph Pace = 12 - 22, Number in Pace = 199 (85.78%)
Variance = 12.19, Standard Deviation = 3.49 mph

* 23 April 2024

Time	Total	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Mean	Vpp	>PSL	>PSL%	>SL1	>SL1%	>SL2	>SL2%	Mean	Vpp
<--		1	2	3	4	5	6	7	8	9	10	11	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75		85	30	30	30	30	30	30		85
													10	15	20	25	30	35	40	45	50	55	60	65	70	75	80										
0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
0100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
0200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
0300	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
0400	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
0500	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
0600	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
0700	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
0800	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
0900	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
1000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
1100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
1200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
1300	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
1400	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
1500	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
1600	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
1700	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
1800	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
1900	4	0	0	0	4	0	0	0	0	0	0	0	0	1	3	0	0	0	0	0	0	0	0	0	0	0	0	14.3	-	0	0	0	0	0	0	14.3	-
2000	7	0	0	4	3	0	0	0	0	0	0	0	0	3	3	1	0	0	0	0	0	0	0	0	0	0	0	16.2	-	0	0	0	0	0	0	16.2	-
2100	9	0	0	5	4	0	0	0	0	0	0	0	0	2	5	2	0	0	0	0	0	0	0	0	0	0	0	17.3	-	0	0	0	0	0	0	17.3	-
2200	4	0	0	1	3	0	0	0	0	0	0	0	0	1	3	0	0	0	0	0	0	0	0	0	0	0	0	16.2	-	0	0	0	0	0	0	16.2	-
2300	4	0	0	4	0	0	0	0	0	0	0	0	1	2	0	1	0	0	0	0	0	0	0	0	0	0	0	14.7	-	0	0	0	0	0	0	14.7	-
07-19 12hr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
06-22 16hr	20	0	0	9	11	0	0	0	0	0	0	0	0	6	11	3	0	0	0	0	0	0	0	0	0	0	0	16.3	20.1	0	0	0	0	0	0	16.3	20.1
06-00 18hr	28	0	0	14	14	0	0	0	0	0	0	0	1	9	14	4	0	0	0	0	0	0	0	0	0	0	0	16.1	20.1	0	0	0	0	0	0	16.1	20.1
00-00 24hr	28	0	0	14	14	0	0	0	0	0	0	0	1	9	14	4	0	0	0	0	0	0	0	0	0	0	0	16.1	20.1	0	0	0	0	0	0	16.1	20.1

Vehicles = 28
Posted speed limit = 30 mph, Exceeding = 0 (0.000%), Mean Exceeding = 0.00 mph
Maximum = 23.2 mph, Minimum = 9.9 mph, Mean = 16.1 mph
85% Speed = 20.05 mph, 95% Speed = 22.55 mph, Median = 15.83 mph
10 mph Pace = 10 - 20, Number in Pace = 24 (85.71%)
Variance = 10.89, Standard Deviation = 3.30 mph

* 24 April 2024

Time	Total	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Mean	Vpp	>PSL	>PSL%	>SL1	>SL1%	>SL2	>SL2%	Mean	Vpp
<--		1	2	3	4	5	6	7	8	9	10	11	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75		85	30	30	30	30	30	30		85
													10	15	20	25	30	35	40	45	50	55	60	65	70	75	80										
0000	1	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	15.1	-	0	0	0	0	0	0	15.1	-
0100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
0200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
0300	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
0400	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	15.3	-	0	0	0	0	0	0	15.3	-
0500	3	0	0	1	2	0	0	0	0	0	0	0	0	1	0	2	0	0	0	0	0	0	0	0	0	0	0	18.8	-	0	0	0	0	0	0	18.8	-
0600	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	16.2	-	0	0	0	0	0	0	16.2	-
0700	15	0	0	7	7	0	0	0	1	0	0	0	1	5	7	2	0	0	0	0	0	0	0	0	0	0	0	15.8	20.8	0	0	0	0	0	0	15.8	20.8
0800	35	0	0	9	26	0	0	0	0	0	0	0	0	4	28	3	0	0	0	0	0	0	0	0	0	0	0	17.3	19.3	0	0	0	0	0	0	17.3	19.3
0900	24	0	0	5	17	2	0	0	0	0	0	0	2	5	15	2	0	0	0	0	0	0	0	0	0	0	0	16.1	18.7	0	0	0	0	0	0	16.1	18.7
1000	15	0	0	1	11	3	0	0	0	0	0	0	1	8	4	2	0	0	0	0	0	0	0	0	0	0	0	14.8	20.6	0	0	0	0	0	0	14.8	20.6
1100	28	0	1	6	19	2	0	0	0	0	0	0	2	14	11	1	0	0	0	0	0	0	0	0	0	0	0	14.6	17.1	0	0	0	0	0	0	14.6	17.1
1200	22	0	1	5	14	2	0	0	0	0	0	0	1	6	14	1	0	0	0	0	0	0	0	0	0	0	0	15.9	19	0	0	0	0	0	0	15.9	19
1300	14	0	0	5	9	0	0	0	0	0	0	0	0	3	8	3	0	0	0	0	0	0	0	0	0	0	0	17.3	20.6	0	0	0	0	0	0	17.3	20.6
1400	23	0	0	2	20	1	0	0	0	0	0	0	3	9	8	2	1	0	0	0	0	0	0	0	0	0	0	15	20	0	0	0	0	0	0	15	20
1500	26	0	1	8	16	1	0	0	0	0	0	0	0	12	10	4	0	0	0	0	0	0	0	0	0	0	0	15.5	20.2	0	0	0	0	0	0	15.5	20.2
1600	45	1	0	6	36	2	0	0	0	0	0	0	3	11	30	1	0	0	0	0	0	0	0	0	0	0	0	15.7	19	0	0	0	0	0	0	15.7	19
1700	31	0	0	10	20	0	0	0	1	0	0	0	2	8	18	2	1	0	0	0	0	0	0	0	0	0	0	16	18.9	0	0	0	0	0	0	16	18.9
1800	17	0	0	5	12	0	0	0	0	0	0	0	0	5	6	6	0	0	0	0	0	0	0	0	0	0	0	17.7	21.4	0	0	0	0	0	0	17.7	21.4
1900	12	0	0	1	10	1	0	0	0	0	0	0	2	4	6	0	0	0	0	0	0	0	0	0	0	0	0	14.9	19.4	0	0	0	0	0	0	14.9	19.4
2000	20	0	1	3	16	0	0	0	0	0	0	0	0	6	11	2	1	0	0	0	0	0	0	0	0	0	0	16.7	19.9	0	0	0	0	0	0	16.7	19.9
2100	15	0	0	4	11	0	0	0	0	0	0	0	0	4	9	2	0	0	0	0	0	0	0	0	0	0	0	16.5	20.2	0	0	0	0	0	0	16.5	20.2
2200	9	0	0	2	6	0	0	0	1	0	0	0	0	7	2	0	0	0	0	0	0	0	0	0	0	0	0	14.3	-	0	0	0	0	0	0	14.3	-
2300	1	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	14.1	-	0	0	0	0	0	0	14.1	-
07-19 12hr	295	1	3	69	207	13	0	0	2	0	0	0	15	90	159	29	2	0	0	0	0	0	0	0	0	0	0	15.9	19.4	0	0	0	0	0	0	15.9	19.4
06-22 16hr	343	1	4	78	244	14	0	0	2	0	0	0	17	104	186	33	3	0	0	0	0	0	0	0	0	0	0	16	19.4	0	0	0	0	0	0	16	19.4
06-00 18hr	353	1	4	81	250	14	0	0	3	0	0	0	17	112	188	33	3	0	0	0	0	0	0	0	0	0	0	15.9	19.3	0	0	0	0	0	0	15.9	19.3
00-00 24hr	358	1	4	83	253	14	0	0	3	0	0	0	17	113	190	35	3	0	0	0	0	0	0	0	0	0	0	15.9	19.4	0	0	0	0	0	0	15.9	19.4

Vehicles = 358
Posted speed limit = 30 mph, Exceeding = 0 (0.000%), Mean Exceeding = 0.00 mph
Maximum = 25.7 mph, Minimum = 5.4 mph, Mean = 15.9 mph
85% Speed = 19.37 mph, 95% Speed = 21.14 mph, Median = 16.11 mph
10 mph Pace = 11 - 21, Number in Pace = 316 (88.27%)
Variance = 11.61, Standard Deviation = 3.41 mph

* 25 April 2024

Time	Total	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Mean	Vpp	>PSL	>PSL%	>SL1	>SL1%	>SL2	>SL2%	Mean	Vpp
<--		1	2	3	4	5	6	7	8	9	10	11	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75		85	30	30	30	30	30	30		85
													10	15	20	25	30	35	40	45	50	55	60	65	70	75	80										
0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
0100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
0200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
0300	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
0400	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
0500	4	0	0	1	3	0	0	0	0	0	0	0	0	1	1	2	0	0	0	0	0	0	0	0	0	0	0	18.6	-	0	0	0	0	0	0	18.6	-
0600	2	0	0	1	0	1	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	15.7	-	0	0	0	0	0	0	15.7	-
0700	21	0	1	8	11	1	0	0	0	0	0	0	1	8	10	2	0	0	0	0	0	0	0	0	0	0	0	16.2	19.8	0	0	0	0	0	0	16.2	19.8
0800	32	0	0	6	26	0	0	0	0	0	0	0	2	8	17	5	0	0	0	0	0	0	0	0	0	0	0	16.1	20.7	0	0	0	0	0	0	16.1	20.7
0900	23	0	0	4	16	2	0	0	1	0	0	0	2	10	7	4	0	0	0	0	0	0	0	0	0	0	0	15.4	21.2	0	0	0	0	0	0	15.4	21.2
1000	16	0	0	1	14	1	0	0	0	0	0	0	0	8	7	1	0	0	0	0	0	0	0	0	0	0	0	15.4	18.2	0	0	0	0	0	0	15.4	18.2
1100	34	0	0	4	25	5	0	0	0	0	0	0	1	15	16	2	0	0	0	0	0	0	0	0	0	0	0	15.7	19.5	0	0	0	0	0	0	15.7	19.5
1200	10	0	0	2	7	0	0	0	1	0	0	0	0	3	6	1	0	0	0	0	0	0	0	0	0	0	0	15.7	-	0	0	0	0	0	0	15.7	-
07-19 12hr	136	0	1	25	99	9	0	0	2	0	0	0	6	52	63	15	0	0	0	0	0	0	0	0	0	0	0	15.8	19.6	0	0	0	0	0	0	15.8	19.6
06-22 16hr	138	0	1	26	99	10	0	0	2	0	0	0	6	52	65	15	0	0	0	0	0	0	0	0	0	0	0	15.8	19.6	0	0	0	0	0	0	15.8	19.6
06-00 18hr	138	0	1	26	99	10	0	0	2	0	0	0	6	52	65	15	0	0	0	0	0	0	0	0	0	0	0	15.8	19.6	0	0	0	0	0	0	15.8	19.6
00-00 24hr	142	0	1	27	102	10	0	0	2	0	0	0	6	53	66	17	0	0	0	0	0	0	0	0	0	0	0	15.9	19.6	0	0	0	0	0	0	15.9	19.6

Vehicles = 142
Posted speed limit = 30 mph, Exceeding = 0 (0.000%), Mean Exceeding = 0.00 mph

Maximum = 23.9 mph, Minimum = 5.6 mph, Mean = 15.9 mph
85% Speed = 19.63 mph, 95% Speed = 21.98 mph, Median = 15.66 mph
10 mph Pace = 12 - 22, Number in Pace = 123 (86.62%)
Variance = 12.79, Standard Deviation = 3.58 mph

*** Virtual Week (Partial weeks = 1.28571)**

Time	Total	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Mean	Vpp	>PSL	>PSL%	>SL1	>SL1%	>SL2	>SL2%	Mean	Vpp
<--		1	2	3	4	5	6	7	8	9	10	11	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75		85	30		30	30	30	30	30		85
													10	15	20	25	30	35	40	45	50	55	60	65	70	75	80											
Mon	232	3	1	60	158	10	0	0	0	0	0	0	13	70	124	25	0	0	0	0	0	0	0	0	0	0	0	15.9	19.4	0		0	0	0	0	0	15.9	19.4
Tue	28	0	0	14	14	0	0	0	0	0	0	0	1	9	14	4	0	0	0	0	0	0	0	0	0	0	0	16.1	20.1	0	0	0	0	0	0	0	16.1	20.1
Wed	308	3	5	71	218	11	0	0	2	0	0	0	22	102	155	28	2	0	0	0	0	0	0	0	0	0	0	15.7	19.2	0	0	0	0	0	0	0	15.7	19.2
Thu	250	1	3	62	171	11	0	0	2	0	0	0	11	81	131	27	0	0	0	0	0	0	0	0	0	0	0	16.2	19.5	0	0	0	0	0	0	0	16.2	19.5
Fri	386	0	6	96	274	9	0	0	1	0	0	0	19	128	202	36	1	0	0	0	0	0	0	0	0	0	0	15.8	19.3	0	0	0	0	0	0	0	15.8	19.3
Sat	294	0	9	66	211	6	0	0	2	0	0	0	12	105	150	26	1	0	0	0	0	0	0	0	0	0	0	15.8	19.1	0	0	0	0	0	0	0	15.8	19.1
Sun	269	4	8	66	187	3	0	0	1	0	0	0	18	107	122	22	0	0	0	0	0	0	0	0	0	0	0	15.4	18.9	0	0	0	0	0	0	0	15.4	18.9

Vehicles = 2323
Posted speed limit = 30 mph, Exceeding = 0 (0.000%), Mean Exceeding = 0.00 mph
Maximum = 27.8 mph, Minimum = 5.2 mph, Mean = 15.8 mph
85% Speed = 19.24 mph, 95% Speed = 21.14 mph, Median = 15.88 mph
10 mph Pace = 11 - 21, Number in Pace = 2009 (86.48%)
Variance = 11.59, Standard Deviation = 3.40 mph

*** Grand Total**

Time	Total	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Mean	Vpp	>PSL	>PSL%	>SL1	>SL1%	>SL2	>SL2%	Mean	Vpp
<--		1	2	3	4	5	6	7	8	9	10	11	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75		85	30		30	30	30	30	30		85
													10	15	20	25	30	35	40	45	50	55	60	65	70	75	80											
--	**2323**	**14**	**39**	**566**	**1622**	**71**	**0**	**0**	**11**	**0**	**0**	**0**	**127**	**784**	**1184**	**222**	**6**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**15.8**	**19.2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**15.8**	**19.2**

Vehicles = 2323
Exceeding = 0.00 mph
ph, Mean = 15.8 mph
, Median = 15.88 mph
Pace = 2009 (86.48%)
Deviation = 3.40 mph

In profile: Vehicles = 2323 / 4774 (48.66%)

MetroCount Traffic Executive
Default SES (modified)

CustomList-618 -- English (ENG)

Datasets:	
Site:	[TTS-1722-001] Starwood Terrace, Oakamoor <30m>
Attribute:	Sign
Direction:	7 - North bound A>B, South bound B>A. Lane: 0
Survey Duration:	11:46 17 April 2024 => 12:31 25 April 2024,
Zone:	
File:	TTS-1722-001 0 2024-04-25 1232.EC0 (Plus)
Identifier:	XD99JX25 MC5900-X13 (c)MetroCount 09Nov16
Algorithm:	Factory default axle (v5.06)
Data type:	Axle sensors - Paired (Class/Speed/Count)
Profile:	
Filter time:	11:47 17 April 2024 => 12:31 25 April 2024 (8.0311)
Included classes:	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11
Speed range:	5 - 100 mph.
Direction:	South (bound), P = North, Lane = 0-16
Separation:	Headway > 0 sec, Span 0 - 100 metre
Name:	Default Profile
Scheme:	Vehicle classification (DfT-UK)
Units:	Part metric (metre, mi, m/s, mph, kg, tonne)
Column Legend:	
0 [Time]	24-hour time (0000 - 2359)
1 [Total]	Number in time step
2 [Cls]	Class totals
3 [Vbin]	Speed bin totals
4 [Mean]	Average speed
5 [Vpp]	Percentile speed
6 [>PSL]	Number exceeding Posted Speed Limit
7 [>PSL%]	Percent exceeding Posted Speed Limit
8 [>SL1]	Number exceeding Speed Limit 1
9 [>SL1%]	Percent exceeding Speed Limit 1
10 [>SL2]	Number exceeding Speed Limit 2
11 [>SL2%]	Percent exceeding Speed Limit 2
12 [Mean]	Average speed
13 [Vpp]	Percentile speed

?

* 17 April 2024	Classifications												Speeds																								
Time	Total	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Mean	Vpp	>PSL	>PSL%	>SL1	>SL1%	>SL2	>SL2%	Mean	Vpp
<--		1	2	3	4	5	6	7	8	9	10	11	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75		85	30	30	30	30	30	30		85
													10	15	20	25	30	35	40	45	50	55	60	65	70	75	80										
1100	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	22.2	-	0	0	0	0	0	0	22.2	-
1200	28	0	1	3	19	5	0	0	0	0	0	0	1	9	16	2	0	0	0	0	0	0	0	0	0	0	0	16.1	19	0	0	0	0	0	0	16.1	19
1300	18	0	0	4	14	0	0	0	0	0	0	0	0	5	11	2	0	0	0	0	0	0	0	0	0	0	0	16.2	19.6	0	0	0	0	0	0	16.2	19.6
1400	21	0	1	3	16	0	1	0	0	0	0	0	1	6	12	2	0	0	0	0	0	0	0	0	0	0	0	16.3	19.9	0	0	0	0	0	0	16.3	19.9
1500	37	0	1	8	26	2	0	0	0	0	0	0	1	10	22	4	0	0	0	0	0	0	0	0	0	0	0	16.5	19.8	0	0	0	0	0	0	16.5	19.8
1600	38	0	0	7	30	1	0	0	0	0	0	0	4	7	17	9	1	0	0	0	0	0	0	0	0	0	0	16.5	21.7	0	0	0	0	0	0	16.5	21.7
1700	23	0	0	3	19	1	0	0	0	0	0	0	0	5	10	8	0	0	0	0	0	0	0	0	0	0	0	18.5	22.1	0	0	0	0	0	0	18.5	22.1
1800	13	0	1	2	10	0	0	0	0	0	0	0	1	2	7	3	0	0	0	0	0	0	0	0	0	0	0	17	21.5	0	0	0	0	0	0	17	21.5
1900	14	0	0	6	8	0	0	0	0	0	0	0	0	5	4	5	0	0	0	0	0	0	0	0	0	0	0	17.5	22	0	0	0	0	0	0	17.5	22
2000	10	0	0	1	9	0	0	0	0	0	0	0	1	2	6	1	0	0	0	0	0	0	0	0	0	0	0	16.4	-	0	0	0	0	0	0	16.4	-
2100	3	0	0	0	3	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	15.6	-	0	0	0	0	0	0	15.6	-
2200	9	0	0	0	8	1	0	0	0	0	0	0	0	4	3	2	0	0	0	0	0	0	0	0	0	0	0	16	-	0	0	0	0	0	0	16	-
2300	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
07-19 12hr	179	0	4	30	134	10	1	0	0	0	0	0	8	44	95	31	1	0	0	0	0	0	0	0	0	0	0	16.7	20.7	0	0	0	0	0	0	16.7	20.7
06-22 16hr	206	0	4	37	154	10	1	0	0	0	0	0	9	51	108	37	1	0	0	0	0	0	0	0	0	0	0	16.7	20.7	0	0	0	0	0	0	16.7	20.7
06-00 18hr	215	0	4	37	162	11	1	0	0	0	0	0	9	55	111	39	1	0	0	0	0	0	0	0	0	0	0	16.7	20.7	0	0	0	0	0	0	16.7	20.7
00-00 24hr	215	0	4	37	162	11	1	0	0	0	0	0	9	55	111	39	1	0	0	0	0	0	0	0	0	0	0	16.7	20.7	0	0	0	0	0	0	16.7	20.7

Vehicles = 215
Posted speed limit = 30 mph, Exceeding = 0 (0.000%), Mean Exceeding = 0.00 mph
Maximum = 25.2 mph, Minimum = 6.2 mph, Mean = 16.7 mph
85% Speed = 20.69 mph, 95% Speed = 22.37 mph, Median = 17.00 mph
10 mph Pace = 11 - 21, Number in Pace = 177 (82.33%)
Variance = 13.92, Standard Deviation = 3.73 mph

* 18 April 2024		24																																			
Time	Total	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Mean	Vpp	>PSL	>PSL%	>SL1	>SL1%	>SL2	>SL2%	Mean	Vpp
<--		1	2	3	4	5	6	7	8	9	10	11	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75		85	30	30	30	30	30	30		85
													10	15	20	25	30	35	40	45	50	55	60	65	70	75	80										
0000	1	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	17.6	-	0	0	0	0	0	0	17.6	-
0100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
0200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
0300	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
0400	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
0500	6	0	0	0	6	0	0	0	0	0	0	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	20	-	0	0	0	0	0	0	20	-
0600	16	0	2	3	10	1	0	0	0	0	0	0	0	3	10	3	0	0	0	0	0	0	0	0	0	0	0	17.3	20.5	0	0	0	0	0	0	17.3	20.5
0700	23	0	0	5	17	0	1	0	0	0	0	0	1	6	10	5	1	0	0	0	0	0	0	0	0	0	0	17.4	21.4	0	0	0	0	0	0	17.4	21.4
0800	55	0	0	12	43	0	0	0	0	0	0	0	1	11	34	9	0	0	0	0	0	0	0	0	0	0	0	17.2	20.5	0	0	0	0	0	0	17.2	20.5
0900	26	0	0	4	19	3	0	0	0	0	0	0	1	1	17	7	0	0	0	0	0	0	0	0	0	0	0	18	20.9	0	0	0	0	0	0	18	20.9
1000	22	0	2	3	16	1	0	0	0	0	0	0	1	5	8	8	0	0	0	0	0	0	0	0	0	0	0	17.9	22.1	0	0	0	0	0	0	17.9	22.1
1100	23	0	0	5	15	3	0	0	0	0	0	0	0	7	14	2	0	0	0	0	0	0	0	0	0	0	0	16.1	18.7	0	0	0	0	0	0	16.1	18.7
1200	10	0	0	2	7	1	0	0	0	0	0	0	0	5	5	0	0	0	0	0	0	0	0	0	0	0	0	15	-	0	0	0	0	0	0	15	-
1300	27	1	0	8	17	1	0	0	0	0	0	0	1	9	15	2	0	0	0	0	0	0	0	0	0	0	0	16.2	19.2	0	0	0	0	0	0	16.2	19.2
1400	23	0	0	3	16	4	0	0	0	0	0	0	0	5	13	5	0	0	0	0	0	0	0	0	0	0	0	17.3	20.8	0	0	0	0	0	0	17.3	20.8
1500	46	0	0	9	34	3	0	0	0	0	0	0	2	12	24	7	1	0	0	0	0	0	0	0	0	0	0	16.7	20.4	0	0	0	0	0	0	16.7	20.4
1600	35	0	0	5	29	1	0	0	0	0	0	0	4	7	20	4	0	0	0	0	0	0	0	0	0	0	0	16.3	19.8	0	0	0	0	0	0	16.3	19.8
1700	17	0	1	1	13	2	0	0	0	0	0	0	0	4	10	3	0	0	0	0	0	0	0	0	0	0	0	17	21.7	0	0	0	0	0	0	17	21.7
1800	15	0	0	3	10	2	0	0	0	0	0	0	0	2	12	1	0	0	0	0	0	0	0	0	0	0	0	17.5	19.6	0	0	0	0	0	0	17.5	19.6
1900	5	0	0	2	3	0	0	0	0	0	0	0	0	1	4	0	0	0	0	0	0	0	0	0	0	0	0	15.7	-	0	0	0	0	0	0	15.7	-
2000	2	0	0	0	1	1	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	13.6	-	0	0	0	0	0	0	13.6	-
2100	4	0	0	1	2	1	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	13	-	0	0	0	0	0	0	13	-
2200	3	0	0	0	3	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	13.6	-	0	0	0	0	0	0	13.6	-
2300	2	0	0	0	2	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	13.4	-	0	0	0	0	0	0	13.4	-
07-19 12hr	322	1	3	60	236	21	1	0	0	0	0	0	11	74	182	53	2	0	0	0	0	0	0	0	0	0	0	16.9	20.4	0	0	0	0	0	0	16.9	20.4
06-22 16hr	349	1	5	66	252	24	1	0	0	0	0	0	11	84	196	56	2	0	0	0	0	0	0	0	0	0	0	16.9	20.3	0	0	0	0	0	0	16.9	20.3
06-00 18hr	354	1	5	66	257	24	1	0	0	0	0	0	11	89	196	56	2	0	0	0	0	0	0	0	0	0	0	16.8	20.2	0	0	0	0	0	0	16.8	20.2
00-00 24hr	361	1	5	66	263	25	1	0	0	0	0	0	11	89	200	59	2	0	0	0	0	0	0	0	0	0	0	16.9	20.4	0	0	0	0	0	0	16.9	20.4

Vehicles = 361
Posted speed limit = 30 mph, Exceeding = 0 (0.000%), Mean Exceeding = 0.00 mph
Maximum = 28.3 mph, Minimum = 7.9 mph, Mean = 16.9 mph
85% Speed = 20.36 mph, 95% Speed = 22.03 mph, Median = 16.89 mph
10 mph Pace = 12 - 22, Number in Pace = 318 (88.09%)
Variance = 10.53, Standard Deviation = 3.24 mph

* 19 April 2024																																					
Time	Total	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Mean	Vpp	>PSL	>PSL%	>SL1	>SL1%	>SL2	>SL2%	Mean	Vpp
<--		1	2	3	4	5	6	7	8	9	10	11	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75		85	30	30	30	30	30	30		85
													10	15	20	25	30	35	40	45	50	55	60	65	70	75	80										
0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
0100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
0200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
0300	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
0400	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
0500	7	0	0	0	7	0	0	0	0	0	0	0	0	0	3	4	0	0	0	0	0	0	0	0	0	0	0	20.1	-	0	0	0	0	0	0	20.1	-
0600	9	0	0	1	7	0	0	0	1	0	0	0	0	0	8	1	0	0	0	0	0	0	0	0	0	0	0	18	-	0	0	0	0	0	0	18	-
0700	20	0	0	0	20	0	0	0	0	0	0	0	0	4	11	4	1	0	0	0	0	0	0	0	0	0	0	17.9	21.3	0	0	0	0	0	0	17.9	21.3
0800	46	0	2	7	37	0	0	0	0	0	0	0	0	10	26	10	0	0	0	0	0	0	0	0	0	0	0	17.6	20.8	0	0	0	0	0	0	17.6	20.8
0900	41	0	1	1	38	1	0	0	0	0	0	0	1	9	23	8	0	0	0	0	0	0	0	0	0	0	0	17.1	20.6	0	0	0	0	0	0	17.1	20.6
1000	18	0	0	3	14	1	0	0	0	0	0	0	1	6	9	2	0	0	0	0	0	0	0	0	0	0	0	16.2	19.9	0	0	0	0	0	0	16.2	19.9
1100	25	0	1	5	17	2	0	0	0	0	0	0	0	13	12	0	0	0	0	0	0	0	0	0	0	0	0	15.7	19	0	0	0	0	0	0	15.7	19
1200	21	0	1	3	16	1	0	0	0	0	0	0	4	4	11	2	0	0	0	0	0	0	0	0	0	0	0	15.4	19.1	0	0	0	0	0	0	15.4	19.1
1300	24	0	0	5	18	1	0	0	0	0	0	0	0	8	13	3	0	0	0	0	0	0	0	0	0	0	0	16.8	19.7	0	0	0	0	0	0	16.8	19.7
1400	24	0	0	5	14	5	0	0	0	0	0	0	1	12	6	5	0	0	0	0	0	0	0	0	0	0	0	15.8	21	0	0	0	0	0	0	15.8	21
1500	40	0	0	8	32	0	0	0	0	0	0	0	0	10	26	4	0	0	0	0	0	0	0	0	0	0	0	16.9	19.3	0	0	0	0	0	0	16.9	19.3
1600	29	0	0	12	17	0	0	0	0	0	0	0	2	8	16	3	0	0	0	0	0	0	0	0	0	0	0	15.5	19.1	0	0	0	0	0	0	15.5	19.1
1700	27	0	1	2	24	0	0	0	0	0	0	0	1	4	19	3	0	0	0	0	0	0	0	0	0	0	0	17	19.3	0	0	0	0	0	0	17	19.3
1800	18	0	0	4	13	1	0	0	0	0	0	0	0	2	13	3	0	0	0	0	0	0	0	0	0	0	0	17.4	21.1	0	0	0	0	0	0	17.4	21.1
1900	10	0	0	2	8	0	0	0	0	0	0	0	1	4	2	3	0	0	0	0	0	0	0	0	0	0	0	15.9	-	0	0	0	0	0	0	15.9	-
2000	6	0	0	1	4	1	0	0	0	0	0	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	17.5	-	0	0	0	0	0	0	17.5	-
2100	3	0	0	1	2	0	0	0	0	0	0	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	13.9	-	0	0	0	0	0	0	13.9	-
2200	2	0	0	1	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	13.4	-	0	0	0	0	0	0	13.4	-
2300	1	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	10.5	-	0	0	0	0	0	0	10.5	-
07-19 12hr	333	0	6	55	260	12	0	0	0	0	0	0	10	90	185	47	1	0	0	0	0	0	0	0	0	0	0	16.7	19.9	0	0	0	0	0	0	16.7	19.9
06-22 16hr	361	0	6	60	281	13	0	0	1	0	0	0	11	96	202	51	1	0	0	0	0	0	0	0	0	0	0	16.7	19.9	0	0	0	0	0	0	16.7	19.9
06-00 18hr	364	0	6	62	282	13	0	0	1	0	0	0	11	98	203	51	1	0	0	0	0	0	0	0	0	0	0	16.7	19.8	0	0	0	0	0	0	16.7	19.8
00-00 24hr	371	0	6	62	289	13	0	0	1	0	0	0	11	98	206	55	1	0	0	0	0	0	0	0	0	0	0	16.7	20.1	0	0	0	0	0	0	16.7	20.1

Vehicles = 371
Posted speed limit = 30 mph, Exceeding = 0 (0.000%), Mean Exceeding = 0.00 mph
Maximum = 29.0 mph, Minimum = 6.5 mph, Mean = 16.7 mph
85% Speed = 20.13 mph, 95% Speed = 21.59 mph, Median = 16.89 mph
10 mph Pace = 12 - 22, Number in Pace = 331 (89.22%)
Variance = 10.24, Standard Deviation = 3.20 mph

* 20 April 2024																																					
Time	Total	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Mean	Vpp	>PSL	>PSL%	>SL1	>SL1%	>SL2	>SL2%	Mean	Vpp
<--		1	2	3	4	5	6	7	8	9	10	11	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75		85	30	30	30	30	30	30		85
													10	15	20	25	30	35	40	45	50	55	60	65	70	75	80										
0000	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	23.1	-	0	0	0	0	0	0	23.1	-
0100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
0200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
0300	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
0400	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
0500	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	21.9	-	0	0	0	0	0	0	21.9	-
0600	5	0	1	3	1	0	0	0	0	0	0	0	0	1	2	2	0	0	0	0	0	0	0	0	0	0	0	18.8	-	0	0	0	0	0	0	18.8	-
0700	16	1	0	2	12	1	0	0	0	0	0	0	0	4	5	6	1	0	0	0	0	0	0	0	0	0	0	18.3	23.9	0	0	0	0	0	0	18.3	23.9
0800	20	0	0	2	17	1	0	0	0	0	0	0	0	3	15	2	0	0	0	0	0	0	0	0	0	0	0	17	19.5	0	0	0	0	0	0	17	19.5
0900	29	0	1	3	24	1	0	0	0	0	0	0	1	11	14	3	0	0	0	0	0	0	0	0	0	0	0	16.1	19.2	0	0	0	0	0	0	16.1	19.2
1000	35	0	0	3	30	1	0	0	1	0	0	0	0	9	23	3	0	0	0	0	0	0	0	0	0	0	0	16.4	19.2	0	0	0	0	0	0	16.4	19.2
1100	23	0	1	2	20	0	0	0	0	0	0	0	1	1	18	2	1	0	0	0	0	0	0	0	0	0	0	17.9	20.5	0	0	0	0	0	0	17.9	20.5
1200	14	0	0	4	9	0	0	0	1	0	0	0	0	5	7	2	0	0	0	0	0	0	0	0	0	0	0	16	20.9	0	0	0	0	0	0	16	20.9
1300	26	0	0	3	22	1	0	0	0	0	0	0	2	8	15	1	0	0	0	0	0	0	0	0	0	0	0	15.6	18.9	0	0	0	0	0	0	15.6	18.9
1400	20	0	0	3	17	0	0	0	0	0	0	0	0	4	13	3	0	0	0	0	0	0	0	0	0	0	0	17	20.8	0	0	0	0	0	0	17	20.8
1500	15	0	0	4	11	0	0	0	0	0	0	0	0	3	7	5	0	0	0	0	0	0	0	0	0	0	0	17.8	21.6	0	0	0	0	0	0	17.8	21.6
1600	17	0	0	1	15	1	0	0	0	0	0	0	1	8	7	1	0	0	0	0	0	0	0	0	0	0	0	14.8	18	0	0	0	0	0	0	14.8	18
1700	11	0	0	1	10	0	0	0	0	0	0	0	0	3	6	2	0	0	0	0	0	0	0	0	0	0	0	16.6	20.9	0	0	0	0	0	0	16.6	20.9
1800	18	0	1	3	13	1	0	0	0	0	0	0	0	9	6	3	0	0	0	0	0	0	0	0	0	0	0	16.5	22	0	0	0	0	0	0	16.5	22
1900	15	0	0	2	13	0	0	0	0	0	0	0	0	5	7	3	0	0	0	0	0	0	0	0	0	0	0	17	20.5	0	0	0	0	0	0	17	20.5
2000	11	0	0	2	8	1	0	0	0	0	0	0	1	3	6	1	0	0	0	0	0	0	0	0	0	0	0	15.7	19.5	0	0	0	0	0	0	15.7	19.5
2100	4	0	0	0	4	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	15.6	-	0	0	0	0	0	0	15.6	-
2200	5	0	0	0	5	0	0	0	0	0	0	0	0	2	3	0	0	0	0	0	0	0	0	0	0	0	0	14.7	-	0	0	0	0	0	0	14.7	-
2300	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
07-19 12hr	244	1	3	31	200	7	0	0	2	0	0	0	5	68	136	33	2	0	0	0	0	0	0	0	0	0	0	16.6	19.7	0	0	0	0	0	0	16.6	19.7
06-22 16hr	279	1	4	38	226	8	0	0	2	0	0	0	6	79	153	39	2	0	0	0	0	0	0	0	0	0	0	16.6	19.9	0	0	0	0	0	0	16.6	19.9
06-00 18hr	284	1	4	38	231	8	0	0	2	0	0	0	6	81	156	39	2	0	0	0	0	0	0	0	0	0	0	16.6	19.7	0	0	0	0	0	0	16.6	19.7
00-00 24hr	288	1	4	38	235	8	0	0	2	0	0	0	6	81	156	43	2	0	0	0	0	0	0	0	0	0	0	16.7	20.5	0	0	0	0	0	0	16.7	20.5

Vehicles = 288
Posted speed limit = 30 mph, Exceeding = 0 (0.000%), Mean Exceeding = 0.00 mph

Maximum = 28.4 mph, Minimum = 6.9 mph, Mean = 16.7 mph
85% Speed = 20.46 mph, 95% Speed = 22.32 mph, Median = 16.50 mph
10 mph Pace = 12 - 22, Number in Pace = 247 (85.76%)
Variance = 11.18, Standard Deviation = 3.34 mph

* 21 April 2024

Time	Total	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Mean	Vpp	>PSL	>PSL%	>SL1	>SL1%	>SL2	>SL2%	Mean	Vpp
<--		1	2	3	4	5	6	7	8	9	10	11	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75		85	30	30	30	30	30	30		85
													10	15	20	25	30	35	40	45	50	55	60	65	70	75	80										
0000	4	0	0	0	4	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	18.6	-	0	0	0	0	0	0	18.6	-
0100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
0200	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	24.5	-	0	0	0	0	0	0	24.5	-
0300	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
0400	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
0500	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
0600	5	0	1	1	3	0	0	0	0	0	0	0	0	3	2	0	0	0	0	0	0	0	0	0	0	0	0	15.9	-	0	0	0	0	0	0	15.9	-
0700	4	0	0	2	2	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	18.4	-	0	0	0	0	0	0	18.4	-
0800	12	0	0	4	7	1	0	0	0	0	0	0	1	2	7	2	0	0	0	0	0	0	0	0	0	0	0	16.8	20.3	0	0	0	0	0	0	16.8	20.3
0900	26	0	0	6	20	0	0	0	0	0	0	0	2	5	14	5	0	0	0	0	0	0	0	0	0	0	0	16.6	20.4	0	0	0	0	0	0	16.6	20.4
1000	21	0	0	7	14	0	0	0	0	0	0	0	1	14	5	1	0	0	0	0	0	0	0	0	0	0	0	14.1	17.1	0	0	0	0	0	0	14.1	17.1
1100	19	0	0	5	14	0	0	0	0	0	0	0	2	7	8	2	0	0	0	0	0	0	0	0	0	0	0	14.7	19.3	0	0	0	0	0	0	14.7	19.3
1200	42	0	1	16	25	0	0	0	0	0	0	0	17	15	9	1	0	0	0	0	0	0	0	0	0	0	0	11.8	17.2	0	0	0	0	0	0	11.8	17.2
1300	31	1	0	2	28	0	0	0	0	0	0	0	1	13	16	1	0	0	0	0	0	0	0	0	0	0	0	14.8	18.9	0	0	0	0	0	0	14.8	18.9
1400	20	0	0	5	15	0	0	0	0	0	0	0	2	7	10	1	0	0	0	0	0	0	0	0	0	0	0	15.2	18.6	0	0	0	0	0	0	15.2	18.6
1500	18	0	1	2	15	0	0	0	0	0	0	0	0	6	11	1	0	0	0	0	0	0	0	0	0	0	0	16.1	18.2	0	0	0	0	0	0	16.1	18.2
1600	29	0	0	6	23	0	0	0	0	0	0	0	0	7	18	4	0	0	0	0	0	0	0	0	0	0	0	16.6	20	0	0	0	0	0	0	16.6	20
1700	14	0	0	4	9	1	0	0	0	0	0	0	1	6	3	4	0	0	0	0	0	0	0	0	0	0	0	16	22.1	0	0	0	0	0	0	16	22.1
1800	9	0	0	4	4	1	0	0	0	0	0	0	1	2	4	2	0	0	0	0	0	0	0	0	0	0	0	16.9	-	0	0	0	0	0	0	16.9	-
1900	11	0	0	2	9	0	0	0	0	0	0	0	0	1	9	1	0	0	0	0	0	0	0	0	0	0	0	17.6	19.8	0	0	0	0	0	0	17.6	19.8
2000	6	0	0	1	3	2	0	0	0	0	0	0	0	0	5	1	0	0	0	0	0	0	0	0	0	0	0	19.1	-	0	0	0	0	0	0	19.1	-
2100	5	0	0	0	4	1	0	0	0	0	0	0	0	0	4	1	0	0	0	0	0	0	0	0	0	0	0	17.7	-	0	0	0	0	0	0	17.7	-
2200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
2300	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
07-19 12hr	245	1	2	63	176	3	0	0	0	0	0	0	28	84	109	24	0	0	0	0	0	0	0	0	0	0	0	15	19.3	0	0	0	0	0	0	15	19.3
06-22 16hr	272	1	3	67	195	6	0	0	0	0	0	0	28	88	129	27	0	0	0	0	0	0	0	0	0	0	0	15.3	19.5	0	0	0	0	0	0	15.3	19.5
06-00 18hr	272	1	3	67	195	6	0	0	0	0	0	0	28	88	129	27	0	0	0	0	0	0	0	0	0	0	0	15.3	19.5	0	0	0	0	0	0	15.3	19.5
00-00 24hr	277	1	3	67	200	6	0	0	0	0	0	0	28	88	133	28	0	0	0	0	0	0	0	0	0	0	0	15.4	19.5	0	0	0	0	0	0	15.4	19.5

Vehicles = 277
Posted speed limit = 30 mph, Exceeding = 0 (0.000%), Mean Exceeding = 0.00 mph
Maximum = 24.5 mph, Minimum = 5.4 mph, Mean = 15.4 mph
85% Speed = 19.46 mph, 95% Speed = 20.93 mph, Median = 15.77 mph
10 mph Pace = 11 - 21, Number in Pace = 222 (80.14%)
Variance = 15.97, Standard Deviation = 4.00 mph

* 22 April 2024

Time	Total	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Mean	Vpp	>PSL	>PSL%	>SL1	>SL1%	>SL2	>SL2%	Mean	Vpp
<--		1	2	3	4	5	6	7	8	9	10	11	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75		85	30	30	30	30	30	30		85
													10	15	20	25	30	35	40	45	50	55	60	65	70	75	80										
0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
0100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
0200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
0300	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
0400	2	0	0	0	1	1	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	18.2	-	0	0	0	0	0	0	18.2	-
0500	6	0	0	0	6	0	0	0	0	0	0	0	0	0	4	2	0	0	0	0	0	0	0	0	0	0	0	19.2	-	0	0	0	0	0	0	19.2	-
0600	10	0	0	2	8	0	0	0	0	0	0	0	0	2	7	1	0	0	0	0	0	0	0	0	0	0	0	17.6	-	0	0	0	0	0	0	17.6	-
0700	26	0	1	1	22	2	0	0	0	0	0	0	0	2	16	8	0	0	0	0	0	0	0	0	0	0	0	18.2	21.4	0	0	0	0	0	0	18.2	21.4
0800	58	0	0	6	50	0	2	0	0	0	0	0	1	16	31	9	1	0	0	0	0	0	0	0	0	0	0	16.8	20.3	0	0	0	0	0	0	16.8	20.3
0900	35	0	0	3	31	1	0	0	0	0	0	0	0	7	24	4	0	0	0	0	0	0	0	0	0	0	0	16.9	19	0	0	0	0	0	0	16.9	19
1000	25	0	1	4	18	2	0	0	0	0	0	0	1	9	11	4	0	0	0	0	0	0	0	0	0	0	0	15.8	20.4	0	0	0	0	0	0	15.8	20.4
1100	20	0	0	5	13	2	0	0	0	0	0	0	0	8	11	1	0	0	0	0	0	0	0	0	0	0	0	15.6	18.7	0	0	0	0	0	0	15.6	18.7
1200	15	0	0	3	11	1	0	0	0	0	0	0	0	3	11	1	0	0	0	0	0	0	0	0	0	0	0	16.4	18.1	0	0	0	0	0	0	16.4	18.1
1300	15	0	0	4	11	0	0	0	0	0	0	0	0	6	9	0	0	0	0	0	0	0	0	0	0	0	0	15.9	18.2	0	0	0	0	0	0	15.9	18.2
1400	18	0	0	6	11	1	0	0	0	0	0	0	0	4	13	1	0	0	0	0	0	0	0	0	0	0	0	16.6	19.7	0	0	0	0	0	0	16.6	19.7
1500	40	0	0	8	31	1	0	0	0	0	0	0	0	6	25	9	0	0	0	0	0	0	0	0	0	0	0	17.6	21.2	0	0	0	0	0	0	17.6	21.2
1600	25	0	0	3	22	0	0	0	0	0	0	0	1	5	12	7	0	0	0	0	0	0	0	0	0	0	0	17.1	21.6	0	0	0	0	0	0	17.1	21.6
1700	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
1800	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
1900	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
2000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
2100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
2200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
2300	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
07-19 12hr	277	0	2	43	220	10	2	0	0	0	0	0	3	66	163	44	1	0	0	0	0	0	0	0	0	0	0	16.8	20.4	0	0	0	0	0	0	16.8	20.4
06-22 16hr	287	0	2	45	228	10	2	0	0	0	0	0	3	68	170	45	1	0	0	0	0	0	0	0	0	0	0	16.8	20.3	0	0	0	0	0	0	16.8	20.3
06-00 18hr	287	0	2	45	228	10	2	0	0	0	0	0	3	68	170	45	1	0	0	0	0	0	0	0	0	0	0	16.8	20.3	0	0	0	0	0	0	16.8	20.3
00-00 24hr	295	0	2	45	235	11	2	0	0	0	0	0	3	68	176	47	1	0	0	0	0	0	0	0	0	0	0	16.9	20.3	0	0	0	0	0	0	16.9	20.3

Vehicles = 295
Posted speed limit = 30 mph, Exceeding = 0 (0.000%), Mean Exceeding = 0.00 mph
Maximum = 26.6 mph, Minimum = 5.2 mph, Mean = 16.9 mph
85% Speed = 20.31 mph, 95% Speed = 21.70 mph, Median = 16.67 mph
10 mph Pace = 12 - 22, Number in Pace = 267 (90.51%)
Variance = 9.57, Standard Deviation = 3.09 mph

* 23 April 2024

Time	Total	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Mean	Vpp	>PSL	>PSL%	>SL1	>SL1%	>SL2	>SL2%	Mean	Vpp
<--		1	2	3	4	5	6	7	8	9	10	11	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75		85	30	30	30	30	30	30		85
													10	15	20	25	30	35	40	45	50	55	60	65	70	75	80										
0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
0100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
0200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
0300	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
0400	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
0500	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
0600	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
0700	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
0800	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
0900	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
1000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
1100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
1200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
1300	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
1400	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
1500	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
1600	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
1700	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
1800	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
1900	5	0	0	1	4	0	0	0	0	0	0	0	0	1	3	1	0	0	0	0	0	0	0	0	0	0	0	17.6	-	0	0	0	0	0	0	17.6	-
2000	4	0	0	0	4	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	19.9	-	0	0	0	0	0	0	19.9	-
2100	2	0	0	1	1	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	19.3	-	0	0	0	0	0	0	19.3	-
2200	2	0	0	0	2	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	16.7	-	0	0	0	0	0	0	16.7	-
2300	1	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	18.2	-	0	0	0	0	0	0	18.2	-
07-19 12hr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
06-22 16hr	11	0	0	2	9	0	0	0	0	0	0	0	0	1	7	3	0	0	0	0	0	0	0	0	0	0	0	18.7	23.4	0	0	0	0	0	0	18.7	23.4
06-00 18hr	14	0	0	2	12	0	0	0	0	0	0	0	0	1	10	3	0	0	0	0	0	0	0	0	0	0	0	18.4	22.8	0	0	0	0	0	0	18.4	22.8
00-00 24hr	14	0	0	2	12	0	0	0	0	0	0	0	0	1	10	3	0	0	0	0	0	0	0	0	0	0	0	18.4	22.8	0	0	0	0	0	0	18.4	22.8

Vehicles = 14
Posted speed limit = 30 mph, Exceeding = 0 (0.000%), Mean Exceeding = 0.00 mph
Maximum = 24.2 mph, Minimum = 13.0 mph, Mean = 18.4 mph
85% Speed = 22.79 mph, 95% Speed = 24.19 mph, Median = 18.12 mph
10 mph Pace = 14 - 24, Number in Pace = 13 (92.86%)
Variance = 9.02, Standard Deviation = 3.00 mph

* 24 April 2024

Time	Total	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Mean	Vpp	>PSL	>PSL%	>SL1	>SL1%	>SL2	>SL2%	Mean	Vpp
<--		1	2	3	4	5	6	7	8	9	10	11	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75		85	30	30	30	30	30	30		85
													10	15	20	25	30	35	40	45	50	55	60	65	70	75	80										
0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
0100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
0200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
0300	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
0400	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
0500	8	0	0	1	7	0	0	0	0	0	0	0	1	0	5	2	0	0	0	0	0	0	0	0	0	0	0	17.2	-	0	0	0	0	0	0	17.2	-
0600	19	0	1	6	11	1	0	0	0	0	0	0	0	6	7	5	1	0	0	0	0	0	0	0	0	0	0	17.9	22	0	0	0	0	0	0	17.9	22
0700	26	0	0	6	19	0	0	0	1	0	0	0	0	1	18	7	0	0	0	0	0	0	0	0	0	0	0	18.1	20.8	0	0	0	0	0	0	18.1	20.8
0800	52	0	0	8	41	3	0	0	0	0	0	0	0	7	32	13	0	0	0	0	0	0	0	0	0	0	0	17.9	20.7	0	0	0	0	0	0	17.9	20.7
0900	33	0	1	2	29	1	0	0	0	0	0	0	1	6	20	6	0	0	0	0	0	0	0	0	0	0	0	17.1	21.6	0	0	0	0	0	0	17.1	21.6
1000	24	0	0	4	16	4	0	0	0	0	0	0	1	8	11	4	0	0	0	0	0	0	0	0	0	0	0	16.2	20.3	0	0	0	0	0	0	16.2	20.3
1100	18	0	1	2	13	2	0	0	0	0	0	0	0	5	9	4	0	0	0	0	0	0	0	0	0	0	0	17.1	20.8	0	0	0	0	0	0	17.1	20.8
1200	25	0	0	4	20	1	0	0	0	0	0	0	0	5	18	2	0	0	0	0	0	0	0	0	0	0	0	16.7	19	0	0	0	0	0	0	16.7	19
1300	19	0	0	3	14	2	0	0	0	0	0	0	0	7	10	2	0	0	0	0	0	0	0	0	0	0	0	16.1	19.9	0	0	0	0	0	0	16.1	19.9
1400	11	0	0	0	9	2	0	0	0	0	0	0	0	4	6	1	0	0	0	0	0	0	0	0	0	0	0	15.4	17.9	0	0	0	0	0	0	15.4	17.9
1500	44	1	0	6	35	2	0	0	0	0	0	0	0	19	21	4	0	0	0	0	0	0	0	0	0	0	0	16.2	19.3	0	0	0	0	0	0	16.2	19.3
1600	31	1	0	6	21	3	0	0	0	0	0	0	0	10	18	3	0	0	0	0	0	0	0	0	0	0	0	16.3	19.6	0	0	0	0	0	0	16.3	19.6
1700	27	0	1	4	22	0	0	0	0	0	0	0	1	3	16	7	0	0	0	0	0	0	0	0	0	0	0	18	22.6	0	0	0	0	0	0	18	22.6
1800	15	0	1	2	12	0	0	0	0	0	0	0	1	3	10	1	0	0	0	0	0	0	0	0	0	0	0	15.8	18.7	0	0	0	0	0	0	15.8	18.7
1900	7	0	0	2	4	1	0	0	0	0	0	0	0	3	2	2	0	0	0	0	0	0	0	0	0	0	0	16.9	-	0	0	0	0	0	0	16.9	-
2000	7	0	0	3	4	0	0	0	0	0	0	0	0	1	6	0	0	0	0	0	0	0	0	0	0	0	0	17.1	-	0	0	0	0	0	0	17.1	-
2100	3	0	0	0	3	0	0	0	0	0	0	0	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0	17.6	-	0	0	0	0	0	0	17.6	-
2200	3	0	0	0	3	0	0	0	0	0	0	0	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	15.8	-	0	0	0	0	0	0	15.8	-
2300	1	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	18.5	-	0	0	0	0	0	0	18.5	-
07-19 12hr	325	2	4	47	251	20	0	0	1	0	0	0	4	78	189	54	0	0	0	0	0	0	0	0	0	0	0	16.9	20.2	0	0	0	0	0	0	16.9	20.2
06-22 16hr	361	2	5	58	273	22	0	0	1	0	0	0	4	88	206	62	1	0	0	0	0	0	0	0	0	0	0	17	20.3	0	0	0	0	0	0	17	20.3
06-00 18hr	365	2	5	58	277	22	0	0	1	0	0	0	4	89	209	62	1	0	0	0	0	0	0	0	0	0	0	17	20.3	0	0	0	0	0	0	17	20.3
00-00 24hr	373	2	5	59	284	22	0	0	1	0	0	0	5	89	214	64	1	0	0	0	0	0	0	0	0	0	0	17	20.3	0	0	0	0	0	0	17	20.3

Vehicles = 373
Posted speed limit = 30 mph, Exceeding = 0 (0.000%), Mean Exceeding = 0.00 mph
Maximum = 29.2 mph, Minimum = 5.2 mph, Mean = 17.0 mph
85% Speed = 20.34 mph, 95% Speed = 22.29 mph, Median = 17.00 mph
10 mph Pace = 13 - 23, Number in Pace = 329 (88.20%)
Variance = 10.43, Standard Deviation = 3.23 mph

* 25 April 2024

Time	Total	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Mean	Vpp	>PSL	>PSL%	>SL1	>SL1%	>SL2	>SL2%	Mean	Vpp
<--		1	2	3	4	5	6	7	8	9	10	11	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75		85	30	30	30	30	30	30		85
													10	15	20	25	30	35	40	45	50	55	60	65	70	75	80										
0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
0100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
0200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
0300	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	-	0	-	0	-	-	-
0400	1	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	11.4	-	0	0	0	0	0	0	11.4	-
0500	11	0	0	0	10	1	0	0	0	0	0	0	0	1	5	5	0	0	0	0	0	0	0	0	0	0	0	19.4	22.6	0	0	0	0	0	0	19.4	22.6
0600	18	0	1	4	13	0	0	0	0	0	0	0	0	1	12	5	0	0	0	0	0	0	0	0	0	0	0	18.2	20.9	0	0	0	0	0	0	18.2	20.9
0700	25	0	0	4	18	1	1	0	1	0	0	0	0	7	13	4	1	0	0	0	0	0	0	0	0	0	0	17.7	21.9	0	0	0	0	0	0	17.7	21.9
0800	55	0	0	11	42	2	0	0	0	0	0	0	0	10	36	9	0	0	0	0	0	0	0	0	0	0	0	17.2	20.6	0	0	0	0	0	0	17.2	20.6
0900	35	0	0	5	26	4	0	0	0	0	0	0	0	19	15	1	0	0	0	0	0	0	0	0	0	0	0	15.1	19.1	0	0	0	0	0	0	15.1	19.1
1000	22	0	0	2	18	2	0	0	0	0	0	0	0	9	8	5	0	0	0	0	0	0	0	0	0	0	0	16.5	21.3	0	0	0	0	0	0	16.5	21.3
1100	25	0	0	3	19	2	0	0	1	0	0	0	1	7	10	7	0	0	0	0	0	0	0	0	0	0	0	16.5	21	0	0	0	0	0	0	16.5	21
1200	18	1	0	2	12	3	0	0	0	0	0	0	1	6	9	2	0	0	0	0	0	0	0	0	0	0	0	15.5	19.6	0	0	0	0	0	0	15.5	19.6
07-19 12hr	180	1	0	27	135	14	1	0	2	0	0	0	2	58	91	28	1	0	0	0	0	0	0	0	0	0	0	16.5	20.3	0	0	0	0	0	0	16.5	20.3
06-22 16hr	198	1	1	31	148	14	1	0	2	0	0	0	2	59	103	33	1	0	0	0	0	0	0	0	0	0	0	16.7	20.4	0	0	0	0	0	0	16.7	20.4
06-00 18hr	198	1	1	31	148	14	1	0	2	0	0	0	2	59	103	33	1	0	0	0	0	0	0	0	0	0	0	16.7	20.4	0	0	0	0	0	0	16.7	20.4
00-00 24hr	210	1	1	31	158	16	1	0	2	0	0	0	2	61	108	38	1	0	0	0	0	0	0	0	0	0	0	16.8	20.5	0	0	0	0	0	0	16.8	20.5

Vehicles = 210
Posted speed limit = 30 mph, Exceeding = 0 (0.000%), Mean Exceeding = 0.00 mph

Maximum = 28.7 mph, Minimum = 5.3 mph, Mean = 16.8 mph
85% Speed = 20.47 mph, 95% Speed = 21.97 mph, Median = 16.83 mph
10 mph Pace = 11 - 21, Number in Pace = 188 (89.52%)
Variance = 10.49, Standard Deviation = 3.24 mph

*** Virtual Week (Partial weeks = 1.28571)**

Time	Total	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Mean	Vpp	>PSL	>PSL%	>SL1	>SL1%	>SL2	>SL2%	Mean	Vpp
<--		1	2	3	4	5	6	7	8	9	10	11	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75		85	30		30	30	30	30		85
													10	15	20	25	30	35	40	45	50	55	60	65	70	75	80											
Mon	295	0	2	45	235	11	2	0	0	0	0	0	3	68	176	47	1	0	0	0	0	0	0	0	0	0	0	0	16.9	20.3	0	0	0	0	0	0	16.9	20.3
Tue	14	0	0	2	12	0	0	0	0	0	0	0	0	1	10	3	0	0	0	0	0	0	0	0	0	0	0	0	18.4	22.8	0	0	0	0	0	0	18.4	22.8
Wed	294	1	5	48	223	17	1	0	1	0	0	0	7	72	163	52	1	0	0	0	0	0	0	0	0	0	0	0	16.9	20.4	0	0	0	0	0	0	16.9	20.4
Thu	286	1	3	49	211	21	1	0	1	0	0	0	7	75	154	49	2	0	0	0	0	0	0	0	0	0	0	0	16.9	20.4	0	0	0	0	0	0	16.9	20.4
Fri	371	0	6	62	289	13	0	0	1	0	0	0	11	98	206	55	1	0	0	0	0	0	0	0	0	0	0	0	16.7	20.1	0	0	0	0	0	0	16.7	20.1
Sat	288	1	4	38	235	8	0	0	2	0	0	0	6	81	156	43	2	0	0	0	0	0	0	0	0	0	0	0	16.7	20.5	0	0	0	0	0	0	16.7	20.5
Sun	277	1	3	67	200	6	0	0	0	0	0	0	28	88	133	28	0	0	0	0	0	0	0	0	0	0	0	0	15.4	19.5	0	0	0	0	0	0	15.4	19.5

Vehicles = 2404
Posted speed limit = 30 mph, Exceeding = 0 (0.000%), Mean Exceeding = 0.00 mph
Maximum = 29.2 mph, Minimum = 5.2 mph, Mean = 16.7 mph
85% Speed = 20.24 mph, 95% Speed = 21.92 mph, Median = 16.78 mph
10 mph Pace = 12 - 22, Number in Pace = 2071 (86.15%)
Variance = 11.55, Standard Deviation = 3.40 mph

*** Grand Total**

Time	Total	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Mean	Vpp	>PSL	>PSL%	>SL1	>SL1%	>SL2	>SL2%	Mean	Vpp
<--		1	2	3	4	5	6	7	8	9	10	11	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75		85	30		30	30	30	30		85
													10	15	20	25	30	35	40	45	50	55	60	65	70	75	80											
--	**2404**	**6**	**30**	**407**	**1838**	**112**	**5**	**0**	**6**	**0**	**0**	**0**	**75**	**630**	**1314**	**376**	**9**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**16.7**	**20.2**	**0**	**0**	**0**	**0**	**0**	**0**	**16.7**	**20.2**

Vehicles = 2404
Posted speed limit = 30 mph, Exceeding = 0 (0.000%), Mean Exceeding = 0.00 mph
Maximum = 29.2 mph, Minimum = 5.2 mph, Mean = 16.7 mph
85% Speed = 20.24 mph, 95% Speed = 21.92 mph, Median = 16.78 mph
10 mph Pace = 12 - 22, Number in Pace = 2071 (86.15%)
Variance = 11.55, Standard Deviation = 3.40 mph

In profile: Vehicles = 2404 / 4774 (50.36%)

Appendix 14.1: Construction Phase Dust Assessment

Appendix 14.1 – Air Quality - Construction Phase Dust Assessment

An assessment of the potential impacts arising from the construction of the Proposed Development was undertaken in accordance with the Institute of Air Quality Management (IAQM) guidance[22].

The assessment steps undertaken are summarised as follows:

- Step 1 – screen the requirement for a more detailed assessment. No assessment is required if there are no receptors within a certain distance of the works;
- Step 2 – assess the risk of dust impacts separately for each of the four activities considered (demolition, earthworks, construction and trackout).
    - Step 2A – determine the potential dust emission magnitude for each of the four activities;
    - Step 2B – determine the sensitivity of the area;
    - Step 2C – determine the risk of dust impacts by combining the findings of steps 2A and 2B.
- Step 3 – determine the site-specific mitigation for each of the four activities; and
- Step 4 – examine the residual effects and determine significance.

The construction phase of the Proposed Development will involve a number of activities which have the potential to impact on local air quality.

The location of sensitive receptors in relation to construction activities will affect the potential for such construction activities to cause dust soiling, nuisance and local air quality impacts. Meteorological conditions and the use of control measures will also contribute to the effects experienced.

Assessment of Significance

Step 1 of the IAQM guidance[22] involves a screening assessment to consider whether a more detailed construction phase dust assessment is required.

In accordance with the guidance[22], a detailed assessment is required if:

- Human receptors are located within 250m of the boundary of the Site or 50m of routes used by construction vehicles on the public highways, up to 250m from the Site entrances; or

- Ecological receptors are located within 50m of the boundary of the Site or 50m of routes used by construction vehicles on the public highways, up to 250m from the Site entrances.

From a review of the Multi Agency Geographic Information for the Countryside (MAGIC) website, the Whiston Eaves Site of Special Scientific Interest (SSSI), an Ancient Woodland areas including Ashbourne Hey, Key Wood, Carr Wood and Frame Wood were within 50m of the Site boundary. In addition, human receptors are located within 250m of the Site. A construction phase assessment was therefore undertaken.

Step 2: Assess the Risk of Dust Impacts

Step 2A: Define the Potential Dust Emission Magnitude

The dust emission magnitudes for the construction activities were defined using the criteria detailed in the IAQM guidance[22], which is detailed in **Table 14.1.1.**

Table 14.1.1: Dust Emissions Magnitude Criteria and Definition

Activity	IAQM Dust Emission Magnitude	IAQM Dust Emission Magnitude Criteria
Earthworks	Large	Total site area >110,000m^2, potentially dusty soil type (e.g. clay, which will be prone to suspension when dry due to small particle size), >10 heavy earth moving vehicles active at any one time, formation of bunds >6 m in height.
	Medium	Total site area 18,000m^2 – 110,000m^2, moderately dusty soil type (e.g. silt), 5 - 10 heavy earth moving vehicles active at any one time, formation of bunds 3m - 6m in height.

	Small	Total site area <18,000m^2, soil type with large grain size (e.g. sand), <5 heavy earth moving vehicles active at any one time, formation of bunds <3m in height.
Construction	Large	Total building volume >75,000m^3, on site concrete batching, sandblasting.
	Medium	Total building volume 12,000m^3 – 75,000m^3, potentially dusty construction material (e.g. concrete), on site concrete batching.
	Small	Total building volume <12,000m^3, construction material with low potential for dust release (e.g. metal cladding or timber).
Trackout	Large	>50 HDV (>3.5t) outward movements in any one day, potentially dusty surface material (e.g. high clay content), unpaved road length >100m.
	Medium	20-50 HDV (>3.5t) outward movements in any one day, moderately dusty surface material (e.g. high clay content), unpaved road length 50m – 100m.
	Small	<20 HDV (>3.5t) outward movements in any one day, surface material with low potential for dust release, unpaved road length <50m.

1.1 As stated within the June 2016 ES, demolition activities required for the former quarry site will be undertaken as part of the restoration scheme and is therefore not considered within this assessment.

The following dust emissions magnitudes were defined for the Proposed Development:

- Earthworks – the total Site area is greater than 110,000m^2. The dust emission magnitude for earthworks was therefore defined as **Large.**

- Construction – due to the number and size of the Proposed Development quantum, the total building volume is expected to be greater than 75,000m^3. The dust emission magnitude for construction was therefore defined as **Large**.
- Trackout – due to the size and scale, and phased nature of the construction of the development, it is anticipated that there will be between 20 and 50 outward HDV movements in any one day. The dust emissions magnitude for trackout was therefore defined as **Medium**. In accordance with IAQM guidance[22] a trackout distance of 250m was used.

A summary of the defined dust emissions magnitudes for the development are provided in **Table 14.1.2.**

Table 14.1.2: Summary of Project Defined Dust Emissions Magnitudes

Activity	Dust Emissions Magnitude
Earthworks	Large
Construction	Large
Trackout	Medium

Step 2B: Define the Sensitivity of the Study Area

Existing sensitive receptors were identified within the distance bands detailed in the IAQM guidance[22] and considered with regard to dust soiling and human health effects. **Figure 14.1** details the construction phase distance buffers for the proposed development. For the purposes of the construction phase assessment, sensitive receptors within committed developments were also considered, where they lie within the relevant distance bands, on the basis that the developments could be occupied during the construction of the Proposed Development.

The sensitivity of the study area takes into account the specific receptors in the vicinity of the Site, the proximity and number of those receptors, the local background concentration of PM_{10} and site-specific factors. The assessment requires the determination of the sensitivity of the area for the purposes of dust soiling and human health and these are presented in **Table 14.1.3.**

- Dust Soiling – There is one Solar Farm within 20m of the proposed Site boundary which is considered to be highly sensitive to dust soiling.

Additionally, residential dwellings are considered to be highly sensitive to dust soiling impacts. There are between 1 and 10 highly sensitive residential dwellings within 50m of the proposed Site boundary. Therefore, the sensitivity of the area to dust soiling impacts was defined as **Medium**. There are no receptors within 50m of the roads to be used by construction vehicles, therefore the sensitivity of the area to human health impacts associated with trackout was defined as negligible.

- Human Health – Residential dwellings are also considered to be highly sensitive to human health effects. Therefore there are between 1 and 10 highly sensitive receptors within 50m of the Site boundary. Background PM_{10} concentrations in the area surrounding the Site are below 24 $\mu g.m^3$ [25]. Therefore, the sensitivity of the area to human health impacts associated with construction and earthworks was defined as **Low**. There are no receptors within 50m of the roads to be used by construction vehicles, therefore the sensitivity of the area to human health impacts associated with trackout was defined as negligible.
- Ecological - For a robust approach, the Whiston Eaves SSSI and Ashbourne Hey, Key Wood, Carr Wood and Frame Wood Ancient Woodlands are assumed to be a highly sensitivity receptor. All ecological receptors are located within 20m of the Site boundary. Therefore, the sensitivity of the area to ecological impacts was defined as **High**. No ecological receptors are within 50m of the trackout route and was therefore defined as negligible.

Table 14.1.3. Summary of Sensitivity of the Area

Potential Impact	Sensitivity		
	Earthworks	Construction	Trackout
Dust Soiling	Medium	Medium	Negligible
Human Health	Low	Low	Negligible
Ecological	High	High	Negligible

Step 2C: Define the Risk of Impacts

The dust emission magnitude determined in Step 2A is then combined with the sensitivity of the area determined in Step 2B to define the risk of dust impacts with no mitigation applied. The results of this assessment are detailed in **Table 14.1.4**.

Table 14.1.4. Summary Dust Risk Table to Define Site Specific Risk

Activity	Step 2A: Dust Emission Magnitude	Step 2B: Sensitivity of the Area	Step 2C: Risk of Dust Impacts
Dust Soiling Effects on People and Property			
Earthworks	Large	Medium	High Risk
Construction	Large	Medium	High Risk
Trackout	Medium	Negligible	Negligible Risk
Human Health Impacts			
Earthworks	Large	Low	Low Risk
Construction	Large	Low	Low Risk
Trackout	Medium	Negligible	Negligible Risk
Ecological Effects			
Earthworks	Large	High	High Risk
Construction	Large	High	High Risk
Trackout	Medium	Negligible	Negligible Risk

The risk of dust impacts, defined in Step 2C of the assessment, is used to determine the mitigation measures required to minimise the emission of dust during construction phase activities. The IAQM guidance[22] provides details of highly recommended and desirable mitigation measures which are commensurate with the risk of dust impacts defined in Step 2C for construction, earthworks and trackout activities. Where the mitigation measures are general in nature, the highest risk category was applied in accordance with the guidance[22]. The highest risk category identified was 'High Risk' and the recommended mitigation taken from the IAQM guidance[22] is detailed in Table 14.1.5 and Table 14.1.6.

Table 14.1.5: Mitigation Measures for a High Risk Site

Category	Mitigation Measures for a High Risk Site	
	Highly Recommended	**Desirable**
Communication	Develop and implement a stakeholder communications plan that includes community engagement before work commences on site.	None
	Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. This may be the environmental manager/engineer or the site manager.	
	Display the head or regional office contact information.	
	Develop and implement a Dust Management Plan (DMP), which may include measures to control other emissions, approved by the Local Authority. The level of detail will depend on the risk, and should include as a minimum the highly recommended measures in this document. The desirable measures should be included as appropriate for the site.	
Site Management	Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner and record the measures taken.	None
	Make the complaints log available to the local authority when asked.	
	Record any exceptional incidents that cause dust and/or air emissions, either on- or off-site, and the action taken to resolve the situation in the log book.	
	Hold regular liaison meetings with other high risk construction sites within 500m of the site boundary, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised. It is important to understand the interactions of the off-site transport/deliveries which might be using the same strategic road network routes.	
Monitoring	Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the local authority when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and window sills within 100m of the site boundary, with cleaning to be provided as necessary.	None
	Carry out regular site inspections to monitor compliance with the DMP, record inspections results, and make an inspection log available to the local authority when asked.	
	Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.	

Category	Mitigation Measures for a High Risk Site	
	Highly Recommended	**Desirable**
Preparing and maintaining the site	Plan the site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.	None
	Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site.	
	Fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extended period.	
	Avoid site runoff of water or mud.	
	Keep site fencing, barriers and scaffolding clean using wet methods.	
	Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below.	
	Cover, seed or fence stockpiles to prevent wind whipping.	
Operating vehicle/ machinery and sustainable travel	Ensure all vehicles switch off engines when stationary – no idling vehicles.	None
	Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable.	
	Impose and signpost a maximum-speed-limit of 15 mph on surfaced and 10 mph on un-surfaced haul roads and work areas (if long haul routes are required these speeds may be increased with suitable control measures provided, subject to the approval of the nominated undertaker with the agreement of the local authority, where appropriate).	
	Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials.	
	Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing).	
Operations	Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems.	None
	Ensure an adequate water supply on site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.	
	Used enclose chutes and conveyors and covered skips.	

Category	Mitigation Measures for a High Risk Site	
	Highly Recommended	**Desirable**
	Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.	
	Ensure equipment is readily available on site to clean and dry spillages, and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.	
Waste Management	Avoid bonfires and burning of waste materials.	None

Table 14.1.6: Mitigation Measures Specific to Earthworks, Construction and Trackout

Category	Mitigation Measures	
	Highly Recommended	**Desirable**
Earthworks (High Risk Site)	Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable.	None
	Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable.	
	Only remove the cover in small areas during work and not all at once.	
Construction (High Risk Site)	Avoid scabbling (roughening of concrete surfaces) if possible.	For smaller supplies of fine power materials ensure bags are sealed after use and stored appropriately to prevent dust.
	Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place.	
Trackout (Medium Risk Site)	Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any materials tracked out of the site. This may require the sweeper being continuously in use.	None
	Avoid dry sweeping of large areas.	
	Ensure vehicles entering and leaving the sites are covered to prevent escape of materials during transport.	
	Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable.	
	Record all inspections of haul routes and any subsequent action in a site log book.	
	Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned.	

Category	Mitigation Measures	
	Highly Recommended	**Desirable**
	Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).	
	Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits.	
	Access gates to be located at least 10m from receptors where possible.	

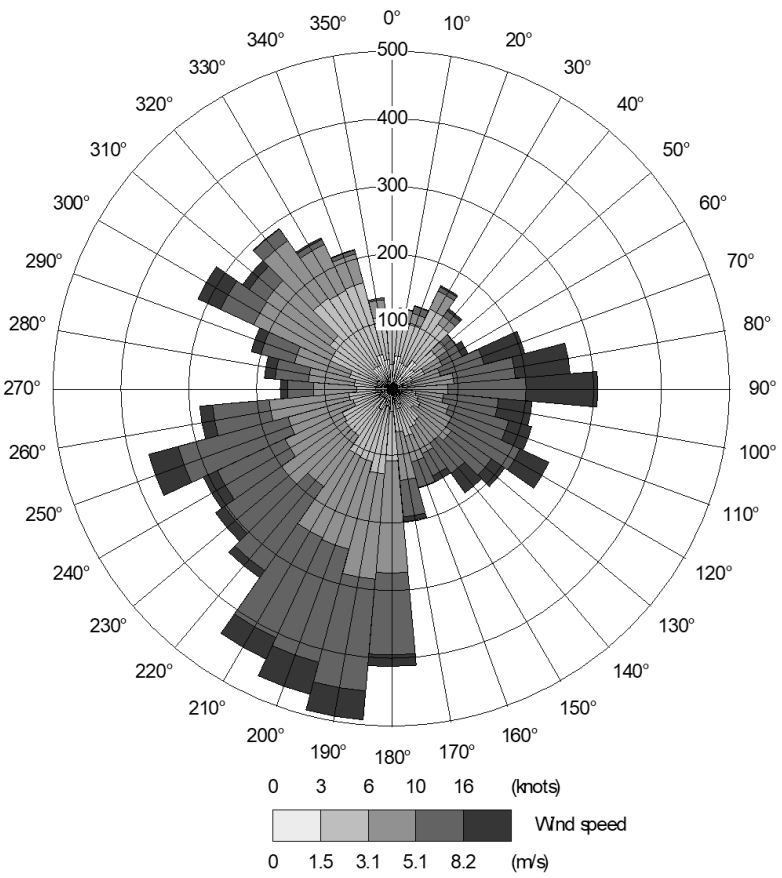
Step 4: Determine Significant Effects

In accordance with the IAQM guidance[22], with the implementation of the mitigation measures detailed above, the residual impacts from the construction phase are considered to be 'not significant'.

Appendix 14.2: Wind Rose

APPENDIX 14.2 – Air Quality – Wind Rose

Meteorological data for the 2022 Verification Year scenario was obtained from the Leek Thorncliffe recording station for use in the air dispersion modelling assessment. The wind rose for 2022 is detailed below and illustrates a predominant wind direction from the south, south west.



Appendix 14.3: Model Verification

APPENDIX 14.3 – Air Quality – Model Verification

Whilst ADMS-Roads is widely validated for use in this type of assessment, model verification for the area around the Site will not have been included. To determine model performance at a local level, a comparison of modelled results with monitored results in the study area was done in accordance with the methodology provided by Defra[21]. This process of verification aims to minimise modelling uncertainty by correcting modelled results by an adjustment factor to give greater confidence to the results.

The model was run for Scenario 1: 2022 Verification Year to predict the 2022 annual mean road contributions of NOx at the monitoring locations in the study area. The model NO_x outputs at these locations were compared to the 2022 monitored concentrations to provide adjustment factors. **Table 14.3.1** presents the verification process for NOx and **Figure 14.6** details the monitoring locations utilised in the model verification.

No monitoring of PM_{10} and $PM_{2.5}$ is undertaken within the study area. Therefore, the adjustment factor calculated during the NOx verification process was utilised to adjust predicted concentrations of PM_{10} and $PM_{2.5}$.

Table 14.3.1: NOx Verification Process

Model Verification Steps	38A & 38B	39A & 39B	42A & 42B	49	53	54	55	56
2022 monitored total NO_2 ($\mu g.m^{-3}$)	35.3	35	34.6	20	32	20	27.1	30.4
2022 background NO_2 concentration ($\mu g.m^{-3}$)	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3
Monitored road contribution NOx ($\mu g.m^{-3}$)	53.9	53.2	8.3	21.8	46.6	21.8	36.1	43.1
Modelled road contribution NOx ($\mu g.m^{-3}$)	8.3	10.6	10.4	10.3	11.1	9.1	13.7	10.8
Ratio of monitored road NOx to modelled road NOx	6.5	5.0	5.0	2.1	4.2	2.4	2.6	4.0

Adjustment factor for modelled road contribution NOx	**3.8136**							
Adjusted modelled road contribution NOx ($\mu g.m^{-3}$)	31.6	40.5	39.7	39.1	42.4	34.7	52.3	41.4
Modelled total NO_2 concentration ($\mu g.m^{-3}$)	24.9	29.2	28.8	28.5	30.1	26.4	34.6	29.6
Monitored total NO_2 concentration ($\mu g.m^{-3}$)	35.3	35	34.6	20	32	20	27.1	30.4
% difference between modelled and monitored total NO_2 concentration	35.3	35	34.6	20	32	20	27.1	30.4
RMSE % (should be less than 25% and ideally less than 10%)	**16.5**							

A road-NOx factor of **3.8136** was determined as the slope of the best fit line between the 'measured' road contribution and the model derived road contribution, forced through zero. This factor was then applied to the modelled road-NOx concentrations at each receptor and across the Site before conversion to NO_2 concentrations using the NOx to NO_2 calculator provided by Defra[21] and the adjusted NO_2 background concentration.

Statistical analysis for the results in **Table 14.3.1** demonstrates that the RMSE value exceeds 10%, however it is within the recommended guideline variance of 25%, as suggested by Defra[21]. Model performance is therefore considered to be acceptable.

Appendix 15.1: Noise and Vibration Guidance

APPENDIX 15.1 Noise and Vibration Guidance

A summary of where guidance has been updated since submission of the June 2016 ES is presented in this appendix. Where guidance is not included here it has remained the same as presented in Appendix 15.2 of the June 2016 ES.

World Health Organization Guidelines

The World Health Organization's (WHO's) 'Environmental Noise Guidelines for the European Region' (2018) provides recommendations to protect human health from noise from transportation, wind turbines and leisure. These guidelines do not cover industrial noise however, the WHO recommends that 'Guidelines for Community Noise' (1999) should remain valid. This recommends external daytime and evening environmental noise limits, and internal night-time limits to avoid sleep disturbance. These have been used in the June 2016 ES and remain valid.

BS4142: 2014+A1:2019: Methods for Rating and Assessing Industrial and Commercial Sound

An amendment was made to BS4142 in 2019. This however does not materially affect the use of the standard in the June 2016 ES.

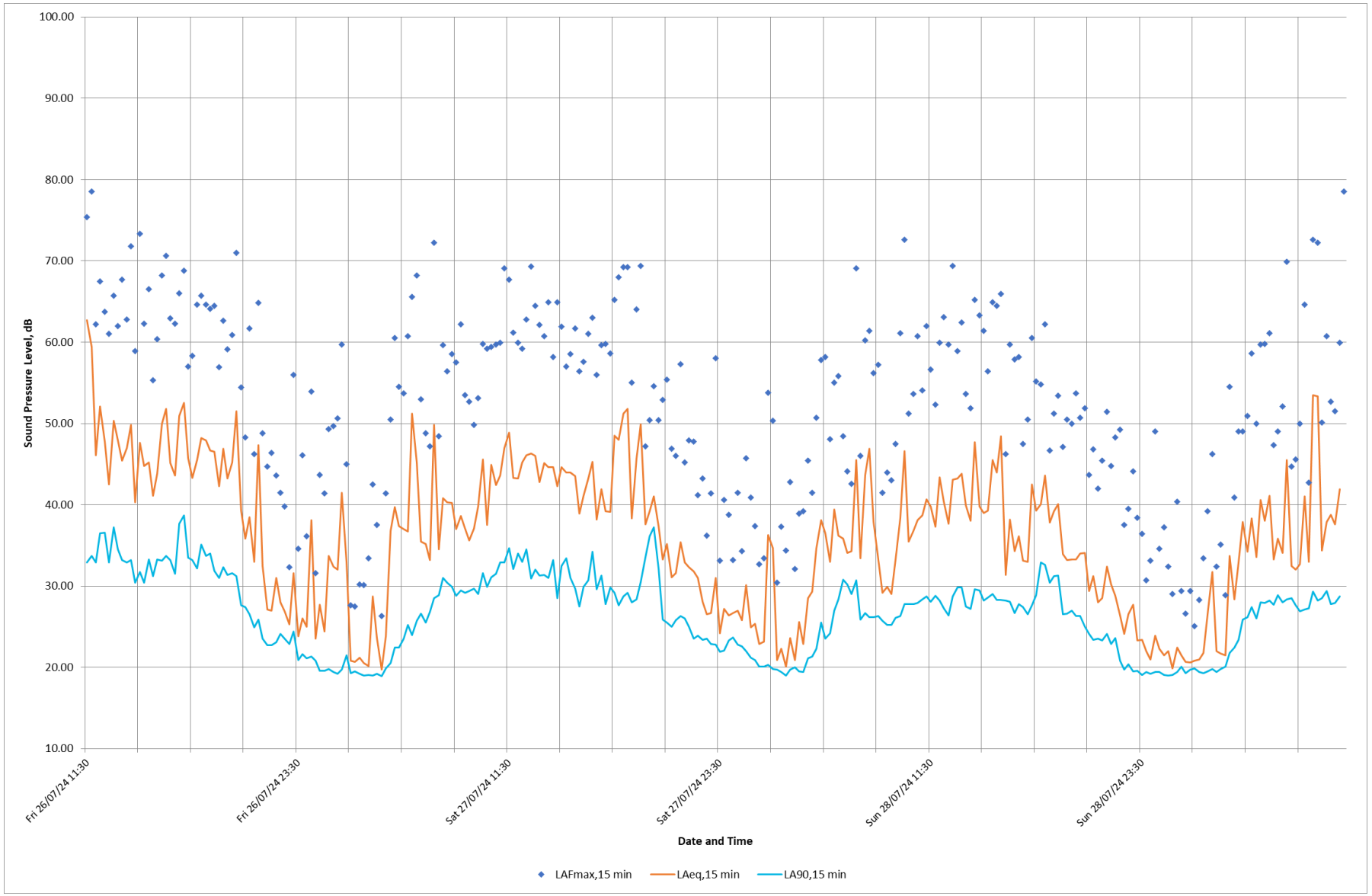
The Design Manual for Roads and Bridges (DMRB): Volume 11: Environmental Assessment

An updated revision of DMRB was published by the Department of Transport in 2020. This does not materially affect the use of the standard in the June 2016 ES.

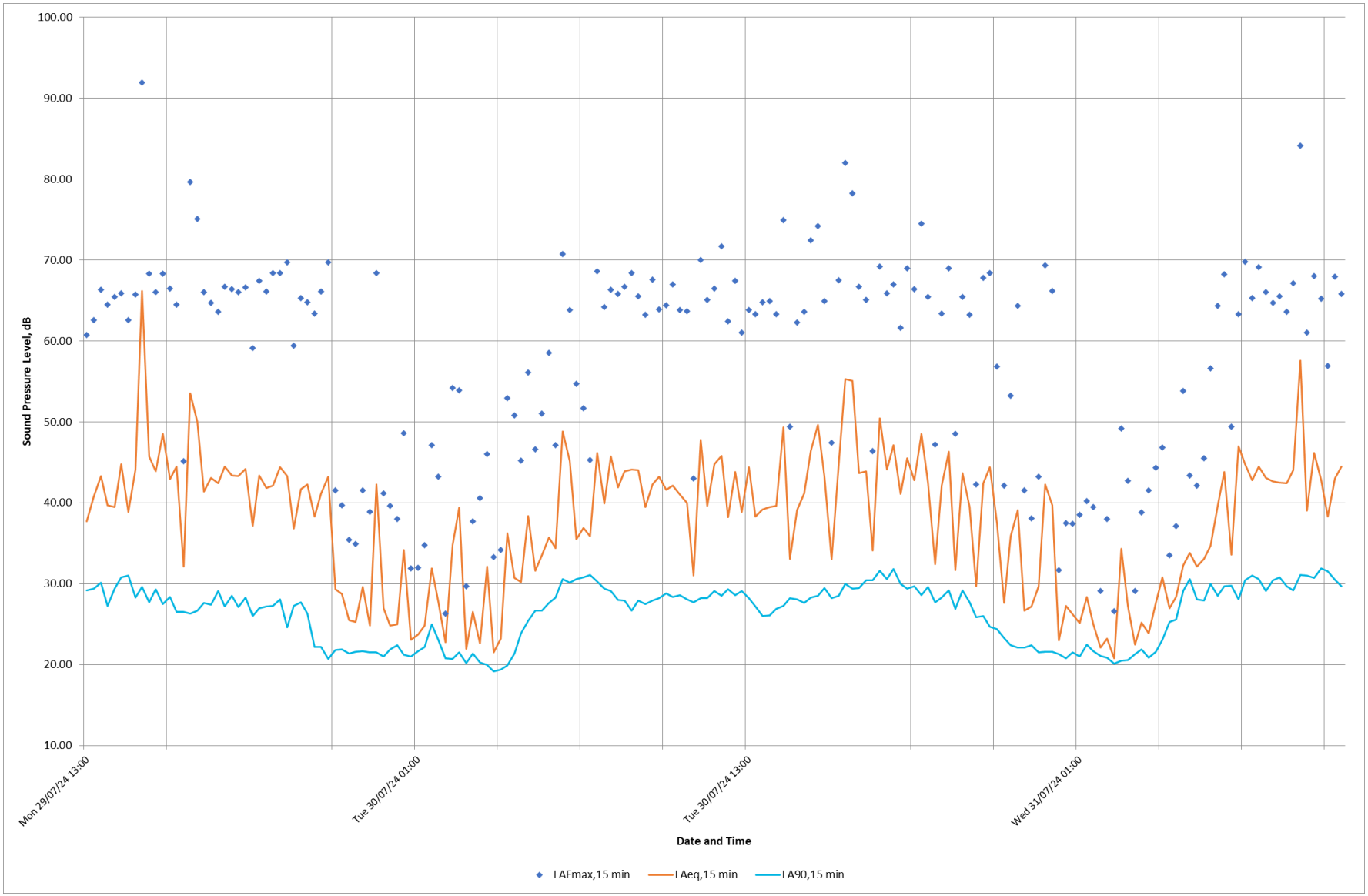
Appendix 15.2: Updated Baseline Sound Measurements

APPENDIX 15.2 Updated Baseline Sound Measurements

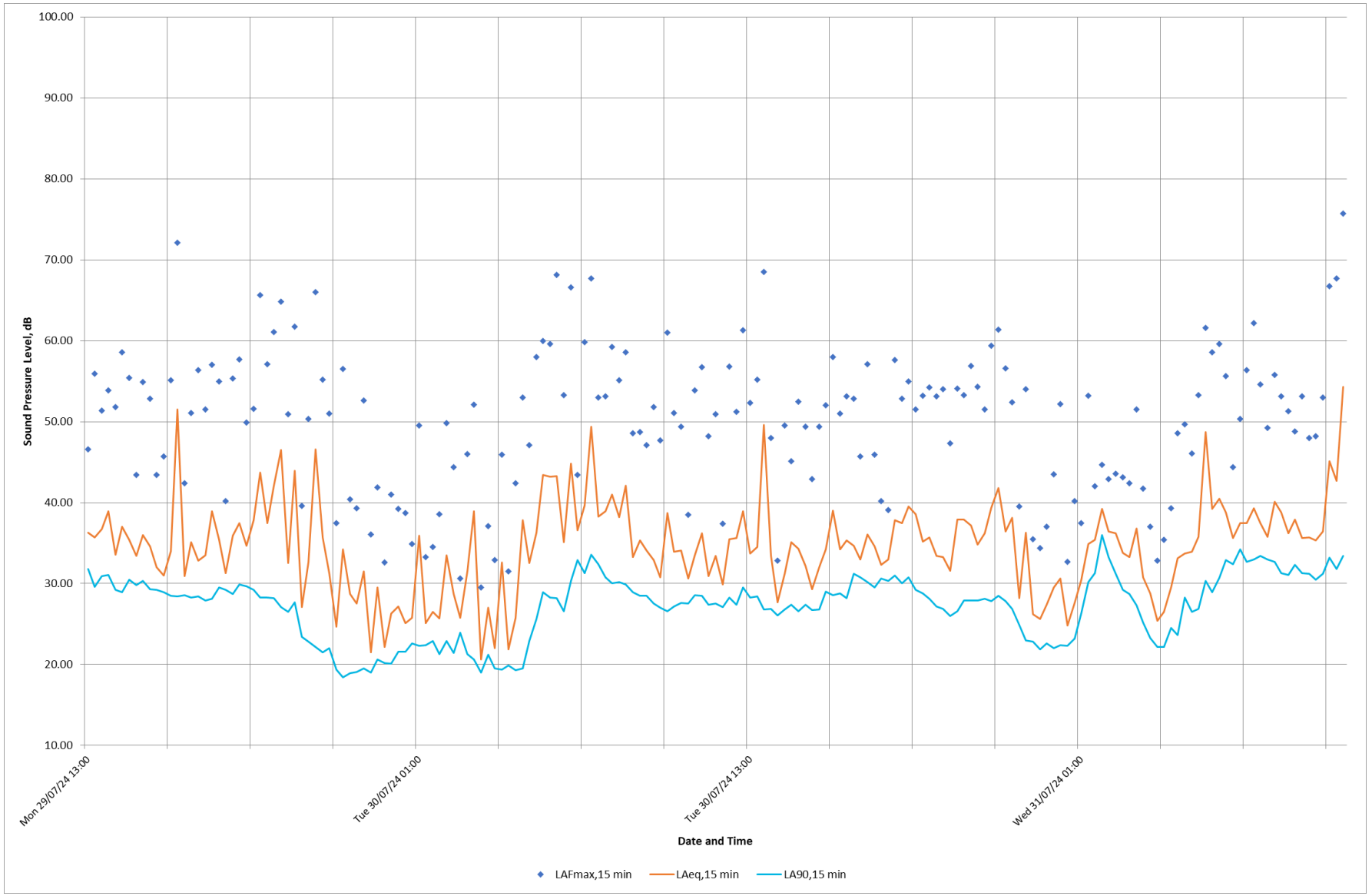
Measurement Location 1



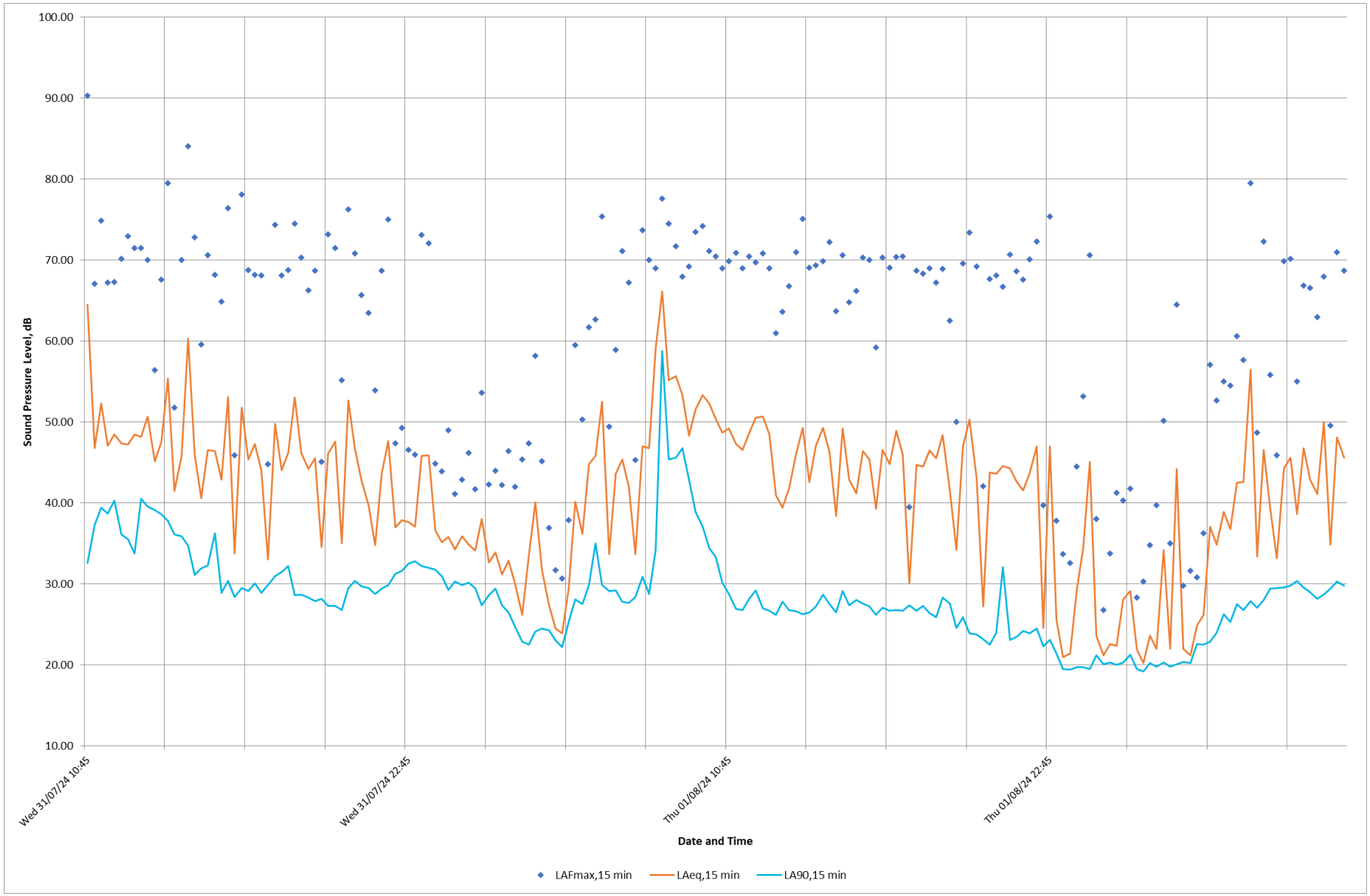
Measurement Location 2



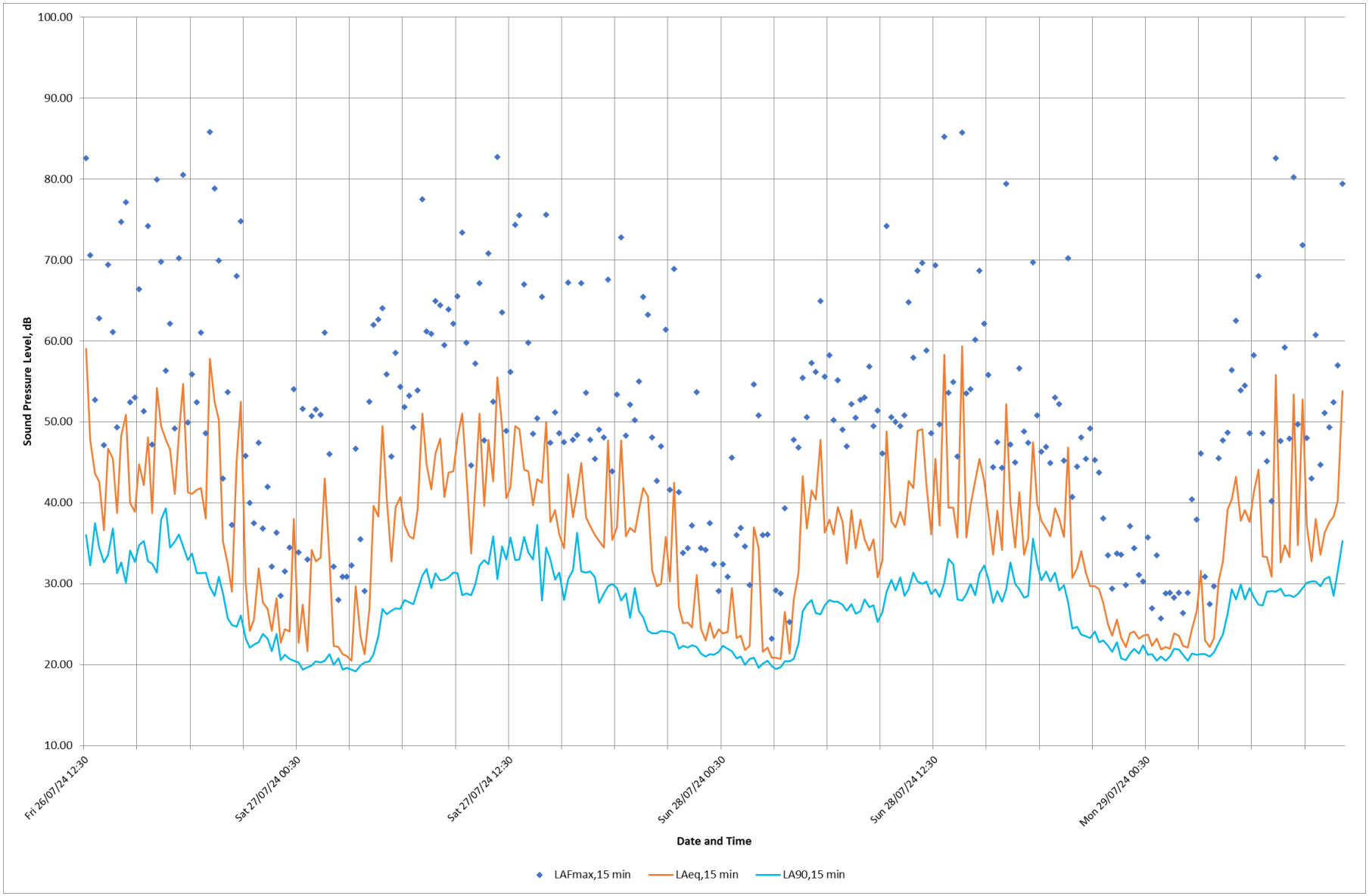
Measurement Location 3



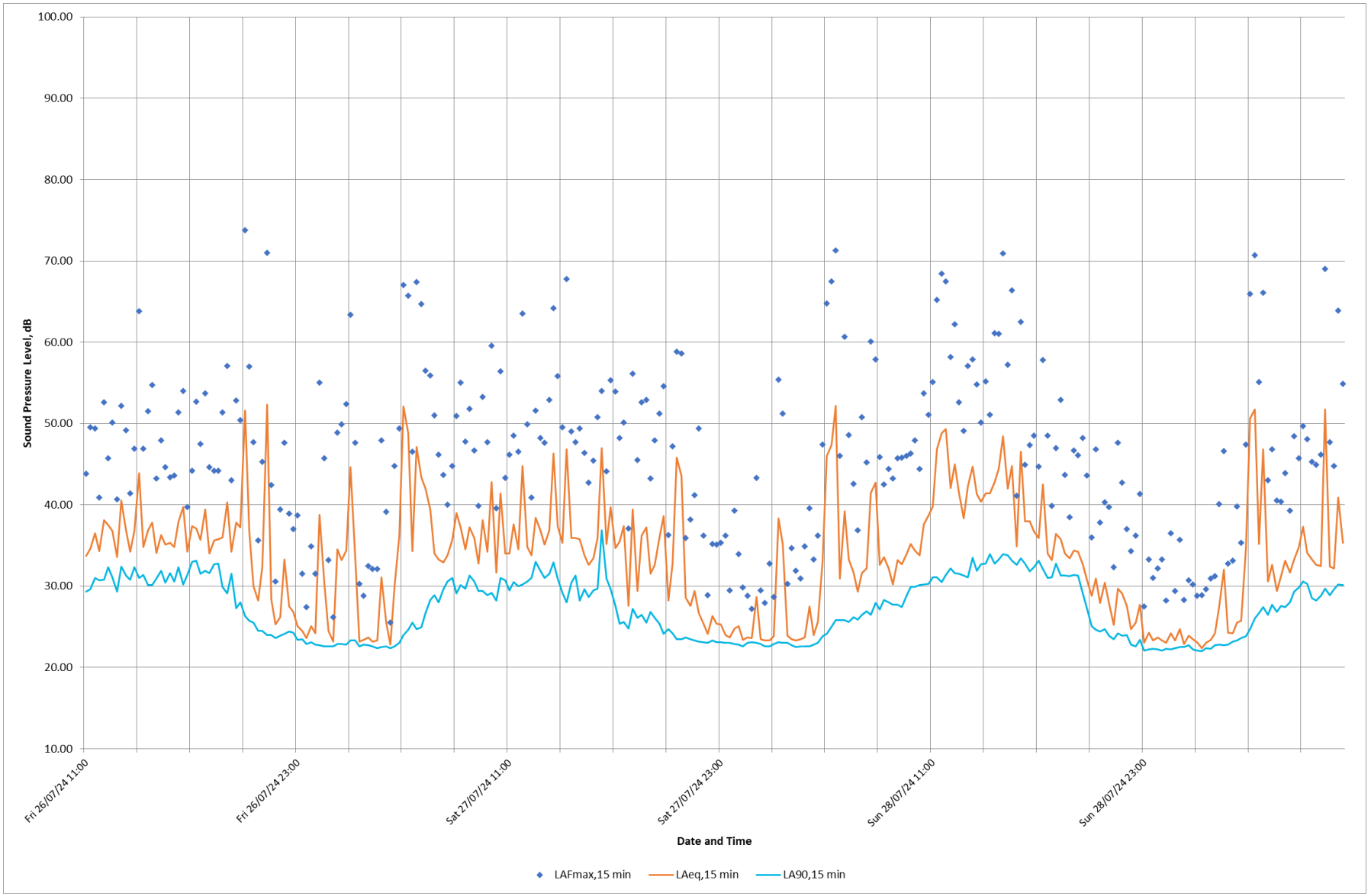
Measurement Location 4



Measurement Location 5



Measurement Location 6



Appendix 17.1: Greenhouse Gas Calculation Inputs

APPENDIX 17.1 GREENHOUSE GAS CALCULATION INPUTS

General project inputs

Table 1 General information

LCA timeline	60	years	BS EN 15978

Table 2 Calculation area schedule for construction of the proposed development

Building	Unit	Area			
		2025	2026	2027	Total m^2
Archery Building	m^2	16	16	16	**48**
Water sports Building	m^2	70	70	70	**211**
Activity Building	m^2	178	178	178	**535**
Hub Building	m^2	611	611	611	**1,834**
Single Lodges	m^2	1,026	1,026	1,026	**3,078**
Twin Lodges	m^2	33,638	33,638	33,638	**100,914**

Table 3 Area schedule for buildings maintained

Building	Unit	Area
Housekeeping/Maintenance	m^2	525

Embodied carbon (construction GHG emission) inputs

Table 4 Material embodied carbon benchmarks

Schedule typologies	Embodied carbon benchmarks (RICS, 2014)	RICS (2014) and WRAP (2017) benchmarks	Unit
Archery Building	Sports/leisure centre (no swimming pool)	905	$kgCO_2e/m^2$
Water sports Building	Sports/leisure centre (no swimming pool)	905	$kgCO_2e/m^2$
Activity Building	Sports/leisure centre (no swimming pool)	905	$kgCO_2e/m^2$
Hub Building	Sports/leisure centre (no swimming pool)	905	$kgCO_2e/m^2$
Single Lodges	Lodging	337	$kgCO_2e/m^2$
Twin Lodges	Lodging	337	$kgCO_2e/m^2$

Table 5 Transport, construction, use and demolition embodied carbon benchmarks.

	Year	Benchmark	Unit	Reference
Total on-site energy use	0	14,000	$kgCO_2$/£m	BRE SMART Waste KPI from RICS 2017 draft professional statement
Total site transport and delivery	0	2,910	$kgCO_2$/£m	BH past project monitored data
Use	15 onwards	90%	% of raw material embodied carbon	BH past project monitored data

	Year	Benchmark	Unit	Reference
Demolition	0 & end of life	3.5	$kgCO_2/£m$	RICS 2017 draft professional statement

Operational GHG emission calculation inputs

Table 6 Operational energy EUI provided by the Energy Consultants

Building	Fossil	Electric	Unit
Watersports building	0	84	$kWh/m^2/y$

Table 7 Building emission rates as provided by the Energy Consultants

Building	$kgCO_2e/m^2/year$
Activity building	9.8
Hub Building	9.8
Housekeeping/maintenance	9.8
Single and twin lodges (all electric solution + PV)	3.7
Single and twin lodges (ASHP solution + no PV)	6.85

Table 8 BEIS (2023) and SAP (2016) emissions factors.

	$kgCO_2/kWh$	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050+
BEIS	Grid Domestic- BEIS projections (BEIS Measuring and reporting environmental impacts: guidance for businesses, 2021)	0.15150	0.131	0.098	0.073	0.063	0.054	0.049	0.042	0.033	0.026	0.021	0.020	0.020	0.018	0.018	0.017	0.016	0.015	0.015	0.009	0.008	0.008	0.008	0.005	0.005	0.003	0.003
BEIS	Grid Commercial / Public sector- BEIS projections (BEIS Measuring and reporting environmental impacts: guidance for businesses, 2021)	0.149	0.129	0.096	0.072	0.062	0.053	0.049	0.041	0.032	0.025	0.020	0.020	0.019	0.018	0.018	0.017	0.016	0.015	0.014	0.009	0.008	0.008	0.008	0.005	0.005	0.003	0.002
BEIS	Grid Industrial- BEIS projections (BEIS Measuring and reporting environmental impacts: guidance for businesses, 2019)	0.146	0.127	0.095	0.070	0.061	0.052	0.048	0.040	0.032	0.025	0.020	0.019	0.019	0.018	0.017	0.016	0.015	0.015	0.014	0.009	0.008	0.008	0.007	0.005	0.005	0.003	0.002
SAP	Grid SAP 2016 Consultation	0.136	0.136	0.136	0.136	0.136	0.136	0.136	0.136	0.136	0.136	0.136	0.136	0.136	0.136	0.136	0.136	0.136	0.136	0.136	0.136	0.136	0.136	0.136	0.136	0.136	0.136	0.136
SAP	Gas SAP 2016 Consultation	0.208	0.208	0.208	0.208	0.208	0.208	0.208	0.208	0.208	0.208	0.208	0.208	0.208	0.208	0.208	0.208	0.208	0.208	0.208	0.208	0.208	0.208	0.208	0.208	0.208	0.208	0.208

Table 9 Benchmarks and conversion factors used for GHG emissions associated with operational water consumption for the proposed development

Building/Use	Benchmark name	Benchmark	Source
Archery building	Fitness suite or gym	Occupant density 0.17	BREEAM UK New Construction – Version 6.1.0
	Field sports and all weather pitch facilities	35 l/day/person	BSRIA BG 85_2024 Mechanical Criteria
Watersports building	Fitness suite or gym	Occupant density 0.17	BREEAM UK New Construction – Version 6.1.0
	Field sports and all weather pitch facilities	35 l/day/person	BSRIA BG 85_2024 Mechanical Criteria
Sports Hall	Dry Sports Hall	Occupant density 0.047	BREEAM UK New Construction – Version 6.1.0
	Sports halls	35 l/day/person	BSRIA BG 85_2024 Mechanical Criteria
Childrens soft play	Fitness suite or gym	Occupant density 0.17	BREEAM UK New Construction – Version 6.1.0
	Sports halls	35 l/day/person	BSRIA BG 85_2024 Mechanical Criteria
Informal screen room	Public circulation areas	Occupant density 0.241	BREEAM UK New Construction – Version 6.1.0
	Sports halls	35 l/day/person	BSRIA BG 85_2024 Mechanical Criteria

Bowling alley	Hall, lecture theatre or assembly area	Occupant density	BREEAM UK New Construction – Version 6.1.0
	Sports halls	35 l/day/person	BSRIA BG 85_2024 Mechanical Criteria
Hub Building	Public circulation areas	Occupant density 0.241	BREEAM UK New Construction – Version 6.1.0
	Sports halls	35 l/day/person	BSRIA BG 85_2024 Mechanical Criteria
Housekeeping/maintenance	Hotels – generic office area	Occupant density 0.106	BREEAM UK New Construction – Version 6.1.0
	Sports halls	35 l/day/person	BSRIA BG 85_2024 Mechanical Criteria
Single lodges	N/A	2 bedrooms per lodge	DAS
	2 bedroom	130 l/day/person	BSRIA BG 85_2024 Mechanical Criteria
Twin lodges	N/A	2 bedrooms per lodge	DAS
	2 bedroom	130 l/day/person	BSRIA BG 85_2024 Mechanical Criteria
All schedule typologies	Carbon factor for water supply	0.177 kg CO_2 per m^3 of water supplied	Department for Business, Energy & Industrial Strategy Greenhouse Gas Reporting: Conversion Factors 2023
	Carbon factor for the treatment of foul water	0.201 kg CO_2 per m^3 of water supplied	

Table 10 Assumptions and conversion factors used for GHG emissions associated with operational transport for the proposed development

Assumed mode of transport	Assumed Distance travelled (km)	Source of assumed distance travelled	Annual trips	Number of trips over 60-year lifecycle	Carbon factor (total kgCO_2e per km)	Lifetime GHG emissions (tCO_2e)
Cars	13	Nimblefins Average Car Journeys in the UK | NimbleFins (based on Department for Transport Statistics, 2022 data)	329,230	19,753,800	0.16674	42,818.73

Appendix 17.2: Climate Change Resilience Risk Assessment

APPENDIX 17.2: CLIMATE CHANGE RESILIENCE RISK ASSESSMENT

1.1 INTRODUCTION

1.1.1 Schedule 4, Clause 5(f) of the Town and Country Planning (EIA) Regulations 2017 states that information should be included in the ES on the likely significant effects of the development on the environment resulting from the vulnerability of the project to climate change.

1.1.2 In line with the IEMA EIA Guide to Climate Change Resilience and Adaptation (IEMA, 2020) (hereafter referred to as the 'IEMA Resilience & Adaptation Guidance'), there are two key strands to assessing climate change resilience and adaptation issues within EIA, as outlined below:

- The risks of changes in the climate impacting the project (i.e. the resilience or conversely the vulnerability of a project to future climate changes). The IEMA Resilience & Adaptation Guidance advises that this can be assessed using a traditional impact magnitude and effect significance methodology; however, it is better suited to a risk assessment type process. A climate change resilience risk assessment has therefore been undertaken and is reported in this appendix; and
- The extent to which climate exacerbates or ameliorates the effects of the project on the environment (i.e., 'in-combination' effects). The IEMA (2020) guidance states that this is best analysed in the existing chapters of the ES and is suited to using traditional significance criteria from the respective chapters. Therefore, this has been included throughout each of the technical ES addendum chapters and has been completed by each technical specialist.

1.2 METHODOLOGY AND ASSESSMENT CRITERIA

Consultation

1.2.1 No specific consultations have been undertaken in regard to this addendum.

Risk assessment

1.2.2 This climate change resilience risk assessment has been undertaken in line with the IEMA Resilience & Adaptation Guidance. The methodology has also been informed by other guidance documents referenced in the IEMA Resilience & Adaptation Guidance, including the C40 Cities Climate Change Risk Assessment Guidance (2018), the Public Infrastructure Engineering Vulnerability Committee (PIEVC) Climate Risk Assessment Methodology (2015), and the Highways England Design Manual for Roads and Bridges Sustainability & Environmental Appraisal. Risks have been assessed based on both the probability of the event occurring and the severity of the consequences of the event, should it occur. The assessment is based on climate change projection data from UKCP18, as well as information provided in other submitted reports, including the Flood Risk Assessment (FRA). The list of climate hazards that has been considered has been adapted from the C40 Cities Climate Change Risk Assessment Guidance (2018).

Probability

1.2.3 Table 1 summarises the criteria that have been used to determine the likelihood rating for an effect, adapted from Appendix 1 of the IEMA 2020 guidance. The project lifetime includes both the construction and operational stages. In line with the principles set out in BS EN 15978, a Reference Study Period (RSP) of 60 years after opening (the opening year) has been used.

Table 1 Criteria used to determine likelihood

Score	Description (probability and frequency of occurrence)
1	The event occurs very rarely during the lifetime of the projects (60 years). For example, once every 60 years (1 event).
2	The event occurs limited number of times during the lifetime of the project (60 years). For example, once every 25 years (2-3 events).
3	The event occurs regularly during the lifetime of the project (60 years) For example, once every 2-5 years (12-30 events).
4	The event occurs frequently during lifetime of the project (60 years). For example, once per year (60 events).
5	The event occurs very frequently during the lifetime of the project (60 years). For example, multiple times per year (more than 60 events).

Consequence

1.2.4 Table 2 summarises the criteria used to determine the consequence rating for effects relating to a climate risk. Consequence has been determined based on the extent to which the climate risk may impact on the amenity value and function of the Proposed Development. The amenity value is the positive element or elements that contribute to the overall character or enjoyment of the Proposed Development. The function is the extent to which the Proposed Development meets the purpose or purposes that it is designed to fulfil (i.e. a leisure development).

Table 2 Criteria used to determine consequence

Score	Description
1	Very low but measurable effect on site users and the Proposed Development itself. Slight negative change in amenity value of the Proposed Development and slight negative change in function.
2	Low but measurable effect on site users and the Proposed Development itself. Low negative change in amenity value of the Proposed Development and slight negative change in function.
3	Moderate effect on site users and the Proposed Development itself. Moderate negative change in amenity value of the Proposed Development and slight negative change in function.
4	Moderate effect on site users and the Proposed Development itself. Major negative change in amenity value of the Proposed Development and low negative change in function.
5	Moderate effect on site users and the Proposed Development itself. Major negative change in amenity value of the Proposed Development and moderate negative change in function.
6	Major effect on site users and the Proposed Development itself. Major negative change in amenity value of the Proposed Development and major negative change in function.
7	Extreme effect on site users and the Proposed Development itself. Loss of asset.

Risk rating

1.2.5 Table 3 sets out the matrix that has been used to determine the risk rating, based on both the probability of the event occurring and the severity of the consequences of the event, should it occur.

Table 3 Risk rating determined based on the likelihood and consequence scores

	Probability					
Consequence		**1**	**2**	**3**	**4**	**5**
	1	1	2	3	4	5
	2	2	4	6	8	10
	3	3	6	9	12	15
	4	4	8	12	16	18
	5	5	10	15	20	25

	Probability					
	6	6	12	18	24	30
	7	7	14	21	28	35

	Low risk
	Medium risk
	High risk

Limitations and assumptions

1.2.6 The main uncertainty regarding the climate change resilience assessment surrounds the climate change projections that the scheme is assessed against. Climate change projections (e.g., UKCP18) are presented using a set of scenarios that capture the relationships between human choices, emissions, concentrations and temperature change. The UKCP18 climate change projections have been selected, as they are UK specific, and relatively conservative. Some scenarios are consistent with continued dependence on fossil fuels, while others are associated with deliberate actions to reduce GHG emissions. Therefore, these climate change projections contain inherent uncertainty, reflecting the uncertainty associated with quantifying human activities (including technological change) and their influence on climate.

1.3 LEGISLATION AND POLICY

International legislation and policy

Paris Agreement 2015

1.3.1 Negotiations at the Conference of the Parties (COP) 21 led to the 2015 Paris Agreement, the aim of which is to maintain the increase in global average temperature at 'well below' 2oC and 'pursue efforts' to limit the temperature increase even further to 1.5oC.

1.3.2 A total of 160 parties, including the UK, made voluntary pledges to reduce emissions by 2030, however the cumulative effect of these would still lead to an estimated 3oC of warming or greater.

The Special Report on Global Warming of 1.5oC, International Panel on Climate Change (IPCC) 2018

1.3.3 The IPCC published a special report in response to the Paris Agreement, to present the impacts of the targeted 1.5ºC temperature rise. The report highlighted that to achieve this, global emissions must decrease by 45% by 2030 (against a 1990 baseline), and that net zero global emissions (where emissions and removals from the atmosphere are balanced) must be achieved by 2050. This is noted to require rapid and far-reaching transitions of every sector on an unprecedented scale.

National legislation and policy

National Planning Policy Framework (NPPF) (MHCLG), 2023

1.3.4 Section 14 of the NPPF 2021 focuses on meeting the challenge of climate change, flooding and coastal change. As part of this, new developments should be planned in ways that:

> *'Avoid increased vulnerability to the range of impacts arising from climate change. When new development is brought forward in areas which are vulnerable, care should be taken to ensure that risks can be managed through suitable adaptation measures, including through the planning of green infrastructure.'*

UK Climate Change Act 2008 (2050 Target Amendment) (Order 2019)

1.3.5 Section 56 requires the UK Government to undertake a Climate Change Risk Assessment (CCRA) on a five-yearly cycle, with the subsequent development of an adaption programme to deliver resilience against these risks. The Act stipulates that the Government must assess 'the risks for the United Kingdom from the current and predicted impacts of climate change'.

UK Climate Change Risk Assessment (HM Government, 2022)

1.3.6 The third and most recent UK-wide CCRA was published in 2022. The assessment outlines risks in the eight priority risk areas relating to the following topics:

- Risks to the viability and diversity of terrestrial and freshwater habitats and species from multiple hazards (Priority Risk Area 1);
- Risks to soil health from increased flooding and drought (Priority Risk Area 2);
- Risks to natural carbon stores and sequestration from multiple hazards, leading to increased emissions (Priority Risk Area 3);
- Risks to crops, livestock and commercial trees from multiple climate hazards (Priority Risk Area 4);
- Risks to supply of food, goods and vital services due to climate-related collapse of supply chains and distribution networks (Priority Risk Area 5);
- Risks to people and the economy from climate-related failure of the power system (Priority Risk Area 6);
- Risks to human health, wellbeing and productivity form increased exposure to heat in homes and other buildings (Priority Risk Area 7);
- Multiple risks to the UK from climate change overseas (Priority Risk Area 8); and
- Additional More Action Needed Risks.

The National Adaptation Programme and the Third Strategy for Climate Adaptation Reporting (Defra, 2018)

1.3.7 The second and most recent National Adaptation Programme sets out government's response to the second CCRA, showing the actions government is, and will be, taking to address the risks and opportunities posed by a changing climate. This breaks down the likely risks associated with climate change into the same six categories as those set out in the CCRA, which is outlined above.

Regional and local policy

Staffordshire Moorlands District Council, The Adopted Local Plan 2014 – 2033

Policy SD 1 Sustainable Use of Resources

1.3.8 The Council will require all development to make sustainable use of resources, and adapt to climate change. This will be achieved by:

- Having regard to the BMV agricultural classification of the land, with a preference for the use of lower quality over higher quality agricultural land. Development should also aim to minimise soil disturbance and to retain ecological connectivity as far as possible;
- Supporting or promoting proposals that remediate brownfield sites affected by contamination;

- Re-use of sites affected by mining activity will be supported, provided that any mining legacy is appropriately addressed and it can be demonstrated that the site is safe and stable for the development proposed;
- Supporting development that is located and designed to minimise energy needs and to take advantage of maximised orientation (subject to design and landscape policies) to achieve energy savings in line with Policy SD;
- The Council will require applicants for all major-scale planning applications (10 or more residential units or 1,000+ square metres floor area) to demonstrate that they have considered the energy efficiency, water conservation, sourcing of construction materials, and site orientation aspects of the scheme, and where possible the feasibility of integrating micro-renewables. The degree of detail expected will depend on the scale/complexity of the proposal; and
- The Council will encourage developers to investigate the potential for re-using construction or construction waste materials, especially those sourced locally (which can include those minerals available on site, as appropriate) and integrates where possible on-site waste management facilities.

Policy SD 2 Renewable/Low-Carbon Energy

1.3.9 The Council will strive to meet part of the District's future energy demand through renewable or low-carbon energy sources (which could be through a variety of technologies, for example solar energy, biomass etc), in line with current evidence which identifies the feasibility of these forms of energy across the District. The Council will assess wind turbine schemes in line with the Government's specific policy on wind turbines. For all other forms of renewable energy the Council will support small- and large- scale stand alone renewable or low-carbon energy schemes subject to the following considerations:

- the degree to which the scale and nature of a proposal impacts on the landscape, particularly having regard to relevant Landscape Character evidence and impact on the Peak District National Park (taking into account both individual and cumulative effects of similar proposals);
- the degree to which the developer has demonstrated any environmental/economic/social benefits of a scheme, as well as how any environmental or social impacts have been minimised (e.g. visual, noise or smell);
- the impact on designated sites of European (or successor), national and local biodiversity and geological importance in accordance with policy NE 1;
- the impact on the amenity of residents and other interests of acknowledged importance, including the historic environment;
- the degree to which individual proposals reflect current local evidence regarding the feasibility of different types of renewable or low-carbon energy at different locations across the District; and
- in the case of solar energy proposals that are not affixed to buildings or structures, applicants will be expected to demonstrate that they have examined whether previously developed land is available before greenfield land. Where agricultural land is proposed, poorer quality land should be utilised before higher quality agricultural land.

Policy SD 3 Sustainability Measures in Development

1.3.10 The Council will support further carbon-saving or water-saving measures in both new and existing developments, in the following ways:

- Supporting developers who propose exceeding the thermal efficiency or water conservation standards required by law for new buildings or extensions, at the time of the application. In the case of larger developments such as housing estates the Council will support measures such as 'communal' renewables, or District Heating installations.
- The Council will support measures by landowners/developers designed to contribute to existing or emerging District Heating networks (for example by connecting 'exporters', with receptors, of heat).
- The Council will support measures designed to improve the sustainability of existing buildings (such as improved thermal insulation, water conservation, or the installation of micro-renewables)

Climate Emergency Declaration

1.3.11 In July 2019, Staffordshire Moorlands District Council ('SMDC') declared a climate change emergency to achieve net zero emissions by 2050 across every aspect of their service provision and estate.

Guidance documents

IEMA EIA Guide to: Climate Change Resilience and Adaptation (IEMA, 2020)

1.3.12 This document acts as a revision to the IEMA guidance on Climate Resilience and Adaptation in EIA (2015) and reflects lessons learnt from emerging practice. It provides a framework for the effective consideration of climate change resilience and adaptation in the EIA process.

ISO 14090:2019 Adaptation to Climate Change – Principles, Requirements and Guidelines (BSI, 2019)

1.3.13 The main purpose of this standard is to provide organisations and projects with a consistent, structured and pragmatic approach to prevent or minimise the harm that climate change could cause and also to take advantage of opportunities.

C40 Cities Climate Change Risk Assessment Guidance (C40 Cities, 2017)

1.3.14 This document aims to provide a concise, easy-to-read guidance, to help cities to develop a climate risk assessment report. It provides the methodology and components of the assessment, as well as providing a comprehensive list of possible effects relating to climate change.

1.4 CURRENT & FUTURE BASELINE CONDITIONS

Current Baseline Conditions

1.4.1 Table 4 provides a summary of the current baseline climatic conditions, taken from the closest weather station, Denstone (Staffordshire) weather station, to the south-east of the Proposed Development. The data provides historic average climatic conditions for 1991-2020, which is assumed to be representative of the baseline year of the assessment (i.e. 2024). The monthly mean minimum/maximum temperatures are calculated from the average of the daily maximum and daily minimum temperatures for each month. The warmest month on average was July and the coolest month on average was January. The wettest month on average was December and the driest month on average was May. The sunniest month on average was July and the least sunny month on average was January.

Table 4 Summary of historic average climatic conditions for 1981-2010 taken from the Denstone Met Office monitoring station.

Month	Mean daily maximum temperature (degrees C)	Mean daily minimum temperature (degrees C)	Days of air frost (days)	Sunshine (hours)	Rainfall (mm)
January	6.59	1.13	9.78	48.2	77.82
February	7.25	1.2	9.08	72.34	67.17
March	9.51	2.44	5.2	109.08	62.12
April	12.7	4.16	3.15	147.5	60.55
May	15.6	6.72	0.17	178.26	56.02
June	18.47	9.6	0	173.33	73.01
July	20.76	11.73	0	184.92	65
August	20.18	11.47	0	178.18	74.86
September	17.36	9.01	0	125	66.06
October	13.37	6.26	1.53	88.48	88.76
November	9.41	3.61	4.07	52.98	82.59
December	6.86	1.53	9.45	48.92	92.81

Climate Change Projections

1.4.2 The UK Climate Projections 2018 (UKCP18) (Met Office, 2018) provide the most up-to-date assessment of how the climate of the UK may change over the 21st century. UKCP18 uses Representative Concentration Pathways (RCPs). These are named according to the concentration of greenhouse gas modelled to occur in the atmosphere in 2100. There are four RCPs available in the UKCP18 climate projections: RCP 2.6, RCP 4.5, RCP 6.0 and RCP 8.5. In line with the IEMA (2020) guidance, RCP 8.5 has been used, which represents the most conservative, highest-impact scenario. Table 5 summarises the projected summer and winter mean temperature and precipitation changes up to the 2090s for RCP 8.5.

Table 5 UKCP18 data for the west midlands under RCP 8.5

Season	Variable	Time Period	Projected Change At		
			10th percentile	50th percentile	90th percentile
Winter	Mean temperature (°C)	2020 - 2039	-1 to 0	0 to 1	1 to 2
		2040 - 2059	0 to 1	1 to 2	2 to 3
		2060 - 2079	0 to 1	2 to 3	3 to 4
		2080 – 2099	1 to 2	3 to 4	5 to 6
	Mean precipitation change (%)	2020 - 2039	-10 to 0	0 to 10	10 to 20
		2040 - 2059	-10 to 0	0 to 10	20 to 30
		2060 - 2079	-10 to 0	10 to 20	30 to 40
		2080 – 2099	-10 to 0	20 to 30	40 to 50
	Mean daily maximum temp change compared to 1981-2000	2020 - 2039	0 to 1	0 to 1	1 to 2
		2040 - 2059	0 to 1	1 to 2	2 to 3
		2060 - 2079	0 to 1	2 to 3	3 to 4
		2080 – 2099	1 to 2	3 to 4	5 to 6
	Mean daily minimum temp change compared to 1981-2000	2020 - 2039	-1 to 0	0 to 1	1 to 2
		2040 - 2059	0 to 1	1 to 2	2 to 3
		2060 - 2079	0 to 1	2 to 3	4 to 5
		2080 – 2099	1 to 2	3 to 4	5 to 6
Summer	Mean temperature (°C)	2020 - 2039	0 to 1	1 to 2	2 to 3
		2040 - 2059	0 to 1	2 to 3	3 to 4
		2060 - 2079	1 to 2	3 to 4	5 to 6
		2080 – 2099	2 to 3	5 to 6	8+
	Mean precipitation change (%)	2020 - 2039	-30 to -20	-10 to 0	10 to 20
		2040 - 2059	-40 to -30	-20 to -10	0 to 10
		2060 - 2079	-60 to -50	-30 to -20	0 to 10
		2080 – 2099	-70 to -60	-40 to -30	-10 to 0
	Mean daily maximum temp change compared to 1981-2000	2020 - 2039	0 to 1	1 to 2	3 to 4
		2040 - 2059	0 to 1	2 to 3	4 to 5
		2060 - 2079	1 to 2	4 to 5	6 to 7
		2080 – 2099	2 to 3	6 to 7	8+
	Mean daily minimum temp change compared to 1981-2000	2020 - 2039	0 to 1	1 to 2	1 to 2
		2040 - 2059	0 to 1	1 to 2	3 to 4
		2060 - 2079	1 to 2	3 to 4	4 to 5
		2080 – 2099	2 to 3	4 to 5	8+

1.4.3 According to UKCP18 data, over land the projected general trends of climate changes in the 21st century are similar to UKCP09, with a move towards warmer, wetter winters and hotter, drier summers. However, natural variations mean that some cold winters, some dry winters, some cool summers and some wet summers will still occur.

Temperature

1.4.4 UKCP18 projections show that there is more warming in the summer than in the winter.

Precipitation

1.4.5 Rainfall patterns across the UK are not uniform and vary on seasonal and regional scales and will continue to vary in the future. While UKCP18 projections show a clear shift to higher probability levels of dry summers, they also suggest that the likelihood of individual wet summers reduces only slightly. The risk of heavy rainfall events is likely to increase.

Sea level rise

1.4.6 According to UKCP18 projections, global sea level has risen over the 20th century and will continue to rise over the coming centuries. The amount of sea level rise depends on the location around the UK and increases with higher emissions scenarios. Sea level rise over the coming centuries may affect tidal characteristics substantially (including tidal range).

Snow

1.4.7 According to UKCP18 projections, for the period 2061-2080, under a high emissions scenario (RCP8.5), the regional (12 km) and local (2.2 km) projections show a decrease in both falling and lying snow across the UK relative to the 1981-2000 baseline.

Wind

1.4.8 There are no compelling trends in storminess, as determined by maximum gust speeds, from the UK wind network over the last four decades. UKCP18 projections over the UK show an increase in near surface wind speeds over the UK for the second half of the 21st century for the winter season when more significant effects of wind are experienced. This is accompanied by an increase in frequency of winter storms over the UK. However, the increase in wind speeds is modest compared to interannual variability.

1.4.9 Winds associated with major storm events can be some of the most damaging and disruptive events for the UK with implications for property, power networks, road and rail transport and aviation.

1.5 IDENTIFICATION AND EVALUATION OF RISKS FROM CLIMATE CHANGE

1.5.1 Table 6 provides a List of potential risks, as adapted from the C40 Cities Climate Change Risk Assessment Guidance (C40 Cities, 2017). A summary is provided of how the identified climate risks are likely to change in the future as a result of climate change. Probability and consequence ratings have been given to these risks, thereby generating a risk rating based on Table 3. The probability and consequence ratings have been considered prior to the implantation of mitigation measures.

Table 6 Climate change risks

Climate Hazard	Description	Is it relevant to the Proposed Development	Likely consequences of climate risk occurring	Change in probability as a result of climate change	Probability rating (1-5)	Consequence rating (1-7)	Risk rating	Mitigation needed?
Rainstorm	Strong wind and heavy rain	Yes – rainstorms happen frequently in the UK.	Damage and degradation of building materials through wetting and impact from rainfall.	The frequency of precipitation is likely to decrease, particularly in the summer. However, the risk of heavy rainfall events is likely to increase.	5 Rainstorms will occur very frequently during the lifetime of the Proposed Development.	1	5	No
Monsoon	'A persistent seasonal wind, often responsible for seasonal precipitation regime.' (National Weather Service, 2023)	No – Monsoons do not occur in the UK, and therefore do not present a climatic risk to the Proposed Development.	N/A	N/A	N/A	N/A	N/A	N/A
Heavy snow	'Large snowflakes that greatly reduce the visibility and falls at a rate exceeding 4cm per hour.' (Wild, 2023)	Yes – Heavy snow can occur during winters in the UK.	Damage to building materials (e.g. roofs). Discomfort and potential injury.	The frequency of heavy snow events is likely to decrease.	2 Heavy snow is likely to occur a limited number of times during the lifetime of the Proposed Development.	2	4	No
Fog	'Water droplets which are suspended in the air near the Earth's surface and causing reduced visibilities.' (National Weather Service, 2023)	Yes – Fog occurs under certain climatic conditions in the UK,.	Increased risk of accidents as a result of impaired vision.	It is unknown how climate change will affect the frequency of fog.	5 Fog will occur very frequently during the lifetime of the Proposed Development.	1	5	No
Hail	'Precipitation of small balls or other pieces of ice (hailstones) falling separately or frozen together in irregular lumps. (Typically associated with thunderstorms and surface temperatures above freezing).' (National Weather Service, 2023)	Yes – Hail occurs in the UK.	Discomfort for users.	The frequency of hailstorms is likely to increase.	5 Hail will occur very frequently during the lifetime of the Proposed Development.	1	5	No
Severe wind	Mean wind speed exceeding 23 m/s (Met Office, 2024a).	Yes – Severe wind occurs in the UK.	Damage to building materials. Discomfort and potential injury.	The frequency of severe wind and storms is likely to remain similar.	4 Severe wind is likely to occur frequently during the lifetime of the Proposed Development.	2 .	8	Yes
Tornado	'A violent rotating column of air, usually forming a pendant from a cumulonimbus cloud with the circulation reaching the ground. It nearly always starts as a funnel cloud and may be accompanied by a loud roaring noise. On a local	No – Tornados are very rare in the UK.	N/A	N/A	N/A	N/A	N/A	N/A

Climate Hazard	Description	Is it relevant to the Proposed Development	Likely consequences of climate risk occurring	Change in probability as a result of climate change	Probability rating (1-5)	Consequence rating (1-7)	Risk rating	Mitigation needed?
	scale, it is the most destructive of all atmospheric phenomena' (National Weather Service, 2023)							
Hurricane	'A severe tropical cyclone with wind speeds in excess of 74 mph (64 knots).' (National Weather Service, 2023)	No – Hurricanes cannot form at the latitudes of the UK.	N/A	N/A	N/A	N/A	N/A	N/A
Extra tropical storm	'Deep depressions that were originally hurricanes which have moved to higher latitudes.' (Met Office, 2024b)	Yes – Extra tropical storms (such as ex-Hurricanes) can reach the UK.	Damage to building materials. Discomfort and potential injury to users.	The frequency of severe wind and storms is likely to remain similar.	3 Extra tropical storms are likely to happen regularly during the lifetime of the Proposed Development	4	12	Yes
Tropical storm	'An organised cyclone in the tropics with wind speed between 35 and 64 knots.' (National Weather Service, 2023)	No – Tropical storms do not occur in the UK and therefore do not pose a climatic risk to the Proposed Development	N/A	N/A	N/A	N/A	N/A	N/A
Storm surge	'A change in sea level that is caused by a storm.' (Met Office, 2024c).	No – the Proposed Development is not located close to the coast, and is therefore not at risk of storm surge	N/A	N/A	N/A	N/A	N/A	N/A
Lightning	'Electrical discharge cause by imbalances between storm clouds and the ground, or within clouds themselves.' (National Geographic, 2024)	Yes – Lightening occurs during storms.	Potential damage to building materials. Injury to users - unlikely but possible.	The frequency of lightning storms is likely to remain similar.	4 Lightening is likely to occur frequently during the lifetime of the Proposed Development.	1	4	No
Extreme winter conditions	'A combination of heavy snow, blowing snow and/or dangerous wind chills' (NOAA, 2024c)	Yes – Extreme winter conditions sometimes occur in the UK.	Damage to building materials (e.g. pipes bursting). Discomfort and potential injury.	The frequency of extreme winter conditions is likely to decrease.	4 Extreme winter conditions are likely to occur frequently during the lifetime of the Proposed Development. This could include a reduction in the outdoor activities available or thermal discomfort.	3	12	Yes
Cold wave	'Average temperatures below 2OC for 5 days' or 'average temperatures below 0oC for 48hrs or more.' (Met Office, 2023)	Yes – Cold waves happen during winter months.	Damage to building materials (e.g. pipes bursting). Discomfort and potential injury.	The frequency of cold waves is likely to decrease.	4 Cold waves are likely to occur frequently during the lifetime of the Proposed Development.	3	12	Yes

Climate Hazard	Description	Is it relevant to the Proposed Development	Likely consequences of climate risk occurring	Change in probability as a result of climate change	Probability rating (1-5)	Consequence rating (1-7)	Risk rating	Mitigation needed?
					This could include a reduction in the outdoor activities available or thermal discomfort.			
Extreme cold days	Average temperatures below 0oC (Met Office, 2023)	Yes – Extreme cold days occur during winter months.	Damage to building materials (e.g. pipes bursting). Discomfort and potential injury to users.	The frequency of extreme cold days is likely to decrease.	4 Extreme cold days are likely to occur frequently during the lifetime of the Proposed Development. This could include a reduction in the outdoor activities available or thermal discomfort.	3	12	Yes
Heat waves	Three days 'of hot weather relative to the expected conditions of the area at that time of year, which may be accompanied by high humidity.' (Met Office, 2024d)	Yes – Heat waves occur increasingly frequently in the UK.	Damage and degradation to building materials.	The frequency of heat waves is likely to increase.	4 Heat waves are likely to occur frequently during the lifetime of the Proposed Development. This could include a reduced ability to do outdoor activities, or health impacts, particularly for children and elderly visitors.	5	20	Yes
Extreme hot days	A day where temperatures exceed 30oC (Met Office, 2023).	Yes – Extreme hot days occur increasingly frequently in the UK.	Damage and degradation to building materials. Intense overheating in building affects comfort.	The frequency of extreme hot days is likely to increase.	4 Extreme hot days are likely to occur frequently during the lifetime of the Proposed Development.	4	16	Yes
Drought	'When rainfall in an area is below average for the region' or 'when water supplies such as streams and reservoirs are low, which is caused by low rainfall, lack of snowmelt, or other reasons' (Met Office, 2024e)	Yes – Drought occurs in the UK.	Health of flora and fauna on the site affected.	The frequency of drought is likely to increase.	4 Drought is likely to occur frequently during the lifetime of the Proposed Development. This could include impacts such as a reduction in the availability of water sports activities, hosepipe bans, and impacts on local vegetation and the associated visual amenity.	4	16	Yes
Wild fire	'Any uncontrolled vegetation fire which requires a decision, or action, regarding suppression' (Scottish Government, 2013)	Yes – Wild fires do occur in the UK.	Damage to buildings and contents. Potential injury to users.	The frequency of land fire is likely to remain similar.	1 Wild fires are likely to occur very rarely during the lifetime of the Proposed Development	6	6	No

Climate Hazard	Description	Is it relevant to the Proposed Development	Likely consequences of climate risk occurring	Change in probability as a result of climate change	Probability rating (1-5)	Consequence rating (1-7)	Risk rating	Mitigation needed?
Flash/surface flood	'A flood that occurs within a few hours (usually less than six) of heavy or excessive rainfall, dam or levee failure.' (National Weather Service, 2023)	Yes – flash/surface floods occur during periods of intense rainfall.	Damage to buildings and contents. Potential injury to users.	The frequency of flash/surface flooding is likely to increase.	1 Flooding in the Site is not anticipated, SUDS strategy is also proposed. Flash/surface floods are likely to occur very rarely during the lifetime of the Proposed Development.	6	6	No
River/tidal flood	'Where a rivers flow will exceed the bank sides and cause damage or obstruction to a nearby area.' (Flood Guidance, 2024)	Yes – river flooding can occur during intense periods of rainfall.	Damage to buildings and contents. Potential injury.	The frequency of river/tidal flooding is likely to increase.	1 The Site is located in Flood Zone 1. River floods are likely to occur a limited number of times during the lifetime of the Proposed Development	6	6	No
Groundwater flood	The level of groundwater rises above the ground level as a result of increased rain, causing flooding on the surface (Flood Guidance, 2024)	Yes – groundwater flooding does occur in the UK.	Damage to buildings and contents. Potential injury to users.	The frequency of groundwater flooding is likely to remain at a similar level.	1 A SUDS strategy is proposed. Groundwater floods are likely to occur very rarely during the lifetime of the Proposed Development	6	6	No
Permanent inundation	The increase of sea level over time to where an area is continuously covered by water (DELWP, 2021)	Yes – Permanent inundation could occur in the UK, and therefore has the potential to impact the Proposed Development	N/A	N/A	N/A	N/A	N/A	N/A
Salt water intrusion	When salt water (from the ocean) gets into fresh water coastal aquifers (USGS, 2024)	No – The Proposed Development is not close to the sea, and therefore salt water intrusion is unlikely to impact the Proposed Development	N/A	N/A	N/A	N/A	N/A	N/A
Ocean acidification	'A reduction in the pH of the ocean over an extended period of time, caused primarily by uptake of carbon dioxide (CO_2) from the atmosphere. (NOAA, 2024)	No – the Proposed Development is not located close to the ocean and is therefore unlikely to be impacted by ocean acidification	N/A	N/A	N/A	N/A	N/A	N/A
Landslide	'The movement of a mass of rock, debris, or earth down a slope' (USGS, 2024b)	No – the Proposed Development is demonstrated to be safe from landslide.	N/A	N/A	N/A	N/A	N/A	N/A
Avalanche	'A mass of snow, rock, ice, soil, and other material slides swiftly	No – the Proposed Development is not located in a location that is steep enough or	N/A	N/A	N/A	N/A	N/A	N/A

Climate Hazard	Description	Is it relevant to the Proposed Development	Likely consequences of climate risk occurring	Change in probability as a result of climate change	Probability rating (1-5)	Consequence rating (1-7)	Risk rating	Mitigation needed?
	down a mountainside.' (National Geographic, 2024b)	receives enough snow for avalanches to be a risk.						
Rock fall	Type of fast-moving landslide that happens when rock or earth falls, bounces, or rolls from a cliff or down a very steep slope.' (Colorado Geological Survey, 2024)	No – the Proposed Development is demonstrated to be safe from rock fall.	N/A	N/A	N/A	N/A	N/A	N/A
Subsidence	'Sinking of the ground because of underground material movement' (NOAA, 2024b)	Yes – subsidence does occur in the UK.	Damage to building materials. Potential injury to users.	The frequency of subsidence is likely to remain low.	1 Subsidence is likely to occur very rarely during the lifetime of the Proposed Development	6	6	No
Water-borne disease	'Illnesses caused by microscopic organisms, like viruses and bacteria, that are ingested through contaminated water or by coming in contact with feces.' (Lifewater, 2024)	Yes – water-borne diseases do occur in the UK.	Potential illness.	The frequency of water-borne disease is likely to increase but remain low.	2 Water-borne diseases are likely to occur a limited number of times during the lifetime of the Proposed Development	3 .	6	No
Vector borne disease	'Human illnesses caused by parasites, viruses and bacteria that are transmitted by vectors' (living organisms) (WHO, 2024)	Yes – Vector borne diseases do occur in the UK.	Potential illness.	The frequency of vector-borne disease is likely to increase but remain low.	2 Given the nature of the Proposed Development and the Site, vector borne diseases, such as those transmitted through ticks, could occur. However they are only likely to occur a limited number of times during the lifetime of the Proposed Development	4	8	No
Airborne disease	'Disease that is caused by a microorganism that is transmitted through the air.' (Ather et al, 2013)	Yes – airborne diseases do occur in the UK.	Potential illness.	The frequency of air-borne disease is likely to increase but remain low.	2 Airborne diseases are likely to occur a limited number of times during the lifetime of the Proposed Development	3	6	Yes
Insect infestation	'Recently detected insect pest population, including an incursion, or a sudden significant increase of an established insect, disease agents or weed population in an area leading to damage to plants in production fields, forests or natural habitats and causing substantial damage to	Yes – Insect infestations do occur in the UK.	Potential illness.	The frequency of insect infestation is likely to increase but remain low.	2 Insect infestations are likely to occur a limited number of times during the lifetime of the Proposed Development	2	4	No

Climate Hazard	Description	Is it relevant to the Proposed Development	Likely consequences of climate risk occurring	Change in probability as a result of climate change	Probability rating (1-5)	Consequence rating (1-7)	Risk rating	Mitigation needed?
	productivity, biodiversity or natural resources' (UNDRR, 2024)							

1.6 INCREASING THE RESILIENCE OF THE PROPOSED DEVELOPMENT TO CLIMATE CHANGE

1.6.1 Table 7 summarises the mitigation measures that have been put in place for the Proposed Development that will increase resilience to the likely effects resulting from climate change. The mitigation measures included in this table are already included in the design, and do not require further implementation. These particularly focus on the effects that scored highly in the risk assessment in Table 7.

Table 7 Climate change resilience measures

Risk	Mitigation measure
Severe winds	The Proposed Development will be built in line with current building regulations, and is therefore expected to be capable of withstanding severe wind and storm conditions.
Extreme tropical storm	
Extreme winter conditions	The Proposed Development will be built in line with current building regulations and will therefore have appropriate insulation and heating in place to withstand extreme winter and cold conditions.
Cold wave	
Extreme cold days	
Heat waves	The Energy Strategy states that Air Source Heat Pumps will be utilised to provide cooling in the summer in he main non-residential areas and amenity areas of the development. The 2016 Sustainability Statement states that the buildings on site will maximise the use of natural light and ventilation, and reduce solar heat gain by considering the buildings orientation. The landscaping strategy includes the planting of native trees, these will provide shading in hot periods, therefore improving external comfort. Education will be provided on site about the risks of high temperatures, especially when undertaking activities outdoors. There will be first aiders and health facilities on site to advise and assist as necessary.
Extreme hot days	
Drought	The 2019 Design and Statement (DAS) states that the Landscape strategy is predominately native planting of local provenance, this will reduce the requirements for irrigation. The 2016 Energy Strategy states that the development will incorporate sustainable design principles to minimise water use.
Vector borne disease	Education will be provided on site about the risks of vector borne disease arising from e.g. tick bites. There will be first aiders and health facilities on site to advise and assist as necessary.
All risks	Since the effects of climate change are dynamic and constantly changing, an adaptive management approach is recommended. The climate change resilience risk assessment should be periodically revisited by the design team during construction in order re-assess likely effects.

1.7 RESIDUAL RISK

Table 8 provides a summary of the residual effects of climate change on the proposed development. Mitigation measures outlined in Table 9 have been taken into account.

Table 8 Summary of residual risks ratings based on probability and consequence taking into account mitigation measures

Risk	Risk rating pre-mitigation	Probability rating (1-5)	Consequence rating (1-7)	Risk rating
Rainstorm	5	5	1	5
Heavy snow	4	2	2	4
Fog	5	5	1	5
Hail	5	5	1	5
Severe wind	8	4	1	4
Extra tropical storm	12	3	3	9
Lightning	4	4	1	4
Extreme winter conditions	12	4	2	8
Cold wave	12	4	2	8
Extreme cold days	12	4	2	8
Heat waves	20	4	3	12
Extreme hot days	16	4	3	12
Drought	16	4	2	8
Flash/surface flood	6	1	6	6
River flood	6	1	6	6
Groundwater flood	6	1	6	6
Subsidence	6	1	6	6
Water-borne disease	6	2	3	6
Vector borne disease	8	2	3	6
Air-borne disease	6	2	3	6
Insect infestation	4	2	2	4

1.8 CONCLUSION

1.8.1 A set of climate change risks to the Proposed Development were identified using the C40 Cities Climate Change Risk Assessment Guidance. These risks were assessed based on the probability of an event occurring and the consequence if it occurred. Mitigation measures have been identified for risks where required, and with the appropriate mitigation measures in place, the risk rating for all climate change hazards relating to the Proposed Development have been reduced. It is considered that the residual risks are in line with typical expectations for developments of this nature in the UK. Nevertheless, due to the nature and scale of many climate hazards, some level of residual risk remains in some instances due to the nature of Climate Change.

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1.10 Abbreviations and Glossary

Term	Definition
ASHP	Air Source Heat Pump
BEIS	Department for Business, Energy and Industrial Strategy
BRISA	Building Services Research and Information Association
CCC	Climate Change Committee
CCTA	Climate Change Risk Assessment
CCUS	Carbon Capture, Utilisation and Storage
CH_4	Methane
CO_2	Carbon dioxide
COP	Conference of Parties
DLUHC	MHCLG
EIA	Environmental Impact Assessment
ES	Environmental Statement
EU	European Union
FRA	Flood Risk Assessment
GHG	Greenhouse gas
GLA	Greater London Authority
GWP	Global Warming Potential
HFC	Hydrofluorocarbons
HGV	Heavy goods vehicle
IEMA	Institute of Environmental Management and Assessment
IPCC	International Panel on Climate Change
LETI	Low Energy Transformation Initiative
LZC	Low and zero carbon
MVHR	Mechanical ventilation with heat recovery
N_2O	Nitrogen Dioxide
NDC	National Determined Contributions
NF_3	Nitrogen Trifluoride
NPPF	National Planning Policy Framework
NPPG	National Planning Practice Guidance
ODP	Ozone Depletion Potential
PFC	Perfluorocarbons
PIEVC	Public Infrastructure Engineering Vulnerability Committee
PV	Photovoltaic
RICS	Royal Institution of Chartered Surveyors
RSP	Reference Study Period

SF_6	Sulphur Hexafluoride
SuDS	Sustainable Urban Drainage
UKGBC	UK Green Building Council
WBCSD	World Business Council for Sustainable Development
WMCA	West Midlands Combined Authority
WRAP	Waste and Resource Action Programme
WRI	World Resource Institute