M3 Junction 9 Improvement

Scheme Number: TR010055

7.4 Flood Risk Assessment

APFP Regulation 5(2)(e)

Planning Act 2008

Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

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M3 Junction 9 Improvement
Development Consent Order 202[x]

7.4 FLOOD RISK ASSESSMENT

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Executive Summary

This Flood Risk Assessment (FRA) has been prepared by Stantec UK, to support the National Highways (formerly Highways England) proposed M3 Junction 9 Improvement scheme (the Scheme) on behalf of our client Volker Fitzpatrick. The Scheme includes widening the M3 to four lanes, reconfiguring the existing roundabout, improving existing motorway slip roads and providing a new combined footway and cycleway to the west (over the River Itchen) and to the east there is a cycleway/footway through the new gyratory and a new bridleway/footway/cycle path on the eastern side, which will connect wider networks. The Scheme includes extra lanes on the carriageways to increase traffic flow, and walkways, along and underneath old bridges allowing pedestrians to pass across and underneath the M3 Junction 9 carriageway.

In accordance with the fundamental objectives of the National Policy Statement for National Networks (NPS NN) and National Planning Policy Framework (NPPF), the FRA demonstrates that:

- The development is safe
- The development does not increase flood risk
- The development does not detrimentally affect third parties

The Environment Agency Flood Zone map shows that the site location is classified as a combination of Flood Zone 1 'Low Probability', Flood Zone 2 'Medium Probability' and Flood Zone 3 'High Probability' of the River Itchen and Nun's Walk Stream (as defined in NPPF Planning Practice Guidance (PPG) 'Flood Risk and Coastal Change' Table 1) as follows:

- Flood Zone 1 'Low Probability' (less than 1 in 1000 (0.1%) annual probability of flooding)
- Flood Zone 2 'Medium Probability' (between 1 in 100 (1%) and 1 in 1000 (0.1%) of flooding)
- Flood Zone 3 'High Probability' (greater than 1 in 100 (1%) annual probability of flooding).

The Scheme constitutes an 'Essential Infrastructure' vulnerability classification. 'Essential Infrastructure' use is considered appropriate in Flood Zone 1, and in Flood Zone 2 and Flood Zone 3 is appropriate subject to the Sequential Test and Exception Test being met.

The EA Surface Water Flood Map shows the majority of the site is classified as at a 'Very Low' risk of flooding from surface water. There are, however, some areas of 'Low', and 'Medium' and 'High' risk of surface water flooding. On the carriageway itself there are mainly areas of 'Low' surface water flood risk, but there are also some minor areas of 'Medium' and 'High' surface water flood risk.

The Environment Agency Historic Flood Map indicated that there have been a number of floods within the area. One event has caused flooding near the A34 route in Kings Worthy and Headbourne Worthy. Another historic flood was recorded near the start of the A34 north-east of Abbotts Barton. However due to the coarse nature of the extent data overlain on OS mapping this is not confirmed.

This FRA concludes that:

(i) The majority of the site is located within Flood Zone 1 'Low Probability', areas adjacent to the watercourses are located in Flood Zone 2 'Medium Probability' and Flood Zone 3 'High Probability' of the River Itchen

(ii) The Scheme is classified as 'Essential Infrastructure'. PPG Table 3 confirms that such development is appropriate within Flood Zone 3 subject to the Sequential Test and Exception Test being carried out

(iii) The Scheme will not encroach upon the floodplain, and therefore will not result in a loss in flood storage

(iv) The surface water network produced for the Scheme will discharge runoff to ground, and to the river at long-term storage rates (2 l/s/ha) with attenuation provided within extended detention basins (EDBs) and oversized pipes

(v) Pollution control is provided via Pollution Control Devices (PCDs), sediment forebays, vegetated detention basins and grassed swales

The proposed works are to an existing road and therefore cannot be located elsewhere. The Sequential Test is therefore considered passed.

The proposed works are classified as an 'Essential Infrastructure' vulnerability. 'Essential Infrastructure' use is considered appropriate in Flood Zone 1, and in Flood Zone 2 and Flood Zone 3 is appropriate subject to the Sequential Test and Exception Test.

This FRA addresses the second part of the Exception Test, demonstrating that the Scheme is safe in terms of flood risk for its lifetime. The first part of the Exception Test concludes that the Scheme has wider benefits to the area.

The works are required on the M3 Junction 9 near Winchester for the area within the National Highways ownership. It therefore cannot be located elsewhere. The Sequential Test is considered to be passed.

In summary, the proposed works and their mitigation measures will not result in increased flood risk to the nearby residents, and therefore there will be no detrimental impacts on third parties. The Scheme complies with the NPS NN, NPPF and local planning policy with respects to flood risk and is an appropriate development for this location.

1 Introduction

1.1 Scope of the flood risk assessment

1.1.1 This Flood Risk Assessment (FRA) has been prepared by Stantec UK Ltd (Stantec), on behalf of our client, Volker Fitzpatrick delivering for National Highways to support the proposed M3 Junction 9 Improvement Scheme (the Scheme).

1.1.2 The FRA focuses on assessing the practical flood risk issues at the site as follows:

- Identification of all the potential sources of flooding at the site from all sources (i.e., fluvial, tidal, pluvial, groundwater, surface water and reservoir breach)
- Assessment of the existing flood risk at the site and the potential impacts of the proposals
- Consideration of the flood risk implications, considering the potential allowance for climate change over the lifetime of the development, and the identification of the measures to mitigate flood risk

1.1.3 Stantec has many years of experience in, amongst other areas, the assessment of flood risk, hydrology, flood defence and river engineering. The authors and reviewers of the document are all experienced engineers and members of chartered institutions such as the Chartered Institution of Water and Environmental Management (CIWEM) or the Institution of Civil Engineers (ICE).

1.2 Sources of information

1.2.1 The FRA has been prepared based on the following sources of information:

- Environment Agency published 'Open Data' datasets available online, reproduced with OS mapping under licence to Stantec (contains Ordnance Survey data © Crown copyright and database right 2016, contains Environment Agency information © Environment Agency and database right) – see **Appendix A**
- The Environment Agency's River Itchen hydraulic model dated 2019
- The Environment Agency's consultation on the project – see **Appendix B**
- Stantec 2021 River Itchen Hydraulic Modelling Report – see **Appendix C**
- Development Proposals – see **General Arrangement Plans (Document Reference 2.5)**

- The Environment Agency online flood maps at [redacted] (assessed April 2020)
- Hampshire County Council Preliminary Flood Risk Assessment (PFRA) 2011, and 2017 review
- Winchester City Council Strategic Flood Risk Assessment (SFRA) dated 2007
- South Downs National Park Authority Water Cycle Study and SFRA dated 2015
- The Standards for Highways Design Manual for Roads and Bridges (DMRB)
- CD 356 Design of Highways Structures for Hydraulic Action, March 2020
- LA 113 Road Drainage and the Water Environment, March 2020
- CIRIA Sustainable Drainage Systems (SuDS) Manual

1.2.2 The Scheme is located within the jurisdiction of Winchester City Council and partially within South Downs National Park Authority, with the relevant Lead Local Flood Authority (LLFA) being Hampshire County Council.

1.3 Relevant planning policy

1.3.1 This FRA has been prepared in accordance with the relevant national, regional and local planning policy and statutory authority guidance as follows:

- National Policy Statement for National Networks (NPS NN) 2014, including:
  - Paragraphs 4.36 to 4.47 (climate change adaptation)
  - Paragraphs 5.90 to 5.115 (flood risk)
- National policy contained within the NPPF, with particular reference to Section 14 ‘Meeting the challenge of climate change, flooding and coastal change’
- The PPG (‘Flood Risk and Coastal Change’ section)
- The Environment Agency’s ‘Flood Risk Assessments: Climate Change Allowances’ guidance
- Winchester District Local Plan Part 1: Policies DS1 (Development Strategy and Principles) and CP17 (Flooding, Flood Risk and the Water Environment)
- Winchester District Local Plan Part 2: Policies DM17 (Site Development Principles) and DM19 (Development and Pollution)

- South Downs National Park Authority Local Plan 2014-2033 (2019): Policies SD17 (Protection of the Water Environment), SD49 (Flood Risk Management), SD50 (Sustainable Drainage Systems) and SD2 (Ecosystems Services)

1.4 Caveats and notes

1.4.1 This FRA has been prepared in accordance with the NPS NN, NPPF, PPG and Local Planning Policy. The proposed flood management and surface water management strategies are based on the relevant British Standards (BS8533), the standing advice provided by the Environment Agency or based on common practice. Therefore the advice provided is caveated based on the current policy and guidance available at the date of this assessment.

1.4.2 The (Construction (Design and Management) Regulations 2015 (CDM Regulations) will apply to any future development of this site which involves "construction" work, as defined by the CDM Regulations. As such it is the responsibility of the proposed developer (ultimate client) to fulfil its duties under the CDM Regulations and confirm CDM requirements in relation to flood risk further on in the design process.

1.4.3 The approach for the FRA and proposals for the surface water management strategy are based on the current requirements of the Environment Agency and Hampshire County Council in their role as Lead Local Flood Authority in place at the date of this assessment.

1.4.4 It is caveated that the findings of this FRA are based on data available at the time of the study and on the subsequent assessment that has been undertaken in relation to the development proposals as outlined in **Section 5**. As such, the FRA is accurate at time of issue, and can be valid in the future provided a future review of current flood data is undertaken. However, we would recommend the end user reviews the validity of the flood data on an annual basis with the Environment Agency.

2 Site setting

2.1 Site description

2.1.1 The M3 Junction 9 is a key transport interchange which connects South Hampshire and the wider sub-region, with London via the M3 and the Midlands/North via the A34 (which also links to the principal east west A303 corridor). **Figure 2.1** indicates the Application Boundary.

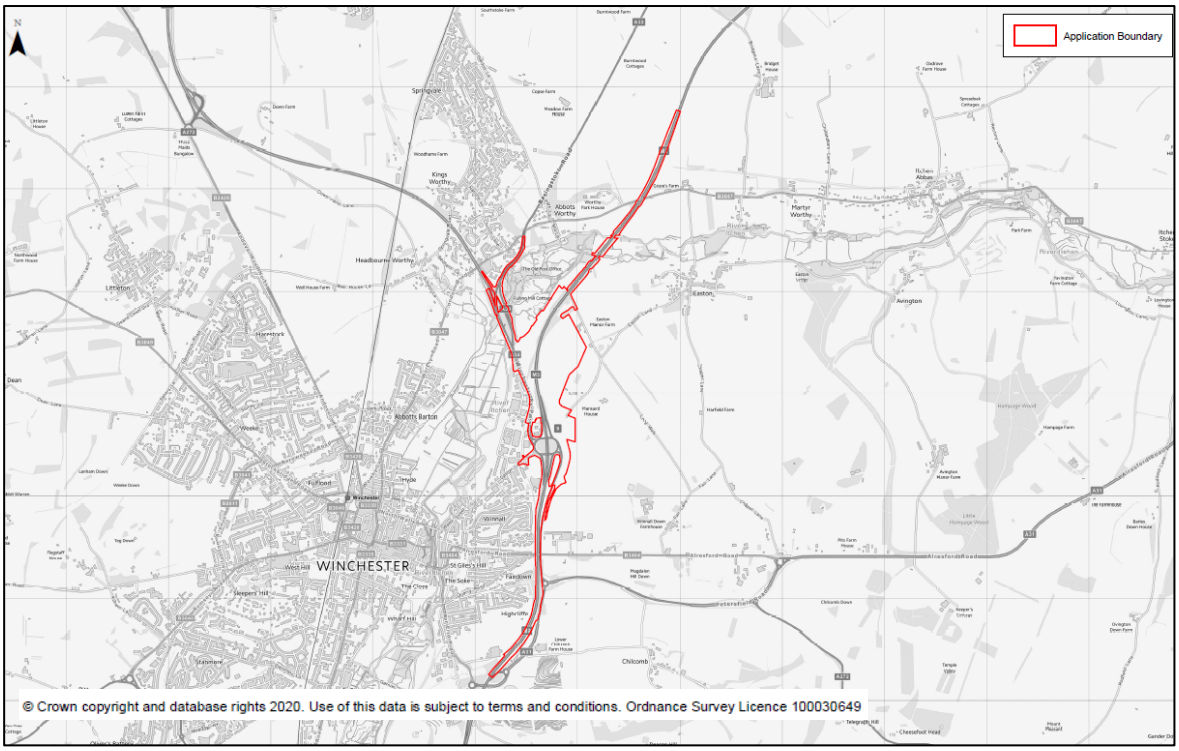


Figure 2.1: Application Boundary (not to scale)

2.1.2 The site lies within the planning authority boundaries of Winchester City Council and is within Hampshire County Council and partially within the South Downs National Park Authority.

2.1.3 The M3 Junction 9 is bordered by tree and grass verges with the River Itchen flowing underneath it to the north-east of Winchester. Landscapes to the north and south of the M3 Junction 9 are mainly rural and agricultural with some urban areas including Headbourne Worthy (north-west) and Winchester (south-west).

2.2 Scheme description

2.2.1 The improvements proposed as part of the Scheme both maintain existing connectivity on the road network, whilst providing enhanced capacity, simplifying routing, improved facilities for walkers, cyclists and horse-riders and landscaping enhancements. The Scheme would provide new free flow links

between the M3 and A34, as well as a dedicated new A33 alignment. The Scheme elements are as follows:

- Widening of the M3 from a dual two-lane motorway (two-lane motorway with hard shoulders) to a four-lane motorway (with hard shoulders) between the proposed M3 Junction 9 gyratory north and south slip roads.
- A new smaller grade separated gyratory roundabout arrangement within the footprint of the existing roundabout, incorporating new connections over the M3 with improved walking, cycling and horse-riding routes.
- Connector roads from and to the new gyratory roundabout.
- Improved slip roads to/from the M3.
- New structures (in the form of gyratory bridges, underpasses, retaining walls, subway and a new cycle and footbridge over the River Itchen).
- A new surface water runoff system with associated drainage and infiltration features.
- New signage and gantries.
- Utility diversions.
- New lighting (subways, underpasses and gantries).
- Modifications to topography through cuttings and false cuttings as well as re-profiling of existing landform.
- New walking, cycling and horse-riding provision.
- Creation of new areas of chalk grassland, woodland, scrub planting and species rich grassland.

2.2.2 The Application Boundary covers an area of approximately 109 hectares (ha). This includes the proposed land required for gantries, signage, temporary construction compound areas, areas for environmental mitigation, areas for drainage requirements (some of which would be temporary) and traffic management.

2.2.3 The Scheme includes a package of environmental mitigation and enhancement measures to reduce the impacts from the Scheme to the environment where possible. Consideration has also been given to the enhancement of the South Downs National Park where reasonably practicable.

2.2.4 Bridleways, footpaths and cycleways have been designed to allow all gradients to be less than 1:20 to comply with Department for Transport's (DfT) inclusive mobility impaired users. Also, the walking, cycling and horse-riding routes are designed for cyclists, and therefore all horizontal radii are suited for cyclists.

They are also considered acceptable for mobility impaired users. The range of opportunities and barriers to all forms of movements have been given due consideration in the design of the Scheme.

2.2.5 A number of new structures are required to be both constructed and demolished to facilitate the Scheme. Some of the main structures are as follows:

- The existing bridges at the M3 Junction 9 gyratory roundabout are proposed to be demolished and replaced by the two new bridge structures carrying the new gyratory.
- A new underpass is proposed to carry the A34 southbound under the new A33 link road and the existing M3. The A34 northbound underpass would carry the new A34 northbound over the new A33 link.
- The existing subways (Winnall Subway East and Winnall Subway West) located under the existing gyratory are proposed to be demolished to facilitate the construction of the reconfigured roundabout. New subways are proposed along the proposed footpath and cycle path route.
- A new bridge to accommodate the footpath and cycle path over the River Itchen is proposed between the existing Itchen Bridge, (which carries the A34 northbound carriageway), and the existing Kings Worthy Bridge would carry the A33 north and southbound carriageways and the A34 southbound carriageway, respectively.

2.2.6 The walking, cycling and horse-riding facilities around and within the Scheme are to be upgraded. This includes an improvement to the National Cycle Network (NCN) Route 23. An additional footpath, cyclepath and bridleway is proposed on the eastern side of the Scheme to link Easton Lane with Long Walk. Such a route would provide a circular leisure path for those using the South Downs National Park with a link to the other paths around Long Walk with their links to local villages. A new combined footpath and cyclepath for the western side of the Scheme is proposed to link the A33 / B3047 Junction to Winnall Industrial Estate situated on Easton Lane.

2.2.7 A detailed description of the Scheme is provided in **Chapter 1 (Introduction)** and **Chapter 2 (The Scheme and its Surroundings) of the Environmental Statement (ES) (Document Reference 6.1)**.

2.3 Topography

2.3.1 **Figure 2.2** indicates that Winchester is located at lower levels compared to the surrounding area, due to the presence and course of the River Itchen valley. Due to the coarse and filtered nature of the topographic information utilised within the **Figure 2.2** it is not possible to decipher between the levels of the existing road network and the surrounding areas.

2.3.2 A site-specific topographic survey has been undertaken to inform the Scheme. This confirms that the road networks are raised in comparison to the surrounding land, specifically in the vicinity of the River Itchen crossing. Where the A33 branches from the A34 (marked as 1) the A34 road level is approximately 47.0m Above Ordnance Datum (AOD) with land to the west set at approximately 42.2m AOD. The A33 road level is approximately 41.0m AOD with land to the east set at approximately 38.7m AOD.

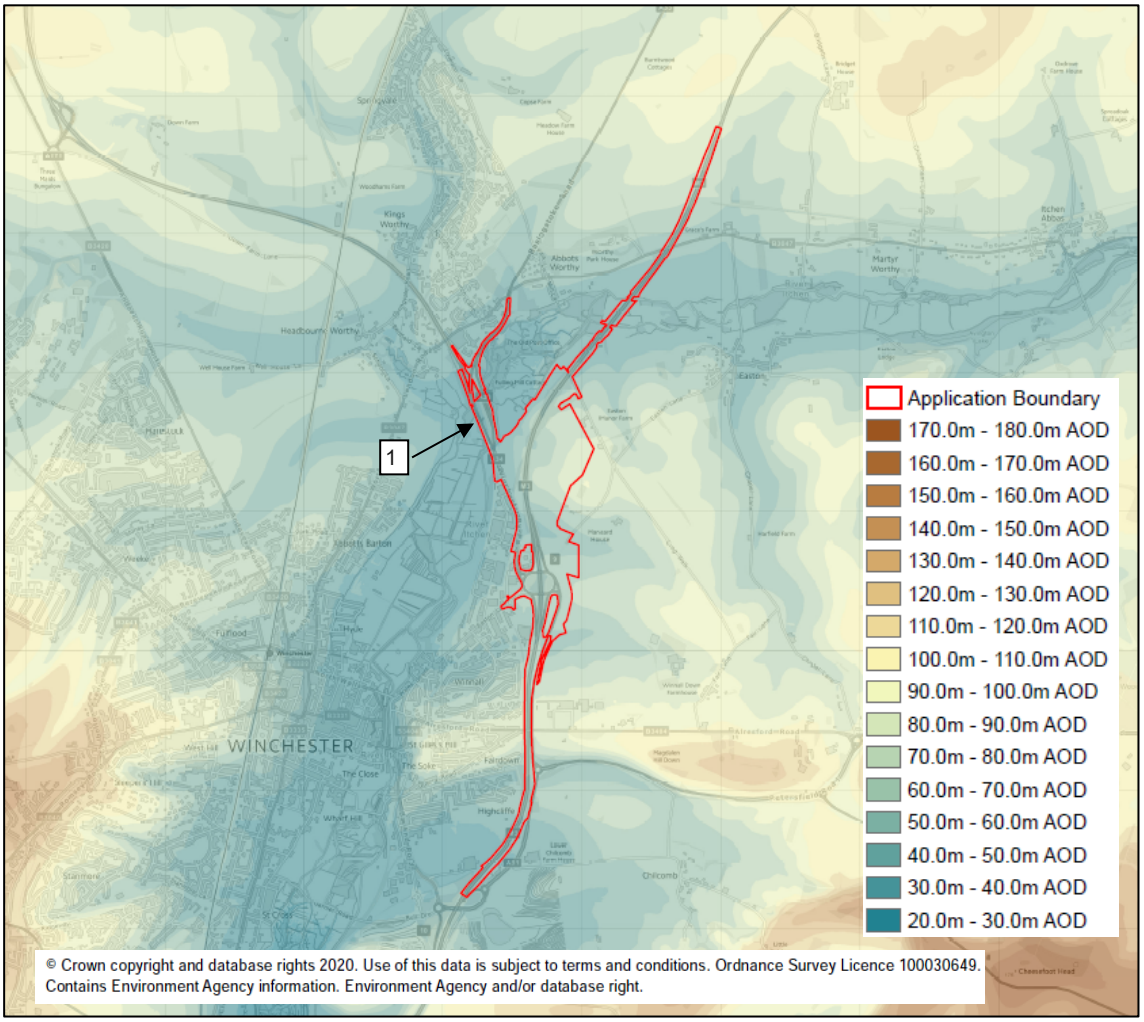


Figure 2 2: Site Location (Topography)

1 = New Proposed Footway and Cycling Route

2.4 Hydrological setting

2.4.1 Based on **Figure 2.1,** the River Itchen flows from east to west as a braided river channel until it flows underneath the Winchester Bypass (A34) where it flows in a south westerly direction. It continues to flow in a largely southerly direction towards Eastleigh and flows to the east of Southampton where it joins the Southampton Water and the English Channel. There are two existing road bridges over each branch of the watercourse.

2.4.2 The River Itchen and the Nun's Walk Stream are classified as 'Main Rivers' and therefore regulated by the Environment Agency. The River Itchen also has a separate arm called the River Itchen Navigation Canal, located approximately 5km downstream of the site. The River Itchen Navigation Canal has been heavily modified and forms part of the floodplain of the River Itchen.

2.4.3 The River Itchen flows in a channel in a south-westerly direction and comprises several tributaries and land drains. There are also a number of ditches, ponds, wetlands, and ordinary watercourses associated with this floodplain.

2.4.4 All other watercourse channels and ditches within the floodplain are either highway drainage ditches alongside the A33 and A34 highway embankments or are ditches draining pasture. All watercourse channels and highway ditches are confirmed by Hampshire County Council (LLFA) as Ordinary Watercourses under their regulation. Ditches that drain the A33/A34 highways are also recorded as National Highways drainage assets on the HADDMS online asset database.

2.4.5 All watercourses within the study area form part of the Test and Itchen Catchment Flood Management Plan (CFMP) (Environment Agency, 2009) and the South East River Basin District River Basin Management Plan (RBMP) (Environment Agency, 2015).

2.4.6 The existing bridges over the River Itchen are being retained as the A34 provides two lanes at this location. However, the King's Worthy Bridge is being strengthened and the Itchen will have an additional new bridge which will accommodate pedestrians and cyclists.

2.5 Existing drainage arrangements

2.5.1 The study area is currently served by existing infiltration drainage arrangements, comprising a network of pipes, soakaway trenches and soakaway chambers. A small part of the existing highway (A34 southbound approach) drains by gravity to the River Itchen. As part of the Scheme the drainage arrangements will be updated and improved to serve the updated road alignment and capacity, including incorporation of pollution control measures.

2.5.2 Refer to the Drainage Strategy Report (appended to **Chapter 13** (**Road Drainage and the Water Environment**) of the **ES** (**Document Reference 6.1**) for details of the existing and proposed drainage serving the Scheme works area.

2.6 Geology and hydrogeology

2.6.1 The online British Geological Society (BGS) website[1] indicates that the bedrock underlying the southern area of the Scheme consists of Holywell Nodular Chalk Formation, Zag Chalk Formation, and New Pit Chalk Formation. The southern

[1] British Geological Survey, Geology of Britain Viewer. Accessed April 2021

area also includes superficial deposits including head and Alluvium, which consist of Clay, Silt, Sand and Gravel particles.

2.6.2 The BGS website also shows that the underlying bedrock of the northern area of the Scheme is the Seaford Chalk Formation. However, there is also the bedrock Newhaven Clay Formation within the vicinity. These bedrock formations have superficial deposits including Head and Alluvium (Clay, Silt, Sand and Gravel) and river terrace deposits (Sand and Gravel).

2.6.3 The Defra MAGIC website[2] shows that the Scheme is located partially in a Source Protection Zone (SPZ). This includes Zone I (Inner Protection Zone), Zone II (Outer Protection) and Zone III (Total Catchment). The extents are indicated in the OpenData mapping provided in **Appendix A**.

2.7 Existing flood defences

2.7.1 The Environment Agency has an online dataset showing the location of flood defences – the Asset Information Management System Spatial Flood Defences data set. This indicates that the left bank of the southern branch of the River Itchen beneath the A34 benefits from high ground. This is outside of the application boundary. This high ground is classified as a flood defence under this data set. No other formal flood defences are identified in the vicinity of the Scheme.

2.8 Environment Agency consultation

2.8.1 Consultation has been undertaken with regards to the hydraulic modelling completed to support the Scheme.

2.8.2 The Environment Agency was consulted as statutory consultees through the Environmental Impact Assessment Scoping Report. The Environment Agency's response to the submitted Scoping Report (provided in **Appendix B**) confirmed the below:

"Our primary concerns regarding the scheme relate to the protection of groundwater, and protection/enhancement of the ecological balance and species within the River Itchen and surrounding areas (including biodiversity net gain). The River Itchen is a designated Main River, and the river and the associated floodplain is a Special Area of Conservation (SAC) and Site of Special Scientific Interest (SSSI)."

"In regard to flood risk, the majority of works are to take place in Flood Zone 1 areas. It seems that only minor works are taking place within the section of road that is located in Flood Zone 3 (i.e. the section of road crossing the River Itchen). Therefore, flood risk is of lesser concern to us at this stage. This may change if

[2] DEFRA, MAGiC [www] Available at: < https://magic.defra.gov.uk/> Accessed April 2021

later design stages determine that more extensive work will be required within Flood Zone 3."

2.8.3 The design of the Scheme has progressed such that a new crossing of the River Itchen is now proposed. On 24 February 2021 an updated meeting was subsequently held with the Environment Agency to discuss the updated approach to flood risk and the updated Scheme.

2.8.4 During this meeting the proposed footbridge/cycleway over the River Itchen was discussed, and the subsequent updates being made to the hydraulic model to understand any flood risk implications. It was confirmed by the Environment Agency flood risk continues to be of lower concern and the Environment Agency asked that the FRA be clear on any impacts. The minutes from this meeting are provided in **Appendix B**.

2.8.5 Further consultation undertaken with the Environment Agency confirmed our approach to assessment of climate change was appropriate and Environment Agency has also subsequently undertaken a review of the FRA report and approved the report. All correspondence is included within **Appendix B**.

3 Overview of flood risk

3.1 Environment Agency flood maps

Flood zone map

3.1.1 The first phase in identifying whether a site is potentially at risk of flooding is to consult the Environment Agency's Flood Zone maps, available on the Environment Agency's website. The Environment Agency's Flood Zone Mapping ignores the presence of any flood defences.

3.1.2 **Figure 3.1** shows that the majority of the Scheme is located within Flood Zone 1 'Low Probability'. There are minor areas included within the Application Boundary which are noted to be classified as Flood Zone 2 'Medium Probability' and/or Flood Zone 3. These are defined (NPPF PPG 'Flood Risk and Coastal Change' Table 1) as:

- Flood Zone 1 'Low Probability' – less than 1 in 1000 annual probability of flooding from rivers or the sea
- Flood Zone 2 'Medium Probability' – between 1 in 100 and 1 in 1000 annual probability of river flooding, or between 1 in 200 and 1 in 1000 annual probability of tidal flooding
- Flood Zone 3 'High Probability' – greater than 1 in 100 annual probability of river flooding or greater than 1 in 200 annual probability of tidal flooding

3.1.3 Based upon the mapping shown in **Figure 3.1**, it assumed that the flood zones do not encroach on the carriageway but remain in the river channels on the west side of the road and beneath the A34 where it crosses the River Itchen. This will concur with the topographic information included in **Section 2.3** which indicated that the road network is raised in comparison to surrounding areas in the vicinity of the River Itchen crossing.

3.1.4 The area south of the A33/A34 branch is wholly located within Flood Zone 1 'Low Probability' and does not have main rivers present in the vicinity of the Scheme.

3.1.5 The River Itchen and associated network of watercourses are located in the north and west of Winchester, with numerous crossings of the Application Boundary including at the M3 and A34. The areas surrounding the River Itchen are classified as a combination of Flood Zone 2 'Medium Probability' and Flood Zone 3 'High Probability'.

3.1.6 The Environment Agency's Flood Zone maps provide an initial indication of the extent of flood zones, which will be further refined using more detailed site-specific level survey and modelled flood levels.

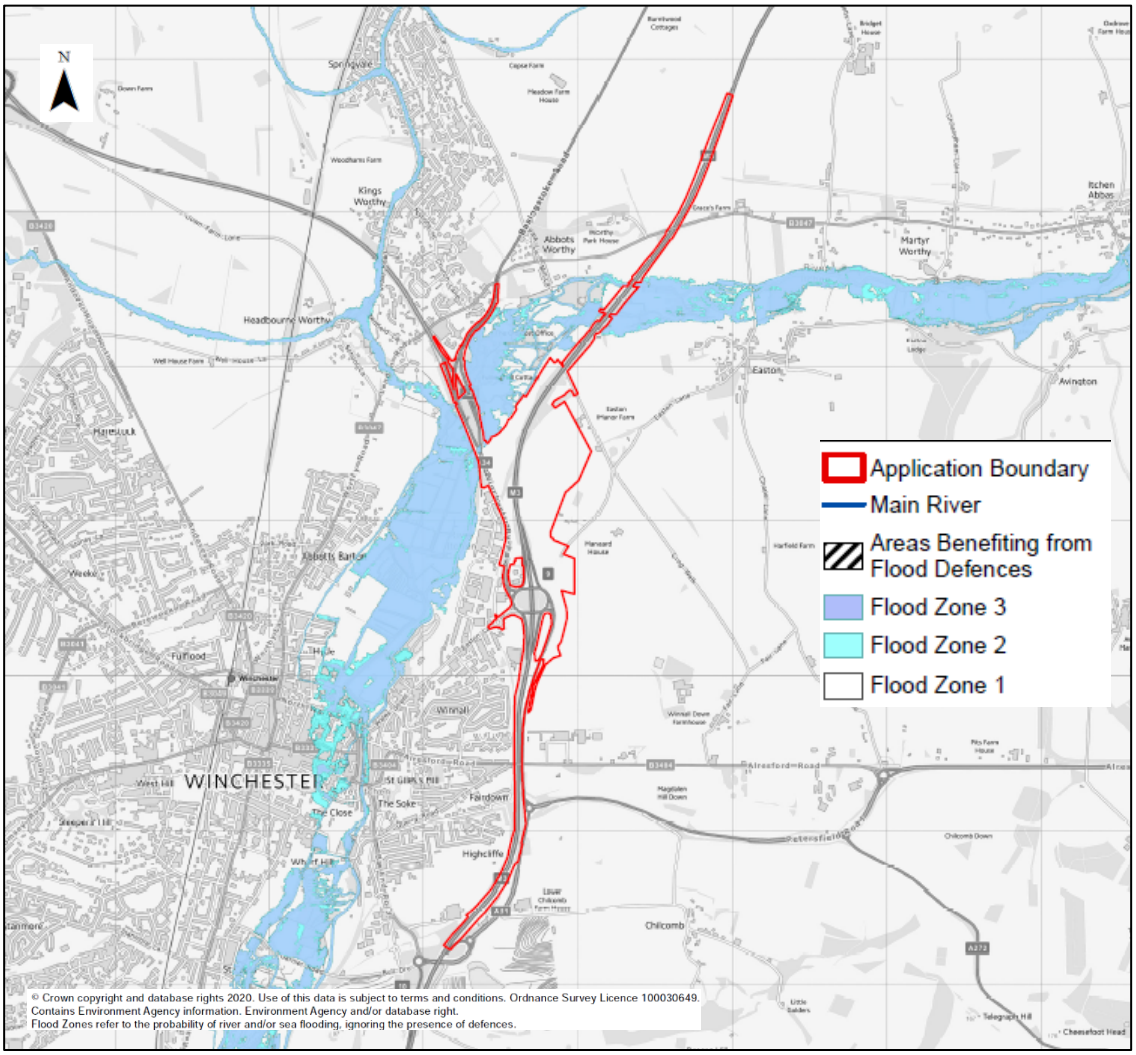


Figure 3 1: Environment Agency Flood Zone Map (Site Location)

Flood risk from surface water

3.1.7 The Environment Agency's 'Flood Map for Surface Water' mapping ('FMfSW') shows the location of areas which are potentially susceptible to surface water flooding in an extreme rainfall event.

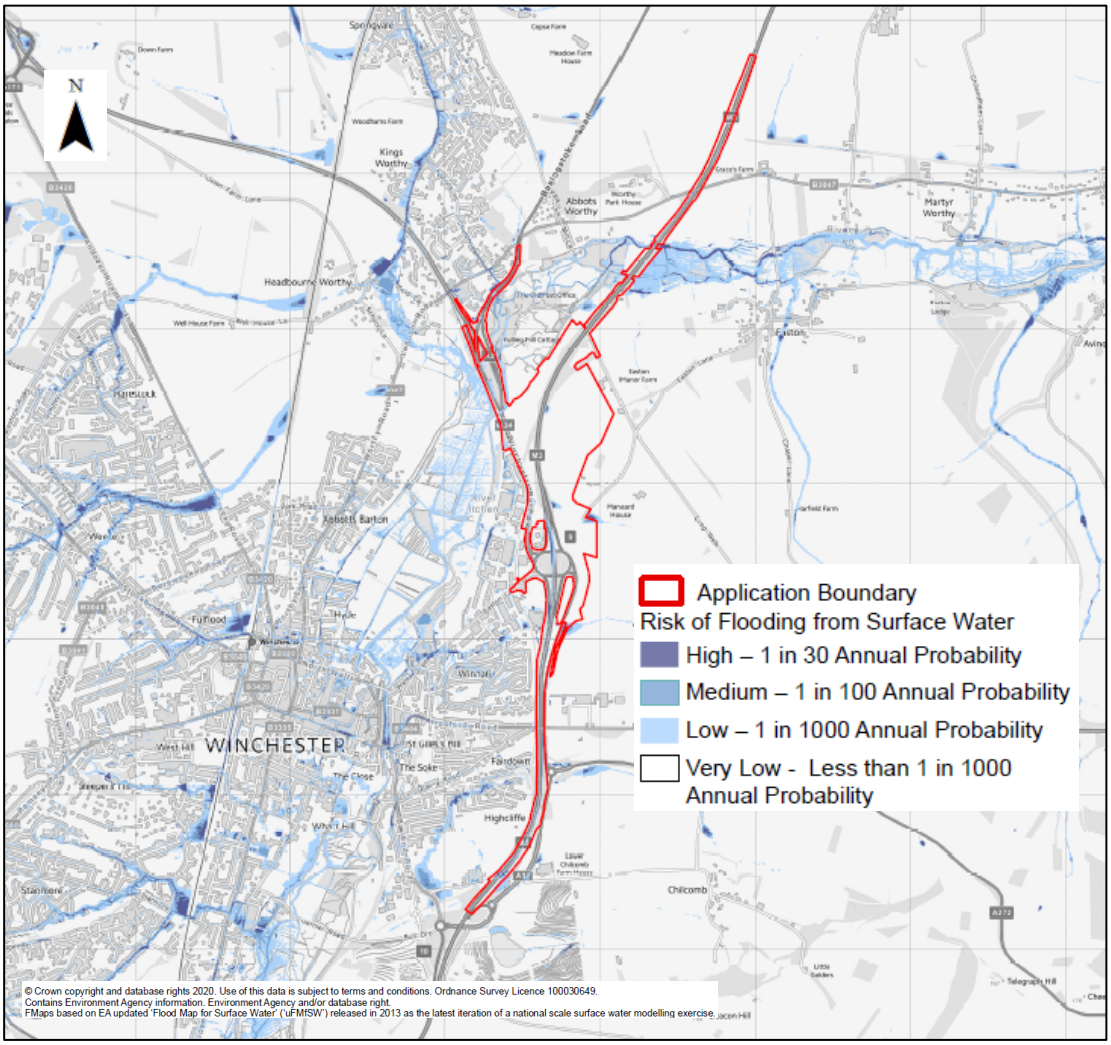


Figure 3 2: Environment Agency Surface Water Flood Risk

3.1.8 **Figure 3.2** indicates that the majority of the Application Boundary is located within an area classified as at 'Very Low' risk of surface water flooding (less than 1 in 1000 annual probability). The majority of the road network is classified as at 'Very Low' risk of surface water flooding.

3.1.9 The FMfSW maps indicate that localised sections of the M3 and A33 carriageways are classified as at 'Low' surface water flood risk (1 in 1000 Annual Probability). This is specifically located at M3 Junction 9 and the southern extents of the A33. On the A33 this mainly occurs during extreme storm events. There are also very minor and localised areas of 'Medium' (1 in 100 Annual Probability) and 'High' surface water flood risk (1 in 30 Annual Probability) located at Junction 9 on the M3 carriageway.

3.1.10 Within the wider Application Boundary there are localised and minor areas classified as at 'High' risk of surface water flooding. These are not located in areas where any changes in ground levels will be proposed.

3.1.11 It should be noted that the surface water maps are generated using a generic methodology on a national scale, whereby rainfall is routed over a ground surface model. The analysis does not take account of any specific local information on below-ground drainage infrastructure and infiltration, although an adjustment is included in urban areas to account for the impact of sewerage and a standard infiltration allowance based on soil type. Consequently, the mapping provides a guide to potentially vulnerable areas based on the general topography of an area.

3.1.12 The Scheme is supported by a surface water drainage strategy **(**see **Appendix 13.1 (Drainage Strategy Report)** of the **ES (Document Reference 6.3))** which takes account of the existing infrastructure and Scheme.

Flood risk from reservoirs

3.1.13 The Environment Agency website provides maps indicating the risk of flooding in the event of a breach from reservoirs, based only on large reservoirs (over 25,000 cubic metres of water). This mapping shows that the River Itchen channel within the Application Boundary is located within the maximum flood extent in event of a reservoir breach due to the presence of several lakes and ponds (Old Alresford Pond) located upstream of the site.

3.1.14 The Reservoir Flood map is included in **Appendix A**. The maximum flood extents appear to remain within the River Itchen channel at the crossings of the A34 and as such do not cause flooding on the road network included within the Application Boundary.

3.1.15 It should be emphasised that the risk of flooding from reservoir breach is very small in any case; the Environment Agency are the enforcement authority of the Reservoir Act (1975) and all large, raised reservoirs are inspected and supervised by reservoir panel engineers. The Environment Agency's website states:

'Reservoir flooding is extremely unlikely to happen. There has been no loss of life in the UK from reservoir flooding since 1925. All large reservoirs must be inspected and supervised by reservoir panel engineers. As the enforcement authority for the Reservoirs Act 1975 in England, we ensure that reservoirs are inspected regularly, and essential safety work is carried out'.

3.1.16 The risk of such occurrence is therefore considered negligible and no further assessment/review of reservoir flooding is required.

Flood risk from groundwater

3.1.17 As detailed below, the Winchester City Council SFRA and South Downs National Park Authority Water Cycle Study and SFRA indicated that part of the site is at high groundwater flooding susceptibility. In addition to the SFRA Areas Susceptible to Groundwater Flooding mapping, groundwater levels along the proposed Scheme corridor were collated and reviewed to inform the baseline

conditions. An extract of the mapping is included in **Figure 3.3** and discussed further in **Section 3.3.**

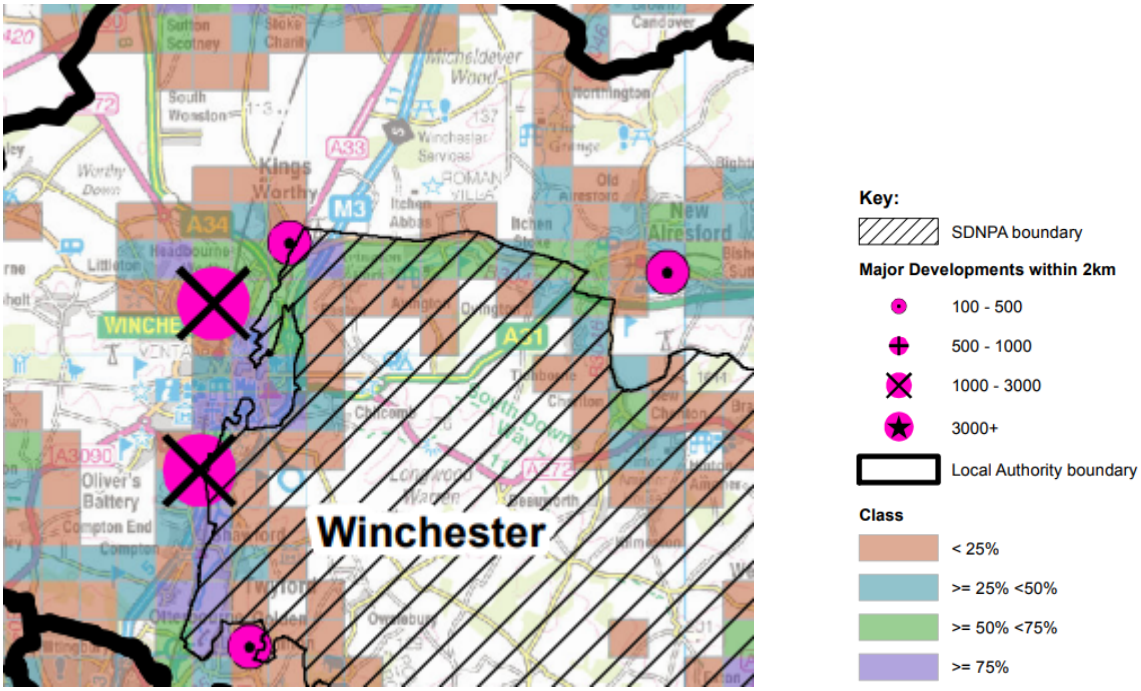


Figure 3.3: Extract from the South Downs National Park Authority WCS and SFRA (2015) Groundwater Flood Risk

3.1.18 **Figure 3.4** shows the location of shows the location of groundwater boreholes (confirming groundwater levels) within the River Itchen floodplain close to the A34 carriageway where the new proposed walkway will be implemented.

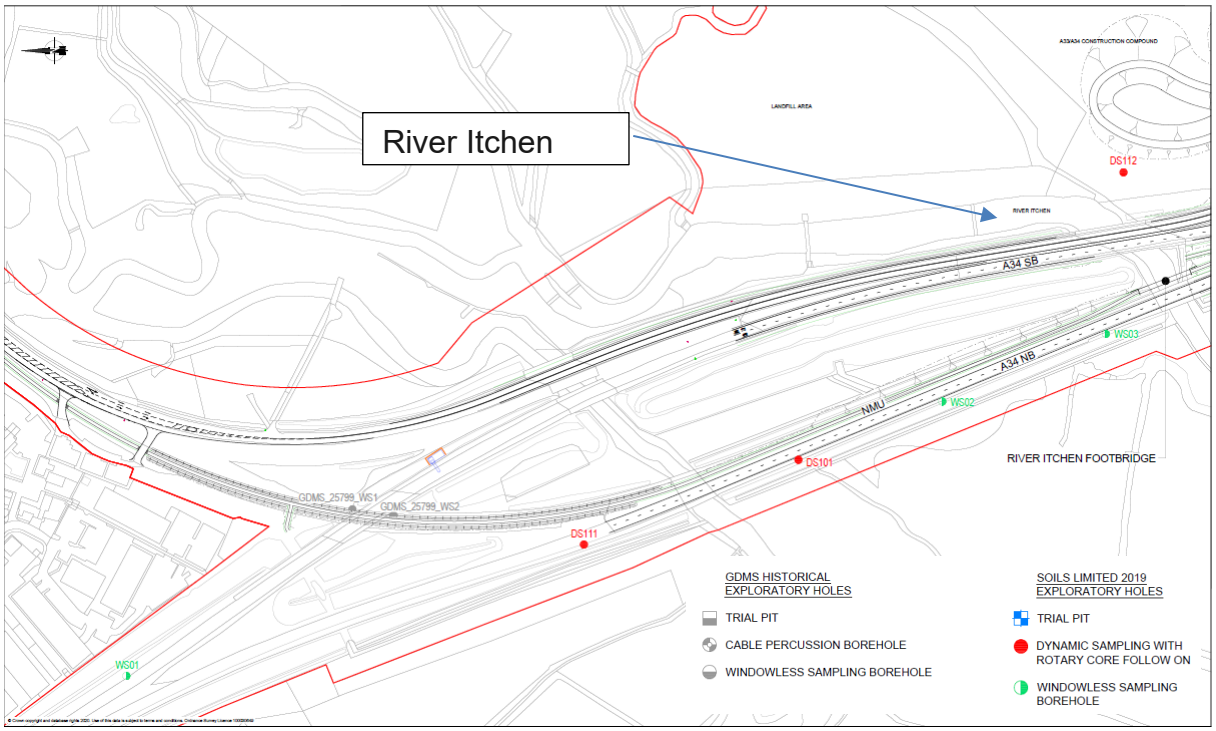


Figure 3.4: Groundwater boreholes at A34 carriageway

3.1.19 **Table 3.1** shows the results of groundwater level recordings recorded from samples taken during June 2019 through to August 2019.

Table 3.1: Observed Groundwater Level Recordings

Borehole number (M3 Junction 9 north to south)	Location	Groundwater Level (m below ground level (bgl))
DS112	River Itchen Floodplain along the A34	2.65
WS03		3.1-7.0
WS02		

3.1.20 The groundwater samples identified in **Table 3.1** were taken to the north and south of the existing A34 in the vicinity of location of the proposed new footbridge/cycleway. Groundwater is shown to be encountered in some areas within the superficial deposit (alluvium). It identifies that the groundwater is not close to ground level near the River Itchen (WS02 and WS03).

3.1.21 Groundwater was encountered within both the superficial deposits and the chalk at varying depths across the Scheme. The groundwater was recorded closest to existing ground level around the River Itchen within the superficial deposits.

The groundwater in the chalk was recorded at its highest elevation in DS112 along the A34 at northern end of the Scheme. This is likely due to its proximity to the River Itchen.

Historic flooding

3.1.22 **Figure 3.5** summarises Environment Agency historic flooding incidents in the area from river, surface water and groundwater flooding.

3.1.23 **Figure 3.5** indicates that the Application Boundary has not been subject to flooding according to recorded flood extents. The Kings Worthy area immediately north east of the A34 within the Application Boundary is shown to have previously been impacted by flooding, however this does not encroach on the existing or proposed development area.

3.1.24 There are no National Highways flooding hotspots identified within the Application Boundary.

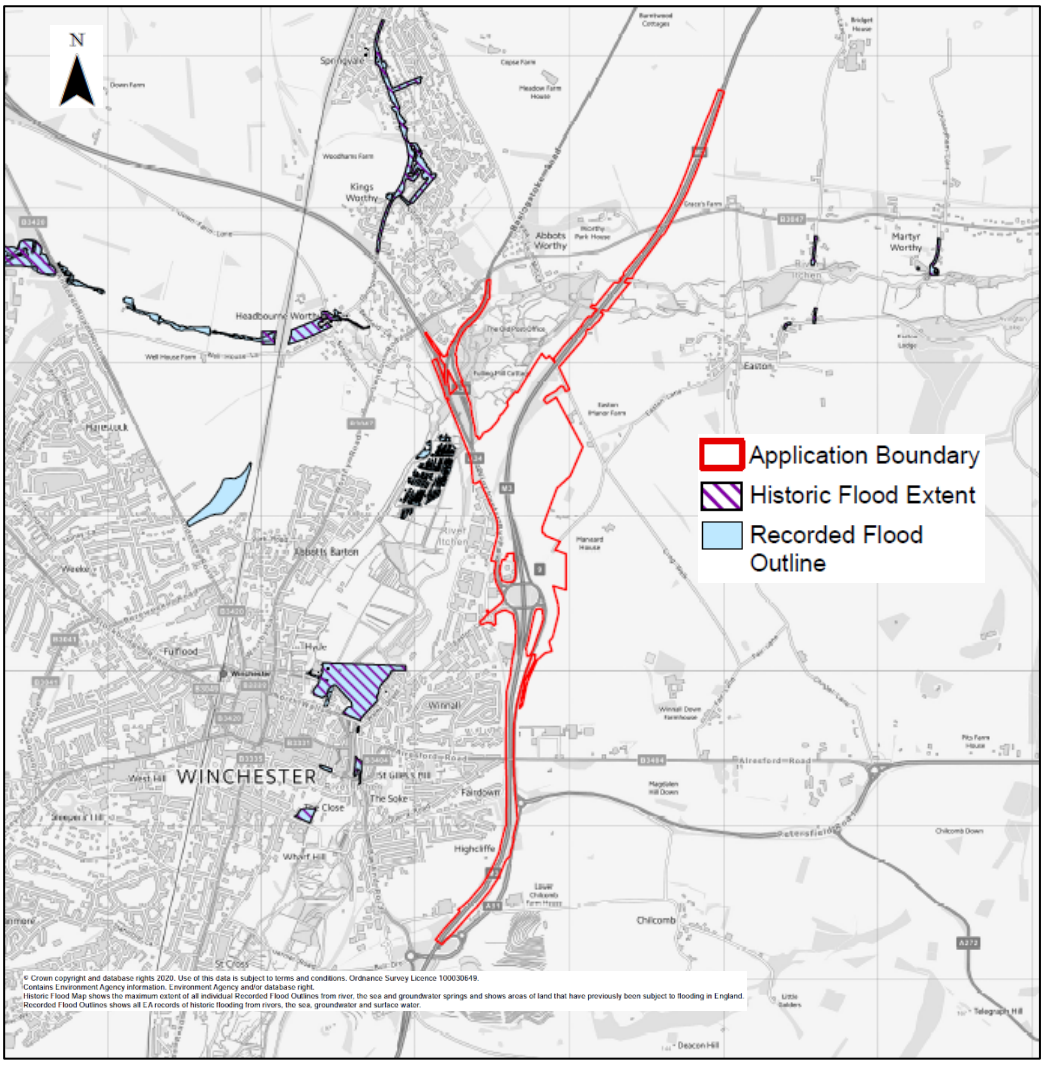


Figure 3.5: Environment Agency Recorded Historic Flood Events

3.2 Preliminary flood risk assessment

3.2.1 The Flood Risk Regulations 2009 transpose the European Commission (EC) Floods Directive (Directive 2007/60/EC) into domestic law. The regulations require that preliminary flood risk assessments are prepared by the EA and Unitary/County Authorities (LLFAs) and that areas at significant potential risk of flooding are identified. The PFRA, provides a national high-level overview of flood risk from all sources within a local area, including consideration of surface water, groundwater, ordinary watercourses, and canals.

3.2.2 The Hampshire County Council PFRA (2011) did not contain any Flood Risk Areas. Review of the PFRA indicated that the Scheme does not have high potential surface water flood risk to properties and people.

3.2.3 Figure 11 of Hampshire County Council's PFRA (2011) shows flooding incidents within Hampshire, however the mapping is of such a scale such that Winchester nor the Application Boundary can be located with sufficient accuracy to confirm any relevant flood incidents.

3.3 Strategic Flood Risk Assessment

3.3.1 A Strategic Flood Risk Assessment (SFRA) is a study carried out by one or more local planning authorities to assess the risk to an area from flooding from all sources, now and in the future, taking account of the impacts of climate change, and to assess the impact that land use changes and development in the area will have on flood risk.

3.3.2 Level 1 SFRAs have been prepared with the purpose to determine the variation in flood risk across the administration boundaries based on data from a variety of sources in order to apply the Sequential Test (see **Section 5** for further information on Sequential Test).

3.3.3 An SFRA was produced by Winchester City Council in 2007. The Winchester City Council SFRA states that there is a high proportion of chalk within the Winchester District. These geological conditions and the high-water table increase susceptibility to groundwater flooding. The SFRA details that flooding from a combination of sources including groundwater has occurred in Winchester, however there are no records of flooding occurring from groundwater only.

3.3.4 The South Downs National Park Authority Water Cycle Study and SFRA Level 1 (dated 2015) Groundwater Flood Risk Map indicates a variable susceptibility to groundwater flooding within the study area. The level of risk ranges from high (>75% based on a 1km square grid area) to low (25 – 50% based on a 1km square grid area) susceptibility; from south (M3/A34 crossing) to north of the Scheme.

3.3.5 There are areas identified to be of high groundwater flood risk within the study area to the south-west and north-east of the Scheme. The areas of greatest risk are generally at close proximity to the River Itchen and its tributaries.

3.4 Environment Agency modelled flood data – River Itchen

3.4.1 Flood levels for the site are summarised in **Table 3.2**. These results have been extracted from the 2019 hydraulic modelling (as per sources of information listed in **Section 1.2**) of the River Itchen at locations relevant to the Scheme.

Table 3.2: Environment Agency Modelled Flood Data

Environment Agency Node	1 in 100 Annual Probability (m AOD)	1 in 100 Annual Probability +45% climate change (m AOD)	1 in 100 Annual Probability +105% climate change (m AOD)	1 in 1000 Annual Probability (m AOD)
38.155	37.97	38.09	38.17	38.06
94.018	38.19	38.23	38.27	38.22

3.4.2 The node map below (**Figure 3.6**) shows the location of the points where the water levels were measured. The nodes are located in the Itchen channel where it passes beneath the A34.

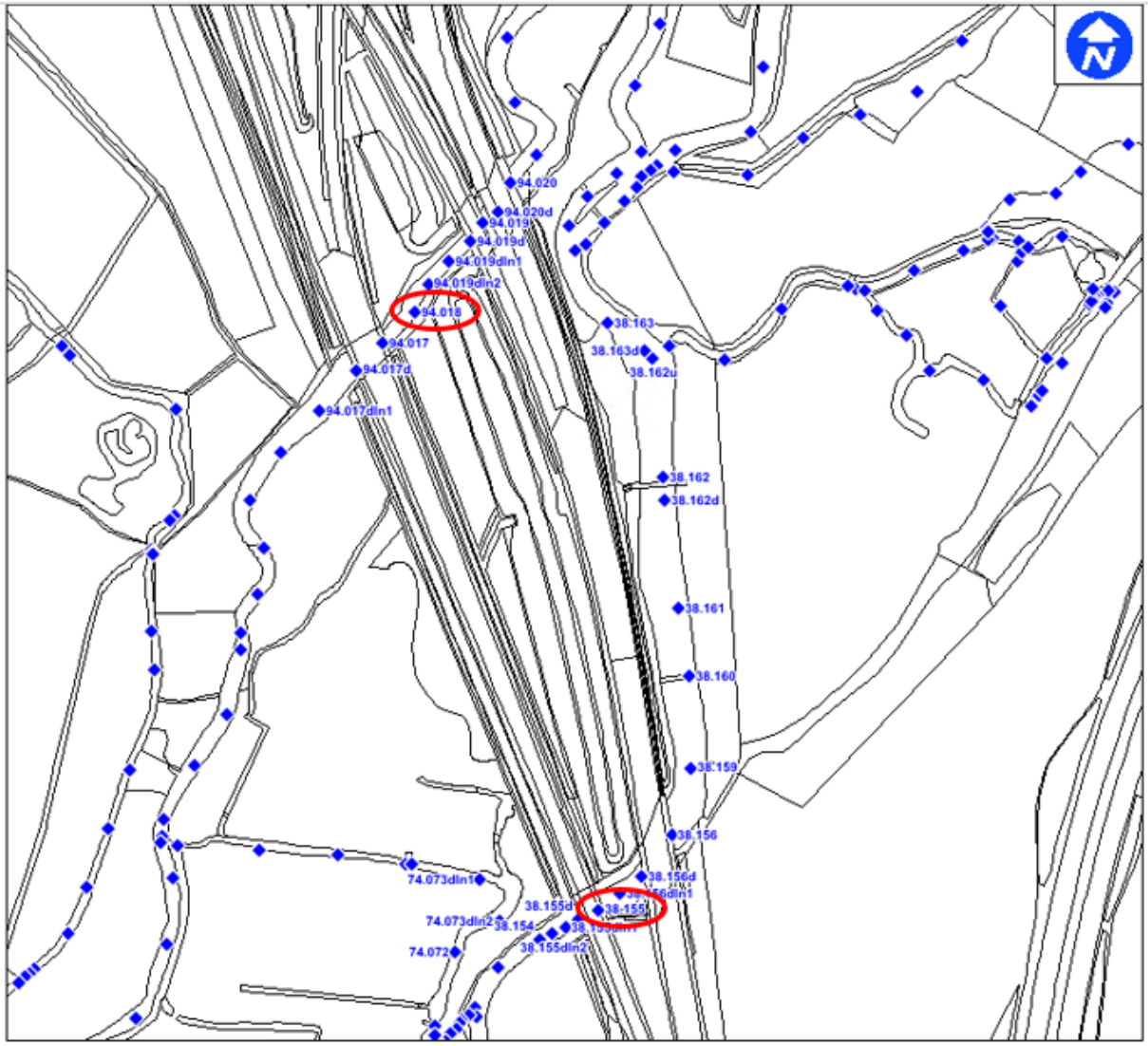


Figure 3.6: Node Location Map of Environment Agency Modelled Flood Data

3.5 Updated modelled flood data – River Itchen

3.5.1 Site-specific topographic survey was collected to inform the Scheme. The existing EA hydraulic model of the River Itchen was therefore updated to refine flood risk to the site and to represent the proposed design to understand flood risk impacts as a result of the Scheme. This is detailed in full in the hydraulic modelling report provided in **Appendix C**.

3.5.2 The updated baseline model results in the location of interest are provided in **Table 3.3**. The node labels were retained as per the Environment Agency model to allow for direct comparison.

Table 3.3: Updated Modelled Baseline Water Levels

Location	1 in 100 Annual Probability (m AOD)	1 in 1000 Annual Probability (m AOD)
38.155	37.97	38.07
94.018	38.19	38.22

3.5.3 The proposed design for the Scheme was included within the model. This was completed through implementing the proposed bridge structure into the 1D domain, and through updating the 2D domain to account for the changes in ground surface. Full details are provided within the hydraulic modelling reporting which is provided in **Appendix C**. **Table 3.4** shows the design water levels for the Scheme.

Table 3.4: Updated Modelled Design Water Levels

Location	1 in 100 Annual Probability (m AOD)	1 in 1000 Annual Probability (m AOD)
38.155	37.97	38.07
94.018	38.19	38.22

4 Impact of climate change

4.1 Impact of climate change

4.1.1 In considering flood risk to the site, it is necessary to fully consider the potential impacts of climate change for the lifetime of the development within the mitigation measures. The Environment Agency released guidance in February 2016 (updated October 2021) on the application of climate change allowances in flood risk assessments (*Flood Risk Assessments: climate change allowances*, accessed on UK Government website).

4.1.2 Whereas the previous approach was to consider a standard +20% allowance to peak river flows to allow for potential climate change impacts – with the associated flood levels provided by the Environment Agency – the new guidance sets out a range of % allowances that require consideration. These vary according to a number of factors, including site location (river basin district), Flood Zone of the development and flood vulnerability classification of the development.

4.1.3 The Scheme focuses on improving the M3 Junction 9, a major transport route. The Scheme is therefore considered as 'Essential Infrastructure'. The climate change allowances for this improvement Scheme are presented in **Table 4.1**.

Table 4.1: Environment Agency Climate Change Allowances

River Basin District	Flood Zone	Flood Risk Vulnerability Classification	Climate Change Allowance requiring consideration (2070 to 2115)
South-east	*3*	*Essential Infrastructure – Nationally Significant Infrastructure Project*	***H++** 120%*

4.1.4 Ordinarily peak flow allowances to be considered for the proposed 'Essential Infrastructure' development within the South East River Basin, Flood Zone 3 will be Upper End (105%) allowance, with the H++ allowance considered for residual risk assessment. In this instance, however, the Scheme is classified as a Nationally Significant Infrastructure Project (NSIP) and as such the only climate change allowance that will be considered is the more conservative H++ allowance of 120%.

4.1.5 The updated hydraulic modelling of the River Itchen and its tributaries included consideration of this climate change allowance for both baseline and design. Further to our assessment, the fluvial climate change allowances were updated in July 2021. Correspondence with the Environment Agency (a copy is included in **Appendix B**) confirms that our assessment of H++ (+120%) gives a more

conservative assessment as the new climate change allowance result in a lower value. The models did not need to be re-run.

4.1.6 **Table 4.2** summarises the climate change flood levels downstream of the M3 Junction 9 crossing of the River Itchen in the baseline scenario. **Table 4.3** provides the climate change flood levels for the design model scenario downstream of the M3 Junction 9.

4.1.7 The hydraulic modelling report is provided in **Appendix C** and provides full details of the modelling approach.

Table 4.2: Modelled Baseline Water Level with Climate Change Allowance

Location	1 in 100 Annual Probability +120% CC (m AOD)
38.155	38.17
94.018	38.32

Table 4.3: Modelled Design Water Level with Climate Change Allowance

Location	1 in 100 Annual Probability +120% CC (m AOD)
38.155	38.17
94.018	38.32

4.1.8 Comparison of **Table 4.2** and **Table 4.3** indicate that the modelled flood levels at the locations of interest remain consistent between the baseline and design scenarios.

4.1.9 Implications for flood mitigation measures are discussed in **Section 6**.

5 The Scheme and sequential test

5.1 The Scheme

5.1.1 This FRA supports the Scheme. The works include:

- Widening of the M3 from a dual two-lane motorway (two-lane motorway with hard shoulders) to a four-lane motorway (with hard shoulders) between the proposed M3 Junction 9 gyratory north and south slip roads.
- A new smaller grade separated gyratory roundabout arrangement within the footprint of the existing roundabout, incorporating new connections over the M3 with improved walking, cycling and horse-riding routes.
- Connector roads from and to the new gyratory roundabout.
- Improved slip roads to/from the M3.
- New structures (in the form of gyratory bridges, underpasses, retaining walls, subway and a new cycle and footbridge over the River Itchen).
- A new surface water runoff system with associated drainage and infiltration features.
- New signage and gantries.
- Utility diversions.
- New lighting (subways, underpasses and gantries).
- Modifications to topography through cuttings and false cuttings as well as re-profiling of existing landform.
- New walking, cycling and horse-riding provision.
- Creation of new areas of chalk grassland, woodland, scrub planting and species rich grassland.

5.1.2 A number of new structures are required to be both constructed and demolished to facilitate the Scheme. Some of the main structures are as follows:

- The existing bridges at the M3 Junction 9 gyratory roundabout are proposed to be demolished and replaced by the two new bridge structures carrying the new gyratory.
- A new underpass is proposed to carry the A34 southbound under the new A33 link road and the existing M3. The A34 northbound underpass would carry the new A34 northbound over the new A33 link.

- The existing subways (Winnall Subway East and Winnall Subway West) located under the existing gyratory are proposed to be demolished to facilitate the construction of the reconfigured roundabout. New subways are proposed along the proposed footpath and cycle path route.

- A new bridge to accommodate the footpath and cycle path over the River Itchen is proposed between the existing Itchen Bridge, (which carries the A34 northbound carriageway), and the existing Kings Worthy Bridge would carry the A33 north and southbound carriageways and the A34 southbound carriageway, respectively.

5.1.3 Further details are provided in **Section 2** and **Chapter 2 (The Scheme and its Surroundings)** of the **ES (Document Reference 6.1)**.

5.2 Flood risk probability

5.2.1 The NPPF follows a sequential risk-based approach in determining the suitability of land for development in flood risk areas, with the intention of steering all new development to the lowest flood risk areas.

5.2.2 PPG Table 2 confirms the *'Flood risk vulnerability classification'* of a site, depending upon the proposed usage. This classification is subsequently applied to Table 3 to determine whether:

- The Scheme is suitable for the flood zone in which it is located

- Whether an Exception Test is required for the Scheme

5.2.3 The site is located within Flood Zone 1 'Low Probability', Flood Zone 2 'Medium Probability' and Flood Zone 3 'High Probability' and the site is classed as Essential Infrastructure. Essential Infrastructure project developments are considered appropriate in Flood Zone 3 provided the Sequential and Exception Tests are undertaken and passed. The Sequential Test must be considered (for all of the land within the order limits) because at least part of the Scheme falls within an area categorised as a Flood Zone 3 area.

5.3 NPPF sequential test

5.3.1 The NPPF follows a sequential risk-based approach in determining the suitability of land for development in flood risk areas, with the intention of steering all new development to the lowest flood risk areas.

5.3.2 The proposed works are specifically needed at Junction 9 of the M3 and therefore cannot be located elsewhere. The Scheme is to improve/alter the existing road infrastructure rather than constructing new roads/junctions. The Sequential Test is therefore considered passed as there is no option to locate the Scheme elsewhere and therefore no option to locate the entire Scheme in Flood Zone 1.

5.4 NPPF exception test

5.4.1 The Exception Test is a method to demonstrate and help ensure that flood risk to people and property will be managed satisfactorily, while allowing necessary development to go ahead in situations where suitable sites at lower risk of flooding are not available.

5.4.2 The Application Boundary is shown on the Environment Agency Flood Zone maps and detailed hydraulic modelling as being located within Flood Zone 1 'Low Probability' with only one small section being located within Flood Zones 2 and 3 'Medium and High Probability' (as shown on **Figure 3.1**). The Exception Test has therefore been carried out in accordance with the NPPF to demonstrate the significant benefits of the Scheme. NPPF paragraph 160 states:

> *"For the Exception Test to be passed it should be demonstrated that:*
>
> *a) the development would provide wider sustainability benefits to the community that outweigh the flood risk; and*
>
> *b) the development will be safe for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall."*

5.4.3 The first part of the Exception Test requires the consideration of the wider benefits of the Scheme. National Highways has been through a lengthy options stage and has considered all environmental impacts and constraints.

5.4.4 The Scheme has five strategic objectives, supported by the National Highways Delivery Plan 2015-2020 (National Highways, 2015):

- To reduce delays at M3 Junction 9 on all links M3, A33 and A34
- Smooth the flow of traffic by improving journey time reliability and reducing delays (time lost per vehicle per mile) at M3 Junction 9 and the exit and entry roads for the A33 and A34
- Improve the safety for all road users and reduce the annual collision frequency and severity ratio on the M3 Junction 9
- Support economic growth and ensure the junction can accommodate additional traffic
- Improvements for walkers and cyclists, including connecting the National Cycle Network Route 23 which is severed by the current junction layout

5.4.5 The South Downs National Park is a sensitive landscape receptor within which the Scheme is partially located. In view of its special landscape character, there is a clear need to balance the economic, social and safety benefits of an improved junction against the potentially adverse environmental impacts. The

sensitivity of the South Downs National Park, and consultation with the South Downs National Park Authority has been a key factor in the evolution of the Scheme, with particular regard to the profile design of the eastern section of land within the Application Boundary as it rises up the escarpment within the South Downs National Park. Further detail is provided in the **ES (Document Reference 6.1)**.

5.4.6 The design of the Scheme takes into account National Highways 10 principles of good design, published in 'The Road to Good Design' (National Highways, 2018), to support its aspirations for a network that responds better to both people and places through improved design processes. These promote environmentally sustainable design that fits in context, whilst making roads safe, useful, and understandable.

5.4.7 National Highways has therefore demonstrated that the Scheme meets wider sustainability benefits that outweigh flood risk and therefore the first part of the Exception Test has been met. Further detail on how the Scheme meets wider sustainability benefits is set out in the **Case for the Scheme (Document Reference 7.1)** and the **Design and Access Statement (Document Reference 7.9)**.

5.4.8 The second part of the Exception Test is to demonstrate that the development will be safe for its lifetime

5.4.9 The benchmark of what is considered safe is that the Scheme will be able to withstand a 1 in 200 year flood event with an increase of +120% on hydrological inflows factored in for the potential impacts of climate change over the operational lifetime of the Scheme.

5.4.10 The development will need to ensure that flood risk is not increased upstream or downstream of the site and that users of the Scheme will not be risk of flooding. The hydraulic modelling assessment contained within the FRA confirms that flood risk is not increased as a result of the development and that users of the Scheme will not be affected by flooding over the lifetime of the development.

5.4.11 **Section 6** and **Section 8** confirm that the Scheme has no detrimental impact on flood risk and has been appropriately designed to ensure safe access including consideration of climate change i.e. for the lifetime of the development.

5.4.12 The Exception Test has therefore been passed as the Scheme offers wider benefits which outweigh the flood risk, and this FRA demonstrates that the development is safe for its lifetime.

5.4.13 In conclusion, the provided information confirms that the Exception Test has been passed and the Scheme is appropriate, in flood risk terms.

6 Flood mitigation strategy

6.1 Floodplain compensation

6.1.1 The modelled extents for the design scenario indicate that the Scheme does not encroach on existing floodplain when considering the 1 in 100 annual probability +120% climate change event. No additional measures with regards to floodplain compensation are therefore required and have not been provided.

6.2 Proposed bridge soffit levels

6.2.1 The design of the bridge has taken into account the required design standards that must be achieved in relation to flood risk. No specific mitigation measures are therefore required as they have been built into the design.

6.2.2 The standard requirements for bridge soffit height are that it is set a minimum of 600mm above the design for a 1 in 200 annual probability plus climate change allowance (CD356 – Design of Highway Structures for Hydraulic Action). In this instance, the relevant climate change allowance is 120%.

6.2.3 The existing bridge over the River Itchen upstream of the proposed new bridge has a lowest beam soffit level of 39.79m AOD. The existing bridge over the River Itchen downstream of the proposed new footbridge has a lowest beam soffit level of 40.56m AOD. The soffit level of the proposed bridge is proposed to be set at 40.56m AOD minimum at this stage for the proposed footbridge crossing of the River Itchen. This provides a freeboard of 2.31m AOD to the modelled 1 in 200 annual probability +120% climate change allowance flood event. This is equal to and higher than the upstream and downstream lowest beam soffit levels, and therefore will not introduce constriction to in-channel flows.

6.2.4 The proposed bridge span is set at this stage to approximately 35m. This is a wider span than both the upstream and downstream existing bridges over the River Itchen (approximately 30m and 24m respectively) and will therefore not cause a constriction to flow in the localised area.

6.2.5 Further information with regards to the significance of the change in flood levels is provided in **Section 8**.

6.3 Flood Risk Activity Permit requirements

6.3.1 The fluvial flood risk during construction has the greatest risk in comparison to the other identified flood sources. Mitigation recommendations are detailed in the **first iteration Environmental Management Plan (fiEMP) (Document Reference 7.3)** and any Method Statements prepared to support the works. These will be prepared to define how the construction phase will progress with regards to the environment, highlighting mitigation measures which will be implemented.

6.3.2 The construction phase will be completed in line with the mitigation measures outlined in the **fiEMP (Document Reference 7.3)** and Second Iteration Environmental Management Plan (siEMP) and other relevant documentation to prevent any increase in flood risk throughout the construction phase. The fiEMP and siEMP will be secured through Requirements in Schedule 2 of the DCO.

6.3.3 Flood Risk Activity Permit (FRAP) applications will be completed and submitted to the Environment Agency for approval in due course for any temporary or permanent works within 8m of a Main River or located within the floodplain (refer to the **Consents and Agreements Position Statement (Document Reference 3.3)**. Consultation with the Environment Agency is ongoing in relation to permits which will be applied for post-submission and prior to construction starting. This has been confirmed as an acceptable and standard approach with the Environment Agency in meetings held in January and February 2022.

7 Surface water drainage

7.1 Existing surface water drainage strategy

7.1.1 The existing surface water drainage is described in detail within **Appendix 13.1 (Drainage Strategy Report)** of the **ES (Document Reference 6.3**). A summary of the general approach is provided below.

7.1.2 The existing M3 Junction 9 carriageway is drained by eight catchments which mainly drain to ditches, soakaways and basins that infiltrate to ground, some areas outfall directly to the River Itchen.

7.1.3 A Pollution Control Device (PCD) currently exists in the outfall of Catchment 1 in the M3 Junction 9 site boundary, immediately upstream of the riverbank and River Outfall 8 (please refer to drawing HE551511-VFK-HDG-X_XXXX_XX-DR-CD-0515 in Appendix F of **Appendix 13.1 (Drainage Strategy Report)** of the **ES (Document Reference 6.3)**). It comprises an open ditch of approximately 60m³ capacity, which terminates in a penstock, full-retention interceptor and a 300m diameter piped outfall to the River Itchen.

7.2 Proposed surface water drainage strategy

7.2.1 The proposed Surface Water Drainage Strategy is provided in **Appendix 13.1 (Drainage Strategy Report)** of the **ES (Document Reference 6.3)**. A summary of the general approach is provided in the paragraphs that follow.

7.2.2 The design approach is to install new gravity drainage for all new carriageway, or to replace existing highway drainage that is being built over by new impermeable highway, such as hardening of the central reserve and lane widenings.

7.2.3 In areas where existing carriageway is being overlaid only, then existing highway drainage is retained.

7.2.4 Areas of local, minor lane widenings proposed remote from the main works, are drained to existing highway drainage, which is modified, where required, to maintain existing discharge rates and no-flooding capacity.

7.2.5 All new drainage conveys run-off to soakaways or EDBs, which infiltrate to ground where the National Highways Water Risk Assessment Tool (HEWRAT) assessment of risk to groundwater, allows.

7.2.6 Runoff volumes are attenuated in EDBs as far as space and acceptable draw-down times allow. Runoff volumes that are unable to drain to ground within a practical time period are discharged to river at the long-term storage rate of 2 l/s/ha.

7.2.7 Treatment of run-off before discharge is proposed; please refer to Section 8 (Pollution Mitigation) in **Appendix 13.1 (Drainage Strategy Report)** of the **ES (Document Reference 6.3)**.

8 Design manual for roads and bridges - assessment

8.1.1 The DMRB provides a method for assessing the impacts from routine run off, spillages and flooding as a result of the construction and operation of roads and the significance of the impacts on the watercourse.

8.1.2 The assessment focuses on surface water, groundwater, spillage and flood risk.

8.1.3 The method assesses the importance of each attribute and the magnitude of the impact to give an overall significance of the impact.

8.2 Classification

8.2.1 **Table 8.1** summarises the estimation criteria for the importance of water environment attributes.

Table 8.1: Estimating the Importance of Water Environment Attributes (extract)

Importance	Typical Criteria	Typical Examples	
Very high	Nationally significant attribute of high importance	Surface water	Watercourse having a WFD classification shown in a RBMP and Q_{95} ≥1.0m^3/s Site protected/designated under EC or UK legislation (SAC, SPA, SSSI, Ramsar site, salmonid water)/Species protected by EC legislation LA 108 [Ref 1.N]
		Groundwater	Principal aquifer providing a regionally important resource and/or supporting a site protected under EC and UK legislation LA 108 [Ref 1.N] Groundwater locally supports GWDTE SPZ1
		Flood risk	Essential infrastructure or highly vulnerable development
High	Locally significant attribute of high importance	Surface water	Watercourse having a WFD classification shown in a RBMP and Q_{95} <1.0m^3/s Species protected under EC or UK legislation LA 108 [Ref 1.N]
		Groundwater	Principal aquifer providing a locally important resource or supporting a river ecosystem Groundwater locally supports GWDTE

Importance	Typical Criteria	Typical Examples	
			SPZ2
		Flood risk	More vulnerable development
Medium	Of moderate quality and rarity	Surface water	Watercourses not having a WFD classification shown in a RBMP and Q_{95} >0.001m^3/s
		Groundwater	Aquifer providing water for agricultural or industrial us with limited connection to surface water SPZ3
		Flood risk	Less vulnerable development
Low	Lower quality	Surface water	Watercourses not having a WFD classification shown in a RBMP and Q_{95} ≤0.001m^3/s
		Groundwater	Unproductive strata
		Flood risk	Water compatible development

8.2.2 **Table 8.2** summarises the estimation criteria for assessing the magnitude of an impact.

Table 8.2: Estimating the Magnitude of an Impact (extract)

Magnitude	Criteria	Typical example	
Major adverse	Results in loss of attribute and/or quality and integrity of the attribute	Surface water	Failure of both acute-soluble and chronic sediment related pollutants in HEWRAT and compliance failure with EQS values. Calculated risk of pollution from a spillage ≥2% annually (spillage assessment). Loss or extensive change to a fishery. Loss of regionally important public water supply. Loss or extensive change to a designated nature conservation site. Reduction in water body WFD classification.
		Groundwater	Loss of, or extensive change to, an aquifer. Loss of regionally important water supply.

Magnitude	Criteria	Typical example	
			Potential high risk of pollution to groundwater from routine runoff - risk score >250 (Groundwater quality and runoff assessment). Calculated risk of pollution from spillages ≥2% annually (Spillage assessment). Loss of, or extensive change to GWDTE or baseflow contribution to protected surface water bodies. Reduction in water body WFD classification. Loss or significant damage to major structures through subsidence or similar effects.
		Flood risk	Increase in peak flood level (100mm)
Moderate adverse	Results in effects on integrity of attribute, or loss of part of attribute	Surface water	Failure of both acute-soluble and chronic-sediment related pollutants in HEWRAT but compliance with EQS values. Calculated risk of pollution from spillages ≥1% annually and <2% annually. Partial loss in productivity of a fishery. Degradation of regionally important public water supply or loss of major commercial/industrial/agricultural supplies. Contribution to reduction in water body WFD classification.
		Groundwater	Partial loss or change to an aquifer. Degradation of regionally important public water supply or loss of significant commercial/ industrial/ agricultural supplies. Potential medium risk of pollution to groundwater from routine runoff - risk score 150-250. Calculated risk of pollution from spillages ≥1% annually and <2% annually. Partial loss of the integrity of GWDTE.

Magnitude	Criteria	Typical example	
			Contribution to reduction in water body WFD classification. Damage to major structures through subsidence or similar effects or loss of minor structures.
		Flood risk	Increase in peak flood level (> 50mm).
Minor adverse	Results in some measurable change in attributes, quality or vulnerability	Surface water	Failure of either acute-soluble or chronic sediment related pollutants in HEWRAT. Calculated risk of pollution from spillages ≥0.5% annually and <1% annually. Minor effects on water supplies.
		Groundwater	Potential low risk of pollution to groundwater from routine runoff - risk score <150 Calculated risk of pollution from spillages ≥0.5% annually and <1% annually Minor effects on an aquifer, GWDTEs, abstractions and structures
		Flood risk	Increase in peak flood level (>10mm)
Negligible	Results in effect on attribute, but of insufficient magnitude to affect the use or integrity	The proposed project is unlikely to affect the integrity of the water environment	
		Surface water	No risk identified by HEWRAT (pass both acute-soluble and chronic-sediment related pollutants). Risk of pollution from spillages <0.5%.
		Groundwater	No measurable impact upon an aquifer and/or groundwater receptors and risk of pollution from spillages <0.5%.
		Flood risk	Negligible change to peak flood level (≤ +/- 10mm).
Minor beneficial	Results in some beneficial effect on attribute or a	Surface water	HEWRAT assessment of either acute-soluble or chronic-sediment related pollutants becomes pass from an existing site where the baseline was a fail condition.

Magnitude	Criteria	Typical example	
	reduced risk of negative effect occurring		Calculated reduction in existing spillage risk by 50% or more (when existing spillage risk is <1% annually).
		Groundwater	Calculated reduction in existing spillage risk by 50% or more to an aquifer (when existing spillage risk <1% annually). Reduction of groundwater hazards to existing structures. Reductions in waterlogging and groundwater flooding.
		Flood risk	Creation of flood storage and decrease in peak flood level (> 10mm).
Moderate beneficial	Results in moderate improvement of attribute quality	Surface water	HEWRAT assessment of both acute-soluble and chronic-sediment related pollutants becomes pass from an existing site where the baseline was a fail condition. Calculated reduction in existing spillage by 50% or more (when existing spillage risk >1% annually). Contribution to improvement in water body WFD classification.
		Groundwater	Calculated reduction in existing spillage risk by 50% or more (when existing spillage risk is >1% annually). Contribution to improvement in water body WFD classification. Improvement in water body catchment abstraction management Strategy (CAMS) (or equivalent) classification. Support to significant improvements in damaged GWDTE.
		Flood risk	Creation of flood storage and decrease in peak flood level1 (>50mm).
Major beneficial	Results in major	Surface water	Removal of existing polluting discharge, or removing the likelihood

Magnitude	Criteria	Typical example	
	improvement of attribute quality		of polluting discharges occurring to a watercourse. Improvement in water body WFD classification.
		Groundwater	Removal of existing polluting discharge to an aquifer or removing the likelihood of polluting discharges occurring. Recharge of an aquifer. Improvement in water body WFD classification.
		Flood risk	Creation of flood storage and decrease in peak flood level (> 100mm).
No change		No loss or alteration of characteristics, features or elements; no observable impact in either direction.	

8.2.3 All references to peak flood levels in **Table 8.2** are for the 1 in 100 annual probability event including appropriate allowance for climate change.

8.3 Surface water

8.3.1 **Section 3** outlines the existing risk of surface water, which is summarised in **Table 8.3** in relation to the Scheme.

Table 8.3: Summary of existing surface water flood risk

Flood Risk	Surface Water Flood Overland Flow
High: greater than 1 in 30 annual probability	Within the Application Boundary, minor areas in the southern end of the M3 Junction 9 carriageway (near A31 roundabout) have depths below 300mm, which are not located on the carriageway. Areas near the Junction 9 roundabout indicate depths between 300-900mm on the carriageway. Areas of minor localised ponding exist within the Application Boundary with depths of 300-900mm, it should be noted that these are not on the road network. Velocities are largely less than 0.25m/s with some minor isolated areas at the M3 Junction 9 roundabout showing localised velocities over 0.25m/s.

Flood Risk	Surface Water Flood Overland Flow
Medium: between 1 in 30 and 1 in 100 annual probability	A stretch of the M3 carriageway at the Junction 9 roundabout indicates depths below 300mm and a smaller extent with depths between 300-900mm. The A34 carriageway has minor areas with depths below 300mm. Velocities in isolated areas along the M3 carriageway are indicated to be over 0.25m/s. A localised area adjacent to the Application Boundary at Kings Worthy is shown to be at risk of flooding with depths of over 900mm, near the A33 carriageway. However, this is outside of the Application Boundary and does not affect the carriageway itself.
Low: between 1 in 100 and 1 in 1000 annual probability	The M3 carriageway through the Junction 9 roundabout is indicated to be affected by flood depths between 300-900mm. The Winchester Bypass (routes A33 and A34) have minor areas affected by floods with depths between 300-900mm, however these are likely associated with the watercourses below the carriageway and are not indications of flooding on the carriageways themselves. An isolated extent of flooding with depths less than 300mm is present on the northern bound carriageway of the M3 south of Junction 9 and on the carriageway of the adjacent A272 between Junction 9 roundabout and the A31 roundabout. Velocities exceed 0.25m/s in these localised areas with some flood extents showing velocities less than 0.25m/s.

8.3.2 The Environment Agency/Defra Flood Risk to People (2006) document outlines that flood depths greater than 300mm and of high velocity (>0.25m/s) could result in stationary vehicles being moved by the flow of water, which will be unsafe for users. The velocity exceeds 0.25m/s in very isolated areas and depths do exceed 300mm, therefore the risk to vehicles in the areas identified in **Table 8.3** is medium as the areas identified are not in the path of the M3 Junction 9 carriageway. The overall likelihood of surface water flooding occurring within the Scheme is medium to low risk, however the potential impact will be classified as high in the identified areas due to the depths and velocities. It should be noted that the information used to inform **Table 8.3** is coarse, strategic scale information that does not take into account existing drainage systems and hence the extents, depths and velocities shown are likely conservative by nature.

8.3.3 The Scheme has the potential to impact existing surface water flood risk due to introduction of permanent impermeable areas. The increase in impermeable areas has the potential to increase runoff rates and disrupt existing flow paths which could result in an increase in surface water flood risk.

8.3.4 The Scheme has the potential to increase flood risk as a result of the additional lanes, and footpaths along the north-east and north-west bound carriageways of the Scheme essentially resulting in a greater area of paved and hence impermeable surface. In particular, this could exacerbate existing areas of identified flood risk were mitigation measures not included.

8.3.5 Without storage and attenuation of the additional runoff it could increase the rate at which runoff reaches receiving watercourses. While the increase from one drainage outfall alone could not make a significant difference to the receiving watercourse, the cumulative effect of all the outfalls in the Scheme could affect flood risk elsewhere in the catchment, increasing fluvial flood risk. Surface water flood risk could also be increased locally by the increase in impermeable surfacing and potential for new surface water flow paths to be formed as a result of the works.

8.3.6 The Scheme therefore includes a surface water drainage strategy used to manage the risk of surface water flooding along the Scheme carriageway and the impact of the Scheme on flood risk elsewhere. The proposed surface water drainage scheme is detailed in **Section 7**, and includes draining surface water to water storage grounds where necessary. However, when this is not feasible during an intense rainfall event, such as a storm, attenuation of surface water volumes discharge to the River Itchen will be necessary. The discharge rate from these storage areas of surface water on the M3 Junction 9 carriageway will be limited to 2 l/s/ha of catchment area (therefore no increase over existing discharge rates to the River Itchen) and attenuation will be provided to infiltrate surface water where feasible. Pollution prevention and control measures have also been proposed including spillage ditches, sediment forebays, separation and infiltration basins, and wetlands. These measures will treat and clean surface water flow prior to the discharge of surface water runoff to water storage grounds or the River Itchen.

8.3.7 The Environment Agency and Lead Local Flood Authority have been consulted on the drainage strategy throughout the project and have agreed proposed discharge rates and pollution prevention measures to be implemented.

8.3.8 **Table 8.1** refers to surface water features such as rivers, lakes and canals, whereas the surface water flood risk in this instance refers to overland flow that occurs from rainfall events only, without fluvial sources. When the surface water drainage strategy is considered, the Scheme will have an overall Minor Beneficial impact in comparison to existing conditions due to the reduction in discharge rates and the attenuation provided causing reduced flooding from surface water sources in comparison to existing.

8.4 Groundwater

8.4.1 The key element of the design of relevance to the groundwater flooding is associated with the piling activities. The risk is that the barrier effect of the piles and pile caps (below groundwater level) will cause an increase in hydraulic head

upstream of the barrier due to the loss of transmissivity induced by the underground construction and could increase the risk of groundwater flooding.

8.4.2 Proposed mitigation methods to manage groundwater contamination within the Scheme Application Boundary include a swale and filter trench. These methods will require approximately 180m³ of treatment volume. The methods will consist of superficial geology including a sand, gravel, and clay topsoil (minimum 0.3m) rather than sandy, gravelly, structureless chalk (minimum 0.5m). If 50% of Basin 5 is considered for the prevention of groundwater contamination, then the remaining treatment of volume (140m³) can be provided by the top 300mm of surface soils leaving 900mm of soils for further filtration above the chalk.

8.4.3 Five of the proposed detention basins are designed to infiltrate to ground. An impermeable liner is proposed for three of the detention basins due to pollution control measures required. This also reduces the risk of introducing additional volumes of water to the groundwater therefore reducing the risk of groundwater flooding, and groundwater contamination because there is a high risk to groundwater in basins founded on fractured geology and shallow unsaturated zones. This will prevent the infiltration of pollutants into groundwater streams and the overall impact will be negligible.

8.5 Flood risk

8.5.1 The Scheme is classified as essential infrastructure and is therefore classified as 'Very High' importance. **Sections 3** and **4** outline the flood risk in the vicinity of the Scheme for the present day and in the future, based upon the current Environment Agency flood zones and updated hydraulic modelling completed to inform the Scheme.

8.5.2 As part of the design process, the Scheme was represented within the hydraulic model to demonstrate anticipated changes to the flood risk in the area as a result of the works. These are provided in **Table 4.2** and **Table 4.3** and show that the in-channel flood level changes as a result of the Scheme for the applicable 1 in 100 annual probability +120% climate change event is considered negligible in accordance with **Table 8.2**.

8.5.3 The Scheme does not encroach upon floodplain and therefore floodplain storage is not impacted as a result of the Scheme.

8.5.4 The differences in modelled flood levels on the floodplain between the baseline scenario and design scenario for the applicable 1 in 100 annual probability +120% climate change event have been compared and are provided in **Figure 8.1**. These indicate that the area surrounding the Scheme show negligible impact as a result of the Scheme. **Figure 8.1** also shows that the proposed footway/cycle bridge has negligible impact on flood levels / extents with changes in water level shown to be within +/-10mm."

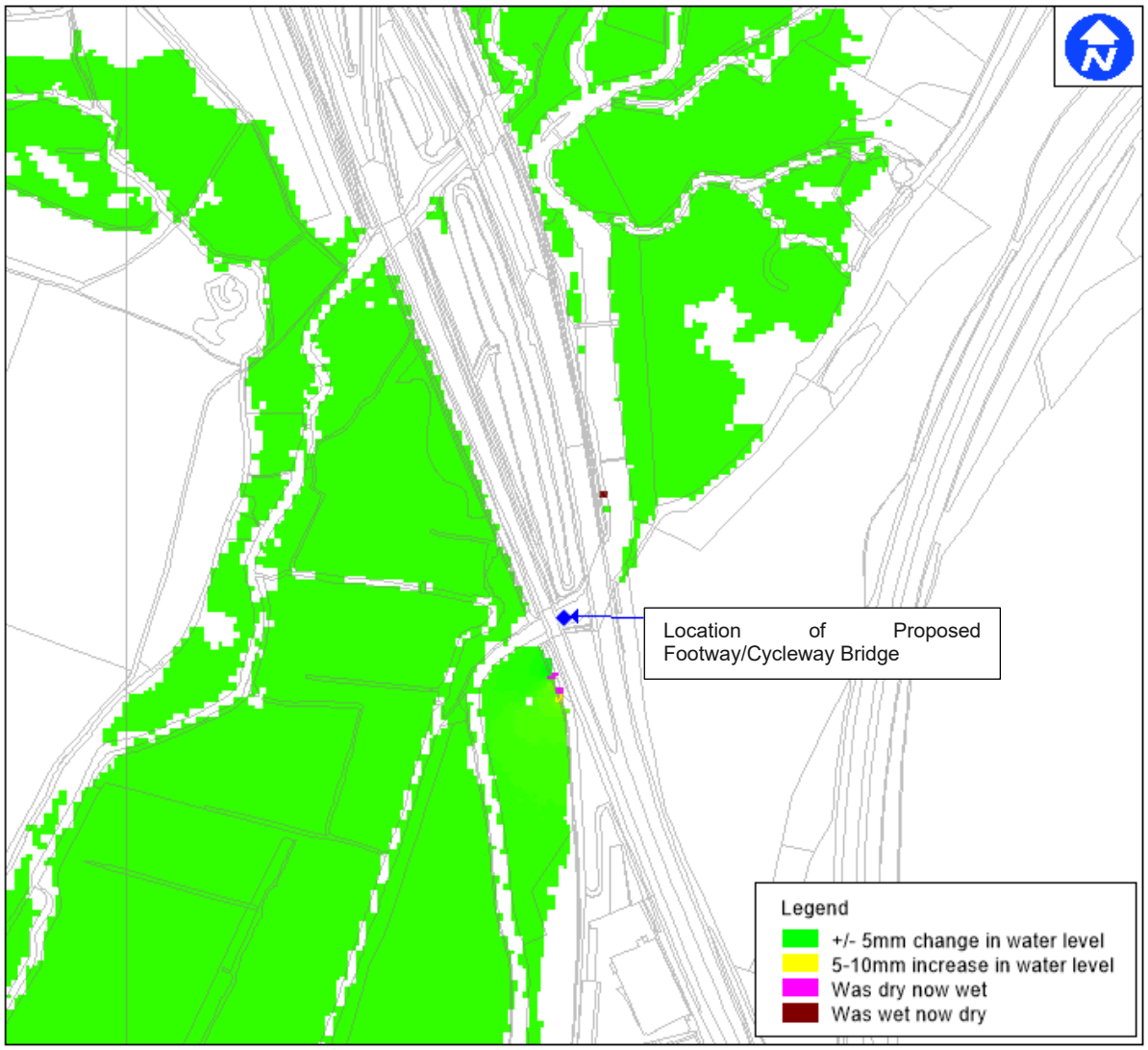


Figure 8 1: 100 year H++ - Impacts of Proposed Footway/Cycleway Bridge

8.5.5 The Scheme is therefore considered to have negligible impacts with regards to flood risk.

9 Residual risk

9.1.1 It is difficult to completely guard against flooding since extreme events greater than the design standard event are always possible, however, it is practicable to minimise the risk by allowing a substantial freeboard (safety margin) and by using suitable construction and management techniques.

9.1.2 Residual risk has been addressed through the following:

- Making use of the 1 in 200 annual probability plus H++ (120%) climate change allowance to inform the design of the bridge
- Making use of the 1 in 100 annual probability plus H++ (120%) climate change allowance to assess the impact on flood risk as a result of the Scheme
- A separate Surface Water Drainage Strategy has been prepared which will drain surface water to ground where possible. However, where this is not feasible, due to insufficient space or impractical drain-down times, attenuation of surface water runoff volumes will be achieved in detention basins, prior to discharge to the River Itchen. The discharge rate of surface water to the River Itchen from the M3 Junction 9 carriageway and cutting areas will be limited to 2 l/s/ha of catchment area. Pollution control measures have also been proposed, which will treat surface water flow prior to the discharge of surface water runoff to ground or to the River Itchen

9.1.3 All drainage design and pollution control is proposed in line with current DMRB design standards and with National Highways, Hampshire County Council and Environment Agency approval. As such, the residual risk deemed acceptable by statutory guidance is considered to be met for the lifetime of the development.

10 Conclusions

10.1.1 This FRA has been prepared to support the Scheme. The Scheme includes the proposed widening of the existing M3 carriageway from a dual two-lane motorway (two-lane motorway with hard shoulders) to a four-lane motorway (with hard shoulders) between the proposed M3 Junction 9 gyratory north and south slip roads

10.1.2 The Scheme also includes the provision of a new combined footway and cycleway to the west (over the River Itchen), to the east a proposed cycleway/footway through the new gyratory and a new bridleway/footway/cycle path on the eastern side, which will connect wider networks, reconfiguring the existing roundabout, and improving slip-roads to and from the M3.

10.1.3 The FRA concludes:

- The Application Boundary is largely located within Flood Zone 1 'Low Probability', with minor areas within the Application Boundary classified as Flood Zone 2 'Medium Probability' and Flood Zone 3 'High Probability' of River Itchen and its tributaries

- The Scheme is classified as 'Essential Infrastructure'. PPG Table 3 confirms that such development is appropriate within Flood Zone 3 subject to the Sequential Test and Exception Test being carried out

- The Scheme will not encroach upon the floodplain, and therefore will not result in a loss in flood storage

- The surface water drainage within **Appendix 13.1 (Drainage Strategy Report)** of the **ES (Document Reference 6.3**) will drain surface water to ground where possible via EDBs. However, when this is not feasible, surface water volumes will discharge to the River Itchen at long-term storage rates (2 l/s/ha). Pollution control measures have also been proposed, which will treat surface water flow prior to the discharge of surface water runoff to ground or to the River Itchen

10.1.4 The proposed works are for improvements to an existing road and therefore cannot be located elsewhere. The Sequential Test is therefore considered passed.

10.1.5 The proposed works are classified as Essential Infrastructure, which is considered appropriate in Flood Zone 3 'High Probability' subject to passing the Exception Test, in accordance with the PPG Table 3. This FRA addresses the second part of the Exception Test, demonstrating that the Scheme is safe in terms of flood risk for its lifetime. The first part of the Exception Test concludes that the Scheme has wider benefits to the area.

10.1.6 The Scheme includes the provision of a new bridge (footway and cycleway) over the River Itchen. Hydraulic modelling has been undertaken to understand the

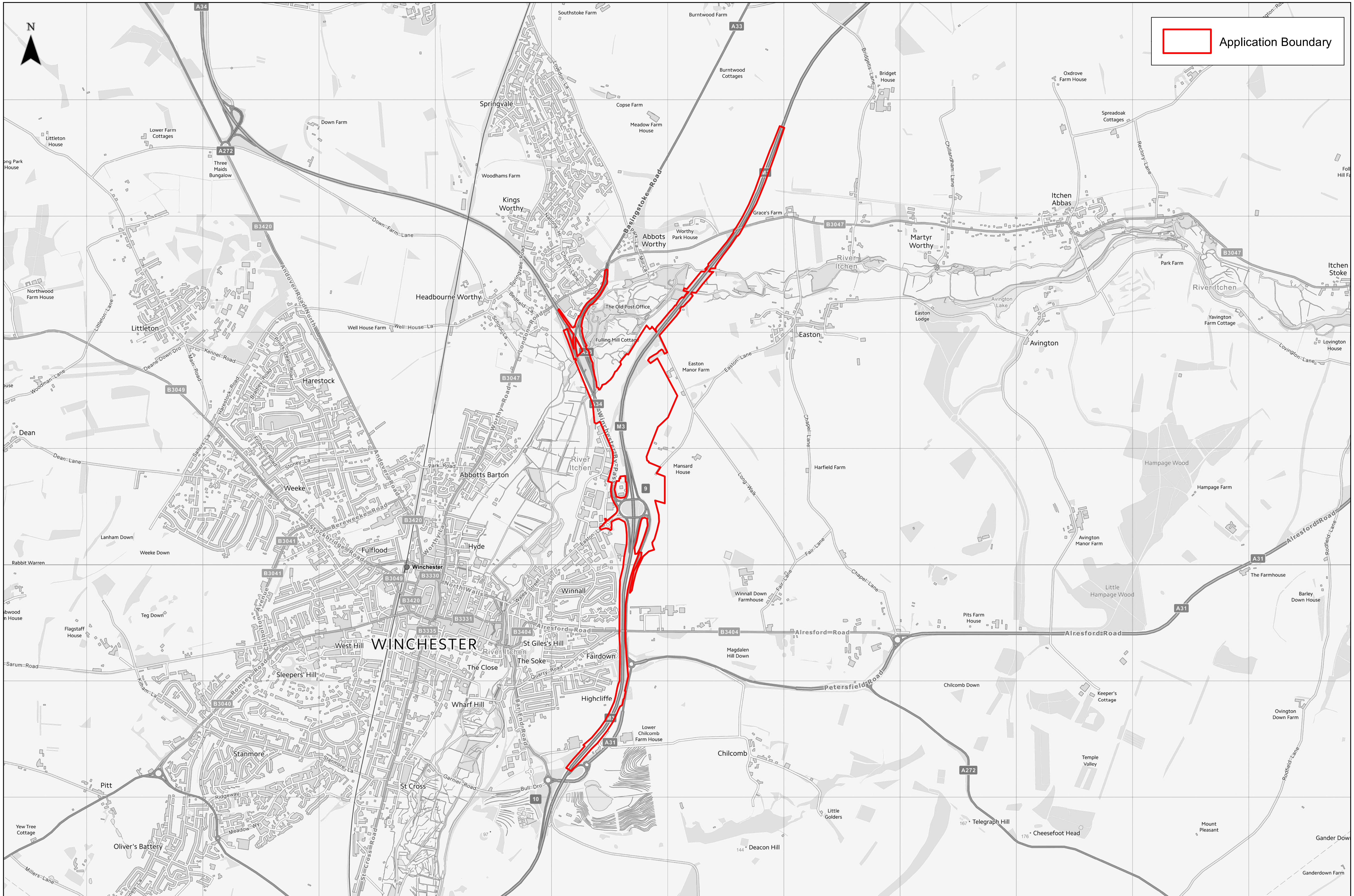
impact on fluvial flood risk. The modelling showed that the Scheme has a negligible impact upon fluvial flood risk.

10.1.7 The Scheme is supported by the surface water drainage strategy outlined above. The strategy is noted to be an improvement to the existing drainage network, and therefore will have a minor beneficial impact upon surface water flood risk in the localised area.

10.1.8 Groundwater is present within the Scheme Application Boundary and was encountered within both the superficial deposits and the chalk at varying depths across the Scheme. To reduce the risk of groundwater contamination, a set of mitigation methods have been proposed including swales, impermeable liners and filter trenches as outlined within **Appendix 13.1 (Drainage Strategy Report)** of the **ES (Document Reference 6.3)**.

10.1.9 In conclusion, the proposed works and their mitigation measures will not result in increased flood risk to the nearby residents, and therefore there will be no detrimental impact on third parties. The Scheme complies with the National Policy Statement for National Networks (NPS NN), National Planning Policy Framework (NPPF) and local planning policy with respect to flood risk and is an appropriate development at this location.

Appendix A: Site Information



Client:

VolkerFitzpatrick

Stantec

M3 JUNCTION 9 IMPROVEMENT

Site Location

0 1.5 3 km

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1:29,065 @ A3	Date: 18/02/2022
Drawn: CE	Checked: SK
Figure 001	Rev A

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Stantec

Client: VolkerFitzpatrick

M3 JUNCTION 9 IMPROVEMENT

Site Location (Aerial)

0 1.5 3 km

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

1:30,000 @ A3	Date: 18/02/2022
Drawn: CE	Checked: SK
Figure 002	Rev A

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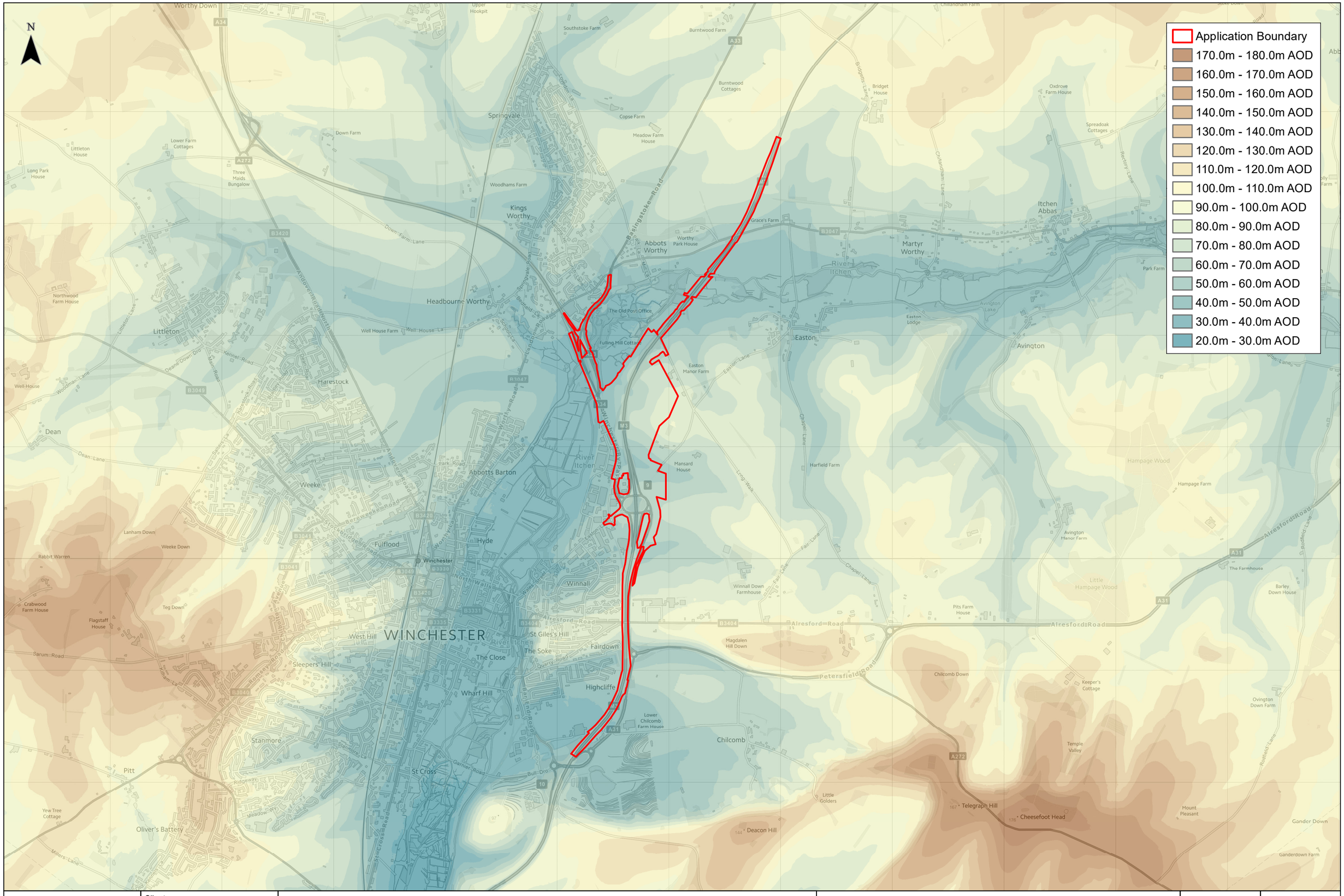

Stantec

Client: VolkerFitzpatrick

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M3 JUNCTION 9 IMPROVEMENT

Topography

0 1.5 3 km

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Figure 003	Rev A

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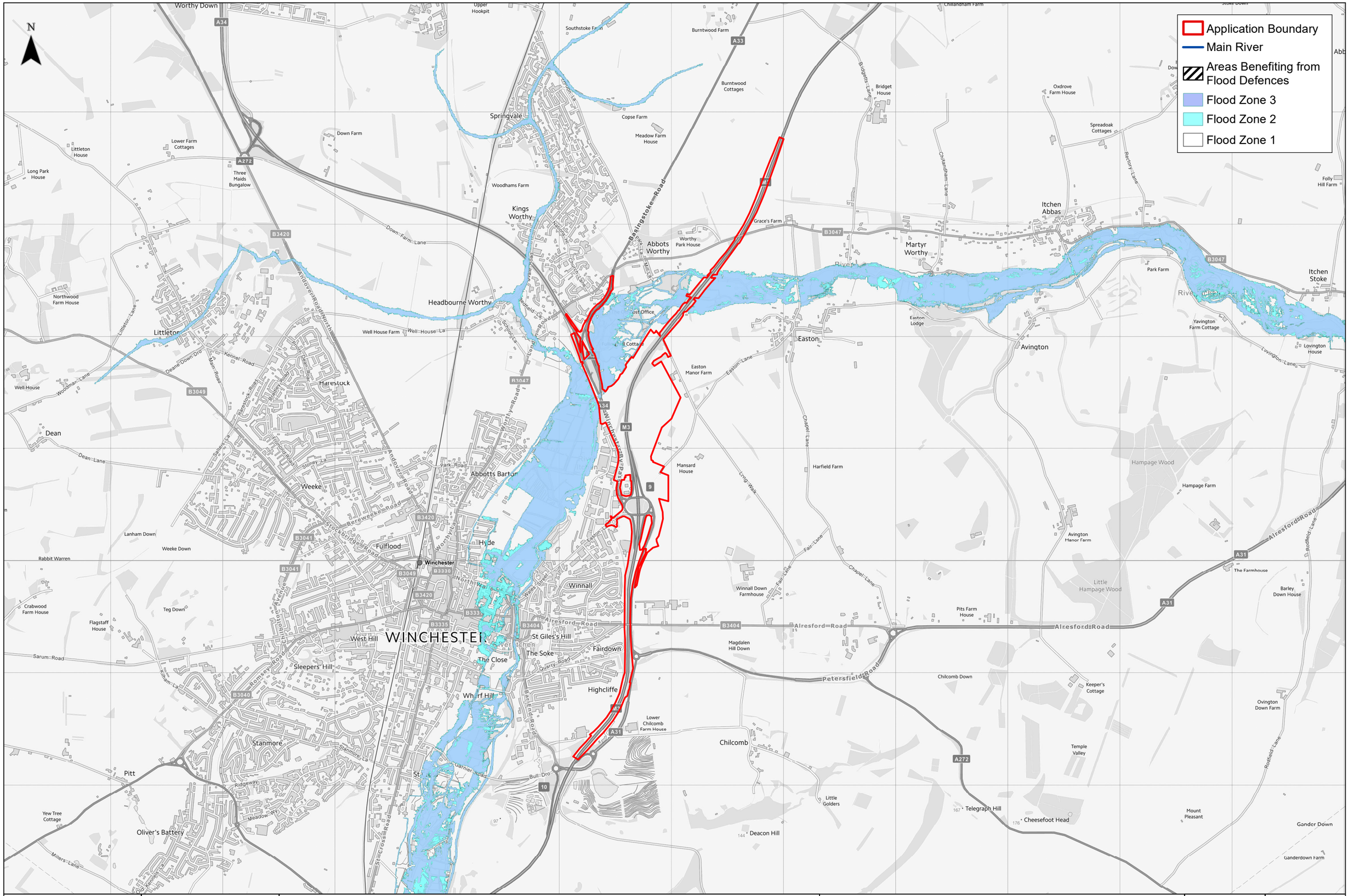

Stantec

Client: VolkerFitzpatrick

M3 JUNCTION 9 IMPROVEMENT

EA Flood Zone

0 1.5 3 km

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Date: 18/02/2022

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Checked: SK

Figure 004

Rev A

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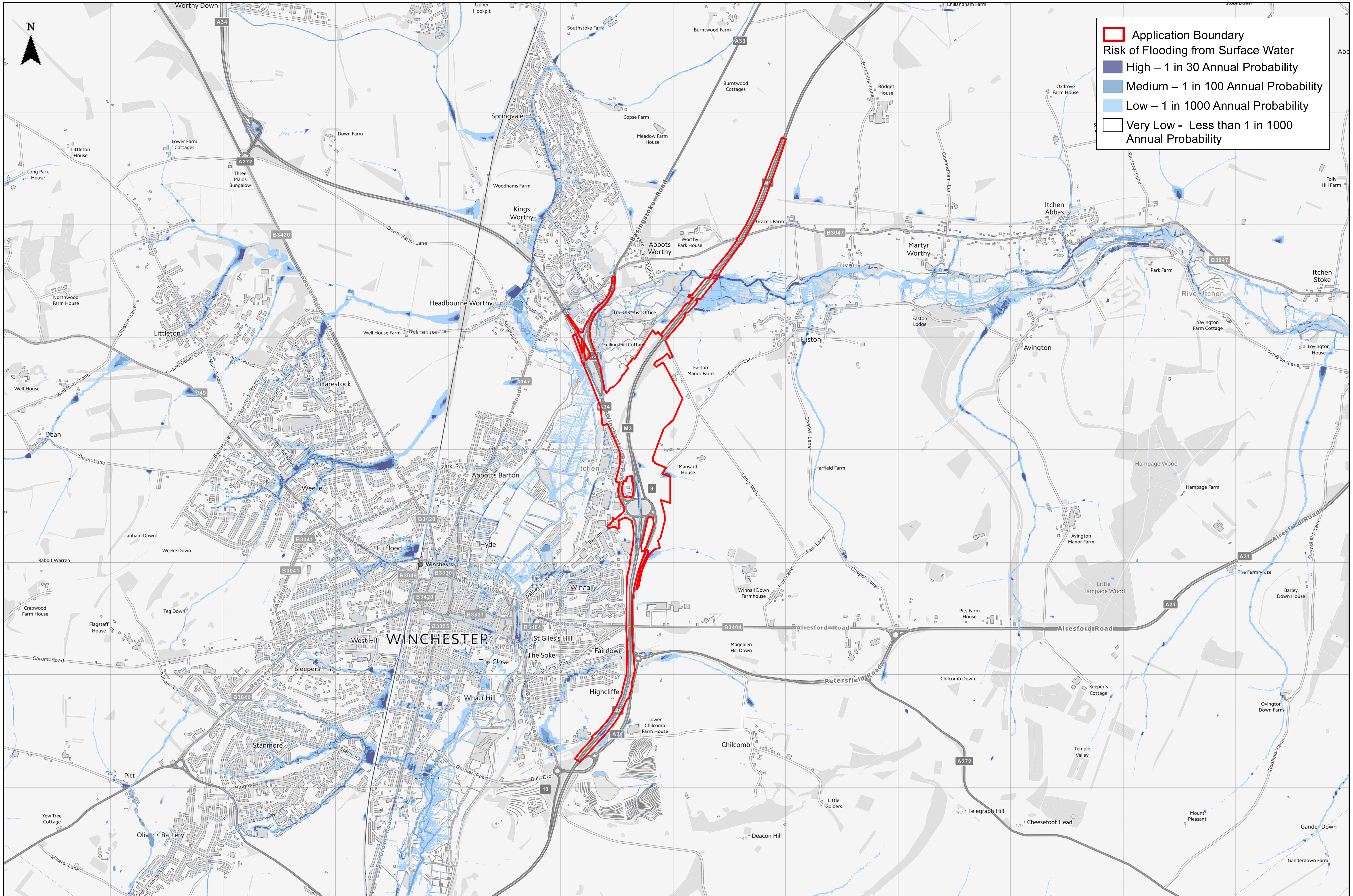

Client:

M3 JUNCTION 9 IMPROVEMENT

EA Surface Water Flood Risk

0 1.5 3 km

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Maps based on EA updated 'Flood Map for Surface Water' ('uFMfSW') released in 2013 as the latest iteration of a national scale surface water modelling exercise

1:30,000 @ A3	Date: 18/02/2022
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Figure 005	Rev A

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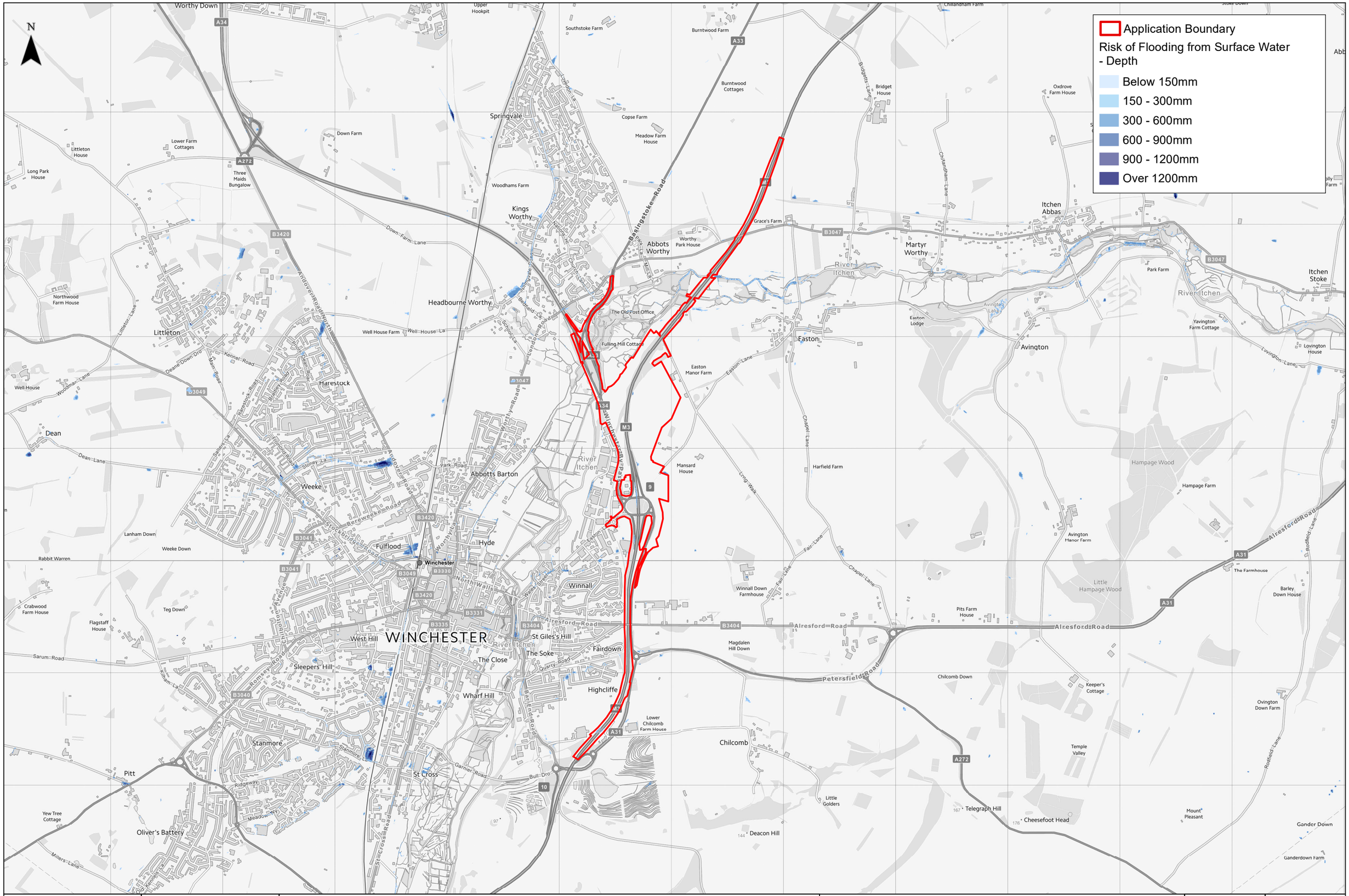

Stantec	Client: VolkerFitzpatrick	**M3 JUNCTION 9 IMPROVEMENT** EA Surface Water Flood Risk - Depth 3.3 Percent Chance	0 1.5 3 km Contains Environment Agency information © Environment Agency and database right 2022. Contains Ordnance Survey data © Crown copyright and database right 2022. Maps based on EA updated 'Flood Map for Surface Water' ('uFMfSW') released in 2013 as the latest iteration of a national scale surface water modelling exercise	1:30,000 @ A3 | Date: 18/02/2022 Drawn: CE | Checked: SK Figure 005a | Rev A

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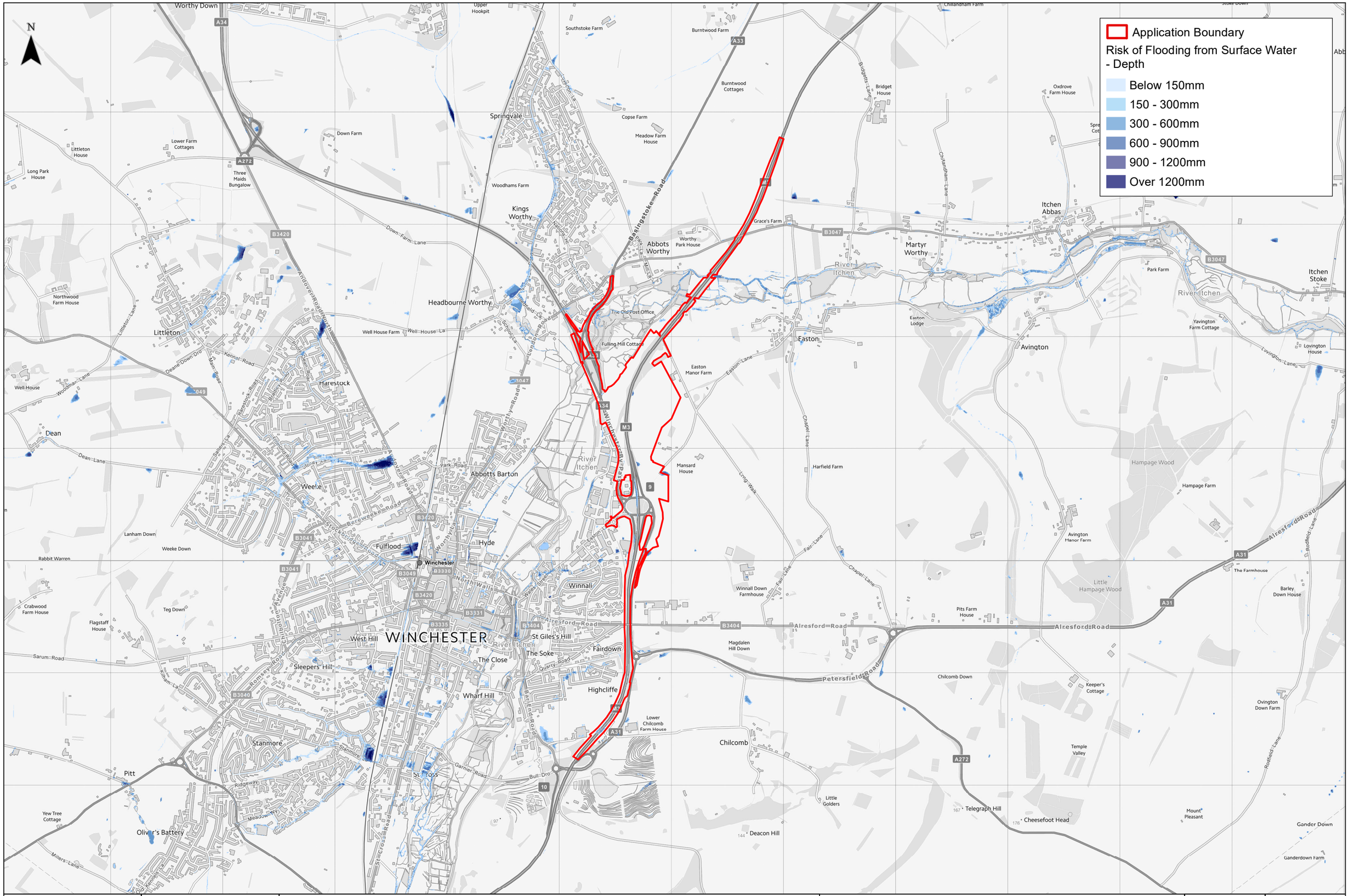

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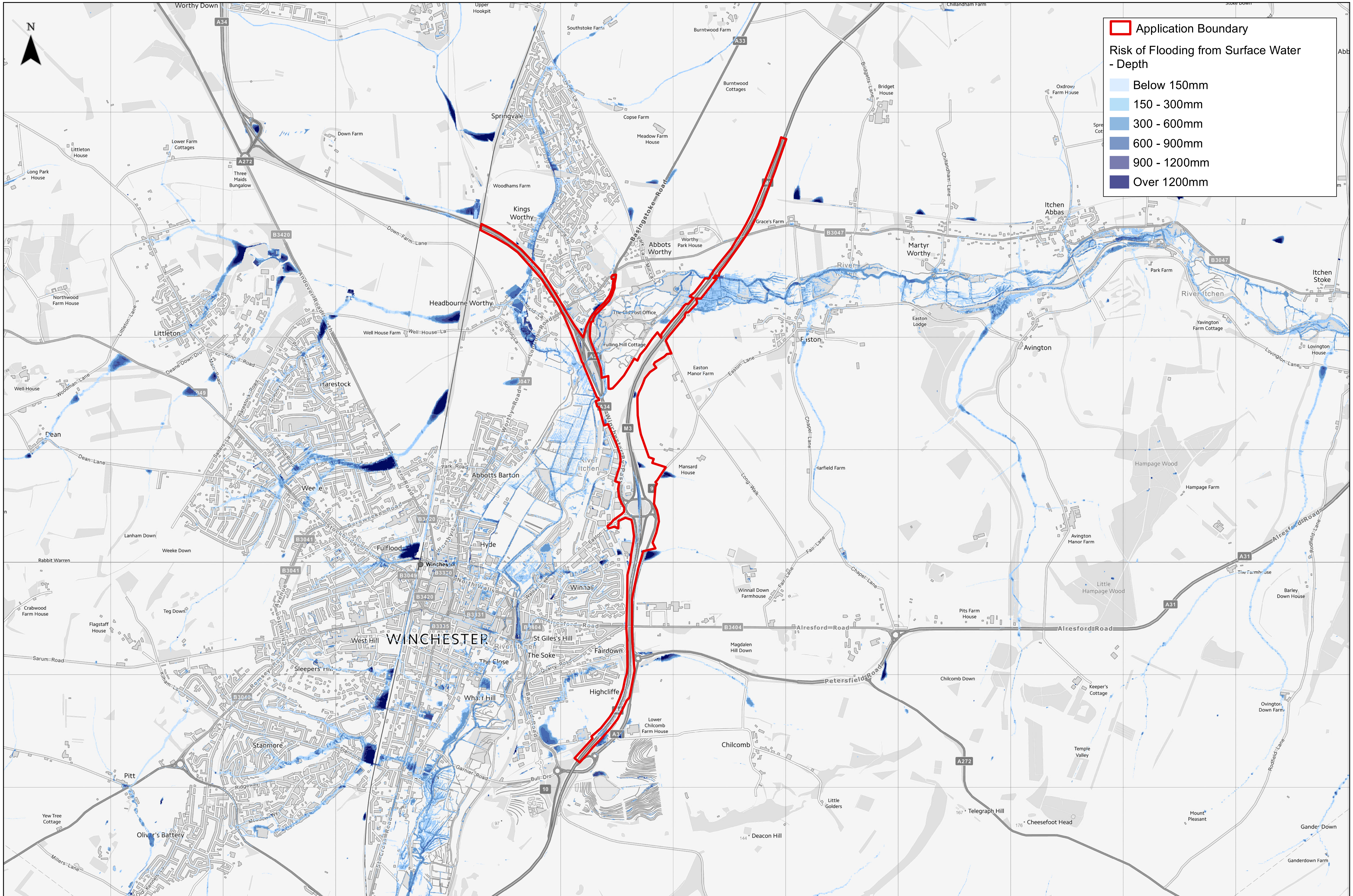

Stantec	Client: VolkerFitzpatrick	**M3 JUNCTION 9 IMPROVEMENT** EA Surface Water Flood Risk - Depth 0.1 Percent Chance	0 1.5 3 km

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Maps based on EA updated 'Flood Map for Surface Water' ('uFMfSW') released in 2013 as the latest iteration of a national scale surface water modelling exercise

1:30,000 @ A3	Date: 16/02/2022
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Figure 005c	Rev A

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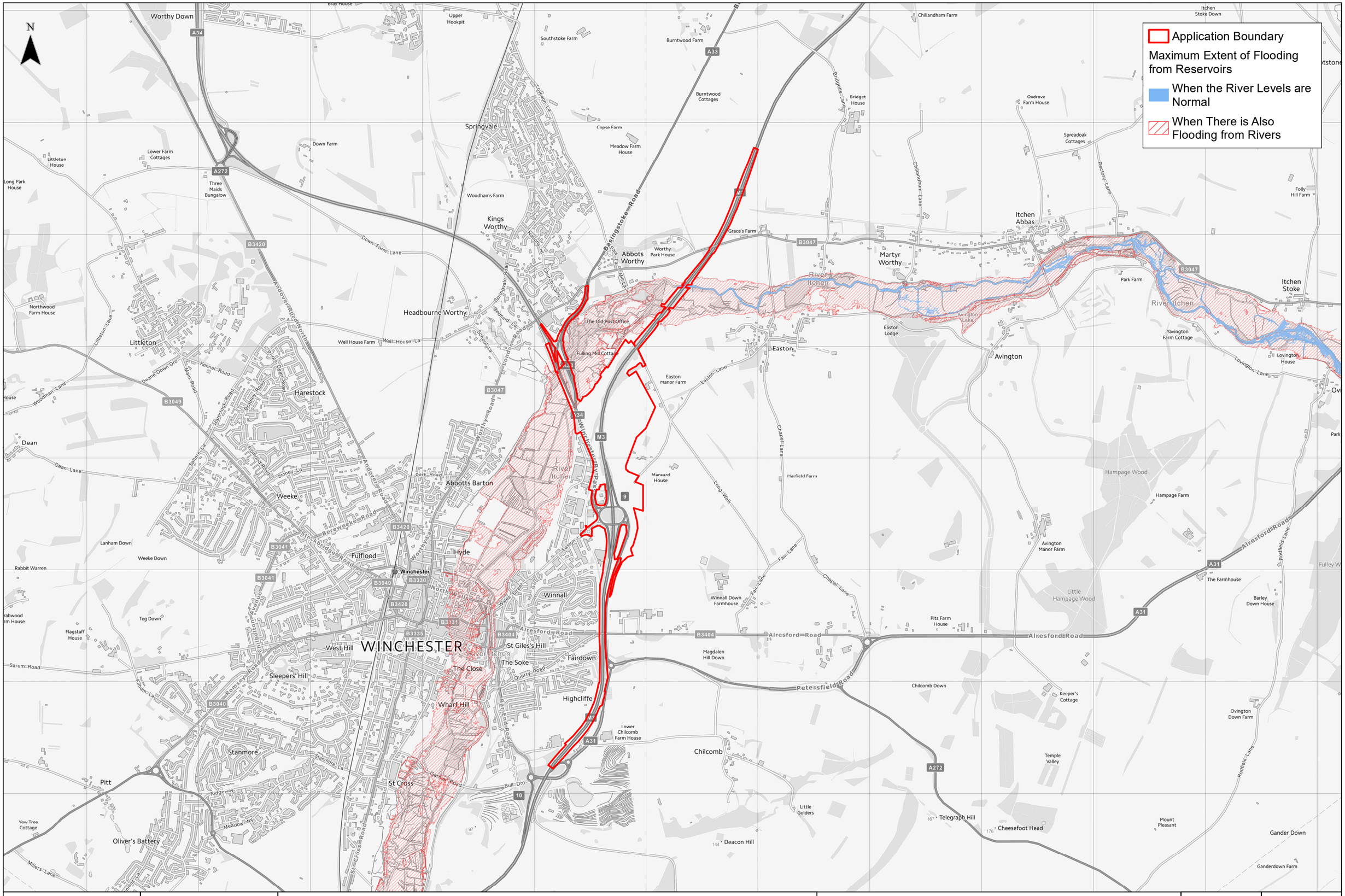

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Client: VolkerFitzpatrick

M3 JUNCTION 9 IMPROVEMENT

Risk of Flooding from Reservoirs - Maximum Flood Extent

0 1.5 3 km

1:30,000 @ A3	Date: 18/02/2022
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Figure 006	Rev A

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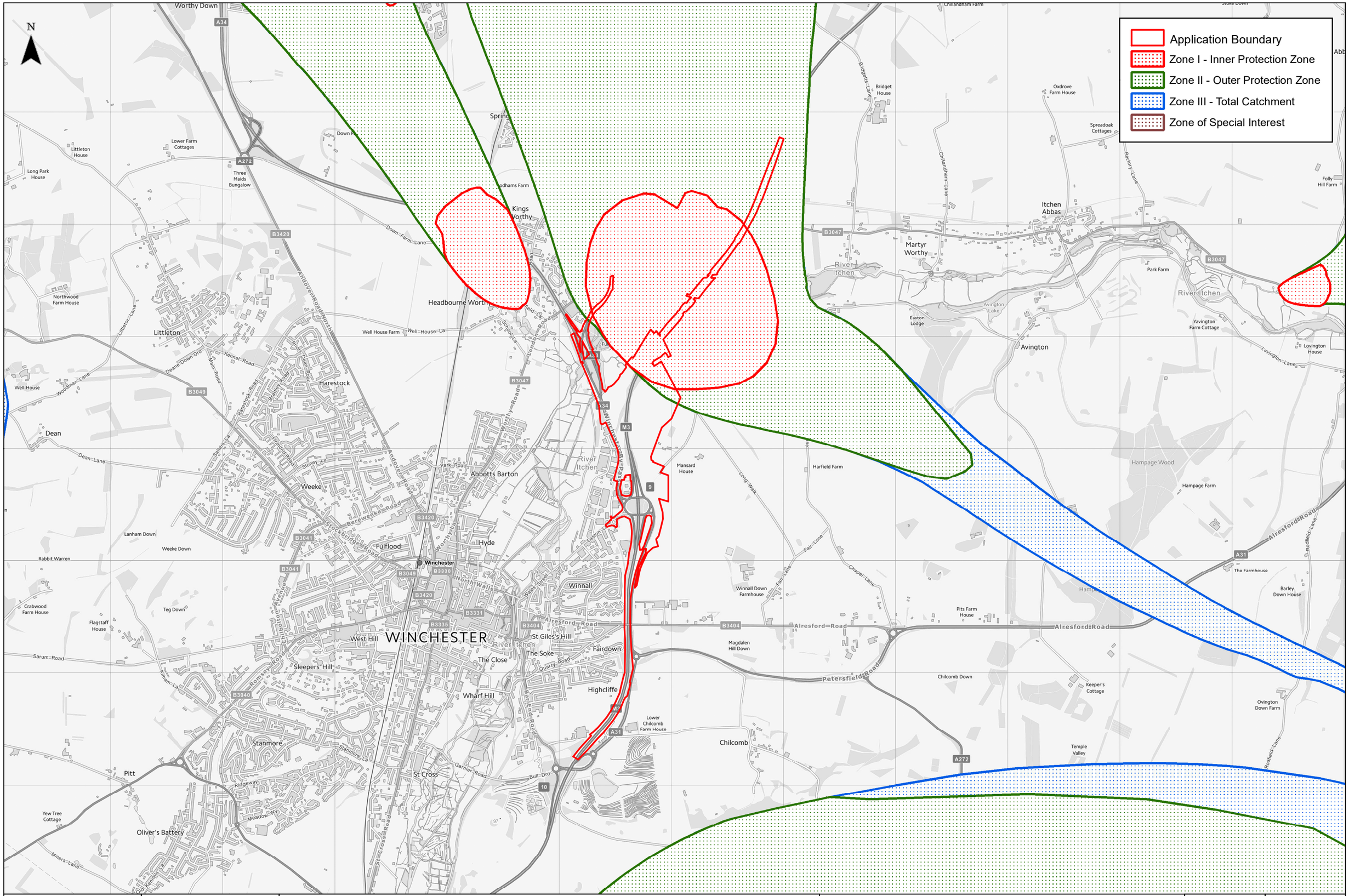

Stantec

Client: VolkerFitzpatrick

M3 JUNCTION 9 IMPROVEMENT

EA Ground Water Source Protection Zones

0 1.5 3 km

1:30,000 @ A3 | Date: 18/02/2022

Drawn: CE | Checked: SK

Figure 007 | Rev A

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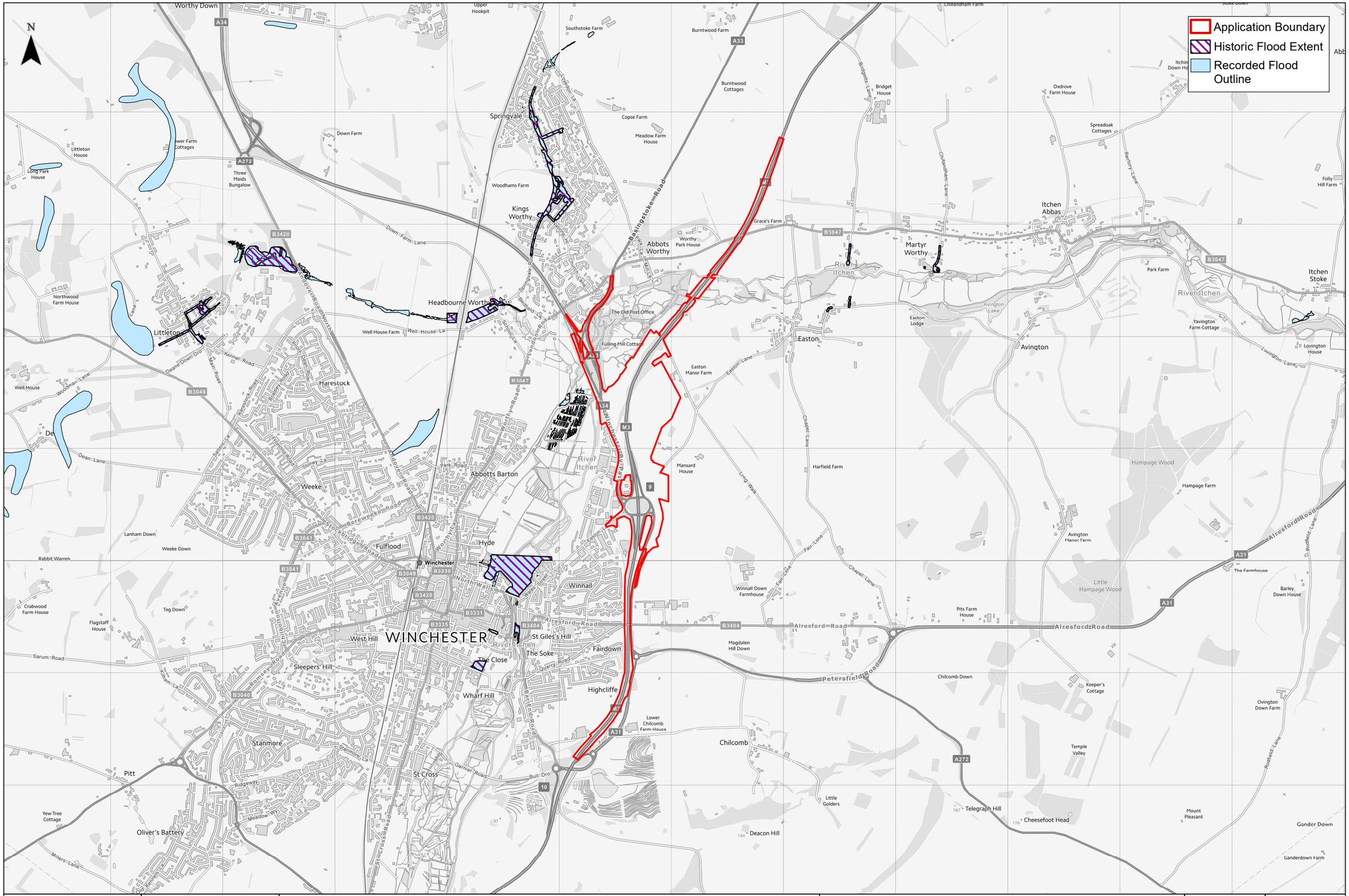

Stantec

Client: VolkerFitzpatrick

M3 JUNCTION 9 IMPROVEMENT

EA Recorded Historic Flood Extents

0 1.5 3 km

Historic Flood Map shows the maximum extent of all individual Recorded Flood Outlines from river, the sea and groundwater springs and shows areas of land that have previously been subject to flooding in England.
Recorded Flood Outlines shows all EA records of historic flooding from rivers, the sea, groundwater and surface water

1:30,000 @ A3	Date: 18/02/2022
Drawn: CE	Checked: SK
Figure 008	Rev A

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Appendix B: Environment Agency Consultation

creating a better place
for people and wildlife

Environment Agency

BY EMAIL: [redacted]

The Planning Inspectorate
Environmental Services
Central Operations
Temple Quay House
2 The Square
Bristol
BS1 6PN

Our ref: HA/2020/122667/01
Your ref: TR010055-000100

Date: 19 November 2020

Dear Sir or Madam,

M3 JUNCTION 9 IMPROVEMENT - EIA SCOPING NOTIFICATION AND CONSULTATION REG 11.

Thank you for consulting the Environment Agency on the above Scoping Opinion. Our comments are set out below.

Introduction

Overall, we are generally pleased with the scope of the report and the range of topics that have been proposed to be included within the Environmental Statement (ES).

Our primary concerns regarding the scheme relate to the protection of groundwater, and protection/enhancement of the ecological balance and species within the River Itchen and surrounding areas (including biodiversity net gain). The River Itchen is a designated Main River, and the river and the associated floodplain is a Special Area of Conservation (SAC) and Site of Special Scientific Interest (SSSI).

In regard to flood risk, the majority of works are to take place in Flood Zone 1 areas. It seems that only minor works are taking place within the section of road that is located in Flood Zone 3 (i.e. the section of road crossing the River Itchen). Therefore, flood risk is of lesser concern to us at this stage. This may change if later design stages determine that more extensive work will be required within Flood Zone 3.

Our more detailed comments are split into the following three categories based on matters of most concern to us:

1. Protection of groundwater
2. Ecology/biodiversity – River Itchen
3. Flood risk

1. Protection of groundwater

It is our understanding that the applicant proposes to change various aspects of the project including improvements/construction of new bridge structures and reconfiguration of roundabouts and highways.

The proposed operational area rests upon the Seaford, Lewes Nodular, Holywell Nodular and Zig Zag Chalk formations, designated as Principal Aquifers by us. These formations are overlain by Head and Alluvial deposits in some locations, designated as unproductive and Secondary A aquifers respectively by us.

The north east operational area intersects Source Protection Zones 1 and 2 for the Easton public groundwater supply, as well as numerous smaller, private abstraction nearby.

Hydrogeological Risk Assessment

Given the sensitivity of the groundwater environment beneath the IAB, we would expect the Applicant to produce a Hydrogeological Risk Assessment for the development. This assessment would focus on groundwater and receptors that are dependent upon groundwater and potential risks of contamination (land contamination, drainage, piling and excavation).

We note that the Applicant has installed monitoring wells around the proposed site to obtain groundwater levels and groundwater quality. The data sets obtained by these wells could provide the basis for a hydrogeological risk assessment.

Land contamination

With the increased scope for excavation and penetrative works, there is a risk of the mobilisation of potentially contaminated material. There is a risk that unknown contamination could be mobilised into shallow groundwater. Groundwater may then act as a potential pathway to sensitive receptors, in this case ecological receptors or public water supply boreholes.

In addition to the findings of the phase 2 site investigation. We would expect an extensive watching brief around any significant earthworks to ascertain contaminated material and initiate remediation and verification of the site prior to any intrusive works occurring.

Drainage

We support the proposal to assess the use of SuDS in the drainage strategy and hope to see further information within the ES.

Whilst we would not object to the use of SuDs at this site, we expect the Applicant to incorporate a suitable level of pollution prevention measures into the drainage design to ensure that groundwater and drinking water supplies are protected.

With regards to clean roof water, we have no objection to this being discharged to ground. However surface water drainage from car parking areas and roads has the potential to contain pollutants and hazardous substances. We would expect a risk assessment to be carried out to determine the level of treatment required prior to the water from these areas being discharged to ground.

Cont/d..

In Section 14.2.24, the Applicant discusses the travel times in groundwater based upon Source Protection Zone designations. We would remind the Applicant that groundwater travel times in Chalk can be a lot faster than conventional flow rates and that any contamination released in a Source Protection Zone 2 could travel to a sensitive receptor, through groundwater in much shorter period than the prescribed 400 days.

Piling and excavation

It is assumed that with the changes in the proposal that there will be the need for piled foundations and excavations to support the new, proposed structures and reconfigurations. As explained in the comments on land contamination above, these works can liberate contaminated material into groundwater, putting sensitive receptors at risk.

Additionally, they also increase the risk of turbidity. Piling operations and excavations can induce sediment loads into groundwater, this sediment then moves with groundwater flow and had the potential to carry harmful bacteria, and can result in the shutdown of a public water supply.

As such we would expect the Applicant to produce a Foundation Risk Assessment, focusing on the potential hazards of piling/excavation activities on local groundwater, and the methods that might mitigate the risk of those hazards having a detrimental impact.

Dewatering

The scoping report suggests that temporary de-watering may be required in order for construction activities to take place and mentions permits may be required. For information, dewatering is generally no longer exempt from needing an abstraction licence. However there still remains a small scale dewatering exemption in place under Section 5, Part 2 of the Water Abstraction and Impounding (Exemptions) Regulations 2017. Details on this exemption can be found on the following web page: [redacted]

If the exemption cannot be complied, with then an abstraction licence will need to applied for. The licensing process can be fairly lengthy, therefore we recommend early pre-application discussions with us.

An environmental permit may also be required to cover the discharge from the scheme.

Additionally an abstraction licence and/or environmental permit may be required if the cuttings or other works are assessed to intercept groundwater on a longer term basis, and if more permanent passive or active groundwater management mitigation measures will be required. It is understood that groundwater levels are currently being monitored which could be used to assess groundwater levels extremes at the site (if taken over a number of years). As above, we recommend early pre-application discussions with us.

2. Ecology/biodiversity – River Itchen

In relation to Chapter 9 of the report (entitled 'Biodiversity'), we have the following comments:

Table 9-1 (Freshwater Fish and Invertebrates)

We have previously made available to Highways England a copy of a report regarding a Brook Lamprey Condition Assessment for the River Itchen SAC. This should be utilised in regard to the ES. In addition, Environment Agency fish and macroinvertebrate data is now available as open data on the gov.uk website [redacted]

Table 9-1 (Otter)

We have previously discussed with the Applicant reports we have received about recent otter deaths reported on motorways where open central reservation barriers have been replaced with closed concrete ones (M27 and M4/5). Given the close proximity of a recent report of an otter death (on the M27), we strongly recommend that there is scoped in further assessments of otter and other mammal movements in the project area, and the risk of them crossing the roads, with a view to minimising the risks of injuries and fatalities.

Section 9.3

Potential impacts during construction should also include changes in surface water flows (quantity and quality) which lead to or are connected to aquatic habitats.

Section 9.4

We welcome the aim of delivering biodiversity net gain, but feel this shouldn't be an aim but a requirement of the scheme to deliver against the Applicant's own commitments in their biodiversity plan, alongside the aims of national planning policy.

We would welcome further opportunities to discuss biodiversity net gain possibilities in the area of the project. There have been historic discussions about this aspect, with other organisations in attendance (Natural England, South Downs National Park Authority and the Hampshire & Isle of Wight Wildlife Trust), but these did not reach any conclusion as such.

Drainage designs should also ensure no likelihood of detrimental changes in quantity of surface water entering the River Itchen and associated wetland habitat, not just focus on quality of the surface water.

Section 9.5.4

The ES should include changes to surface water flows as a potential for significant effect on the River Itchen SSSI/SAC and other priority habitats.

Section 9.6.10

We welcome the use of the Biodiversity Net Gain metric when assessing biodiversity net gains and losses and that this will be made available to consultees.

Cont/d..

If a Flood Risk Activity Permit (or other permits are required from us), then we will become a Competent Authority under the Habitat Regulations. We request, therefore, that the findings of the Habitats Regulation Assessment (HRA) are presented to us and we are able to review the HRA at the earliest possible opportunity.

In relation to Chapter 16 (entitled 'Cumulative Effects') we have the following comments:

Table 16-1

We consider that there are a number of 'Potential interrelationships between topics' that have been missed from this table. For example, the potential receptor of statutory designated sites has a potential interrelationship with soils and geology, yet this is not ticked (and yet it is for the River Itchen). Climate also has a potential interrelationship with biodiversity with regards to changes in rainfall (and therefore run-off/flooding patterns). This should be re-assessed for the purposes of the cumulative effects chapter of the ES.

3. Flood Risk

As set out in the introduction, we understand that relatively minor works (such as changing road markings) will be undertaken in the section of road within Flood Zone 3 (i.e. the section of the road crossing the River Itchen). Should this change during the detailed design phases, then further considerations will need to be taken account to ensure that flood risk is not increased elsewhere, and we would expect to be specifically consulted in this regard.

We are pleased that a Flood Risk Assessment will be undertaken (Section 5.4.1 of the report), and we would recommend that the 'worst case scenario' is considered for the Flood Risk Assessment (Section 2.6.1 of the report). It should be borne in mind that Climate Change Allowances have been updated in accordance with UKCP18, and the Flood Risk Assessment is likely to need to take account of those.

The latest information and guidance about UKCP18 can be accessed here – [redacted].

Guidance of when and how local planning authorities, developers and their agents should use climate change allowances in flood risk assessments can be found here - [redacted]

In addition to the above, our updated flood model for the River Itchen was completed in 2019.

Both new climate change allowances and the new model should be taken account of in terms of the baseline information for the Flood Risk Assessment, and we would encourage the Applicant to consult with us further in this regard.

Flood Risk Activity Permit

In the report, there is mention of possible works on or near the River Itchen (Sections 9.4.2 and 14.2.20). Any proposed works or structures in, under, over or within 8 metres of the river bank is likely to require a Flood Risk Activity Permit from us under the Environmental Permitting (England and Wales) Regulations 2016.

Further details about Flood Risk Activity Permits can be found on the GOV.UK website using the following link - [redacted]

As construction details are developed, we would recommend early consultation with us regarding any applications for any Flood Risk Activity Permits.

Final comments

Pollution Prevention

All precautions must be taken to avoid discharges and spills to the ground both during and after construction. Ultimately, we would expect to see a Construction Environmental Management Plan (CEMP) specifying any pollution prevention measures that will be incorporated into any works.

Further details regarding pollution prevention for the long-term maintenance of the road post construction should also be included within the ES.

Surface Water

It should be noted that responsibility for surface water matters in terms of quantity and flow lies with the Lead Local Flood Authority (Hampshire County Council). We recommend that they are consulted in regard to the drainage proposals related to surface water.

Our considerations in regard to surface water relate to the potential mobilisation of contaminants, which may impact the Main River and/or groundwater.

Please do not hesitate to contact me using the contact details shown below should any queries arise from the above response.

Yours faithfully,

Miss Anna Rabone
Sustainable Places Advisor

Direct dial: [redacted]
Direct e-mail: [redacted]

Our opinion is based on the information available to us at the time of the request. If, at the time of the submission of the formal DCO, there have been changes to environmental risk(s) or evidence, and/or planning policy, our position may change.

End

Kirby, Sarah

From: Rabone, Anna [redacted]
Sent: 09 August 2021 10:50
To: Kirby, Sarah
Subject: RE: Updated climate change allowances for peak river flows

Hi Sarah,

Thank you for your email last week.

We should get comments to you on the FRA and WFD next week.

Yes, the proposal not to re-run the model is fine.

Kind regards,
Anna

Anna Rabone
Sustainable Places Advisor | Solent and South Downs
Environment Agency | Oving Road, Chichester, West Sussex, PO20 2AG

Direct dial: [redacted]

From: Kirby, Sarah [redacted]
Sent: 06 August 2021 12:00
To: Rabone, Anna [redacted]
Subject: FW: Updated climate change allowances for peak river flows

Hi Anna

How is the EA progressing with the FRA and WFD review?

In terms of the updated climate change allowances, please see our review below and confirm that this approach is acceptable?

Our previous assessment confirmed the EA modelling report outlines that the central, higher central and upper end allowances were used within the study. A detailed hydrological study, including non-stationary investigation, was completed to inform the latest modelling. Within this study and as a result of the non-stationary assessment the baseline year for the assessing climate change was updated from 1975 to 2015. This means that partial climate change allowances were applied as the impact and influence of climate change between 1975 and 2015 was accounted for within the hydrology. The table below shows the full climate change allowances for the South East river basin district, partial allowances applied within the modelling and the proposed allowance we applied for the H++ scenario calculated in a consistent manner with the other allowances.

PRE-JULY 2021 CC ALLOWANCES

Allowance	Full Allowance	Partial Allowance Applied
Central	35%	25%
Higher Central	45%	29%
Upper End	105%	71%
H++	120%	78%

The EA confirmed that this approach was acceptable and in line with how other values were produced in the 2019 Itchen Model in correspondence dated 28th May..

With regards to the new climate change allowances, the same uplift factors based on the time epochs have been applied which gives the following partial allowances to be applied (no H++ is required under new guidance). This has resulted in a lower upper end allowance of +63% when compared to the previous H++ partial allowance of +78%. This is due to the relatively higher increases in allowances for the 2020 time period (and therefore the allowance calculated for 2015) when compared to 2080 values – shown in second table below set out in same format as per EA Hydrology report.

We are therefore proposing that we do not need to re-run the model to consider the new CC allowances as the previous H++ assessment gives the conservative result as the CC allowance is higher. Can you confirm that this is appropriate?

JULY 2021 CC ALLOWANCES

Allowance	Full Allowance	Partial Allowance Applied
Central	35%	18%
Higher Central	56%	30%
Upper End	127%	63%

Proportional increases in flow	From EA Guidance		Calculated	
Epoch	2020s from 1961-90 baseline	2080s from 1961-90 baseline	2015 from 1961-90 baseline	Between 2015 and 2080s
UE	1.45	2.27	1.39	1.63
HC	1.24	1.56	1.20	1.30
C	1.16	1.35	1.14	1.19

For ease, I have again provided an extract of the relevant section from the hydrological reporting below.

7.6 Peak flows adjusted for potential impacts of climate change

The climate change scenarios follow the Environment Agency's guidance: *Flood risk assessments: climate change allowances*[21] initially released in February 2016. The three allowances to be tested are the Central, Higher Central and Upper End estimates of total potential change in peak flow rates anticipated for the '2080s' (2070 to 2115). As the watercourse is located within the South-East River Basin District, the change factors for these events are of 35%, 45% and 105%.

As explained in section 4.5.2, at sites where the present-day flood frequency estimates have been derived from non-stationary analysis they are assumed to incorporate the effects of climate change up to the present day.

A partial adjustment, considering only future climate change, has been applied to allow for future climate change. This has been calculated by dividing the recommended uplift for the 2080s by an uplift for the year 2015, which has been calculated by linear interpolation between 1975 (the midpoint of the 1961-90 baseline) and 2025 (the midpoint of the 2020s epoch). 2015 is 80% of the way through the period 1975 to 2025 and so the uplifts for 2015 have been calculated as 80% of the recommended uplifts for the 2020s. The uplift for the period between 2015 and the 2080s is calculated by dividing the 2080s uplift by the 2015 uplift, when both are expressed as factorial changes rather than percentage increases, i.e. 1.45 rather than 45%. The table below sets out the calculations.

Proportional increases in flow	From EA guidance		Calculated	
Epoch	2020s from 1961-90 baseline	2080s from 1961-90 baseline	2015 from 1961-90 baseline	Between 2015 and 2080s
Upper end	1.25	2.05	1.20	1.71
Higher central	1.15	1.45	1.12	1.29
Central	1.10	1.35	1.08	1.25

Kind Regards

Sarah

From: Rabone, Anna [redacted]
Sent: 28 July 2021 13:15

To: Kirby, Sarah [redacted]
Subject: RE: Updated climate change allowances for peak river flows

Hi Sarah,

Apologies – I had to check in with the technical specialists reviewing the WFD & FRA reports and it took a while with annual leave and busy workloads!

I am hoping to be able to send you our comments within the next two weeks.

Our flood risk technical specialist agrees that re-running the model at the higher allowance of +127% is unlikely to change your conclusions much and that sufficient freeboard will be in place for the new footbridge.

In terms of charging, we have an agreement set up with Highways England for 30 hours, so we will just record our time on that and Highways England will be invoiced, unless you say otherwise.

Thank you very much.

Kind regards,
Anna

Anna Rabone
Sustainable Places Advisor | Solent and South Downs
Environment Agency | Oving Road, Chichester, West Sussex, PO20 2AG

Direct dial: [redacted]

Creating a better place for people and wildlife

From: Kirby, Sarah [redacted]
Sent: 21 July 2021 17:08
To: Rabone, Anna [redacted]
Subject: RE: Updated climate change allowances for peak river flows

Hi Anna

Thanks for sending this through

For the M3Jct9 project, a comparison of the climate change allowances are below:

Year 2080	**Prev Allowances**	**Updated Allowances**
Central Allowance		+35%
Higher Central Allowance	+45%	+56%
Upper End	+105	+127%
H++	+120%	N/A

In the current FRA - Essential Infrastructure' development within the South East River Basin, Flood Zone 3 would be Upper End (105%) allowance, with the H++ allowance considered for residual risk assessment. As the scheme is classified as a Nationally Significant Infrastructure Project (NSIP) and as such the only climate change allowance that was considered is the more conservative H++ allowance of 120%.

However, updated EA guidance on NSIP is to use the upper end allowance, which with the new allowances is +127%.

We will re-run the model with the slightly higher allowance for completeness although we do not anticipate the conclusions changing and sufficient freeboard will still be maintained for the new footbridge.

Do you have any other comments on the FRA and WFD reports at this time?

Kind regards

Sarah

From: Rabone, Anna [redacted]
Sent: 21 July 2021 09:47
To: Kirby, Sarah [redacted]
Subject: Updated climate change allowances for peak river flows

Dear Sarah,

I hope you are well.

Please find below and attached information regarding the update of climate change allowances for peak river flows, which were published yesterday.

The [redacted]' was updated in line with the latest climate change projections and research on flooding from rivers. The main changes include:

- Change to how peak river flow allowances are provided, from by river basin district to a smaller geography called management catchments. This means the allowances better reflect variability in how different catchments will respond to the impact of climate change.
- How the peak river flow allowances are applied has also changed, focusing more on use of the central allowance.
- Reflecting variability within catchments means allowances will be lower than the current allowances in some places, but also they will be higher in others. Focus on use on the central allowance will ameliorate the impact where updated allowances are higher than the previous allowances.

Latest climate science and research shows peak river flows could more than double by 2100 in some locations. By ensuring our guidance is premised on the latest climate change projections, it promotes resilient and sustainable communities and built environment, helping local planning authorities and developers to demonstrate they are prepared for the climate emergency.

In our corporate plan 'EA 2025' in 'A nation resilient to climate change' we state our ambition is to be a stronger leader on climate adaptation and resilience, encouraging others to act now on the climate emergency and invest in adaptation.

[redacted] is to create a net zero nation that is resilient to climate change. Putting it at the heart of all we do will help us and the country be better prepared for climate impacts whilst limiting further climate change by driving down emissions. It focuses on three main areas: enabling UK net zero, preparing for climate impacts and walking the walk (EA net zero). Our climate change allowances guidance supports the second of these, by providing benchmarks for customers to use to help them design developments and flood risk infrastructure that is resilient to future flood risk.

Our guidance promotes a robust approach to climate resilience, based on the high emission scenario of UKCP18, with the central allowance representing a 4oC increase by 2100. This ensures our approach is grounded on the latest evidence on the global climate change pathway we are currently following, reflected in [redacted] (Jan 2020), which states we are heading for a 3°C temperature rise this century, but this could be as high as 4°C.

Please find attached a briefing note including a short Q&A that gives further information and provides links to where more detail can be found.

If you have any queries, please do not hesitate to get in touch.

Kind regards,
Anna

Anna Rabone
Sustainable Places Advisor | Solent and South Downs
Environment Agency | Oving Road, Chichester, West Sussex, PO20 2AG

Direct dial: [redacted]

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Environment Agency

M3 Junction 9 Improvements (NSIP)

Environment Agency's comments on the Flood Risk Assessment and WFD Assessment

We were supplied with the following documents via a link provided by email dated 6 July 2021 from Sarah Kirby (Principal Hydrologist) of Stantec:

- M3 Junction 9 Improvements PCF Stage 3b – Flood Risk Assessment, June 2021, ref: HE551511-VFK-EWE-X_XXXX_XX-RP-LE-0005, rev: P01 (herein referred to as the 'FRA').
- Model files.
- M3 Junction 9 Improvements PCF Stage 3b – Water Framework Directive Compliance Assessment, June 2021, ref: HE551511-VFK-EWE-X_XXXX_XX-RP-LE-0006, rev: P01 (herein referred to as the 'WFD assessment')

We have reviewed the above as far as we can at this stage. Please find our comments on each set out below.

This review was conducted under the charging agreement in place with Highways England (our ref: ENVPAC/1/SSD/00204).

Comments on the FRA

Thank you for consulting us further on the FRA given the addition of a proposed footbridge over the River Itchen. We welcome the significant freeboard provided for the soffit level of the proposed footbridge, and the wide span proposed, and do not have any concerns regarding the design.

Overall, we are satisfied with the information provided in the FRA. We still consider that works within the area of Flood Zone 3 to be relatively small and as such flood risk matters are of a lesser concern to us in regard to this project.

We highlighted by email (email dated 21 July 2021 from Anna Rabone of the Environment Agency to Sarah Kirby of Stantec) that the peak river flow allowances to be used for FRAs were updated on 20 July 2021[1]. Under the new allowances the maximum increase in peak river flows for the Test and Itchen management catchment under the Upper End scenario is now +127%. We note the H++ climate change scenario has been assessed with an allowance of +120%. Given the small differences in levels between the different modelled climate change events (+105% and +120% are both 38.17mAOD at node 38.155) we do not expect any further reruns to be undertaken and are happy for the H++ scenario as modelled to be the design event.

[1] See [redacted] for more information.

Comments on the model files

We have not undertaken an in-depth review of the model files as we do feel this is necessary given the minimal extent of works within Flood Zone 3. We have conducted a light touch review and confirm that the modelling looks satisfactory.

Comments on the WFD assessment

The WFD assessment is written as though it is a final document. However, whilst we are in general agreement with this assessment on the basis of the information we have seen and reviewed so far (Scoping, PEIR, HRA and this WFD Compliance assessment) it is clear that a number of the proposed mitigation plans and details, especially those covering erosion prevention, sediment control, drainage strategy (temporary and permanent), hydrogeological impact assessment, and ecology surveys are not yet completed (or incomplete due to access issues), or details to enable assessment is lacking. The PEIR also acknowledged that the overall scheme was still in development and that the IAB and perhaps elements of the scheme may be subject to change, all of which may require the WFD Assessment to be updated.

We strongly recommend that the WFD Compliance Assessment is updated as the project develops, particularly as and when the detail of exactly what is being proposed and the proposed mitigation measures required is finalised.

We are in agreement with the risk screening set out in Section 3.4.

Section 3.5.3 says that '*The EA has agreed in principle with the mitigation measures for the scheme which will be outlined within the Register of Environmental Actions and Commitments, to form part of the first iteration Environmental Management Plan (fiEMP) which will be submitted with the application of the scheme at the appropriate time*.' We do not believe we have agreed in principle with the mitigation measures for the scheme, both overall and in relation to river habitats and fish, particularly as these have not been finalised. Our response to the PEIR on 8 July 2021 sets out more detail regarding our comments on mitigation. We have subsequently had a meeting with Duncan McLaughlin of Stantec on 5 August 2021 to discuss our comments on the PEIR further and we are anticipating further information in due course.

There are works that could be done to enhance and/or make positive contributions to the River Basin Management Plan (RBMP) objectives, for example river restoration and delivery of these could be secured through the mitigation/enhancement plans. We would wish to see consideration of these either through the RBMP or in the Environmental Statement.

We are in agreement with the screening set out in Table 4-1.

Section 5 .1.1 states that '*each element is assessed against the key components identified for the project, assuming the mitigation measures outlined in Section 5.2 are in place'*. However, whilst Section 5.2.1 summarises the proposed mitigation

measures which are proposed so that the proposed scheme does not have an adverse effect on the WFD water bodies, it is clear that the detail of these mitigation measures is not yet fully defined or available to be reviewed.

Sections 5.2.2 to 5.2.5 set out a number of mitigation measures that will be included in the fiEMP and siEMP. However, these documents have not yet been produced and it is important that mitigation relied upon to demonstrate compliance must be defined and sufficiently secured.

Section 5.2.3 states that '*The fiEMP is anticipated to include an erosion prevention and sediment control plan to reduce the quantity of sediment entrained in runoff and to prevent hydromorphological changes to surface water features.'* If these plans are required as mitigation to ensure no adverse effect on the WFD water bodies then it **must** be included in the fiEMP or other defined documents and not just **anticipated** to be included in those documents.

We agree that it is important that a temporary drainage strategy is produced and that any temporary construction impacts are assessed as part of the WFD assessment, as for projects of this size and scale temporary works can result in long-term or event permanent effects.

Section 6.2.2, in assessing potential impacts on aquatic flora and fauna, makes reference to mitigation measures outlined in the fiEMP and siEMP. As previously commented, these documents have not yet been produced and the details are not available for us to review. As a result there is likely to be a need for this WFD assessment to be revisited and updated once the detail of these measures is known, including an understanding of how they will be secured.

When considering the potential impact on fish species, sections 6.2.6 to 6.2.8 do not consider the effects of materials, suspended solids or pollutants entering the watercourses (during construction and operation) which, without mitigation, could result in a significant effect on these species and their habitats.

Section 7.3.1 acknowledges that assessment is subject to completion of the hydrogeological impact assessment. This highlights again the need for the WFD assessment to be updated as the scheme develops and new information is supplied.

No mitigation measures are set out in Table 7-1 and 7-2 even though this is stated in paragraph 7.6.2.

The summary and conclusion should make it clear that the assessment is based on current information and that the WFD Compliance Assessment will be updated as the scheme design develops and is finalised, additional required assessments and plans are completed and the proposed mitigation measures are set out in sufficient detail and how they are to be fully secured is known.

Environment Agency
18 August 2021

Disclaimer
Our opinion and comments are based on the information available to us at the time of the enquiry. When the formal DCO application is submitted, our position may change if there have been changes to environmental risk or evidence, and/or planning policy.

MINUTES

Meeting Title: M3J9 Improvement – Meeting with Environment Agency

Attendees: [redacted] (Stantec), [redacted] (Stantec), [redacted] (Stantec), [redacted] (Stantec), [redacted] (Stantec), [redacted] (QVA Consulting), [redacted] (Environment Agency), [redacted] (Environment Agency), [redacted] (Environment Agency)

Apologies: [redacted] (Stantec)

cc: [redacted] (Stantec), V[redacted], Highways England

Date of Meeting: 24 February 2021

Job Number: 48176

Item	Subject	Actions
1. Welcome & Introductions	**JM** outlined the scheme history and provided high level overview of the proposed scheme. Stated that Stantec would follow the meeting with a note from the Geology and Soils lead. **JM** stated that the scheme continues to evolve and go through design work, confirming that items presented in the meeting were subject to change but represent best current estimates. The indicative Land Use Plan, and illustrative General Arrangement Plan were tabled. **AR** questioned the total land area impacted. **JM** confirmed approximately 170 hectares, including land affected on a temporary basis.	**Stantec** to provide note from Geology and Soils lead.
2. Drainage	**AC** introduced the scheme and surrounding context, presented the current Drainage General Arrangement plan, the three surface water drainage catchments. **PR** then presented further high-level intentions for the drainage design, including one location with a swale over tank envisaged as method of attenuating discharge into the River Itchen. Infiltration rates and understanding of geology remain in progress. The target of 2l/s per hectare of long-term storage rate was outlined. Applied across the area contributing to new runoff to the River Itchen, gave a total discharge of 20 l/s, to be distributed across three outfalls, all located close to the bridges. The proposed 20l/s discharge rate represents approximately 1% of the Q95 flow of 2.6 m3/s in the River Itchen, which suggest a high degree of dilution for proposed flows, even after treatment in infiltration basins. **AR** asked if discharge rate discussions are being held with the Lead Local Flood Authority (LLFA). **PR** confirmed this.	

MINUTES

Item	Subject	Actions
	PR outlined that 95% of the current site drains to ground via an existing long soakaway ditch between M3 and A33, which is not compliant with current design standards. The current scheme would build over this existing soakaway ditch. The current scheme design results in approximately one third of runoff draining to ground and two thirds draining to river. New drainage measures will be in place to treat runoff. **AC** confirmed that the only current pollution control is at an existing ditch by the River Itchen. The current scheme would have spillage containment features at the inlets of proposed basins to contain spills. Proposed treatment rates in infiltration basins and wetlands would expect to achieve 50% removal of solids and pollutants, as DMRB guidance. **JB** questioned the day to day treatment, and how microplastics would be dealt with. **AC –** will consider how the scheme can be refined to address microplastics. It was noted that Highways England are doing research on vortex separators. **PR** stated the low flow rates associated with the new drainage may assist this. **PR** outlined that the scheme is in early stages of the HEWRAT assessment, but current screening work has identified medium risk to groundwater and low risk to surface water. **TW** outlined the primary concern is from groundwater to the River Itchen. A secondary concern was connectivity issues (possible Karstic connection) with other users, such as local abstractions. While outside the modelled Source Protection Zone for a public water supply to the north east, the possibility of some connectivity including potentially karstic connections, cannot be totally excluded. It was noted that farms to the north east of the scheme have their own private water supply, regulated by local authorities who should have up to date information (the EA is required to protect it). Another concern was connectivity between basins and groundwater, **PR** confirmed the basins were being designed to be at least 1m above groundwater level. TW stated he saw no 'showstoppers'. **AR** asked when the scheme will be making decisions on pollution treatments. **JM** explained the scheme is evolving and the EA will be informed when further information is available.	**Stantec/Highways England** to consider how the scheme can respond to microplastics. **Stantec** to be aware of local extractions. **Stantec** to provide further detail in due course.
3. Biodiversity & HRA	**DM** – outlined that surveys are ongoing and will continue beyond the submission, which will set out the effect to biodiversity and the River Itchen system. Assessments (and mitigation) will also be informed by other project teams such as Road Drainage and Water Environment and the civils team.	

MINUTES

Item	Subject	Actions
	The draft Stage 1 HRA undertaken by Jacobs in early 2020 identified the potential for likely significant effects to the River Itchen SAC from water quality and noise and vibration, meaning the HRA would need to progress to Stage 2 Appropriate Assessment. Stantec will revisit this but anticipate similar results. **JB** – outlined thoughts regarding risk from construction activities and assumed a CEMP would be prepared for the application. **PR** stated that work was ongoing, but that there were opportunities (such as settlement lagoons) to address during construction. **AC** – this would be subject to construction phasing (e.g. when roads became redundant and can be used for construction purposes. **JB** stated sediment runoff would be fundamental given the chalk catchment – **AC** confirmed this would be considered. **DM** stated Natural England had raised this also. **DM** confirmed that the HRA will be submitted to the EA for comment before the DCO submission. **DM** – Raised timing restrictions regarding vibration effects to migrating fish. **JB** to respond in writing with high level information for now, to be developed as further information becomes available. **JB** questioned what works would take place in river channels. **AC** confirmed existing bridge structures would be retained and strengthened where necessary, also referred to a new footbridge. At this stage, it is anticipated to be clear span. **AR** questioned the Biodiversity Net Gain target. **DM** replied that the high level requirements for the scheme are still being worked on.	**Stantec** to consider sediment run off prevention measures **Environment Agency** to respond in writing regarding timing restrictions
4. Hydrology	**NV** reiterated the new footbridge over the River Itchen. Stantec are using the EA's 2019 model and updating with new data (topographical & lidar) to better define the floodplain. Currently working through stability issues and climate change events. The new design of the scheme (including footbridge) will be input into the model. Baseline and the new design will be compared to determine the flood risk impact of the scheme (areas of benefit, neutral, or detriment) and hence identify any need for additional mitigation requirements **AR** confirmed that the EA feels flooding is of lower concern and asked for the FRA to be clear on any impacts. **NV** referred to the climate change allowances applied to the EA 2019 model, which made use of a hydrological baseline year updated from 1975 to 2015. Partial climate change allowances were therefore applied within the EA 2019 model. **NV** asked for confirmation that it was appropriate to continue to adopt that approach to applying and assessing climate change due	

MINUTES

Item	Subject	Actions
	to the detailed hydrological study completed. **AR** took an action to respond.	**Environment Agency** to respond.
5. AOB	**AR** asked when the scheme was intended to be submitted. **JM** stated that there is no date at this moment in time. **JB** queried who was leading on the WFD. **NV** confirmed. **TW** – queried if dewatering would be required and raised thought about practicalities/potential licence requirements (abstraction and discharge). It was also noted that have been some losses of oil to groundwater in the past which may add complexity. **PR** stated that the lower point in the scheme is the A34 underpass which remains above the groundwater table – no dewatering currently proposed to facilitate construction. **AS** stated that more detail will be provided as the scheme evolves, noting that the Preliminary Environmental Information Report has yet to be issued. As part of the DCO submission there is usually a Consents and Licences Position Statement.	

Appendix C: Hydraulic Modelling Report

TECHNICAL NOTE

Job Name: M3 Junction 9 Improvement

Job No: 330610074

Note No: HE551511-VFK-EWE-X_XXXX_XX-TN-LE-0701

Date: 16th June 2021

Prepared By: Tony Hughes

Subject: **Hydraulic Modelling Technical Note**

1. Introduction

1.1. Stantec UK Ltd (Stantec) has been commissioned by Volker Fitzpatrick, delivering on behalf Highways England, to support the proposed M3 Junction 9 Improvement scheme.

1.2. The proposed scheme involves include widening the M3 to 4 lanes, reconfiguring the existing roundabout, improving existing motorway slip roads and providing a new footway, which will connect wider networks. The proposal includes extra lanes on the carriage ways to increase traffic flow, and walkways, along and underneath old bridges allowing pedestrians to pass across and underneath the M3 Junction 9 carriageway.

1.3. As part of the support, Stantec has prepared a Flood Risk Assessment (FRA) which includes the need to model the impact of the proposed new footway over the River Itchen, as short distance upstream of any existing bridge.

1.4. This Technical Note summarises the hydraulic modelling carried out to support the FRA.

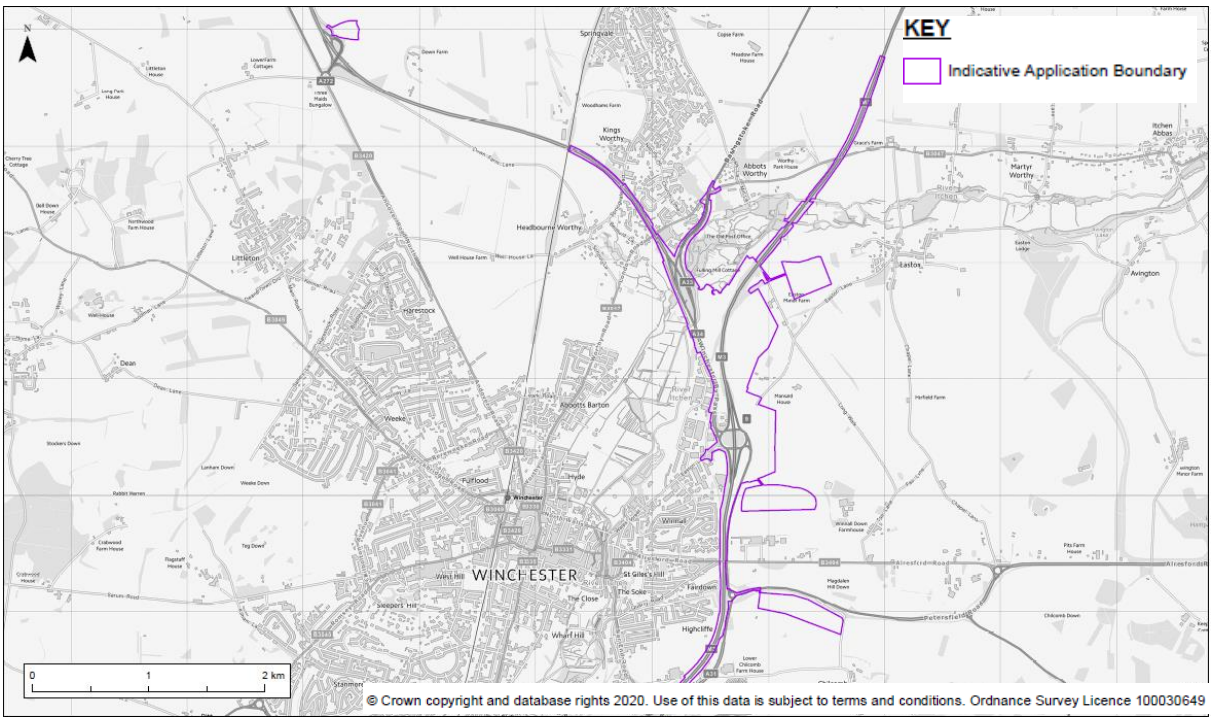
2. Site Location

2.1. The proposed site is located along the M3 Junction 9, Winchester, Hampshire (see **Figure 2-1**). M3 Junction 9 is a key transport interchange which connects South Hampshire (facilitating an intensive freight generating industry) and the wider sub-region, with London via the M3 and the Midlands/North via the A34 (which also links to the principal east and west A303 corridor). The scheme begins along the M3 westbound route near the roundabout, which links the A34 and A272 to the M3, and ends where the A34 splits into two lanes forming the Winchester By-Pass. **Figure 2-1** indicates the Application Boundary (AB).

DOCUMENT ISSUE RECORD

Technical Note No	Rev	Date	Prepared	Checked	Reviewed (Discipline Lead)	Approved (Project Director)
HE551511-VFK-EWE-X_XXXX_XX-TN-LE-0701	P01	16.06.21	TH	SK	AH	AH

Figure 2-1: Site Location Plan (not to scale)



2.2. The site lies within the planning authority boundaries of Winchester City Council (WCC) and is within HCC and the South Downs National Park Authority (SDNPA).

2.3. The M3 Junction 9 is a major route, which starts at Eastleigh and ends at Basingstoke. It is bordered by tree and grass verges with the River Itchen flowing underneath it north-east of Winchester. Landscapes to the north and south of the M3 Junction 9 are mainly rural and agricultural with some urban areas including Headbourne Worthy (north-west) and Winchester (south-west).

2.4. Based on **Figure 2-1**, the River Itchen flows from east to west as a braided river channel until it flows underneath the Winchester Bypass (A34) where it flows in a south westerly direction. It continues to flow in a largely southerly direction towards Eastleigh and flows to the east of Southampton where it joins the Southampton Water and the English Channel.

2.5. The main watercourse of interest flowing though the site is the River Itchen, which flows under the A34 in two locations. There are two existing road bridges over each branch of the watercourse.

3. Proposed Development

3.1. The scheme includes widening the M3 to four lanes, reconfiguring the existing roundabout, improving existing motorway slip roads, providing a new footway and connecting to wider networks.

3.2. The proposed solutions in this scheme will enable Highways England to achieve their main goals of reducing traffic congestion levels, assisting with the strategic movement of traffic at a key arterial intersection, providing additional vehicle capacity, enhancing journey time reliability, and supporting the development of housing and the creation of jobs.

3.3. The existing bridges over the River Itchen are being retained as the A34 provides two lanes at this location. However, both bridges are being modified with the King's Worthy Bridge being strengthened and the Itchen Bridge having a new footbridge.

4. Environment Agency Modelling

4.1. To review and assess the flood risk at the proposed footbridge, Stantec obtained the most recent Environment Agency (EA) modelling for this area.

4.2. The River Itchen Modelling Study was completed in May 2019 and produced a new 1D-2D linked Flood Modeller (FM) -TUFLOW from Easton (upstream of the site) and the tidal extent at Woodmill.

4.3. The site is located within Model 2 – Easton to Hockley Viaduct and M3.

4.4. The models have been run for the present day situation; 50%, 20%, 10%, 5%, 4%, 3.33%, 2%, 1%, 0.5%, and 0.1% annual exceedance probabilities (AEP) and the impact of climate change on the 1% AEP event for the +35%, +45% and +105% allowances (as set out within national guidance dated 2016 and last updated in July 2020).

4.5. The modelling report states that the models were run using FM v4.2 and TUFLOW build 2016-03-AE-iDP-w64. However, a review of the ZZD and TLF files found that FM v4.3 and TUFLOW 2018-03-AB-iDP-w64 had been utilised.

4.6. The 2D model is based on 6m grid.

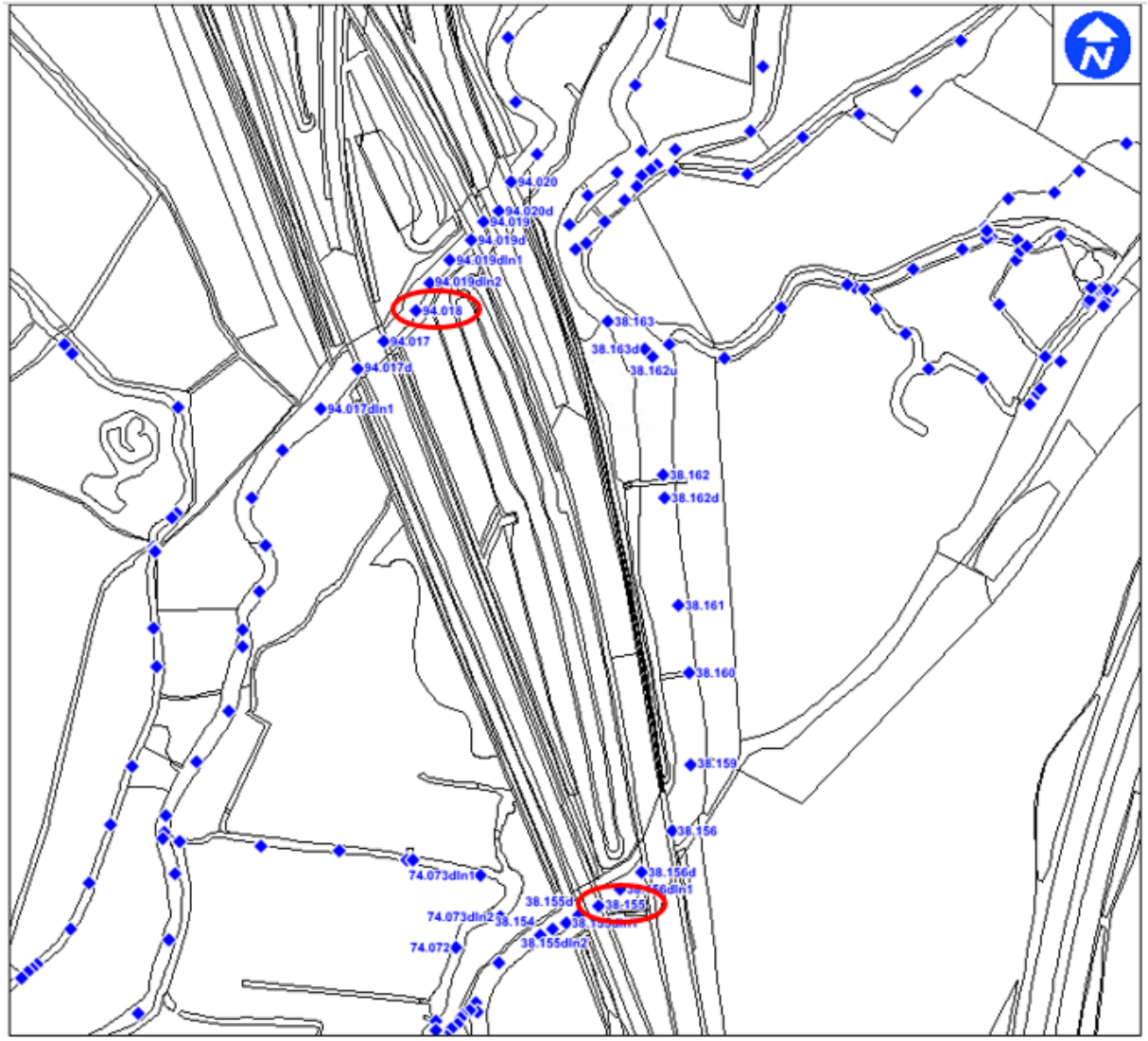
4.7. Flood levels for the M3 Junction 9 carriageway site, from the EA's 2019 modelling, are summarised in **Table 4-1**.

4.8. The node map below (**Figure 4-1**) shows the location of the in channel sections. The nodes are located in between the existing bridges on the River Itchen

Table 4-1: EA Modelled Flood Data

EA Node	1 in 100 Annual Probability (m AOD)	1 in 100 Annual Probability +45% climate change (m AOD)	1 in 100 Annual Probability +105% climate change (m AOD)	1 in 1000 Annual Probability (m AOD)
38.155	37.97	38.09	38.17	38.06
94.018	38.19	38.23	38.27	38.22

Figure 4-1: Node Location Map of EA Modelled Flood Data



5. Updated Stantec Baseline Modelling

5.1. The EA's 2019 modelling has been taken forward and locally refined to review and assess the flood risk at the proposed footbridge.

5.2. Changes have also been made in certain areas of the model for stability at the higher climate change allowances. These are primarily located within Winchester, approximately 2km downstream of site, and will there have negligible impacts on results in the area of interest.

5.3. The following updates have been made to the 1D model:

- Cross section NMUroute_u has been added to the model at upstream face of the proposed footbridge. This new section is based on the site topographic survey and bed levels from node 38.155. NMUroute_u is located 8.8m upstream of the bridge at node 38.155. The cross section has been adjusted for the 8 degree skew. Manning's 'n' values are based on node 38.155.

- The initial flow at ITCH_EAST_GS has been set to 8m^3/s to improve stability at the start of the simulation
- Interpolate nodes 64.003d, 59.012d and 59.009d have been added to the model.
- Interpolate node UPP_0556Re1 has been removed from the model due to oscillations.
- Replicate nodes EAST_0035Re1 and EAST_0035Re2 have also been removed from the model.
- Inlet loss units EAST_0138ci, EAST_0022ci, EAST_0035ci,59.033cu and 59.032cu have been replaced with an orifice units.
- Bridges units 65.002bu, 38.079bu, 59.010bu, 59.008bu and 74.025bu have had orifice mode turned on.
- A number of small width channels in Winchester have either had the de-activation markers turned off and / or banks levels adjusted to reduce oscillations when larger floodplain flows enter the channels.

5.4. The following updates have been made to the 2D model:

- A ground model of the site topographic survey updates LiDAR levels where applicable.
- ZP points have been updated to suit the topographic survey from section 94.021 to 94.017d and 38.162 to 38.155d.
- Node, HX and CN lines have been updated to reflect the 1D updates.
- HX and CN lines have been removed from EAST01_0165u to EAST01_0165, GUIL0063u2 to GUIL_0061 and GUIL_0050 to GUIL_0050d, located in the Colbrook Street area of Winchester, due to oscillations at large flows.

5.5. The updated baseline model has been run for the following events:

- 1% AEP
- 0.1% AEP

5.6. As the proposed scheme is both considered 'Essential Infrastructure' and a Nationally Significant Infrastructure Project (NSIP), the H++ climate change allowance will be considered on the 1% AEP event. The 120% is the allowance for the South East River Basin (guidance dated July 2020) and is considered the design even for the scheme.

5.7. The 120% allowance has been applied to the EA's 1% AEP inflows in the same manner as the +35%, +45% and +105% included in the EA's 2019 study. This method has been confirmed to be appropriate in correspondence with the EA (correspondence included in **Appendix A**).

5.8. The updated baseline models have been run using FM v5.0 and TUFLOW 2020-10-AA-iDP-w64.

5.9. The results in the location of interest are provided in **Table 5-1**. The node labels were retained as per the EA model (**Table 4-1**) to allow for direct comparison. The additional node, NMUroute_u, has also been included to provide flood levels at the upstream face of the proposed new footbridge along with downstream and upstream nodes for the bridge upstream (38.156 and 38.156d. Comparisons with **Table 4-1** show negligible changes in flood levels.

Table 5-1: Updated Baseline Flood Levels

Location	1 in 100 Annual Probability (m AOD)	1 in 1000 Annual Probability (m AOD)	1 in 100 Annual Probability +120% CC (m AOD)
38.156	38.93	38.99	39.13
38.156d	38.13	38.26	38.49
NMUroute_u	37.99	38.09	38.23
38.155	37.97	38.07	38.18
94.018	38.19	38.22	38.32

6. Design Modelling

6.1. The updated baseline models have been taken forward to represent the proposed footbridge design.

6.2. The following updates have been updated into the model to represent the scheme:

- New USBPR bridge unit added at node NMUroute_u with the following information:
  - Based on drawing HE5511511-VFK-DBR-W_NMUX_01-DR-CB-008-P01 dated 3rd March 2021 (**Appendix B**).
  - Left and right banks updated in cross section NMUroute_u.
  - USBPR unit added. The soffit has been modelled as flat with the lowest soffit of 41mAOD. It should be noted that the modelled soffit of the existing bridge, immediately downstream at 38.155, is 40.68mAOD and the drawing states that the proposed soffit will be at or higher that this downstream bridge. The proposed span is also wider than the downstream bridge.
  - Spill unit added based on proposed footpath levels.
  - Cross section NMUroute_d added at downstream of new bridge unit. This is based on a copy of existing cross section 38.155.
- Proposed ground model has been read into 2D model to update the ground levels for the proposed footway and embankment (the proposed embankment is shown not to impact the floodplain). This ground model includes the topographic survey.

6.3. The proposed design has been run for the following events:

- 1% AEP
- 0.1% AEP
- 1% AEP +120% allowance for climate change (H++)

6.4. In addition, the 0.5% AEP +120% (H++) has also been run to ensure the proposed soffit meets 'CD356-Design of Highway Structures for Hydraulic Action' requirements (bridge soffit height set to a minimum of 600mm above the design 1 in 200 annual probability plus 120% climate change allowance).

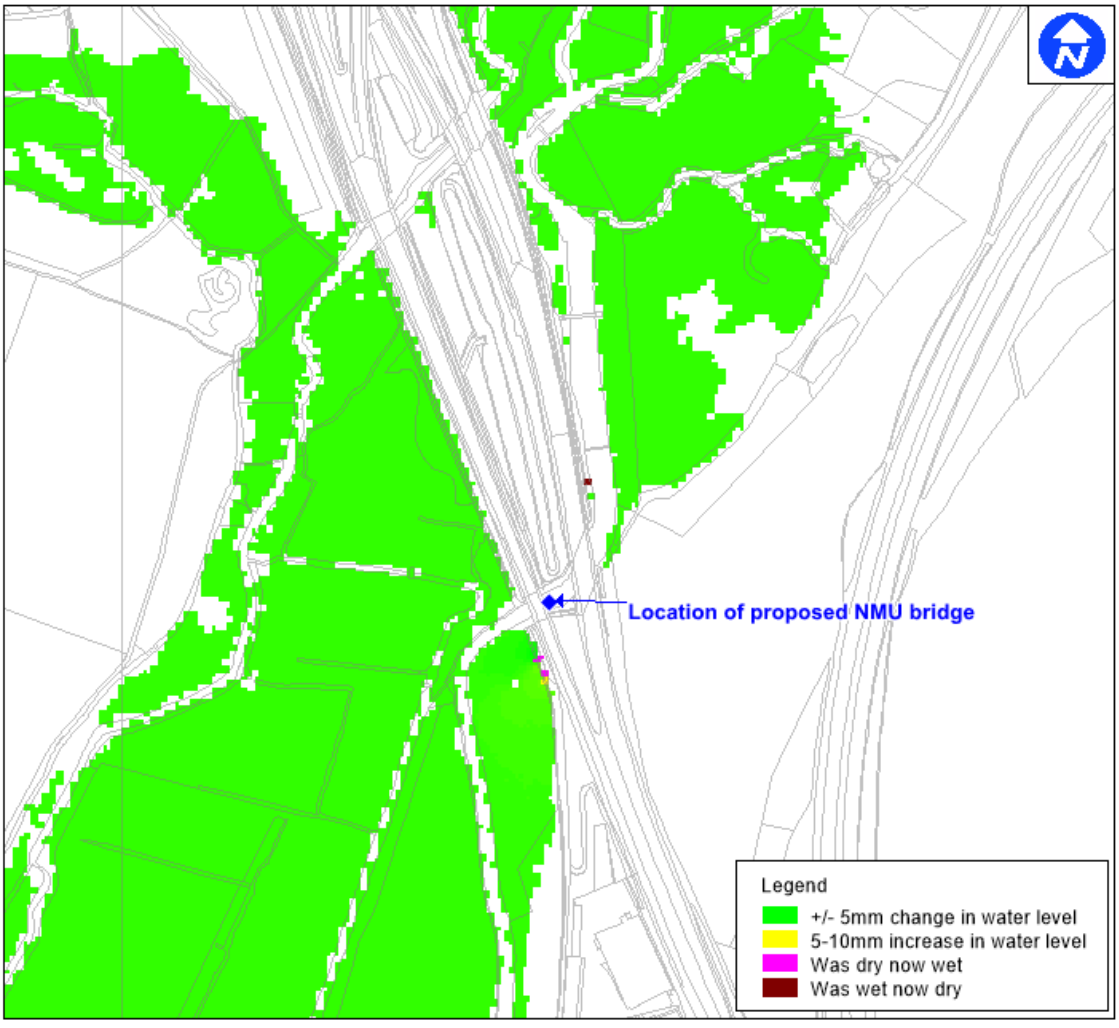
6.5. The results in the location of interest are provided in **Table 6-1**. The node labels were retained as per the updated baseline model (**Table 5-1**) to allow for direct comparison. Comparisons with **Table 5-1** show negligible changes in flood levels.

Table 6-1: Design Flood Levels

Location	1 in 100 Annual Probability (m AOD)	1 in 1000 Annual Probability (m AOD)	1 in 100 Annual Probability +120% CC (m AOD)
38.156	38.93	38.99	39.13
38.156d	38.13	38.25	38.48
NMUroute_u	37.99	38.09	38.23
38.155	37.97	38.07	38.18
94.018	38.19	38.22	38.32

6.6. The differences in modelled flood levels on the floodplain, between the baseline and design scenarios, for the applicable 1% AEP +120% (H++) climate change event has also been compared and is shown in **Figure 6-1**. This indicates that the area surrounding the proposed scheme show negligible impact as a result of the scheme. **Figure 6-1** also shows that the proposed footbridge bridge and embankment has negligible impact on flood levels / extents with changes in water level shown to be within +/-10mm."

Figure 6-1: Impacts of proposed scheme on 1% AEP +120% climate change event



7. Conclusions

7.1. Stantec UK Ltd (Stantec) has been commissioned by Volker Fitzpatrick, delivering on behalf Highways England, to support the proposed M3 Junction 9 Improvement scheme.

7.2. The proposed scheme involves include widening the M3 to 4 lanes, reconfiguring the existing roundabout, improving existing motorway slip roads and providing a new footway, which will connect wider networks. The proposal includes extra lanes on the carriage ways to increase traffic flow, and walkways, along and underneath old bridges allowing pedestrians to pass across and underneath the M3 Junction 9 carriageway.

7.3. As part of the support, Stantec has prepared a Flood Risk Assessment (FRA) which includes the need to model the impact of the proposed new footway over the River Itchen, as short distance upstream of any existing bridge.

7.4. Stantec has obtained the EA's latest modelling for the area, the River Itchen Modelling Study May 2019.

7.5. The River Itchen model (model 2) has been updated with local information with further changes for change instabilities at the larger flows.

7.6. The updated baseline model has been run for the 1%, 0.1% and 1% plus 120% allowance for climate change (H++) events.

7.7. The proposed scheme has been represented in the model and run for the above events. The 0.5% AEP +120% has also been run to help inform soffit requirements.

7.8. Comparisons against the updated baseline models found that the proposed scheme had negligible impacts on flood levels and therefore will not result in increases to local flood risk.

Appendix A – EA Climate Change Correspondence

Kirby, Sarah

From: Rabone, Anna [redacted]
Sent: 28 May 2021 14:04
To: Kirby, Sarah
Subject: M3J9 Improvement - draft meeting minutes

Hi Sarah,

I have had a response from the flood risk team, as set out below:

We agree that the approach to calculating the H++ value seems reasonable, and is in line with how the other values were produced in the 2019 Itchen model.

However, one thing to be aware of is that new fluvial climate change allowances are being released soon (likely to be in July 2021) which will need to considered as part of your assessments. We will send further information to you about this as it gets released.

I am on annual leave next week, so I will pick up any further queries when I am back (Monday 7 June).

Thank you very much.

Kind regards,
Anna

Anna Rabone
Sustainable Places Advisor | Solent and South Downs
Environment Agency | Oving Road, Chichester, West Sussex, PO20 2AG

Direct dial: [redacted]

From: Rabone, Anna
Sent: 26 May 2021 15:30
To: Kirby, Sarah [redacted]
Subject: RE: M3J9 Improvement - draft meeting minutes

Hi Sarah,

This is with our flood risk team at the moment – I will chase them for a response and get back to you.

Thank you very much.

Kind regards,
Anna

Anna Rabone
Sustainable Places Advisor | Solent and South Downs
Environment Agency | Oving Road, Chichester, West Sussex, PO20 2AG

Direct dial: 02077 140525

From: Kirby, Sarah [redacted]
Sent: 26 May 2021 15:20
To: Rabone, Anna [redacted]
Subject: RE: M3J9 Improvement - draft meeting minutes

Hi Anna

Please could you confirm Natasha's query below re climate change assessment methodology.

FYI Natasha is on maternity leave from next week and I will be picking up the flood risk aspects of this project.

Please contact me if you have any queries

Kind regards,

Sarah Kirby
Principal Hydrologist

Direct: [redacted]
[redacted]
Birmingham

Stantec

From: Vaughan, Natasha
Sent: 27 April 2021 10:38
To: Murphy, Jonny [redacted]; Rabone, Anna [redacted]
Cc: McLaughlin, Duncan [redacted]; Champion, Alan [redacted] Saunders, Andrew [redacted]; Riley, Kate [redacted]; Fillingham, Malcolm [redacted]
Subject: RE: M3J9 Improvement - draft meeting minutes

Hi Anna,

The modelling report outlines that the central, higher central and upper end allowances were used within the study. A detailed hydrological study, including non-stationary investigation, was completed to inform the latest modelling. Within this study and as a result of the non-stationary assessment the baseline year for the assessing climate change was updated from 1975 to 2015. This means that partial climate change allowances were applied as the impact and influence of climate change between 1975 and 2015 was accounted for within the hydrology. The table below shows the full climate change allowances for the South East river basin district, partial allowances applied within the modelling and the proposed allowance we intend to apply for the H++ scenario calculated in a consistent manner with the other allowances.

Allowance	Full Allowance	Partial Allowance Applied
Central	35%	25%
Higher Central	45%	29%
Upper End	105%	71%
H++	120%	78%

For ease, I have provided an extract of the relevant section from the hydrological reporting below. We are seeking confirmation that it continues to be appropriate to make use of the allowances applied within the detailed modelling study, and that the H++ value we've proposed is suitable for use.

7.6 Peak flows adjusted for potential impacts of climate change

The climate change scenarios follow the Environment Agency's guidance: *Flood risk assessments: climate change allowances*[21] initially released in February 2016. The three allowances to be tested are the Central, Higher Central and Upper End estimates of total potential change in peak flow rates anticipated for the '2080s' (2070 to 2115). As the watercourse is located within the South-East River Basin District, the change factors for these events are of 35%, 45% and 105%.

As explained in section 4.5.2, at sites where the present-day flood frequency estimates have been derived from non-stationary analysis they are assumed to incorporate the effects of climate change up to the present day.

A partial adjustment, considering only future climate change, has been applied to allow for future climate change. This has been calculated by dividing the recommended uplift for the 2080s by an uplift for the year 2015, which has been calculated by linear interpolation between 1975 (the midpoint of the 1961-90 baseline) and 2025 (the midpoint of the 2020s epoch). 2015 is 80% of the way through the period 1975 to 2025 and so the uplifts for 2015 have been calculated as 80% of the recommended uplifts for the 2020s. The uplift for the period between 2015 and the 2080s is calculated by dividing the 2080s uplift by the 2015 uplift, when both are expressed as factorial changes rather than percentage increases, i.e. 1.45 rather than 45%. The table below sets out the calculations.

Proportional increases in flow	From EA guidance		Calculated	
Epoch	2020s from 1961-90 baseline	2080s from 1961-90 baseline	2015 from 1961-90 baseline	Between 2015 and 2080s
Upper end	1.25	2.05	1.20	1.71
Higher central	1.15	1.45	1.12	1.29
Central	1.10	1.35	1.08	1.25

Kind regards,

Natasha Vaughan
Senior Hydrologist
Caversham Bridge House, Waterman Place, Reading RG1 8DN
Direct: +44 118 952 3131
[redacted]

Stantec

From: Murphy, Jonny [redacted]
Sent: 27 April 2021 09:01
To: Rabone, Anna [redacted]
Cc: Vaughan, Natasha [redacted] McLaughlin, Duncan [redacted] Champion, Alan [redacted] Saunders, Andrew [redacted]; Riley, Kate [redacted]; Fillingham, Malcolm [redacted]
Subject: RE: M3J9 Improvement - draft meeting minutes

Hi Anna

Thank you for the update below, one of my colleagues will respond to you shortly with the below clarification.

Kind regards

Jonny Murphy
Principal Environmental Planner

Bristol
Direct: [redacted]
Mobile [redacted]
[redacted]

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From: Rabone, Anna [redacted]
Sent: 26 April 2021 13:51
To: Murphy, Jonny [redacted]
Cc: Vaughan, Natasha [redacted]; McLaughlin, Duncan [redacted] Champion, Alan [redacted]; Saunders, Andrew [redacted] Riley, Kate [redacted]; Fillingham, Malcolm [redacted]
Subject: RE: M3J9 Improvement - draft meeting minutes

Hi Jonny,

Thank you very much for your email on 13 April 2021. I apologise that it has taken me a while to get back to you – I had a period of annual leave and then things have been extremely busy.

In terms of actions from the minutes, we have responded about timing restrictions (please see email attached) and also provided feedback on the geology & soils note provided by Kate in March (please see email attached).

This leaves one further action for us as copied below from the minutes:

*"**NV** referred to the climate change allowances applied to the EA 2019 model, which made use of a hydrological baseline year updated from 1975 to 2015. Partial climate change allowances were therefore applied within the EA 2019 model. **NV** asked for confirmation that it was appropriate to continue to adopt that approach to applying and assessing climate change due to the detailed hydrological study completed. **AR** took an action to respond."*

I confess that I have not taken steps to address this yet which I can only apologise for – it is simply a case of having slipped from my mind. I will of course rectify this as quickly as I can and ask for advice from our flood risk team as soon as possible. Before I do, could I just have some further clarification about the request – for example, what partial climate change allowances have been applied and are proposed to be applied going forwards?

Thank you very much.

Kind regards,
Anna

Anna Rabone
Sustainable Places Advisor | Solent and South Downs
Environment Agency | Oving Road, Chichester, West Sussex, PO20 2AG

Direct dial: [redacted]

Creating a better place for people and wildlife

From: Murphy, Jonny [redacted]
Sent: 13 April 2021 12:23

To: Rabone, Anna [redacted]
Cc: Vaughan, Natasha [redacted] McLaughlin, Duncan [redacted]
Champion, Alan [redacted] Saunders, Andrew
[redacted]; Riley, Kate <[redacted] Fillingham, Malcolm
[redacted] Beard, Judith [redacted]; Wickens, Tom
[redacted]
Subject: RE: M3J9 Improvement - draft meeting minutes

Hi Anna

I hope you're well. Are you able to provide an update on the agreed actions from the M3J9 meeting held in February?

Kind regards

Jonny Murphy
Principal Environmental Planner
Bristol
Direct: +[redacted]
Mobile +[redacted]
[redacted]

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From: Murphy, Jonny
Sent: 04 March 2021 08:24
To: Rabone, Anna [redacted]
Cc: Vaughan, Natasha [redacted] McLaughlin, Duncan <[redacted]
Champion, Alan [redacted] Saunders, Andrew
[redacted]; Riley, Kate [redacted] Fillingham, Malcolm
[redacted]; Beard, Judith [redacted]; Wickens, Tom
[redacted]; Gavin Symonds [redacted]; Stephen
Pettifer [redacted]; Roose, Jon [redacted]; Palmer,
Anne-Marie [redacted]; Clark, Joseph <[redacted]
Subject: RE: M3J9 Improvement - draft meeting minutes

Dear Anna

Thank you for your prompt response, please find the finalised meeting minutes attached. We look forward to future liaison with the Environment Agency.

Kind regards

Jonny Murphy
Principal Environmental Planner
Bristol
Direct: +44[redacted]
Mobile +44[redacted]
[redacted]

Stantec

From: Rabone, Anna [redacted]
Sent: 03 March 2021 14:22
To: Murphy, Jonny [redacted]
Cc: Vaughan, Natasha [redacted]; McLaughlin, Duncan [redacted]; Champion, Alan [redacted] Saunders, Andrew [redacted] Beard, Judith [redacted]; Wickens, Tom [redacted]
Subject: RE: M3J9 Improvement - draft meeting minutes

Dear Jonny,

Thank you very much for your email earlier this week with the draft meeting minutes.

We have one minor amendment to request, which is shown in red on page 2, but other than that we are satisfied with the minutes.

If you have any queries, please do not hesitate to contact me.

Kind regards,
Anna

Anna Rabone
Sustainable Places Advisor | Solent and South Downs
Environment Agency | Oving Road, Chichester, West Sussex, PO20 2AG

Direct dial: [redacted]

From: Murphy, Jonny [redacted]
Sent: 01 March 2021 17:35
To: Rabone, Anna [redacted]; Beard, Judith [redacted] Wickens, Tom [redacted]
Cc: Vaughan, Natasha [redacted]; McLaughlin, Duncan [redacted] Champion, Alan [redacted] Saunders, Andrew [redacted]; Riley, Kate [redacted] Fillingham, Malcolm [redacted]
Subject: M3J9 Improvement - draft meeting minutes

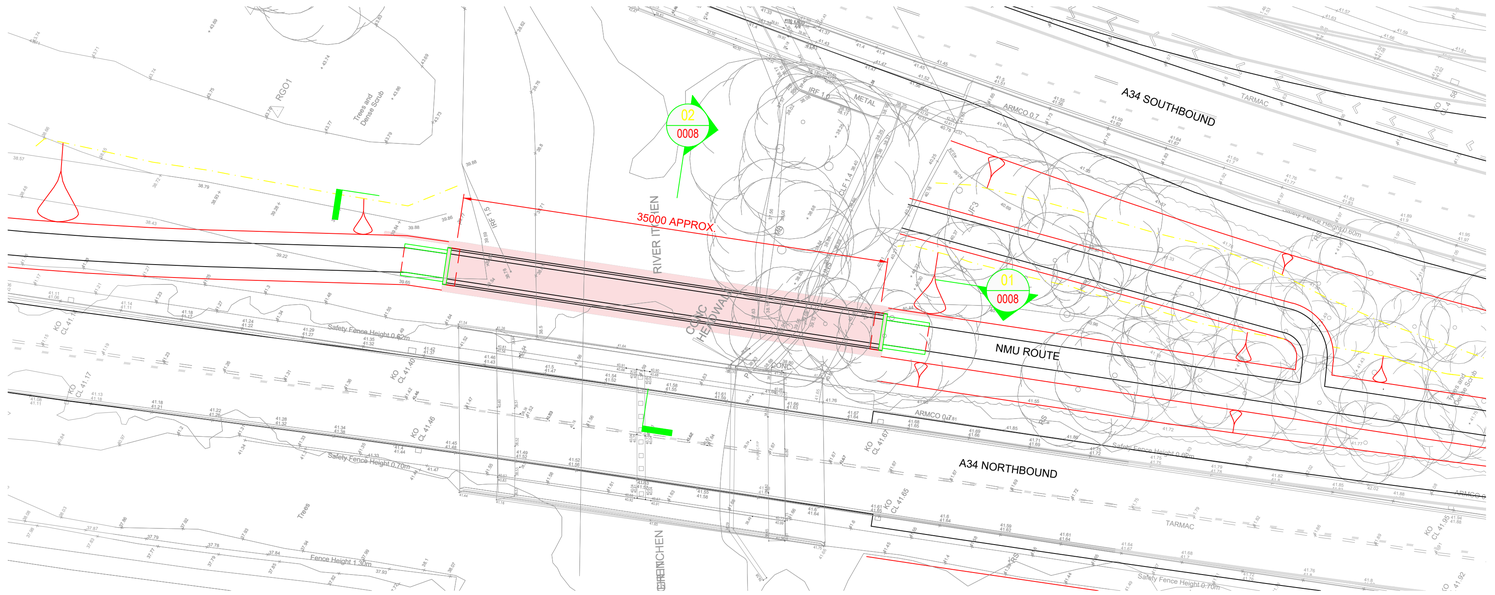
Dear Anna, Judith and Tom

Thank you again for your time and inputs at the M3J9 Improvement meeting held last week. Please find attached a set of draft meeting minutes for you to review and confirm. Once finalised we will circulate a finalised PDF.

Kind regards

Jonny Murphy
Principal Environmental Planner
Bristol
Direct: +44 [redacted]

Appendix B - Bridge Design Drawing



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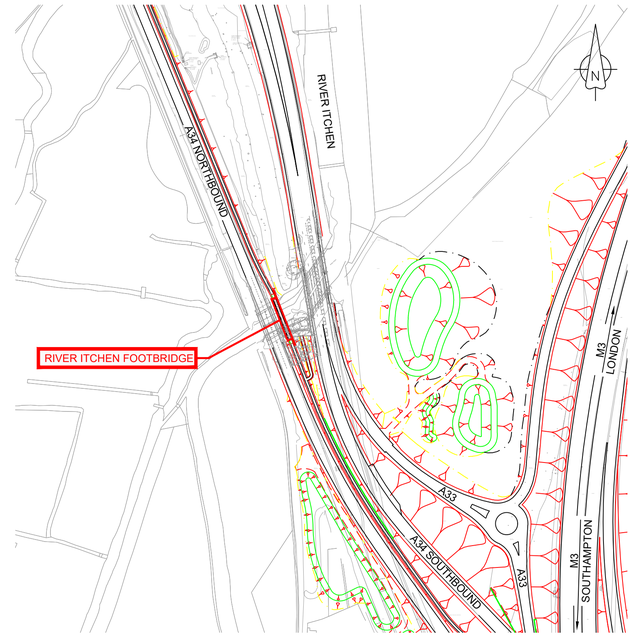

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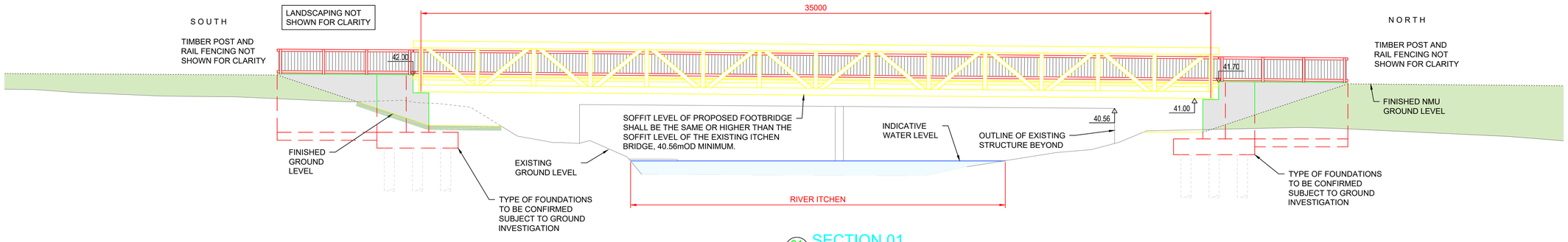

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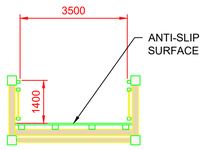

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Rev.	Date	Description	Drawn	Chk'd	App'd
P01	03.03.21	FOR INFORMATION	GCP	JAS	JWS

Drawing Status: FOR INFORMATION

VolkerFitzpatrick

Client: highways england

Project Title: M3 JUNCTION 9 IMPROVEMENTS

Drawing Title: STAGE 3B
RIVER ITCHEN FOOTBRIDGE
GENERAL ARRANGEMENT

Scale	Designed	Drawn	Checked	Approved
As Indicated	GCP	GCP	JAS	JWS
Original Size	**Date**	**Date**	**Date**	**Date**
A1	03.03.2021	03.03.2021	03.03.2021	03.03.2021

Drawing Number: HE PIN | Originator | Volume
HE551511 - VFK - SBR - W_NMUX_01 - DR - CB - 0008
Location | Type | Role | Number

Project Ref. No.: 48176

Revision: P01