

**LAND TO THE EAST OF FROGHALL ROAD
CHEADLE, STOKE-ON-TRENT**

**TECHNICAL NOTE 001: SURFACE WATER - FLOOD RISK ASSESSMENT
(SUPPLEMENTARY INFORMATION FOLLOWING THE ENVIRONMENT AGENCY
PUBLICATION OF NEW DATA ON 28TH JANUARY 2025)**

1.0 Introduction

- 1.1 This technical note has been prepared to assess the flood risk to the proposed development site from surface water.
- 1.2 The original Flood Risk Assessment (FRA), ref.: HYD618_Froghall.Road_FRA&DMS-Final-Rev2.0-Con, by Betts Hydro, dated November 2022, used the Environment Agency's (EA) surface water mapping that was available at the time of preparation. The last full update to National Flood Risk Assessment (NaFRA) was in 2018.
- 1.3 The EA have published a new NaFRA and the new Risk of Flooding from Surface Water (RoFSW) mapping went live on 28th January 2025. This new model uses much better data and improved modelling methodologies and provides an improved assessment of the risk to properties, infrastructure and agricultural land. More specifically the RoFSW products indicate where surface water flooding may occur when rainwater does not drain away through the normal drainage systems or soak into the ground but lies on or flows over the ground instead.
- 1.4 A very important addition to the RoFSW mapping is the inclusion of future flood risk modelling scenarios to account for the uncertainty of Climate Change (CC). The future scenario dataset has been produced to indicate the predicted impacts of CC on future flood risk. The CC allowances are based on the latest UK Climate Projections (UKCP18) from the Met Office, using the Representative Concentration Pathway 8.5 (RCP8.5). A near-term epoch (2040 – 2060 '2050s' epoch) and central allowances have been used initially, to support short and medium-term decisions informed by the highest flood likelihood projections.
- 1.5 All proposed development sites should be assessed against the most up-to-date flood risk information and the updated RoFSW mapping is considered such.

2.0 Surface water flood risk assessment

2.1 The RoFSW updated mapping dataset has been created by combining best available flood models, including locally produced detailed flood model information from Lead Local Flood Authorities (LLFA), and national flood modelling. These are used to generate the probability of flood risk for each 2m grid square of land, with the aim of using the best available flood risk information in any one location and it includes information about flooding extents and depths. RoFSW is a probabilistic product, meaning that it shows the overall risk, rather than the risk associated with a specific event or scenario. In externally published versions of this dataset, risk is displayed as one of three likelihood bandings:

- High - greater than or equal to 1 in 30 (3.3%) chance of flooding in any year
- Medium – Less than 1 in 30 (3.3%) but greater than or equal to 1 in 100 (1%) chance of flooding in any given year
- Low – Less than 1 in 100 (1%) but greater than or equal to 1 in 1000 (0.1%) chance of flooding in any given year

2.2 It is important to recognise that the RoFSW datasets include depth and velocity data which can be used to determine the specific flood risk. The ‘High’, ‘Medium’ and ‘Low’ flood outlines are simply the extents of potential flood water in a range of events not the flood risk of a specific event.

2.3 The current extent of surface water flooding indicated in the new RoFSW dataset is presented below in **Figure 1** using QGIS (Geographic Information System software) to overlay aerial imagery and the development proposals. The full drawing is in **Appendix A**.

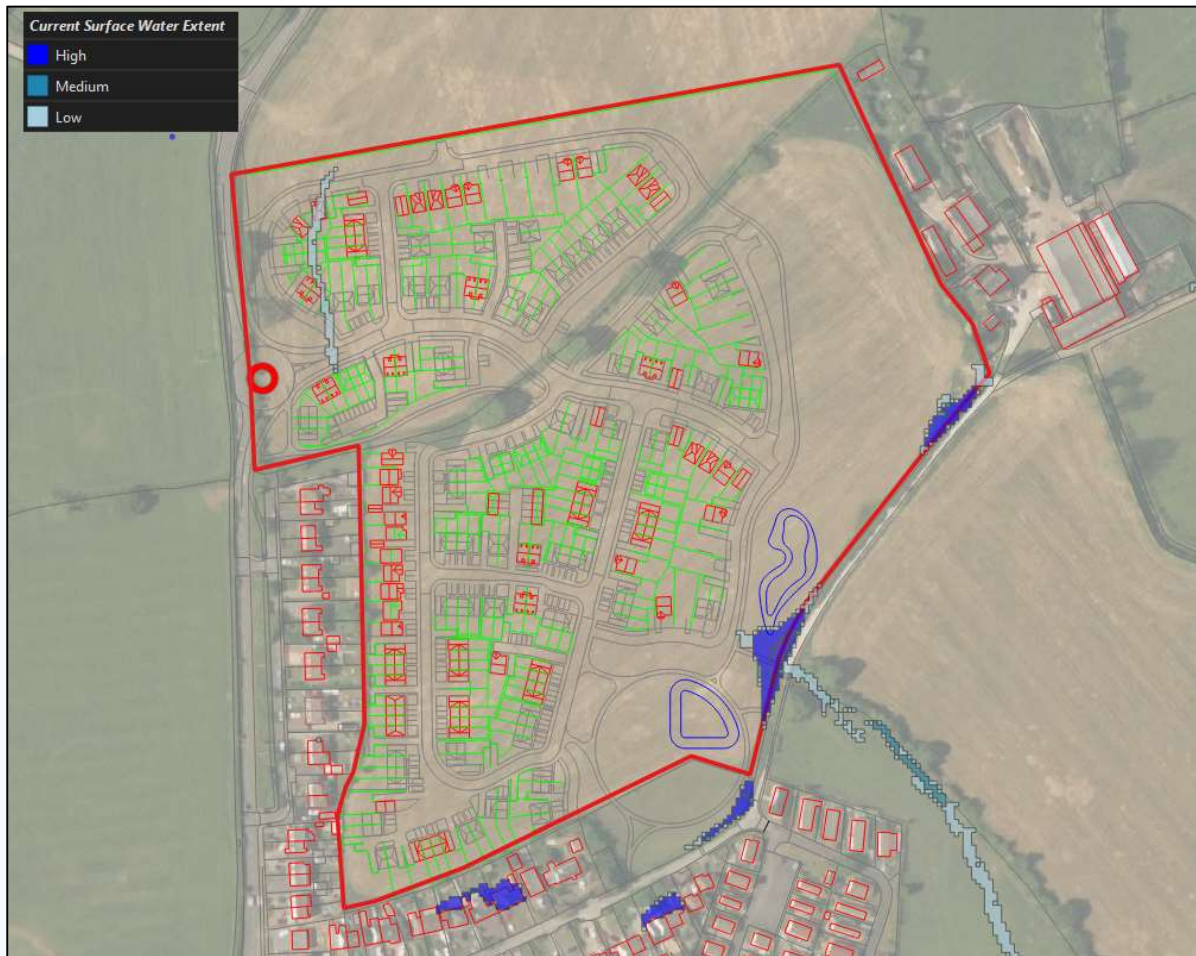


Figure 1 – RoFSW High, Medium and Low outlines overlaid [current day scenario]

- 2.4 The extent of current day surface water flooding varies with a small area in the northwest shown to be ‘low’ and two locations on the eastern boundary (corresponding with low-points) shown to be at ‘medium’ and ‘high’ likelihood of occurrence.
- 2.5 The new RoFSW dataset also includes a future Climate Change scenario that must be considered; this is presented overleaf in **Figure 2**, the full drawing is in **Appendix A**.
- 2.6 The extent of future surface water flooding varies with small areas in the northwest, west and northeast shown to be ‘low’ and two locations on the eastern boundary (corresponding with low-points) shown to be at ‘medium’ and ‘high’ likelihood of occurrence.



Figure 2 – RoFSW High, Medium and Low outlines overlaid [future scenario – Epoch 2050]

2.7 The National Planning Policy Framework (NPPF) identifies that a sequential approach to flood risk should be adopted. NPPF §170 states: *‘Inappropriate development in areas at risk of flooding should be avoided by directing development away from areas at highest risk (whether existing or future).’* NPPF §173 states: *“A sequential risk-based approach should also be taken to individual applications in areas known to be at risk now or in the future from any form of flooding, by following the steps below”*. NPPF §174 states: *‘Within this context the aim of the sequential test is to steer new development to areas with the lowest risk of flooding from any source. Guidance as to the interpretation of the NPPF is set out in the PPG. Revisions made in August 2022 set out that the sequential approach should consider all sources of flooding including areas at risk of surface water flooding.*

- 2.8 The RoFSW dataset has been updated to not only provide improved accuracy but also it removes any potential ambiguity surrounding the term ‘lowest risk’ in national policy and guidance, which might have arisen in consequence of the fact that the previous generation of RoFSW also included a ‘very low’ category. Notwithstanding that this was the case, it should be noted that both the ‘very low’ and ‘low’ flood extents almost always result in ‘low risk’ when depth and velocity are considered for specific events.
- 2.9 Based on my experience I have never had a LPA request a Sequential Test be undertaken based on the site being partially within the ‘low’ flood extent and reference is often made to PPG §23 which identifies the aim of the sequential approach; *‘The approach is designed to ensure that areas at little or no risk of flooding from any source are developed in preference to areas at higher risk. This means avoiding, so far as possible, development in current and future medium and high flood risk areas considering all sources of flooding including areas at risk of surface water flooding...Application of the sequential approach in the plan – making and decision – making process will help to ensure that development is steered to the lowest risk areas...’*
- 2.10 PPG §24 also sets out that the sequential test ensures that a sequential, risk-based approach is followed to steer new development to areas with the “lowest risk of flooding”, taking all areas of flood risk and climate change into account. It states that where it is not possible to locate development in low – risk areas, the Sequential Test should go on to compare reasonably available sites in medium risk and then (if there are not reasonably available sites in low and medium risk areas) within high – risk areas. PPG §027 provides guidance as to how the sequential test should be applied to planning applications. It confirms that the sequential test is not required where the site is within an area at low risk from all sources of flooding, unless the SRFA, or other information, indicates there may be a risk of flooding in the future. These paragraphs make it clear that the sequential test does not ordinarily apply to areas of low risk.
- 2.11 In any case, any ambiguity is now removed as the ‘very low’ flooding extent has been removed and ‘low’ flooding extent now clearly falls within the lowest risk category for surface water flood risk. This is consistent with my professional opinion that it is appropriate to classify all the areas of site to which built development is proposed as being within the lowest risk category based on the most up-to-date information available, the new RoFSW mapping.
- 2.12 There are areas within the planning application boundary that are within the ‘medium’ and ‘high’ flooding extents as described on the RoFSW mapping. §175 NPPF was introduced by changes to the NPPF made in December 2024, and post – dates the guidance in the PPG. It provides an exception to the sequential test in situations where a site specific flood risk assessment demonstrates that no built development within the site boundary, including access or escape routes, land raising, or other potentially vulnerable elements,

would be located on an area that would be at risk of flooding from any source, now or in the future (having regard to potential changes in flood risk). This site-specific FRA identifies that no built development is proposed within the medium or high extents, including access or escape routes, land raising or potentially vulnerable elements in accordance with NPPF §175, therefore there should be no requirement to undertake the Sequential Test based on the risk from surface water.

- 2.13 There are two short sections of pedestrian footpath link from the proposed development to Hammersley Hayes Road within an area of medium or high flooding extent, this is shown in Drg. No. HYD618-104-A EA Surface Water Extents Yearly Chance of Flooding (2040-2060) contained in **Appendix B**, an extract of this plan is shown overleaf in **Figure 3**. However, the location of the footpath links is a reserved matter and minor amendment to the alignment will allow this to remain within the lowest area of risk. It is understood that this matter can be conditioned.

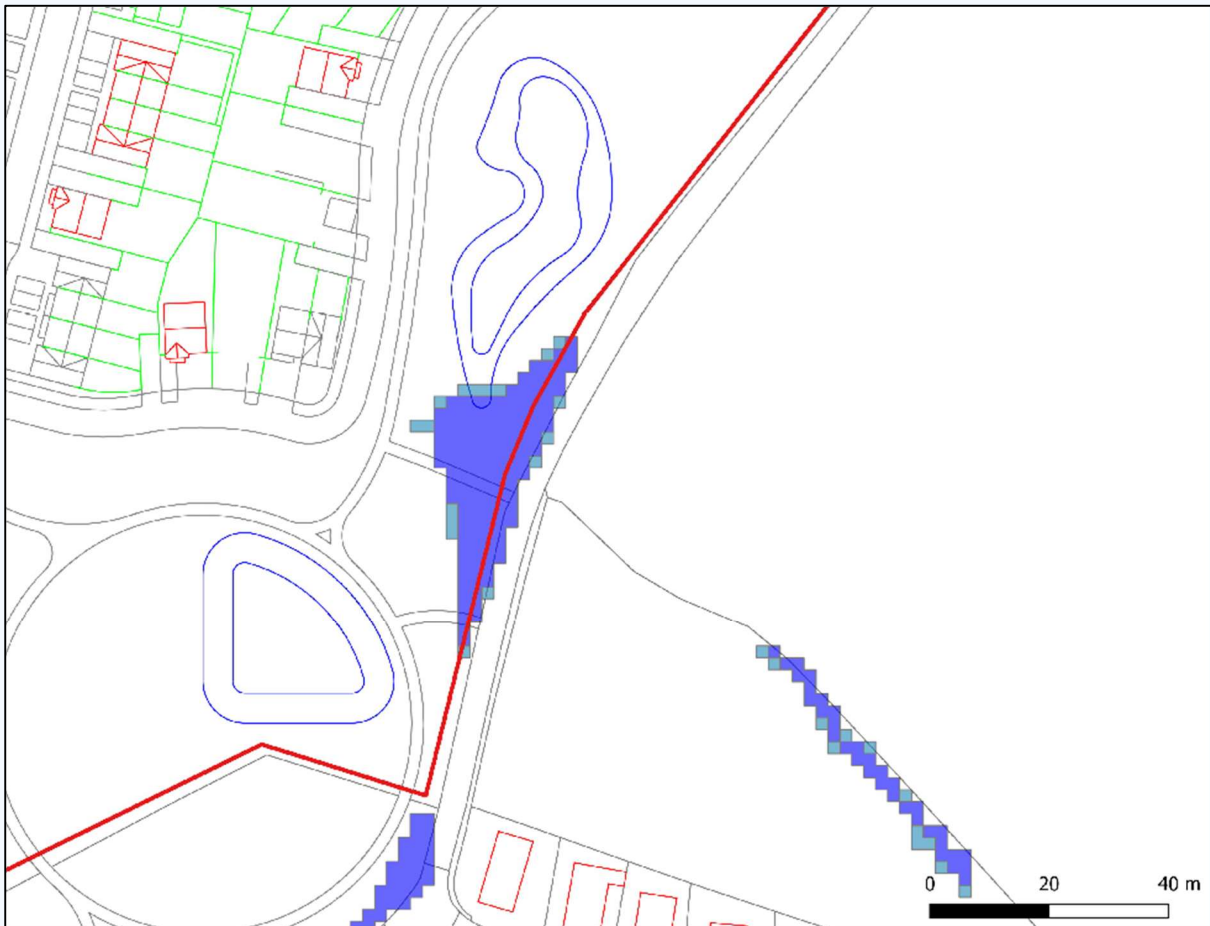


Figure 3 – Extract from Drg. No. 105 showing medium and high flooding extent

3.0 Summary

- 3.1 The proposed development site is at low risk / lowest risk from surface water flooding, both now and in the future, accounting for the uncertainty of Climate Change. There are two low-lying areas of the site that are at medium and high flooding extent, however this site-specific FRA identifies that these do not impact on the built development, escape routes, land raising or other potentially vulnerable elements.

This technical note has been prepared by,

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Director

BETTS HYDRO LIMITED

Enc. –

TN001 – Appendix A – RoFSW Flooding extents overlay (current and future scenarios, existing and proposed) – Drg. No.s:

HYD618_101_A_EA.SURFACE.WATER.CURRENT.EXTENT_A3L

HYD618_102_A_EA.SURFACE.WATER.FUTURE.EXTENT_A3L

HYD618_103_A_EA.SURFACE.WATER.CURRENT.WITH.LAYOUT_A3L

HYD618_104_A_EA.SURFACE.WATER.FUTURE.WITH.LAYOUT_A3L

TN001 – Appendix B – RoFSW Medium and High flooding extents overlay (future proposed)

HYD618_105_A_EA.SURFACE.WATER.FUTURE.WITH.LAYOUT_A3L

TN001 – Appendix A
RoFSW Flooding extents overlay (current and future scenarios, existing and proposed)







DO NOT SCALE


Legend:

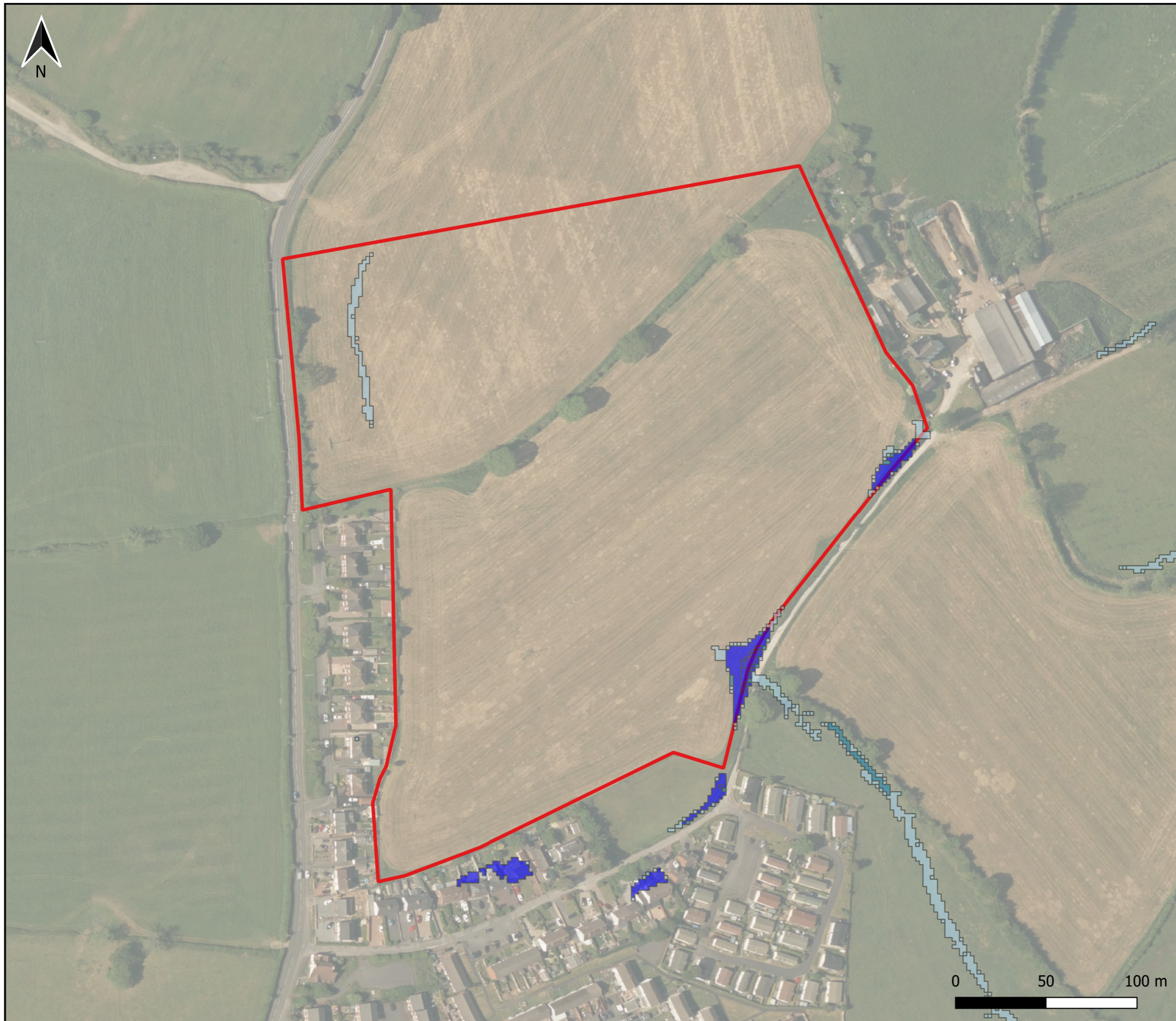
 Planning Application Boundary

Yearly Chance of Flooding:

 High (More than 3.3% chance)

 Medium (1% to 3.3% chance)

 Low (0.1% to 1% chance)



REV	DATE	BY	DESCRIPTION	CHK
A	29/01/25	JT	PRELIMINARY FOR ISSUE	RDN

DRAWING STATUS:



BETTS HYDRO
CONSULTING ENGINEERS

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BLOOR HOMES

PROJECT:
**FROGHALL ROAD, CHEADLE
STOKE-ON-TRENT**

TITLE:
**EA SURFACE WATER EXTENTS
YEARLY CHANCE OF FLOODING**

DATE: JAN' 25	SCALE @ SIZE: 1:2000@A3	DRAWN: JT	CHECKED: RDN
PROJECT No: HYD618	DRAWING No: 101	REV: A	



DO NOT SCALE

Legend:

- Planning Application Boundary
- Yearly Chance of Flooding (between 2040 - 2060):
- High (More than 3.3% chance)
- Medium (1% to 3.3% chance)
- Low (0.1% to 1% chance)

REV	DATE	BY	DESCRIPTION	CHK
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PROJECT:
**FROGHALL ROAD, CHEADLE
STOKE-ON-TRENT**

TITLE:
**EA SURFACE WATER EXTENTS
YEARLY CHANCE OF FLOODING
(2040 - 2060)**

DATE: JAN' 25	SCALE @ SIZE: 1:2000@A3	DRAWN: JT	CHECKED: RDN
PROJECT No: HYD618	DRAWING No: 102	REV: A	



DO NOT SCALE

Legend:

- Planning Application Boundary
- Yearly Chance of Flooding:
- High (More than 3.3% chance)
- Medium (1% to 3.3% chance)
- Low (0.1% to 1% chance)

REV	DATE	BY	DESCRIPTION	CHK
A	29/01/25	JT	PRELIMINARY FOR ISSUE	RDN

DRAWING STATUS:



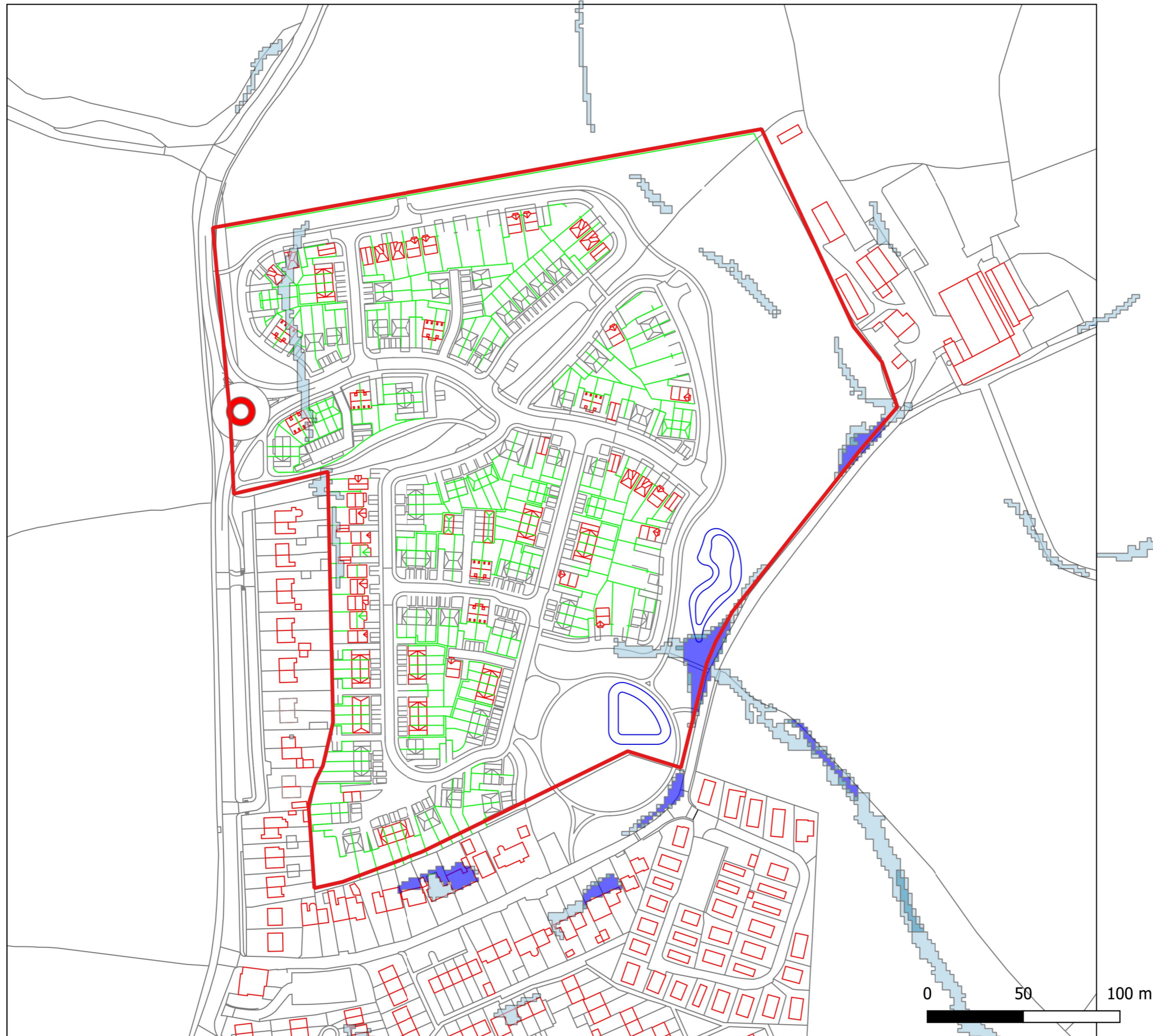
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PROJECT:
**FROGHALL ROAD, CHEADLE
STOKE-ON-TRENT**





TITLE:
**EA SURFACE WATER EXTENTS
YEARLY CHANCE OF FLOODING**

DATE: JAN' 25	SCALE @ SIZE: 1:2000@A3	DRAWN: JT	CHECKED: RDN
PROJECT No: HYD618	DRAWING No: 103	REV: A	



DO NOT SCALE

Legend:

-  Planning Application Boundary
- Yearly Chance of Flooding (between 2040 - 2060):
 -  High (More than 3.3% chance)
 -  Medium (1% to 3.3% chance)
 -  Low (0.1% to 1% chance)

REV	DATE	BY	DESCRIPTION	CHK
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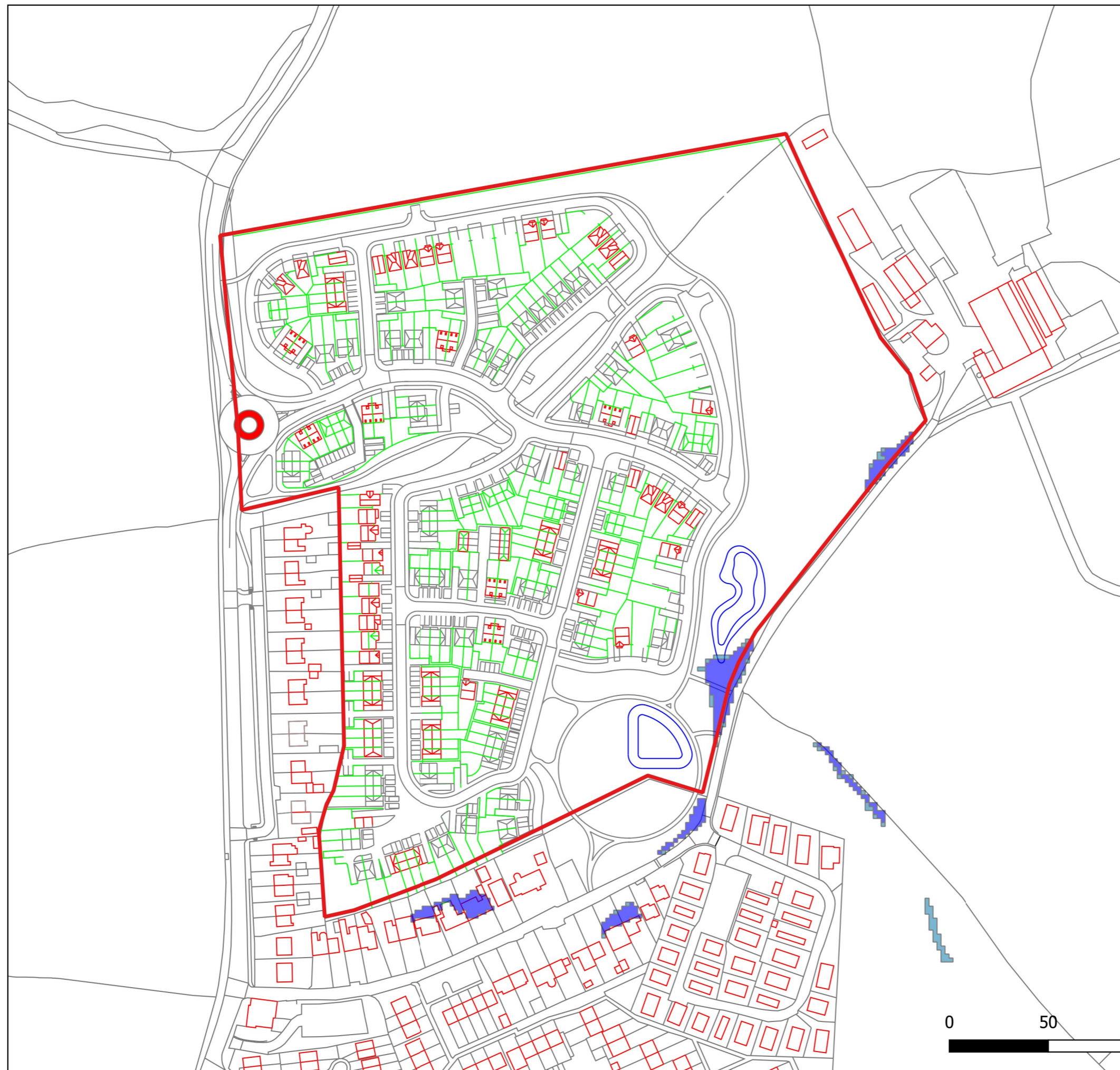
PROJECT:
**FROGHALL ROAD, CHEADLE
STOKE-ON-TRENT**

TITLE:
**EA SURFACE WATER EXTENTS
YEARLY CHANCE OF FLOODING
(2040 - 2060)**

DATE: JAN' 25	SCALE @ SIZE: 1:2000@A3	DRAWN: JT	CHECKED: RDN
PROJECT No: HYD618	DRAWING No: 104	REV: A	

TN001 – Appendix B
RoFSW Medium and High flooding extents overlay (future proposed)





DO NOT SCALE

Legend:

- Planning Application Boundary
- Yearly Chance of Flooding (between 2040 - 2060):
 - High (More than 3.3% chance)
 - Medium (1% to 3.3% chance)

REV	DATE	BY	DESCRIPTION	CHK
A	30/01/25	JT	PRELIMINARY FOR ISSUE	RDN

DRAWING STATUS:



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PROJECT:

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TITLE:

EA SURFACE WATER EXTENTS
YEARLY CHANCE OF FLOODING
(2040 - 2060)

DATE:	SCALE @ SIZE:	DRAWN:	CHECKED:
JAN' 25	1:2000@A3	JT	RDN

PROJECT No:	DRAWING No:	REV:
HYD618	105	A