

M3 Junction 9 Improvement Scheme

Scheme Number: TR010055

6.4 Environmental Statement – Non- Technical Summary (Rev 1) Clean

APFP Regulations 5(2)(a)

Planning Act 2008

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

Volume 6

6 June 2023

Infrastructure Planning

Planning Act 2008

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

M3 Junction 9 Improvement
Development Consent Order 202[x]

6.4 ENVIRONMENTAL STATEMENT - NON-TECHNCAL SUMMARY

| | |
|--|--|
| Regulation Number: | Regulation 5(2)(a) |
| Planning Inspectorate Scheme Reference: | TR010055 |
| Application Document Reference: | 6.4 |
| BIM Document Reference: | HE551511-VFK-EGN-X_XXXX_XX-RP-LE-0012 |
| Author: | M3 Junction 9 Improvement Project Team, National Highways |

| Version | Date | Status of Version |
|---------|---------------|------------------------|
| Rev 0 | November 2022 | Application Submission |
| Rev 1 | 6 June 2023 | Deadline 1 Submission |

Contents

| | | |
|----------|---|-----------|
| 1 | INTRODUCTION..... | 1 |
| 1.1 | Background..... | 1 |
| 2 | DESCRIPTION OF THE SCHEME | 3 |
| 2.1 | Background to the Scheme..... | 3 |
| 2.2 | Scheme Objectives | 3 |
| 2.3 | Scheme Description | 3 |
| 2.4 | Environmental Design Features and Environmental Mitigation..... | 5 |
| 3 | ALTERNATIVES..... | 7 |
| 3.1 | Background..... | 7 |
| 3.2 | Reasonable Alternatives Studied and Rejected | 7 |
| 4 | POTENTIAL ENVIRONMENTAL EFFECTS | 10 |
| 4.1 | Air Quality..... | 10 |
| 4.2 | Cultural Heritage | 12 |
| 4.3 | Landscape and Visual..... | 14 |
| 4.4 | Biodiversity..... | 17 |
| 4.5 | Geology and Soils | 21 |
| 4.6 | Material Assets and Waste..... | 23 |
| 4.7 | Noise and Vibration..... | 24 |
| 4.8 | Population and Human Health | 27 |
| 4.9 | Road Drainage and the Water Environment | 30 |
| 4.10 | Climate..... | 32 |
| 4.11 | Cumulative Effects | 35 |
| 5 | COMMENTING ON THE APPLICATION | 37 |
| 5.1 | Further Details..... | 37 |

Figures

| | | |
|------------|--|----|
| Figure 1: | Location of the Scheme..... | 4 |
| Figure 2: | The Scheme | 5 |
| Figure 3: | Air Quality Features / Receptors | 10 |
| Figure 4: | Cultural Heritage Features / Receptors | 12 |
| Figure 5: | Landscape and Visual Features / Receptors | 15 |
| Figure 6: | Biodiversity Features / Receptors | 19 |
| Figure 7: | Geology and Soils Features / Receptors | 21 |
| Figure 8: | Material Assets and Waste Features / Receptors | 23 |
| Figure 9: | Noise and Vibration Features / Receptors..... | 25 |
| Figure 10: | Population and Human Health Features / Receptors | 28 |

Figure 11: Road Drainage and the Water Environment Features / Receptors 31

1 INTRODUCTION

1.1 Background

- 1.1.1 National Highways is responsible for the operation, maintenance and improvements of the strategic road network in England on behalf of the Secretary of State (SoS) for Transport. National Highways has been investigating options to alleviate a major bottle neck at Junction 9 on the M3 which connects South Hampshire and the wider sub-region, with London via the M3 and the Midlands / north via the A34 for a number of years. After consulting on different route options, an option to widen the existing M3 at Junction 9, creating four lanes each way, reconfiguring the existing main Junction 9 roundabout to make it more efficient, making provision for walkers, cyclists and horse-riders and improving the motorway slip roads was announced as the preferred solution in June 2018 (hereafter referred to as ‘the Scheme’).
- 1.1.2 Construction is anticipated to commence in late 2024 and the Scheme is anticipated to be open in 2027. The Scheme is a Nationally Significant Infrastructure Project (NSIP) under the Planning Act 2008. Therefore, an application for Development Consent is required to be submitted to the SoS for Transport via the Planning Inspectorate. The application is accompanied by an Environmental Statement (ES) prepared in accordance with the Infrastructure Planning (Environmental Impact Assessment (EIA)) Regulations 2017. This document is the Non-Technical Summary (NTS) of the ES. The ES identifies and assesses the likely significant effects on the environment, resulting from the construction and operation of the Scheme and recommends appropriate mitigation to reduce effects.
- 1.1.3 The NTS provides a summary of the Scheme and the findings of the ES in non-technical language to ensure that the outcomes are readily communicated and understood by all. The following environmental topics are assessed within the ES and are summarised in this NTS:
- Air Quality
 - Cultural Heritage
 - Landscape and Visual
 - Biodiversity
 - Geology and Soils
 - Material Assets and Waste
 - Noise and Vibration
 - Population and Human Health

- Road Drainage and the Water Environment
- Climate
- Cumulative Effects

2 DESCRIPTION OF THE SCHEME

2.1 Background to the Scheme

2.1.1 Hampshire County Council identified in 2013 that infrastructure improvements were necessary to reduce congestion levels and assist with the strategic movement of traffic at Junction 9 of the M3, a key arterial intersection with the A34, to make sure that traffic congestion and increased journey times do not compromise the scale of potential future economic growth in the surrounding area.

2.1.2 The improvement to M3 Junction 9 was included in the Department for Transport's Road Investment Strategy (RIS). The RIS sets out the list of schemes to be delivered by National Highways over the period covered by the RIS (2015 to 2020). The RIS identified improvements to M3 J9 Winnall Interchange as one of the key investments in the Strategic Road Network for the London and South East region.

2.2 Scheme Objectives

2.2.1 The Scheme has five 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

2.3 Scheme Description

2.3.1 The M3 Junction 9 is a key transport interchange which connects South Hampshire (which generates a large number of Heavy Goods Vehicles movements) and the wider area with London via the M3 and the Midlands/North via the A34 (which also links to the principal east west A303 corridor).

2.3.2 Significant volumes of traffic use the traffic-light controlled roundabout above the M3 (approximately 6,000 vehicles per hour during the peak periods) which acts as a bottleneck on the local highway network and causes significant delays throughout the day. Northbound and southbound movements between the M3

and the A34 are particularly intensive, with downstream queues on the northbound off slip of the M3 often resulting in safety concerns during peak periods.

2.3.3 To address this, the Scheme includes the development and delivery of works and modifications to increase capacity, enhance journey time reliability and support new development in line with adopted and emerging Local Plans in the local area. The Scheme will provide new free flow links between the M3 and A34, as well as a dedicated new A33 alignment and will include:

- Widening of the M3 at Junction 9 to create four lanes each way
- Introducing free flowing links for the M3 to the A34 north bound and the A34 to the M3 south bound to avoid the Junction 9 roundabout entirely
- Making provision for walkers, cyclists and horse-riders
- Improving the motorway slip roads

2.3.4 A location plan and the Scheme are presented in **Figures 1 and 2**

Figure 1: Location of the Scheme

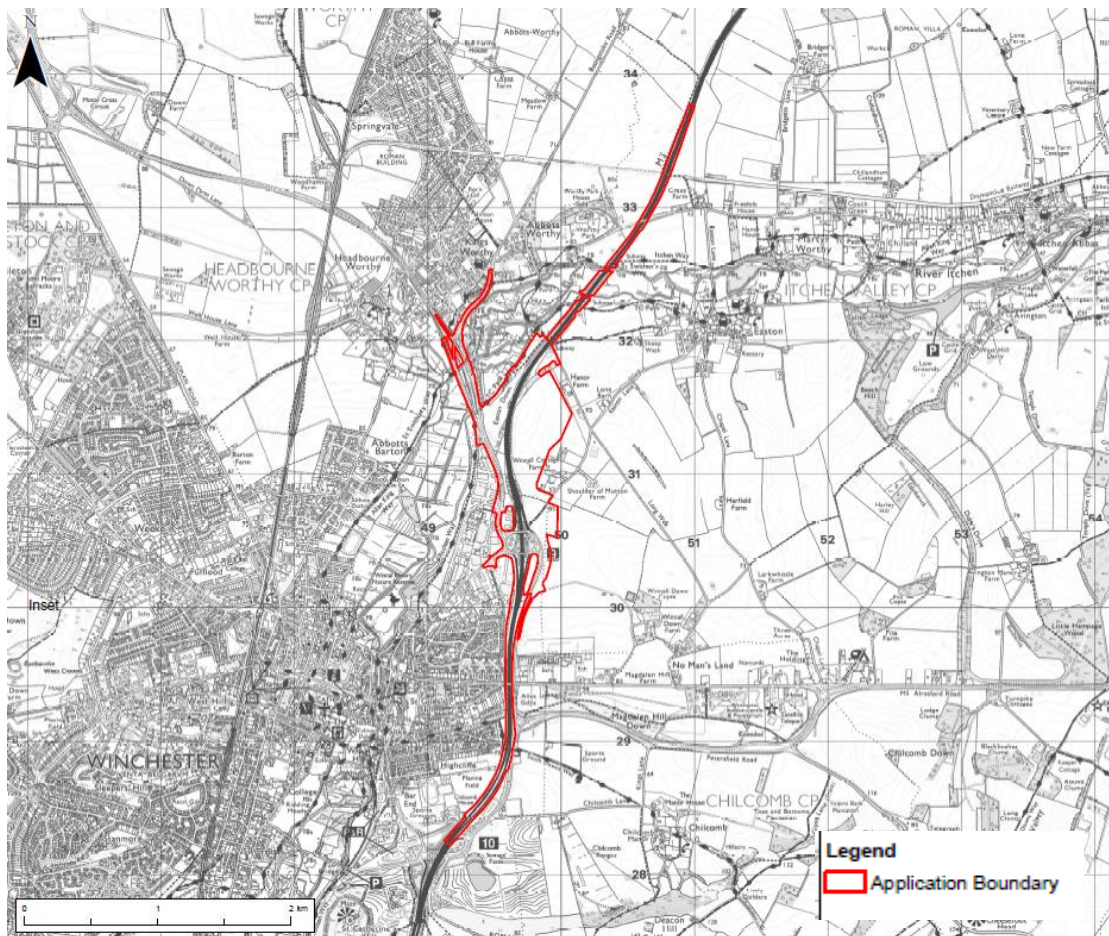
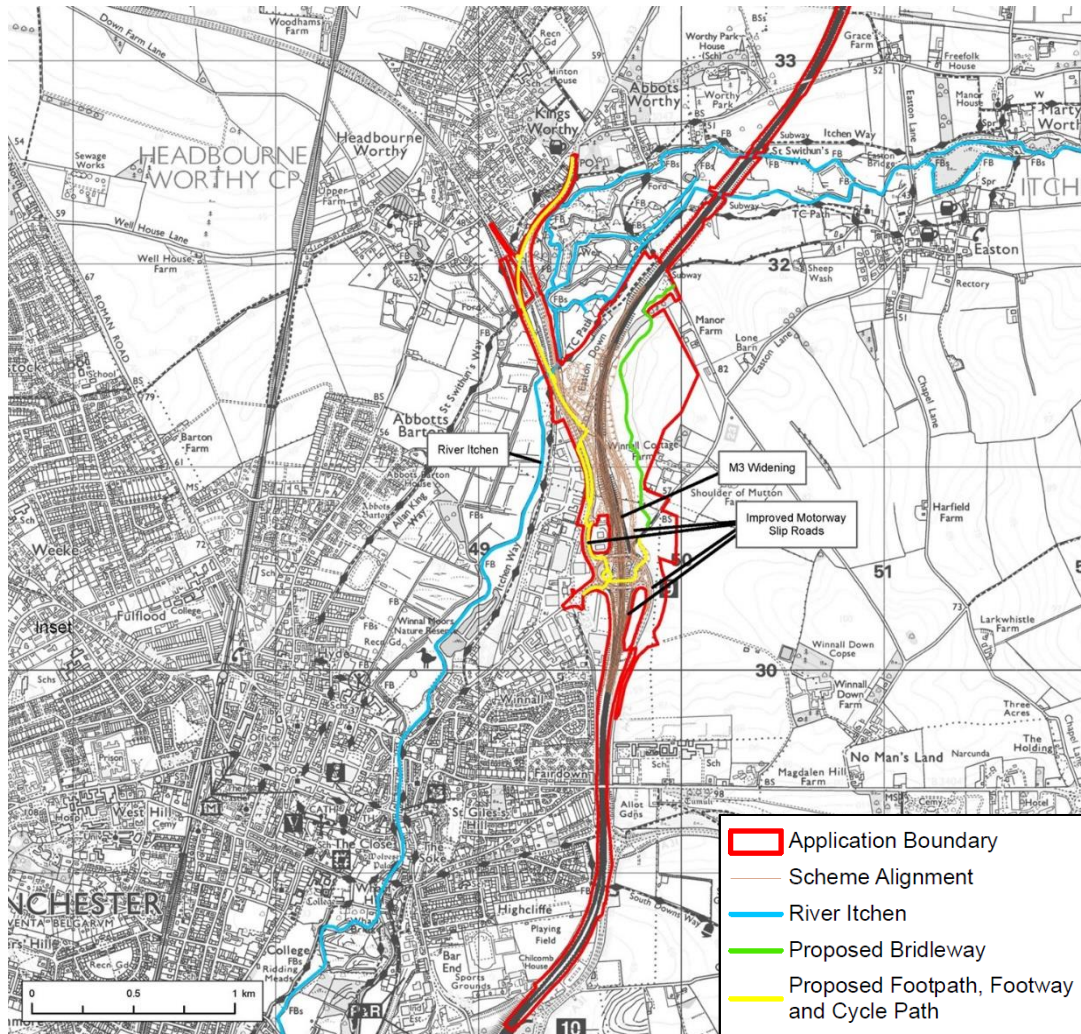


Figure 2: The Scheme



2.4 Environmental Design Features and Environmental Mitigation

2.4.1 The Scheme incorporates a range of design features and environmental mitigation that have been developed to reduce adverse environmental effects. Environmental design features and mitigation¹ incorporated into the Scheme include:

- Implementing an environmental masterplan that incorporates sensitive landscape planting and new habitats
- A sensitively designed new path for walkers, cyclists and horse-riders on the edge of the South Downs National Park

¹ Further environmental topic specific mitigation is outlined under each environmental heading within this Non-Technical Summary.

- Material generated from site excavation works will be reused in the Scheme where possible
- The design of the new bridge over the River Itchen will be a clear span structure with abutments set back from the river channel. No works are required within the river channel
- Low noise road surfacing will be used where new road surfaces are needed
- Providing drainage ponds and treatment of operational highway runoff. The drainage design also prevents pollution of watercourses by intercepting and treating the road drainage discharges
- The short-term temporary localised damming and dewatering within the River Itchen to clean an existing headwall (retaining wall at drainage outfalls), and install two new headwalls as part of the operational drainage system
- Retaining existing pavements where possible
- Using warm rolled asphalt for installation of road surfacing, not hot rolled asphalt (resulting in reduced carbon emissions and energy requirements)

3 ALTERNATIVES

3.1 Background

3.1.1 Schedule 4 of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 requires an Environmental Statement to provide 'A description of the reasonable alternatives (for example in terms of development design, technology, location, size and scale) studied by the developer, which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects.'

3.2 Reasonable Alternatives Studied and Rejected

3.2.1 The need for the Scheme was first considered in 2013, where a study identified that free-flow links from the M3 to the A34 and a remodelled Junction 9 would be the best option to relieve congestion.

3.2.2 In 2015, the Department for Transport then identified M3 Junction 9 as a key investment in the Road Investment Strategy (RIS).

3.2.3 National Highways then developed the Scheme taking into account factors like the environment, costs and compliance with Scheme objectives.

3.2.4 The Scheme has been subject to National Highways' option appraisal process over a period of eight years in which options (seven options plus variants of these options) were assessed and discounted based on a number of factors including environmental effects, cost, buildability and value for money.

3.2.5 In early 2018, the preferred option was presented at a public options consultation where views were sought. Feedback highlighted that the main concerns with the preferred option were related to safety and access from Junction 9 to the A33. In 2018 National Highways announced their preferred option.

3.2.6 Through a statutory consultation process undertaken in 2019, further concerns were raised in relation to local stakeholder perception, traffic capacity and operational safety.

3.2.7 As a result, in May 2020, National Highways prepared a report identifying four 'solutions'. It was identified that Solution 2 would support economic growth, encourage a freer, better flowing network whilst also reducing severance effects and improving access for non-road users to Kings Worthy. It had the potential to encourage greater active travel whilst also encouraging access to the South Downs National Park and was taken forward as the preferred solution to address concerns raised in 2019. Solution 2 comprised a single two-lane carriageway between M3 Junction 9 (M3J9) and the proposed A33 roundabout, an extension of the weaving distance between A34 southbound diverge and M3J9 southbound diverge, a proposed oval roundabout at M3J9 and a

shortened M3J9 southbound diverge slip road. Solution 2 also included a new walking and cycling footbridge over the River Itchen

- 3.2.8 Since the selection of Solution 2, further examination of options has been undertaken to consider the most appropriate routes for walkers, cyclists and horse-riders, in relation to the environment, consideration against Scheme objectives, highways, structures and safety.
- 3.2.9 Ongoing design and assessment work has contributed to the consideration of alternatives relating to the selection of construction compounds.
- 3.2.10 Following a ministerial announcement on 12 January 2022, all lane running (ALR) schemes not yet constructed were paused, which included the M3 Junction 9 to Junction 14 ALR Scheme. Although the ALR scheme is being paused, National Highways is progressing with plans to upgrade the existing central reservation barrier to concrete to deliver safety benefits, which were originally included in the ALR scheme. This work will be completed prior to the M3 Junction 9 Improvement scheme starting.
- 3.2.11 The M3 Junction 9 to Junction 14 ALR scheme is independent from the M3 Junction 9 Improvement Scheme, however there is an interface where the schemes diverge, and therefore the Scheme has continued to undergo minor design changes to reflect this.
- 3.2.12 The traffic model has been re-run to assimilate a revised situation to tie-in to the existing strategic road network south of Junction 9. This has shown that the Scheme continues to meet the key project objectives.
- 3.2.13 The minor design changes are as follows:

Southbound amendments

- M3 Junction 9 Southbound on-slip arrangement amended from a lane gain perspective to a merge arrangement, which ties into the existing 3 No. southbound lanes
- Localised widening required into the existing southbound verge which requires a low level (max. 1.2m high) retaining wall.

Northbound amendments

- Proposed alignment was amended so it ties into the existing 4 No. northbound lanes on the approach to Junction 9.
- 1 Mile Verge Mounted Advance Direction Sign to be erected on the approach to Junction 9.
- ½ Mile Verge Mounted Advance Direction Sign to be erected on the approach to Junction 9.

- MS4 Digital Variable Message Sign to be erected between the proposed ½ mile Advance Direction Sign and the off-slip road to Winchester.
- Portal gantry to be erected across both carriageways to provide Final Direction Signage to Junction 9.
- The Emergency refuge area (ERA) originally proposed on the M3 Junction 9 Northbound off-slip is now omitted.

3.2.14 The design changes set out above do not result in any change to the Application Boundary.

4 POTENTIAL ENVIRONMENTAL EFFECTS

4.1 Air Quality

Methodology

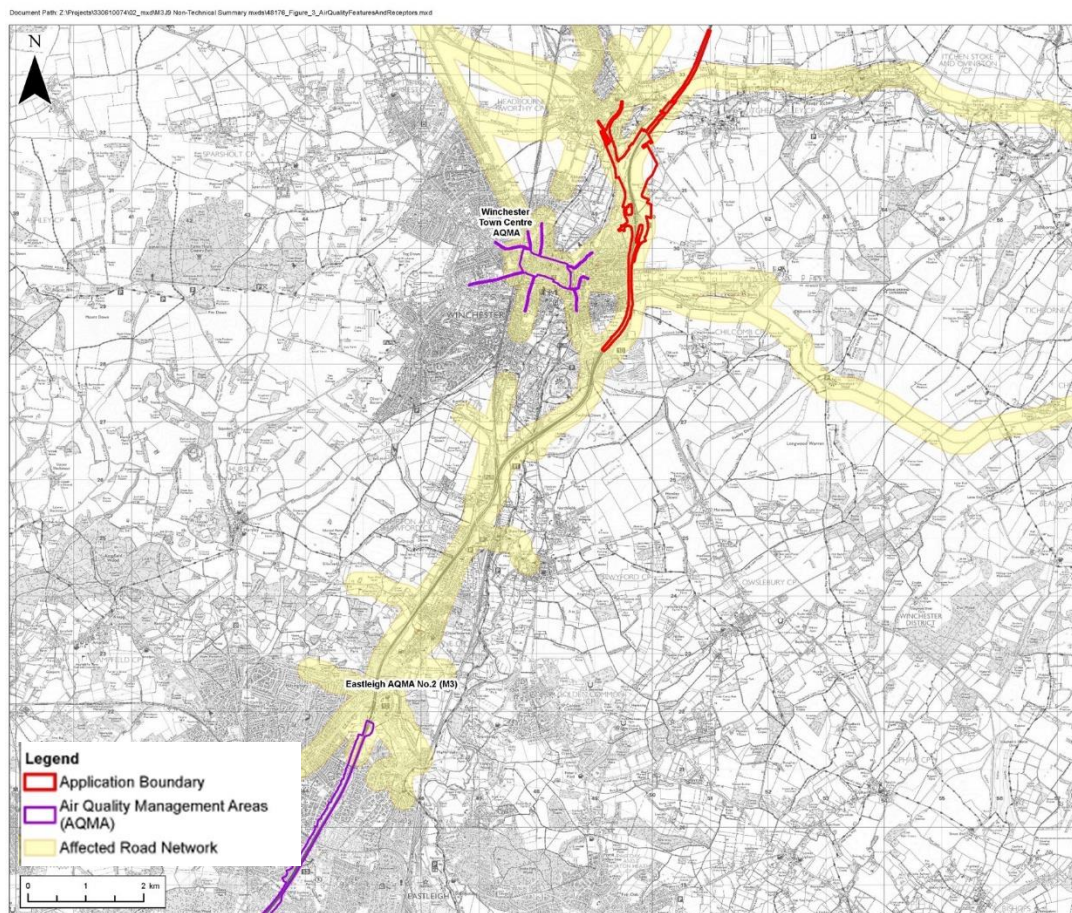
4.1.1 The construction and operational air quality assessment was undertaken in accordance with the Design Manual for Roads and Bridges (DMRB) LA 105 Air Quality (National Highways, 2019).

Baseline

4.1.2 The study area for assessing air quality impacts is the 'affected road network' (ARN). This is shown on **Figure 5.2 (Affected Road Network)** of the **ES (Document Reference 6.1)**.

4.1.3 Existing baseline air quality information has been gathered from Winchester City Council and Eastleigh Borough Council, which together cover the air quality study area. There are two Air Quality Management Areas (AQMAs) within the air quality study area, these are within Winchester City Centre and Eastleigh. Both AQMAs have been declared due to high levels of nitrogen dioxide (NO₂) as a result of traffic emissions, congestion and the location of buildings preventing the dispersion of air pollutants – these are presented on **Figure 3**.

Figure 3: Air Quality Features / Receptors



- 4.1.4 There are a number of sensitive receptors, predominantly residential dwellings within the air quality study area.

Mitigation Measures

- 4.1.5 Construction phase dust emissions will be controlled by the implementation of standard control mitigation measures outlined within an Environmental Management Plan (EMP). A first iteration of the EMP (**fiEMP**) (**Document Reference 7.3**) has been prepared and includes standard dust mitigation measures such as damping down roads to reduce dust and removing materials that have the potential to produce dust from site. During detailed design, this fiEMP will be developed and refined into a second iteration Environmental Management Plan that will be used during construction of the Scheme to control the construction works.
- 4.1.6 It has been demonstrated in **Chapter 5 (Air Quality)** of the **ES (Document Reference 6.1)** that the Scheme will not have a significant air quality effect during the operational phase, nor does it affect reported compliance with the relevant Air Quality Regulations. As a result, no operational mitigation is proposed.

Residual Effects

- 4.1.7 Residual effects (these are effects after mitigation measures have been implemented) from construction dust, construction traffic emissions and operational traffic emissions were assessed in **Chapter 5 (Air Quality)** the **ES (Document Reference 6.1)**.
- 4.1.8 Properties located close to construction activities have the potential to be adversely affected by construction dust, however these effects will be short-term. There will also be changes to traffic flows during the construction phase, however following implementation of measures outlined within the **fiEMP (Document Reference 7.3)**, construction phase effects from dust and emissions are assessed as being not significant.
- 4.1.9 Operational traffic emissions were modelled and indicate that the Scheme results in both predicted increases and decreases in NO₂ concentrations at a number of receptor locations.. The majority of decreases were located within Winchester City Centre and increases were located in the area of the M3 and Easton Lane (and adjoining roads) due to predicted increase on traffic flows on these routes. The assessment undertaken demonstrates that there are no locations where NO₂ concentrations exceed the air quality threshold (40 micrograms per cubic metre (µg/m³)) according to the DMRB LA 105 methodology. Therefore, there will be no significant effects as a result of the operation of the Scheme.

4.2 Cultural Heritage

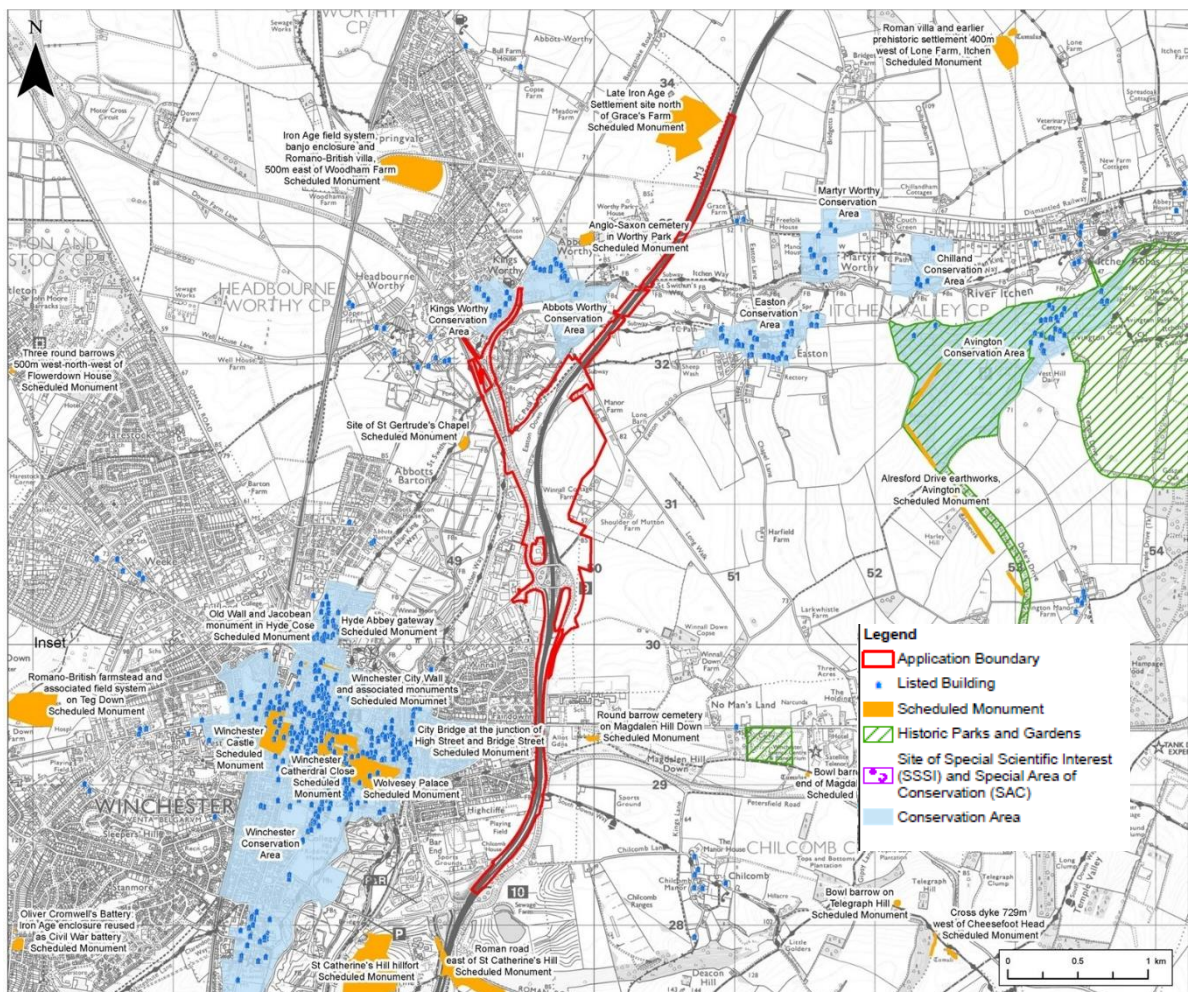
Methodology

4.2.1 The cultural heritage assessment has been undertaken in accordance with the DMRB LA 106 Cultural Heritage Assessment (National Highways, 2020) and also draws on the previous version HA208/07 Cultural Heritage (Highways Agency, 2007).

Baseline

4.2.2 The baseline for the assessment has been informed through gathering readily available desk-based information, data from stakeholders and site visits together with geophysical surveys and trial trenching. Details of designated cultural heritage assets (Scheduled Monuments, Listed Buildings, Registered Battlefields, Registered Historic Parks and Gardens and World Heritage Sites) within a 1km study area around the Application Boundary were gathered, along with details of non-designated cultural heritage assets within a 300m study area around the Application Boundary. **Figure 4** presents the locations of heritage receptors.

Figure 4: Cultural Heritage Features / Receptors



- 4.2.3 From the information gathered it was identified that there are no designated heritage receptors located within the Application Boundary of the Scheme. However, within the study areas there are:
- Nine Scheduled Monuments
 - 117 Listed Buildings
 - Eight Registered Historic Parks and Gardens
- 4.2.4 The Application Boundary also covers small parts of the Abbots Worthy and Kings Worthy Conservation Areas and there are a further three conservation areas within the 1km study area.
- 4.2.5 There are no designated historic landscapes recorded by Historic England within the 1km study area. The historic landscape character (HLC) within the Application Boundary is identified in the Hampshire Historic Landscape Characterisation Project as predominately parliamentary enclosure with areas of recent settlement, old settlement, downland and valley floor.
- 4.2.6 There are 46 records of archaeological investigations within the 300m study area including 14 within the Application Boundary, the majority of which are associated with the construction and development of the M3. The majority of the archaeological remains excavated during these investigations have been largely removed during construction of the M3.
- 4.2.7 More recent archaeological investigations were undertaken to assess the potential impacts of the Scheme. These investigations found remains of several prehistoric ring ditches, part of a prehistoric and Roman enclosure complex archaeologically excavated prior to the construction of the M3, prehistoric and post-medieval field boundaries, a post-medieval building, a number of undated features and anomalies potentially of archaeological interest.

Mitigation Measures

- 4.2.8 The Scheme has been designed to limit or avoid, as far as possible, adverse effects on unknown archaeological remains, through minimisation of intrusive footprints, depths and method of intrusive ground investigation and construction works. A programme of archaeological mitigation is required which will consist of pre-construction archaeological excavation, sampling and analysis and a watching brief during construction. These investigations will preserve by record any archaeological remains that will be impacted upon and this will offset the impacts and reduce any significant adverse effects. The exact form of this mitigation will be outlined in a detailed Archaeology and Heritage Mitigation Strategy and Written Scheme of Investigation (WSI) which will be approved by the SoS in consultation with the relevant planning authorities and will be based on the Outline Mitigation Strategy (**Appendix 6.7, Document Reference 6.3**) prepared for the Development Consent Order application.

4.2.9 **Figure 2.3 (Environmental Masterplan)** of the **ES (Document Reference 6.2)** includes details of proposed new landscaping and planting, all of which will provide some screening of the Scheme from cultural heritage assets.

Residual Effects

4.2.10 Residual effects on archaeological remains, historic buildings and historic landscapes during construction and operation were assessed in **Chapter 6 (Cultural Heritage)** of the **Environmental Statement (Document Reference 6.1)**.

4.2.11 Construction of the Scheme will not directly affect any designated heritage asset as all of those identified within the 1km study area are located outside the works area.

4.2.12 A number of designated heritage assets were identified as having potential impacts to their setting during construction of the Scheme. In addition, a number of non-designated heritage assets were also considered to have potential to experience effects however, the assessment determined there will be no or limited temporary impacts upon these assets during the construction of the Scheme. A small section of construction works adjacent to the A33 falls within the Kings Worthy Conservation Area, however, the works would not affect any of its key features.

4.2.13 Operation of the Scheme will not impact upon any buried archaeological remains as this will have been sufficiently investigated (mitigated) during construction. There will not be any significant effects upon the setting of any built heritage assets or Historic Parks and Gardens (HPG) during operation. Any impacts upon historic landscapes will have occurred during construction and therefore no further impacts will occur during operation.

4.2.14 The assessment concluded that following mitigation there will not be any significant residual effects upon the historic environment from the construction or operation of the Scheme.

4.3 Landscape and Visual

Methodology

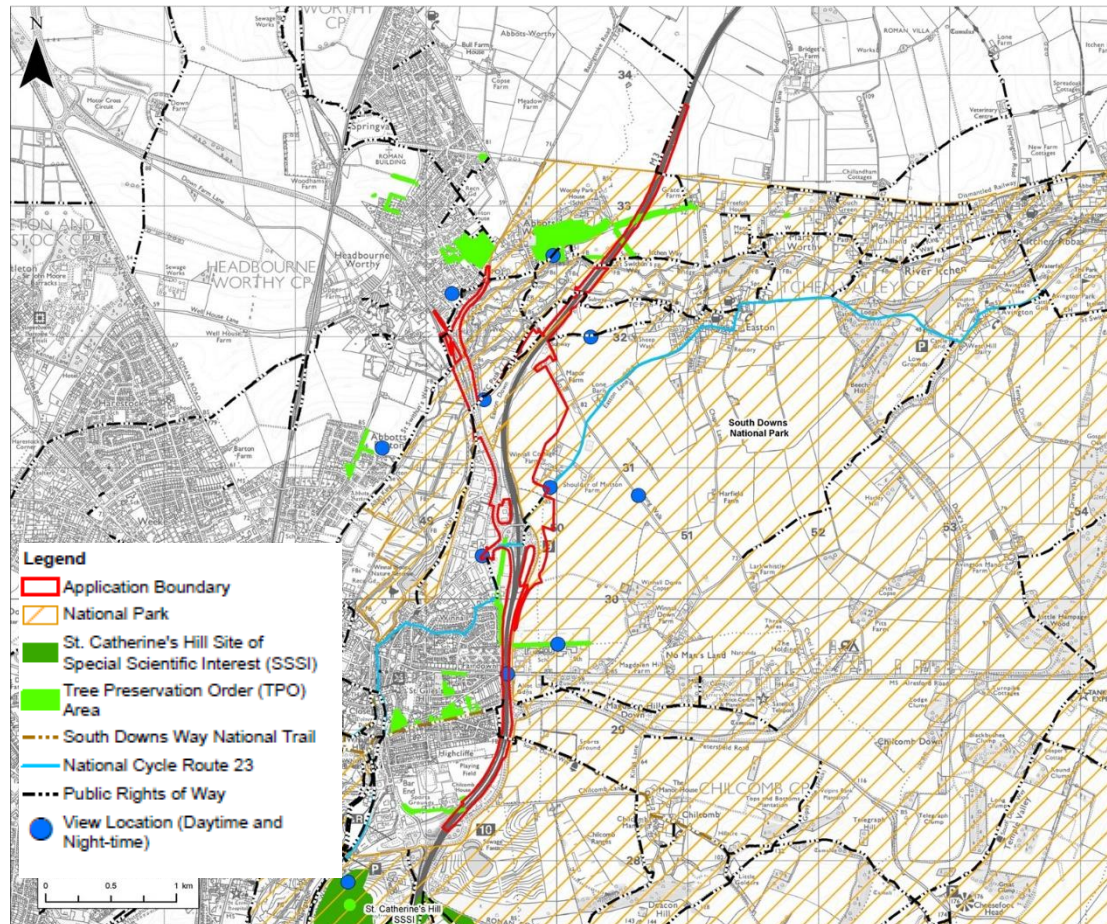
4.3.1 The assessment of effects on landscape character (including features and elements) and views during construction and operation was undertaken in accordance with the DMRB LA 107 Landscape and Visual Effects (National Highways, 2020).

Baseline

4.3.2 Data was gathered through a review of readily available information and a number of site visits undertaken in 2020 and 2021. The land within the Application Boundary partially lies within the South Downs National Park; refer to **Figure 5**. The existing landscape pattern is influenced by the M3 and A34

transport corridors and road features such as bridges, slip roads and signage. There are large areas of trees (some covered by Tree Preservation Orders), shrubs, and established vegetation on embankments planted at the time of construction of these roads.

Figure 5: Landscape and Visual Features / Receptors



4.3.3 The area to the east and south of the M3 is a valued landscape of rolling chalk downland with large agricultural fields interspersed with small woodlands and copses, hedgerow field boundaries and a small number of farm holdings and houses. St Catherine's Hill is a prominent landscape feature to the south of Winchester. There are some important Public Rights of Way used for recreation near the Proposed Scheme including St Swithun's Way, the Itchen Way Long Distance Path, the South Downs Way and National Cycle Network Route 23 which provides a link from Winchester to the South Downs National Park.

4.3.4 Twenty-five representative view locations were selected based on the theoretical visibility of the Scheme (refer to **Figure 5**). These were agreed with Winchester City Council, Hampshire County Council and the South Downs National Park Authority.

Mitigation Measures

4.3.5 The Scheme has incorporated measures into the design including modifications to landform, and re-profiling of existing landform to create sympathetic features, reinforce existing characteristics and aid visual screening, together with improving the network of Public Rights of Ways and new walking, cycling and horse-riding routes (improvements to National Cycle Route 23/Winchester Bridleway 520). These measures are presented in detail in **Figure 2.3 (Environmental Masterplan)** of the **ES (Document Reference 6.2)**.

Residual Effects

- 4.3.6 The landscape and visual assessment considered effects on landscape character, landscape features and effects arising to visual receptors during construction and operation.
- 4.3.7 Construction activities will result in significant effects to both landscape and visual receptors. Within the South Downs National Park construction activities would result in a moderate adverse effect on the special qualities of the South Downs National Park, however there would be no significant effects on Worthy Park or on protected trees and hedgerows.
- 4.3.8 There will be moderate adverse effects on Hampshire County Landscape Character Area (LCA) 3C: Itchen Valley and LCA 8G: East Winchester Open Downs.
- 4.3.9 There will be a large adverse effect on the South Downs National Park Authority's LCA A5: East Winchester Open Down and moderate adverse effects on LCA F5: Itchen Floodplain and LCA G5: Itchen Valley Side.
- 4.3.10 There will be a moderate adverse effect on Winchester City Council's LCA 12C: Easy Winchester Downs.
- 4.3.11 Within the Application Boundary there will be large adverse effects on land beyond the existing highway network and which is also located within the South Downs National Park.
- 4.3.12 There will be moderate effects on all features of the landscape within the Application Boundary. These features are topography, existing trees woodlands and hedgerows, agricultural land, watercourses, and Public Rights of Ways.
- 4.3.13 The Scheme will be visible from several locations where changes to views due to construction activities will result in significant effects. There will be a very large adverse effect at Easton Lane, with large adverse effects experienced at St Swithun's Way in the Itchen Valley, the foot path on the crown of Magdalen Hill Down and Itchen Way close to A33/A34 bridge over the River Itchen. Moderate adverse effects will be experienced at Abbots Barton, Public Open Space at Lea View, the B3404 on the bridge over M3 looking north, from the foot path adjacent to railway near Well House Lane, Easton Lane adjacent to retail/ commercial development on northern edge of Winnall and close to the

existing Junction 9 Roundabout, Long Walk close to western edge of South Downs National Park, St Swithun's School and Winchester Cathedral.

- 4.3.14 No significant adverse effects will be experienced from any other locations.
- 4.3.15 Operation of the Scheme will result in significant effects on the landscape in winter one year after opening. There will be moderate adverse effects on: the special qualities of the South Downs National Park, and on: Hampshire Council LCA 3C: Itchen Valley and LCA 8G: East Winchester Open Downs; on South Downs National Park Authority's LCA A5: East Winchester Open Down and LCA G5: Itchen Valley Side; on Winchester City Council's LCA 12C: Easy Winchester Downs; on land within the Application Boundary beyond the existing highway estate; and on landscape features of existing trees, woodlands and hedgerows.
- 4.3.16 By summer 15 years after opening, there will be no significant residual effects on the South Downs National Park or its special qualities, and on the landscape character or any features of the landscape.
- 4.3.17 Operation of the Scheme will also result in significant visual effects from several view locations. In winter one year after opening, there will be a large adverse effect at Easton Lane, with moderate adverse effects experienced at St Swithun's Way within the Itchen Valley, the foot path on the crown of Magdalen Hill Down, Long Walk close to western edge of South Downs National Park, Itchen Way close to A33/A34 bridge over the River Itchen, St Swithun's School and Winchester Cathedral. By summer 15 years after opening, a moderate adverse significant effect remains at Easton Lane. No further significant visual effects remain as landscape mitigation planting successfully establishes to help with landscape integration and to provide visual screening.

4.4 Biodiversity

Methodology

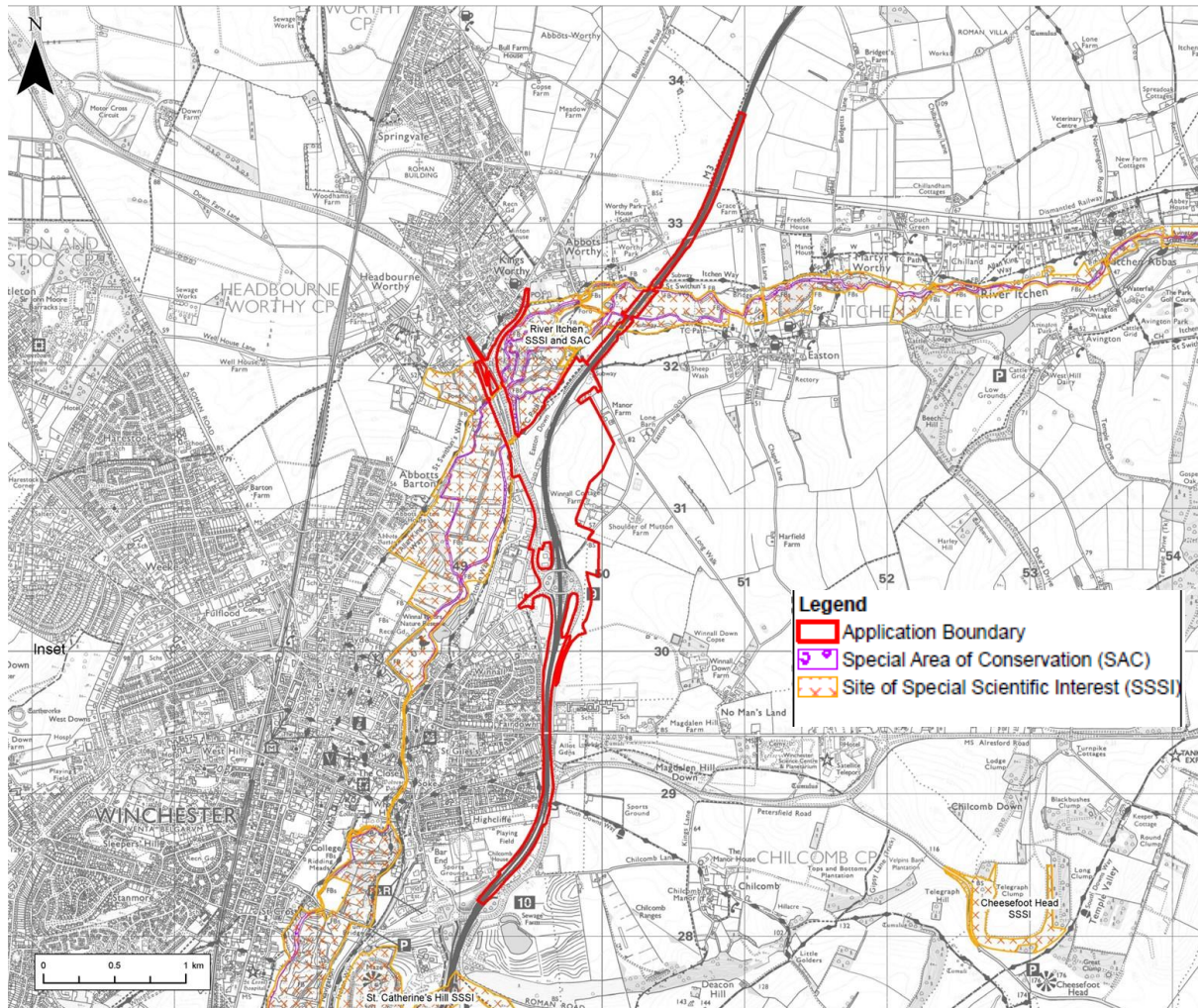
- 4.4.1 The assessment of effects on biodiversity was undertaken using the standard industry approach as set out in the Guidelines for Ecological Impact Assessment in the UK and Ireland (Chartered Institute of Environmental and Ecological Management, 2018) which is endorsed in DMRB LA 108 Biodiversity (National Highways, 2020).

Baseline

- 4.4.2 Part of the European designated River Itchen Special Area of Conservation (SAC; internationally important) and the nationally designated River Itchen Site of Special Scientific Interest (SSSI; nationally important) is located within the Application Boundary, refer to **Figure 6**. There is one other European designated site within a 30km radius of the Application Boundary; the Mottisfont Bats SAC (16km west of the Application Boundary) and one other nationally designated site within a 2km study area of the Application Boundary; St Catherine's Hill SSSI. There are 26 Sites of Importance for Nature Conservation

(SINC) and two Road Verge of Ecological Importance (RVEI), locally important sites, within a 2km radius of the Scheme. Easton Down SINC, as shown on **Figure 6** lies partially within the Application Boundary.

Figure 6: Biodiversity Features / Receptors



4.4.3 A number of ecological surveys have been undertaken and they identified a diverse range of habitats within the Application Boundary including lowland calcareous grassland, rivers, hedgerows and open mosaic habitat on previously developed land. No parcels of ancient woodland, ancient trees or veteran trees have been identified within the Application Boundary.

4.4.4 Species identified within and near the application boundary include bats, badgers, hazel dormice, otter, water vole, hedgehog, brown hare, harvest mouse, polecat, white-clawed crayfish, breeding birds, wintering birds, reptiles, amphibians including great crested newts, freshwater fish, terrestrial invertebrates, aquatic invertebrates and notable plants.

Mitigation Measures

4.4.5 The design has sought to avoid adverse effects in the first instance through an iterative approach e.g. moving the alignment to avoid sensitive receptors where possible. In this way the mitigation hierarchy has been embedded with the design process. Additionally, the proposed new foot / cycle bridge over the River

Itchen SAC / SSSI will be a clear span structure and set back from the riverbank to allow for continued wildlife movement.

- 4.4.6 The design includes habitats of ecological value which are appropriate to the local area, including chalk grassland, species rich grassland and woodland, with the aim of maximising biodiversity outputs from the Scheme. This will include creation of areas of chalk / calcareous grassland, broadleaved and native scrub and species rich grassland which are presented on **Figure 2.3 (Environmental Masterplan)** of the **ES (Document Reference 6.2)**. Where hedgerows cannot be retained, these will be replaced or re-located where possible.
- 4.4.7 Additional mitigation measures include a sensitive lighting design and a drainage design with features including wetlands and swales which will provide semi-natural habitats of value to biodiversity. Other mitigation measures to be implemented during construction and outlined in the **fiEMP (Document Reference 7.3)** include fencing to prevent access to important habitats, timing the construction works to avoid bird breeding and bat roosting periods, obtaining the correct licenses to undertake ecological works and supervision from an ecological specialist whilst construction works are being undertaken.
- 4.4.8 During operation, mitigation will include the management and monitoring of habitat creation and enhancement measures, as detailed in **Appendix 7.6: Outline Landscape and Ecological Management Plan** of the **ES (Document Reference 6.3)**. Monitoring of badger and dormice populations will be undertaken as part of the licensing requirements and will be agreed with Natural England.
- 4.4.9 Enhancement measures include the removal of invasive species in areas of retained woodland and measures to enhance areas of the River Itchen including riparian planting.

Residual Effects

- 4.4.10 The biodiversity assessment considered effects on designated areas, habitats and species during construction and operation of the Scheme.
- 4.4.11 During construction the assessment identified a number of residual adverse and beneficial effects to biodiversity receptors. Effects predicted resulted from habitat loss and gain, fragmentation of populations / habitats, disturbance from light, noise and vibration, habitat degradation, accidental pollution events, provision of measures for the treatment of surface water, and species mortality.
- 4.4.12 During operation the assessment also identified residual adverse and beneficial effects to biodiversity receptors. Effects predicted resulted accidental pollution events, species mortality, operational emissions, and disturbance from lighting and noise.
- 4.4.13 Following the inclusion of mitigation measures, effects to all designated, habitats of importance and protected and notable species identified within the study areas will not be significant.

4.5 Geology and Soils

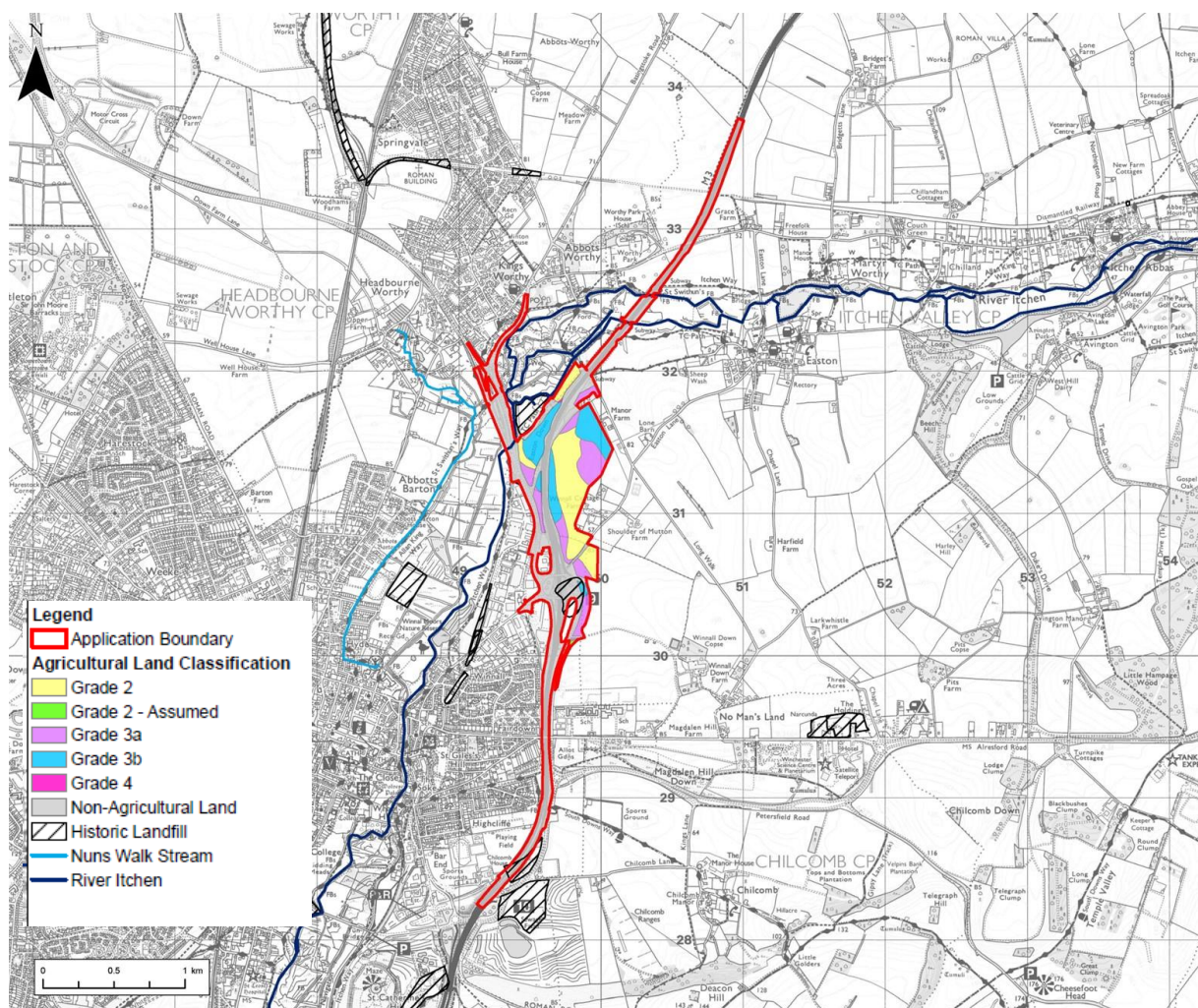
Methodology

4.5.1 The assessment of effects on geology and soils during construction and operation was undertaken in accordance with the DMRB LA 109 Geology and Soils (National Highways, 2019).

Baseline

4.5.2 The land around the Application Boundary is mixed, comprising agricultural land, highway land, undeveloped land, flood plain, residential and mixed-use industrial. Much of the surrounding area was undeveloped until the 1930s when parts of the road network began to be constructed. Industrial uses including gas works and a railway line also existed in the area. There are three historical landfills within the study area (up to 2km). The River Itchen floodplain is within the Application Boundary and Nun's Walk stream flows parallel to the River Itchen – all are shown on **Figure 7**.

Figure 7: Geology and Soils Features / Receptors



- 4.5.3 The majority of the geology in the vicinity comprises chalk from two different chalk formations. Along the route of the River Itchen in the north of the Application Boundary, the chalk is overlain by Alluvium. To the east of the M3 there is an area of Clay with Flints and Head deposits overlying the chalk. There is also made ground from construction of the M3, A34 and A33. A small number of chalk pits and cavities have been identified in the Application Boundary. The chalk within the Application Boundary and the overlying deposits are designated as principal and secondary aquifers which are important drinking water resources.
- 4.5.4 The Application Boundary is located predominantly on a mix of grade 2, 3a and 3b agricultural land, with 0.1ha classified as Grade 4. Grade 2 and 3a is classed as Best and Most Versatile agricultural land (refer to **Figure 7**).

Mitigation Measures

- 4.5.5 Mitigation measures identified to minimise adverse effects of the Scheme include construction best practice and minimising land take. In addition, mitigation measures outlined in the **fiEMP (Document Reference 7.3)** include limiting the potential for accidental releases of potential contaminants and uncontrolled surface water run-off during construction, and committing to preparing a Soil Management Plan and Soil Resource Plan. As part of these plans, health and safety procedures would be established for dealing with unexpected soil or groundwater contamination that may be encountered during construction. The **Temporary Construction Drainage Strategy (Appendix J)** of the **fiEMP (Document Reference 7.3)** provides details of surface water and groundwater monitoring that will also be undertaken.
- 4.5.6 Potential effects to ground instability will be mitigated through appropriate ground investigation and geotechnical design being undertaken so that any slopes, structures and remedial works will be safe and stable.
- 4.5.7 Following the completion of construction works, agricultural land taken on a temporary basis will be restored and returned to its existing condition.
- 4.5.8 During operation potential risks posed to maintenance workers will be mitigated through adherence to appropriate health and safety documentation and good practice measures.

Residual Effects

- 4.5.9 The geology and soils assessment considered effects on human health (construction workers and neighbours), controlled waters (ground water and surface water), environmentally sensitive sites, the built environment and soil resources during the construction and operation of the Scheme.
- 4.5.10 The assessment identified that controlled waters and environmentally sensitive sites have a very high sensitivity to change, while the built environment and human health receptors have a high sensitivity. The potential for significant contamination to be present within the Application Boundary is assessed to be

low, therefore while there are very high and high sensitivity receptors within the study area, the assessment concluded no significant residual effects on these receptors as a result of the construction and operation of the Scheme.

4.5.11 There will, however, be a temporary and permanent loss of Best and Most Versatile agricultural land which was assessed as a significant effect.

4.6 Material Assets and Waste

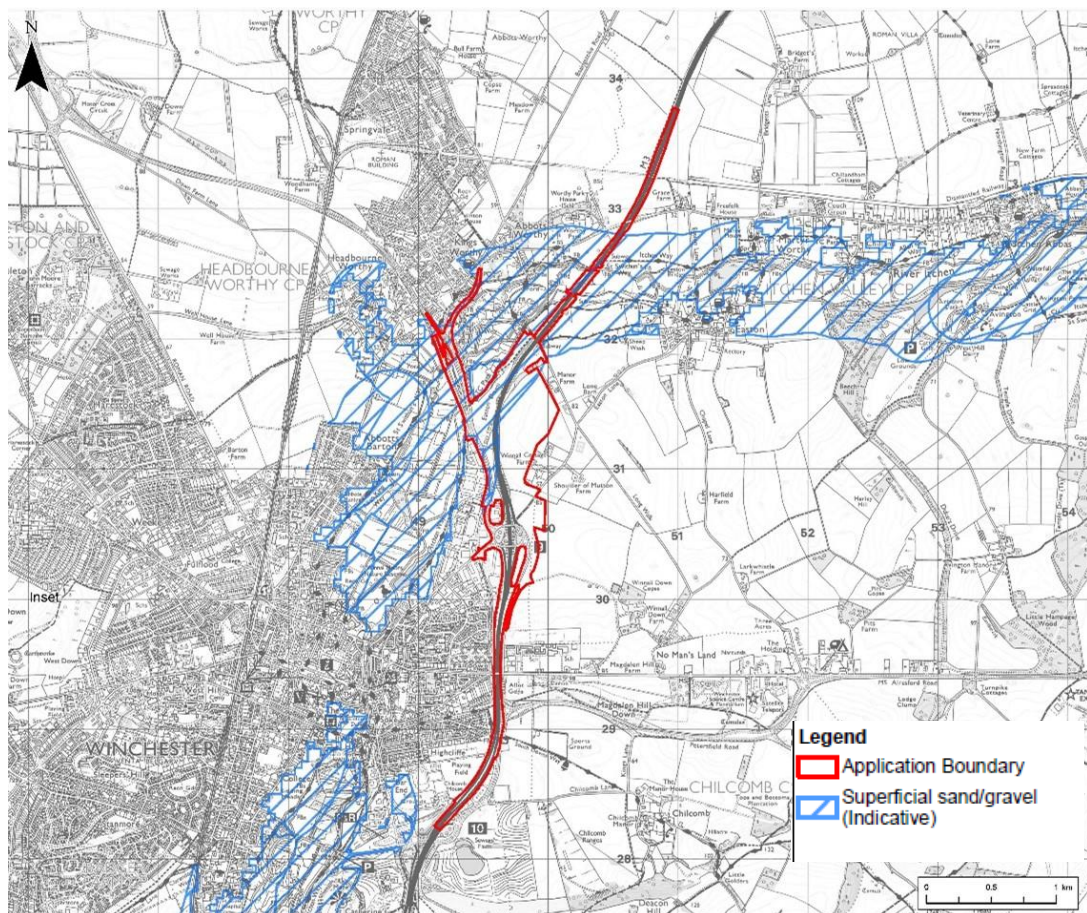
Methodology

4.6.1 The assessment was undertaken in accordance with DMRB LA 110 Material Assets and Waste (National Highways, 2019).

Baseline

4.6.2 The Scheme is located partially within a Mineral Safeguarding Area, safeguarded for the deposit of superficial sand/gravel, this is shown on **Figure 8**.

Figure 8: Material Assets and Waste Features / Receptors



- 4.6.3 There is an increasing shortage of landfill capacity in England, and the total and non-inert landfill capacity in the south of England is likely to become an increasingly sensitive receptor over time. However, there is a very high (92%) recovery rate for non-hazardous construction and demolition waste within the UK.

Mitigation Measures

- 4.6.4 The Scheme has been designed to ensure the cut / fill balance is optimised so that quantities of excavated material leaving the site and imported fill materials are minimised. Much of the excess material generated by the Scheme will be utilised in proposed landscape bunding (false cuttings / mounds).
- 4.6.5 A Site Waste Management Plan will be prepared prior to construction which will include steps to be taken to manage and dispose of the varied waste that is anticipated to occur during the construction phase.
- 4.6.6 A Materials Management Plan will also be developed to ensure that any adverse effects associated with material assets are responsibly managed. This will include measures that promote the re-use and recycling of materials where possible, using locally sourced materials and suppliers where practical and limiting the likelihood of waste. As part of this plan, the Principal Contractor has committed to achieve a 95% recovery / recycling rate by weight for all non-hazardous construction waste generated by the Scheme.
- 4.6.7 Both these plans are secured by the **fiEMP (Document Reference 7.3)**.

Residual Effects

- 4.6.8 The material assets and waste assessment considered effects on material recovery, the use of re-cycled material, Mineral Safeguarded Areas and waste generation during the construction of the Scheme. Operational effects were not considered within the assessment as agreed with the Planning Inspectorate in the Scoping Opinion which can be found in **Appendix E.1 of the Consultation Report (Document Reference 5.1)**.
- 4.6.9 The assessment concluded that, following the implementation of the mitigation measures, there will be no significant effects on material assets and waste, largely owing to the cut and fill being balanced as much as possible during construction.

4.7 Noise and Vibration

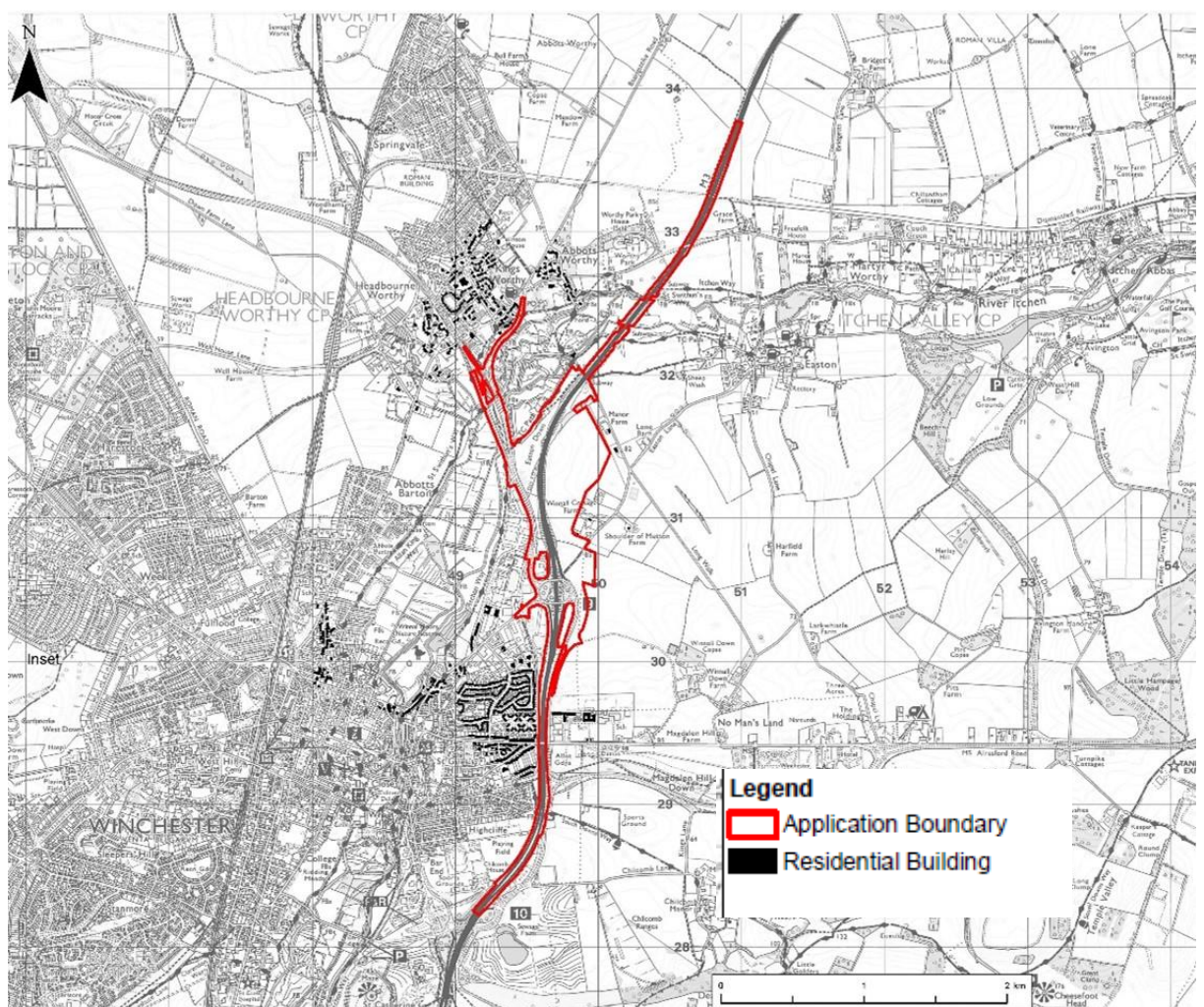
Methodology

- 4.7.1 The assessment of noise and vibration was undertaken in accordance with the requirements of DMRB LA 111 Noise and Vibration (National Highways, 2020).

Baseline

- 4.7.2 Noise surveys were undertaken to measure baseline noise at a number of locations near the Scheme in 2019 and 2021. These surveys determined that the predominant noise source in the area comes from road traffic using the M3, A34 and A33. Other sources of noise come from commercial areas, aircraft and the local Winchester to Basingstoke train line.
- 4.7.3 There are a number of sensitive receptors, predominantly residential dwellings within the study areas (refer to **Figure 9**).

Figure 9: Noise and Vibration Features / Receptors



Mitigation Measures

- 4.7.4 Construction mitigation includes adopting best practical means (BPM) on site. BPM includes measures such as ensuring machinery is switched off when not in use, not permitting radios on site and no idling of machinery. More detailed environmental mitigation is set out within the **fiEMP (Document Reference 7.3)**.

4.7.5 Operational mitigation to reduce the effects of noise includes the provision of low noise road surfacing where new road is being constructed.

Residual Effects

4.7.6 The noise and vibration assessment considered noise effects during both the construction and operation of the Scheme and vibration effects during construction.

4.7.7 Construction noise and vibration from the Scheme is anticipated to have a small to neutral effect at some existing receptors (e.g. residential properties and commercial buildings). With the inclusion of mitigation outlined in the **fiEMP (Document Reference 7.3)**, some residential areas located close to the Scheme will experience short-term significant and non-significant adverse effects, from demolition and construction noise and vibration. In the long-term, these effects are not significant.

4.7.8 Only commercial properties have been identified to be within proximity to piling and road surfacing works, which may give rise to vibration, however the assessment undertaken in **Chapter 11 (Noise and Vibration)** of the **ES (Document Reference 6.1)** concludes that the risk of building damage due to vibration is very low.

4.7.9 Significant effects as a result of construction traffic are not anticipated and based on anticipated schedules, noise arising from night-time diversions are also not anticipated to be significant.

4.7.10 During operation, short-term (the year the new junction opens) modelling shows that significant beneficial effects are anticipated at two residential dwellings based on the magnitude of impact (i.e. moderate beneficial) and sensitivity of dwellings (i.e. high). These indirect effects are due to reduced traffic flows along the B3047. In the long-term (fifteen years after opening), modelling shows that effects are not considered significant, as the magnitude of impact in the long-term is negligible.

4.7.11 Significant beneficial effects are also anticipated at 44 other properties during the daytime based on the magnitude of impact in the short-term (i.e. moderate or major beneficial) and sensitivity of commercial receptors (i.e. medium). These direct effects are due to the conversion of the slip road from the A34 to the A33 into a public footpath. In the long-term (15 years after opening), the modelling shows the effects are not significant, as the magnitude of impact is negligible.

4.7.12 During operation, short-term modelling shows that significant adverse effects are anticipated at 20 residential properties during the daytime based on the magnitude of impact in the short-term (i.e. minor adverse) and sensitivity of dwellings (i.e. high). These residential properties are anticipated to experience an increase in traffic flows on the surrounding road network, as a result of the Scheme. The long-term modelling shows the magnitude of impact is negligible, resulting in effects that are not significant.

4.7.13 Long-term significant adverse effects are not anticipated at any dwellings. Eight commercial properties will experience a significant long-term reduction in noise, due to the re-routing of traffic along the A34, which with the Scheme, would be moved towards the east.

4.8 Population and Human Health

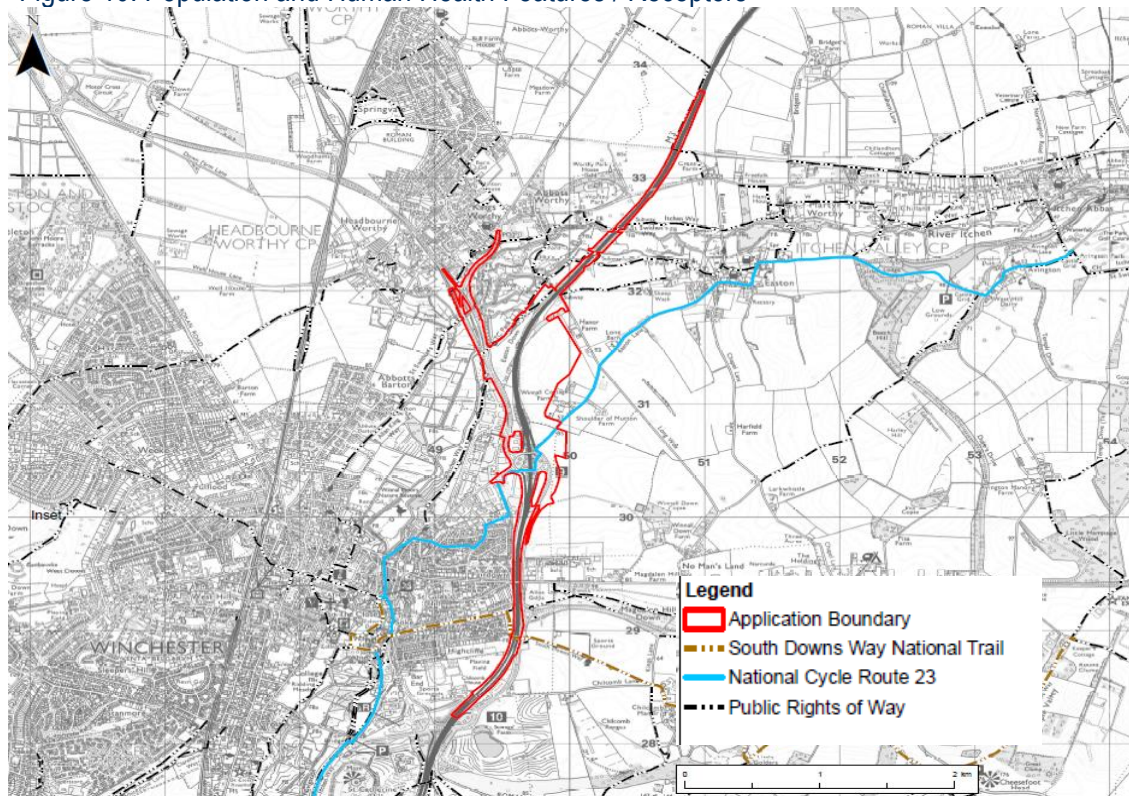
Methodology

4.8.1 The assessment of population and human health was undertaken in accordance with the requirements of DMRB LA 112 Population and Human Health (National Highways, 2020).

Baseline

- 4.8.2 A desk study was undertaken using readily available sources between 2019 and 2021. A number of receptors were identified within the defined study area including private property and housing, community land and assets, development land and businesses, agricultural land holdings, and walking, cycling, and horse-riding routes.
- 4.8.3 A number of settlements are either within or adjacent to the Scheme, including Winchester City Centre, suburbs of Winchester and surrounding villages including Headbourne Worthy and Kings Worthy. Winchester is a historic city centre with a hospital, education facilities, a retail area, employment areas and tourist attractions. Winnall Industrial Estate, Valley Business Park and the Wykeham Trade Park lie immediately west of the Application Boundary.
- 4.8.4 A network of public rights of way surrounds the Scheme. The South Downs Way National Trail crosses the M3 using an overbridge south of Junction 9. The National Cycle Network Route 23 that links Reading to Southampton also crosses the M3. Public Rights of Way and the National Cycle Route 23 are shown on **Figure 10**.

Figure 10: Population and Human Health Features / Receptors



- 4.8.5 Winchester has a lower proportion of people aged 25-44 than the England and South East region average, and the average life expectancy at birth for both men and women is generally higher than the national average.
- 4.8.6 Health baseline information gathered for the assessment identified that the populations within and around the Application Boundary perform similar or better than the national average in terms of living with a long-term illness or disability, childhood obesity, emergency hospital admissions for heart disease, heart attack, stroke, Chronic Obstructive Pulmonary Disease, incidence of all cancers and deaths from respiratory diseases. The area performs overall significantly better than the national average with regards to income deprivation, child poverty and older people in deprivation.
- 4.8.7 The economic activity rate and employment rate in Winchester are higher than regional and national averages and residents of Winchester are relatively highly skilled with 48.7% of the working age population holding a degree-level qualification or equivalent. Data shows that Winchester generally performs better than the national average in regard to deprivation.

Mitigation Measures

- 4.8.8 The Scheme has been designed such that there will be no requirement to demolish any residential properties, commercial buildings or community assets.

Additionally, optioneering exercises undertaken for the Scheme have considered impacts on open land to reduce land take where possible.

- 4.8.9 The Scheme has incorporated measures into the design including improvements to the National Cycle Network Route 23, provision of a new bridleway between Easton Lane and Long Walk, provision of a new walking and cycling route between Kings Worthy and Winnall and sufficient width and head room in the subways on Junction 9 to accommodate horses as well as cyclists and walkers.
- 4.8.10 Effects on walking, cycling, and horse-riding receptors will be mitigated through the management and diversion of Public Rights of Ways.
- 4.8.11 Human health mitigation is outlined within other assessments such as the control of dust within the air quality chapter (**Chapter 5 of the ES (Document Reference 6.1)**), guarding construction workers from contamination within the geology and soils (**Chapter 9 of the ES (Document Reference 6.1)**), and the road drainage and the water environment chapter (**Chapter 13 of the ES (Document Reference 6.1)**). Details of these mitigation measures can be found in the **fiEMP (Document Reference 7.3)**.
- 4.8.12 During operation there will be improvements to National Cycle Network Route 23, Winchester Bridleway 502 and Winchester Bridleway 520.

Residual Effects

- 4.8.13 The population and human health assessment considers effects on private property and housing, agricultural land holdings, community land and assets, development land and businesses, public access / walkers, cyclists and horse riders and health and amenity during construction and operation.
- 4.8.14 During construction, significant adverse effects were identified on the Winnall Industrial Estate including CEMEX, Keir Highways and Tesco Extra as there would be changes to journey times and accessibility. Where permanent land take is required, there will be an impact to farm operations. It is therefore anticipated that two agricultural land holdings, Itchen Down Farm and Winnall Down Farm would have large areas of land permanently impacted by the Scheme resulting in a significant adverse effect. Significant adverse effects were also identified for walkers, cyclists and horse riders owing to the temporary diversions needed during construction. Due to realignment works, two routes would be lost, although new routes along the proposed realignment would be provided once the Scheme is operational.
- 4.8.15 During operation, a significant beneficial effect for walkers, cyclists and horse riders is predicted owing to the improvements to National Cycle Network Route 23, the Winchester Bridleway 520 and the Winchester Bridleway 502. Significant beneficial effects were also noted for the Winnall Industrial Estate including CEMEX as the journey times will be shorter for those accessing the site via the M3 Junction 9.

4.8.16 Slight beneficial effects were identified for all other development land and business receptors including Keir Highways and Tesco Extra, due to changes to accessibility and a reduction in journey times.

4.9 Road Drainage and the Water Environment

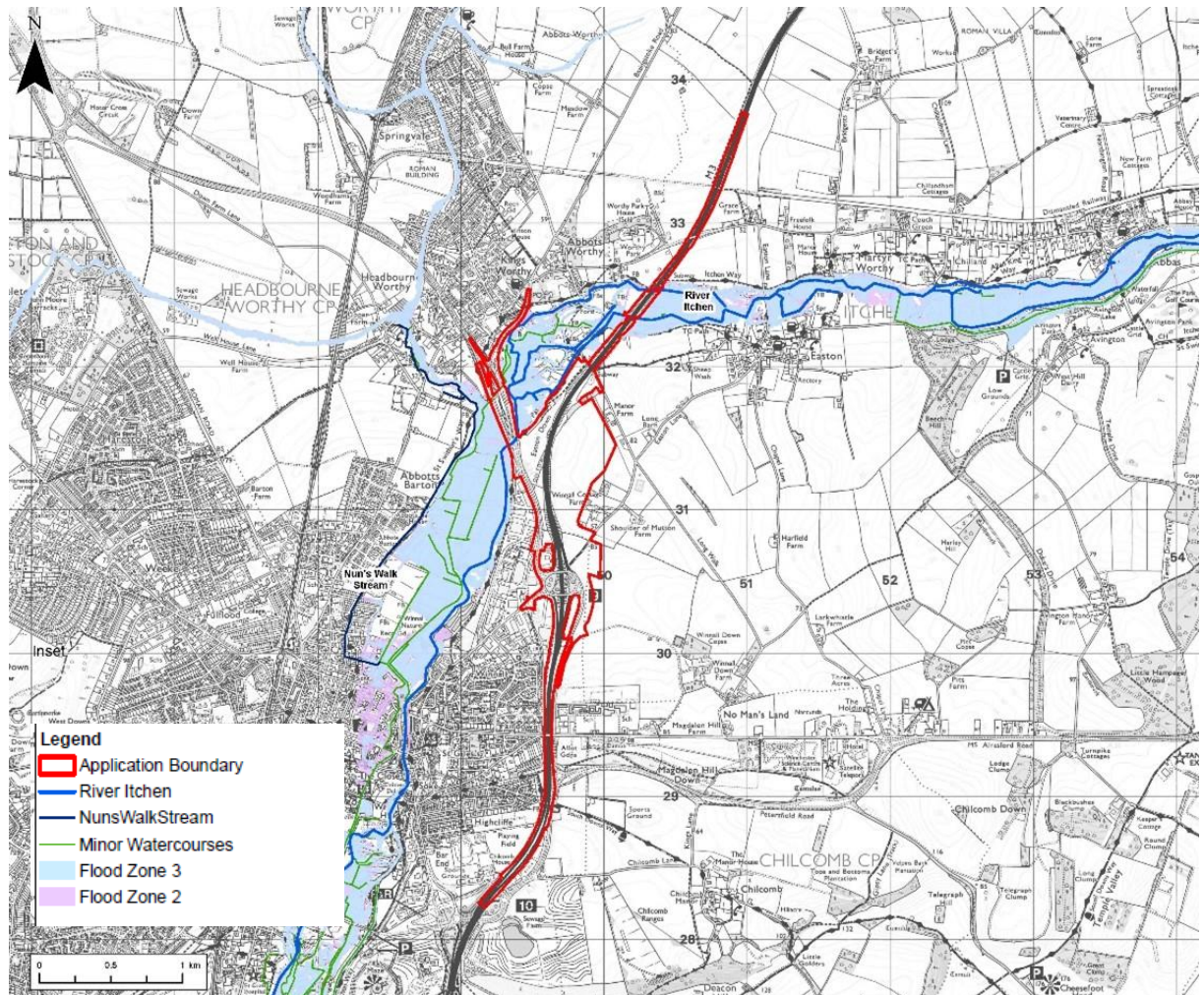
Methodology

4.9.1 The assessment of road drainage and the water environment was undertaken in accordance with the requirements of DMRB LA 113 Road Drainage and the Water Environment (National Highways, 2020).

Baseline

4.9.2 The Scheme crosses the River Itchen at three locations along the A34, A33 and the M3. The Scheme also crosses one of the River Itchen's tributaries (see **Figure 11**), the Nun's Walk Stream, which is crossed by the A34. There are also a number of ditches, ponds, wetlands and watercourses within the study area (1km). The River Itchen is designated as a Special Area of Conservation and a Site of Special Scientific Interest. It also flows through the South Downs National Park and into the Southampton and Solent Water Special Protection Area (SPA). Both the River Itchen and Nun's Walk Stream are classified as having an overall 'Moderate' status as part of the Water Framework Directive (WFD).

Figure 11: Road Drainage and the Water Environment Features / Receptors



4.9.3 The Application Boundary mostly falls within Flood Zone 1 which has a low risk of flooding. The northern and western part of the Application Boundary falls within Flood Zone 2 and 3 which has a medium and high risk of flooding, respectively.

4.9.4 There are existing drainage features within the Application Boundary that pose a risk of pollution or flooding. The general geology of the area is chalk which provides a high level of water storage, with some alluvium.

4.9.5 A programme of monitoring was undertaken to understand water changes and quality.

Mitigation Measures

4.9.6 A range of measures have been incorporated into the design of the Scheme to avoid and reduce effects on surface water and groundwater bodies. These include installation of systems to trap silty and polluted water, preparation of incident response plans in case of any accidental spillages and locating

construction compounds outside areas at risk of flooding where possible. These measures are detailed further in the **fiEMP (Document Reference 7.3)**.

- 4.9.7 During operation, a drainage strategy which includes Sustainable Drainage Systems will be implemented. The outline drainage strategy can be found at **Appendix 13.1 (Drainage Strategy Report)** of the **ES (Document Reference 6.3)**.

Residual Effects

- 4.9.8 The road drainage and water environment assessment considered the effects on quality and quantity of surface and groundwaters, geomorphology and flood risk (including the consideration of Water Framework Directive) during construction and operational road drainage, and accidental spillages.
- 4.9.9 Impacts from construction and operation of the Scheme that affect important water environment receptors include the loss of floodplain storage, mobilisation of contaminants, pollution incidents and changes to surface and groundwater quality and flows.
- 4.9.10 With the implementation of mitigation, the assessment identified slight adverse effects on surface and groundwater quality and flows, and on flood risk during construction, that are not significant. During operation, the assessment identified slight adverse and neutral effects on surface and groundwater quality and flows, and slight adverse effects on flood risk that are not significant.
- 4.9.11 Overall, there are no significant effects on road drainage and the water environment from implementation of the Scheme.

4.10 Climate

Methodology

- 4.10.1 The assessment of climate was undertaken in accordance with the requirements of DMRB LA 114 Climate (National Highways, 2021).

Baseline

Effects of the scheme on climate (Greenhouse gas assessment)

- 4.10.2 From a national perspective, in 2019, UK net greenhouse gas emissions were estimated to be 454,800,000 tonnes carbon dioxide equivalents (tCO₂e), a decrease of 2.9% compared to 2018 (Ricardo Energy & Environment for DBEIS, 2021a). The Climate Change Act (CCA) legally binds the UK to reduce its GHG emissions through carbon budgets.
- 4.10.3 The transport sector is the largest emitting sector in the UK, representing 24% of the net UK greenhouse gas emissions. Transport was the greatest source of greenhouse gas emissions in Winchester City Council (58% of emissions) and south east England (46% of emissions) in 2021.

Vulnerability of the scheme to climate change

- 4.10.4 Historic UK climate data shows that a gradual warming has occurred between 1961 and 2018. There has been an increase in average rainfall, with wetter winters and an increase in severe autumn and winter wind-storms.
- 4.10.5 In terms of temperature, the Met Office issued an amber warning for high temperatures in July and August 2022 for Winchester and most of the UK, with local temperatures reaching up to 35°C. Hampshire reported their driest July in 2022 since 1836 (Met Office, 2022) and experienced a drought in 2004-2006.
- 4.10.6 The Scheme location adjacent to Winchester, lies partially within Flood Zone 3 which is associated with the River Itchen and its tributaries, as well as areas of Flood Zone 2 and 1. It is anticipated that climate change would cause these flood zone extents to increase in the future.

Mitigation Measures

Effects of the scheme on climate (greenhouse gas assessment)

- 4.10.7 A number of measures have been incorporated in the Scheme to reduce effects including designing the highways structures to meet British and UK standards (and allowing for climate change), designing an appropriate drainage design and developing an appropriate **Environmental Masterplan (Figure 2.3 of the ES (Document Reference 6.2))**.
- 4.10.8 Standard control measures are also outlined within the **fiEMP (Document Reference 7.3)** which would seek to minimise emissions during construction. The fiEMP includes a draft Soil Management Plan which aims to ensure that material excavated during construction is to be processed for use in the works where possible to reduce the amount of material disposed of. A draft Site Waste Management Plan is also appended to the fiEMP. This aims to ensure that waste produced during the construction phase is dealt with appropriately, minimising the greenhouse gas emissions associated with waste management.
- 4.10.9 Selecting appropriate materials can also help to reduce the need for maintenance and replacement and greenhouse gases associated with this. Weathering steel is proposed for the gyratory bridges which eliminates the need for a paint system and associated maintenance.
- 4.10.10 The Scheme seeks to facilitate and encourage active travel and sustainable forms of transport (to help reduce individual car journeys over short distances) through the provision of high-quality accessible pedestrian and cyclist routes.
- 4.10.11 The proposals show retention of existing vegetation where possible and a range of enhancement planting is proposed; refer to **Figure 2.3 (Environmental Masterplan)** of the **ES (Document Reference 6.2)**, maximising the carbon sequestration benefits of landscape features.

Vulnerability of the scheme to climate change

- 4.10.12 A number of measures have been incorporated in the Scheme to reduce effects including designing the highways structures to meet British and UK standards (and allowing for climate change), designing an appropriate drainage design and developing an appropriate **Environmental Masterplan (Figure 2.3 of the ES (Document Reference 6.2))**.
- 4.10.13 To build in climate change resilience, the components of the Scheme have been designed to address the potential for increased rainfall and more extreme rainfall events such as the inclusion of modern drainage systems with flood storage to accommodate a one in 100 year flood event, and raised bridge decks.
- 4.10.14 Landscape design and planting would create multi-functional habitat corridors across the Scheme linking to the wider landscape. The design includes areas of new ecologically valuable habitat, with a diverse species mix incorporating a selection of low maintenance habitats. Species with enhanced attributes to drought tolerance and waterlogging would be considered and incorporated where practicable to increase resilience to climate change.

Residual Effects

- 4.10.15 The climate assessment included an assessment of the effect the Scheme would have on climate change (from greenhouse gas emissions or 'carbon') and the vulnerability of the Scheme to climate change.

Effects of the scheme on climate (greenhouse gas assessment)

- 4.10.16 During construction, the main source of greenhouse gas emissions (approximately 70%) is anticipated to be associated with construction materials and embodied carbon. 20% of emissions are as a result of plant equipment used on land within the Application Boundary, through combustion of fuel, and around 2% are from the use of portacabins and construction site welfare facilities which require electricity. Land use is estimated to comprise approximately 5% of construction emissions. Further emissions are from the transportation of materials and staff to and from the areas of work within the Application Boundary, as well as the disposal of waste.
- 4.10.17 During operation, the main source of greenhouse gas emissions is from 'end-users' i.e. traffic. Greenhouse gases emitted from subway lighting, CCTV, variable message signage and maintenance would contribute a relatively small amount to the overall operational carbon emissions.
- 4.10.18 The Scheme is expected to contribute between approximately 0.002% and 0.001% of the UK carbon budgets over the next fifteen years. This is considered a small increase in the magnitude of emissions from the Scheme, and it is unlikely that this Scheme, would materially affect the UK's ability to meet its carbon budgets. The Scheme is not anticipated to give rise to a significant effect on climate.

Vulnerability of the scheme to Climate

4.10.19 The Scheme has been designed to withstand future events such as an increase in precipitation and flooding as a result of climate change. The drainage design has been designed to allow for future climate change events and structural design has been designed in accordance with several UK and British Standards (BS), and in accordance with National Highways Specification for Highway Works (SHW) (National Highways, 2021).

4.10.20 Effects from climate could include heat stress on structures leading to increased maintenance, increased risk of wildfires, increased risk of defects in the road surface, increased risk of flooding, increased risk of closing structures to high sided vehicles due to high winds.

4.10.21 With mitigation in place, the effect of climate on the Scheme is not considered to be significant.

4.11 Cumulative Effects

4.11.1 The cumulative effects assessment was undertaken in accordance with DMRB LA 104 Environmental Assessment and Monitoring and the Planning Inspectorates Advice Note 17 'Cumulative Effects Assessment' (2019).

4.11.2 Cumulative effects are the result of multiple actions on environmental receptors or resources. There are principally two types of cumulative effect:

- Combined Effects – The combined action of a number of different environmental topic specific effects upon a single resource / receptor
- Cumulative Effects – The combined action of a number of different projects, in combination with the project being assessed, on a single resource / receptor

4.11.3 The combined effects assessment determined that five receptors would experience multiple effects from different environmental topics as a result of the Scheme and are listed below:

- River Itchen
- Agricultural land
- Public Right of Way (PRoW) Network
- Worthy Park Historic Park and Gardens (HPG)
- Habitats
- South Downs National Park
- Residential dwellings / residents

- 4.11.4 The assessment of combined effects on residential dwellings / residents identified a temporary significant effect at White Hill Cottage on Easton Lane. This is due to the combination of visual, noise and land take effects from construction, at that location. The significant effect is temporary in nature, being experienced during the construction period..
- 4.11.5 The cumulative effects assessment considered the effects of the Scheme in conjunction with 19 other developments.
- 4.11.6 While it is noted in **Chapter 15: Cumulative Effects** of the **ES (Document Reference 6.1)** that there is potential for cumulative effects on human health during construction with regards to air quality and noise from two 'other developments', the other developments (ID 72 and ID 79), along with the Scheme, would be subject to compliance with local and national policy. Under these policies, they will need to demonstrate minimal impact to air quality and noise levels and it is assumed that best practice measures would be implemented, which would reduce and mitigate the potential for impacts. As a result, no cumulative effects are anticipated on human health during construction.
- 4.11.7 Both developments ID 72 and ID 79 are anticipated to increase traffic on the local network during construction and therefore have minor impacts on journey time reliability which is not significant. During operation the minor impact on journey time would still be experienced, but is not significant.
- 4.11.8 Where combined effects were identified but did not result in a greater significance of effect than the individual topic assessment, or where cumulative effects were identified that were minor or below, they are not deemed to be significant and therefore no additional mitigation or monitoring is required.
- 4.11.9 Although the assessment for combined effects on residential dwellings / residents is considered to be significant, it is not anticipated to result in a greater significance of effect than individual topic assessments and therefore, the mitigation and monitoring identified in the individual topic assessments and set out within the **first iteration Environmental Management Plan (fiEMP) (Document Reference 7.3)** is considered appropriate.
- 4.11.10 As a result of the assessment for combined effects, further mitigation specifies that engagement must be undertaken with the occupant/owner of White Hill Cottage to ensure they are provided with contact details for a site representative, are kept up to date on the construction works programme and the relevant mitigation being implemented.
- 4.11.11 As the assessment of cumulative effects did not identify any significant effects, no further mitigation or monitoring than that identified in the **fiEMP (Document Reference 7.3)** is required.

5 COMMENTING ON THE APPLICATION

5.1 Further Details

- 5.1.1 Following acceptance of the application by the Planning Inspectorate, consultees and the local community will be able to review the documents and provide representations.
- 5.1.2 Copies will be available directly from National Highways. Paper copies will be made available at a reasonable cost to cover printing and postage.
- 5.1.3 Electronic copies of the ES and hard copies of this NTS will be made available on request for free. An electronic copy will also be available on the Planning Inspectorate's website.
- 5.1.4 Further details about making a representation and how to get involved in the planning process are provided in the Planning Inspectorate's Advice Note 8: Overview of the nationally significant infrastructure planning process for members of the public and others.