# Churnet Valley Masterplan

## Transport Study

## Final Report

**30th July 2013**

ATKINS

Plan Design Enable

# Notice

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## Introduction

The Staffordshire Moorlands is in north-east Staffordshire, bordered by Cheshire to the north-west, Derbyshire to the east and Stoke-on-Trent to the south-west. The district covers an area of 57,624 hectares and has a population of approximately 97,100. Just over half of the population is centred in the three largest settlements of Biddulph, Cheadle and Leek, with the remainder divided among 39 rural parishes.

A Draft Masterplan is currently being compiled by Staffordshire Moorlands District Council (SMDC) for the Churnet Valley, drawing together information on the potential developments at a number of sites, covering residential, employment and tourism land uses. The Draft Masterplan seeks to increase the economic contribution from sustainable tourism and regenerate key brownfield sites in the area.

## Purpose of the Study

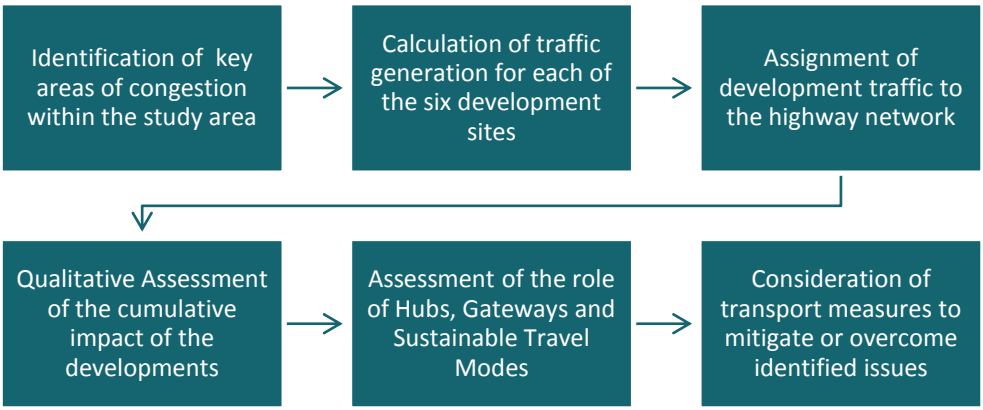
In April 2013, Atkins was commissioned to prepare a Churnet Valley Transport Study. This is one of a number of studies that is being produced to test the impacts of the developments set out in the Draft Masterplan. This Transport Study looks at the potential impact on the highway network of six of the key development opportunities identified in the Draft Masterplan, namely:

- Cornhill (residential, employment and tourism);
- Bolton Copperworks (residential, employment and tourism);
- Moneystone Quarry (tourism only);
- Alton Towers (tourism only);
- Leek (residential only); and
- Cheadle (residential only).

In addition, the Transport Study considers the impacts of more minor residential developments in four locations, namely Kingsley, Cheddleton, Ipstones and Alton. The Transport Study also considers the potential role that hubs (existing centres of interest/visitor attractions), gateways and other travel modes may be able to play in the future, including railway and bus services.

## Methodology

A six stage methodology was used to assess the impact of the proposed developments and identify potential mitigation measures. The process is summarised below.




## Existing Congestion Hotspots

Though interrogation of Satellite Navigation highway journey time data, plus a site visit and liaison with relevant SMDC and Staffordshire County Council (SCC) personnel, a number of

existing areas of peak hour congested were identified in the study area. The most notable examples are the town centres of both Leek and Cheadle, but also the A52/A520 Cellarhead Junction and the route between the A50 and Alton Towers. Other more minor examples were also noted, including the A52/A521 Kingsley Bank Junction and A52/A522 Kingsley Moor Junction. Slightly further afield, Blythe Bridge has been identified as an area prone to congestion.

## Trip Generation and Assignment

Trip rates have been calculated for the proposed developments for both the AM and PM peaks on a weekday, and also between 12:00 and 13:00 on a Saturday. This process used the TRICS database (Version 2013(a) v6.11.2), which is the national standard system of trip generation and analysis in the UK and Ireland. The trips were then assigned to the highway network using a variety of different approaches, each tailored to the site in question. For the residential developments, 2001 Census Journey to Work data was used to calculate both internal (intra-settlement) and external (longer) trips.

The trip generation has shown that the largest increases in trips are associated with the residential developments at both Leek (800 dwellings) and Cheadle (1,080 dwellings). The A53 south of Leek, A523 south of Leek, B5053, A521 north of Cheadle and the A521 south of Cheadle have been identified as areas where the percentage increase in traffic will be greatest. It should be noted that a relatively small increase in traffic can be significant in areas of congestion whereby queues and delays can increase exponentially.

## Summary of Impacts and Development of Measures

The Transport Study culminates in site specific measures for the six opportunity sites, which have been classified as either ‘essential’ or ‘desirable’. It would be expected that developer contributions would be sought to at least part fund many of the suggested measures. In addition to the site specific measures, the Transport Study notes the importance that travel plans are completed for all new residential and employment land uses, to ensure that good travel behaviour is engrained from the outset. Examples of the site specific measures include considering safety at a key junction close to Moneystone Quarry and consideration of pedestrian and cycle links between Cornhill and Leek Town Centre. A full listing of the site specific measures is set out in the report.

Two heritage railway routes currently operate in the study area, namely the Churnet Valley Railway (operating between Leekbrook Junction in the north and Kingsley and Froghall to the south) and the Cauldon Line (operating between Leekbrook Junction in the west and Cauldon Lowe in the east). The Moorland & City Railways has aspirations to expand this network, providing a through route between Cauldon Lowe and Stoke-on-Trent (to allow freight trains to operate), plus an extension from Leekbrook Junction to Cornhill (initially operating as a northern extension of the Churnet Valley Railway) and also a southerly extension between Kingsley and Froghall and Alton Towers. In regard to this Transport Study, the extension of the railway (all three routes detailed above) by Moorland & City Railways will be considered as a long term possibility. Nonetheless, the railway provides a clear opportunity to link many points of interest in the study area sustainably.

Overall, the highway network, assuming the ‘essential’ improvements outlined in the Transport Study are introduced, should be able to cope with the increased vehicle movements associated with the developments. It is noted that it is the two large residential developments (Leek and Cheadle) that will have the largest impact on the highway network, but these are also the two settlements that were noted as having existing congestion issues. It is crucial that developer funding is acquired for both these settlements, allowing a mix of capital and revenue measures to be introduced, both within and in the vicinity of the towns. It should also be noted that schemes are already outlined for some of the congested areas earlier outlined, for example on the route between the A50 and Alton Towers, including a new junction at Denstone. In addition, the town centre packages of the Integrated Transport Strategy outline suggested improvements to junctions in both Leek and Cheadle, along with other non-highway interventions.

Finally, the Transport Study notes that developments at many of the sites will be phased over time, particularly for the residential sites and for that at Bolton Copperworks. For some of the suggested public transport interventions, such as improving bus services, this means that more detailed investigation would be required to determine the optimum time at which to make the change.

# 1. Introduction

## Background and Study Purpose

1.1. The Staffordshire Moorlands is in north-east Staffordshire, bordered by Cheshire to the north-west, Derbyshire to the east and Stoke-on-Trent to the south-west. The district covers an area of 57,624 hectares and has a population of approximately 97,100. Around 53% of the population is based in the three main settlements of Biddulph, Cheadle and Leek, with the remainder divided among 39 rural parishes. A third of the district lies in the Peak Park and the Peak District National Park Authority represents the special interests of this Park. Of the reminder of the Staffordshire Moorlands, around 30% is designated Green Belt.

1.2. The Churnet Valley is a treasured part of the Staffordshire Moorlands which is rich in history and natural beauty. The Draft Churnet Valley Masterplan, which is currently under development, aims to set out a comprehensive framework for future development in the area. It identifies opportunities and measures to help regenerate and manage the area based around sustainable tourism in a manner which is sensitive to and enhances its important heritage, landscape and ecology.

1.3. The Draft Masterplan comprises a set of principles based around the concept of sustainable tourism which have informed the vision for the Churnet Valley. The Draft Masterplan seeks to increase the economic contribution from sustainable tourism and regenerate key brownfield sites in the area.

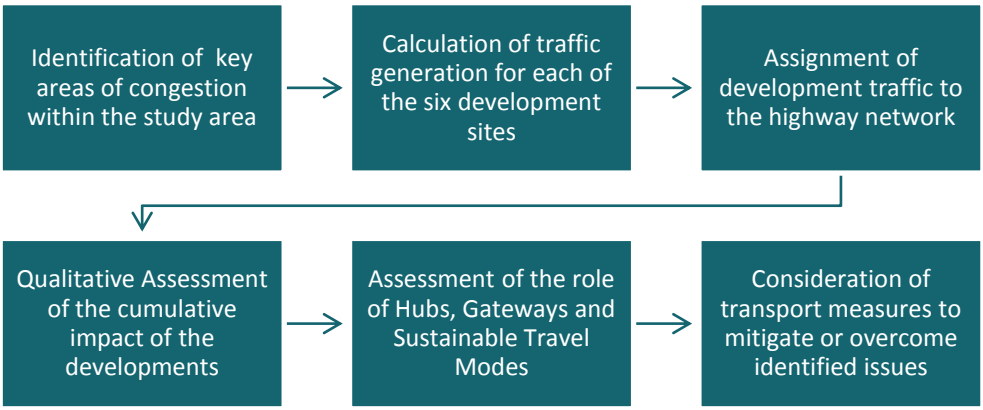
1.4. Once adopted as a Supplementary Planning Document (SPD), the Masterplan will have a major influence on future planning decisions affecting the area and on other initiatives and strategies.

1.5. In April 2013, Atkins was commissioned to prepare a Churnet Valley Transport Study. This is one of a number of studies that is being produced to test the Draft Masterplan. Other such studies include an Economic Assessment, Habitats Regulations Assessment and Sustainability Appraisal. Upon completion of these supporting studies, the Draft Masterplan may be refined in light of any findings.

1.6. This Transport Study looks at the potential impact on the highway network of six of the key development opportunities identified in the Draft Masterplan. In addition, the Transport Study considers the impacts of new residential developments in four locations. The Transport Study also considers the potential role that hubs (existing centres of interest/visitor attractions), gateways and other travel modes may be able to play in the future, including railway and bus services. It is anticipated that gateways will provide places of entry, from which to then travel through the Churnet Valley by more sustainable modes where possible.

1.7. Figure 1.1 illustrates the broad approach to the study.

**Figure 1.1 – Approach to the Study**

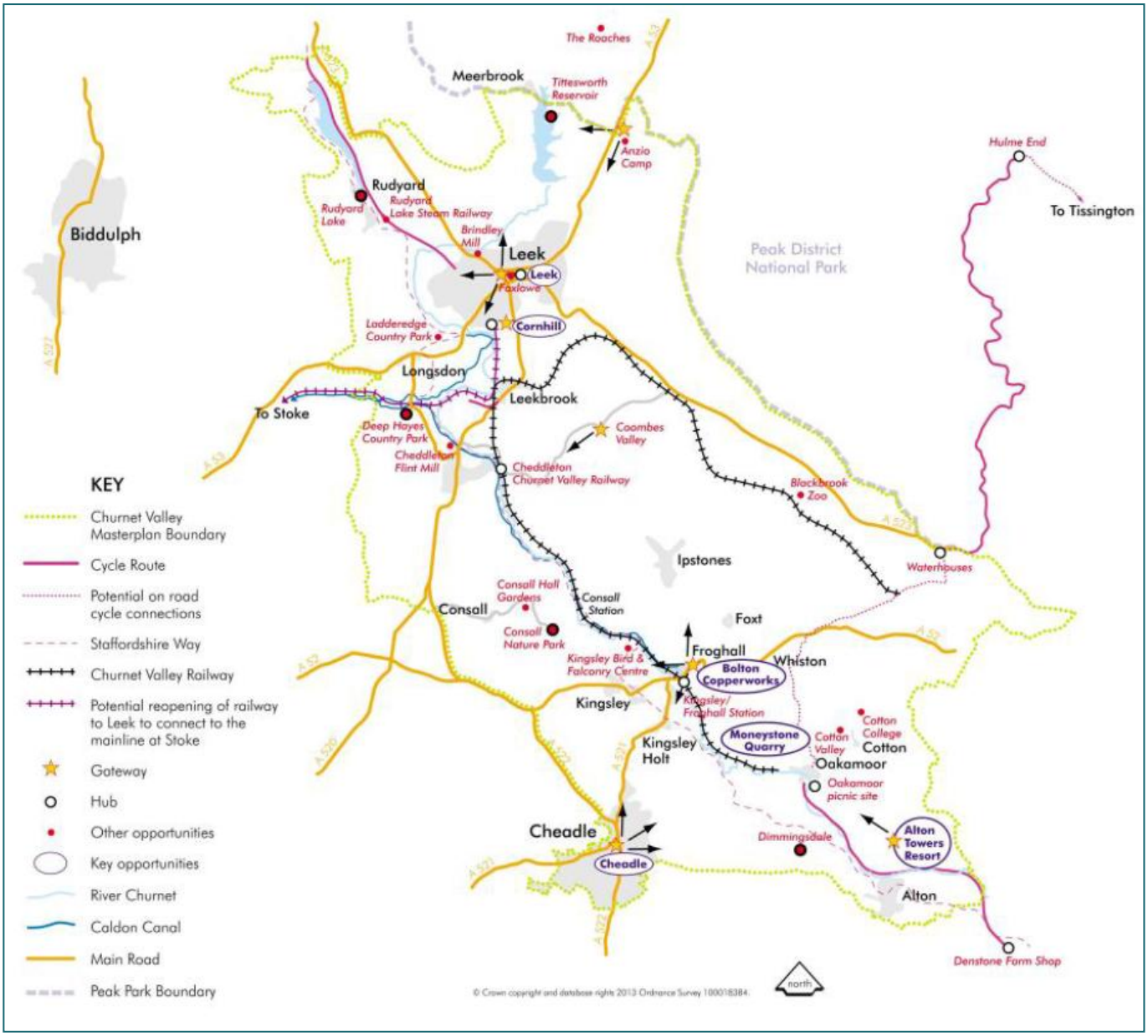


## Proposed Development Sites

1.8. This section provides a brief introduction to the six major development opportunity sites, namely: Cornhill; Bolton Copperworks; Moneystone Quarry; Alton Towers; Leek and Cheadle. Later in the report, the estimated vehicle trip generation associated with these sites is presented.

1.9. The location of the development opportunity sites, proposed gateways and hubs is illustrated in Figure 1.2. The scale and mix of development for each site is based on the development strategy identified in the Concept Statements in the Draft Masterplan and are indicative only at this stage for purposes of this study. The developments represent the 'worst case' scenario (i.e. the highest level of development). It should be noted also that the developments at many of the sites will be phased, particularly those at Bolton Copperworks, Leek and Cheadle. As such, mitigation measures may need to be phased accordingly.

**Figure 1.2 – Development Site Locations**




## Cornhill

1.10. Cornhill is located on the south-western edge of the town of Leek. As well as acting as a minor gateway in the north, particularly for those arriving by train or canal, a proposed mixed use development site is planned for Cornhill. The following development mix is proposed:

- 100 residential dwellings;

- 25,000 square metres of employment land (B1/B2); and
- Two hectares of tourism/leisure use, namely:
  - A railway terminus (initially to serve an extended Churnet Valley Railway);
  - A marina; and
  - Other potential tourism/leisure (exact nature currently unknown).

## Bolton Copperworks

1.11. This is a strategically important site in the centre of the Churnet Valley and is a focal point for the Churnet Valley Railway and the Caldon Canal. It is accessed via the A52.

1.12. The existing attractions of the Froghall Canal Basin and Froghall Railway Station are compromised by being split each side of the Copperworks site. A mixed use development is envisaged for this site, consisting of:

- 50 residential dwellings;
- 10,500 square metres of employment land (B1/B2);
- A 50 bed hotel;
- A Pub/Restaurant (2000m$^2$ GFA);
- A visitor /heritage/educational centre; and
- An outdoor activity centre.

## Moneystone Quarry

1.13. Quarrying activity recently ceased at Moneystone Quarry, located approximately 2km south-east of Froghall. New owners, Laver Leisure, have put forward draft proposals for an 'eco-resort' with outdoor recreational activities and holiday accommodation. The development envisaged at this site would consist of two elements:

- 250 holiday lodges; and
- A 100 bed hotel (not currently referenced in Draft Masterplan, but included to allow for an assessment of the ‘worst case’ scenario).

## Alton Towers

1.14. Two new rides are planned for Alton Towers, one opening in 2016 and one in 2019. However, the long term objective of Alton Towers Resort is to develop the site as a year round resort and in particular increase the number of visitors staying for more than one day. As such the following developments are planned:

- A 150 bed hotel; and
- 150 holiday lodges.

## Leek

1.15. Taking account of existing residential development commitments, plus growth envisaged in the Core Strategy for growth, it is assumed that a further 800 residential dwellings will be created in the town of Leek up to 2026. These dwellings would be spread across a range of locations in and on the edge of the town. In addition, there is scope to promote Leek as a gateway to the area, both in a physical sense including potential hotel developments and by acting as a source of visitor information.

## Cheadle

1.16. The number of residential dwellings envisaged for the town of Cheadle, taking account of existing development commitments and the Core Strategy for growth, is 1,080 up to 2026. These will be spread across a range of locations in and on the edge of the town, with one major development in the north. In addition, Cheadle acts as a gateway to the area.

## Other Residential Developments

1.17. In addition to the aforementioned six sites, this Transport Study takes account of smaller residential developments. Specifically, it is envisaged that there would be an average of 50 new residential dwellings in each of the following, up to 2026:

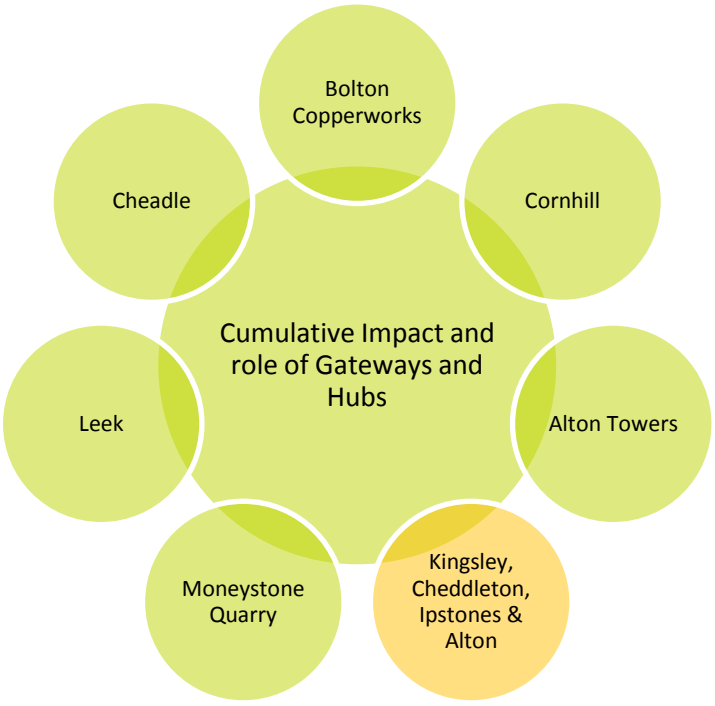
- Kingsley (west of Froghall, on the A52);
- Cheddleton (south-west of Leek, on the A520);
- Ipstones (north of Froghall, on the B5053); and
- Alton (south of the Alton Towers Resort, on the B5032).

1.18. It is envisaged that a further 50 residential dwellings will be developed across the study area up to 2026, in a range of small settlements. As the exact locations of these are not currently known, these will not be considered any further in this Transport Study, and focus will instead be placed on the four sets of 50 dwellings earlier outlined.

# Cumulative Impacts

1.19. As well as considering each development site in isolation, it is necessary to assess the cumulative impact of developments at the major opportunity sites and related to this there is a need to consider the role of the identified gateways and hubs on the local highway network, including consideration of existing traffic levels and capacity.

**Figure 1.3 – Cumulative Impacts**




# Structure of the Report

1.20. Following this introduction, the report is split into a further five chapters:

- **Chapter 2** - Literature Review: setting out key documents of relevance to this study;
- **Chapter 3** - Baseline Conditions: examining the data acquired for use in the study;
- **Chapter 4** - Trip Generation & Assignment: for the six key development sites (plus four smaller residential developments) already outlined;
- **Chapter 5** - Impact on the Highway Network: looking at how the developments will impact the local and wider highway network; and

- **Chapter 6** - Summary of Impacts and Development of Measures: looking at the implication of the forecast impacts for each site, and considering measures to support the developments and mitigate adverse impacts.

1.21. In addition, the report is supported by five appendices:

- **Appendix A** - Stafford Moorlands District Council's Integrated Transport Strategy Summary Table;
- **Appendix B** - TomTom analysis ouputs;
- **Appendix C** - Strat-e-gis outputs;
- **Appendix D** - Accident plots for key locations; and
- **Appendix E** - Traffic impacts by location.

# 2. Literature Review

## Background

2.1. This chapter considers key documents of relevance to the study area, namely:

- Staffordshire Local Transport Plan 3 (including Staffordshire Moorlands District Council's Integrated Transport Strategy);
- Draft Churnet Valley Masterplan;
- Churnet Valley Accessibility and Connectivity Study;
- Churnet Valley Masterplan Options Report; and
- Staffordshire Moorlands Tourism Study.

## Staffordshire Local Transport Plan 3

2.2. Staffordshire's third Local Transport Plan (LTP) was produced by Staffordshire County Council (SCC) and published on 1st April 2011. It covers the period until March 2015. The LTP comprises two documents, namely the Strategy Plan and the Implementation Plan.

### Strategy Plan

2.3. This sets out the objectives and policies for managing local transport, infrastructure and highways in the county. It covers all modes of transport (including walking, cycling, public transport, car based travel, rail and freight), the management and maintenance of the local highway network and the relationship between transport and wider strategic issues such as the economy, community safety, the environment and social inclusion. The main objectives which will contribute towards these wider strategic issues are:

- Supporting growth and regeneration;
- Maintaining the highway network; and
- Making transport easier to use and places easier to get to.

2.4. Stakeholders and members of the public were consulted during the development of the Strategy Plan, providing local representatives with the opportunity to influence the LTP and helping to build wider ownership.

2.5. The Strategy Plan sets out a vision for transport provision in Staffordshire:

> *A transport system that supports Staffordshire's economy, and safely and conveniently connects people and services within Staffordshire and beyond; it provides opportunities for services and jobs to be accessed in a sustainable way, and makes sure that any adverse effect of transport on Staffordshire's rich environment and on residents' quality of life is minimised.*

### Implementation Plan

2.6. This sets out SCC's plans for transport delivery in the context of the resources expected to be available during this period; it identifies the areas of service provision that SCC will be unable to fund at previous levels given the current financial situation. The Implementation Plan also describes the arrangements in place for overseeing LTP delivery and ensuring that it remains on track to meet its objectives.

2.7. In tabulated form, the Implementation Plan describes what will be delivered (at a strategic level) over the funding period (i.e. until March 2015), under the following headings:

- Maintenance;
- Public Transport (Bus and Rail);
- Cycling;

- Walking;
- Local Safety Schemes; and
- Traffic and Demand Management.

2.8. The Implementation Plan describes the funding and delivery mechanism at a strategic (typically county-wide) level and hence does not provide any detail on specific interventions for the Staffordshire Moorlands district. Detail on the study area is however provided in the documents reviewed later in this section.

2.9. The Implementation Plan states that performance management is based on the plan-do-review-revise cycle, as set out in Figure 2.1.

**Figure 2.1 – Plan-Do-Review-Revise Cycle of Performance Management**


2.10. An LTP Programme Board ensures that staff and partners are energised to deliver the LTP on time and to the agreed budget.

## Staffordshire Moorlands District Council's Integrated Transport Strategy 2012 - 2028

2.11. Following on from the County-wide LTP3, Integrated transport strategies have been developed for the eight District / Boroughs in Staffordshire to help prioritise SCC's expenditure on transport improvements and to secure potential resources including developer contributions. Delivery of the Transport Strategy for Staffordshire Moorlands District will help to achieve key County Council Priority Outcomes:

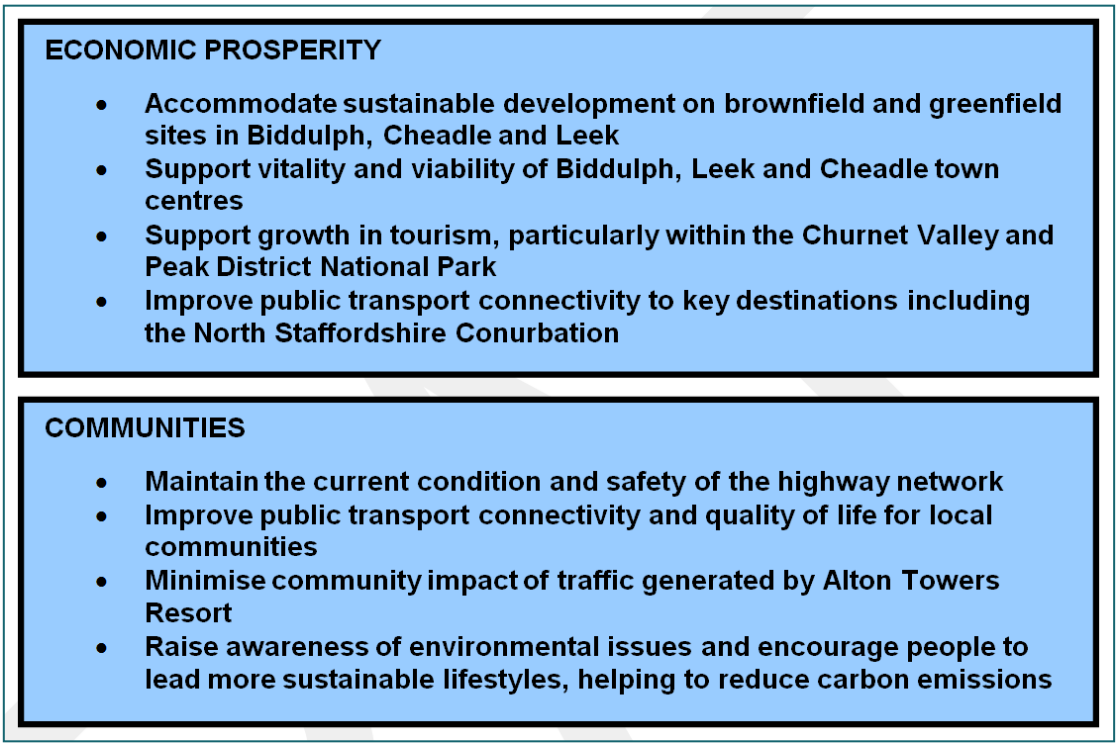
- Staffordshire is a place where people can easily and safely access everyday facilities and activities through the highways and transport networks;
- Staffordshire's economy prospers and grows, together with the jobs, skills, qualifications and aspirations to support it; and
- Staffordshire's people and communities are places where people and organisations proactively tackle climate change, gaining financial benefit and reducing carbon emissions.

2.12. The Transport Strategy for Staffordshire Moorlands District Council notes that the highway and transport networks are fundamental to delivering the above Priority Outcomes.

2.13. Prior to publication of the Transport Strategy, there was consultation with communities and stakeholders. Comments during the consultation process focussed on traffic issues relating to the Alton Towers Resort and to partnership working with the Peak District National Park Authority.

2.14. Figure 2.2 sets out how it is intended that the Transport Strategy will be delivered. The table shows that priorities will be delivered through a combination of county-wide initiatives, connectivity proposals, schemes identified in the Divisional Highway Programme and Local Transport Packages for Leek, Cheadle and Biddulph.

**Figure 2.2 – Extract from Staffordshire Moorlands District Integrated Transport Strategy**




2.15. A summary is now provided of the initiatives proposed for the study area:

## Divisional Highway Programme

2.16. This gives County Councillors the opportunity to directly input into delivery programmes. Councillors work closely with Community Highway Managers, parish councils and other stakeholders to ensure local concerns and challenges are identified and priorities are established, taking into account financial constraints. The Divisional Highway Programme is reviewed twice a year and gives an overview of highway and transport concerns within the local area, such as pedestrian safety, speeding through residential areas, on-street parking and safety at junctions.

## Connectivity in the District

2.17. Enhanced connectivity in the District will be achieved through continued partnership working with key stakeholders. The County Council will be producing a Rail Strategy in 2013 to compliment the District Integrated Transport Strategies. A Rail Summit will also be held in early 2013 to help confirm policy support and priorities for rail investment in Staffordshire. The County Council has indicated its opposition to the Government's proposals for a High Speed Rail link through the County. The County Council will therefore continue to liaise with Network Rail and key stakeholders throughout the process to ensure that current local and inter-urban services are maintained and improved.

## Leek Local Transport Package

2.18. This has been drawn up with reference to the aspirations identified in Staffordshire Moorlands District Council's (SMDC's) Leek Town Centre Masterplan. The package identifies potential re-development opportunity sites in and around Leek town centre, including a significant regeneration area to the south. The package of transport interventions includes a reconfigured bus station with associated access improvements to key town centre routes, improved pedestrian links into the town centre, significant traffic management and public realm enhancements, further junction modifications and potential new highway capacity south of the town centre. The potential regeneration site at Cornhill and Barnfields, between the A520 Cheddleton Road and the A53 Newcastle Road south of Leek town centre, would provide a focus for tourism, retail and leisure.

### Cheadle Local Transport Package

2.19. This has been drawn up with reference to SMDC's Cheadle Town Centre Masterplan. The package identifies potential re-development sites within the town which could potentially contribute towards transport improvements. The package includes consideration of modifications to key junctions around the town centre, public realm enhancements, traffic management and new public transport infrastructure on the High Street, improved pedestrian links into the town centre and improved sustainable access to employment including improvements to bus service 7/7A linking to Blythe Bridge rail station.

### Biddulph Town Centre Area Action Plan Transport Package

2.20. This has been drawn up to support the regeneration of the High Street and town centre area, and accommodate development growth in Biddulph. Measures include new and improved sustainable links for pedestrians and cyclists, bus access improvements on routes between Biddulph and the North Staffordshire Conurbation, and Biddulph and Macclesfield, public realm enhancements and potential new gateways into the town centre. The package will be implemented via a combination of Local Transport Plan and developer funding.

### Travel Plans for New Developments

2.21. All new developments that are predicted to generate significant levels of traffic will be required to produce and deliver a Travel Plan. Existing businesses in the district will be encouraged to develop Workplace Travel Plans that promote initiatives such as car share and sustainable travel. In addition, schools will be encouraged to have Travel Plans in place during the plan period.

### Overall

2.22. A table summarising all interventions in SMDC's Integrated Transport Strategy can be found in Appendix A.

## Draft Churnet Valley Masterplan

2.23. The Draft Churnet Valley Masterplan, produced by SMDC, dated May 2013, sets out a comprehensive framework for future development in the area. It identifies opportunities and measures to help regenerate and manage the area based around sustainable tourism in a manner which is sensitive to and enhances its important heritage, landscape and ecology. Once adopted as a Supplementary Planning Document (SPD), the Masterplan will have a major influence on future planning decisions affecting the area and on other initiatives and strategies.

2.24. The Draft Masterplan sets out a vision for the Churnet Valley, aiming for it to be a celebrated, high quality landscape which is treasured by both the communities who live and work in the area and visitors to it.

2.25. The Draft Masterplan was itself informed by a Churnet Valley Masterplan Baseline Report, which drew together background evidence. A number of supporting studies have also been undertaken to inform the Masterplan, as set out in Figure 2.3.

**Figure 2.3 – Studies Underpinning the Masterplan**


2.26. The Churnet Valley Transport Study is one of a number of studies that is being produced to test the Draft Masterplan. Other such studies include an Economic Assessment, Habitats Regulations Assessment and Sustainability Appraisal. Upon completion of these supporting studies, the Draft Masterplan may be refined in light of any findings.

2.27. The Draft Masterplan begins with a SWOT analysis of the strengths, weaknesses, opportunities and threats associated with the study area. Key strengths (amongst others) include the high quality attractive landscape, good highway links (particularly north-south) and industrial heritage

such as the Churnet Valley Railway and the Caldon Canal. A major threat identified is that the lack of a planning framework could lead to uncoordinated piecemeal development.

2.28. Extensive consultation has guided the formulation of the Draft Masterplan. A report entitled the 'Churnet Valley Masterplan Options Report' was produced which formed the basis of consultation with interested parties. This was followed by various other consultation initiatives, including a series of roadshows. The responses to this consultation raised a number of issues, concerns and opportunities, which officers have given consideration to. Following completion of the consultation, officers have also held meetings with key stakeholders in the study area such as the local authorities, North Staffordshire Railway and the Caldon and Uttoxeter Canals Trust.

2.29. The Draft Masterplan identifies eight local character areas that reflect the distinctiveness of areas of the Churnet Valley and the roles these individual character areas will play in achieving the vision:

- Rudyard Lake (Rudyard);
- Peak District Fringe (Meerbrook, Tittesworth with Visitor Centre, Anzio Camp, Blackbrook, Waterhouses);
- Leek;
- Central (Cheddleton, Consall, Ipstones);
- Froghall (Kingsley, Froghall, Whiston);
- Moneystone (Kingsley Holt, Oakamoor);
- Alton (Alton, Alton Towers Resort); and
- Cheadle.

2.30. For the above character areas, the following information is identified:

- Role – setting out ideas and rationale of the proposals for the area;
- Key activities – identifying uses and activities which are appropriate to this area; and
- Key actions – identifying main measures and proposals necessary to deliver the role.

2.31. The Draft Masterplan endorses the concept of gateways and hubs, serving the following purposes:

- Gateways – to provide places of entry, from which to then travel through the valley by more sustainable modes where possible. Leek is to act as the main gateway in the north and Cheadle is to act as the main gateway in the south. Other smaller gateways are also identified ; and
- Hubs – these are either in or beyond the character areas. They are existing centres of interest, with visitor facilities, from which visitors can explore the wider area. These include Rudyard Lake and the Tittesworth Reservoir.

2.32. In regard to links within the study area, the Draft Masterplan identifies the need for a comprehensive network of road and off-road routes for all users. It also makes reference to 'green infrastructure', which refers to the network of green spaces and natural elements that intersperse and connect the Churnet Valle, comprising country parks, nature reserves, woodlands, rivers, canals, wildlife habitats and green routes.

2.33. Finally, the Draft Masterplan provides detail on key 'opportunity' sites, which are attractions or sites which have or could play a key role in delivering the strategy. These are:

- Cornhill;
- Froghall (Bolton Copperworks);
- Moneystone Quarry; and
- Alton Towers Resort.

2.34. In addition, the Draft Masterplan notes that the towns of Leek and Cheadle are key opportunities which are subject to their own masterplans, with opportunities for a number of opportunity sites within each of the towns having been identified in the respective town centre masterplans.

2.35. This Churnet Valley Transport Study will focus on the aforementioned six sites, providing analysis of the potential impact on the highway network in the study area.

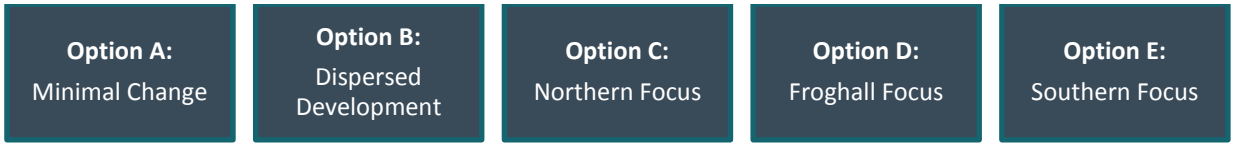
## Churnet Valley Masterplan Options Report

2.36. This document[1], dated January 2012, formed part of the consultation for the Draft Churnet Valley Masterplan, undertaken by SMDC.

2.37. This document begins with the same SWOT analysis as the Draft Masterplan, identifying the key strengths, weaknesses, opportunities and threats associated with the study area.

2.38. The document asks interested parties a number of questions, beginning with high level questions such as whether there is agreement on the key issues raised in the SWOT analysis. The document then sets out five potential development scenarios for the study area, as summarised in Figure 2.4.

**Figure 2.4 – Development Scenarios**




2.39. Under each of the five options, detail is provided on the development scenario, along with any associated advantages and disadvantages.

2.40. For example, under Option C ('Northern Focus'), the report notes that the approach would focus on the northern area of the Churnet Valley, with Leek playing a major role as the principal gateway with development at Cornhill being a priority and focus. The report notes that historically, the northern area has seen less tourism development than the south and this approach (Option C) offers an opportunity for the north to become a focus for future tourism development. The report notes that this option would appeal primarily to the 'countryside' market but also 'actives' and 'discovers'. It will also appeal to the 'family fun' market. The report then lists the major advantages and disadvantages with this option; an obvious example of the latter being the limited economic growth for the southern area.

2.41. The report provides comprehensive information on all five options and invites feedback by interested parties. The report provides a summary of the impact of the five options on the emerging principles of the Draft Masterplan, as set out in Figure 2.5.

[1] For the purpose of the consultation, a summary booklet with accompanying questionnaire was also made available.

**Figure 2.5 – Impact of Options on Emerging Principles**

| | Emerging Principles | | | | |
|---|---|---|---|---|---|
| **Approach** | **1. Ensure that communities are at the heart of the future Churnet Valley** | **2. Support local enterprise and create local employment opportunities** | **3. Improve accessibility and connectivity** | **4. Respect, enhance and protect the positive aspects of the Churnet Valley** | **5. Deliver quality and sustainable tourism** |
| A. Minimal Change | -/+ | -/+ | + | ++ | + |
| B. Dispersed Development | -/++ | ++ | + | -/+ | ++ |
| C. Northern Focus | -/++ | -/+ | ++ | -/++ | -/++ |
| D. Froghall Focus | -/+ | -/+ | ++ | -/+ | + |
| E. Southern Focus | --/+ | -/+ | --/++ | -/+ | -/++ |

## Staffordshire Moorlands Tourism Study

2.42. The aim of the study is to provide an appraisal of the role and impact of the visitor economy of the Staffordshire Moorlands. It also aims to identify the opportunities for economic growth based on the visitor economy, with particular emphasis on the Churnet Valley corridor. The key objectives are to:

- Identify the potential for opportunities and growth of tourism;
- Make recommendations for potential boundaries of the Churnet Valley Tourism Corridor (CVTC);
- Make recommendations for key themes or opportunities;
- Identify the anticipated visitors using market segmentation;
- Identify key areas for improvement for existing businesses; and
- Make recommendations for future investment.

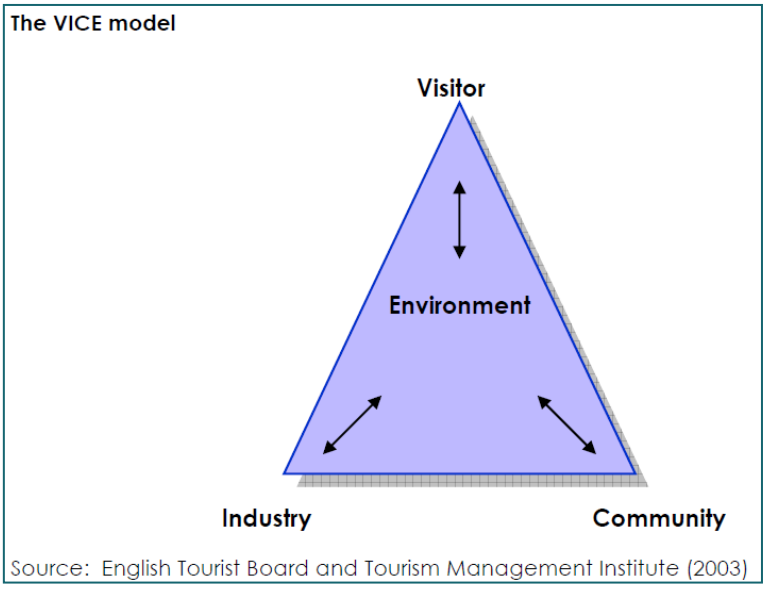
2.43. The study notes that the CVTC, for the most part, attracts the following:

- Day trips (mainly local visitors – for example, from within Staffordshire);
- Short breaks (mainly from further afield);
- Regular or second-time visitors;
- Mainly couples (50%), followed by families (27%); and
- Middle aged visitors.

### Managing Growth

2.44. The VICE Model, as set out in Figure 2.6 emphasises that all users of the CVTC should be considered as well as the impact on the natural environment. The main challenge for transport in the corridor is to ensure that it remains attractive and usable to visitors while meeting the needs of the local community, enabling business (and the local economy) to prosper and to minimise the impact on the destination's environment and/or culture.

**Figure 2.6 – The VICE Model**




2.45. The study highlights that *what is on offer* on a holiday is becoming more important than location, as tourists are seeking 'culture, unique experiences, authenticity, exploration, adventure and personal fulfilment from their holiday experience'. The accessibility and connectivity of a site plays an important role in determining *what is on offer* and how easily it is accessed.

### Connectivity and Accessibility

2.46. The study identifies the linkages between the key sites as poor and a weakness of the CVTC – and something that needs improving for those travelling to and around the district. While geographically, the district is well-positioned in a populous catchment area, road and rail transport could be improved. In the longer term, sustainable transport is likely to become a more pressing issue and will need to be considered.

2.47. The study notes that the proposals for the development of the Moorland and City Railway will play a key role in improving connectivity between Stoke and the Churnet Valley (providing a link to the mainline railway) and allowing for more sustainable travel into the area. It is anticipated that the railway will also become a catalyst for tourism to other sites in the Valley – particularly with the opening of subsequent stages.

2.48. Information on some of the sites covered in this Churnet Valley Transport Study is set out in the Staffordshire Moorlands Tourism Study. This information is picked up in the next chapter of the report.

## Churnet Valley Accessibility and Connectivity Study

2.49. Noting high reliance on car transport in the study area, the purpose of this study, produced by Consultant AECOM, is to determine:

- The potential for promoting sustainable forms of transport; and
- The opportunities for improving linkages between visitor attractions and settlements.

2.50. The study notes that for people accessing the Churnet Valley area to work, as well as leaving the area to work, car use makes up approximately 80% of all trips. This demonstrates that connectivity to area by modes other than car is limited.

2.51. The study states that the primary road network serving the Churnet Valley Tourist Corridor includes the A50, A53, A523, A52 and A520. The towns of Cheadle and Leek are often the first point of entry for people visiting the area and are locations from which the next part of a journey towards one of the many attractions nearby is made.

2.52. A summary of the key issues by travel mode is provided in the study. This information is set out in Table 2.1.

**Table 2.1 – Key Issues by Mode**

| Mode of Transport | Key Issues |
|---|---|
| Highways | • Relatively poor access and signage (with exception of Alton Towers) from the Strategic Road Network (M6 and A50)<br>• Good external road links to access the Churnet Valley from the North Staffordshire conurbation. Roads within the Churnet Valley have limited capacity and are of a poor standard in places (road surface, visibility etc)<br>• Little or no provision for pedestrians and cyclists along the network<br>• Road network within the Churnet Valley presents a significant constraint for bus and coach use<br>• Signing of routes and attractions is sporadic and can cause confusion for motorists<br>• Road access and availability of parking reinforces reliance on the car for access and movement |
| Walking | • Staffordshire Way runs parallel to the River Churnet<br>• Designated walking routes for specific attractions are present, with most being served by car parks<br>• Lack of coherent, high quality routes permeating the valley and linking key attractions<br>• Little integration between walking and other sustainable modes of travel (bus and cycle)<br>• Many routes need to be upgraded to a higher standard or formalised for pedestrian use, particularly for those with impaired mobility<br>• The canal, river and railway all present barriers to pedestrian movement<br>• Linkages from existing settlements (Leek, Cheddleton, Cheadle etc) into the Churnet Valley are underdeveloped |
| Cycling | • Little or no designated cycle network in the Churnet Valley<br>• The canal towpath is not currently suitable for cycle use along its full length<br>• Lack of infrastructure and facilities (i.e. cycle hire, cycle parking, signing)<br>• The road network is not suitable for use by the majority of leisure cyclists<br>• Information for cyclists (signage, maps etc) is very limited<br>• Topography and permeability of network is a constraint to cycling in parts of the area |
| Public Transport | • No rail access to the Churnet Valley<br>• Public transport access to key attractions is limited to bus<br>• Buses are constrained to the main highway network<br>• Limited services and frequencies represent a barrier to increasing bus modal share<br>• Bus infrastructure (shelters etc) could be upgraded on parts of the network<br>• Availability of bus information for the Churnet Valley as a whole could be improved routes |

2.53. The principal weaknesses of the transport network are identified in the study as:

- Reliance on the private car;
- Localised congestion at peak times;
- Unsuitable roads for buses or coaches;
- Lack of coherent walking routes;
- Poor permeability for cyclists;
- Limited access by bus;
- Disparate directional signage for all modes;
- Restrictive topography; and
- Physical barriers in the form of the railway and canals.

# 3. Baseline Conditions

## Background

3.1. This chapter sets out the baseline conditions on the highway network. There were three major components to enable this assessment, namely:

- Interrogation of TomTom Satellite Navigate data;
- A site visit to study area in the PM peak period; and
- Consultation with SCC's Community Liaison Team.

## Interrogation of TomTom Data

### Introduction to Data

3.2. Floating car data (FCD) is accessible through a web portal called Traffic Stats. Traffic Stats has been available to governments and engineers in over 40 countries since 2011, and has been used in several projects in the UK. This historic traffic data has been applied to journey time studies, traffic model calibrations, before/after analysis, bottleneck analyses and scheme evaluations.

3.3. The system uses floating car data that is collected by millions of TomTom navigation device users who voluntarily and explicitly agree to share their anonymous journey statistics. All TomTom satellite navigation systems that have been in the market since 2007 have the option to log trip information. The data behind the web portal comes from various systems, such as personal navigation devices (PNDs), embedded in-car devices, fleet management systems and navigation apps on smartphone handsets.

3.4. The database is primarily filled with information from passenger cars as opposed to delivery fleets or goods vehicles. It therefore provides a fair understanding of the traffic and travel conditions on the road network, not restricted by speed limiters or heavy goods movement.

### TomTom Data Parameters

3.5. In order to extract information on average speeds and journey times, three parameters must be defined:

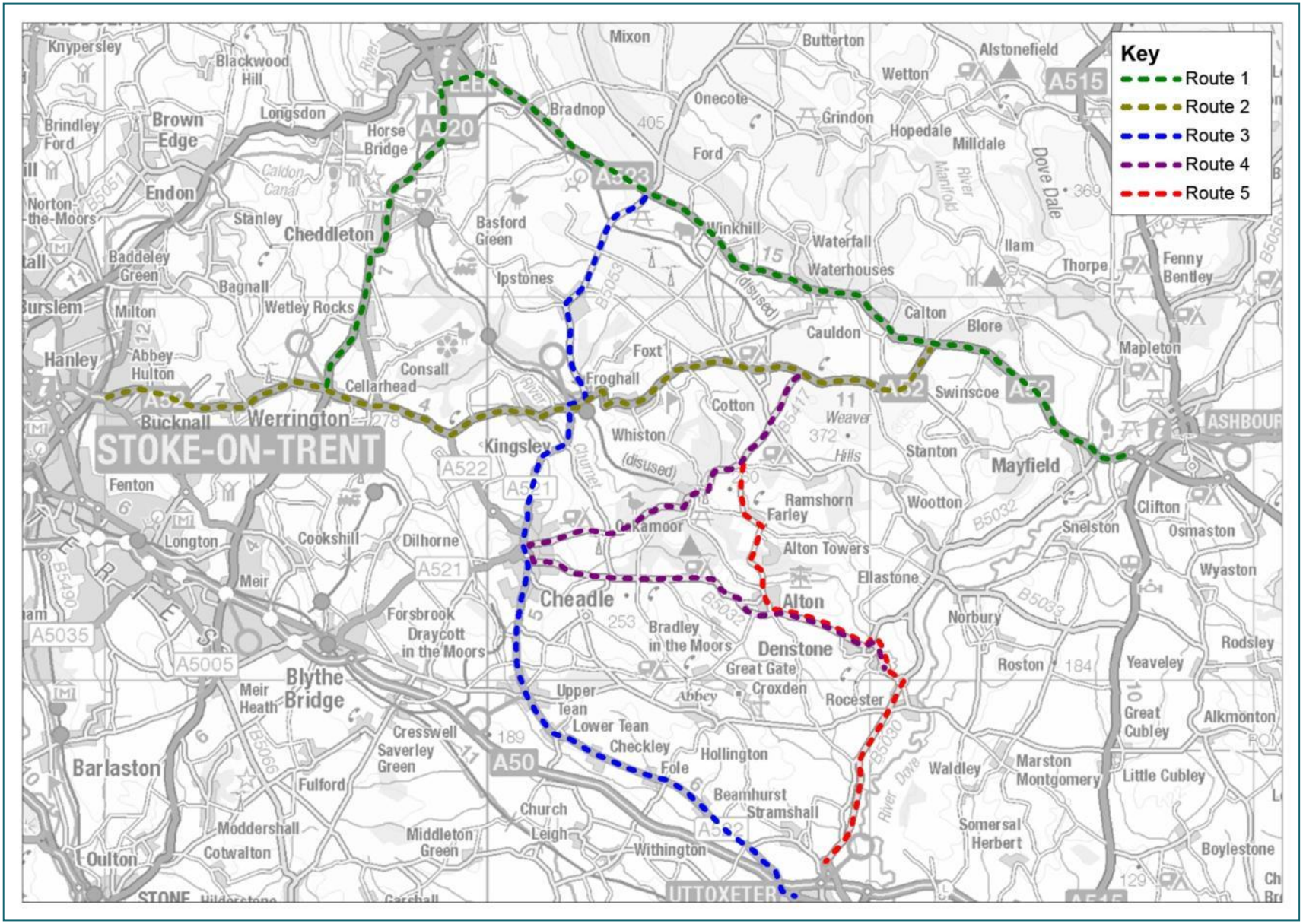
- The A to B points of the journey time route;
- The date range for the period under consideration; and
- The time periods for which data is required.

3.6. The follow sub-sections set out the rationale behind the data chosen for use in this Transport Study.

#### Journey Time Routes

In order to provide good coverage of the routes in the study area, a network of routes, as set out in Figure 3.1, was developed. This includes the A52 between Stoke-on-Trent and Ashbourne, which passes east-west through the study area, plus the A522 from Uttoxeter through the study area and the A520 from its junction with the A52 to Leek. More minor routes are also included in the network, such as the B5030/B5031/B5032 from Uttoxeter to Alton Towers (an important route for traffic approaching Alton Towers from the south).

**Figure 3.1 – Journey Time Routes**



### Date Range

3.7. Given that the study area serves many different tourist attractions, including Alton Towers and the Churnet Valley Railway, it is likely that levels of congestion will vary considerably by time of year. As such, it was agreed that two date ranges would be used in the analysis, as set out below. The reason for having the query across both 2011 and 2012 is to ensure that sample sizes are high, whilst still maintaining very recent data:

- Period 1: Summer holiday[2] 2011 and 2012; and
- Period 2: Remainder of 2011 and 2012.

### Time Periods

3.8. The database allows for seven different time periods to be exported. As such, the following seven time periods have been chosen, to ensure that the study can consider impacts on the highway network at appropriate times.

**Table 3.1 – TomTom Time Periods**

| Weekday/Weekend | Description | Start Time | Finish Time |
|---|---|---|---|
| Weekday | AM peak | 07:00 | 10:00 |
| | Inter-peak | 10:00 | 16:00 |
| | PM peak | 16:00 | 19:00 |
| | Off-peak | 19:00 | 07:00 |
| Weekend | Morning | 08:00 | 12:00 |
| | Early afternoon | 12:00 | 16:00 |
| | Late-afternoon/evening | 16:00 | 20:00 |

## Results of TomTom Analysis

3.9. In order to provide information on where congestion may be occurring on the network, a set of drawings was produced for each of the five routes, showing the difference in average speed between the off-peak period (19:00-07:00 on weekdays) and either the AM or PM peak on weekdays. These drawings are set out in Appendix B. A colouring scheme has been used to denote the difference in average speed. The reason for taking this approach is that the off-peak period is assumed to represent free flow conditions, against which comparisons can be made.

3.10. The assessment showed a number of potential areas of congestion, as shown in Figure 3.2. It should be noted in the first instance that some of the locations identified are likely not to reflect real congestion concerns. Rather, they may be junctions where an increase in traffic through the peak periods may make a right turn manoeuvre more difficult, causing some localised queuing. Hence this exercise was intended to flag up potential problem areas which could then be investigated further through both a site visit and through liaison with SCC and SMDC.

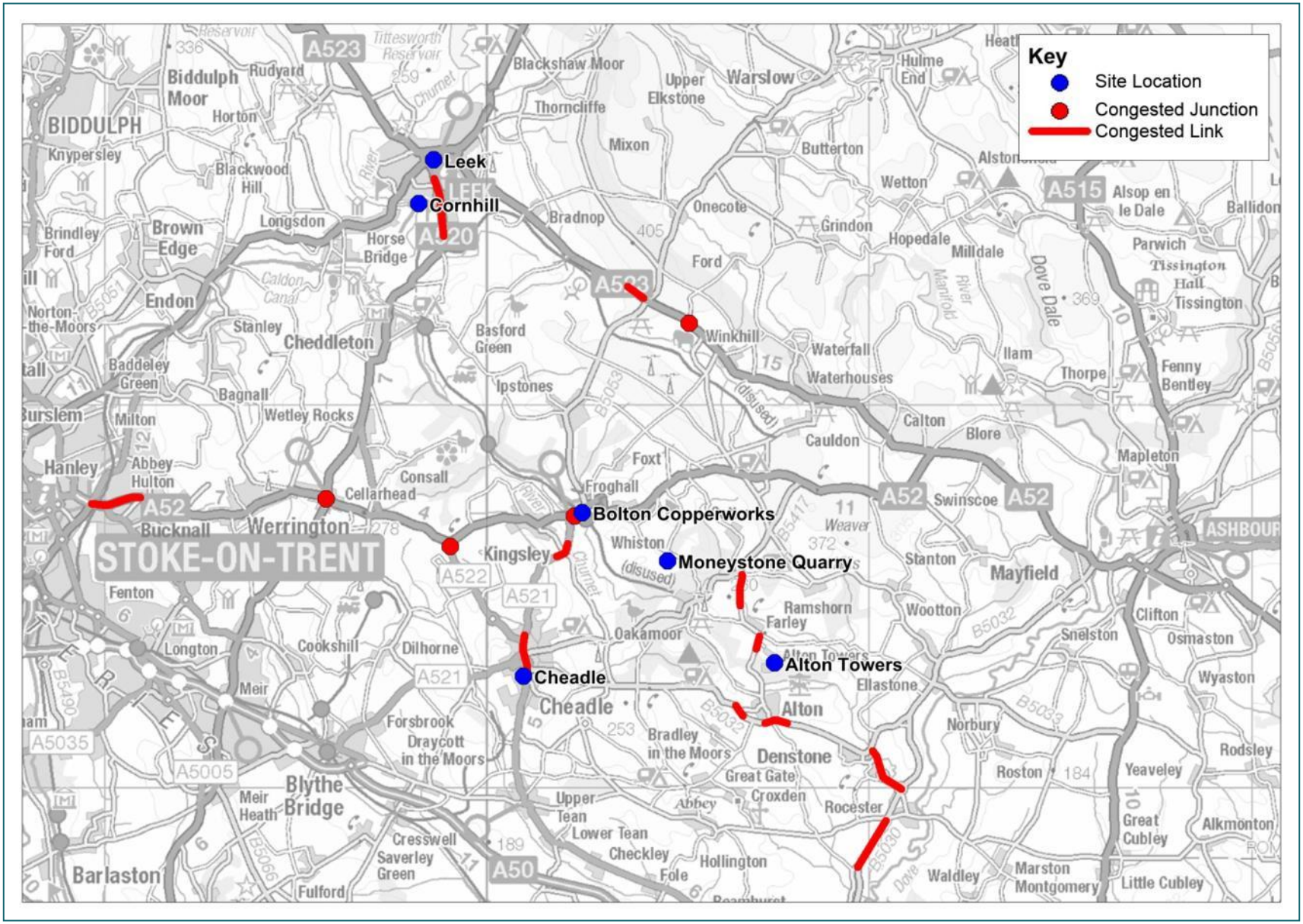
3.11. The most obvious areas of congestion raised through this analysis are as follows:

- A520 between Cornhill and Leek Town Centre;
- The junction of the A52 and A520 at Cellarhead;
- A52 in the western suburbs of Stoke-on-Trent;
- A521 in Cheadle Town Centre;
- Various sections of the B5030/B5031/B5032 between Uttoxeter and Alton, including the junction in Denstone; and
- The junction of the A523 and B5053 at Bottomhouse.

3.12. Further analysis on some of these sections is provided later in the report.

[2] The exact dates used for this period are Saturday 23rd July 2011 until Sunday 4th September 2011 and Saturday 21st July 2012 until Sunday 2nd September.

**Figure 3.2 – Congestion Areas**



## Strat-e-gis Data

3.13. Trafficmaster data from the Department for Transport (DfT) has been provided by SCC for links not covered by the TomTom analysis. Specifically, this data has been acquired for the A521 south of Cheadle and the A522 Leek Road north of Cheadle. This data has been used to gain an appreciation of baseline traffic conditions along these links, in much the same way that the TomTom data has been used. Data is provided for the AM (08:00 – 09:30) and PM (17:00 – 18:00) peak periods.

3.14. Delay is calculated as the travel time during the peak period minus free flow travel time which is represented by observations taken from 22:00 to 06:00. The total travel time therefore includes any experienced delay.

3.15. The analysis shows congestion/delay on the A522 Leek Road (inbound – towards Cheadle) in the AM peak period but no such congestion in the PM peak. It is likely that this congestion is related to the junction of the A521/A522 on entering Cheadle which accords with the TomTom analysis for Route 3 which part covers this link. No significant congestion is noted on the A521 (south of Cheadle) in either peak.

3.16. Analysis shows a noticeable reduction in congestion during the school holiday periods.

3.17. The Strat-e-gis data is set out in Appendix C.

# Site Visit

3.18. In order to validate some of the results of the TomTom analysis, a site assessment was undertaken on Wednesday 10th July 2013. This included a PM peak hour as this was demonstrated in the TomTom analysis to be the most congested peak. In addition the site inspection included a high level assessment of the local highway network in the vicinity of the six key development sites.

3.19. The following section presents a short summary of the site assessment findings.

## Cornhill

3.20. A mixed use development is proposed for Cornhill, including residential dwellings, B1/B2 employment use and also a new railway terminus and marina.

3.21. The TomTom analysis highlighted that average speeds are typically much lower than in the off-peak for journeys out of Leek Town Centre to Cornhill in the AM peak and from Cornhill into Leek Town Centre in the PM peak.

3.22. During the site visit, undertaken during the traditional highway PM peak period, there was some congestion on the A520 (NB) from the Cornhill area into the town centre but this was not significant and seemed to be connected to traffic from the Britannia employment site. As such any queues were relatively short lived.

3.23. In terms of the town of Leek as a whole, during the PM peak, the highway network was noted to be reasonably busy, with some queuing on the approaches to the more major junctions, particularly the A520/A53 junction where right turning traffic (particularly large vehicles) did, on occasion, block ahead movements due to a lack of storage capacity in front of the stop lines.

## Bolton Copperworks

3.24. A mixed use development is envisaged for this site, consisting of a residential component, B1/B2 employment use, plus a hotel, pub/restaurant, visitor/heritage/educational centre and finally, an outdoor activity centre. The development would spread across both sides of the A52 in the village of Froghall.

3.25. During the site assessment in the PM peak, there did not appear to be any congestion concerns in the village of Froghall.

3.26. The suitability of the B5053/A52 junction to accommodate more development traffic was assessed during the site visit. This confirmed that there is good visibility for all users of the junction. The photographs in Figure 3.3 show the visibility from the B5053 onto the A52, looking

west along the A52 in the left photograph and looking east in the right hand photograph. The Draft Masterplan document notes that highway improvements are expected at this junction as part of any development, plus traffic calming measures on the A52 (which is de-restricted through the village).

**Figure 3.3 – A52/B5053 Junction in Froghall**

## Moneystone Quarry

3.27. Following the recent cessation of quarrying activity at Moneystone Quarry, an 'eco-resort' is planned, to include outdoor recreational activities and holiday accommodation (250 holiday lodges plus a hotel).

3.28. The quarry is located off Eaves Lane, approximately 1km south-east of the village of Whiston. During the site audit, three potential access routes to the quarry were driven. The results of the assessment were as follows:

- **To A52 via Eaves Lane:** The road between the A52 and Moneystone Quarry is generally of good quality and is wide enough for two vehicles for much of its length. There are however some narrow sections, and on-street parking in the village of Whiston reduces the available road space close in proximity to the A52. A major concern with this route is the poor visibility at the junction of Whiston Eaves Lane and the A52. The visibility from Whiston Eaves Lane onto the A52 is shown in Figure 3.4 (left photograph – looking west on the A52, right photograph – looking east on the A52). The A52 has a Posted Speed Limit (PSL) of 40mph through the village of Whiston. Assuming the traffic on the main road was travelling at or near the PSL, a visibility splay of 4.5m x 90m in each direction would be required in accordance with DMRB[3]. Further assessment of the visibility requirement on the basis of measured 85th percentile speeds and the potential road safety implications would need to be addressed at the planning application stage for the Moneystone Quarry development. Mitigation in the form of vegetation cut back and or speed reductions on the main road may be necessary;
- **To A52 via Blakeney Road:** Blakeney Road, from its junction with Eaves Lane, until the A52, is largely single track road, with occasional passing places. In terms of ability to accommodate new development traffic, this suggests it is less suitable than the aforementioned route to the A52. There is however excellent visibility at the junction of Blakeney Road and the A52;
- **To B5417 via Eaves Lane:** East of Moneystone Quarry, Eaves Lane is largely single track road, with passing places. There is also a very steep gradient (16%) as the road enters the village of Oakamoor. There is some on-street parking in Oakamoor, making the route through the village relatively narrow (illustrated in Figure 3.5). There is good visibility at the junction of the B5417 and Eaves Lane.

[3] TD 42/95 Geometric Design of Major/Minor Priority Junctions

**Figure 3.4 – Junction of Eaves Lane and the A52 at Whiston**

**Figure 3.5 – Eaves Lane in Oakamoor**

## Alton Towers

3.29. Traffic relating to Alton Towers Resort was noted as a key concern by residents and stakeholders in SMDC's Integrated Transport Strategy. The TomTom analysis showed that there are a number of sections where peak hour traffic (for both school holidays and non-school holidays) is significantly slower than off-peak (assumed free-flow) conditions. These include various sections of the B5030/B5031/B5032 between Uttoxeter and Alton.

3.30. As the issues regarding this are already well documented, a peak hour assessment was not made to this site, but an off-peak visit was made to inform the study team on the highway conditions in the vicinity of the site, specifically on the main route for traffic to/from the north (B5417 via Farley Lane/Beelow Lane, passing through the village of Farley) and to/from the south (B5032 via Farley Lane/Uttoxeter Road, passing through the village of Alton). A visit was also made to the junction of the B5031/B5032 in Denstone, which should be modified in the future via Local Pinch Point funding.

## Leek

3.31. Approximately 800 dwellings are expected to be provided in the town of Leek. However, at this stage, the exact locations of these dwellings are not known, and hence it was not possible to consider potential entry points to development sites. Rather, the site visit at this location just considered the levels of congestion on the main routes through the town. See the earlier section regarding Cornhill for details of the assessment in the town.

## Cheadle

3.32. As with Leek, whilst a large number of residential dwellings are expected to be introduced in Cheadle, the exact locations of all these are not currently known (with the exception of an expected development of 240 dwellings in the north of the town), and hence the site assessment considered general levels of congestion rather than specific access points to potential development sites.

3.33. Prior to the visiting the site, it was suggested that congestion in Cheadle Town Centre can be particularly notable at the end of school day. Hence two separate visits were made to this site – one to correspond with the end of the school day (from approximately 14:45 until 15:45) and one to correspond with the traditional PM peak hour. The pattern of congestion was different in the two time periods. At the visit at the end of the school day, some traffic congestion was noted on the A522 through the town centre. This congestion appears to be attributed to the close proximity of four pedestrian crossings (which were called frequently by school children wishing to cross the road on their route to school) plus a number of smaller local junctions. However, the congestion appeared to be short lived and queues dissipated fairly quickly once the school rush had passed. The traffic situation appeared to improve in the traditional PM peak period (17:00 – 18:00) with little or no congestion noted. Consultation with SCC confirmed that the signal timings on the pedestrian crossings have been adjusted in early 2013 on the A522 through the town centre, but the TomTom analysis was all based on 2011 and 2012, hence the probable improvement to traffic flow more recently would not be reflected.

3.34. The photographs in Figure 3.3 demonstrate some of the congestion noted at the end of the school day. The left photo is the junction of the A522 Leek Road and A521 High Street. The queue in the foreground is on the southbound A522 on the approach to the junction. As earlier noted however, this congested dissipated fairly quickly once the school rush had passed.

**Figure 3.6 – Traffic Congestion in Cheadle**


## Other Areas of Congestion

3.35. In addition to the development sites already noted, a number of other potentially congested links and junctions were assessed during the site visit. Details of these are now provided.

### A52/A520 Junction, Cellarhead

3.36. The TomTom analysis showed that vehicle speeds are notably slower on the approaches to this junction in the AM and PM peak than in the off-peak period.

3.37. This junction was noted to be heavily congested in the PM peak period, with very long queues on all approaches, particularly on the A52 (WB) approach to the junction. The queues were such that vehicles were unable to clear within the green phase of the signals and as such vehicles were significantly delayed. The photographs in Figure 3.6 show the observed congestion at the junction (left photograph – A52 WB approach to the junction, right photograph – A520 SB approach to the junction).

**Figure 3.7 – A52/A520 Junction, Cellarhead**

### A52/A521 Kingsley Bank Junction, Froghall

3.38. The TomTom analysis demonstrated some congestion at this junction in the PM peak. Although no significant queues were witnessed during the site visit, delays picked up by the TomTom analysis are likely to be due to the geometry of the junction. The tight angle of entry for vehicles making the A521 (NB) to A52 (WB) movement means vehicles have to wait for both directions of the A52 to be clear before making their desired manoeuvre. With the increase in peak hour traffic on the A52 in the peak hours it will be more difficult to find sufficient gaps in the two way traffic and hence increased journey times are likely.

### A52/A522 Kingsley Moor Junction

3.39. The TomTom analysis showed some slowing of traffic here (for A52 WB traffic), but this was not observed during the onsite observations. As A52 WB traffic must give way at this junction, it is likely that there is some localised queuing at times, hence the TomTom analysis capturing slower average speeds during the AM and PM peak periods.

### A523/B5053 Junction, Bottomhouse

3.40. The TomTom analysis highlighted some slowing of traffic on the A523 on both the westbound and eastbound approach to the junction with the B5053. This location was not visited during the site visit, but it is likely that the slowing of traffic is a result of vehicles turning right off the A523 into the B5053. It is not thought that this is a significant congestion concern.

## Consultation with Staffordshire County Council

3.41. Following the site visit and the TomTom analysis, the study team liaised with the Community Highway Liaison Team at SCC, to understand whether there are any other notable areas of congestion that were not already picked up in the analysis. This consultation confirmed that in addition to the aforementioned congestion concerns, there is some congestion in Blythe Bridge, particularly between Grindley Lane and Cheadle Road Junction, associated with both the school finishing time and during the traditional highway AM and PM peak periods. This issue will be picked up later in this report.

## Journey Times through Individual Sections

3.42. Having completed the site visit and liaised with the Community Highway Liaison Team at SCC, some of the congested areas have been interrogated further using the TomTom data. Specifically, this analysis considers the average journey times through the congested sections by time period. Both the AM peak and PM peak journey times have been compared to the comparable off-peak journey times. The sections interrogated are in Figure 3.8 and the results of the analysis are in Table 3.2. Key points to note are as follows:

- The percentage differences between the off-peak period and AM/PM peak periods are larger in the non-school holiday period than the school holiday period. For instance, the largest percentage difference during the school holidays is 20%, but the largest different outside of school holidays is 72%;

- The largest percentage difference is on the A520 southbound approach to Cellarhead Junction, where journey times in both the AM and PM peak are 72% longer than in the off-peak period (a journey time of 98 seconds for the section highlighted as opposed to 57 seconds in the off-peak period). Therefore whilst the percentage change is relatively high, the actual delay on the ground equates to an additional 40 seconds. This highlights the importance of considering both the percentage and absolute changes in journey time. On the westbound A52 through the junction in the PM peak, the increase over the comparable journey in the off-peak period is 17%;
- A 34% increase in journey time in the AM peak (over the off-peak period) is recorded for the southbound A521 through Cheadle Town Centre. The comparable figure for the northbound carriageway is 15%. The percentage increases in the PM peak are smaller, in line with the dialogue with SCC, which suggested the busiest times in Cheadle are the AM peak and the end of school day time; and
- The result for the A520 south of Leek is interesting and suggests a similar journey time (and proportional increase over the off-peak period) for both the AM and PM peaks.

**Figure 3.8 – Journey Time Sections**

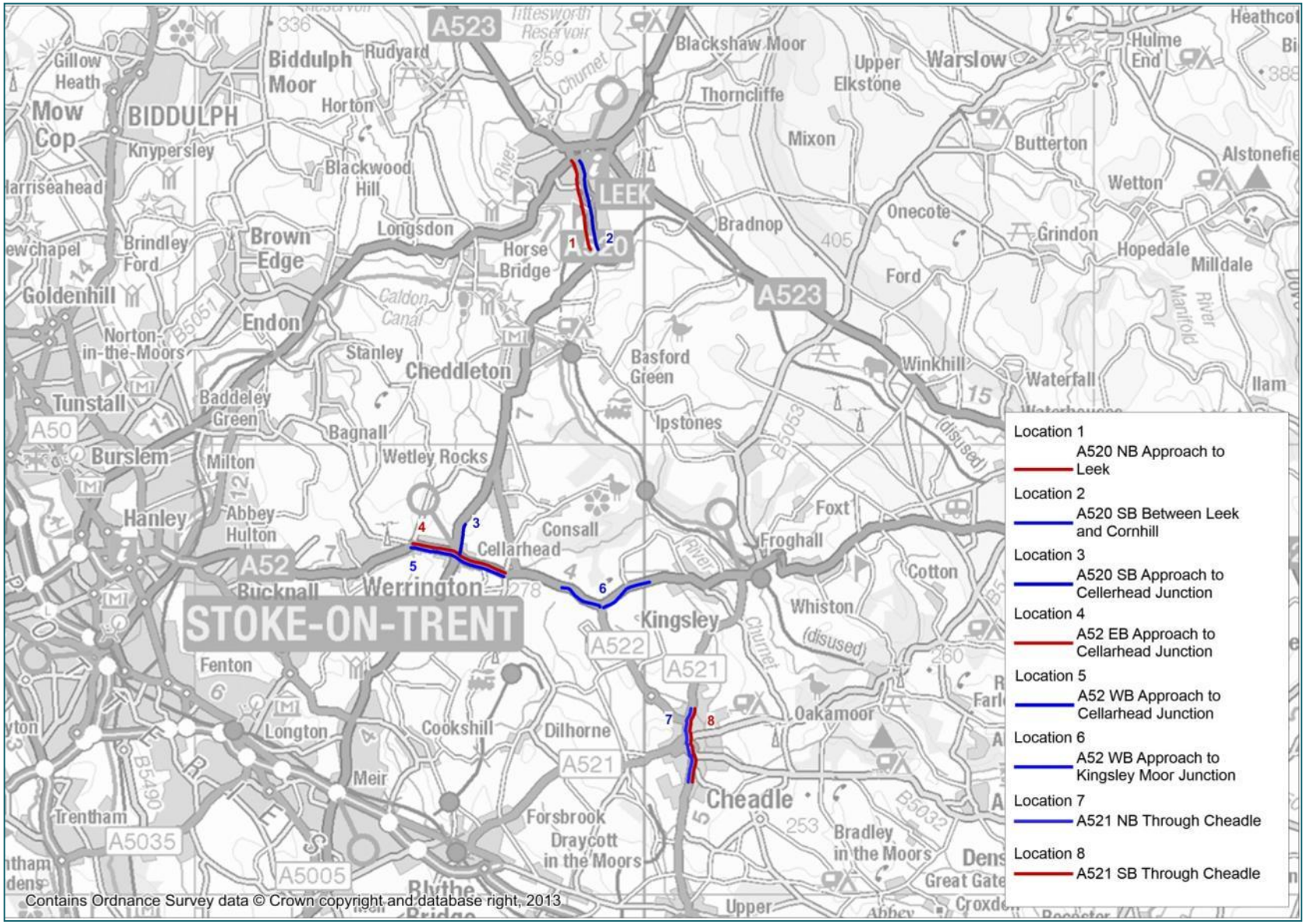


**Table 3.2 – Journey Time Statistics**

| Map Reference | Location (& Direction) | | Non School Holiday | | | | | School Holiday | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Off-Peak JT (Seconds) | AM Peak JT (Seconds) | AM Peak Difference | PM Peak JT (Seconds) | PM Peak Difference | Off-Peak JT (Seconds) | AM Peak JT (Seconds) | AM Peak Difference | PM Peak JT (Seconds) | PM Peak Difference |
| 1 | A520 south of Leek | NB | 166 | 271 | **64%** | 263 | **59%** | 226 | 244 | **8%** | 206 | **-9%** |
| 2 | | SB | 147 | 177 | **21%** | 179 | **21%** | 165 | 178 | **8%** | 158 | **-4%** |
| 3 | A52/A520 Cellarhead Junction | A520 SB Approach | 57 | 98 | **72%** | 98 | **72%** | 73 | 88 | **20%** | 66 | **-10%** |
| 4 | | A52 EB Approach | 177 | 164 | **-7%** | 196 | **11%** | 145 | 165 | **14%** | 162 | **12%** |
| 5 | | A52 WB Approach | 167 | 155 | **-8%** | 196 | **17%** | 146 | 159 | **9%** | 151 | **3%** |
| 6 | A52/A522 Kingsley Moor Junction | A52 WB Approach | 150 | 142 | **-6%** | 151 | **1%** | 141 | 147 | **4%** | 139 | **-1%** |
| 7 | A521 Through Cheadle | NB | 194 | 223 | **15%** | 201 | **3%** | 213 | 198 | **-7%** | 214 | **0%** |
| 8 | | SB | 203 | 271 | **34%** | 227 | **12%** | 231 | 250 | **8%** | 236 | **2%** |

## Accident Data Analysis

3.43. The final element of the assessment of baseline conditions was an analysis of available accident data. This data was provided by SCC for the latest five year period available (1st April 2008 until 31st March 2013) at some of the key congestion hotspots identified by the TomTom analysis and/or site observations. Accident plots are provided in Appendix D whilst data is summarised in Table 3.2. Please note collisions at a junction are those within 20m of each junction only.

**Table 3.3 – Summary of Accident Analysis**

| Location | Number of Accidents | | | | PIA Rate per year |
|---|---|---|---|---|---|
| | Slight | Serious | Fatal | Total | |
| A52/A522 Kingsley Moor Junction | 11 | 0 | 0 | 11 | 2.2 |
| A52/A521 Kingsley Bank Junction | 1 | 0 | 0 | 1 | 0.2 |
| A52/A520 Cellarhead Junction | 4 | 0 | 0 | 4 | 0.8 |

3.44. Table 3.2 shows that the A52/A522 Kingsley Moor Junction has a relatively high collision rate with 11 over the five year period to 31st March 2013. Five of the 11 accidents (45%) cited slippery road surface (due to weather) as one of the contributory factors. Other contributory factors include loss of control, failing to look properly and travelling too fast for the conditions.

3.45. One collision at the A52 Cellarhead Junction involved a pedal cycle. Failing to judge another person's path or speed appears to be a common factor in the collisions which is not untypical at traffic signals and/or congested junctions.

3.46. At the A52/A521 Kingsley Bank Junction the accident rate is low and as such no further analysis with regards to causation is deemed necessary.

# 4. Trip Generation and Assignment

## Trip Generation

4.1. The trip generation for each development site and each distinct land use within each development site has been estimated using the TRICS database (Version 2013(a) v6.11.2).

4.2. TRICS is the national standard system of trip generation and analysis in the UK and Ireland. It is a database system which allows its users to establish potential levels of trip generation for a wide range of development and location scenarios.

4.3. The development proposals have been provided by SMDC and have been established from the emerging masterplans/proposals for each site. Trip rates have been reviewed and approved by SCC. In the case of employment uses and pub/restaurant uses Newcastle-under-Lyme Transport and Development Strategy (NTADS) standardised rates have been adopted to ensure robust assessments.

4.4. Trip rates have been estimated for the following periods:

- Weekday AM Peak (08:00 – 09:00);
- Weekday PM Peak (17:00 – 18:00); and
- Saturday (12:00 – 13:00).

4.5. The development peak periods can vary and as such traffic counts were used to derive the typical peak periods for a weekday and Saturday.

4.6. Trip rates and traffic generation is presented in Tables 4.1 and 4.2.

4.7. For robustness it has been assumed that all trips are new trips (i.e. there are no existing site uses which generate trips on the local and wider highway network). This means the calculated trip generation is likely to represent a 'worst case' scenario as there will be some existing trips on the network (existing trip generation data is difficult to quantify in the absence of a survey or detailed information regarding site uses and scale). Due to the speculative nature of some of the land uses it has been necessary to make the following assumptions in the establishment of trip rates:

- Where employment uses are proposed a 50:50 proportional split between B1 (office) and B2 (Industrial units) has been assumed; and
- The proposed Marina at Cornhill is assumed to have 50 berths.

4.8. To obtain a trip rates two or more sites with similar characteristics are required. In the case of some of the more individual tourist uses associated with Cornhill and Bolton Copperworks trip rates were not readily available due to their largely unique characteristics.

4.9. In the case of Bolton Copperworks trip generation was based on a tourist complex in the north of England comprising a hotel, restaurant, craft shops, and the tourist board head office. It was considered that this site closely matched the proposed Bolton Copperworks site uses.

4.10. The TRICS database showed a maximum car park accumulation of 172 vehicles at the TRICS Tourist Complex site. The proposed Bolton Copperworks tourist uses will have a total of 220 car parking spaces and as such the traffic generation for Bolton Copperworks has been factored upwards by a factor of 1.28 assuming the proposed car park reaches its full capacity.

4.11. For the railway terminus at Cornhill, it was not felt that there was a suitable example available in the TRICS database and hence trip rates were calculated based on a number of assumptions specific to the site. In the first instance, the study team liaised with the Moorland and City Railway regarding the latest plans for any railway extension to Cornhill. David Kemp, of the Moorland and City Railway, confirmed that initially, the service to Cornhill/Leek would likely be an extension of existing heritage services on the Churnet Valley Railway, but in the longer term there could be services to and from Stoke-on-Trent or Alton Towers. The trip rate calculation has been based on the railway being, at least initially, an extension of the Churnet Valley Railway.

4.12. The following assumptions were made in the calculation of trip rates for the railway terminus:

- The first train departure is at approximately 10:00 and the last train arrival is at approximately 17:00 (broadly in line with the current timetable on the Churnet Valley Railway);
- A typical trip to the railway lasts for four hours. This is based on a round trip taking an estimated 1.5 to two hours (i.e. slightly longer than the existing round trip journey time on the Churnet Valley Railway), plus time for passengers to visit facilities such as cafes and shops at some of the railway stations; and
- Finally, as the timetable typically spreads train departures fairly evenly over the day, it is assumed that there will be an even spread of vehicle arrivals to the site between 09:00 and 15:00, dropping thereafter.

4.13. For Alton Towers no additional traffic generation from the proposals has been assumed. The Alton Towers Long Term Plan states that *'with the presence of the existing hotels and also the proposed additional accommodation, the number of vehicular trips is reduced, and therefore, the proposals to extend the length of stay and make Alton Towers Resort more of a family attraction will only lead to a marginal increase in trips on the local network.*' In the long term it is anticipated that an increase in overnight stays on site would off-set any increase in admissions with longer visits and as such no additional trips have been taken into account. Figure 4.1 is an extract from the Transport Study element of the Long Term Plan. The red line indicates the forecast change in trip rates between the current time and 2019.

**Figure 4.1 – Forecast Change in Trips at Alton Towers**

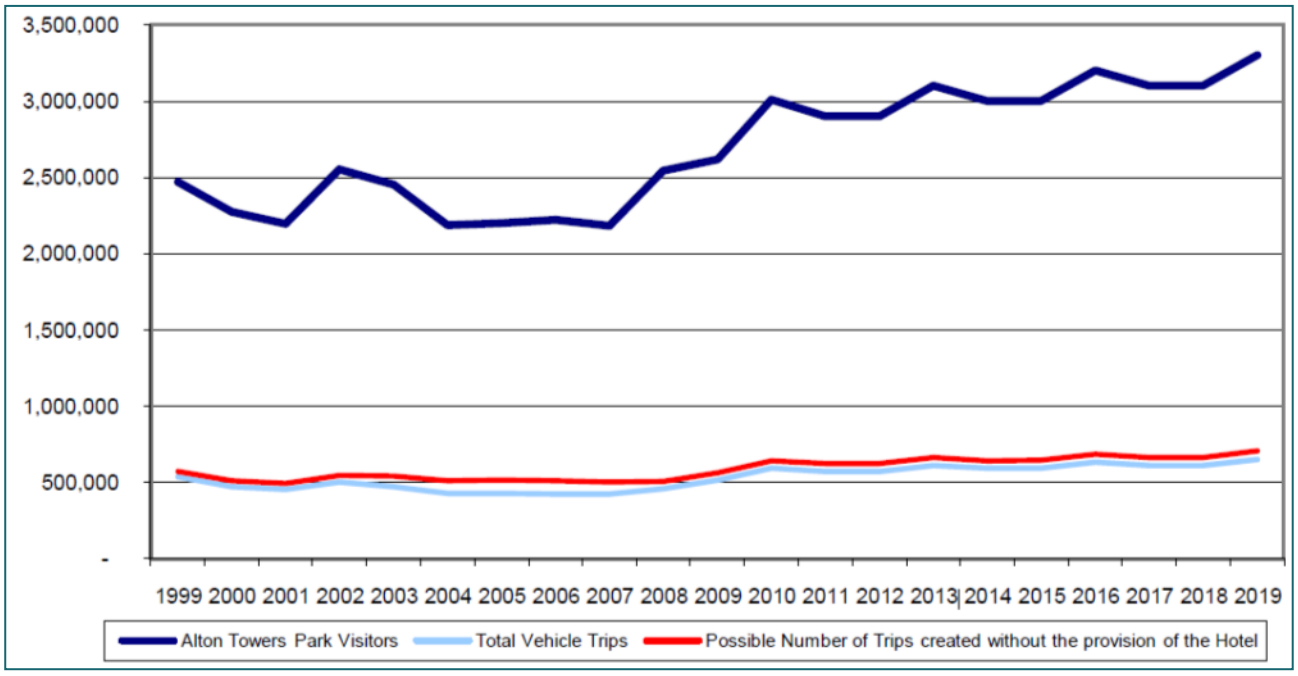


**Table 4.1 – Trip Rates**

| Land Use | Sub Land Use | Main Selection | Trip Rates | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Weekday AM Peak | | | Weekday PM Peak | | | Saturday Peak | | |
| | | | Arrivals | Departures | Total | Arrivals | Departures | Total | Arrivals | Departures | Total |
| Employment | Office | Gross Floor Area | 1.497 | 0.237 | 1.734 | 0.25 | 1.6 | 1.85 | 0 | 0 | 0 |
| Employment | Industrial Unit | Gross Floor Area | 0.336 | 0.076 | 0.412 | 0.08 | 0.67 | 0.75 | 0.139 | 0.174 | 0.313 |
| Residential | Houses Privately Owned | No. of Dwellings | 0.155 | 0.411 | 0.566 | 0.395 | 0.232 | 0.627 | 0.219 | 0.202 | 0.421 |
| Residential | Holiday Accommodation | No. of Dwellings | 0.06 | 0.042 | 0.102 | 0.076 | 0.078 | 0.154 | 0.131 | 0.076 | 0.207 |
| Hotel, Food and Drink | Hotels | Total Bedrooms | 0.166 | 0.241 | 0.407 | 0.19 | 0.13 | 0.32 | 0.077 | 0.154 | 0.231 |
| Hotel, Food and Drink | Pub/Restaurant | Gross Floor Area | 0 | 0 | 0 | 3.14 | 2.81 | 5.95 | 2.719 | 1.412 | 4.131 |
| Marinas | Marinas | No. of Berths | 0 | 0 | 0 | 0 | 0 | 0 | 0.118 | 0.124 | 0.242 |
| Mixed | Miscellaneous - Tourist Complex | N/A | This land use has no parameters or trip rates as it is an individual site | | | | | | | | |

**Table 4.2 – Trip Generation**

| Location | Land Use | Sub Land Use | Main Selection | Quantity/ Size | Trip Generation (AM Peak) | | | Trip Generation (PM Peak) | | | Trip Generation (Sat Peak) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Arrivals | Departures | Total | Arrivals | Departures | Total | Arrivals | Departures | Total |
| Cornhill | Residential | Houses Privately Owned | No. of Dwellings | 100 | 16 | 41 | 57 | 40 | 23 | 63 | 22 | 20 | 42 |
| | Employment | Office | Gross Floor Area | 12,500 | 187 | 30 | 217 | 31 | 200 | 231 | 0 | 0 | 0 |
| | Employment | Industrial Unit | Gross Floor Area | 12,500 | 42 | 10 | 52 | 10 | 84 | 94 | 17 | 22 | 39 |
| | Marinas | Marinas | No. of Berths | 50 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 6 | 12 |
| | Tourist Attractions | Tourist Attractions - Railway | N/A | N/A | 5 | 5 | 10 | 5 | 5 | 10 | 23 | 5 | 28 |
| | **Total** | | | | **250** | **85** | **335** | **86** | **312** | **398** | **68** | **53** | **121** |
| Bolton Copperworks | Residential | Houses Privately Owned | No. of Dwellings | 50 | 8 | 21 | 28 | 20 | 12 | 31 | 11 | 10 | 21 |
| | Employment | Office | Gross Floor Area | 5,250 | 79 | 12 | 91 | 13 | 84 | 97 | 0 | 0 | 0 |
| | Employment | Industrial Unit | Gross Floor Area | 5,250 | 18 | 4 | 22 | 4 | 35 | 39 | 7 | 9 | 16 |
| | Hotel Food and Drink | Hotels | Total Bedrooms | 50 | 8 | 12 | 20 | 10 | 7 | 16 | 4 | 8 | 12 |
| | Hotel Food and Drink | Pub/Restaurant | Gross Floor Area | 2,000 | 0 | 0 | 0 | 63 | 56 | 119 | 54 | 28 | 83 |
| | Mixed | Miscellaneous - Tourist Complex | No. of Parking Spaces | 220 | 0 | 0 | 0 | 74 | 59 | 133 | 92 | 81 | 172 |
| | **Total** | | | | **112** | **49** | **161** | **184** | **252** | **436** | **168** | **136** | **304** |
| Moneystone Quarry | Residential | Holiday Accommodation | No. of Dwellings | 250 | 15 | 11 | 26 | 19 | 20 | 39 | 33 | 19 | 52 |
| | Hotel Food and Drink | Hotels | Total Bedrooms | 100 | 17 | 24 | 41 | 19 | 13 | 32 | 8 | 15 | 23 |
| | **Total** | | | | **32** | **35** | **66** | **38** | **33** | **71** | **40** | **34** | **75** |
| Alton Towers | The Long term plan states that *'with the presence of the existing hotels and also the proposed additional accommodation, the number of vehicular trips is reduced, and therefore, the proposals to extend the length of stay and make Alton Towers Resort more of a family attraction will only lead to a marginal increase in trips on the local network.' In the long term an increase in overnight stays on site would off-set any increase in admissions with longer visits and as* such no additional trips have been taken into account. | | | | | | | | | | | | |
| Leek | Residential | Houses Privately Owned | No. of Dwellings | 800 | 124 | 329 | 453 | 316 | 186 | 502 | 175 | 162 | 337 |
| | **Total** | | | | **124** | **329** | **453** | **316** | **186** | **502** | **175** | **162** | **337** |
| Cheadle | Residential | Houses Privately Owned | No. of Dwellings | 1,080 | 167 | 444 | 611 | 427 | 251 | 677 | 237 | 218 | 455 |
| | **Total** | | | | **167** | **444** | **611** | **427** | **251** | **677** | **237** | **218** | **455** |

## Trip Assignment

4.14. A number of different methodologies were used to assign the trips to the highway network, as follows:

- Cornhill: Trips have been assigned based on figures provided in the Cornhill Transport Assessment (TA);
- Bolton Copperworks: Travel to Work Census data used;
- Moneystone Quarry; Same trip distribution as Alton Towers assumed, in the absence of any more credible data sources. Specifically, the north/south split has been taken from the Alton Towers Resort Long Term Plan – Transport Study;
- Alton Towers: No new trips have been assumed and hence no assignment has been necessary[4];
- Leek: Travel to Work Census data used; and
- Cheadle: Travel to Work Census data used.

4.15. In addition to the above, the residential dwellings for Kingsley, Cheddleton, Ipstones and Alton have been considered in the local assignment, as detailed later.

4.16. The following sub-sections set out the methodology used for Bolton Copperworks, Leek and Cheadle, using Journey to Work Census Data.

## Journey to Work Assessment

4.17. Trip assignment for has been based on Journey to Work Census data from 2001. Unfortunately the most recent Census (2011) Journey to Work data is not yet available.

4.18. The assessment considered the number of internal (intra-ward) and external trips. Further details are now provided.

### Internal Trips

4.19. Taking the town of Leek as an example, there are four wards:

- Leek North;
- Leek East;
- Leek South; and
- Leek West.

4.20. The Journey to Work data was used to calculate the proportion of the number of trips generated in Leek that would travel only as far as one of the above wards. Those represent the 'internal' trips. The calculation for Leek showed that 51% of Journey to Work trips would be travelling to one of the above wards, and hence they would not enter the wider highway network.

### External Trips

4.21. A separate calculation was then made of external trips, which are those which are travelling to wards outside the settlement. In the case of Leek, external trips would be those which are not to one of Leek North, Leek East, Leek South or Leek West. It should be noted that the analysis did not consider all wards in the UK, but extended to the following Council areas:

- Amber Valley;
- Cannock Chase;
- Derby City;
- Derbyshire Dales;

[4] It is appreciated that if people stay overnight at Alton Towers, they may leave the site to visit other nearby tourist attractions in the Churnet Valley, but the numbers are likely to be minimal and hence this has not been taken account of in the trip generation. It is unlikely that these flows would correspond with the major traffic flows into and out of the park.

- East Staffordshire;
- High Peak;
- Lichfield;
- Newcastle-under-Lyme;
- North East Derbyshire;
- Sheffield;
- South Derbyshire;
- Stafford;
- Staffordshire Moorlands (the remainder of – once internal wards have been removed);
- Stoke-on-Trent; and
- Tamworth.

4.22. A check was made to ensure that the above areas would encompass the vast majority of trips. A journey planning website was then used to assign trips to the each ward to a route. For example, any trips from Leek to Stoke-on-Trent would be assumed to route via the A53.

4.23. The results of this analysis are set out in Figure 4.2 – Figure 4.6. A key to those diagrams is provided in Figure 4.1.

**Figure 4.2 – Trip Assignment Key**

| **Road Name/Number** | |
|---|---|
| **Arr.** | **Dep.** |
| Number of arrivals in weekday AM peak (08:00 → 09:00) | Number of departures in weekday AM peak (08:00 → 09:00) |
| Number of arrivals in weekday PM peak (17:00 → 18:00) | Number of departures in weekday PM peak (17:00 → 18:00) |
| Number of arrivals in Saturday peak (12:00 → 13:00) | Number of departures in Saturday peak (12:00 → 13:00) |

**Figure 4.3 – Trip Assignment: Cornhill**

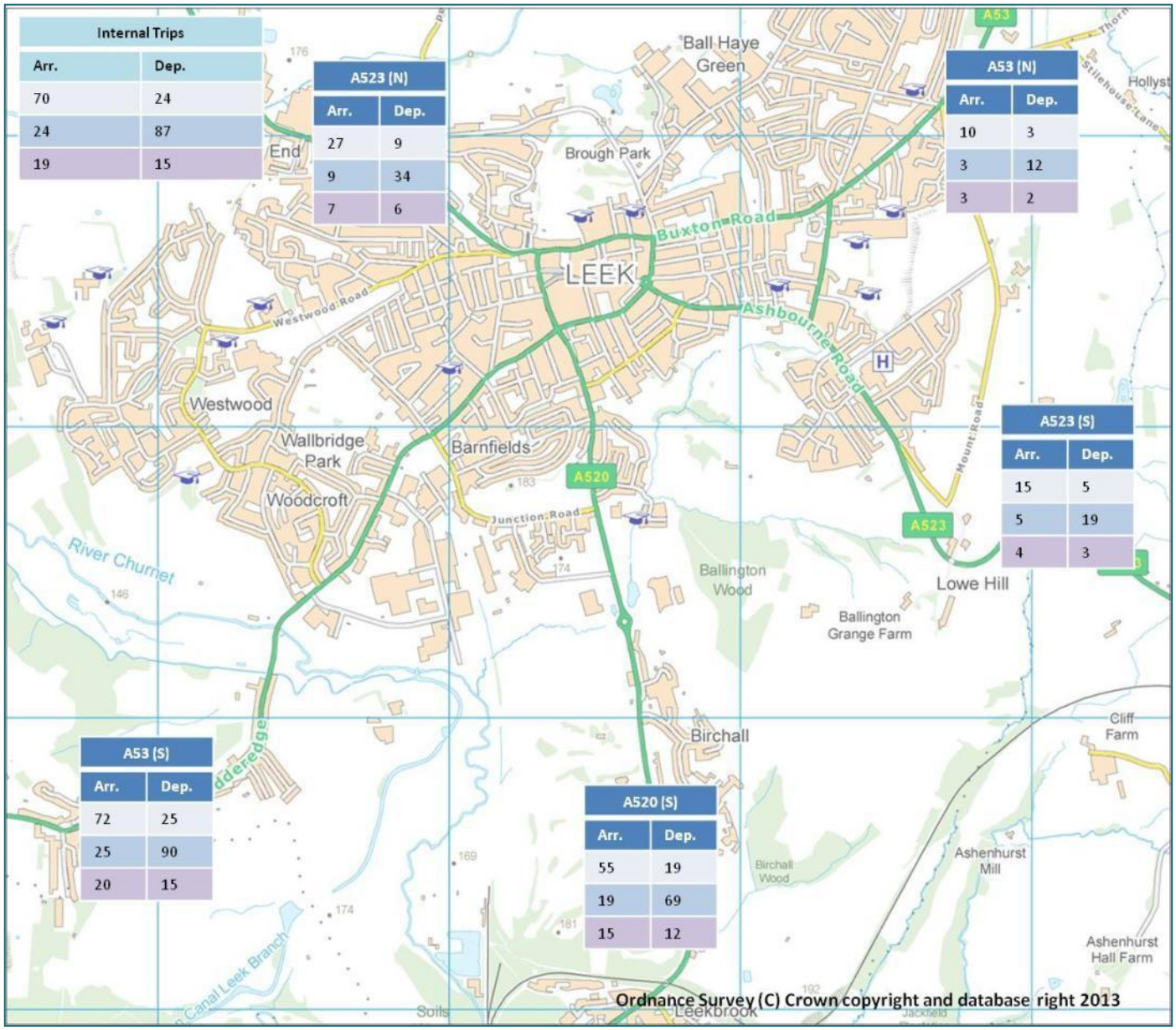


**Figure 4.4 – Trip Assignment: Bolton Copperworks**

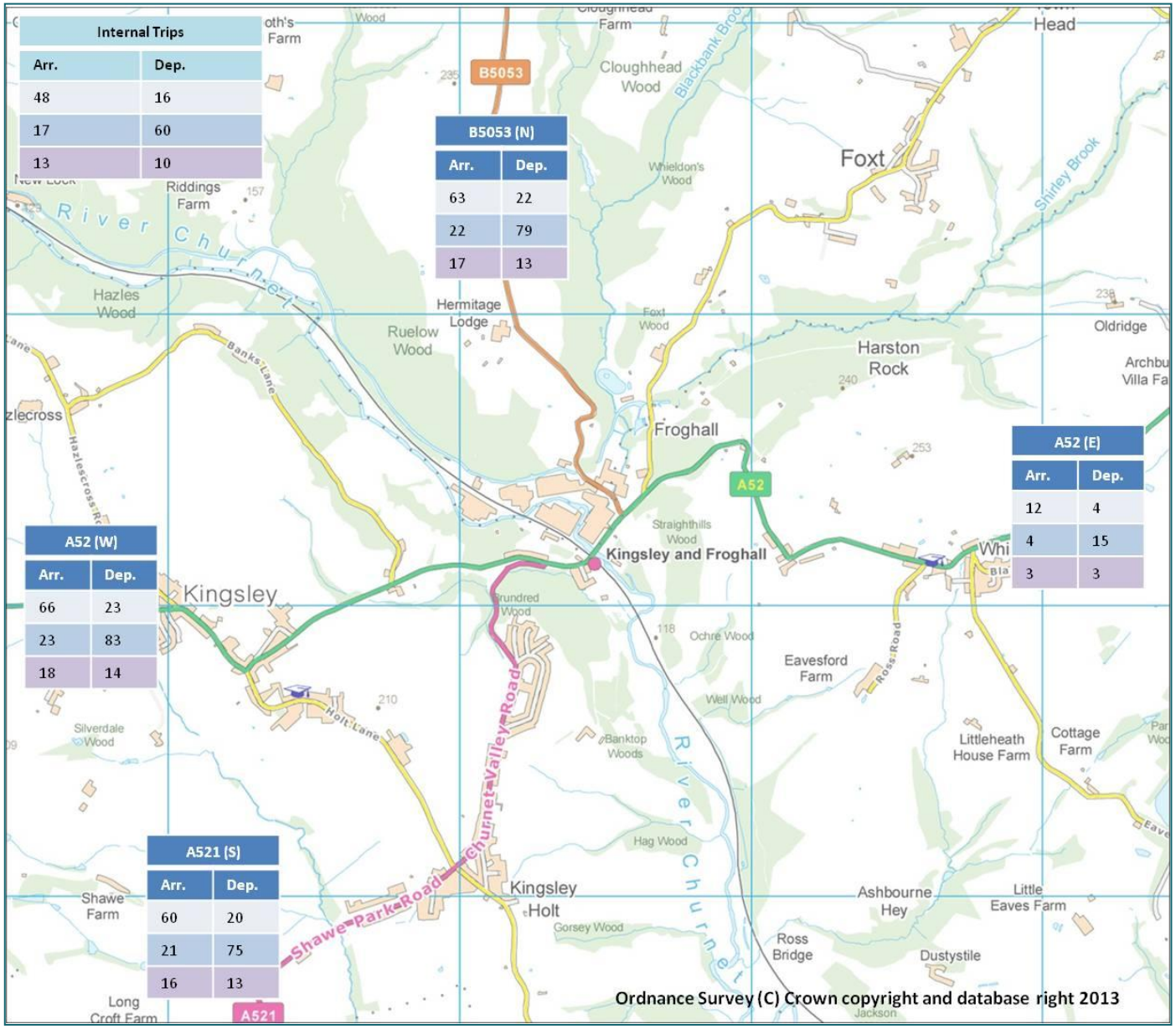


**Figure 4.5 – Trip Assignment: Moneystone Quarry**

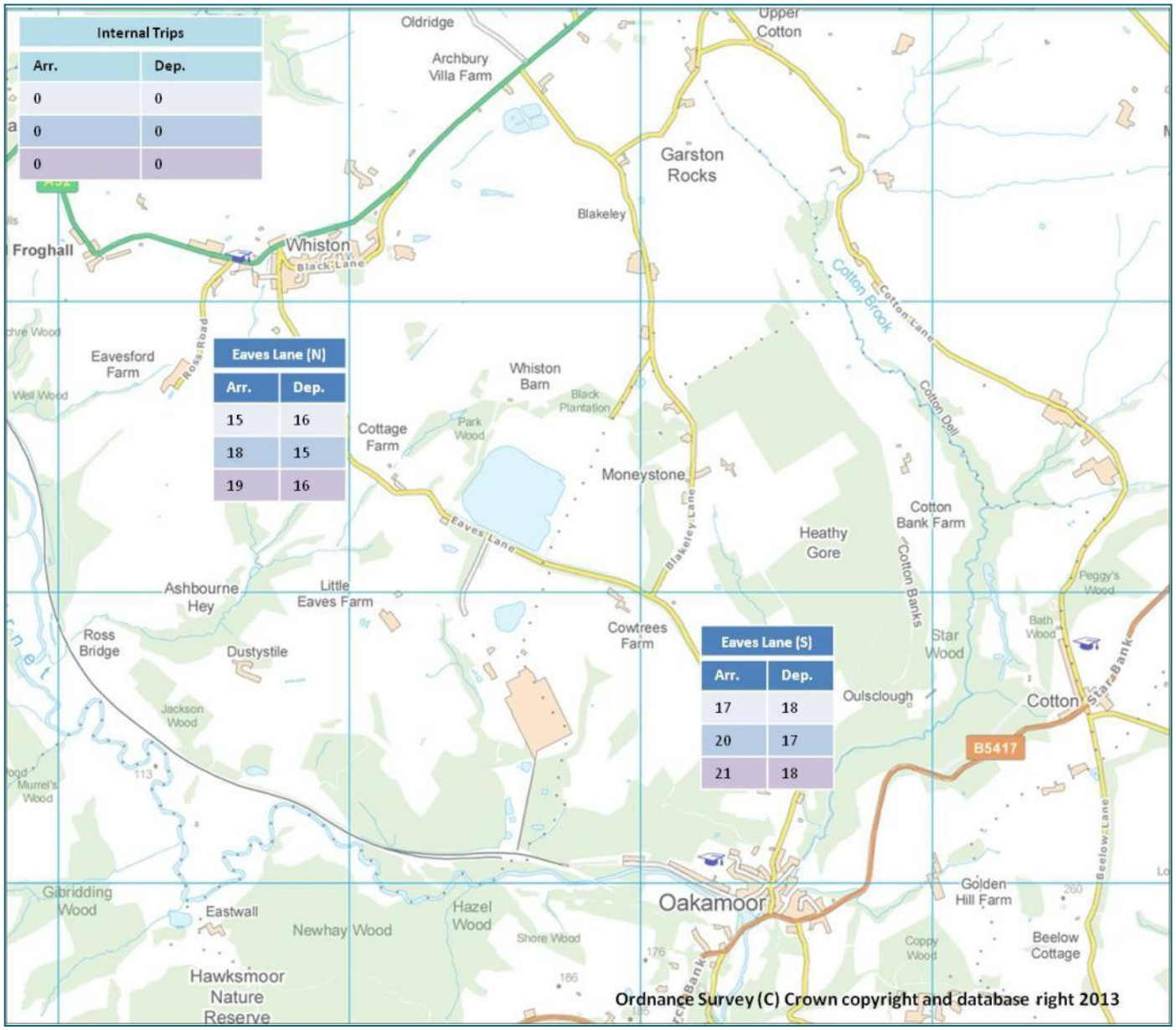


**Figure 4.6 – Trip Assignment: Leek**

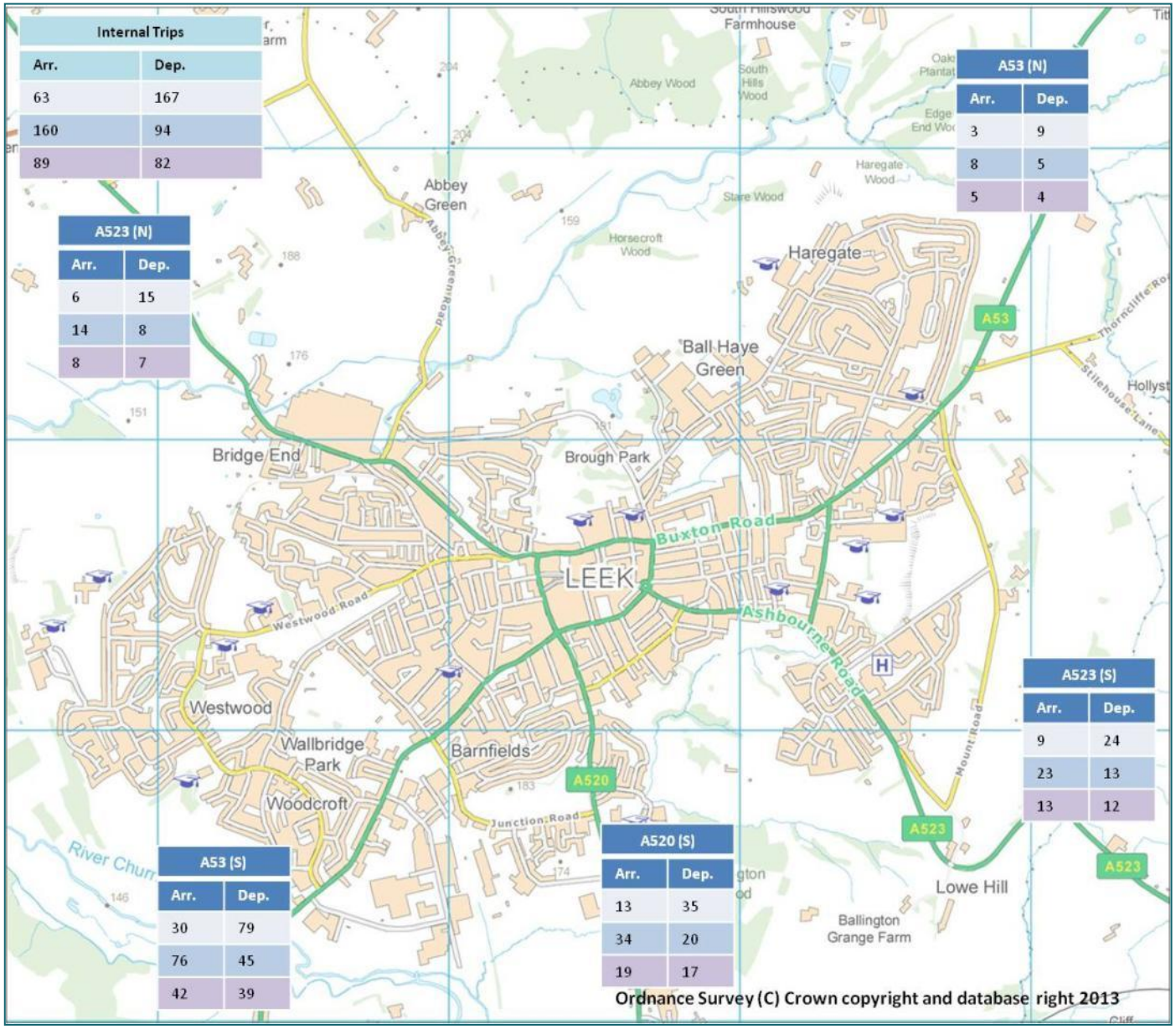
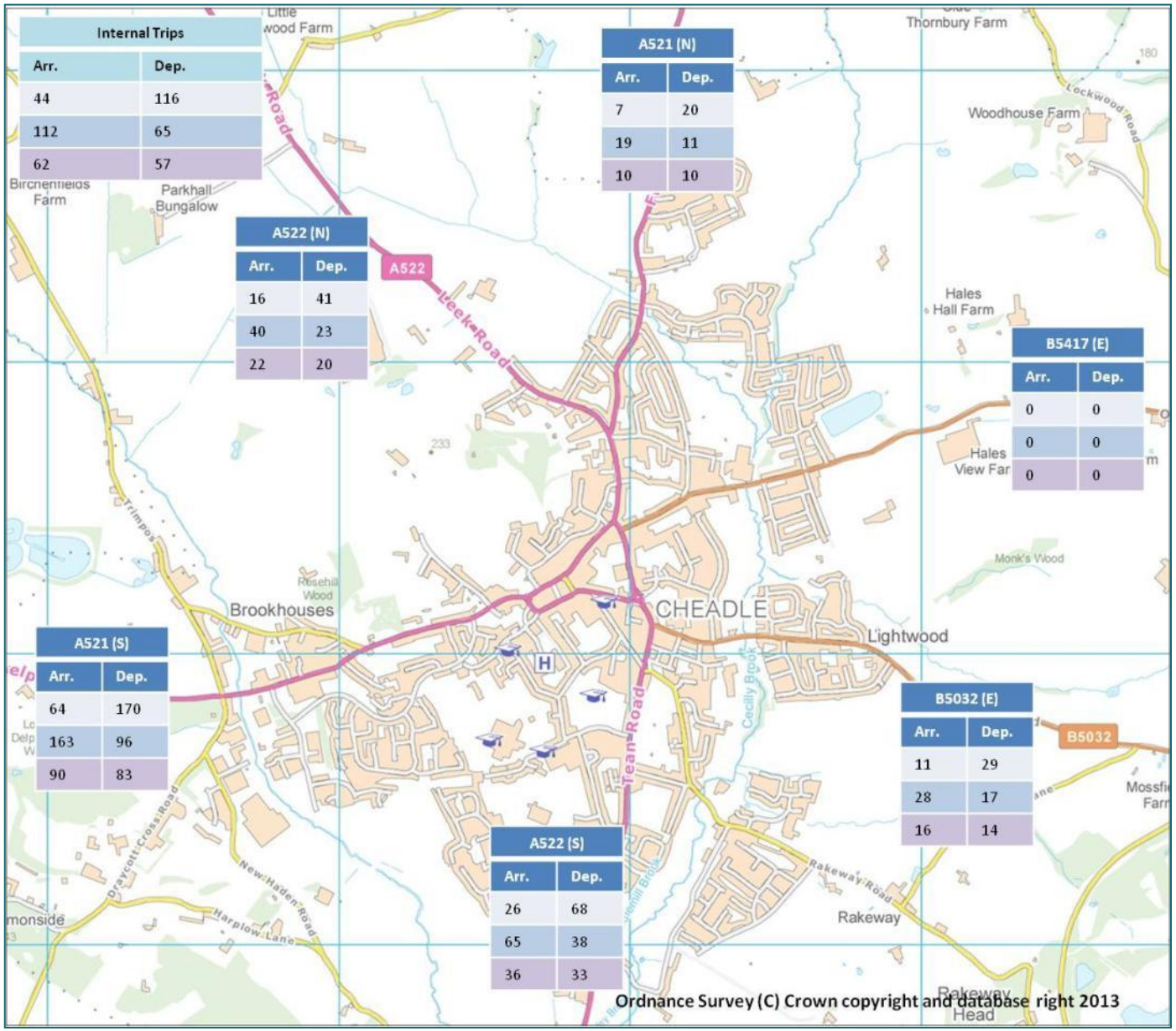


**Figure 4.7 – Trip Assignment: Cheadle**



# 5. Impact on the Highway Network

## Existing Traffic Volumes

5.1. In order to determine the potential impact of the major development sites the cumulative volume of development traffic on each key link relative to base (existing) traffic flows has been determined.

5.2. Existing (base) traffic flows have been provided by SCC and are from recent (last 5 years) traffic counts with the exception of one from 2008. Traffic counts used are listed in Table 5.1.

**Table 5.1 – Traffic Counts**

| Site Ref | Road No. | Road Name | Location | Count Type | Start Date |
|---|---|---|---|---|---|
| 23371 | A52 | Ashbourne Road | Shirley Common | Speed And Volume | 05/11/2010 |
| 23376 | B5053 | Onecote Road | Ipstones | Speed And Volume | 05/11/2010 |
| 23520 | B5417 | Rue Hill Road | Cauldon Low | Speed And Volume | 01/02/2011 |
| 9033 | A53 | Buxton Road | Leek | Manual Passing Count | 02/04/2009 |
| 4727 | A53 | Broad Street | Leek | Manual Passing Count | 04/05/2012 |
| 10025 | A2 | Ashbourne Road | Rue Hill | Automatic Continuous Volumetric | 01/08/2012 |
| 10039 | A52 | Leek Road | Kingsley Moor | Automatic Continuous Volumetric | 20/06/2012 |
| 11060 | A523 | Wink Hill | N/A | Automatic Volume and Speed (Loop Based) | 27/05/2009 |
| 11066 | A52 | Lane End Lane | Swinscoe | Automatic Volume and Speed (Loop Based) | 29/07/2009 |
| 11446 | A523 | Macclesfield Road | Poolend | Automatic Continuous Volumetric | 04/05/2012 |
| 12161 | A520 | Leek Road | Cheddleton | Automatic Volume and Speed (Loop Based) | 03/07/2009 |
| 22967 | C Road | Farley Lane | Farley | Automatic Volume and Speed (Loop Based) | 04/06/2012 |
| 22781 | A522 | Tean Road | Cheadle | Speed And Volume | 24/02/2010 |
| 23753 | A522 | Leek Road | Cheadle | Speed And Volume | 08/11/2011 |
| 24112 | B5032 | Ashbourne Road | Cheadle | Speed And Volume | 05/12/2012 |
| 21862 | A521 | Delphouse Road | Cheadle | Speed And Volume | 29/05/2009 |
| 22119 | A521 | Froghall Road | Cheadle | Speed And Volume | 15/10/2008 |

5.3. Figure 5.1 illustrates the traffic profile of an average week day compared to an average weekend based on a traffic count undertaken in 2011 on the A522 Leek Road to the north of Cheadle (site ref: 23753). Figure 5.2 illustrates the same as Figure 5.1 but for a count undertaken in 2012 on the A52 Leek Road in Kingsley Moor (site ref: 10039).

**Figure 5.1 – Traffic Profile (A522 Cheadle)**

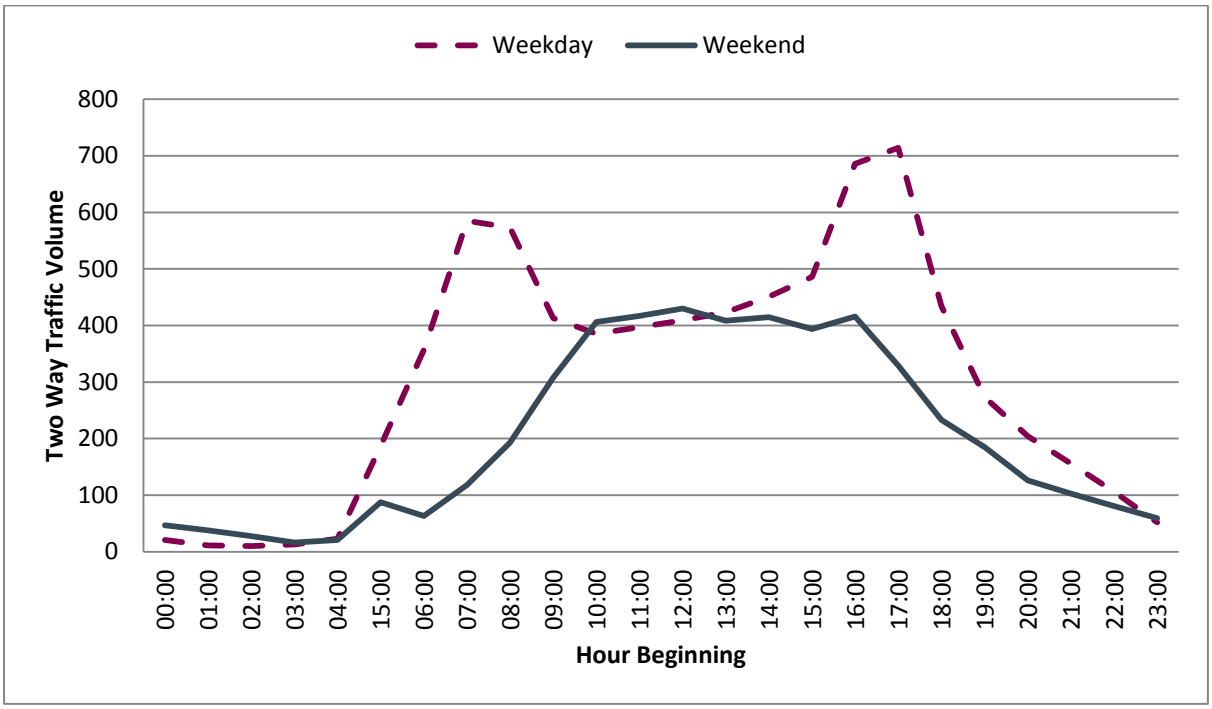
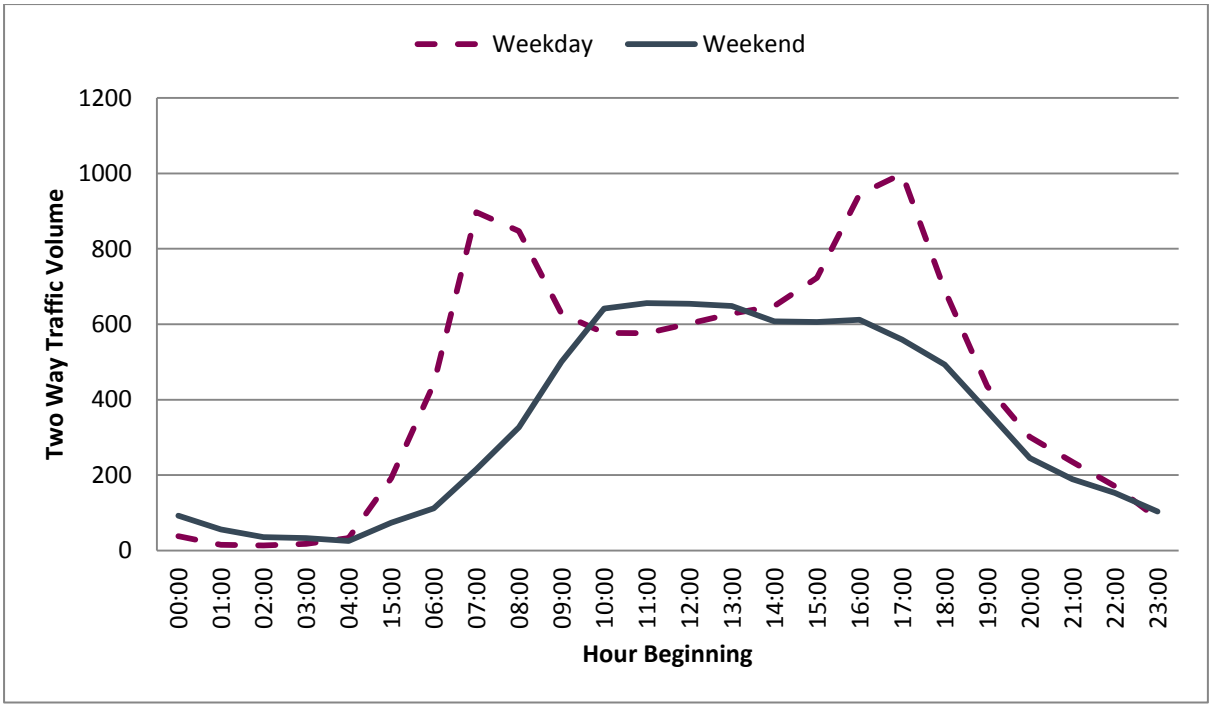


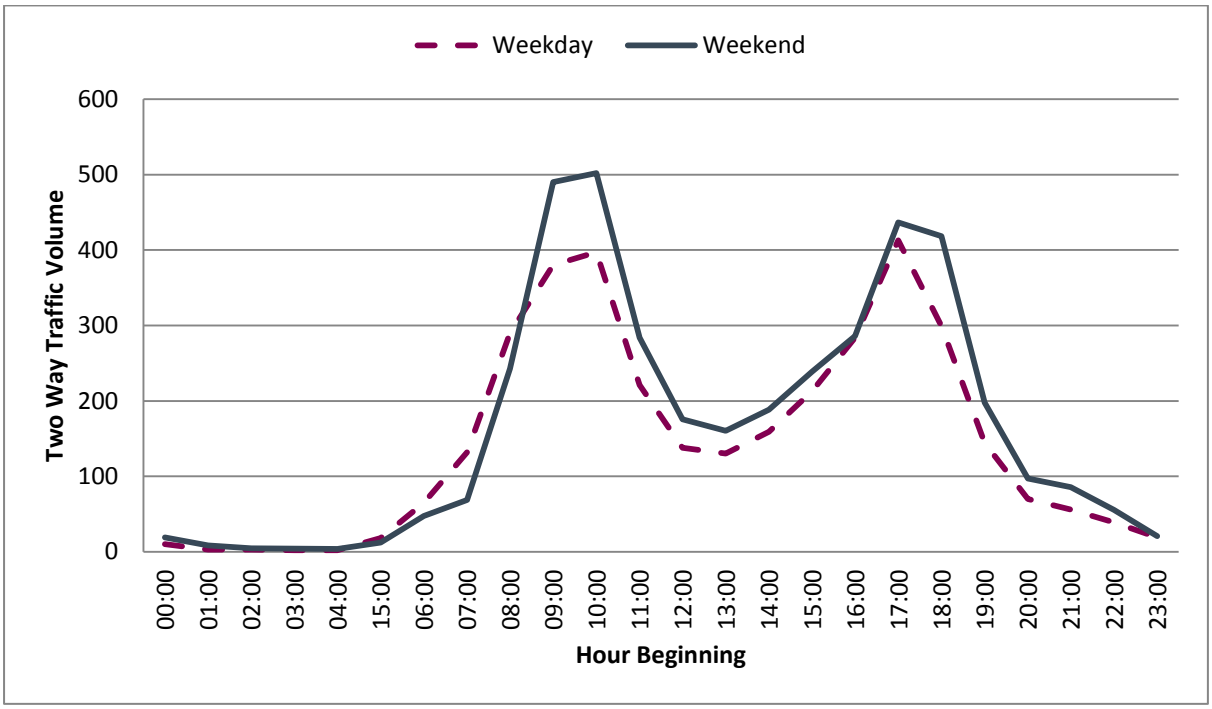

**Figure 5.2 – Traffic Profile (A52 Leek Road, Kingsley Moor)**




5.4. As expected, Figures 5.1 and 5.2 illustrate the weekday behaviour is dominated by a two-pronged commuter pattern, with peaks in the morning between 07:00 and 09:00 and in the afternoon between 16:00 and 18:00. On the weekend the traffic volume is lower and more evenly spread throughout the day without clearly defined peaks.

5.5. Figure 5.3 illustrates the traffic profile of an average week day compared to an average weekend based on a traffic count undertaken in 2012 on Farley Lane adjacent to Alton Towers (site ref: 22967).

**Figure 5.3 – Traffic Profile (Farley Lane)**

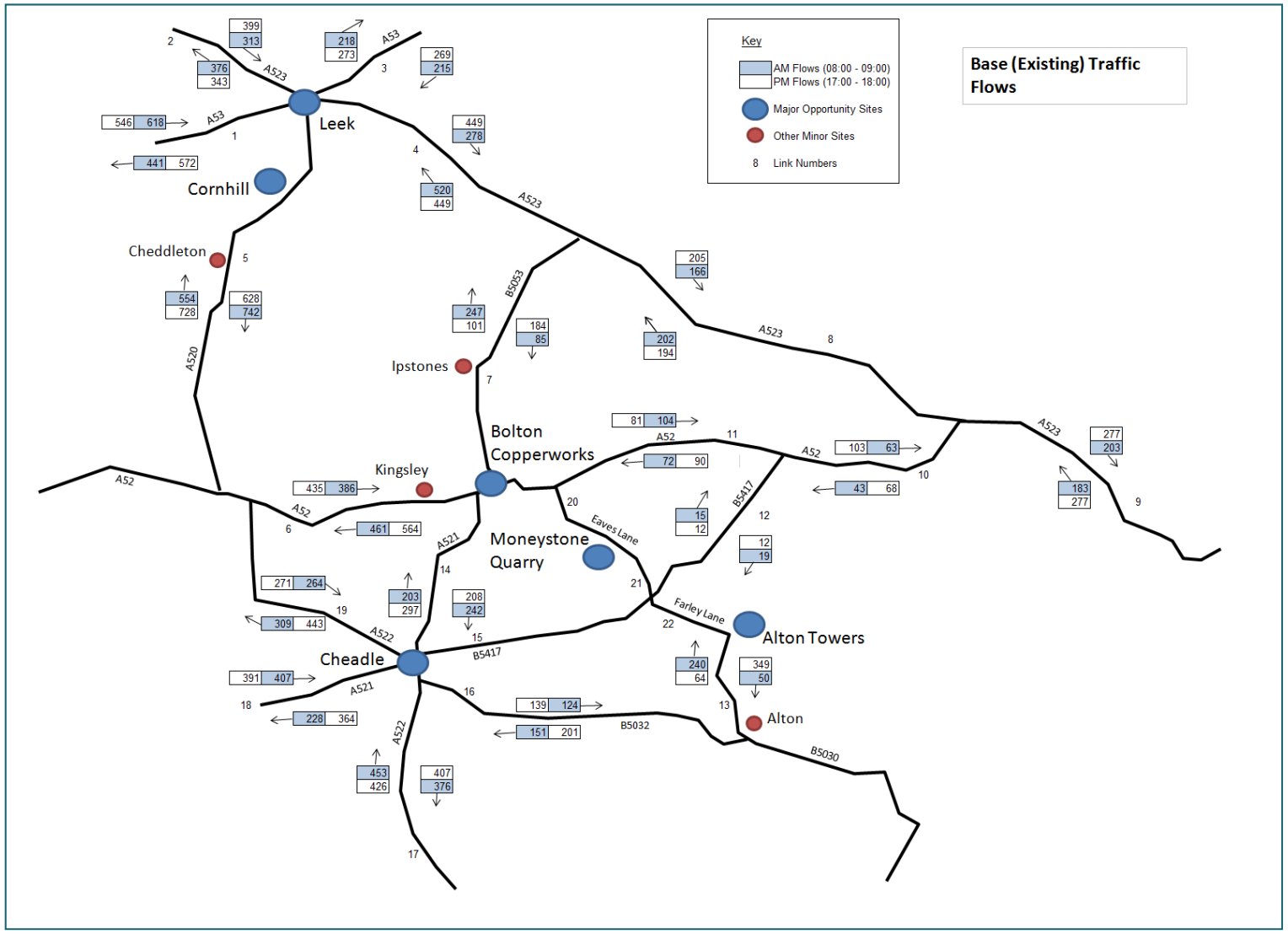



5.6. This rather extreme case with the count being so close to Alton Towers illustrates the localised impacts in this area being dominated by tourist trips with weekend peaks outnumbering weekday trips and clearly defined peaks coinciding with park opening and closing times.

5.7. Whilst localised impacts close to some key tourist sites such as Alton Towers are prevalent particularly at weekends and in the school holidays, in general across the Churnet Valley area none school holiday weekday traffic in the commuter peaks are still the times when traffic congestion impacts will be at their greatest. As such for the purposes of this impact assessment the weekday peaks will be the focus.

5.8. Weekday peak base flows are presented diagrammatically in Figure 5.3.

**Figure 5.4 – Base Traffic Data**

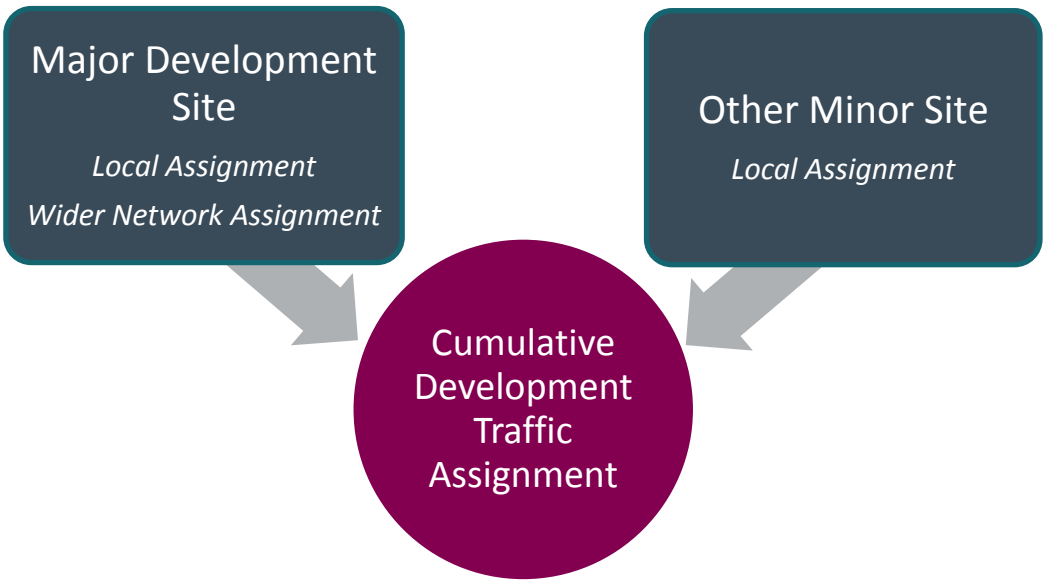


## Development Traffic

5.9. The methodology for the assignment of the cumulative development traffic is illustrated in Figure 5.5. The major development sites have been assigned to the immediate (local) network using Journey to Work census data (2001) as detailed previously. Traffic has then been assigned to the wider network for the purposes of cumulative impact assessments using a combination of Journey to Work census data and manual traffic assignment on the basis of route journey times, distances and route suitability.

5.10. For the minor sites at Cheddleton, Ipstones, Alton and Kingsley where a total of 200 new homes are proposed (50 at each location) local assignment only has been undertaken. The reason being that with the relatively low traffic generation of the sites, any impact would be diluted when traffic was dissipated across the wider network.

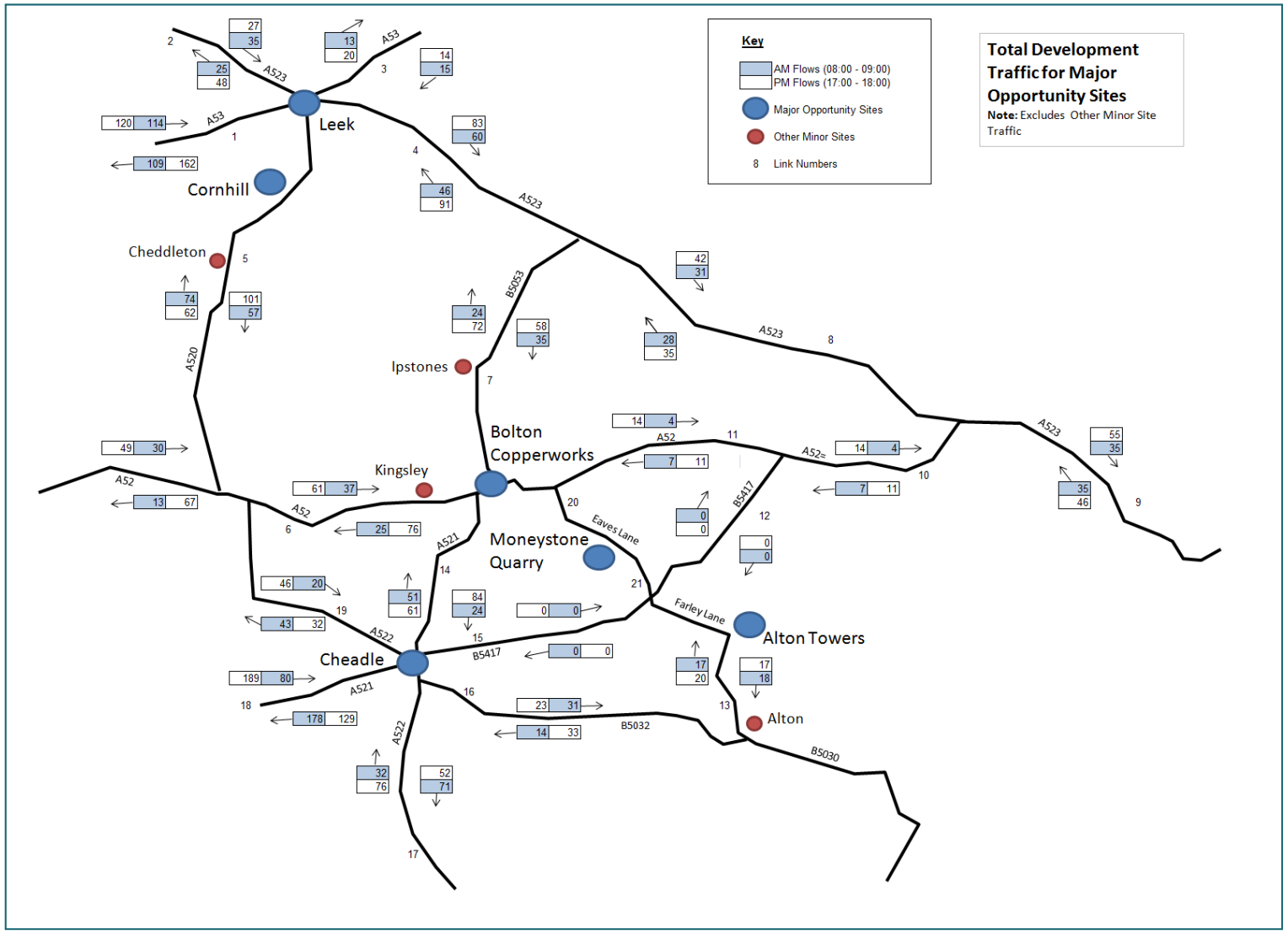
**Figure 5.5 – Cumulative Development Traffic Assignment Methodology**




5.11. The total cumulative development traffic on the network is presented diagrammatically in Figure 5.5.

5.12. It should be noted that Figure 5.5 excludes traffic associated with the minor opportunity sites. Whilst these are not included in Figure 5.5 they are included in the percentage impact assessment that follows.

**Figure 5.6 – Total Development Traffic**



# Cumulative Impact of Development Traffic

## Percentage Impact

5.13. The 1994 IHT Guidelines[5] contained thresholds of 10% or 5% (where congestion exists or the location is sensitive) for levels of development traffic relative to background traffic, below which impact is not deemed to be significant. Whilst this is no longer deemed an acceptable mechanism for an assessment of material impact since it creates an incentive in favour of locating development where high levels of background traffic already exist[6], a percentage impact assessment has been undertaken here to demonstrate the likely impact on each link, for illustrative purposes. This methodology provides an indication of where the percentage change will be greatest and allows for a quick comparison of the proportional impact across the study area.

5.14. Table 5.2 presents the percentage impact assessment results. The development traffic used in this assessment includes traffic from the other minor sites at a local level only .i.e. using Journey to Work census data (2001) to allocate traffic to local strategic links.

**Table 5.2 – Percentage Impact Results**

| Link No.* | Link Name | Base Flow (2 way) | | Development Traffic** | | Percentage Impact | |
|---|---|---|---|---|---|---|---|
| | | AM | PM | AM | PM | AM | PM |
| 1 | A53 (S of Leek) | 1059 | 1118 | 230 | 290 | 22% | 26% |
| 2 | A523 (N of Leek) | 689 | 742 | 62 | 77 | 9% | 10% |
| 3 | A53 (N of Leek) | 433 | 542 | 28 | 35 | 6% | 6% |
| 4 | A523 (S of Leek) | 798 | 898 | 108 | 177 | 14% | 20% |
| 5 | A520 (S of Leek) | 1296 | 1356 | 133 | 166 | 10% | 12% |
| 6 | A52 (E of Cellarhead Junction) | 847 | 999 | 77 | 153 | 9% | 15% |
| 7 | B5053 | 332 | 285 | 74 | 146 | 22% | 51% |
| 8 | A523 (B5032 to A52) | 368 | 399 | 59 | 76 | 16% | 19% |
| 9 | A523 (S of A52) | 386 | 554 | 70 | 101 | 18% | 18% |
| 10 | A52 (E of B5417) | 106 | 171 | 11 | 24 | 10% | 14% |
| 11 | A52 (between Eaves Lane and B5417) | 176 | 171 | 14 | 27 | 8% | 16% |
| 12 | B5417 (N of Farley Lane) | 34 | 24 | 0 | 0 | 0% | 0% |
| 13 | Farley Lane | 290 | 413 | 50 | 54 | 17% | 13% |
| 14 | A521 (N of Cheadle) | 445 | 505 | 89 | 160 | 20% | 32% |
| 15 | B5417 | - | - | 0 | 0 | - | - |
| 16 | B5032 | 275 | 340 | 45 | 55 | 16% | 16% |
| 17 | A522 (S of Cheadle) | 829 | 833 | 104 | 127 | 12% | 15% |
| 18 | A521 (S of Cheadle) | 635 | 755 | 258 | 318 | 41% | 42% |
| 19 | A522 (N of Cheadle) | 573 | 714 | 63 | 77 | 11% | 11% |
| 20 | Eaves Lane (N) | - | - | 31 | 33 | - | - |
| 21 | Eaves Lane (S) | - | - | 35 | 37 | - | - |

**Link numbers coincide with those illustrated in Figures 5.1 and 5.3*
*** Includes Minor Opportunity Sites at a Local Level*

[5] '*Guidelines for Traffic Impact Assessment*', published by the Institution of Highways and Transportation (1994)
[6] 'Guidance on Transport Assessments' published by the DfT (2007)

5.15. Table 5.2 shows that the A53 to the south of Leek has a high percentage impact in both peaks despite relatively high base flows. The TomTom congestion analysis did not extend along this route. The B5053 is also predicted to have a high percentage impact, particularly in the PM peak period. This is due to a combination of relatively low base flows and high development traffic flows largely associated with Bolton Copperworks.

5.16. The A521 to the north of Cheadle is predicted to have a high percentage impact, particularly in the PM peak period as is the A521 to the south of Cheadle. This is due to the high levels of development traffic associated with the proposed residential developments.

## Impact Assessment

## Leek & Cornhill

5.17. TomTom analysis has shown the A520 to the south of Leek as a congested link. The Cornhill TA (2009) has been reviewed in respect of existing (2009) capacity issues which are summarised as:

- The A53 Newcastle Road/Junction Road/Burton Street/ A53 Broad Street junction shows significant signs of capacity problems, particularly the A53 (S) Newcastle Road arm in the AM peak;
- The A520 Cheddleton Road/Junction Road traffic signal controlled junction shows significant signs of capacity problems in both the AM and PM peak periods;
- The A520 Compton/A53 Broad Street/Brook Street/St Edward Street junction exhibits signs of capacity problems in both the AM and PM peak periods with queues most notably on the A53 (S) Broad Street arm of the junction;
- South Bank Street/A520 Compton priority junction exhibits signs of capacity problems in both the AM and PM peak periods.

5.18. In summary junctions on both the A520 (S) and A53 (S) links into and out of Leek are under stress with current (2009) traffic volumes. Predicted percentage impacts of 10% (AM) and 12% (PM) on the A520 (S) and 22% (AM) and 26% (PM) on the A53 (S) indicate that any existing capacity constraints are likely to be exacerbated with an increase in base traffic and cumulative development traffic (largely attributable to the Leek residential development).

## A52/A520 Cellarhead Junction

5.19. TomTom analysis and site investigations have shown the A520/A52 Cellarhead junction to be a significantly congested junction. It is somewhat difficult to quantify the exact impact at this junction within the confines of this study due to a lack of base traffic data however, being over capacity in its existing form, a relatively minor increase in traffic will cause queues and delays to increase exponentially.

5.20. Journey Time analysis (Table 3.2) has shown that the A520 southbound approach to the junction (from Leek) has a large increase (72%) in journey time in both the AM and PM peak periods. On the A52 approaches in the AM peak journey times are lower in the AM peak compared to the off peak. This is possibly due to some form of optimising control system e.g. MOVA whereby more green time is allocated to congested arms in the peak periods i.e. A520, to the detriment of other arms. In the PM peak period journey times in the PM peak were higher on the A52 approaches but only by 11% (eastbound) and 17% (westbound).

## Cheadle

5.21. TomTom analysis and site investigations have shown some congestion within Cheadle, largely associated with the signalised pedestrian crossings during school start and finish times. Percentage impact assessments predict a very high increase (41% in the AM peak and 42% in the PM peak) can be expected on the A521 south of Cheadle towards Blythe Bridge which itself has been highlighted as an area of congestion, particularly the junction of Cheadle Road and Uttoxeter Road. This increase in traffic is largely attributable to the residential developments in Cheadle rather than that generated by the other opportunity sites in the Churnet Valley.

## A50 to Alton Corridor

5.22. This corridor is a key link to Alton Towers and key employment sites at JCB in Rocester. Whilst the majority of this corridor falls outside the study area the congested B5031/B5032 junction is of material consideration being a key link to Alton Towers.

5.23. The B5031/B5032 junction is a priority T junction in the village of Denstone. The junction is currently substandard whereby it is not easily negotiated by either HGV's or Alton Towers' coaches. Delays at this junction are caused by the high levels of Alton Towers' traffic and the large vehicles that struggle to negotiate the turn. This results in traffic rat-running through Denstone village to avoid this junction. The problem is largely a weekend and in particular a school holidays issue with peaks in congestion coinciding with peaks in Alton Tower's visitor numbers.

5.24. Local Pinch Point funding has recently (2013) been secured for improvements to the A50 to Alton Growth Corridor which includes significant improvements to the B5031/B5032 junction and the JCB junctions Rocester.

## A523/B5053 Junction

5.25. TomTom analysis has shown there to be a slight slowing of traffic in the vicinity of this junction in the AM and PM peak periods. This is likely to be caused by right turning traffic to the B5053 as there is no dedicated right turn lane and consequently traffic waiting to turn right block the ahead traffic movements. With a predicted increase in traffic on this link of 22% in the AM peak and 51% in the PM peak it is possible that congestion at this location will worsen.

# 6. Summary of Impacts & Development of Measures

## Background

6.1. This chapter draws on the evidence base to consider which measures may be needed going forward to both accommodate and mitigate against the transport impacts of the proposed development sites. Before looking at site specific issues and potential solutions, it is first important to re-visit the transport principles set out in the Draft Churnet Valley Masterplan.

## Draft Masterplan – Role of Gateways and Hubs

6.2. The Draft Masterplan comprises a set of principles based around the concept of sustainable tourism which have informed the vision for the Churnet Valley. The Draft Masterplan seeks to increase the economic contribution from sustainable tourism and regenerate key brownfield sites in the area. The Draft Masterplan endorses the concept of gateways and hubs.

## Gateways

6.3. Gateways will provide places of entry, from which to then travel through the valley by more sustainable modes where possible. There are a number of gateways to reflect the different places the Churnet Valley can be entered. The identified gateways are as follows:

- Leek – to act as the main gateway in the north;
- Cornhill – to act as a more minor gateway in the north, particularly for those arriving by train or canal;
- Froghall – to act as a minor gateway in the central area;
- Anzio Camp/Coombes Valley – to act as gateways for those arriving from the Peak District;
- Cheadle – to act as the main gateway in the south; and
- Alton Towers – to act as another gateway in the south.

## Hubs

6.4. Hubs are existing centres of interest, with visitor facilities, from which visitors can explore the wider area. Two hubs are either at or in close proximity to the development sites taken account of in this Transport Study, namely:

- Kingsley and Froghall Railway Station (on the Churnet Valley Railway); and
- Cheddleton Railway Station (also on the Churnet Valley Railway).

6.5. The role of both the gateways and hubs will be considered in the discussion that follows.

## Overall Issues in the Study Area

### Moorland & City Railways

6.6. There are currently two heritage routes operating:

- Churnet Valley Railway – operating between Leekbrook Junction in the north and Kingsley and Froghall to the south (the line continues as far south as Oakamoor where there are stabling facilities for the railway); and
- Cauldon Line – operating between Leekbrook Junction in the west and Cauldon Lowe in the east.

6.7. As part of this Transport Study, the study team liaised with David Kemp, Commercial Director of Moorland & City Railways, to gain an understanding of the latest aspirations for the railway. This

discussion confirmed that three different routes are proposed by Moorland & City Railways for the future:

- Opening of the entire railway between Cauldon Lowe and Stoke-on-Trent, to enable freight trains to run between the quarries at Cauldon Lowe (there are four major limestone quarries and one of the country's largest cement works) and the national rail network at Stoke-on-Trent. Currently heritage services operate between Cauldon Lowe and Leekbrook Junction only (i.e. there is no service operating between Leekbrook Junction and Stoke-on-Trent). The entire line is intact though;
- Extension of the Churnet Valley Railway south from its current southern terminus at Kingsley and Froghall to Alton Towers. If linked to the above, this would offer the possibility of through passenger services between the national rail network at Stoke-on-Trent and Alton Towers. It is understood that there is some opposition to this element of the plan though; and
- Finally, a northern extension of the line from Leekbrook Junction to Cornhill, on the south-western edge of Leek. In the first instance, it is likely that this would be operated as an extension of the Churnet Valley Railway. There is an aspiration from the Moorland & City Railways for a large car park at the new Cornhill terminus. In the longer term, there is an aspiration to operate commercial services between Leek and Stoke-on-Trent.

6.8. Originally, the Moorland & City Railways envisaged that the freight link to Cauldon Lowe would come first, followed by the link to Alton Towers, followed by the extension from Leekbrook Junction to Leek. More recently however, there has been a shift in focus and the link to Cornhill has been pushed up the agenda, and may come to fruition as early as 2014, subject to the necessary funds being generated by the sale of land at Leekbrook Junction. In regard to this Transport Study, the extension of the railway (all three routes detailed above) by Moorland & City Railways will be considered as a long term possibility.

6.9. A route map is shown in Figure 6.1. This has been extracted from the Moorland & City Railways' website.

**Figure 6.1 – Moorland & City Railways Map**

6.10. In the first instance, it is clear that the railway serves, be it directly or indirectly, virtually all of the developments set out earlier in this report. Further consideration of the potential role that the railway can play is set out later in this section.

### Highway Congestion

6.11. The earlier analysis in this report has demonstrated that there are some existing areas of congestion in the study area, even before any new development traffic is added to the network. The most clear examples of this, based on the TomTom analysis, site visit and consultation with appropriate personnel within SCC, are in Leek Town Centre, Cheadle Town Centre and the junction of the A52 and A520 at Cellarhead. Slightly further afield, Blythe Bridge has been identified as an area prone to congestion.

6.12. The trip generation has shown that the largest increases in trips are associated with the residential developments at both Leek (800 dwellings) and Cheadle (1,080 dwellings). Census Journey to Work data has been used to assign this traffic to the highway network, and this has shown where additional stress on the network can be expected.

6.13. The A53 south of Leek, A523 south of Leek, B5053, A521 north of Cheadle and the A521 south of Cheadle have been identified as areas where the percentage increase in traffic will be greatest. However, it should be noted that a relatively small increase in traffic can be significant in areas of congestion whereby queues and delays can increase exponentially.

6.14. SMDC's Integrated Transport Strategy notes the importance of travel plans for both new and existing developments. Specifically, it notes that all new developments that are predicted to generate significant levels of traffic will be required to produce and deliver a Travel Plan. In addition, existing businesses in the district will be encouraged to develop Workplace Travel Plans that promote initiatives such as car share and sustainable travel.

6.15. Overall, the highway network, assuming the 'essential' improvements outlined later in this section are introduced, should be able to cope with the increased vehicle movements associated with the developments. It is noted that it is the two large residential developments (Leek and Cheadle) that will have the largest impact on the highway network, but these are also the two settlements that were noted as having existing congestion issues. It is crucial that developer funding is acquired for both these settlements, allowing a mix of capital and revenue measures to be introduced, both within and in the vicinity of the towns.

## Site Specific Issues

### Cornhill

6.16. The development at Cornhill is expected to be mixed use, including residential dwellings, employment land, plus tourism and leisure uses (a railway terminus and a marina). The Cornhill Regeneration Area has been a focus for SMDC for a number of years. The Draft Masterplan identifies Cornhill as a hub to act as a more minor (compared to Leek) gateway in the north, particularly for those arriving by train or canal. The Masterplan does however note that a constraint at the site is the distance/weak linkages to Leek Town Centre. This is clearly an area for further consideration.

6.17. It is understood that the exact highway access to the site from the strategic road network has not been finalised. The Draft Masterplan makes reference to a link road between the A53 and the A520, as does the Churnet Valley Accessibility and Connectivity Study. The earlier assessment of traffic and levels of congestion in Leek and on the A520 to the south of Leek suggested that a number of junctions are coming close to capacity in the peak hours. The TomTom analysis highlighted a slowing of traffic in both the AM and PM peak periods, and therefore the new development at Cornhill will likely add to this issue. A new link road between the A53 and A520 should help to spread the impact on the highway network and has the potential to relieve traffic in the town centre.

6.18. The role of the railway at this location is particularly important. The liaison with the Moorland & City Railways suggested that, at least initially, the railway at this location would likely be a northerly extension of the Churnet Valley Railway, with services operating as far south as the present terminus at Kingsley and Froghall (potentially onwards to Alton Towers in the future). Although not confirmed, liaison with the Moorland & City Railways suggested that a car park size

of 150 spaces would be the aspiration at Cornhill, but the reason for wanting a car park of that size is linked to the longer term aspiration of providing a commercial service between Leek and Stoke-on-Trent. If this plan does come to fruition, then the railway may serve to reduce wider highway congestion (as commuters from Leek to Stoke-on-Trent would have a new sustainable option). It is important to qualify that whilst the extension to Cornhill is sought by Moorland & City Railways, the extension remains an aspiration and hence bus will form a more suitable stop-gap form of public transport in the short term.

6.19. The role of sustainable transport measures is clearly of central importance at Cornhill, given the earlier findings in regard to highway congestion in and around Leek. It is important therefore that ambitious travel plans are produced for the residential and office developments at Cornhill in line with the SMDC's Integrated Transport Strategy. These travel plans should stipulate that there is extensive consultation with local public transport operators to determine whether bus service diversions would be feasible to serve the site.

6.20. The Draft Masterplan also makes reference to the need to set out suitable links between the Cornhill area and the nearby Ladderedge County Park.

## Bolton Copperworks

6.21. Already subject to masterplanning work, a large mixed use development is envisaged for the Bolton Copperworks site in Froghall, with development to straddle the A52. Specifically, the development is expected to consist of a residential component, B1/B2 employment use, plus a hotel, pub/restaurant, visitor/heritage/educational centre and finally, an outdoor activity centre.

6.22. Froghall is identified in the Draft Masterplan as a minor gateway in the central area. In addition, Kingsley and Froghall Railway Station is identified as a hub. This confirms that the area is considered to be of strategic importance, given its highway, railway and canal infrastructure, all in close proximity.

6.23. The trip generation suggests 112 arrivals in the AM peak and 49 departures. The figures for the PM peak are 184 and 252 respectively. Therefore, particularly in the PM peak, the figures are relatively high.

6.24. It is important the access to and from the A52 is suitable. The junction of the B5053 and A52 has good visibility and appears able to cope with an increase in traffic.

6.25. During the site visit, no obvious congestion was noted in this area, but the TomTom analysis did show some lengthening of journey times at some junctions, likely a result of vehicles having to wait for a suitable gap in traffic before making a given movement. An example of this is the junction of the A52 and A521 (Kingsley Bank Junction). The accident analysis confirmed that there does not appear to be an accident issue at this location, and hence any improvement to this junction is unlikely to be a priority.

6.26. The TomTom analysis showed that there was some slowing of traffic on the A523, at its junction with the B5053 (Bottomhouse). This is likely to be caused by right turning traffic to the B5053 as there is no dedicated right turn lane and consequently traffic waiting to turn right blocks the ahead traffic movements. It should be noted that the trip assignment for Bolton Copperworks suggested that for the B5053 north of Froghall, there will be an in increase in traffic of 22% in the AM peak and 51% in the PM peak. As a result, it is possible that congestion at the junction of the B5053 and A523 will worsen.

6.27. The railway provides a clear opportunity to link this development with other hubs and gateways. For instance, if a halt or small station could be created on an extended Churnet Valley Railway, then there would be an opportunity for sustainable travel between the Froghall area and Moneystone Quarry. Similarly, a link to Alton Towers would provide a key improvement. Similarly, the railway could provide a link to the town of Leek (at Cornhill).

6.28. As earlier noted, the Moorland & City Railways' extensions remain an aspiration and hence it is necessary to consider non-rail public transport modes in the short to medium term. Currently, Clowes Coaches operate the 234/235/236 routes between Leek and Cheadle, via Froghall. However, these only operate Monday to Saturday and frequencies are low. For example, on Saturdays, there are four return workings, with no workings through Froghall after 15:00. On Monday to Fridays, there are five return workings during term time and four outside of term time.

Given the scale of the development planned for Froghall, it is important that two changes are considered. First, the bolstering of the frequency on the 234/235/236 routes on Monday to Saturday, and secondly, the introduction of services on a Sunday, as this is likely to be one of the busiest days for tourists visiting the site. Such services should be partly funded by the site's developer. The Moorlands Connect bus services offer a mode of transport to the site, but a fixed route would be more preferable for a development the size of Bolton Copperworks.

6.29. The Churnet Valley Accessibility and Connectivity Study identifies this location as having poor pedestrian and cyclist links. The A52 in particular causes a barrier in the town, splitting the canal and the railway in the village. Traffic speeds and topography on the A52 are likely to make this relatively unattractive for cyclists, but some of the more rural routes in the area (for example, the B5053 to the north) are more lightly trafficked and are likely to provide a safer cycling environment. In regards to walking, the canal towpath is likely to provide a pleasant environment and should be marketed as such.

## Moneystone Quarry

6.30. The development at Moneystone Quarry, following recent cessation of commercial quarrying activity, is to take the form of an 'eco-resort'. The trip generation work showed that based on there being 250 holiday lodges and a 100 bed hotel, expected trip rates would be 35 departures in the AM peak, and 32 arrivals. In the PM peak, there would be 38 arrivals and 33 departures. Therefore, the trip rates are can be considered relatively low for this site.

6.31. The Draft Masterplan identifies the local highway network as a potential constraint, as does the Churnet Valley Accessibility and Connectivity Study. Based on the relatively low number of trips generated by the proposed development, it is not thought that it will lead to any notable highway congestion issues. It is appreciated however that there will be new traffic passing through rural settlements such as Oakamoor and Whiston, and therefore the highway impact should not be dismissed based on a lack of congestion only.

6.32. One highway issue which does warrant further consideration is the junction of the A52 and Whiston Eaves Lane, in the village of Whiston. During the site visit, this junction was noted as having very poor visibility, which is well below that recommended in DMRB guidelines. As such, it is important that safety at the junction is reviewed by the developer. No significant issues were noted on the other highway access routes to Moneystone Quarry, namely to the A52 via Blakeney Road and to the B5417 via Eaves Lane. The latter has a steep gradient entering the village of Oakamoor.

6.33. The Draft Masterplan makes reference to the need to promote the use of sustainable modes of transport to reach the site and once at the site to explore the surrounding area. The rural location of the development means that no current public transport services directly pass the site. Services on the 235 bus route (between Leek and Cheadle) do however pass through the village of Whiston approximately 1km away from Moneystone Quarry. The volume of trips forecast for Moneystone Quarry is unlikely to warrant a diversion to this service, but that option should not be ruled out.

6.34. In regard to active modes, the Draft Masterplan notes the opportunity for outdoor recreational activities such as cycling, walking, horse riding and water based activities. It is clear that this could apply both within the site, but also to a limited extent, to and from the site (particularly cycling). Eaves Lane is lightly trafficked and therefore could be an attractive route for cycling. The terrain however is relatively challenging, particularly between Moneystone Quarry and Oakamoor. As well as on-road links, the Draft Masterplan stresses the need to consider measures to create off-road links to be used by cyclists, walkers and horse riders to reach other attractions in the area.

6.35. It is likely that visitors to the accommodation at Moneystone Quarry may also choose to visit other attractions in the area, including nearby Alton Towers. To avoid unnecessary and duplicate vehicle trips, some form of shuttle taxi or minibus service may be the most appropriate way of transporting visitors to and from the attraction.

6.36. The Churnet Valley Railway also presents a major opportunity for sustainable travel to and from Moneystone Quarry. This opportunity is raised in both the Draft Masterplan and the Churnet Valley Accessibility and Connectivity Study. This railway currently has its southern terminus at Kingsley and Froghall Station. However the line does continue further south than this, and an area close to Moneystone Quarry is used for stabling of stock. Hence there is a clear opportunity

for some sort of halt to be created close to Moneystone Quarry in the future. Such a halt could be approximately 500m south of the southern part of the Moneystone Quarry development, highlighting the relative proximity of the railway.

6.37. If a commercial service to Alton Towers is introduced in the future (one of the key aims of the Moorland & City Railways), then a service with longer operating hours and potential year round provision may be attractive for those staying at Moneystone Quarry. Clearly it could also be used to transport people staying at Moneystone Quarry to and from Alton Towers, avoiding the need for highway access via the village of Oakamoor.

## Alton Towers

6.38. During the consultation for SMDC's Integrated Transport Strategy, congestion associated with Alton Towers was identified as a key concern for the public and key stakeholders. The Churnet Valley Accessibility and Connectivity Study notes that congestion is of particular concern through the village of Alton.

6.39. The TomTom analysis, and consultation with SCC, plus the stakeholder feedback in regard to the Integrated Transport Strategy, confirmed that traffic congestion is occurring on the approaches to Alton Towers. Notably, it is occurring both in and outside of the school holidays on the northbound route from Uttoxeter (and the A50) to Alton Towers in the AM peak. The PM peak appears to cause less of a problem, potentially as the departure profile from Alton Towers is more spread than the arrival profile, with some visitors choosing to leave the park earlier than the closing time.

6.40. For the purpose of this Transport Study, no change in trip rates has been assumed for Alton Towers, as the Resort owners are trying to increase the appeal and capacity for overnight visitors, potentially spreading the arrival and departure profile. It is noted however that with an increase in visitors staying overnight at Alton Towers, there may some trips originating at Alton Towers and heading towards other tourist attractions or local centres in the Churnet Valley. It is not thought that these numbers will be significant however, and it is unlikely that they will add to the congestion which already exists (for example, if people take a day trip to the Churnet Valley Railway, then they may leave Alton Towers in the mid-morning, but which time most visitors to Alton Towers will likely have arrived at the site). The Alton Towers Resort is also subject to its own Transport Study (as part of the Long Term Plan), completed by Atkins in May 2011. This study set out a package of transportation measures, including the management of traffic related to Alton Towers within the villages of Denstone, Farley and Alton.

6.41. The measures are split into those which are on-site and those which are off-site. Examples of the former include better utilisation of the resort's website (for example – to guide visitors towards the quieter days for their visit) and public transport promotion. Examples of the off-site measures raised include better signage on the highway network, a review of off-street parking (which may lead to local bottlenecks) and selected highway capacity improvements. In regard to highway congestion and improvement, SCC has recently (2013) secured Local Pinch Point funding for improvements to the A50 to Alton Growth Corridor, which includes significant improvements to the B5031/B5032 junction and the JCB Junctions at Rocester.

6.42. As no notable change in trip rates is expected over the coming years, and the Long Term Plan already outlines a number of transport measures (and in light of the recent funding received for SCC to introduce Local Pinch Point improvements), this Transport Study will not raise any further interventions for the site. It is however worth re-iterating the potentially large role that an extended Churnet Valley Railway could play. The extension of the railway line southwards from its current (operational) terminus at Kingsley and Froghall to a station at Alton Towers is an aspiration for Moorland & City Railways.

6.43. The Draft Masterplan notes that further information is required regarding this link, with regard to viability and feasibility as there are potential conflicts and impacts which need further investigation. There could be a number of benefits to Alton Towers, including the potential for people who are staying in accommodation at Alton Towers to visit other attractions in the area, including Bolton Copperworks and Moneystone Quarry.

## Leek

6.44. Leek is identified in the Draft Masterplan as a gateway - specifically the main gateway for people accessing the area from the north. It is expected that 800 residential dwellings will be introduced

in the town, but the exact locations of these are not currently known. It should be noted also that Leek Town Centre is the subject of a separate masterplan.

6.45. The trip generation work earlier showed that of the trips generated by the new development, 51% of trips would be internal (within the four wards that make up the town), and 49% would be external, with the A53 to the south-west taking much of this new development traffic.

6.46. As earlier noted for Cornhill, both the TomTom analysis and the site visit confirmed that peak hour congestion is a concern in Leek, with some queuing noted at the more major junctions, particularly in instances where there is limited right turn stacking capacity. It is also necessary to consider the combined impacts of the new residential developments in Leek and the aforementioned developments at Cornhill, given the proximity.

6.47. SMDC's Integrated Transport Strategy includes a package of measures specific to Leek, as earlier set out in Chapter Two. The Strategy sets out the proposed measures both in the short term (within three years) and in the longer term (2015 → 2028). The package includes a reconfigured bus station with associated access improvements to key town centre routes, improved pedestrian links into the town centre, significant traffic management and public realm enhancements, further junction modifications and potential new highway capacity south of the town centre. The major recommendation regarding Leek is that the trip generation and assignment used in this Transport Study is used to guide the future scheme selection in the Leek Package (for instance – which junctions require the most immediate attention).

6.48. With such significant residential developments forecast for Leek, it should be noted that there is obvious scope to acquire significant development contributions which can be used to offset and mitigate potential transport issues. For example, this could include diversions to existing bus services or even completely new routes. It is important that residential travel planning accompanies these new developments, ensuring that good travel behaviour is engrained from the outset.

6.49. As noted for Cornhill, the plans by Moorland & City Railways offer a significant opportunity for Leek, both in terms of reducing local highway congestion, but also in Leek's capacity as a gateway to the area. Specifically, if Leek is to thrive in its role as a gateway for the north of the region, then it must have good links to attractions within the study area. A station in Cornhill (initially as part of the Churnet Valley Railway) would link Leek with several important tourist attractions, including Bolton Copperworks (accessed via Kingsley and Froghall Station), Moneystone Quarry (potentially accessed via a new station) and ultimately Alton Towers. It is clear however that the railway's development cannot be taken for granted and therefore bus based modes should be reviewed in the shorter term.

## Cheadle

6.50. Also the subject of its own Town Centre Masterplan, Cheadle is expected to receive an additional 1,080 residential dwellings. As a result, this town will see the largest increase in trip rates of all the sites considered in this Transport Study. The Journey to Work analysis suggested that 26% of trips would be internal, with the remainder being external trips. The assignment showed that the A521 to the south of Cheadle would receive the largest absolute increase in traffic. This is significant as one of the highlighted areas of congestion was the highway in Blythe Bridge (particularly the Cheadle Road/Uttoxeter Road Junction).

6.51. The capacity of the highway network at this location should be reviewed to determine whether the priority arrangement remains the most suitable layout in the future, in view of the potential increase in traffic. Improvements of this junction have been considered in the past but the forecast growth in trips may require this work to be re-visited (any improvement could potentially be part funded by development contributions).

6.52. SMDC's Integrated Transport Strategy includes a package aimed solely at the town of Cheadle. As with the plan for Leek, measures are split into those for the short term (2012 → 2015) and those in the longer term (2015 → 2028). Measures include modifications to key junctions around the town centre, public realm enhancements, traffic management and new public transport infrastructure on the High Street, improved pedestrian links into the town centre and improved sustainable access to employment including improvements to bus service 7/7A linking to Blythe Bridge rail station.

6.53. The earlier trip generation work showed that there will be a large number of new trips using the A521 between Cheadle and Blythe Bridge. It is important that any modifications as part of the Integrated Transport Strategy consider this. The increase in trips along the A521 Cheadle High Street means that the public realm element of the Integrated Transport Strategy will play an important role in ensuring that the town centre provides a pleasant environment for non-motorised users.

6.54. As noted for Leek, the introduction of such a large number of residential dwellings to the town offers a significant opportunity to acquire developer contributions, which can be put towards either capital or revenue improvements to transport. This could be in the form of bolstering frequencies on key routes, such as that to and from Stoke-on-Trent.

6.55. The Draft Masterplan supports investigations into the potential for re-opening of the former Cheadle branch railway between Cheadle and the Stoke-on-Trent to Derby railway line at Cresswell. In the shorter term, the Masterplan supports exploring the potential of this route to be used as a multi-user path. This Transport Study supports exploring the potential for that route either as a railway re-opening (potentially in the longer term) or as a multi-user path (in the shorter term).

## Summary of Measures

6.56. Having identified potential mitigation measures at each of the sites, this section considers which of those should be considered ‘essential’ and which should be considered ‘desirable’. This information is presented in Table 6.1.

6.57. Note that in addition to the site specific measures outlined in this section, it is important that travel plans are completed for all new residential and employment land uses, to ensure that good travel behaviour is engrained from the outset. Similarly, it would be expected that developer contributions would be sought to at least part fund many of the suggested measures.

6.58. In addition, as earlier noted in the report, the developments at many of the sites will be phased over time, particularly for the residential sites and for that at Bolton Copperworks. For some of the suggested public transport interventions, such as improving the bus offering at Bolton Copperworks, this means that more detailed investigation would be required to determine the optimum time at which to make the change. For example, a two hourly service may suffice at the outset, increasing to hourly as the site’s usage increases.

**Table 6.1 – Summary of Measures**

| Development | Mode | *Essential* | *Desirable* |
|---|---|---|---|
| Cornhill | Highway | - Access arrangements onto A53/A520 need to be confirmed.<br>- Capacity assessments of nearby junctions on the A53 and A520 should be carried out and mitigation measures should be funded by the development. This could include additional highway capacity and improvements to non-car modes of travel. | - A New Link Road between A53 and A520 (with access junctions into the site) should continue to be investigated, to allow some traffic to avoid travelling into Leek Town Centre.<br>- Possibility of securing funding towards an improvement of the A52/A520 Cellarhead Junction to be investigated. |
| | Other modes | - Consultation with bus operators should be undertaken, along with possible contributions to an improved bus service funded by the development.<br>- Pedestrian/cycle links to Leek Town Centre and nearby origins/destinations to be provided. | - Extended Churnet Valley Railway to continue to be investigated (with longer term opportunities to link to the national rail network at Stoke-on-Trent). |
| Bolton Copperworks | Highway | - Ensure that access onto the B5053 and A52 is safe and has adequate capacity for the proposed level of traffic. | - |
| | Other modes | - Increase of Monday to Saturday bus frequency to be investigated, plus introduction of a Sunday service. | - Extension of the railway south from Kingsley and Froghall to Alton Towers, via a potential halt at Moneystone Quarry, would provide a clear opportunity to link a number of key tourist attractions in the study area. |
| Moneystone Quarry | Highway | - Local highway impacts need to be assessed in detail and improvements considered at the A52/Whiston Eaves Lane Junction, with funding or part-funding provided by the developer. | - |
| | Other modes | - Options for bus links to the site should be investigated, including a potential diversion of the route which already passes through Whiston on the A52.<br>- Connections with existing pedestrian and cycle routes should be reviewed. | - A new station for the Churnet Valley Railway close to Moneystone Quarry would provide a clear opportunity to connect this with other nearby attractions, such as Alton Towers and Bolton Copperworks.<br>- Some form of shuttle bus (or taxi service) should be investigated for those travelling between Moneystone Quarry and Alton Towers. |
| Alton Towers | - | See earlier text – various measures already set out. | See earlier text – various measures already set out. |
| Leek | Highway | - Please refer to the Leek Town Centre Package of the Integrated Transport Strategy for the specific measures outlined for Leek. This includes traffic management improvements in the town centre and capacity improvements to the south, on the A53, A520 and A523. | - |
| | Other modes | - Diversion and expansion of bus routes to serve the new residential developments should be considered, along with pedestrian and cycle links between the proposed areas of housing and the town centre (plus local amenities). | - As noted for Cornhill, the extension of the Churnet Valley Railway would provide an opportunity for a sustainable link between Leek and other attractions (and potentially Stoke-on-Trent in the longer term). |
| Cheadle | Highway | - Please refer to the Cheadle Town Centre Package of the Integrated Transport Strategy for the specific measures outlined for Cheadle.<br>- An assessment of Cheadle Road/ Uttoxeter Road Junction (in Blythe Bridge) is required to determine how capacity can be provided, given the expected increase in traffic as a result of the residential developments in Cheadle.<br>- Modification of some town centre junctions may be required in Cheadle, plus some traffic management and public realm improvements. | - |
| | Other modes | - Improved bus services should be investigated to Blythe Bridge and Stoke-on-Trent, linking with railway stations<br>- Pedestrian and cycle links between the proposed housing, the town centre and local amenities should be provided. | - Re-opening of the disused railway line between Cheadle and the Derby-Stoke Railway should be investigated further. In the shorter term, use of this route as a multi-user path should be promoted. |

# Appendices

# Appendix A. SMDC's Integrated Transport Strategy – Summary Table

# STAFFORDSHIRE MOORLANDS DISTRICT INTEGRATED TRANSPORT STRATEGY SUMMARY TABLE

## PRIORITIES

### ECONOMIC PROSPERITY

- Support vitality and viability of Biddulph, Leek and Cheadle town centres
- Support growth in tourism, particularly within the Churnet Valley and Peak District National Park
- Improve public transport connectivity to key destinations including the North Staffordshire Conurbation
- Accommodate sustainable development on brownfield and greenfield sites in Biddulph, Leek and Cheadle

### COMMUNITIES

- Maintain the current condition and safety of the highway network
- Improve public transport connectivity and quality of life for local communities
- Raise awareness of environmental issues and encourage people to lead more sustainable lifestyles helping to reduce carbon emissions
- Minimise impact of traffic generated by Alton Towers Resort

## PROPOSED STRATEGY

### ECONOMIC PROSPERITY

#### SHORT TERM – 3 YEARS

- **Leek Local Transport Package:** Urban Traffic Control, junction modifications, traffic management and public realm improvements and continued implementation of Moorlands Connect demand responsive public transport service
- **Alton Towers Resort Transport Strategy:** monitor impact of Long Term Plan and deliver appropriate traffic management measures
- **Cheadle Local Transport Package:** junction modifications, sustainable link improvements and public realm enhancements
- **Biddulph Town Centre Area Action Plan:** cycle route improvements / secure parking, and bus connectivity improvements on route 9 Biddulph - Hanley

#### LONG TERM UP TO 2028

- **Leek Local Transport Package:** public realm improvements focusing on town centre retail areas, re-configuration of bus station, regeneration of employment and retail area at Cornhill and Barnfields Industrial Estate, including consideration of new highway capacity, and improvements to pedestrian connectivity into the town centre
- **Biddulph Town Centre Area Action Plan:** enhanced pedestrian links between town centre and key development sites, cycle parking facilities in town centre, new town centre gateways and bus connectivity improvements on route 99 Biddulph-Macclesfield
- **Cheadle Local Transport Package:** town centre public realm enhancements, junction modifications, sustainable link improvements, public transport infrastructure upgrades and improved public transport links between town centre and Blythe Bridge rail station
- **Alton Towers Resort Transport Strategy:** proposals up to 2019 include on site traffic management measures, public transport improvements, selected junction modifications, other traffic management measures, signing upgrades and improved route management.

### COUNTYWIDE INITIATIVES (2012/13)

- Maintenance programme
- 20 mph zones, speed limit review and parking and loading restrictions through clear streets
- Driver training and road safety education and training in schools
- Subsidised bus services, community transport, concessionary fares scheme and bus service information
- Promoting sustainable travel and school travel planning
- Careful consideration of any requests to restrict lorry movements in line with actions and priorities in the Local Transport Plan Freight Strategy (2011)
- Promotion of ‘superfast’ broadband.

### DIVISIONAL HIGHWAY PROGRAMME AND LOCAL SAFETY ISSUES (2012/13)

- A522 Leek Road, Cheadle – street lighting and speed limit revision
- Pedestrian safety improvements in Alton village
- A527 Congleton Road, Biddulph – pedestrian crossing modifications
- Cycling facilities in Biddulph
- Traffic management works in Biddulph
- Vehicle speed issues Blythe Bridge, Caverswall, Werrington, Leekbrook and Birchall
- A52/A522 Kingsley Moor – local safety scheme
- High Street, Kingsley – footway improvements

## JUSTIFICATION / DELIVERY

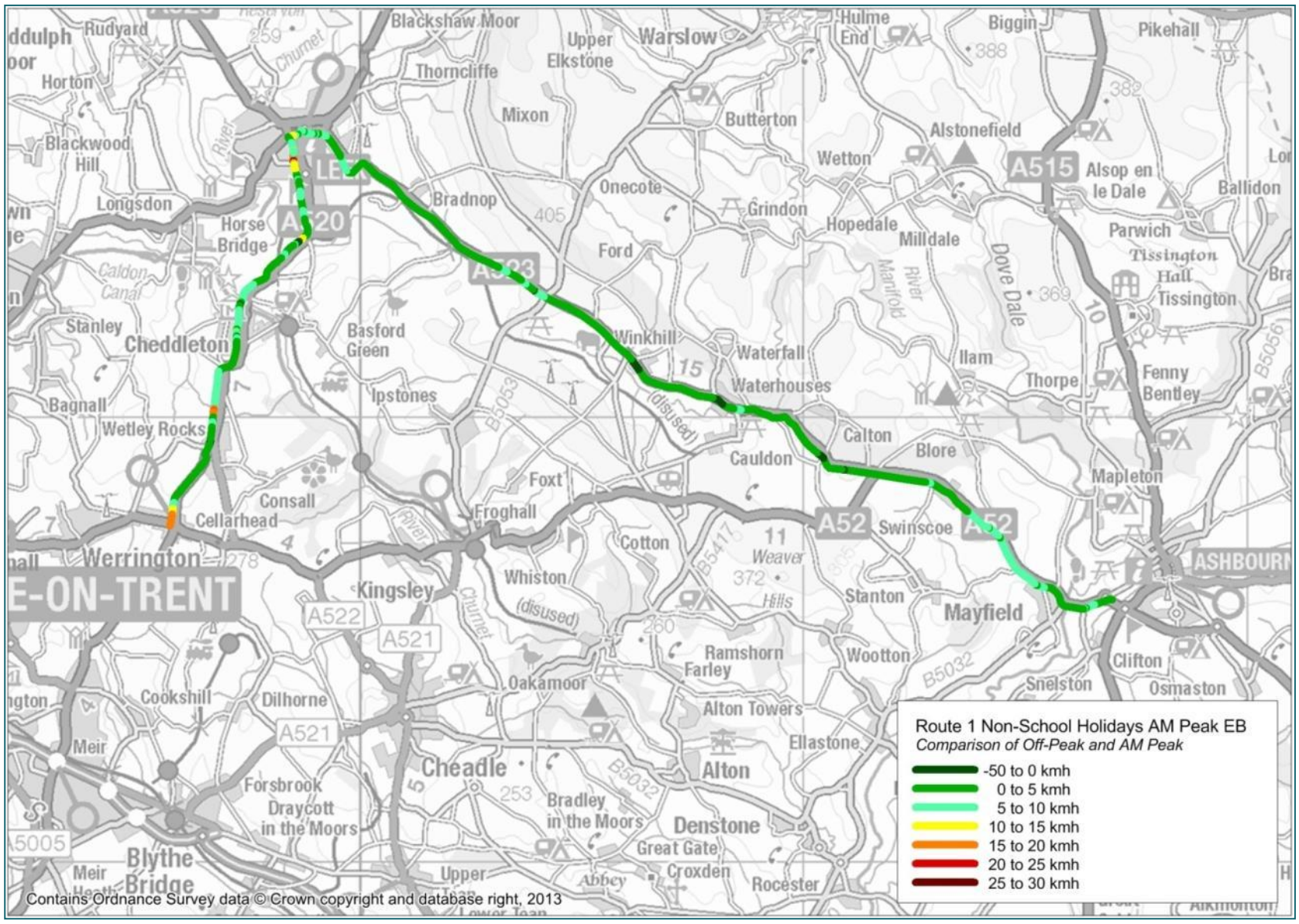
- Efficiencies and value for money will be achieved through delivering local transport packages and by pooling public and private sector resources.
- Transport Assessments will determine the measures required to be delivered by developers and there will only be a refusal on transport grounds where the cumulative impact of development is severe.
- Priorities will take into account the emerging Local Plan which will be examined by an independent Inspector and be in line with the National Planning Policy Framework.
- By April 2014 the District Council is expected to produce a S.123 list of infrastructure accompanying the Community Infrastructure Levy (CIL) Charging Schedule. Anything on the list cannot be funded from S.106. This rule does not apply to S.278 and S.38 agreements.
- Developer contributions will be sought for the delivery of the Leek, Cheadle and Biddulph Local Transport Packages.
- Scheme delivery will acknowledge Manual for Streets and available guidance on the historic environment, habitats and the Urban Forest.
- Public realm enhancements in town centres are expected to attract inward investment particularly in terms of additional retail whilst improving the pedestrian environment.
- Work in partnership with Alton Towers Resort to implement the Long Term Plan will deliver local community and strategic benefits. The Highways Agency and Arriva Midlands will also be involved in future discussions.
- Support for the Churnet Valley Masterplan will boost the tourism economy in the District.

- Initiatives are generally expected to be funded by County Council capital and revenue funds as resources permit.
- The County Council and LEP will act as leaders in the development and the raising of funds to deliver superfast broadband.
- Maintenance will be the main area of County Council expenditure within the strategy period and works will be guided by the Transport Asset Management Plan (TAMP).
- Areas targeted for delivery will be influenced by community consultation and data that identifies need.
- Criteria will be set to determine which services could be supported.

- Councillor’s revenue funds will be used to fund low cost feasible community, safety and maintenance measures. These schemes will generally cost less than £10,000 and will not be listed in the District Transport Strategy.
- Scheme costs will be closely monitored to ensure value for money.
- Value for money will be maximised when initiatives complement other proposals in the Strategy.
- Residents’ Parking Schemes are funded by local residents and a contribution from revenue resources.

# Appendix B. TomTom Analysis Outputs

**Route 1 – AM Peak EB (Non-School Holiday)**

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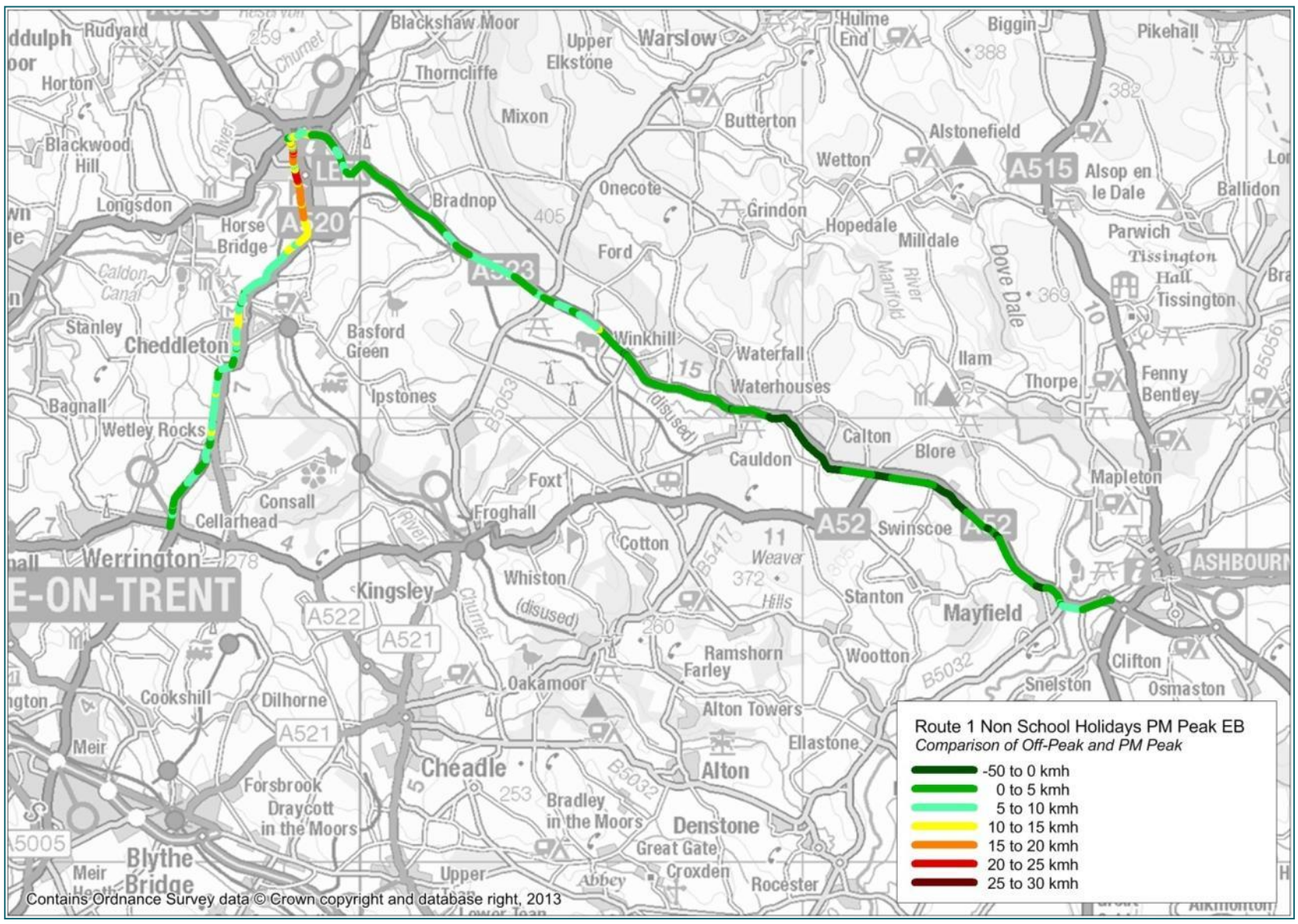

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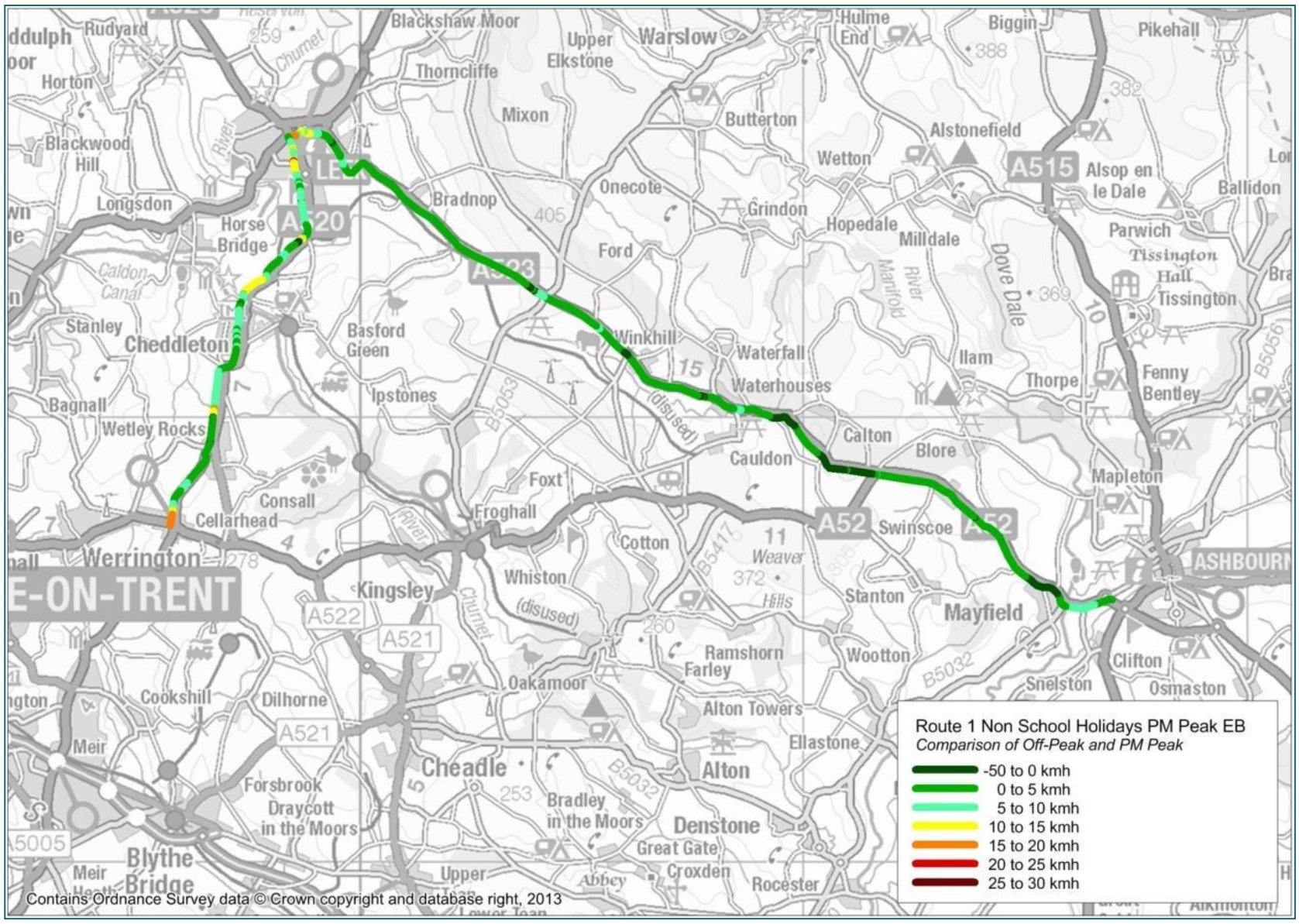


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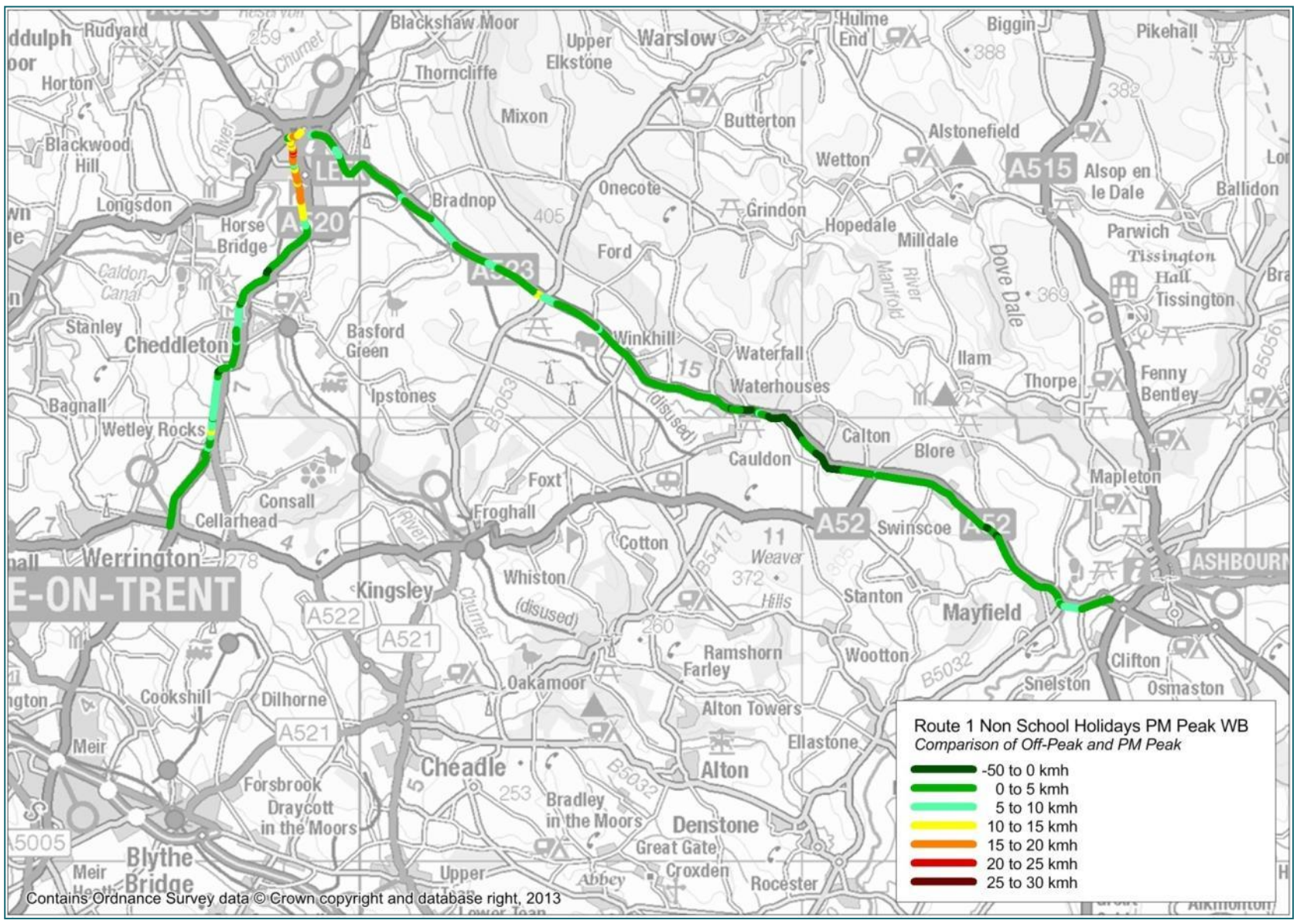

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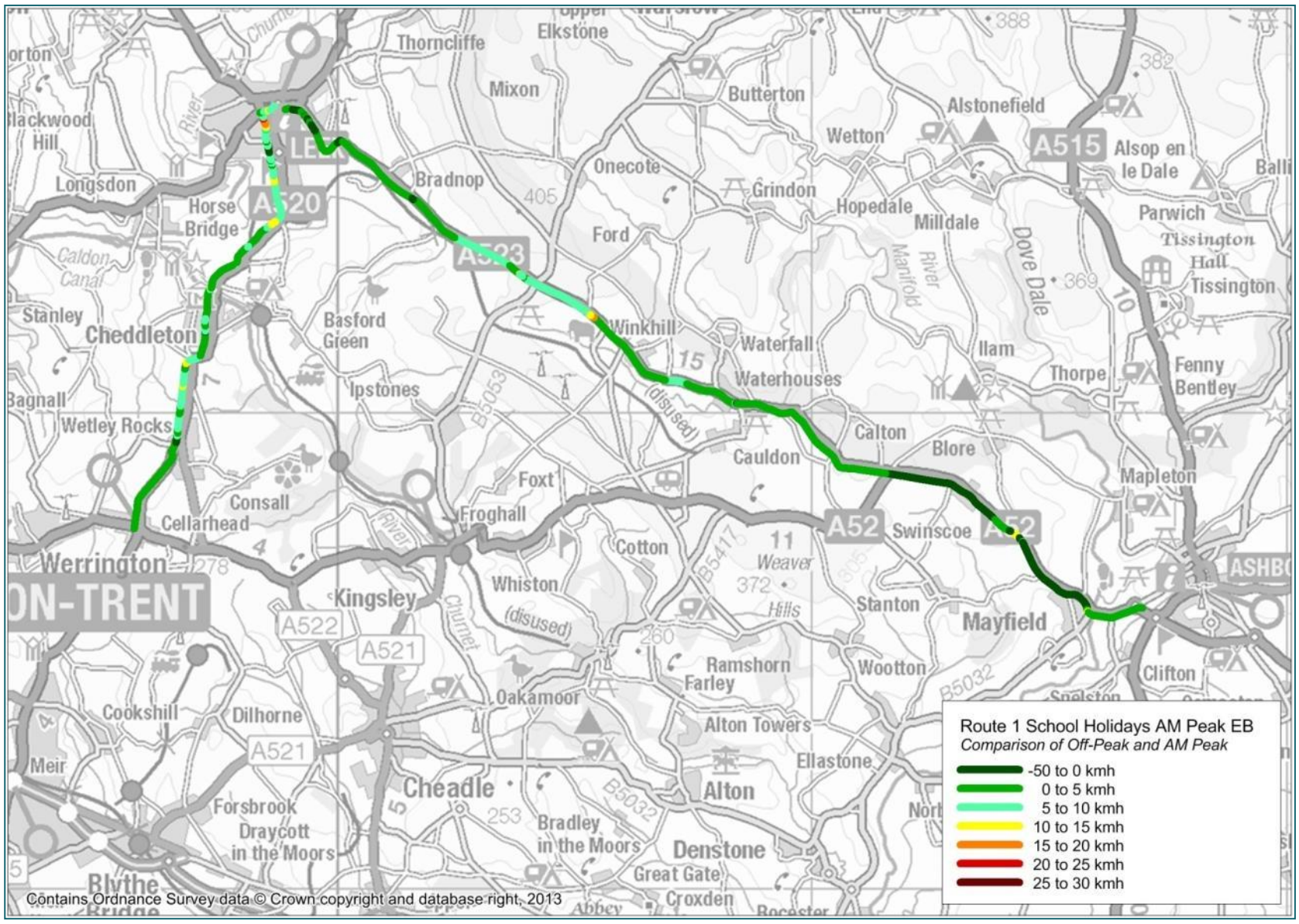


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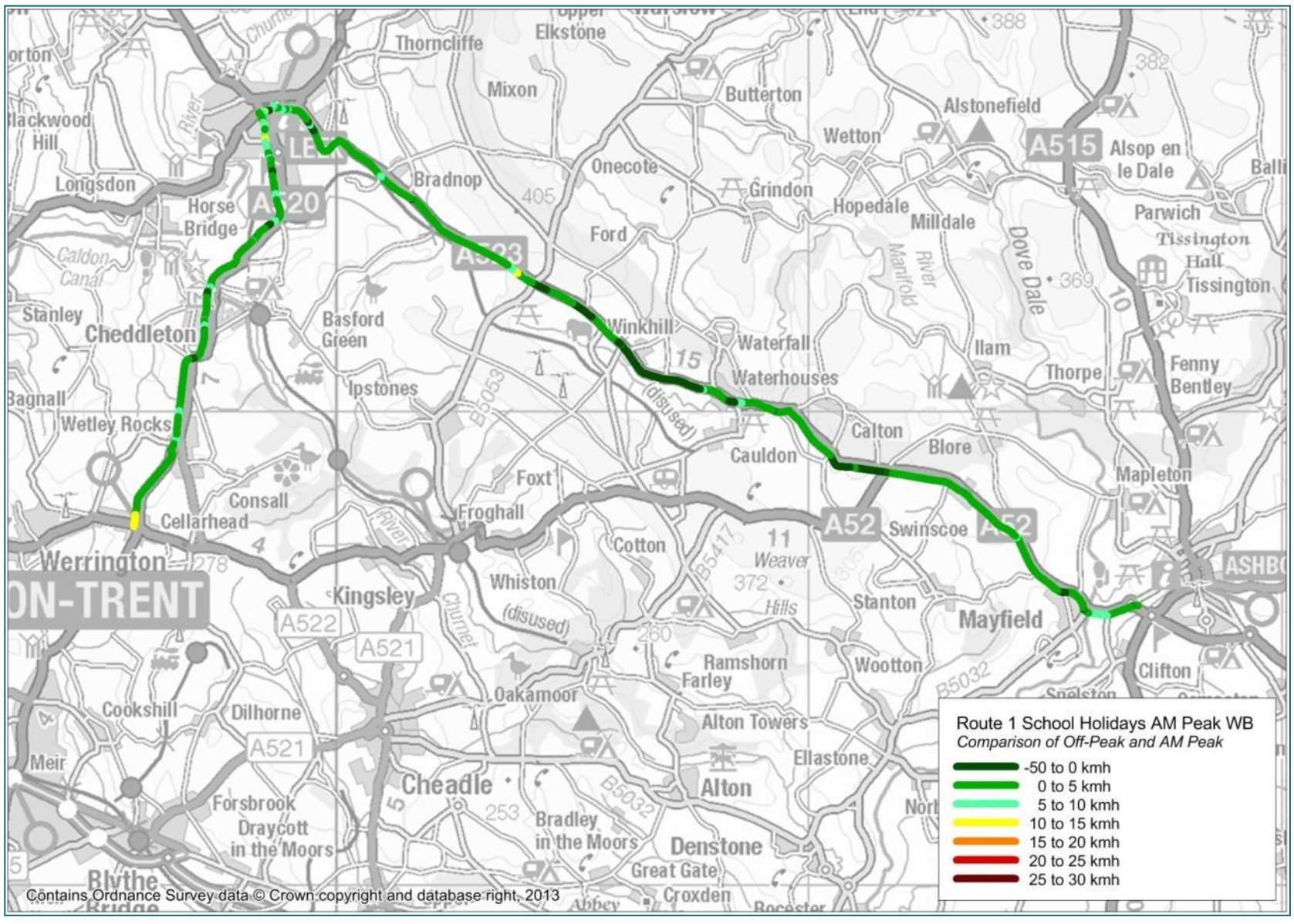

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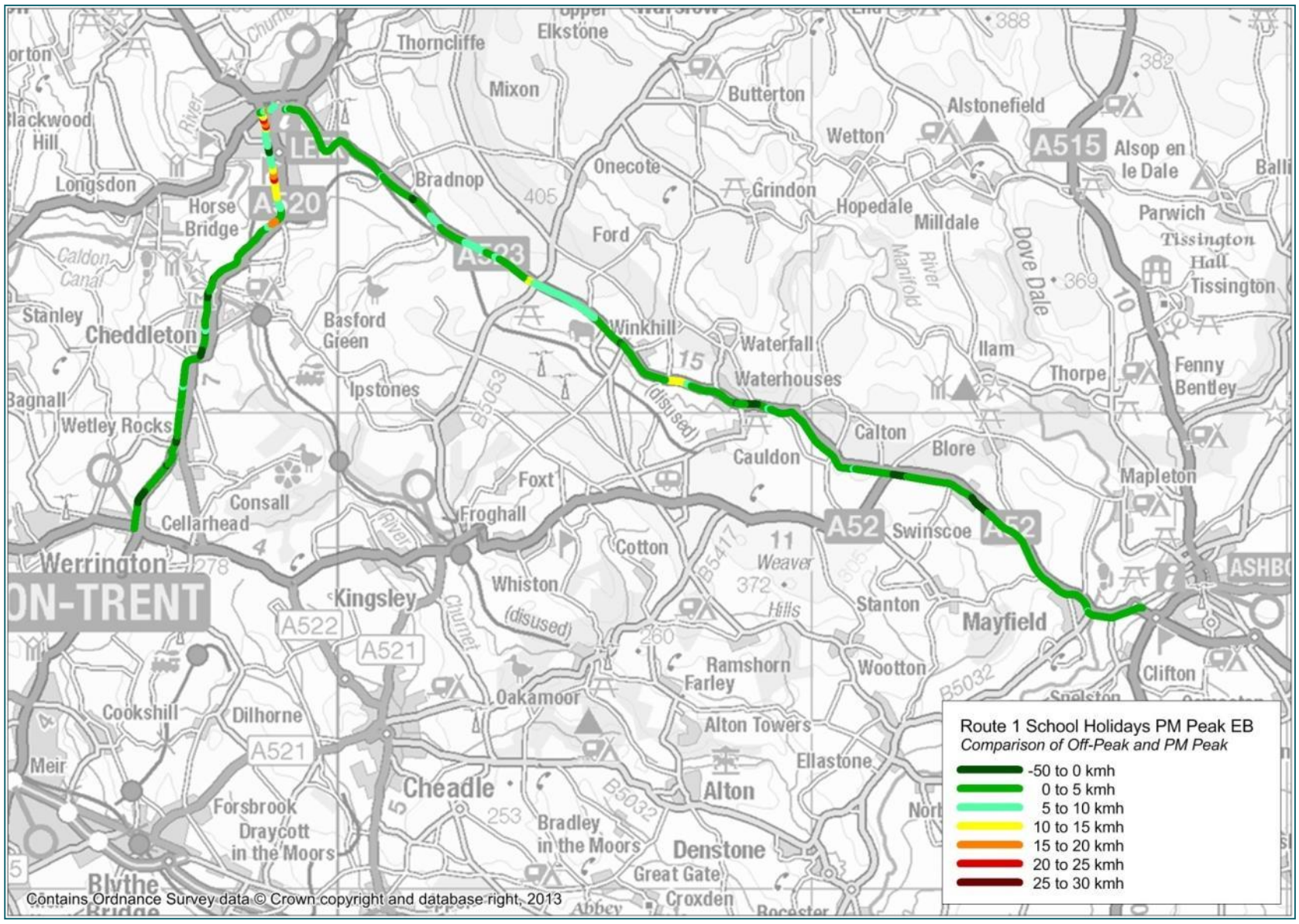


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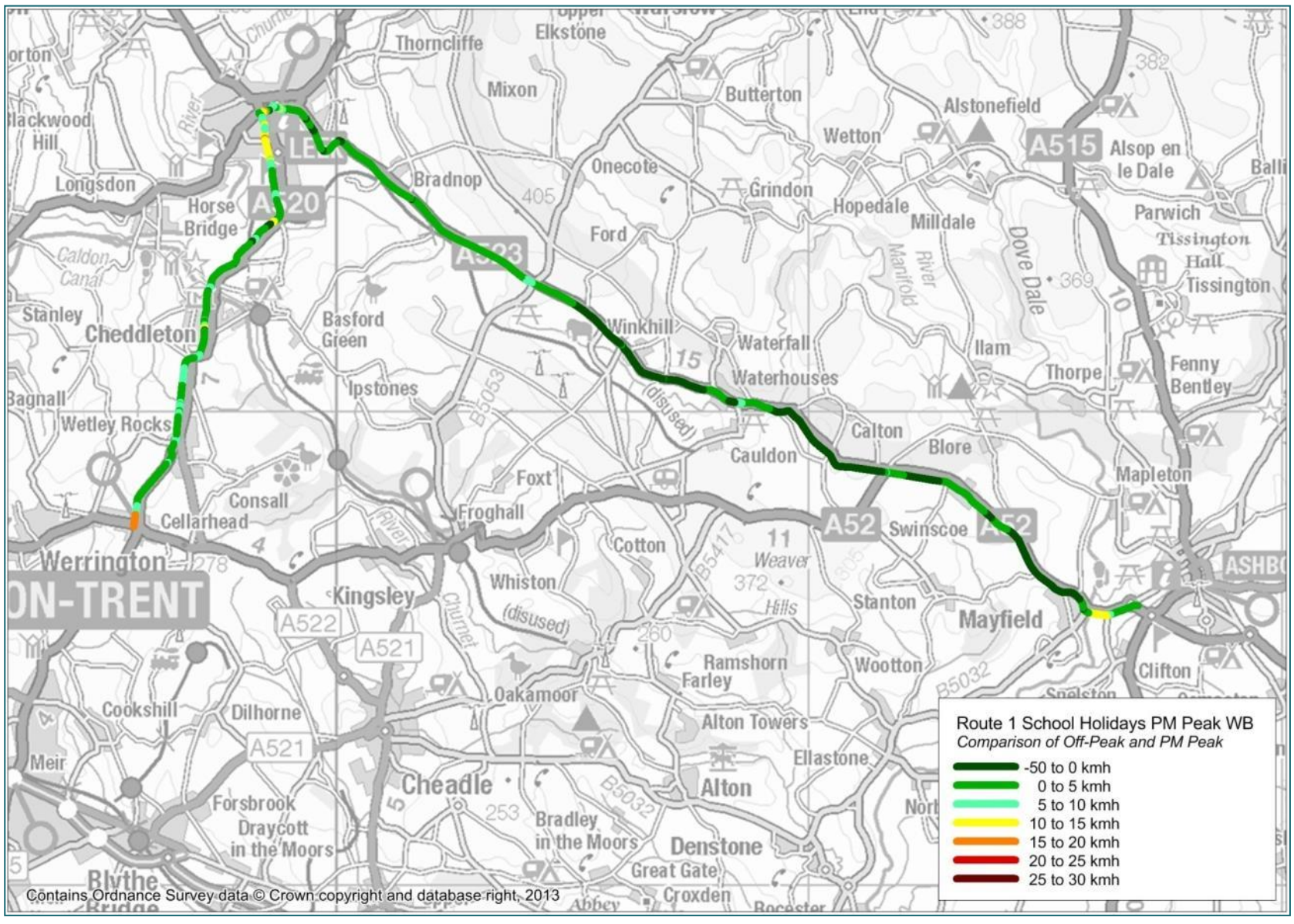

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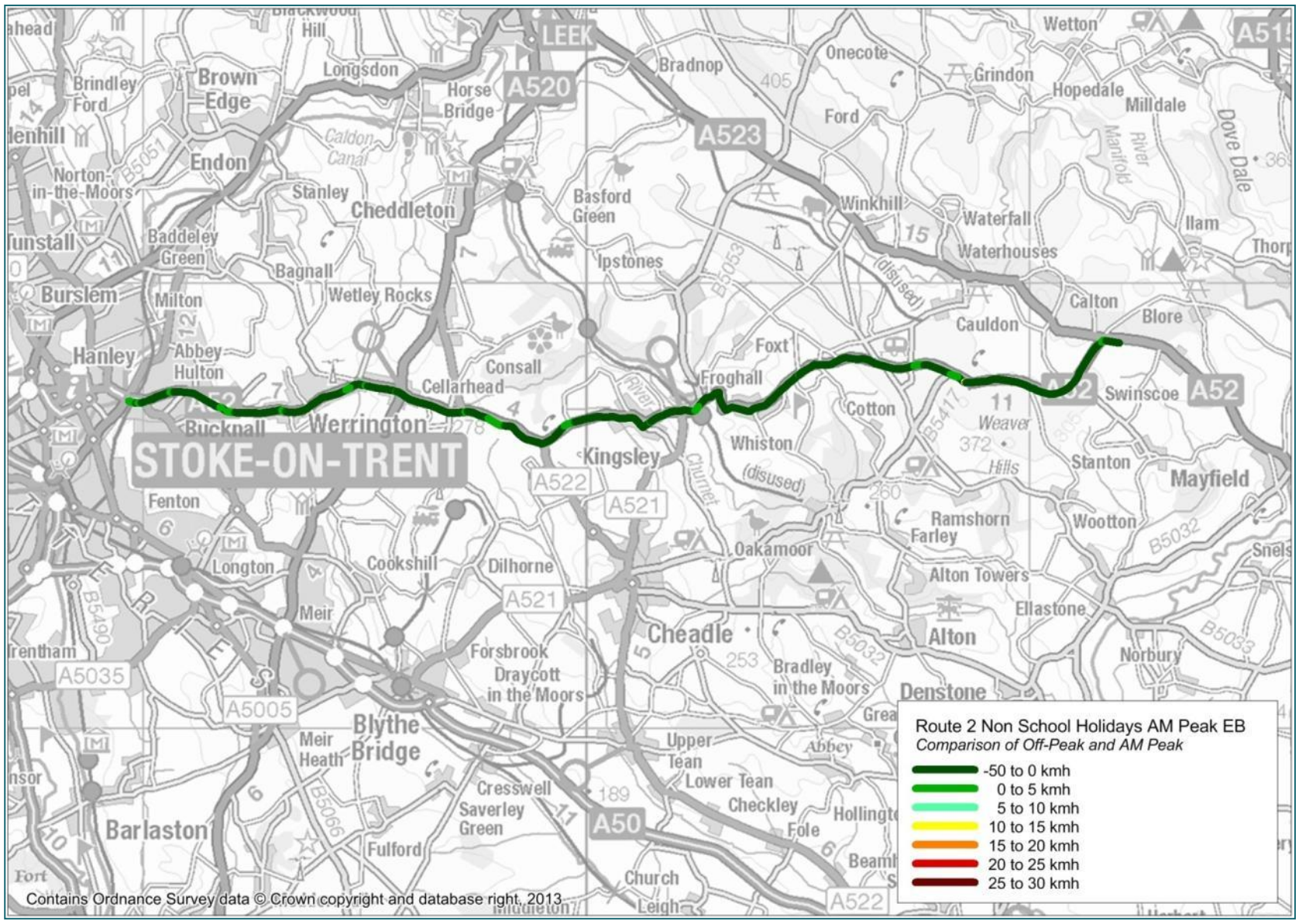


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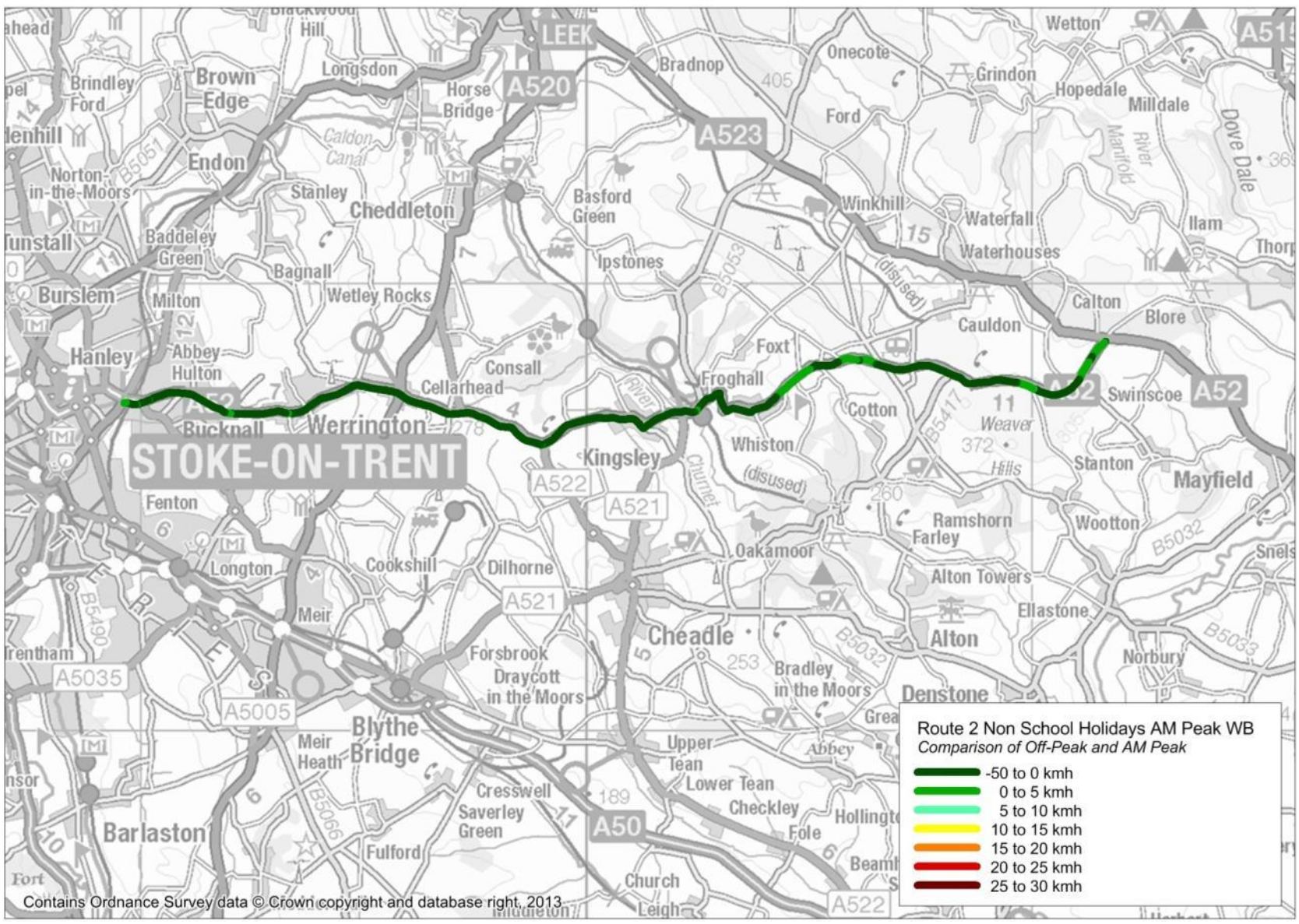

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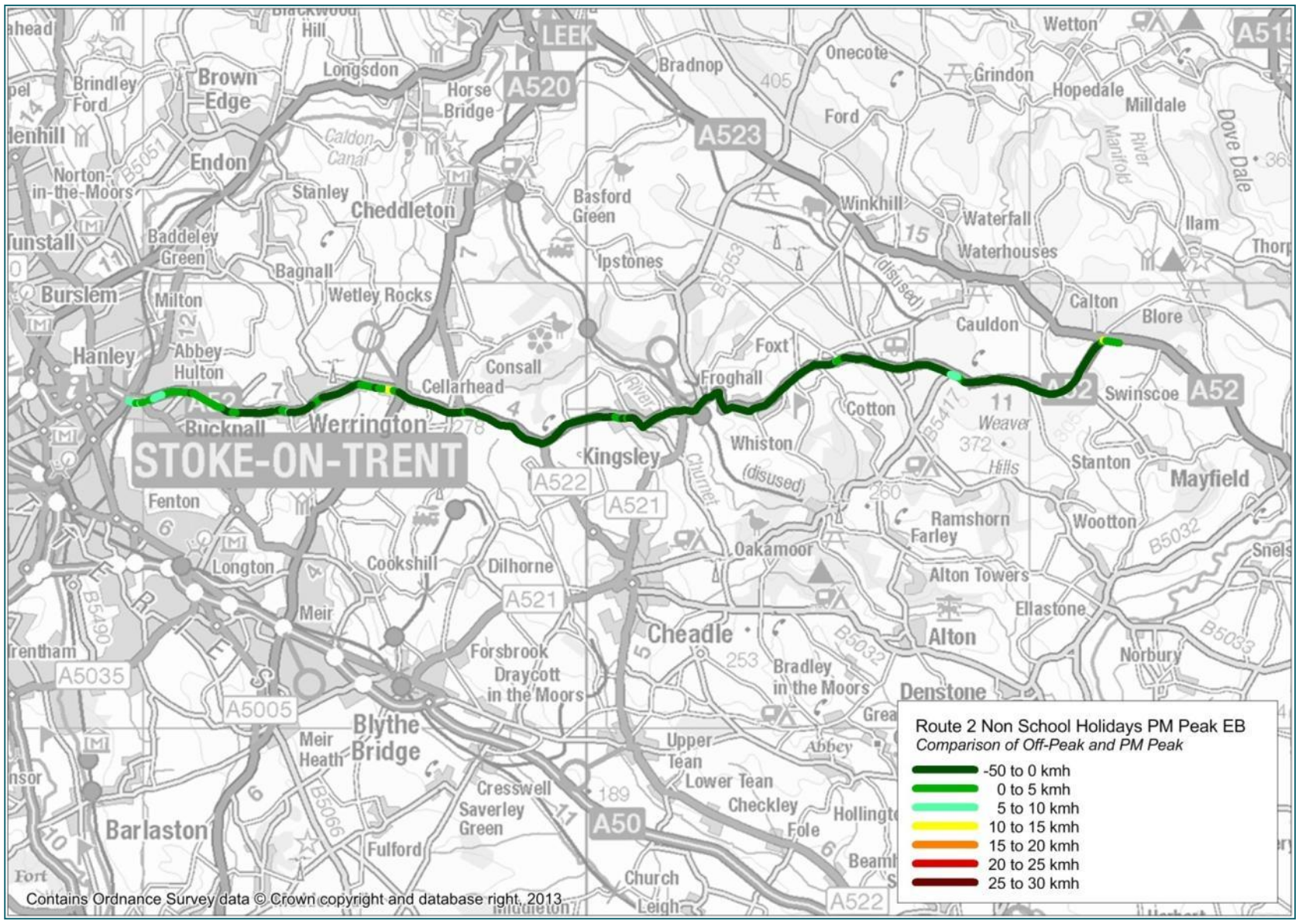


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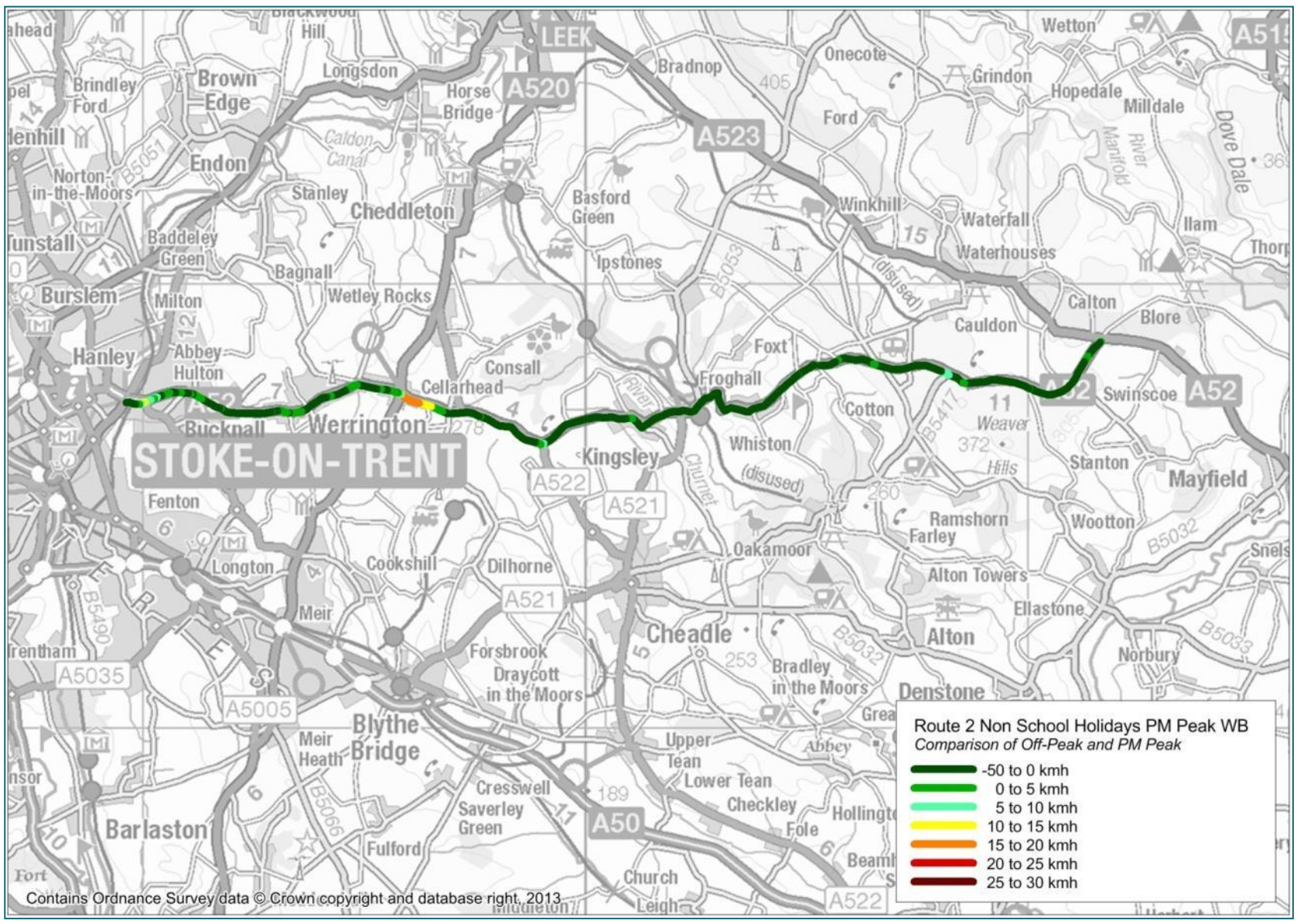

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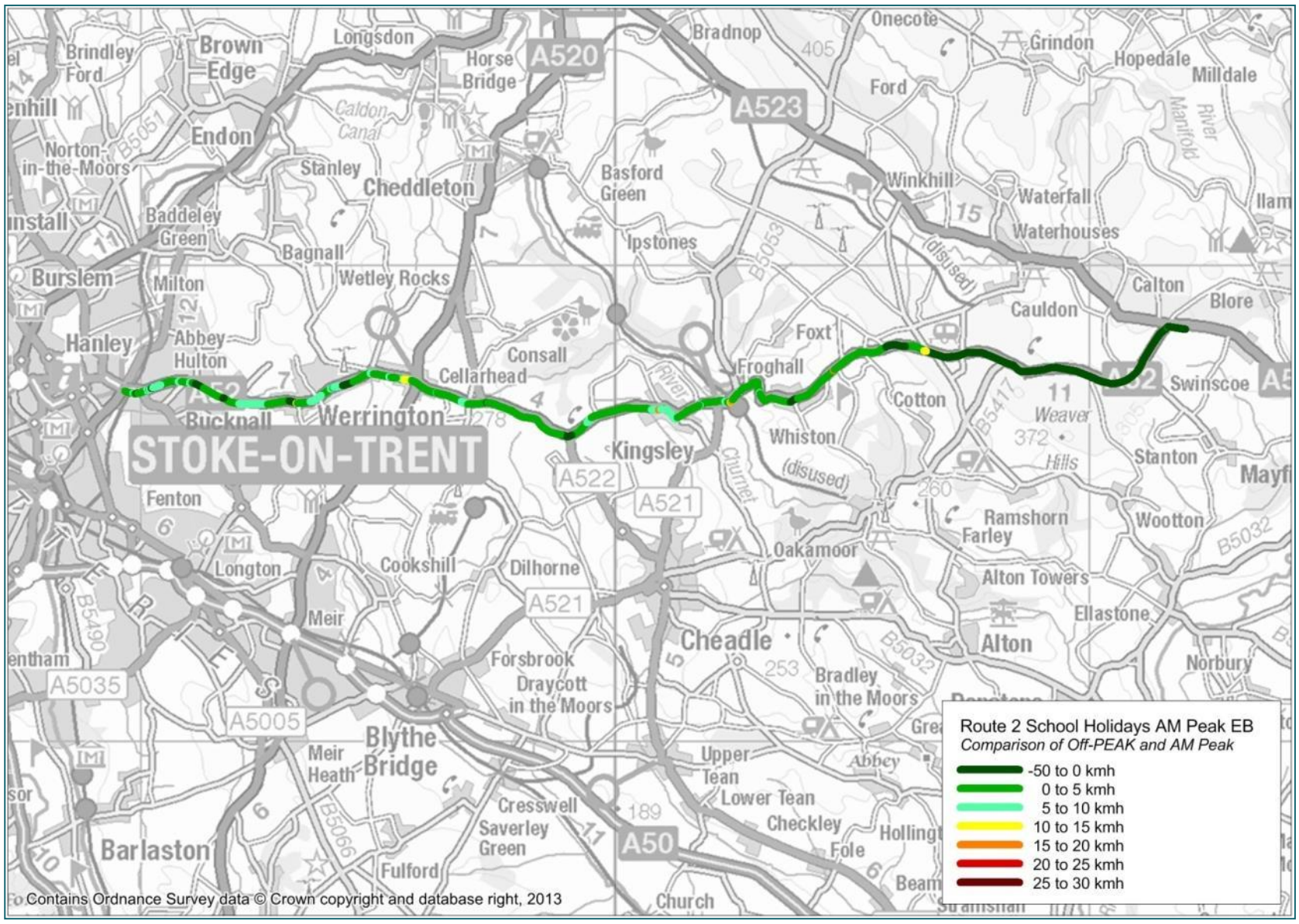


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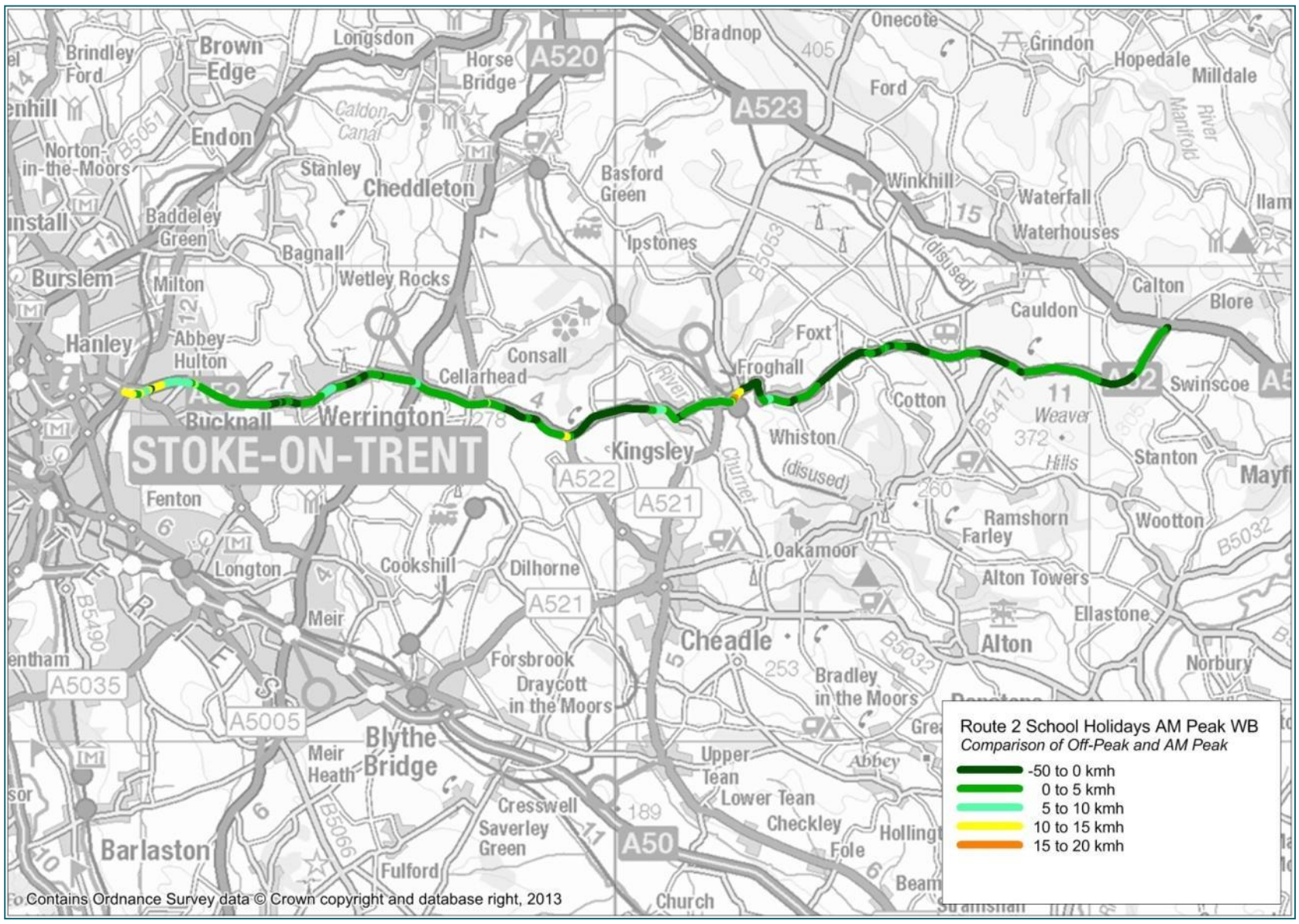

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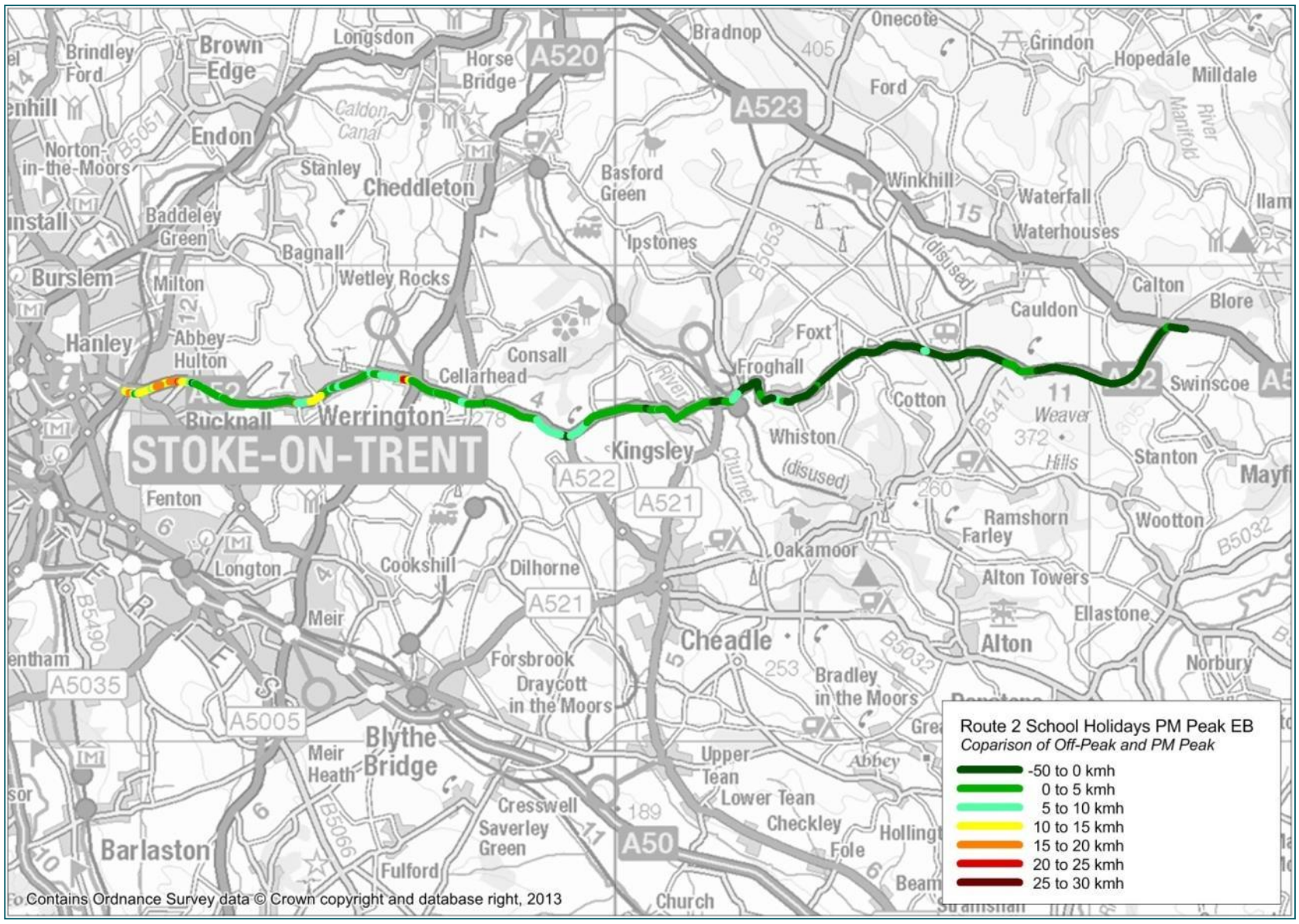


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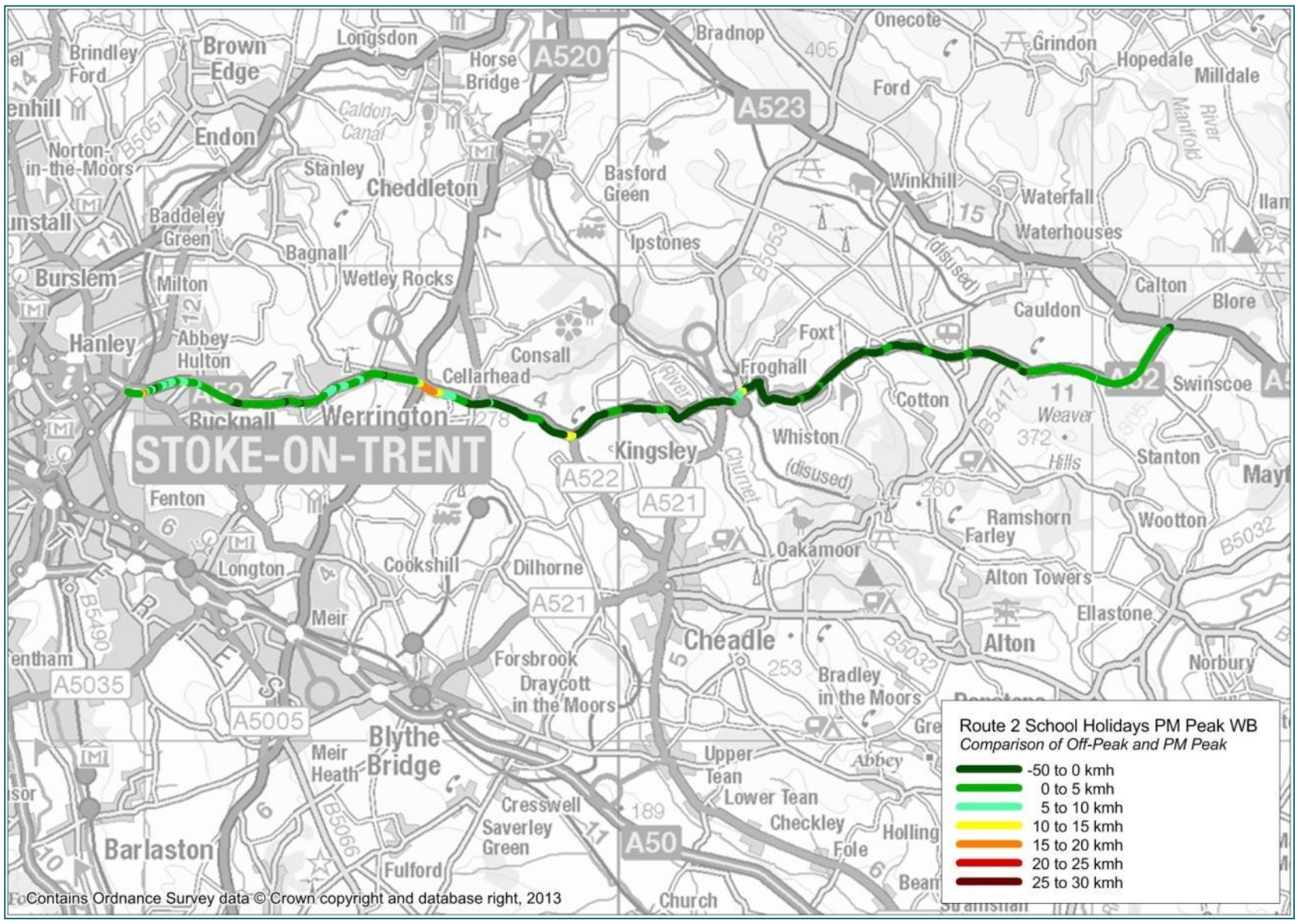

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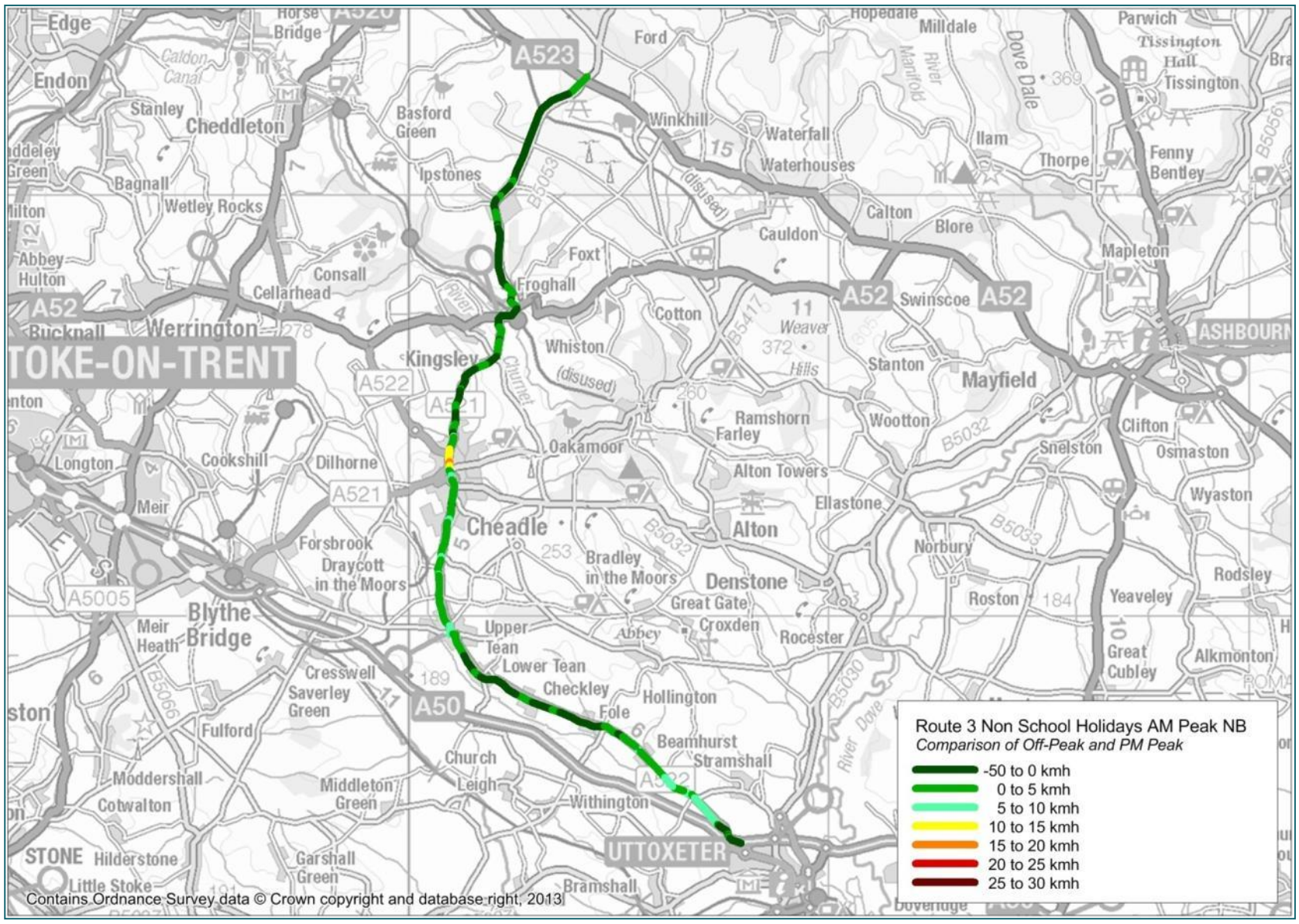


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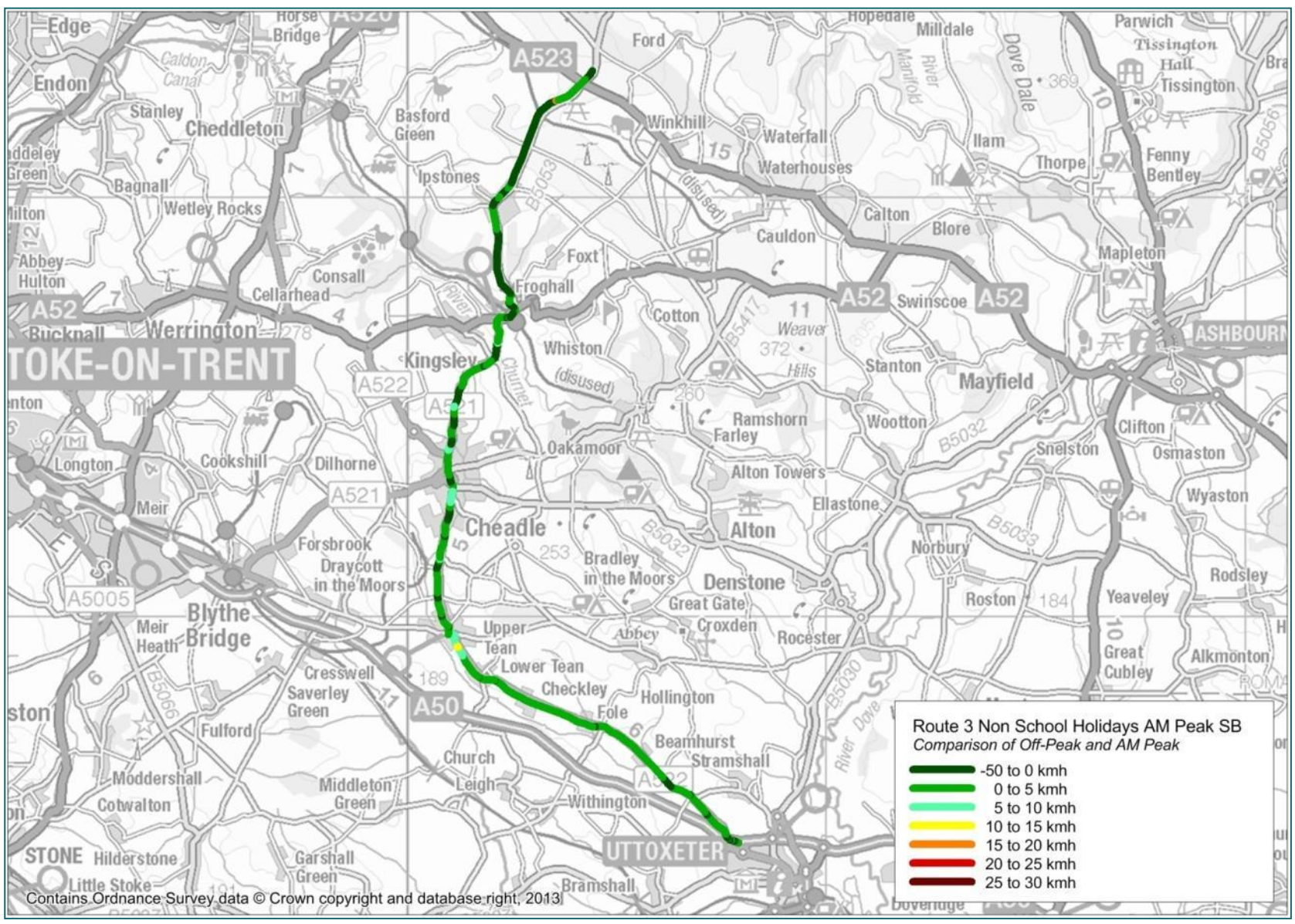

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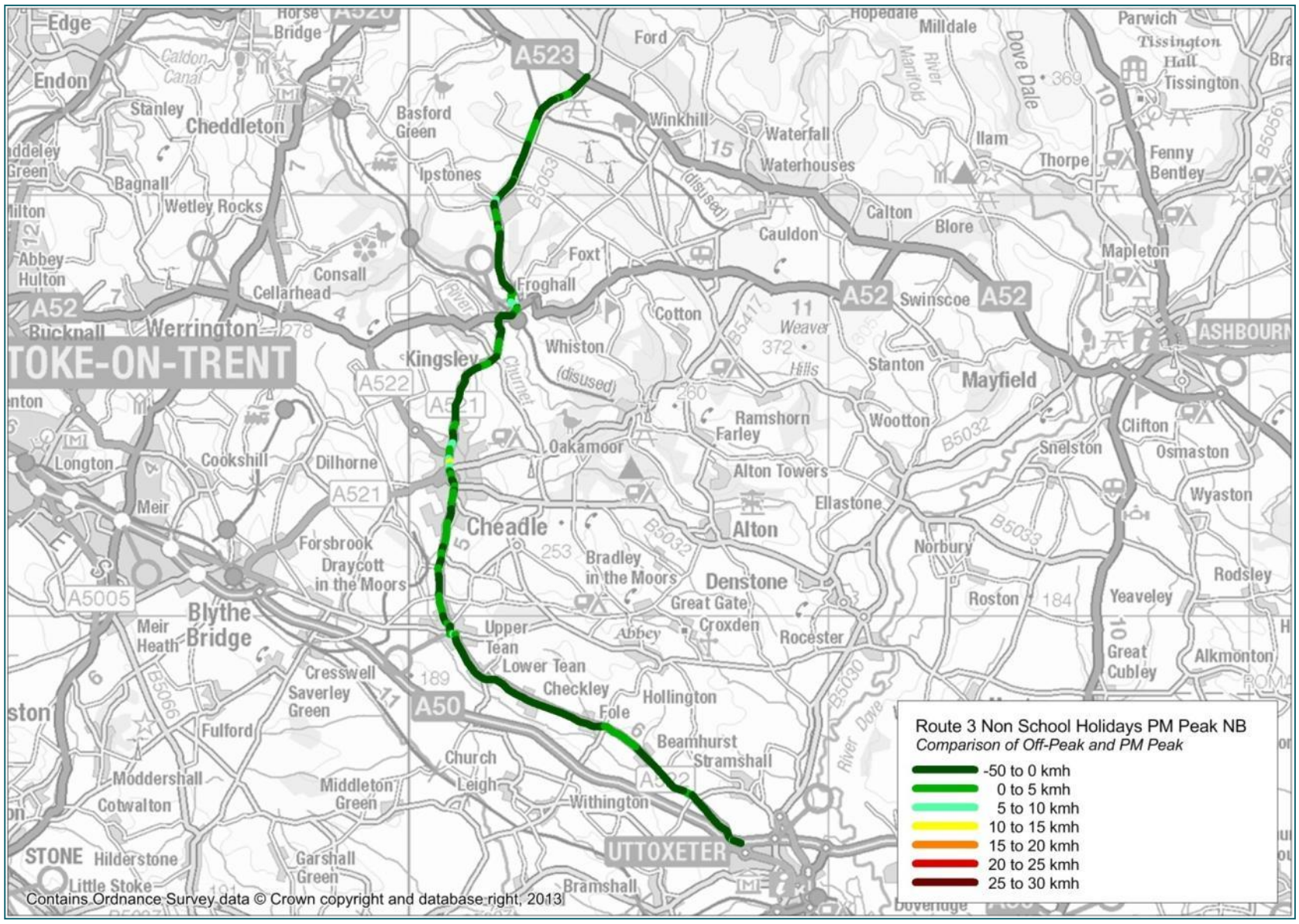


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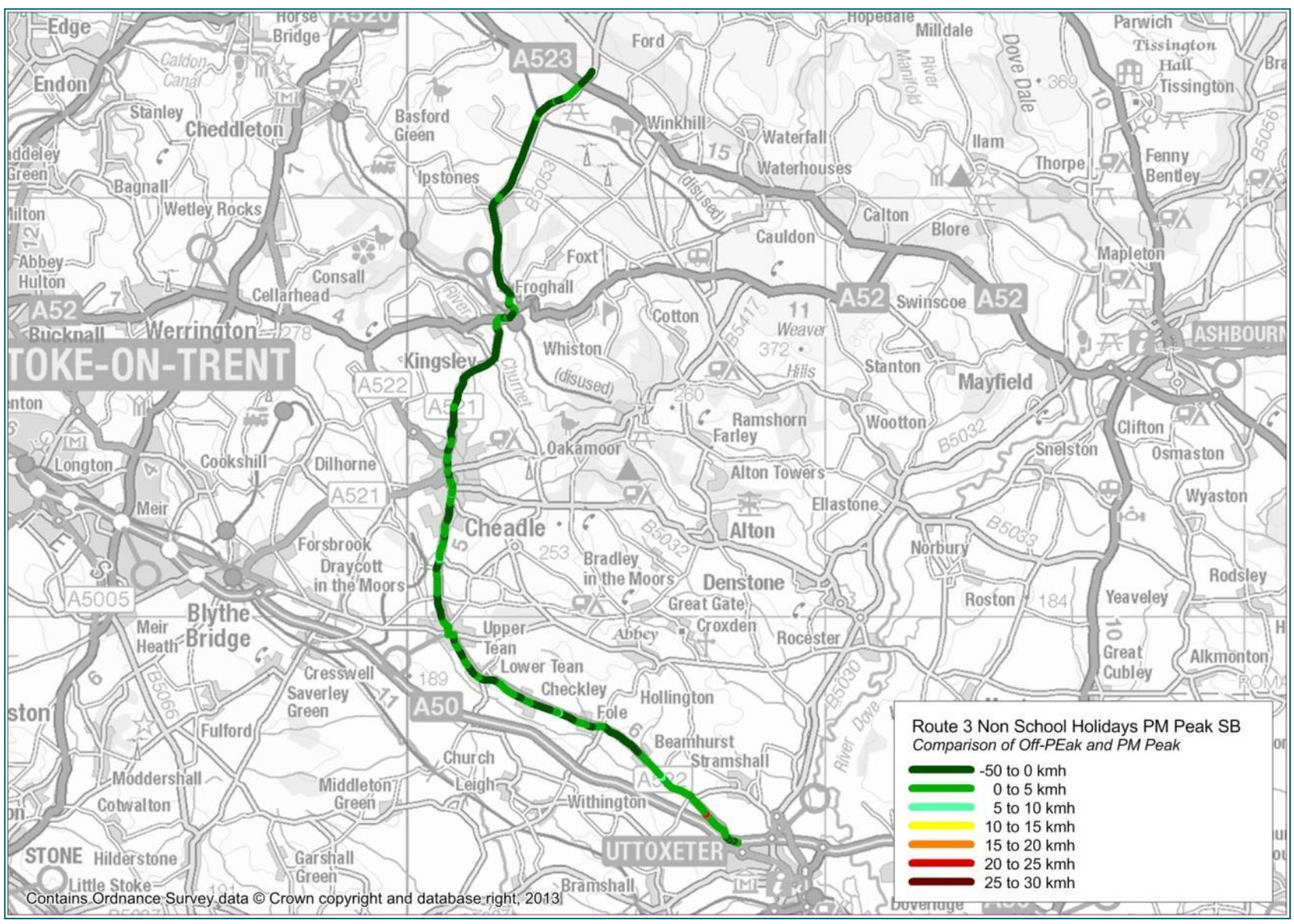

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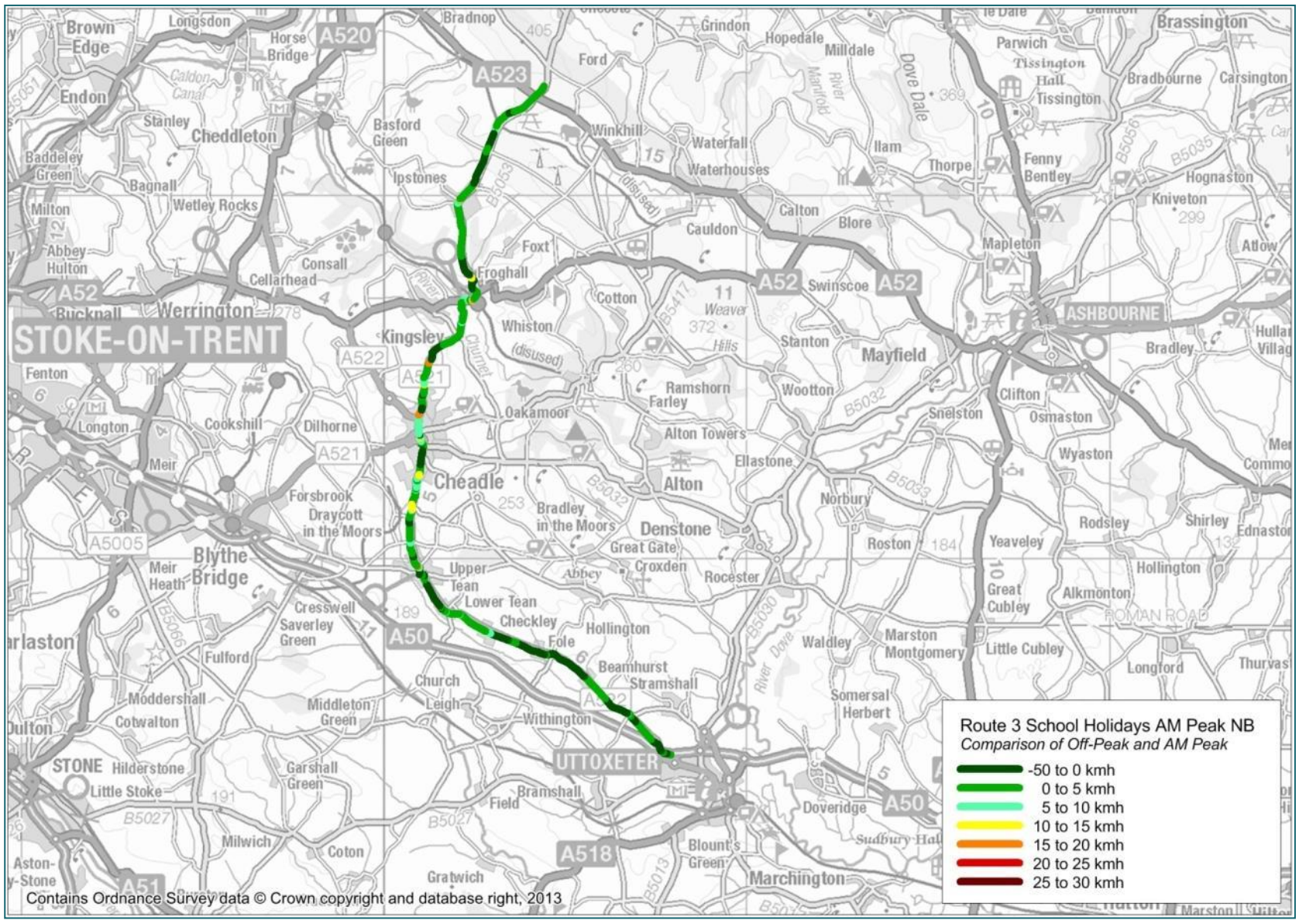


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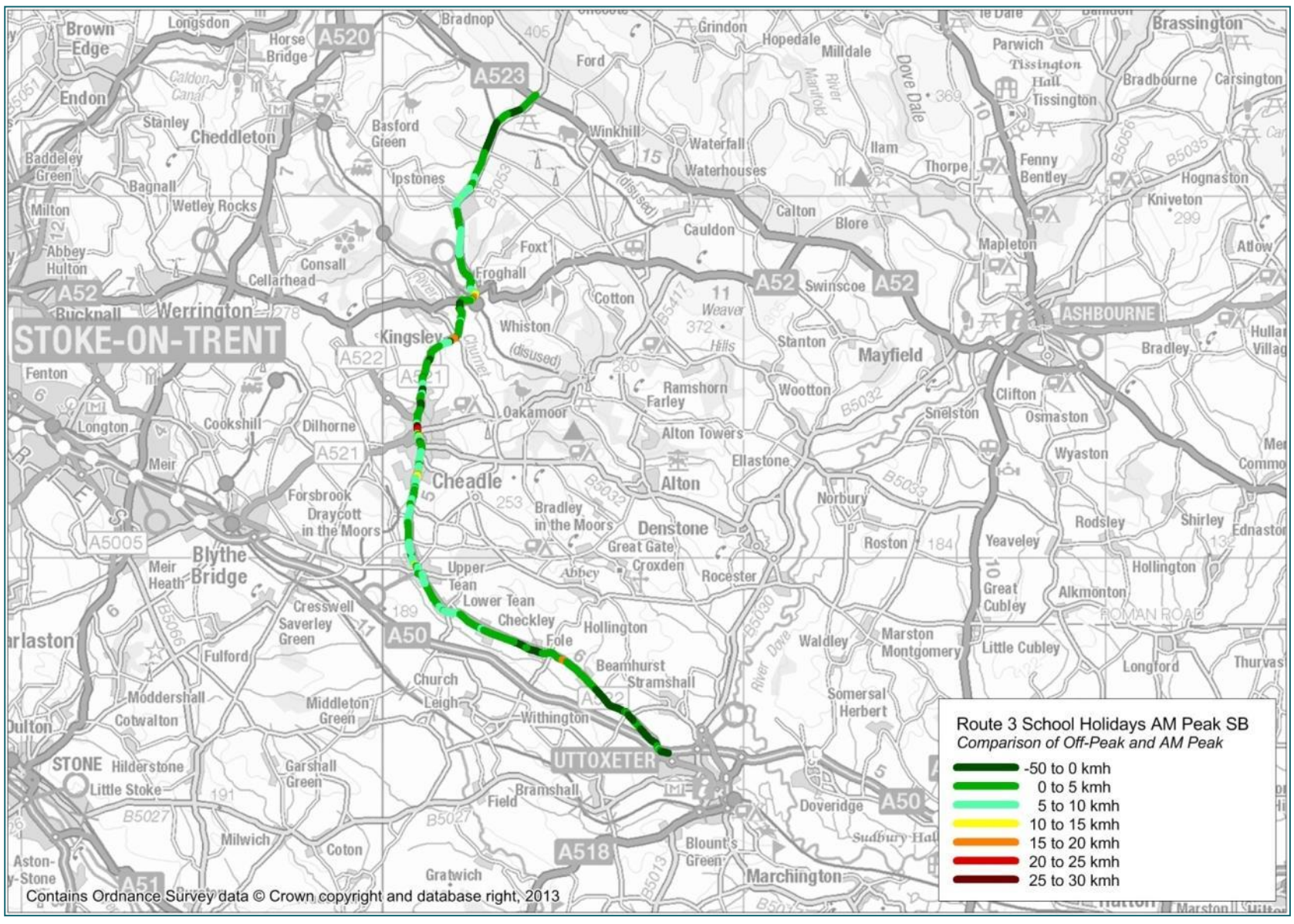

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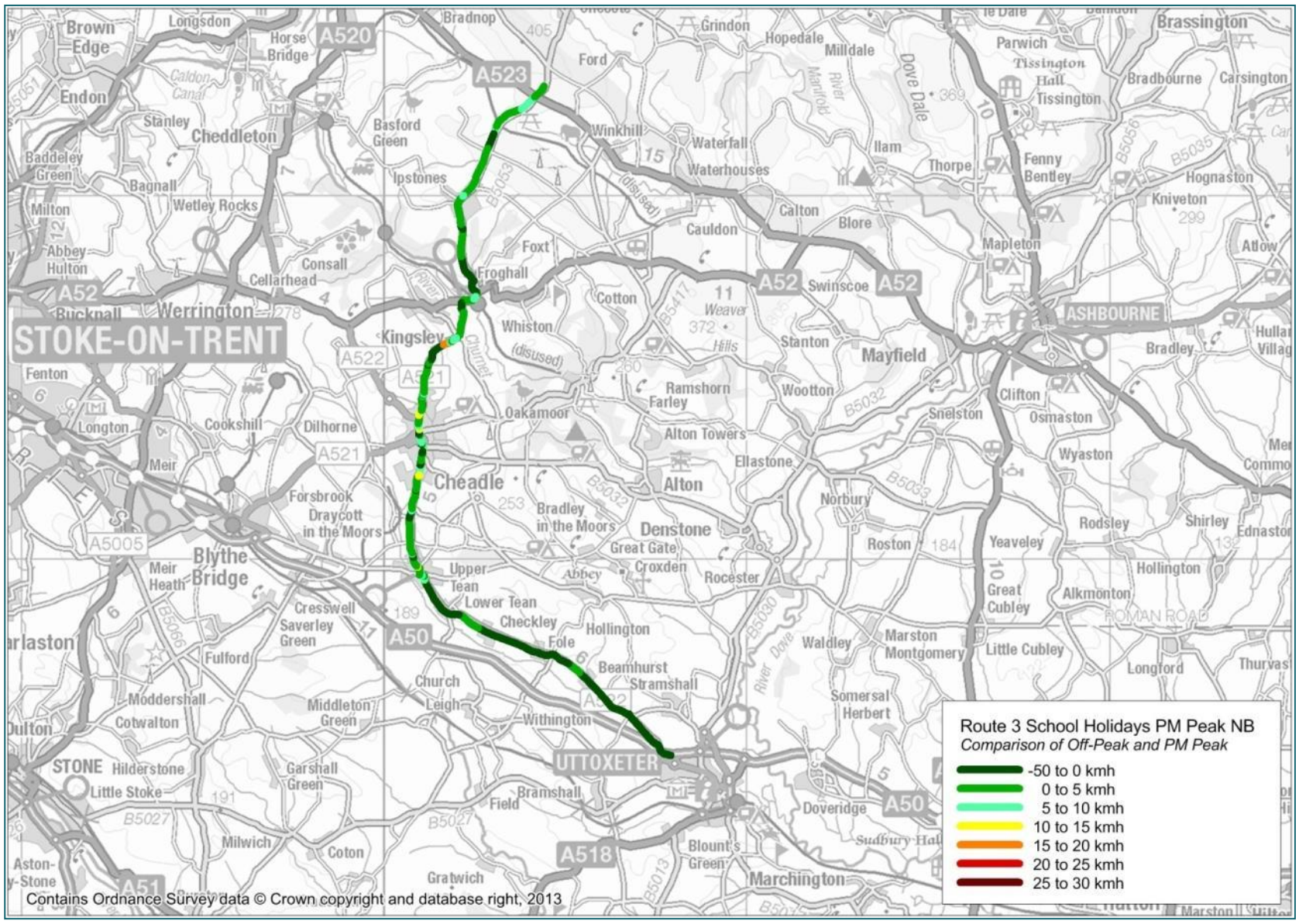


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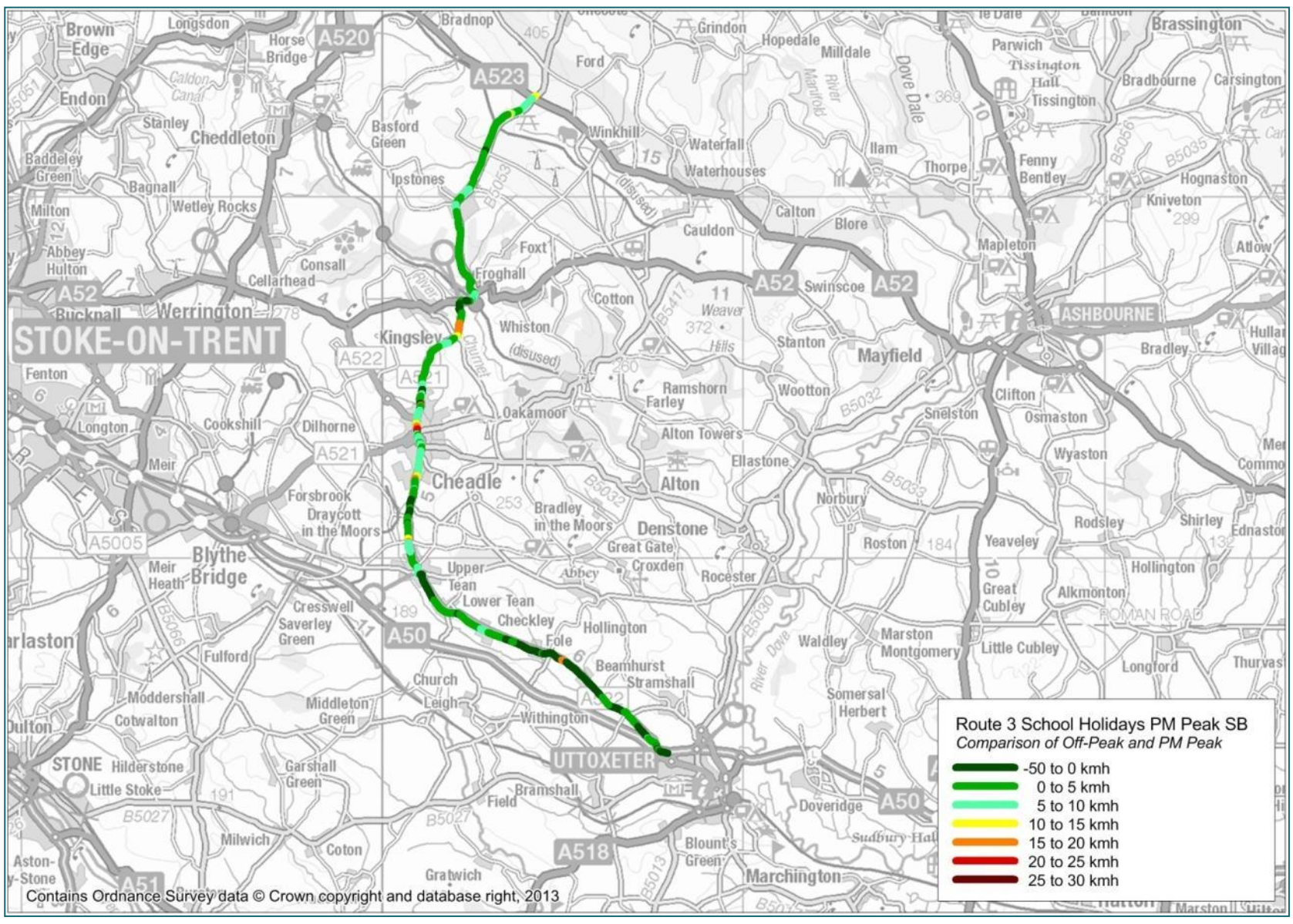

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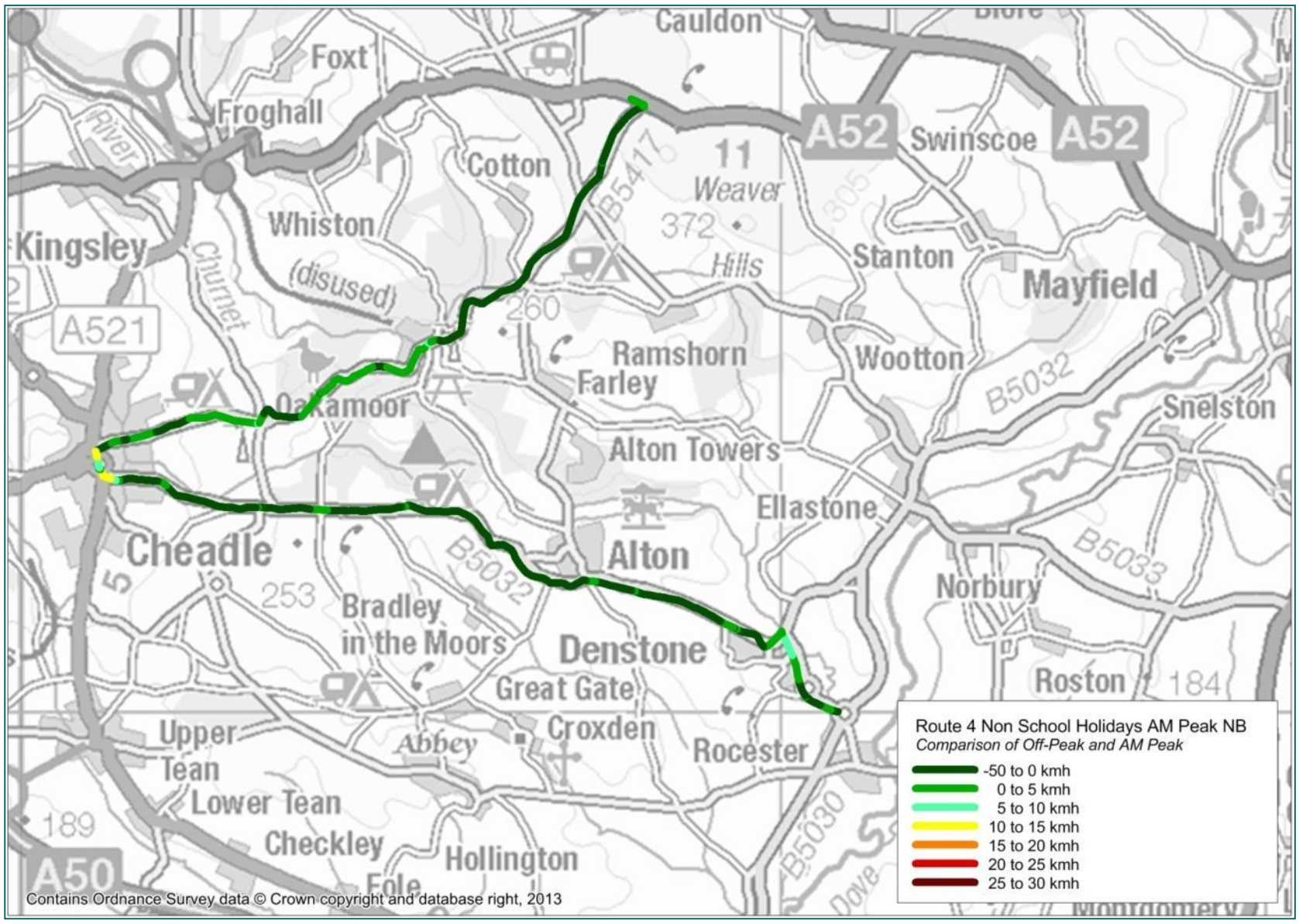


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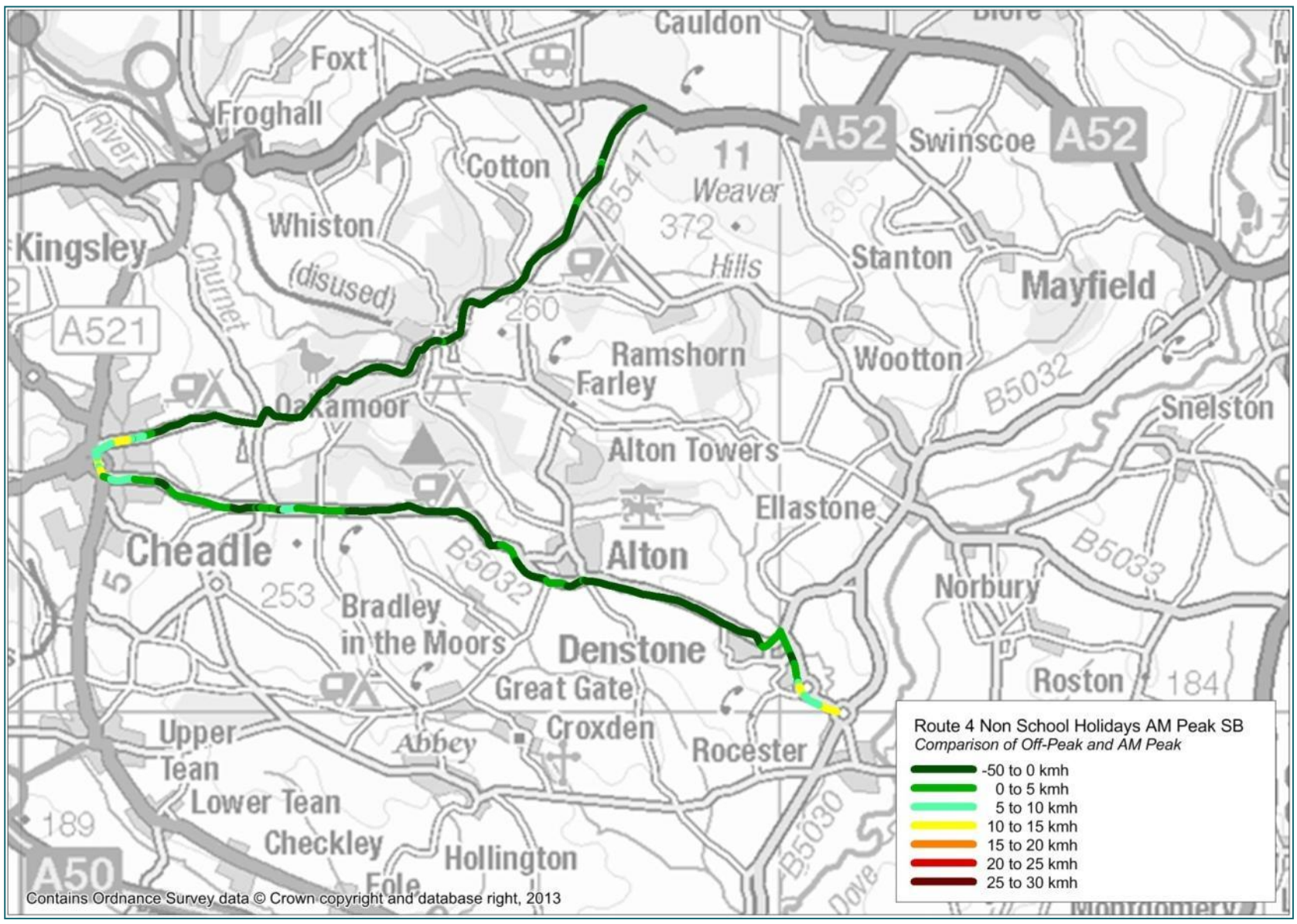

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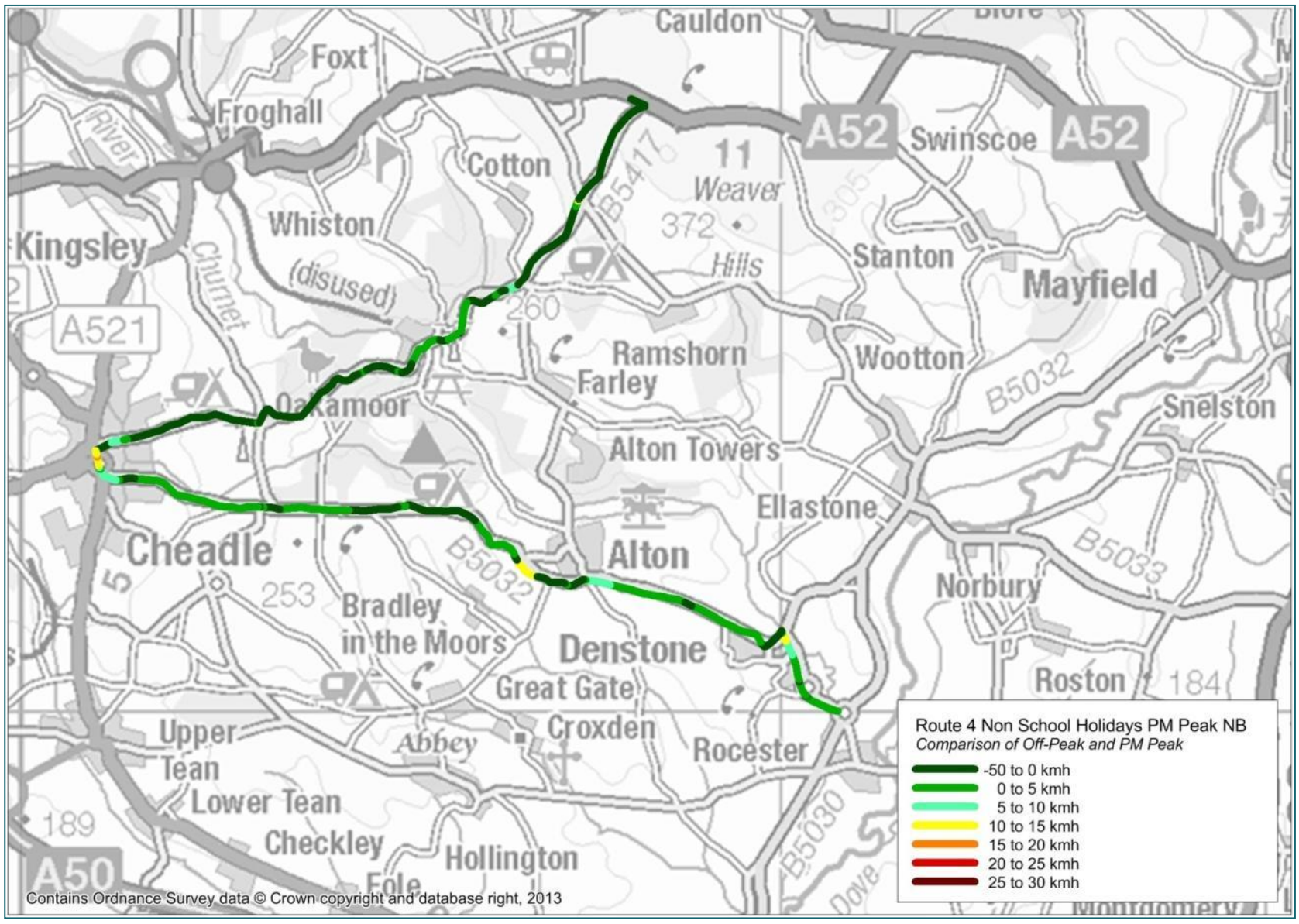


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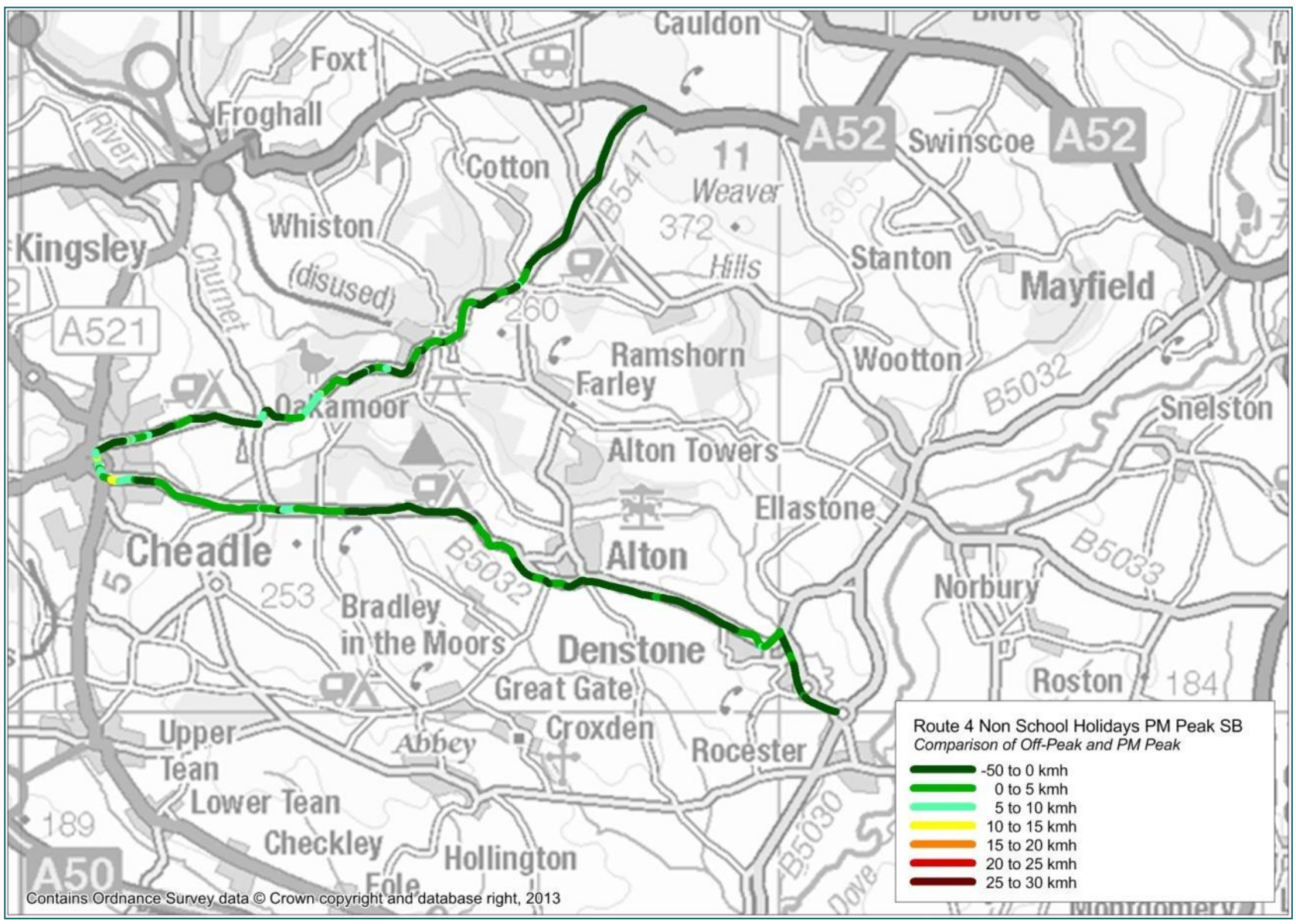

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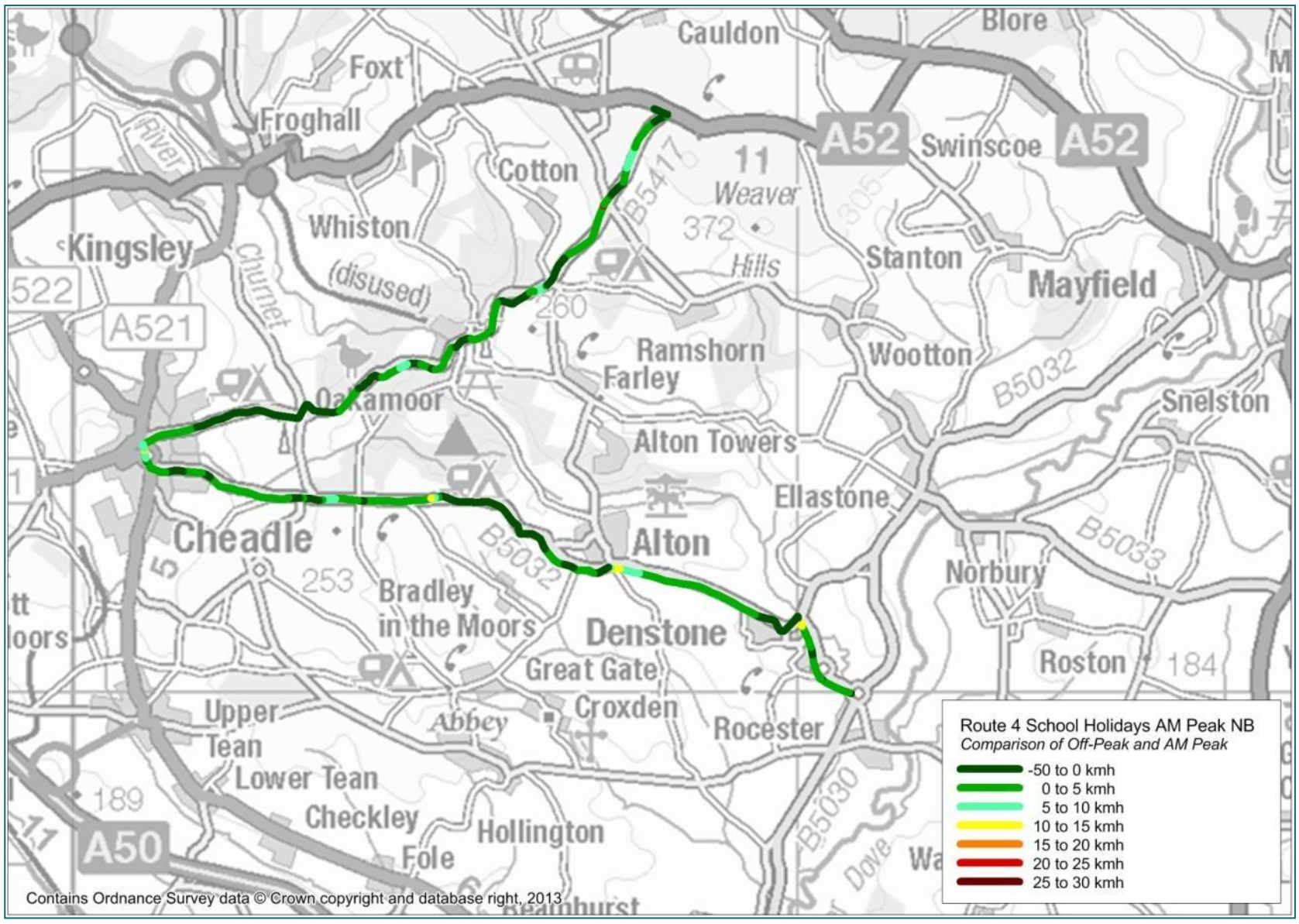


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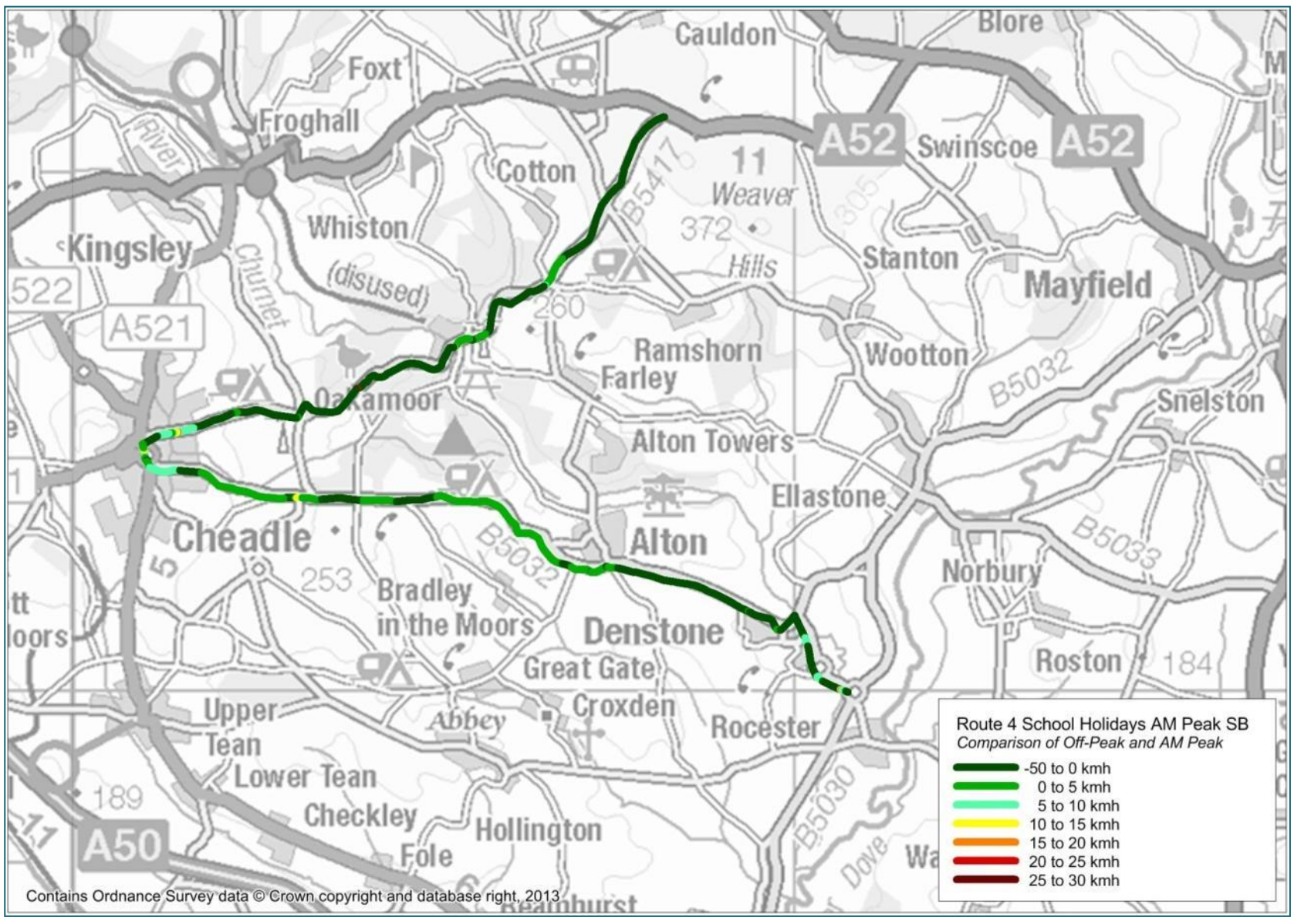

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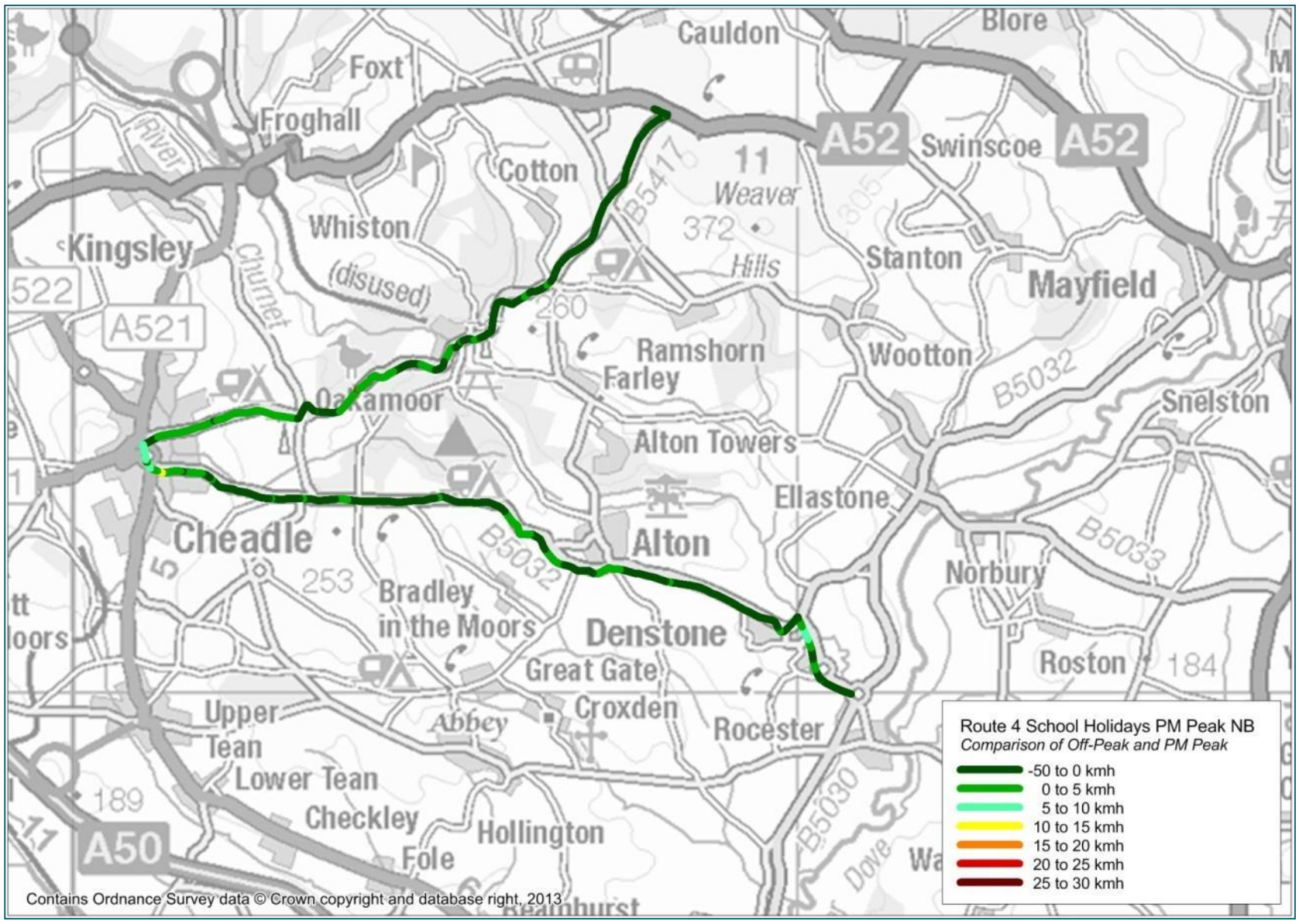


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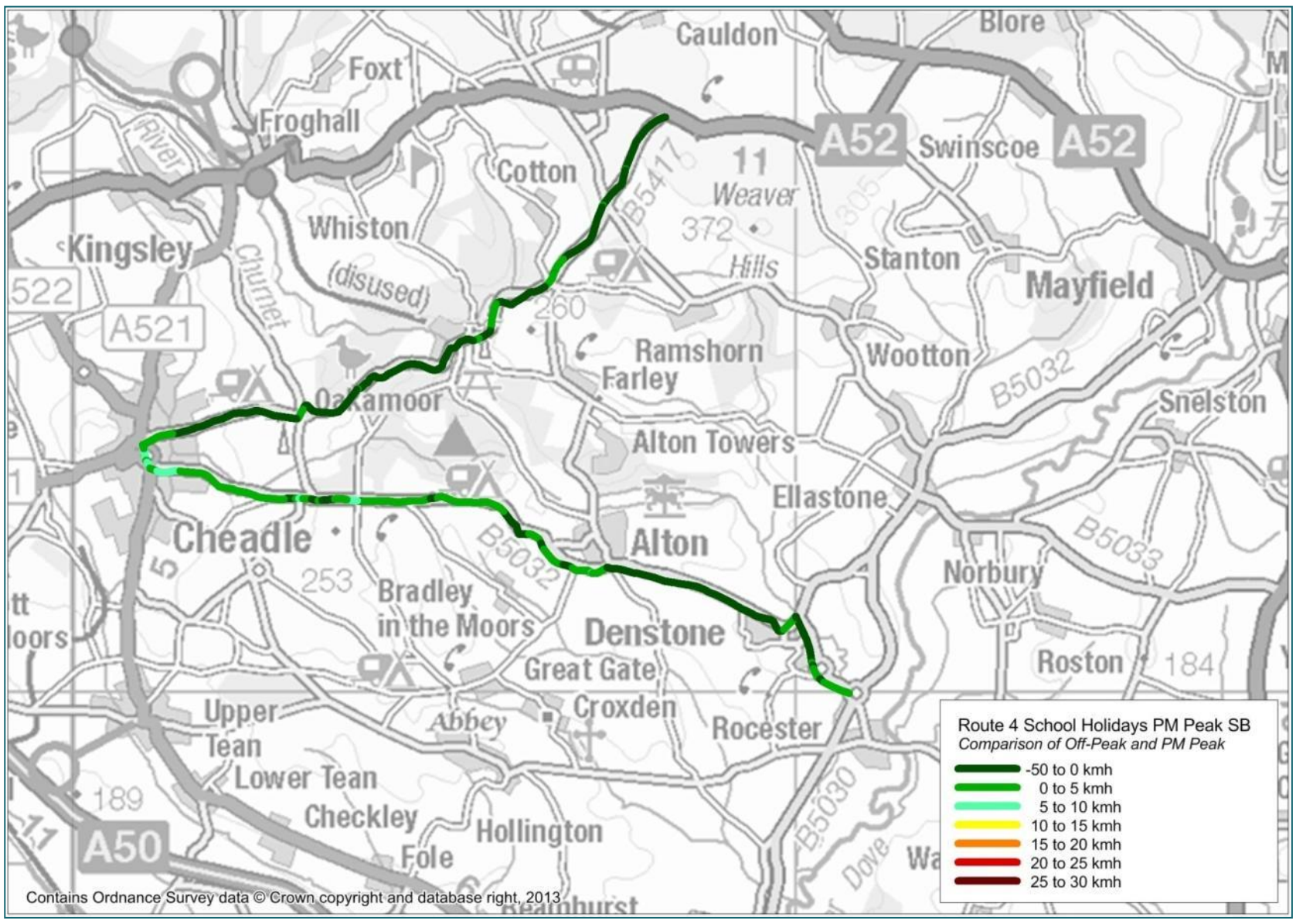

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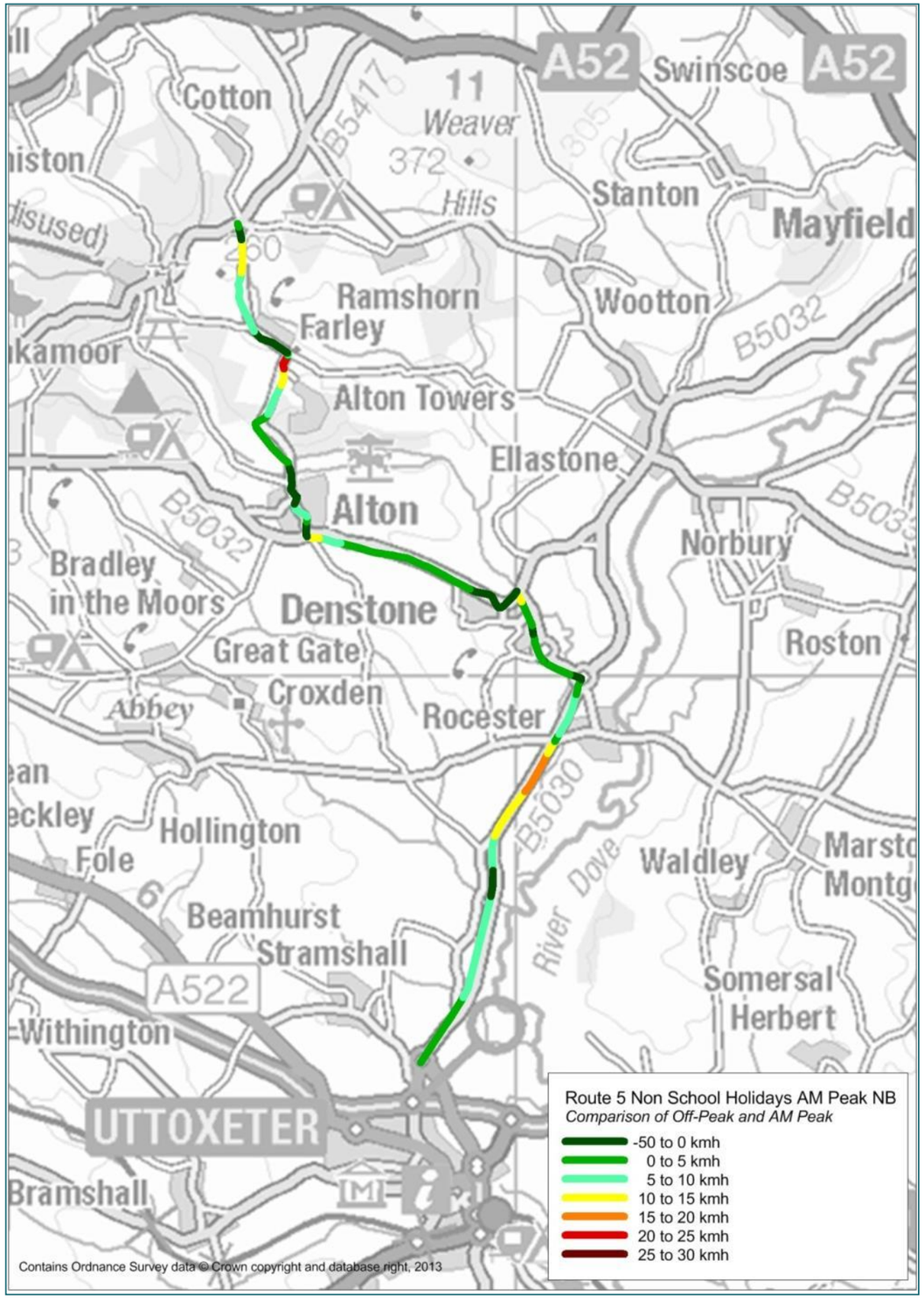


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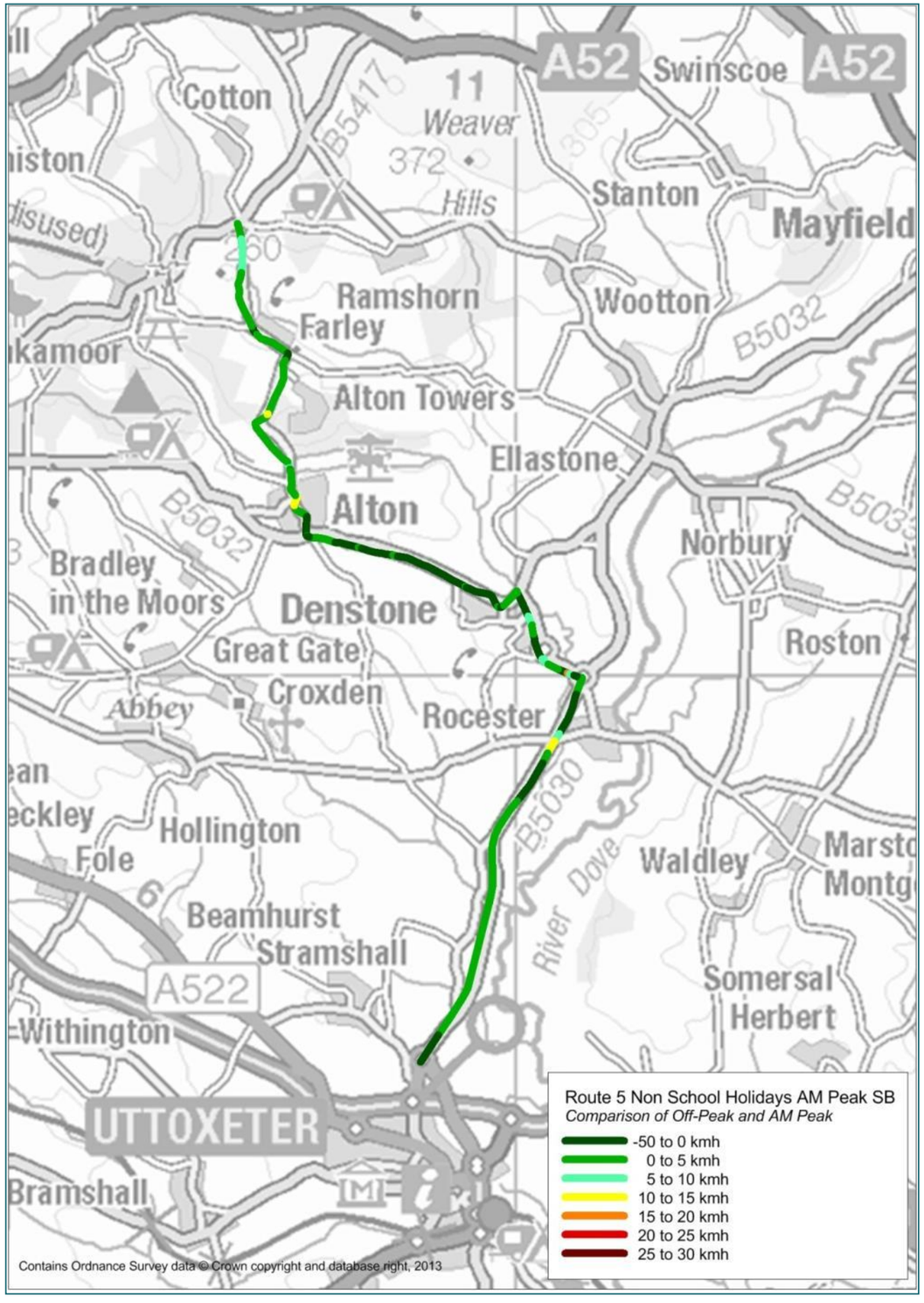

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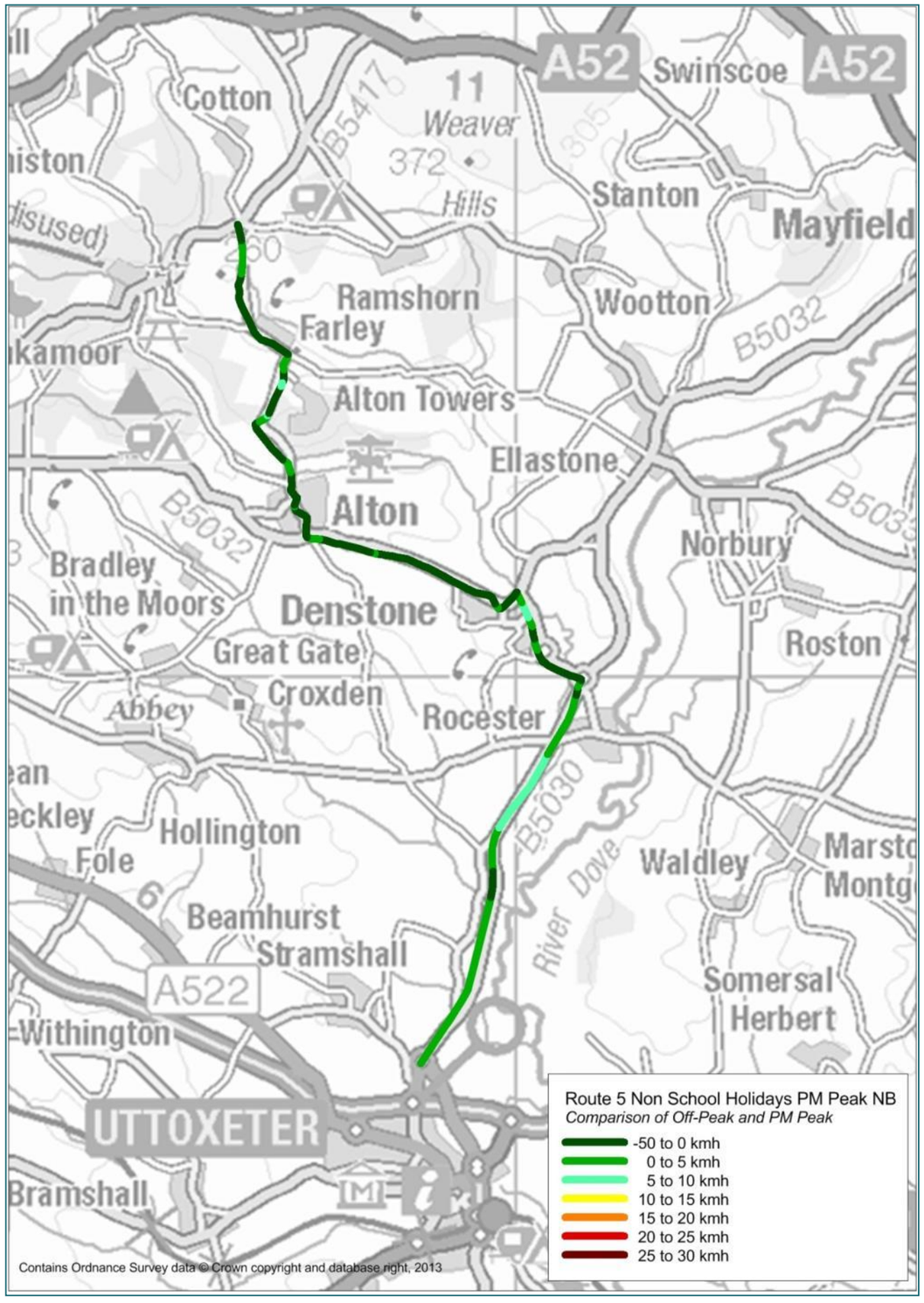


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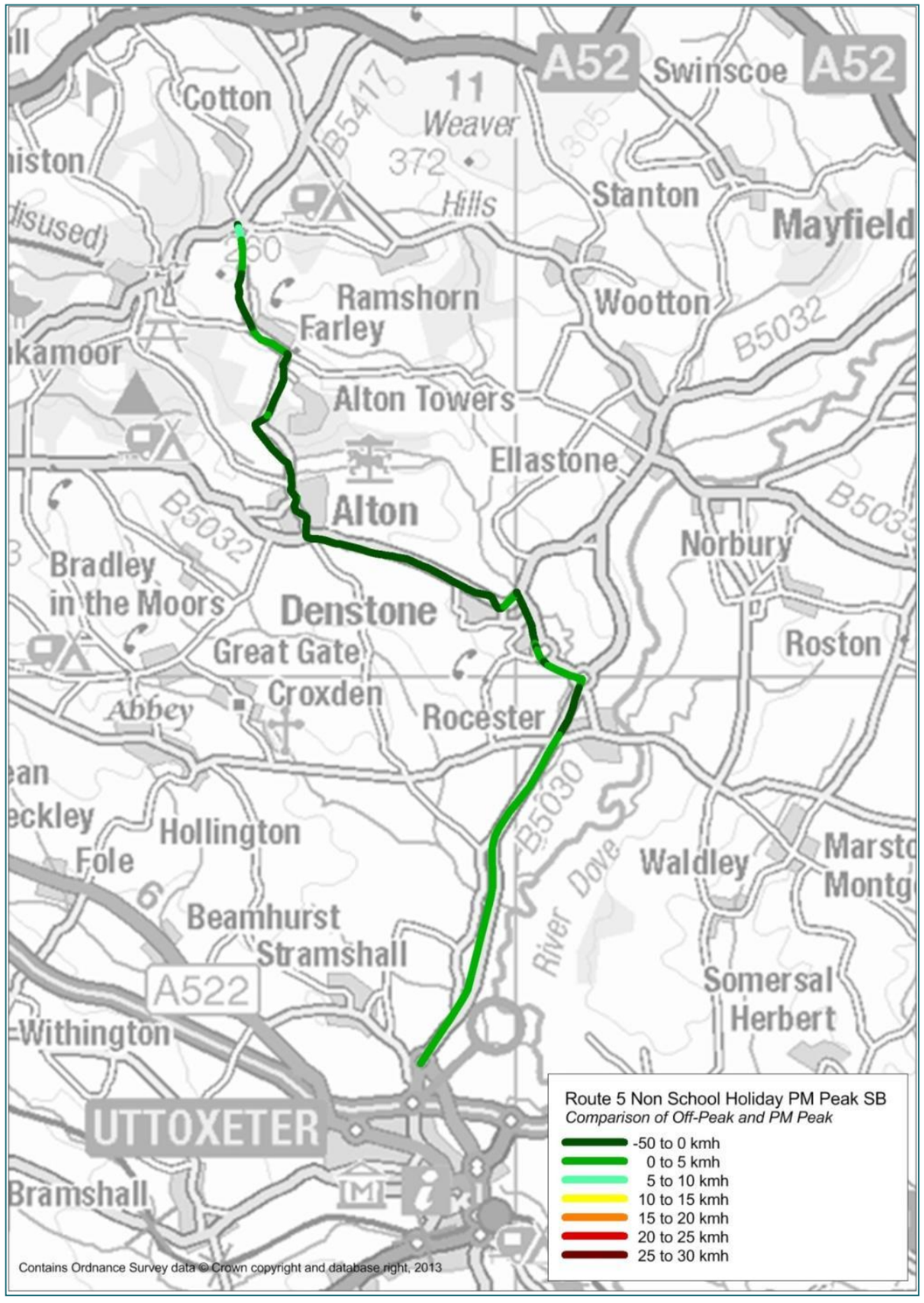

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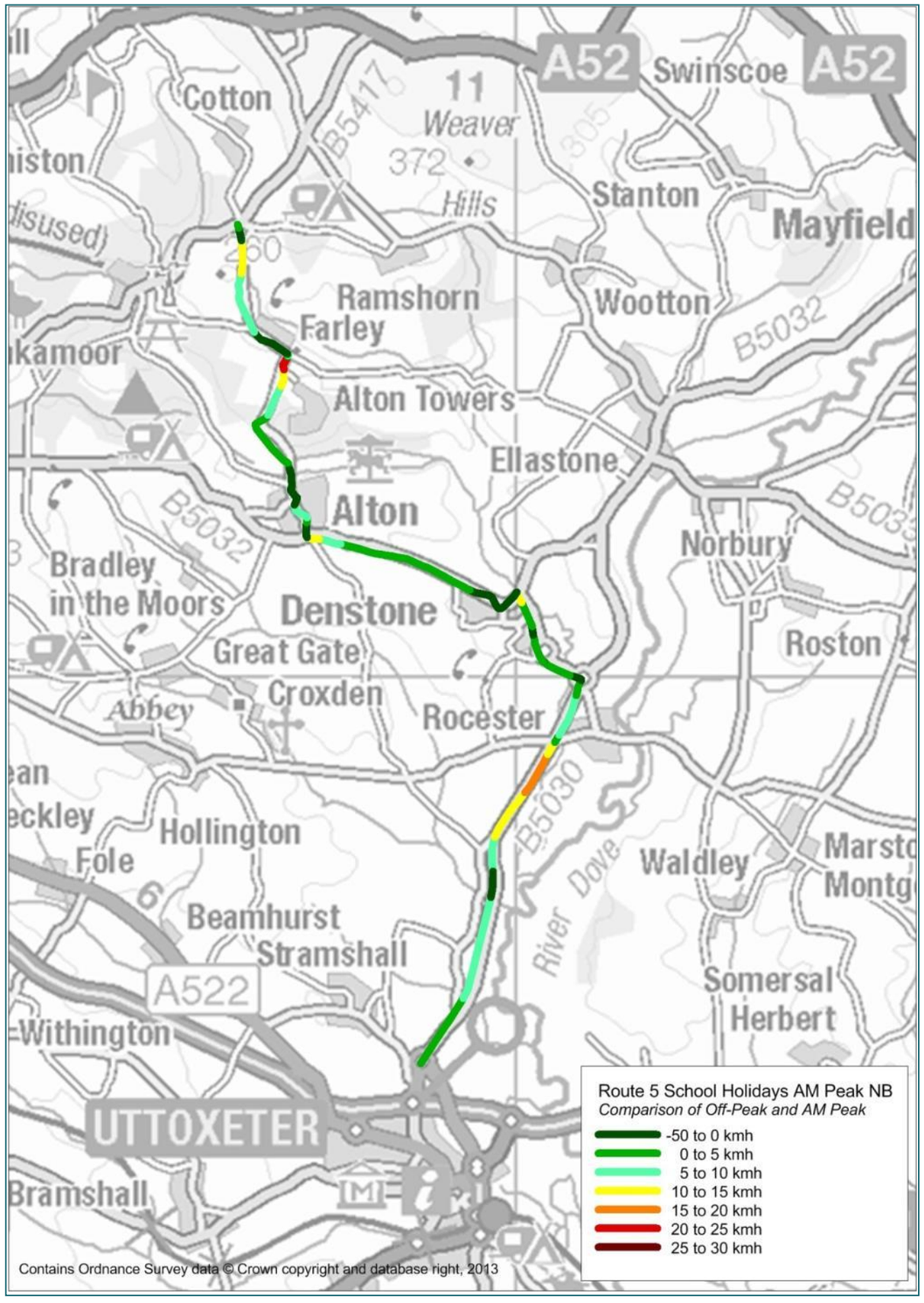


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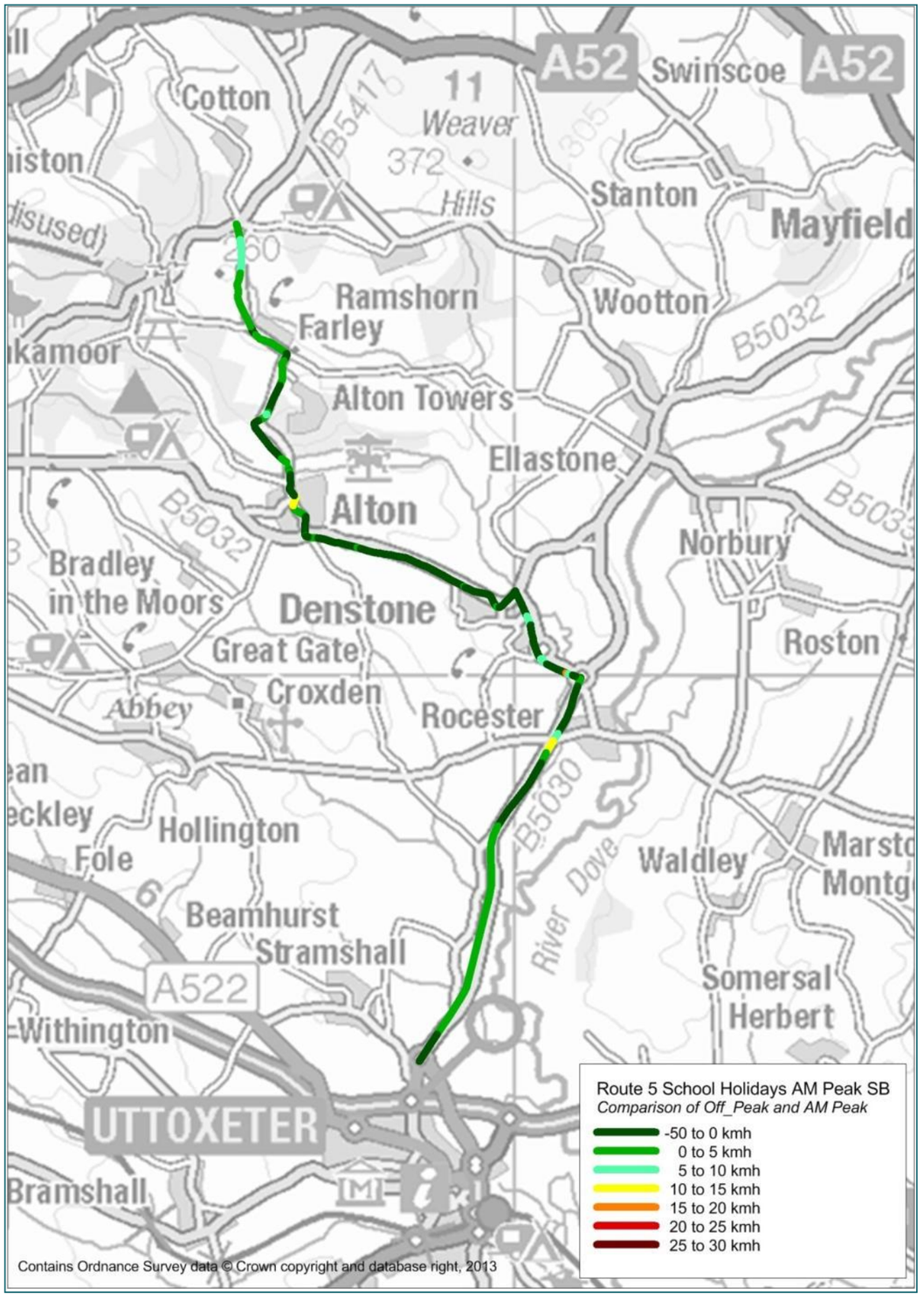

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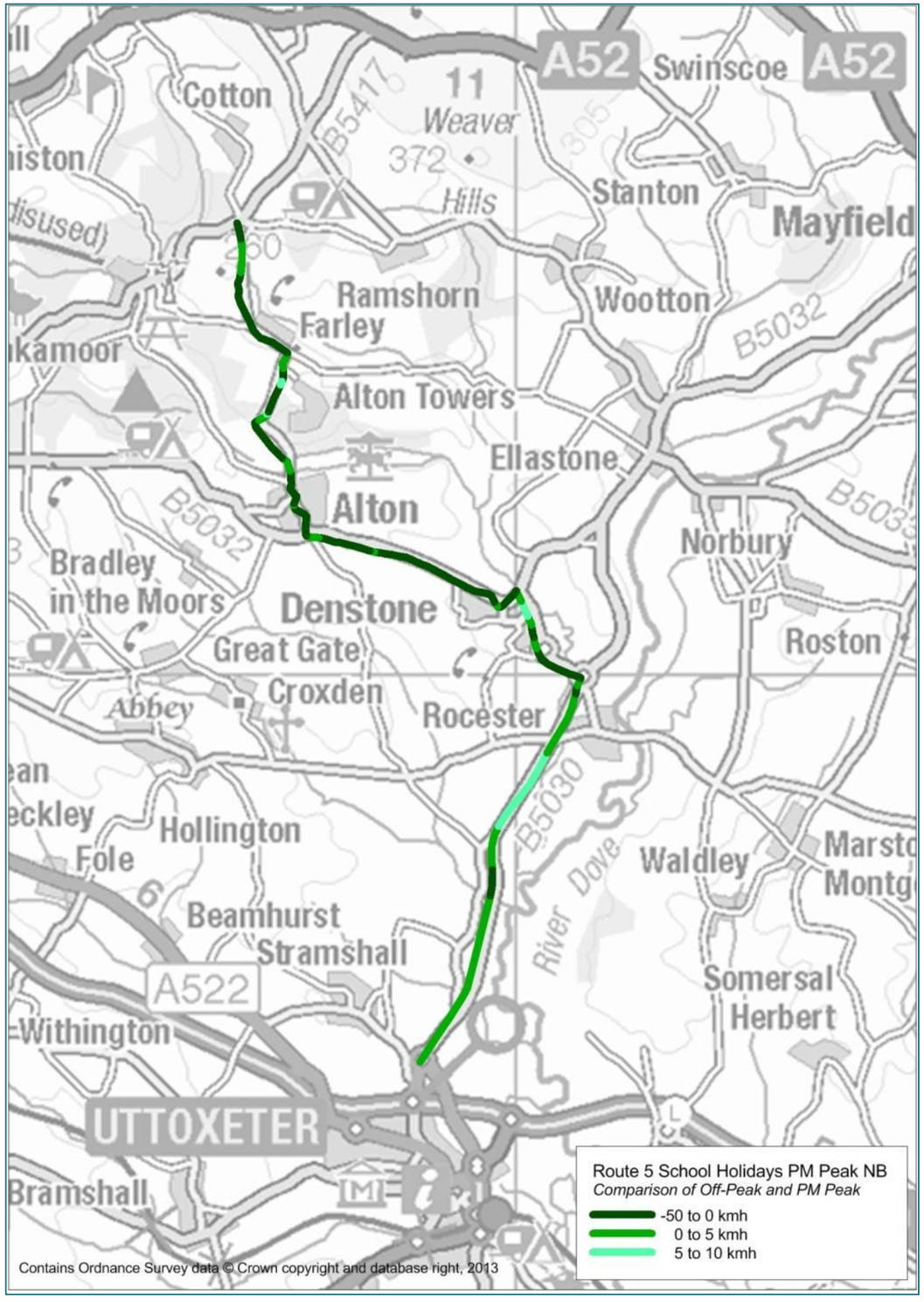


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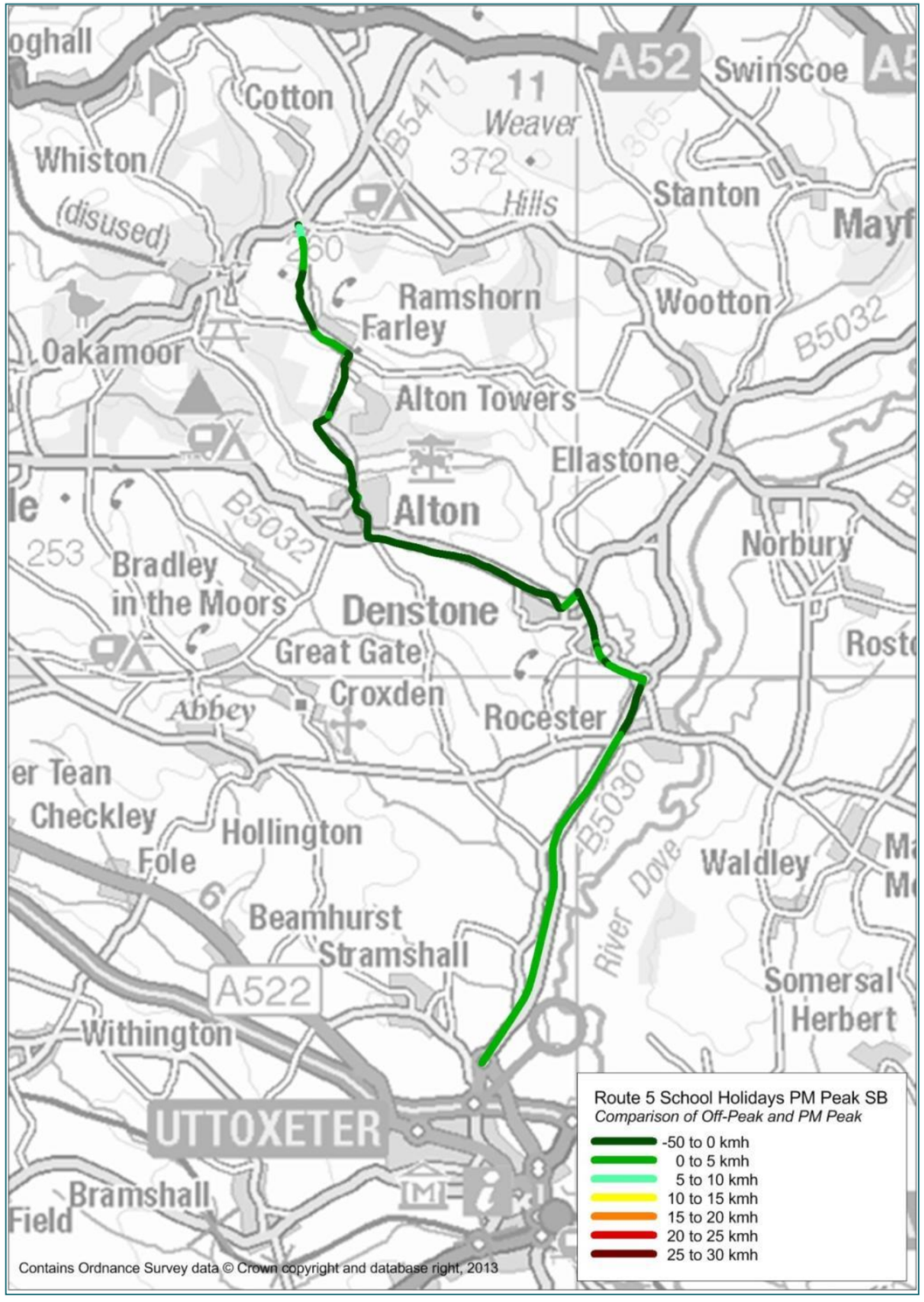
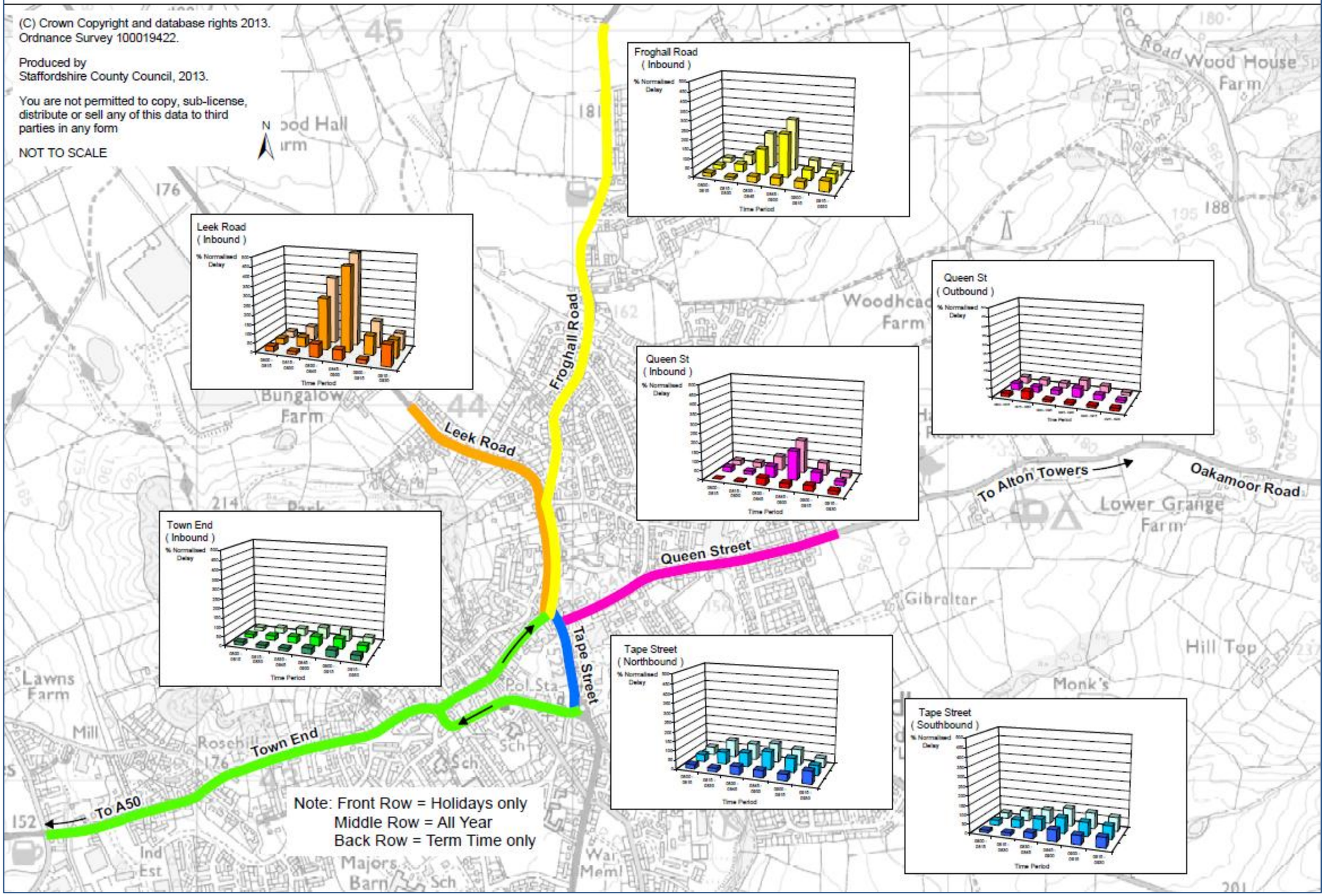


# Appendix C. Strat-e-gis Data

# Baseline Traffic Conditions - AM Peak (08:00 to 09:30 hours)



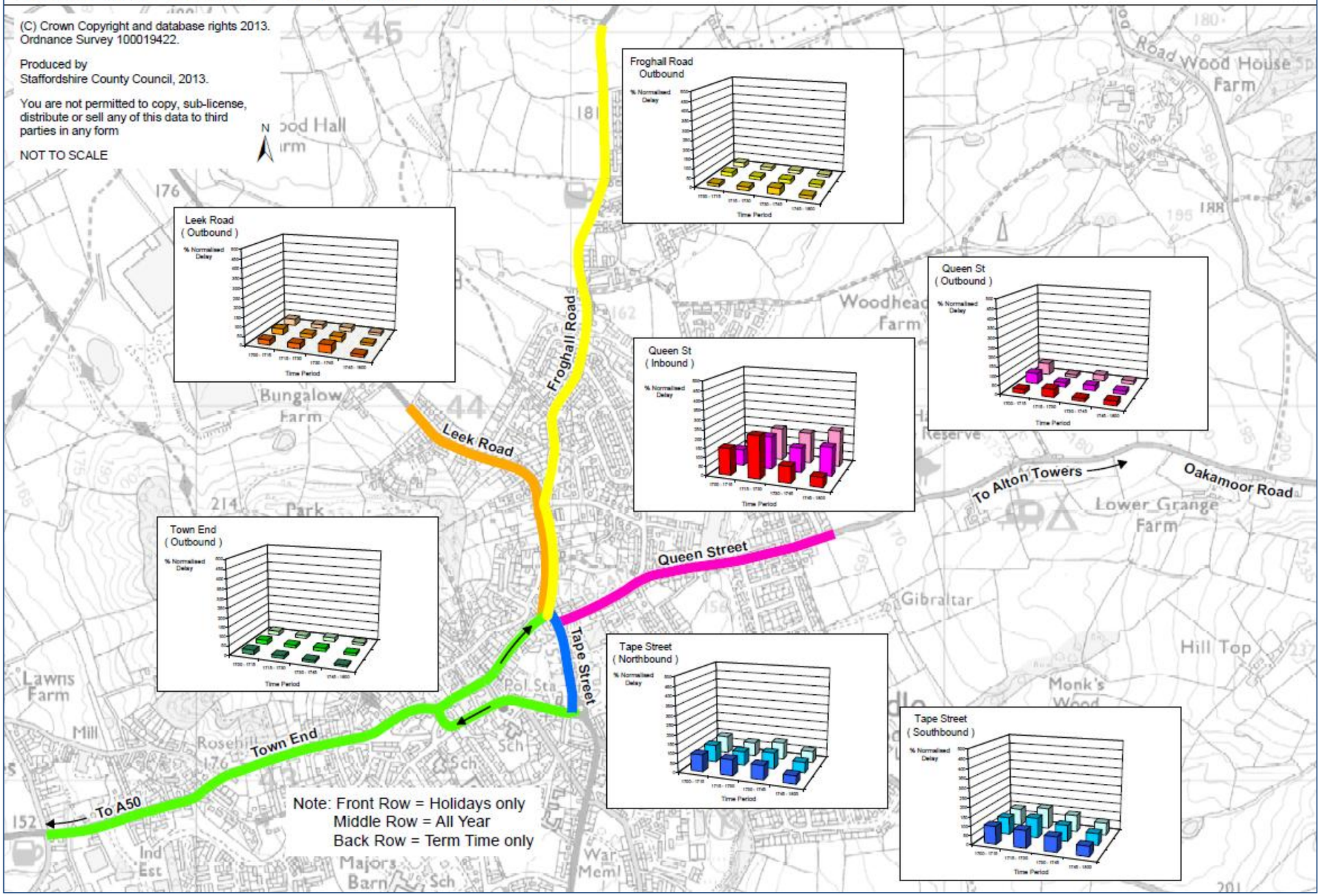
NOT TO SCALE



# Baseline Traffic Conditions - PM Peak (17:00 to 18:00 hours)



NOT TO SCALE



# Appendix D. Accident Plots for Key Locations


Staffordshire County Council

Kingsley Moor Map



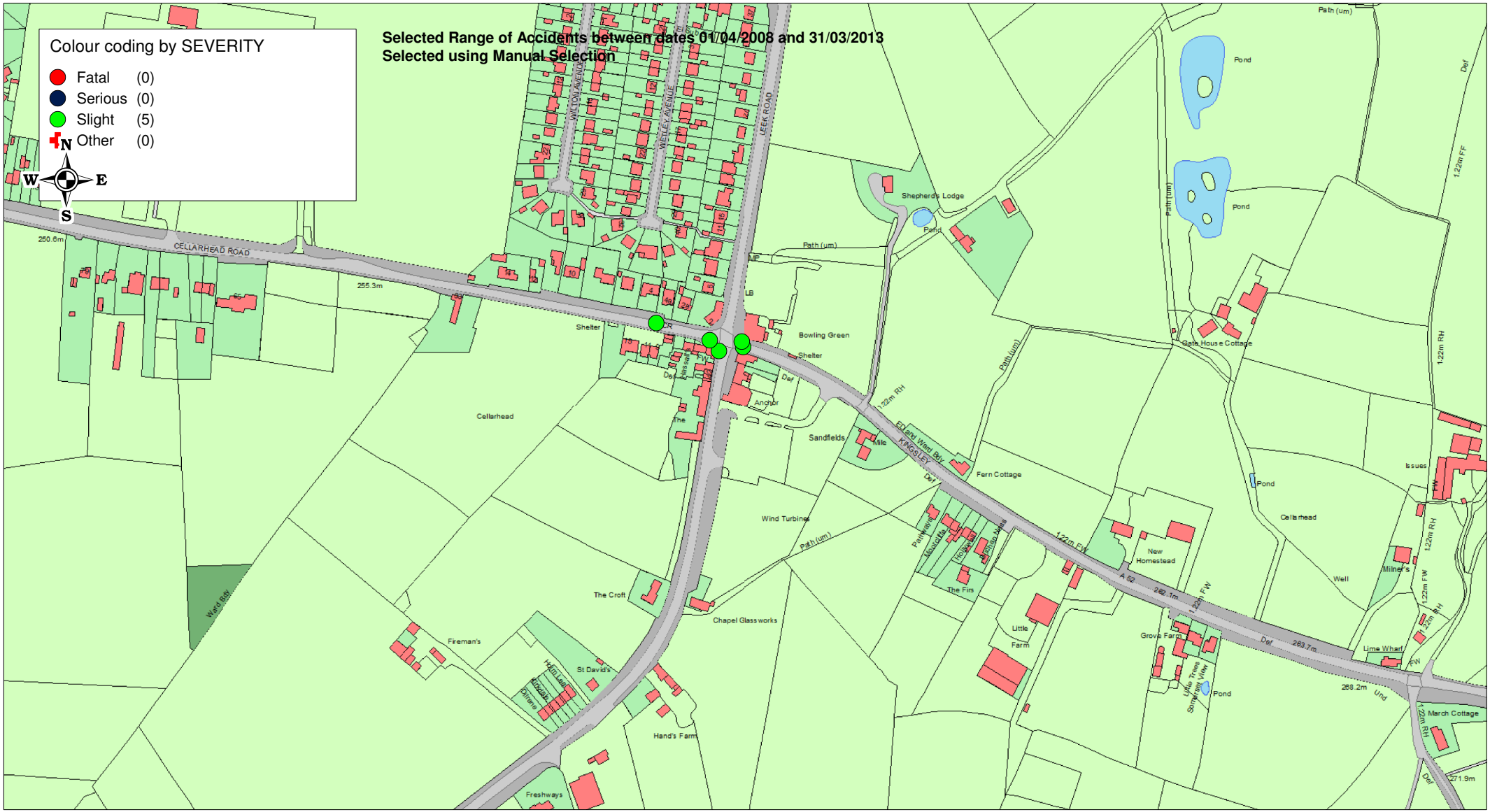
| | |
|---|---|
| SCALE | 1 : 2000 |
| DATE | 09/07/2013 |
| DRAWING No. | |
| DRAWN BY | |
| | |


Staffordshire County Council

Kingsley Bank Map



| | |
|---|---|
| SCALE | 1 : 3640 |
| DATE | 09/07/2013 |
| DRAWING No. | |
| DRAWN BY | |
| | |





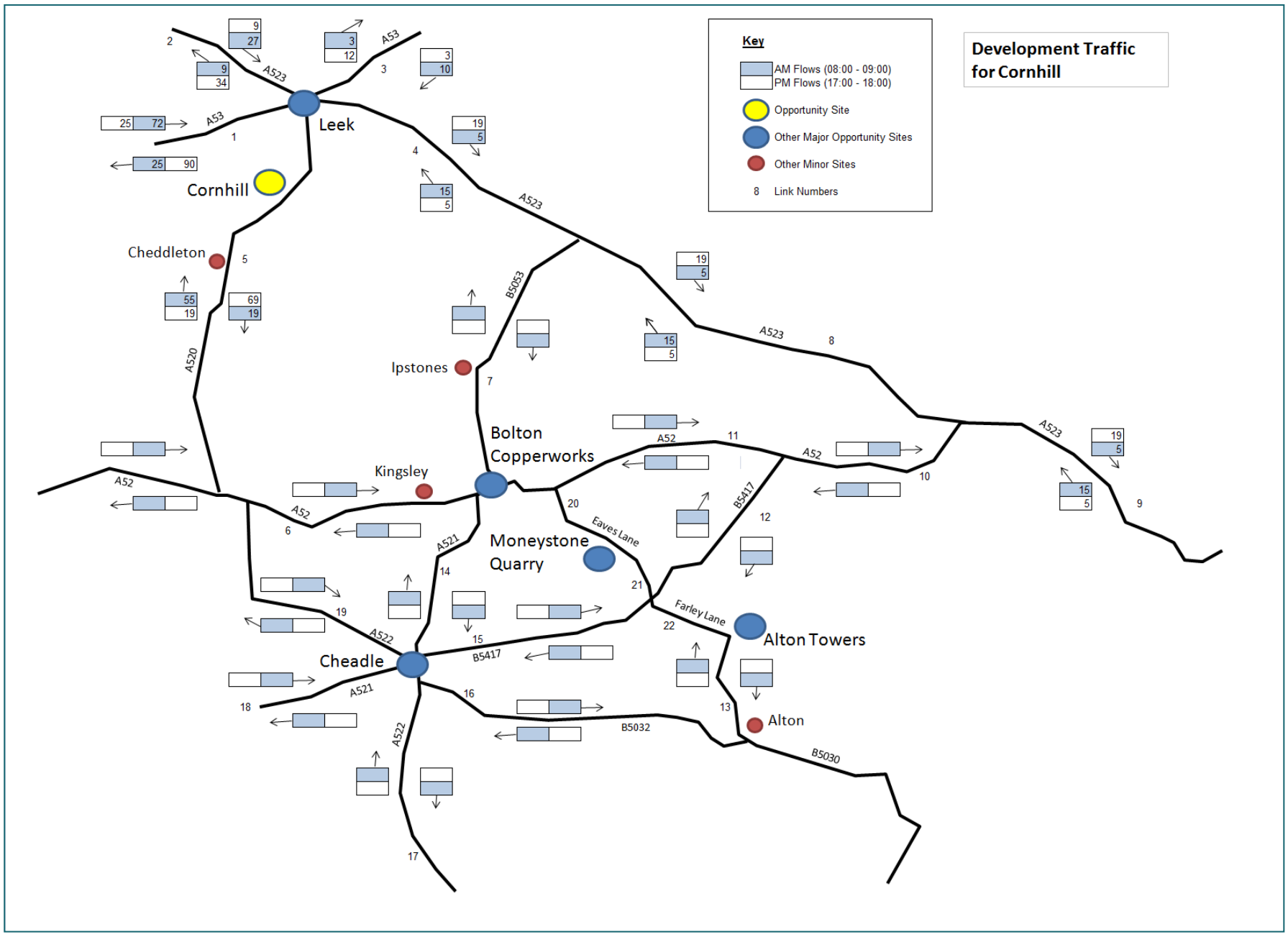

Staffordshire County Council

Cellarhead Map

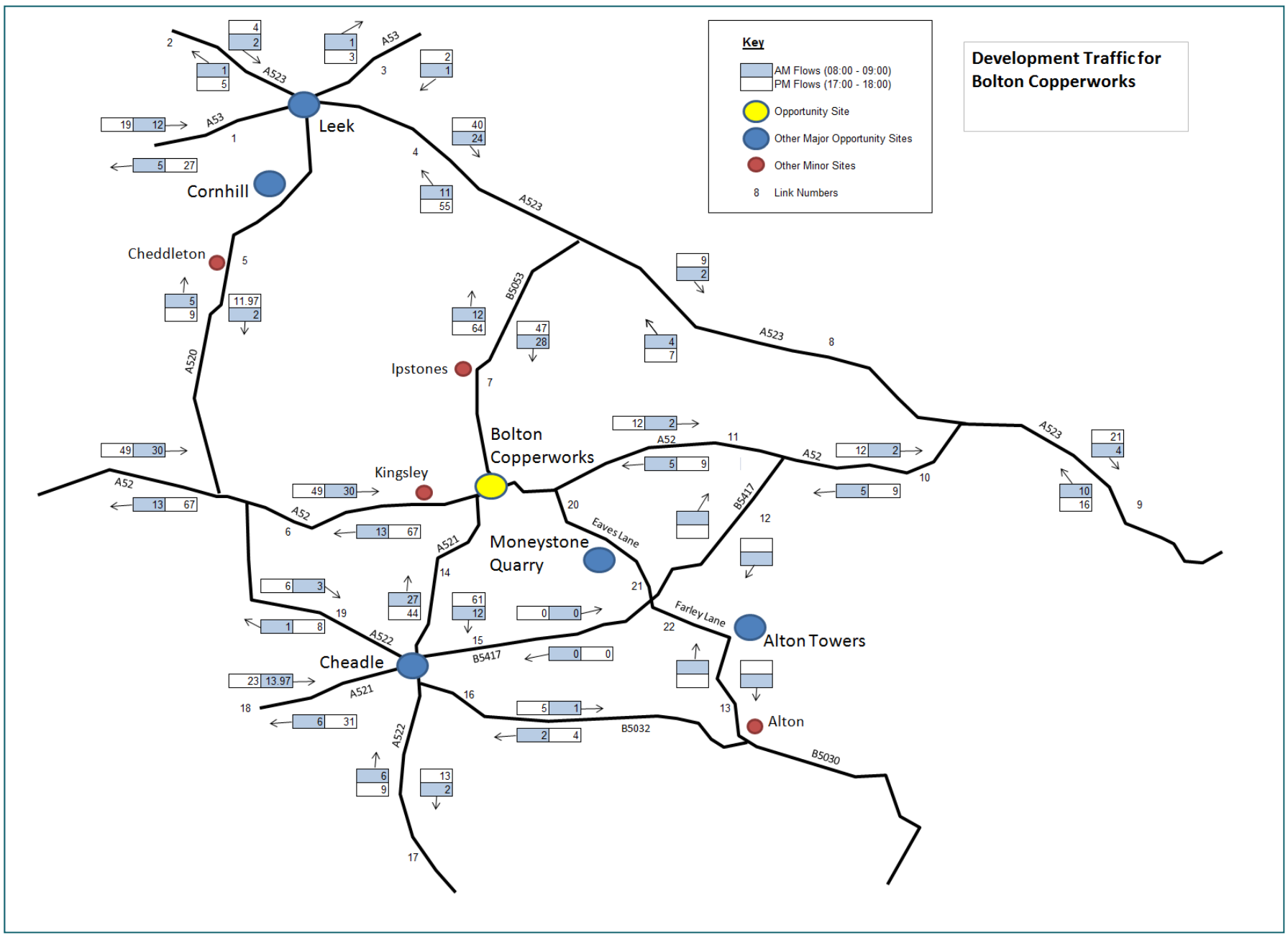
| | |
|---|---|
| SCALE | 1 : 3970 |
| DATE | 09/07/2013 |
| DRAWING No. | |
| DRAWN BY | |
| | |

# Appendix E. Traffic Impacts by Location

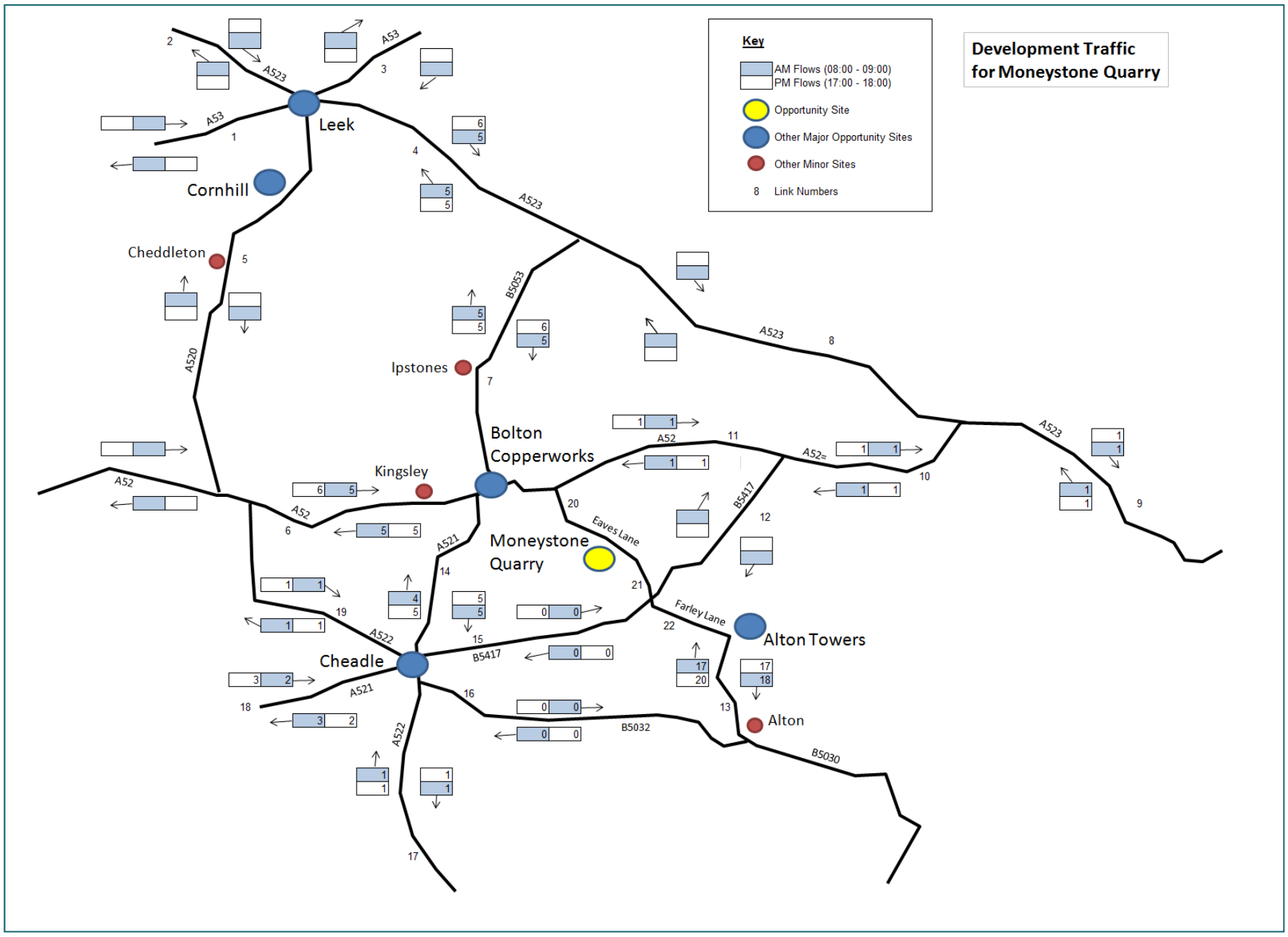
## Cornhill – Development Traffic



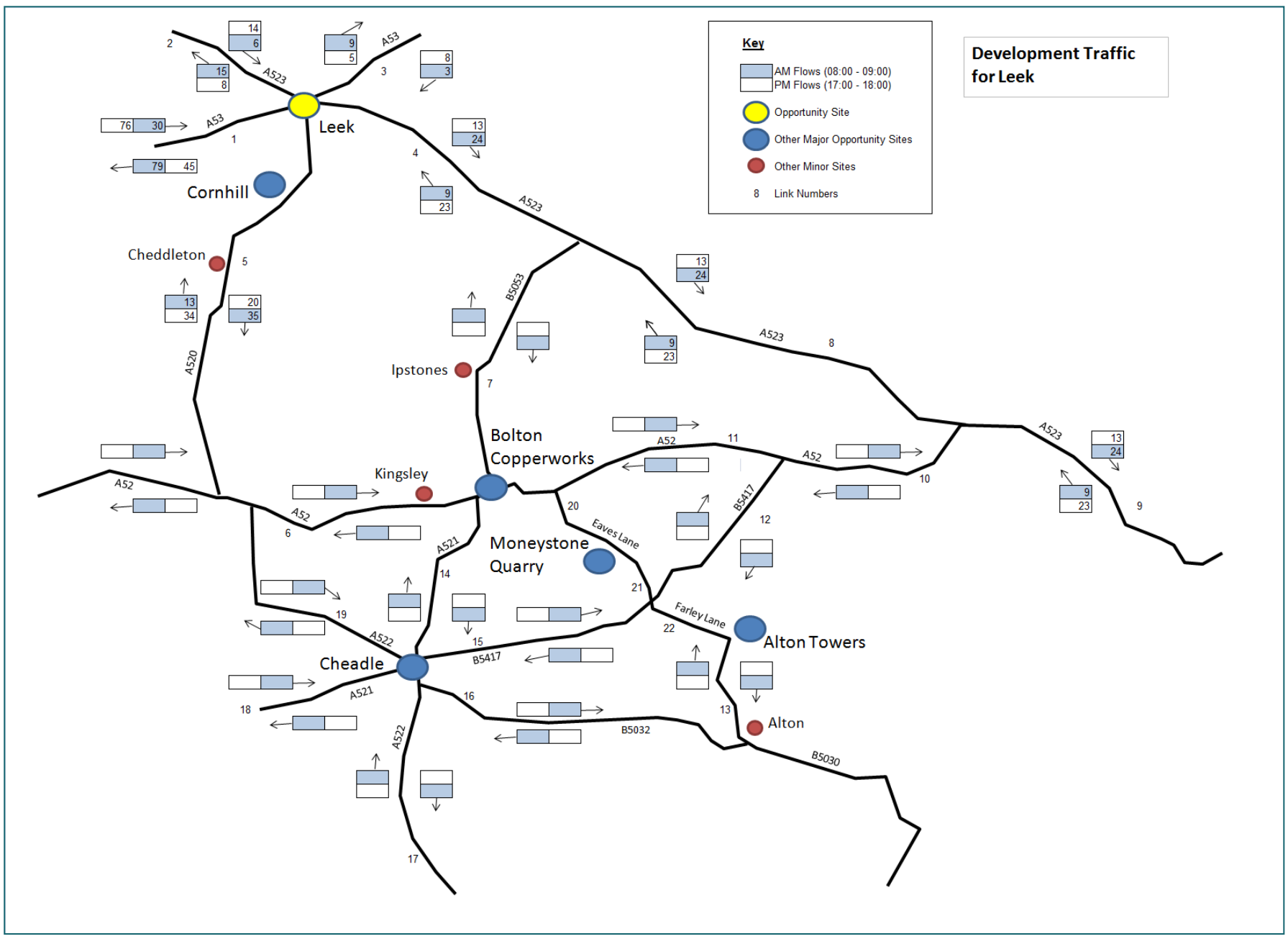

## Bolton Copperworks – Development Traffic



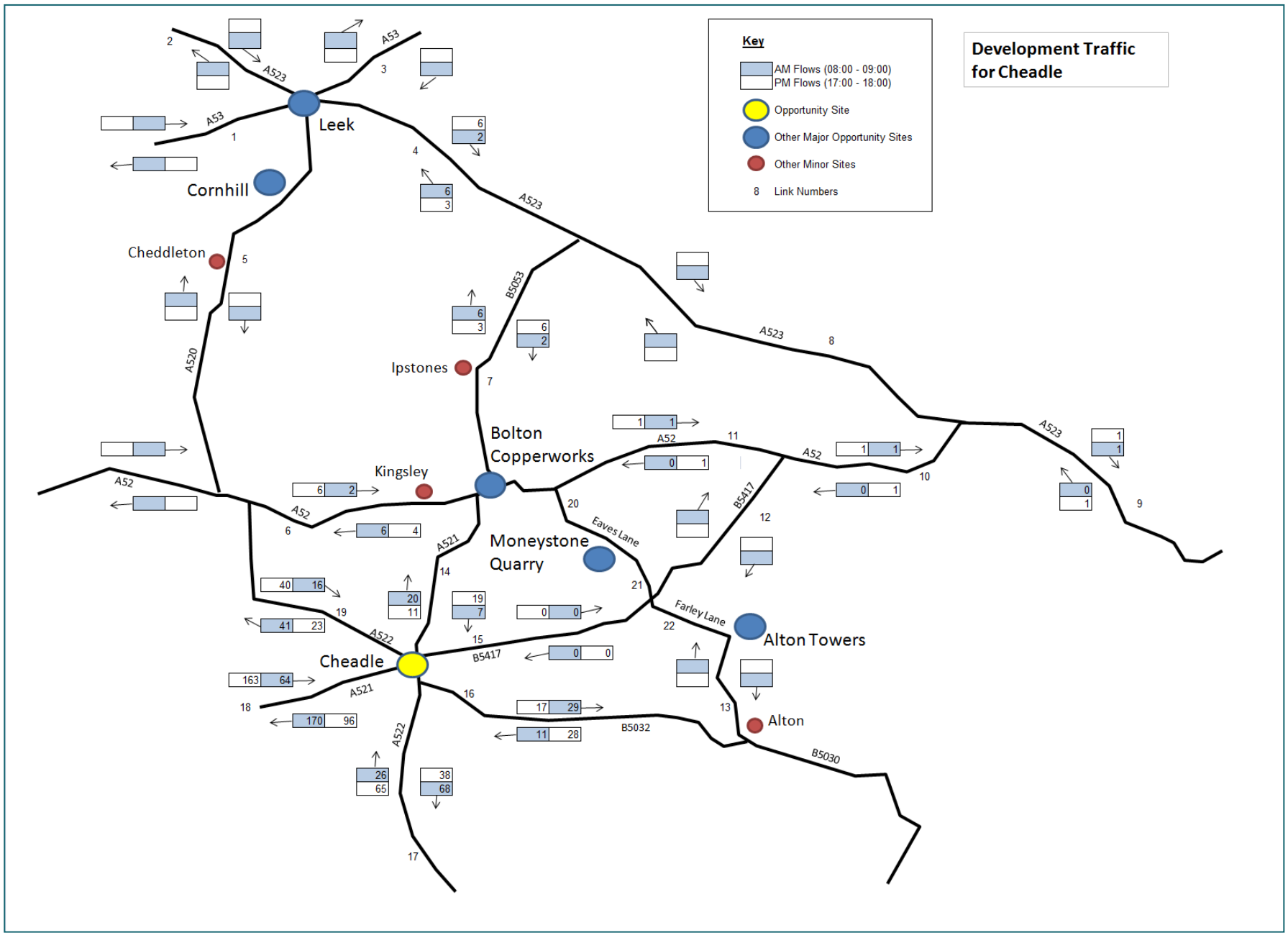
## Moneystone Quarry – Development Traffic




## Leek – Development Traffic



## Cheadle – Development Traffic



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