

A47 Wansford to Sutton Dualling

Scheme Number: TR010039

Volume 7 **7.4 Scheme Design Report**

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7.4 Scheme Design Report

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EXECUTIVE SUMMARY

This Scheme Design Report has been prepared for the A47 Wansford to Sutton Scheme, hereafter referred to as 'the Scheme'.

The A47 Wansford to Sutton dualling scheme is approximately 2.6 kilometres in length and is located within the boundaries of Peterborough City Council (a unitary authority) and partially in the county of Cambridgeshire, between the A1 / A47 junction and the A47 Nene Way Roundabout in Sutton, west of Peterborough.

The existing A47 single-carriageway is to be upgraded to dual-carriageway standard (D2AP). It will be constructed to the north of the existing A47 alignment until it ties into the existing dual carriageway to the east of the existing Nene Way Roundabout.

The design has been developed to meet the Scheme objectives and to take account of Highways England's design principles, the outcomes of consultation and stakeholder engagement, and the environmental, geographical and social constraints in the area in which the Scheme is located.

The preferred option for the route of the new dual carriageway was announced in the Preferred Route Announcement in August 2017, following a non-statutory public consultation where feedback was gathered on three alternative route options. At that stage, the preferred option was to construct a dual carriageway partially to the north and also to the south of the existing alignment. Following subsequent feedback on the section which passes to the south of the existing A47, the route was revised to pass to the north of the existing A47. This feedback centred around proximity to the River Nene, effects on woodland, comparative quality of land, access concerns to the A47 from Wansford and Sutton and congestion at Nene Way roundabout. The design of the Scheme, including the local road connections and ancillaries, was progressed in line with national highway standards including the Design Manual for Roads and Bridges, the Manual of Contract Documents for Highway Works and the Traffic Signs Manual.

The construction strategy for the Scheme has been planned to minimise disruption to road users, neighbouring landowners and the general public during construction whilst providing a safe, efficient and environmentally sound working environment.

1 Introduction

1.1 Purpose of this document

1.1.1 This Scheme Design Report has been prepared for the A47 Wansford to Sutton Scheme, hereafter referred to as 'the Scheme'.

1.1.2 The aim of this report is to summarise the development of the Scheme design and to demonstrate that the principles of good design have been given due regard during the design development.

1.2 A47 projects description

1.2.1 The Scheme is one of six projects to improve journeys on the 115-mile section of the A47 between Peterborough and Great Yarmouth. Together, the proposals will relieve congestion and improve the reliability of journey times for drivers.

1.2.2 The proposals include converting almost eight miles of single carriageway to dual carriageway and making improvements to junctions across the route. The six projects are:

- A47 Wansford to Sutton dualling
- A47 Guyhirn junction improvement
- A47 North Tuddenham to Easton dualling
- A47 Blofield to North Burlingham dualling
- A47/A11 Thickthorn junction improvement
- A47 Great Yarmouth junction improvements

1.2.3 The locations of the six projects are shown in Figure 1-1.



Figure 1-1: A47 projects location plan¹

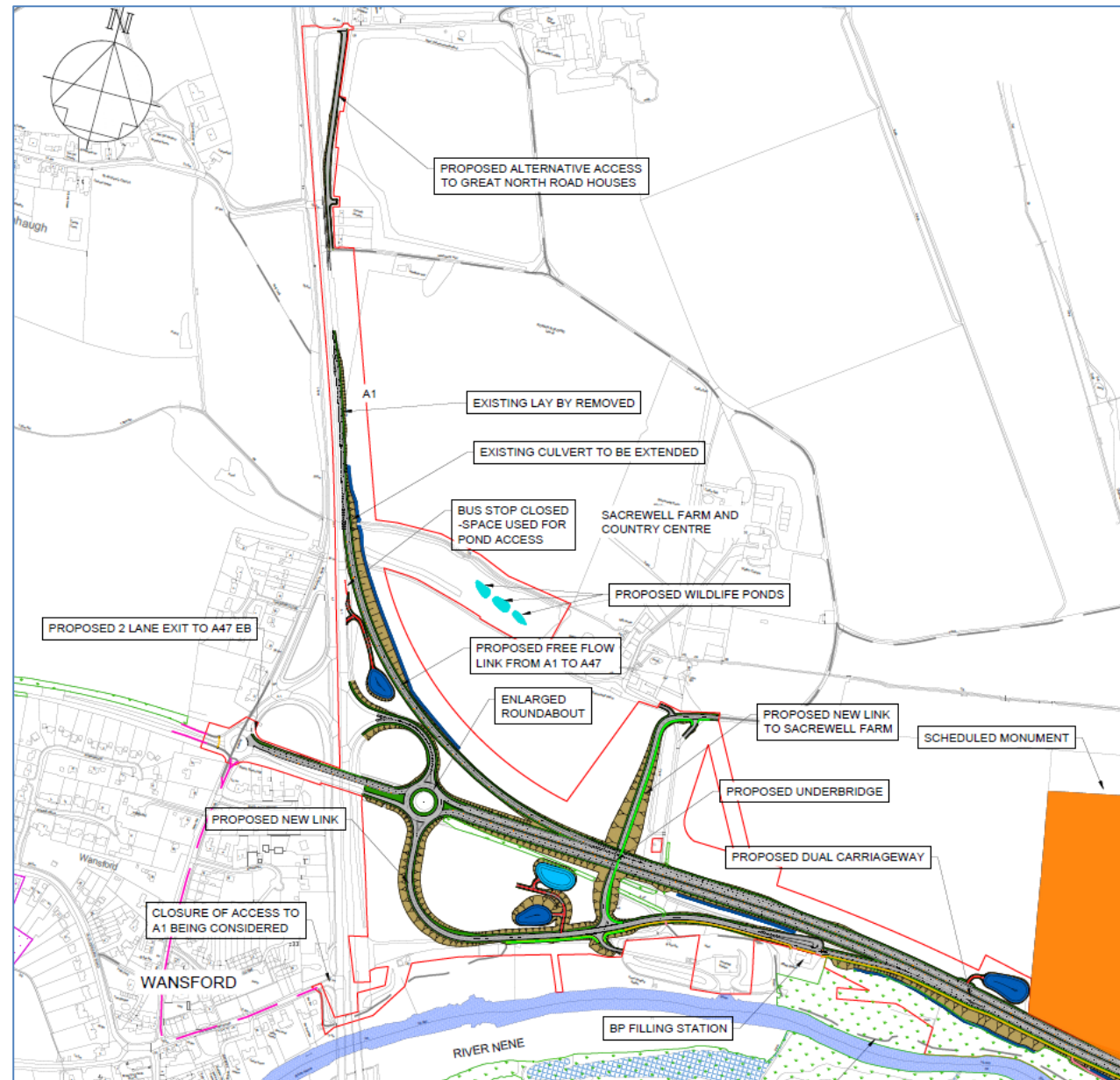
¹ Source: AECOM & Amey. This Map is based upon Ordnance Survey material with the permission of Ordnance Survey on behalf of the Controller of Her Majesty's Stationery Office © Crown copyright. Unauthorised reproduction infringes Crown copyright and may lead to prosecution or civil proceedings. Highways England 100030649 2016.

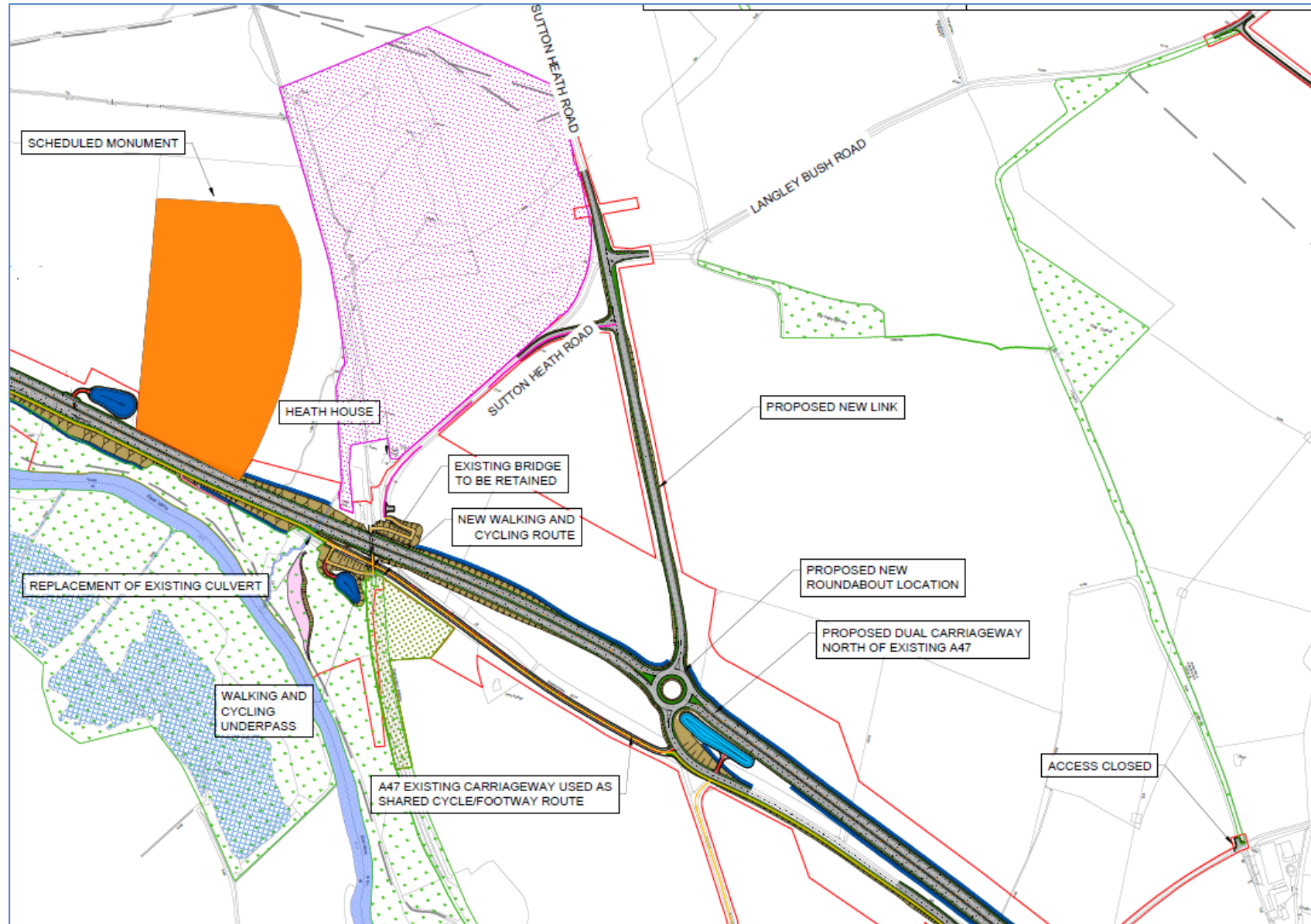
- 1.2.4 The A47 Wansford to Sutton Scheme is approximately 2.6 kilometres in length and is located partly within the boundaries of Peterborough City Council (a unitary authority) and partly in the county of Cambridgeshire, between the A1 / A47 junction and the A47 Nene Way Roundabout in Sutton, west of Peterborough.
- 1.2.5 The existing carriageway acts as a bottleneck along the A47 route, and the dualling will facilitate a reduction in congestion and journey times.
- 1.2.6 Key elements of the Scheme include:
- approximately 2.6km of new dual carriageway constructed largely offline of the existing A47, including the construction of two new underpasses
 - a new free-flow link road connecting the existing A1 southbound carriageway to the new A47 eastbound carriageway
 - a new link road from the Wansford East roundabout to provide access to Sacrewell Farm, the petrol filling station and the Anglian Water pumping station
 - closure of the existing access to Sacrewell Farm with a new underpass connecting to the farm from the link road provided
 - a new slip road from the new A47 westbound carriageway also providing access to the petrol filling station
 - a link road from the new A47 Sutton Heath roundabout, linking into Sutton Heath Road and Langley Bush Road
 - new junction arrangements for access to Sutton Heath Road and Langley Bush Road
 - closure of the existing accesses to the A47 from Sutton Heath Road, Sutton Drift and Upton Road
 - new passing places and limited widening along Upton Drift (also referenced as Main Road)
 - new walking and cycling routes, including a new underpass at the disused railway
 - new safer access to the properties on the A1, north of Windgate Way
 - installation of boundary fencing, safety barriers and signage
 - new drainage systems including:
 - two new outfalls to the River Nene
 - a new outfall to Wittering Brook
 - extension of the A1 culvert at the Mill Stream
 - realignment and extension of the A47 Wansford Sluice
 - drainage ditch interceptors
 - new attenuation basins, with pollution control devices, to control discharges to local watercourses

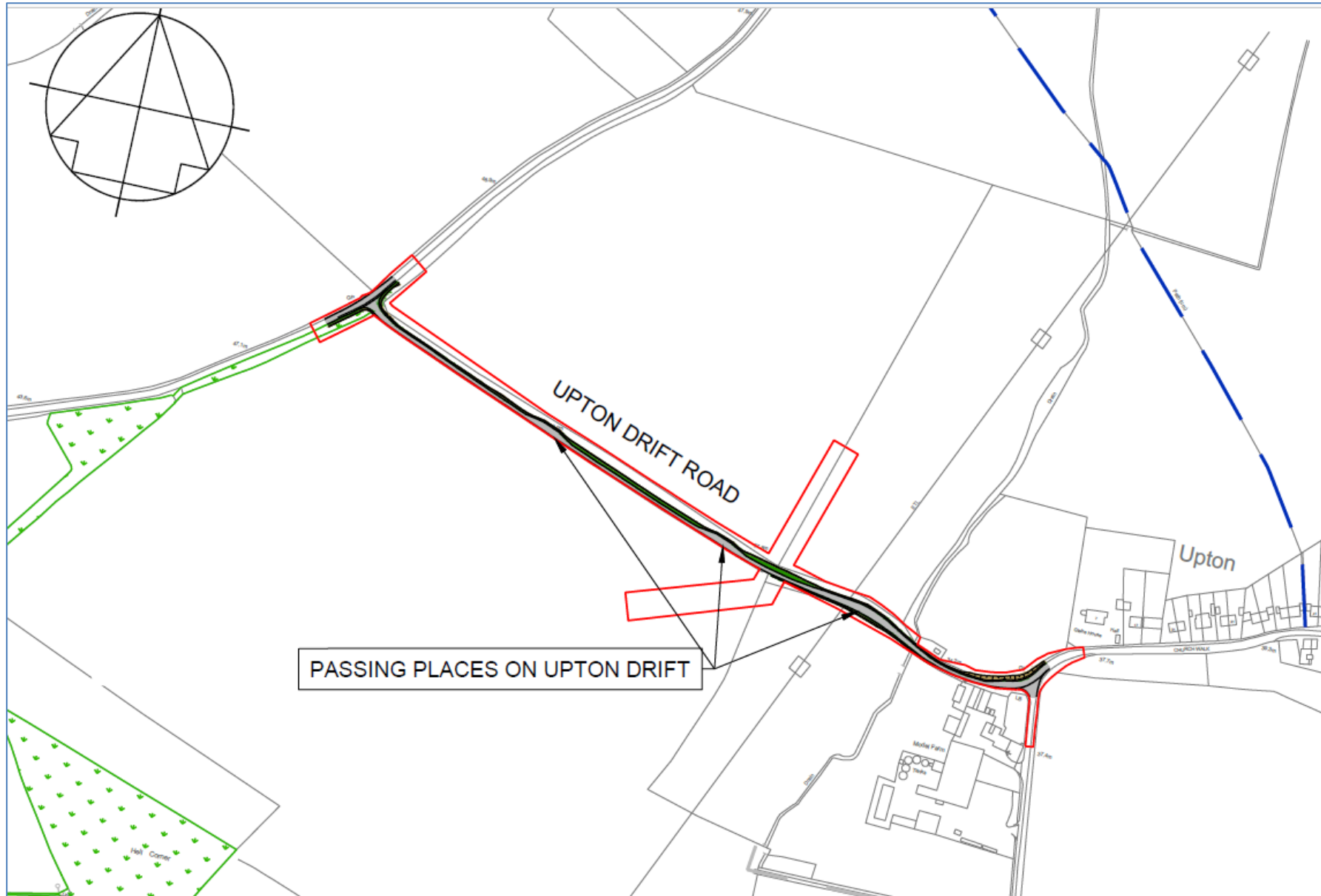
- River Nene compensatory flood storage area
- works to alter or divert utilities infrastructure such as electricity lines, water pipelines and telecommunications lines
- temporary compounds, material storage areas and vehicle parking required during construction
- environmental mitigation measures

1.2.7 The extent of the Scheme is illustrated in Figure 1-1. The Scheme Design Drawings are provided at Appendix A. The Scheme Overview (Figure 1.1 of the Environmental Statement (**TR010039/APP/6.2**)) is reproduced in Figure 1-2 (pages 5, 6 and 7). A detailed description of the Scheme is provided in ES Chapter 2: The Scheme (**TR010039/APP/6.1**).

Figure 1-2: Scheme overview
(Page 5, 6 and 7)







1.3 Site address and references

1.3.1 The A47 Wansford to Sutton site references are shown in Table 1-1.

Table 1-1: Site references

Approximate	Easting	Northing	Latitude	Longitude	Postcode
West end	507339	299761	52.585067	-0.41713715	PE8 6LE
Midpoint	508995	299572	52.583043	-0.39276123	PE5 7XH
East end	510255	299202	52.579459	-0.37430584	PE6 7AG
A1 Properties Access	507296	300557	52.592230	-0.41750908	PE8 6LD
Upton Drift	510252	300527	52.591369	-0.37390709	PE6 7BB

1.4 Programming of the Scheme

1.4.1 The Scheme has completed preliminary design ahead of the application for a Development Consent Order (DCO), submitted in July 2021. The milestone dates are shown in Table 1-2 and the indicative construction programme shown in Table 1-3.

Table 1-2: Milestone dates

Milestone	Date
Preferred route announcement	Summer 2017
End of Option Selection (PCF Stage 2)	Summer 2017
End of Preliminary Design (PCF Stage 3)	Summer 2021
End of Statutory Procedures and Powers (PCF Stage 4)	Winter 2022
End of Construction Preparation (PCF Stage 5)	Spring 2023
Start of works (Construction, Commissioning and Handover: PCF Stage 6)	Spring 2023
End of works (Construction, Commissioning and Handover: PCF Stage 6)	Winter 2024

Table 1-3: Indicative construction programme

Indicative construction programme	Date
Proposed start date of works	Spring 2023
Proposed end date of works	Winter 2024

2 Geographical And Environmental Context

2.1 Geographical context

- 2.1.1 The Scheme is located between the villages of Wansford and Sutton where there is currently a section of single carriageway.
- 2.1.2 Peterborough lies approximately 9km east of the link. Beyond Peterborough, the A47 continues to Norwich and towards the east coast at Great Yarmouth. The corridor intersects with key strategic routes including the A1, A10 and A11, which provide links to other urban centres including Cambridge, Ely and London.
- 2.1.3 The Scheme lies adjacent to the River Nene and the Nene Valley. Arable farmland is the predominant land cover in the area, divided by narrow rural lanes, and defined by hedgerows and ditches. Major roads dominate the local environment, with the A47 running through the study area to the north of Sutton and Stibbington, whilst the A1 runs to the east of Wansford creating a physical boundary between the village and the remainder of the study area.
- 2.1.4 The Scheme is largely an offline alignment running approximately parallel and to the north of the existing A47. The layout extents are shown in the General Arrangement Plans (**TR010039/APP/2.6**).

2.2 Environmental context

- 2.2.1 This section highlights the environmental, socio-economic and health receptors that have the potential to be affected by the Scheme, in accordance with the criteria set out in the Design Manual for Roads and Bridges (DMRB).
- 2.2.2 The study areas for each topic are detailed within the Environmental Statement (**TR010039/APP/ 6.1**) for the Scheme and summarised in Table 2-1 below.

Table 2-1: Environmental statement study areas

Discipline topic	Study area
Air quality	Construction: 200m from construction activities for dust and vehicle emissions. Operation: the Affected Road Network (ARN)
Cultural heritage	Archaeological potential and history context: 1km from the red line boundary Zone of Visual Influence: approx. 1.3km
Landscape and visual effects	1km from the red line boundary
Biodiversity	Special Area of Conservation (SAC) designated for bats: 30km Statutory sites designated for birds: 10km Designated sites: 2km Phase 1 habitat survey: 100m Great crested newts (GCN) Triturus cristatus: 500m Surveys for breeding birds and wintering birds: 500m Aquatic invertebrates from within wetland sites that could be directly impacted by the Scheme: 50m Surveys for other ecological receptors, including badger Meles meles and reptiles: 50m

Discipline topic	Study area
	Barn owl <i>Tyto alba</i> nests that could be directly impacted or disturbed by the Scheme: 1.5km Bats – flight paths, foraging areas or roosts in trees and buildings: 50m
Geology and soils	1km from red line boundary
Material assets and waste	The assessment has two study areas: <ol style="list-style-type: none"> 1) All areas within the Scheme redline boundary. 2) Feasible sources and availability of construction materials required to construct the main elements of the Scheme. Suitable landfill infrastructure that could accept arisings and or waste generated by the Scheme.
Noise and vibration	The assessment has three study areas: <ol style="list-style-type: none"> 1) Construction noise: 300m from the closest construction activity 2) Construction vibration: 30m from closest vibration generating activity 3) Operation assessment
Population and human health	The assessment has two study areas: <ol style="list-style-type: none"> 1) Land use and accessibility: 500m from the red line boundary 2) Human health: wards affected by the Scheme
Road drainage and the water environment	1km from the Scheme (red line) boundary
Climate	The assessment has two study areas: <ol style="list-style-type: none"> 1) Effects on climate: The study area considered for the construction phase is the physical infrastructure assets associated with Scheme and therefore includes the embodied carbon of Scheme materials and emissions associated with construction activities. 2) Vulnerability of the Scheme to climate change: For the purposes of the climate change vulnerability assessment, the study area is considered to be the physical infrastructure assets associated with the Scheme. The Scheme appraisal period is taken to be 60 years or above in line with the WebTAG GHG Assessment and DMRB LA 114 (Climate).

Air quality

2.2.3 There are currently no declared Air Quality Management Areas (AQMAs) for nitrogen dioxide (NO₂) or particulate matter (PM₁₀) within the study area. The nearest AQMA is located 6km to the east of the Scheme within the administrative boundaries of Peterborough City Council.

Cultural heritage

2.2.4 The Scheme is situated mostly to the south of a Bronze Age barrow cemetery with later roman enclosures. This is a scheduled monument which is a nationally important archaeological site and has protection against unauthorised change. The Scheme crosses marginally into the southern part of the scheduled monument area.

2.2.5 Roman settlements, several villas, a fort, and an ironworking site have been recorded in the area surrounding the Scheme. There are a small number of

Saxon finds, but no settlement evidence. The landscape appears to have remained rural with agricultural activities, with pockets of quarrying activity throughout the medieval and post-medieval periods.

- 2.2.6 Geophysical surveying is a remote sensing technique which allows a reading of hidden archaeology, this has been undertaken to inform the assessment of the Scheme. This is used in combination with other survey techniques, such as trial trenching, which are excavations used to determine or confirm archaeological remains. The Geophysical surveys have revealed 5 areas of activity across the Scheme, potentially dating to the prehistoric, Roman, medieval and post-medieval periods.

Landscape and visual effects

- 2.2.7 Arable farmland is the predominant land cover in the area, divided into relatively small agricultural enclosures interconnected by narrow rural lanes, and defined by hedgerows and ditches throughout the landscape. The fields are interspersed with fragmented patches of woodland and clusters of farms and residential settlements. Major roads dominate the local environment, with the A47 running through the study area to the north of Sutton and Stibbington, whilst the A1 runs to the east of Wansford creating a physical boundary between the village and the remainder of the study area.

Biodiversity

- 2.2.8 There are valuable habitats and species of nature conservation importance within the Scheme extents. These include nationally designated sites such as the Sutton Heath and Bog Site of Special Scientific Interest (SSSI) and locally designated sites such as the Sutton Meadows County Wildlife Site (CWS).
- 2.2.9 A wide range of habitats have been identified within the Scheme extents which include but are not limited to semi-improved natural grassland, broadland semi-natural woodland, hedgerows, marshy grassland and dense and scattered scrub.

Geology and soils

- 2.2.10 The land around the existing A47 is predominantly agricultural, the majority of which used for arable production. There are no designated sites that are of geological or geomorphological importance within the Scheme extents.

Noise and vibration

- 2.2.11 Sensitive receptors, such as residential properties and commercial properties, in proximity to the Scheme has been identified. This includes, some isolated dwellings, a petrol station, Sacrewell Farm, a picnic area and some public footpaths. Receptors that are close to the A1 and A47 are already exposed to relatively high noise due to road traffic.

Population and human health

- 2.2.12 The existing A47 provides a connection for people, places, businesses and enables access to employment, healthcare, education and other community assets. Walking and cycling facilities are also located within the Scheme extents.

Road drainage and the water environment

- 2.2.13 The main water features within the study area are within the River Nene catchment.
- 2.2.14 There are two smaller streams including Wittering Brook and Mill Stream, ponds and other water features within the Scheme extents.
- 2.2.15 A small proportion of the Scheme is within Flood Zone 2, which is associated with medium risk of flooding from rivers and Flood Zone 3, which is associated with high risk of flooding from rivers.

Socio-economic context

- 2.2.16 The Scheme is within the Unitary Authority of Peterborough and borders Huntingdonshire District Council. Across the Unitary Authority of Peterborough, the population was estimated to be 183,631 in 2011 (Census, 2011).
- 2.2.17 There are approximately the same number of economically active people in Peterborough (79.3%) as there are in Great Britain (79%). Employment is slightly lower in Peterborough at 74.8% compared to 76% across Great Britain².
- 2.2.18 The city of Peterborough is located to the east of the Scheme and extends between the River Welland and the River Nene. The area surrounding the Scheme is primarily agricultural with interspersed residential housing, community and commercial facilities.
- 2.2.19 Wansford, Stibbington and Castor are the main towns within 500m of the Scheme and are connected by the existing A47. Peterborough is the nearest city to the east, connected by the existing A47.
- 2.2.20 The Peterborough Local Plan outlines proposals for housing and employment growth in the Peterborough area.

² Labour Market Profile – Peterborough
<https://www.nomisweb.co.uk/reports/lmp/la/1946157202/printable.aspx>

3 Design Principles, Objectives and Constraints

3.1 Background

3.1.1 The Government's second Road Investment Strategy (RIS2): 2020 to 2025³ sets a long-term strategic vision for the network by:

- specifying the performance standards Highways England must meet
- listing planned enhancement schemes expected to be built
- stating the funding made available during the second Road Period (RP2), covering the financial years 2020/21 to 2024/25.

3.1.2 The Strategy seeks to ensure that a design led culture is developed by Highways England and project teams in the delivery of road schemes. A starting point for this has been the adoption of a design vision and a set of design principles, by which the success of a scheme is assessed during its design development, implementation and when in use.

3.1.3 There are 10 Highways England principles of good design which should be implemented by a scheme, as identified within Highways England's Strategic Design Panel progress report 3⁴. Good road design:

- makes roads safe and useful
- is inclusive
- makes roads understandable
- fills in context
- is restrained
- is thorough
- is environmentally sustainable
- is innovative
- is long lasting
- is a collaborative process.

3.1.4 These principles have been considered and incorporated throughout the option development, option selection and the preliminary design described in this report.

³ Department for Transport (2020) Road Investment Strategy: for the 2020/21- 2024/25 Road Period [online] available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/872252/road-investment-strategy-2-2020-2025.pdf (accessed December 2020)

⁴ Highways England () Highways England Strategic Design Panel report [online] available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/844039/Strategic_Design_Panel_progress_report_3.pdf (accessed December 2020)

3.2 Scheme objectives

3.2.1 The Scheme's key objectives, derived from the aims of the RIS and the feasibility studies described in the Case for the Scheme (**TR010039/APP/7.1**) are:

- **Supporting economic growth:** The Scheme will improve journey times and journey time reliability. This will help contribute to sustainable economic growth by providing benefits such as effectively bringing businesses closer together and encouraging more people to join the labour market as a result of reduced commuting costs.
- **Making a safer network:** Improving road safety for all road users by designing to modern highway standards appropriate for a major A road.
- **Providing a more free-flowing network:** Increasing the resilience of the A1 / A47 junction to cope with incidents such as collisions, breakdowns, maintenance and extreme weather. The improved A47 section from Wansford to Sutton will be more reliable, reducing journey times and providing capacity for future traffic growth.
- **Creating an accessible and integrated network:** Ensuring the proposals take into account the local communities access to the road network, and provide a safer route between communities for walking, cycling, horse riding and other road users.

3.3 Preferred route development

3.3.1 Three alternative routes were consulted on in 2017. Each of these contains a proposed free flow slip road from the A1 southbound to A47 eastbound. The proposals were:

- Option 1 – Dualling the existing A47. The new dual carriageway will be constructed on the line of the existing A47 and will join the existing carriageway at the Wansford East roundabout at the A1/A47 interchange and at the Nene Way roundabout at the eastern end of the Scheme
- Option 2 – Creating a new dual carriageway that runs to the north and to the south of the existing A47, on the western and eastern halves of the Scheme respectively
- Option 3 – Building a new dual carriageway to the north of the current A47.

3.3.2 From the options assessed and consulted upon as described in the Case for the Scheme (**TR010039/APP/7.1**), a preferred route was selected which meets with the principles and objectives set out above.

3.3.3 The Preferred Route, 'Option 2' was announced on the project website in August 2017, see Figure 3-1 and Figure 3-2.

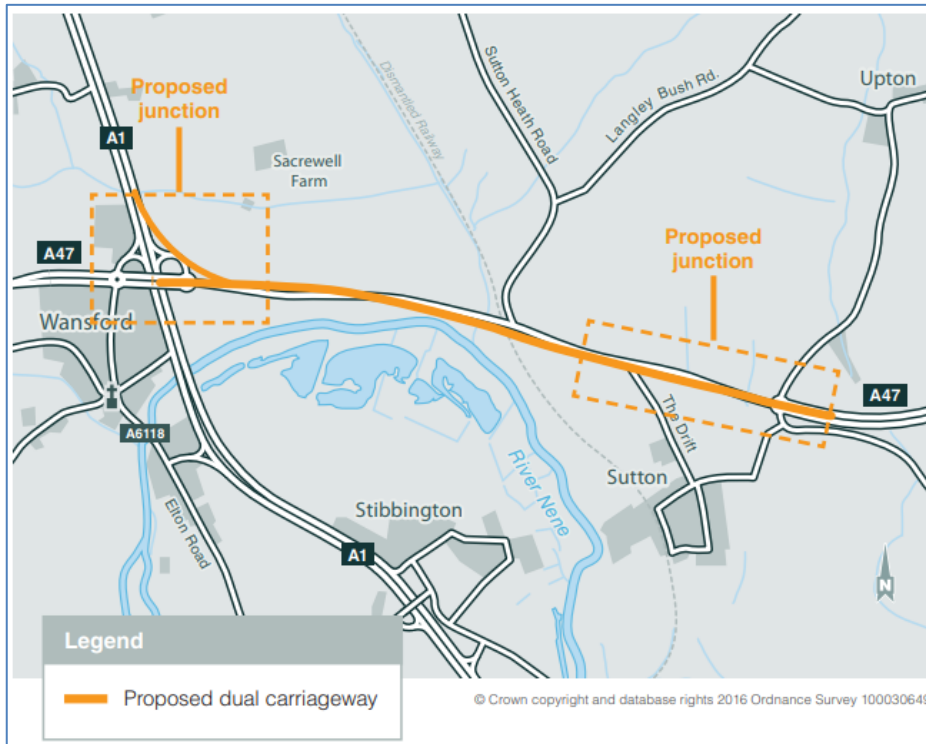


Figure 3-1: The preferred route, Option 2⁵

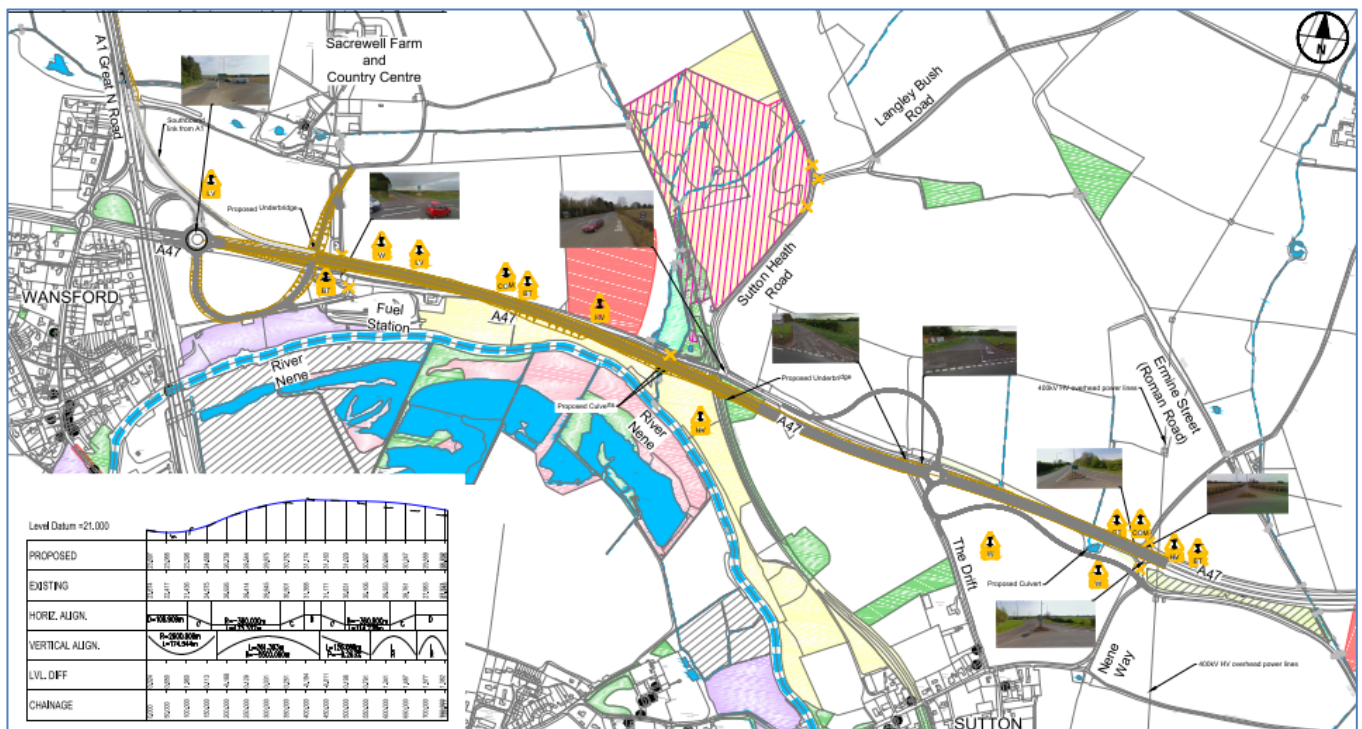


Figure 3-2: The preferred route, Option 2

⁵ Highways England (2017) Preferred Route Announcement A47 Wansford to Sutton. [online] available at: https://highwaysengland.citizenspace.com/he/a47-wansford-to-sutton-dualling/results/25119c-wlea-4-wansford_v2.pdf (last accessed January 2021).

- 3.3.4 The key features of the preferred route option were set out in the Scheme Assessment Report⁶, and can be summarised as follows:
- a largely offline construction, reducing costs
 - a shorter route length than other options.

3.4 Programme constraints

- 3.4.1 The Scheme is to be developed and constructed within the RIS2 period 2020-2025.
- 3.4.2 The Scheme is not dependent on the completion or commencement of any other projects, transport related or otherwise.
- 3.4.3 Construction activities will be seasonally constrained due to environmental considerations. Constraints include common seasonal restrictions, such as for the protection of breeding birds, but do not impose any unusual or exceptional constraints on the Scheme programme.

3.5 Budget constraints

- 3.5.1 The funding for the Scheme is set out in the Funding Statement (**TR010039/APP/4.2**).
- 3.5.2 The Scheme has a 'most-likely' estimate of £70.9 million, including allowances for risk and inflation at the date of application. This estimate includes all costs to deliver the Scheme from Options stages through to the opening for traffic. Further information is set out in the Economic Case Overview in the Case for the Scheme (**TR010039/APP/7.1**).
- 3.5.3 The Scheme was included as part of the Road Investment Strategy (RIS) published by the Government on 1 December 2014. Highways England is responsible for delivering elements of the RIS including the Scheme, as set out in the Highways England Delivery Plan 2015 - 2020 which was published in March 2015 and subsequent delivery plans.
- 3.5.4 Highways England have contracted Galliford Try to deliver the Scheme under its Delivery Integration Partnership. Galliford Try are contracted to deliver the Scheme through to the opening to traffic and handover. Galliford Try are to complete all works within a Statement of Funds Available, which is matched to the 'most-likely' estimate of £70.9 million.

⁶ Highways England (2017) Road Investment Strategy East Area 6 A47 Wansford to Sutton Scheme Assessment Report (A47 IMPS2-AMY-WS-ZZ-DO-L-0006) [online] available at: <https://s3.eu-west-2.amazonaws.com/assets.highwaysengland.co.uk/roads/road-projects/A47+Wansford+to+Sutton+dualling/A47+Wansford+-+SGAR+2+-+Scheme+Assessment+Report+final+version.pdf> (last accessed January 2021).

4 Development of the Scheme

4.1 Introduction

- 4.1.1 The parameters of the dual carriageway design were set by the selection of Option 2 as the preferred route. The options assessment is outlined in the Case for the Scheme (**TR010039/APP/7.1**).
- 4.1.2 The key elements of the Scheme are noted in paragraph 1.2.6 above and are described in detail in Environmental Statement Chapter 2: The Proposed Scheme (**TR010039/APP/6.1**).
- 4.1.3 This section explains the rationale behind the features and how they have been developed from:
- Option 2, now referred to as the Preferred Route Design (PRD) (as described in the Scheme Assessment Report published in 2018 available on the Highways England project website).
 - The Statutory Consultation in 2018.
 - The 2020 Design (as described in the 2020 Design Development Report⁷)
 - The design presented in the Draft DCO 2021
- 4.1.4 A summary of how the scheme has evolved is provided in Appendix B.
- 4.1.5 This section also describes the Walking, Cycling and Horse-riding (WCH) strategy.

4.2 From the PRD to the 2018 Statutory Consultation design

- 4.2.1 At the western end of the Scheme, the PRD proposed no works to the west of the Wansford East roundabout. The Scheme extents were extended in this area to include dualling of the A47 in both directions over the A1. Widening was also proposed to the A47 to the west of the Wansford West roundabout, and also improvements to the A1 Northbound / A47 slip road as shown in Figure 4.1.

⁷ Design Development Report 2020 <https://s3.eu-west-2.amazonaws.com/assets.highwaysengland.co.uk/roads/road-projects/A47+Wansford+to+Sutton+dualling/Design+Development+Report.pdf>

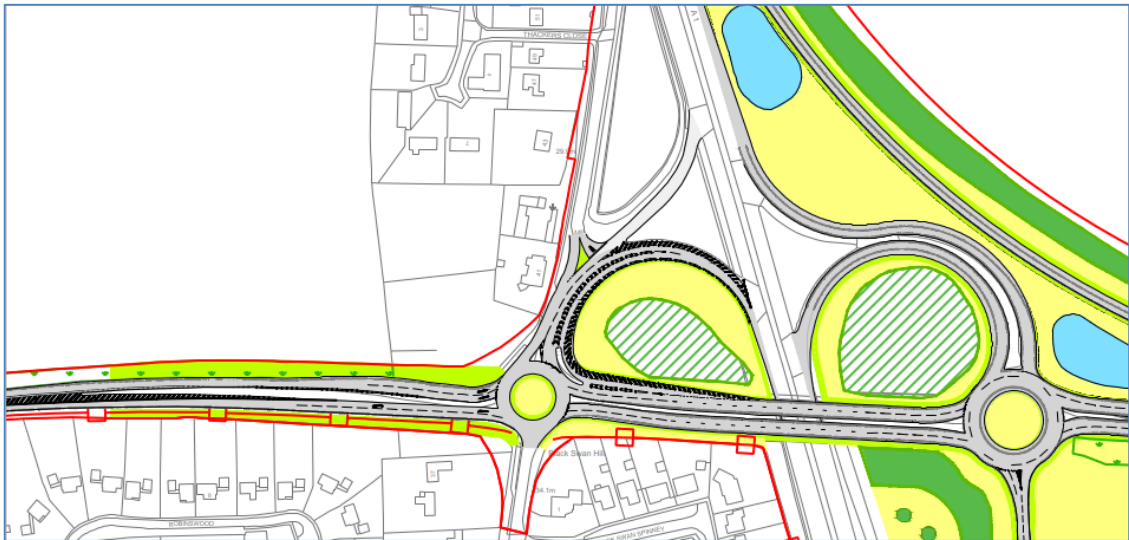


Figure 4-1: Widening to the A47 to the west of the Wansford West roundabout, and improvements to the A1 Northbound / A47 slip road

4.2.2 The PRD proposed closure of the existing Nene Way roundabout and the creation of a new roundabout junction just to the east of the existing junction of The Sutton Drift as shown in Figure 4-2 below.

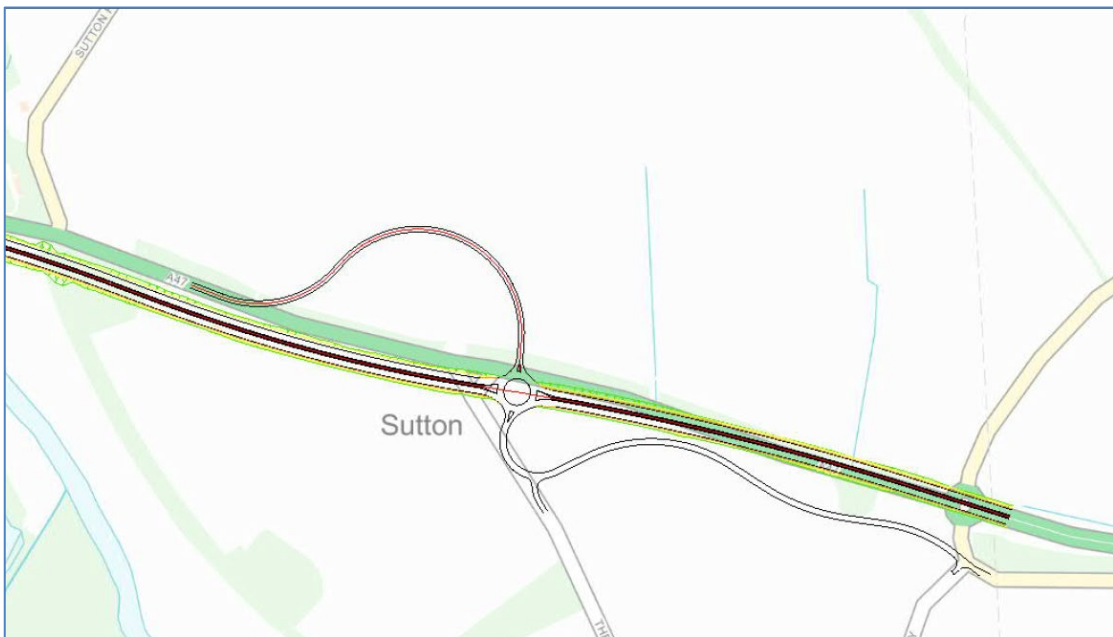


Figure 4-2: PRD proposed closure of the existing Nene Way roundabout and the creation of a new roundabout junction just to the east of the existing junction of The Sutton Drift

4.2.3 Due to concerns that this arrangement would increase the frequency of rat-running through Sutton Village, the proposed new roundabout was relocated to the existing location of the Nene Way Roundabout. This is shown in Figure 4-3.

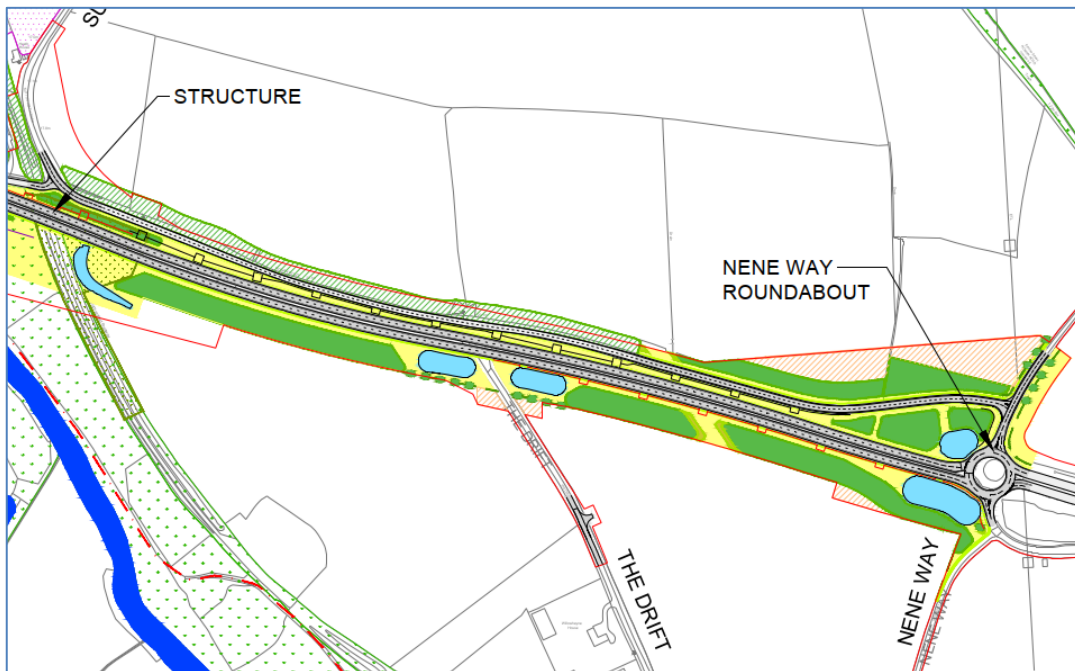


Figure 4-3: Proposed new roundabout was relocated to the existing location of the Nene Way Roundabout

4.2.4 Whilst the alignment remained south of the existing A47, the alignment at the eastern end of the Scheme was also shifted north as far as possible, to reduce impact on the nearby River Nene and maximise the distance from Sutton Village.

4.3 From the 2018 Statutory Consultation design to the 2020 design

4.3.1 This section is as reported in the Design Development Report published in 2020 as part of the 2020 Project Update and Engagement.

4.3.2 The development of the design is described in two sections:

- west of the scheduled monument and
- east of the scheduled monument

4.3.3 The location of the scheduled monument is shown on Figure 4-4.

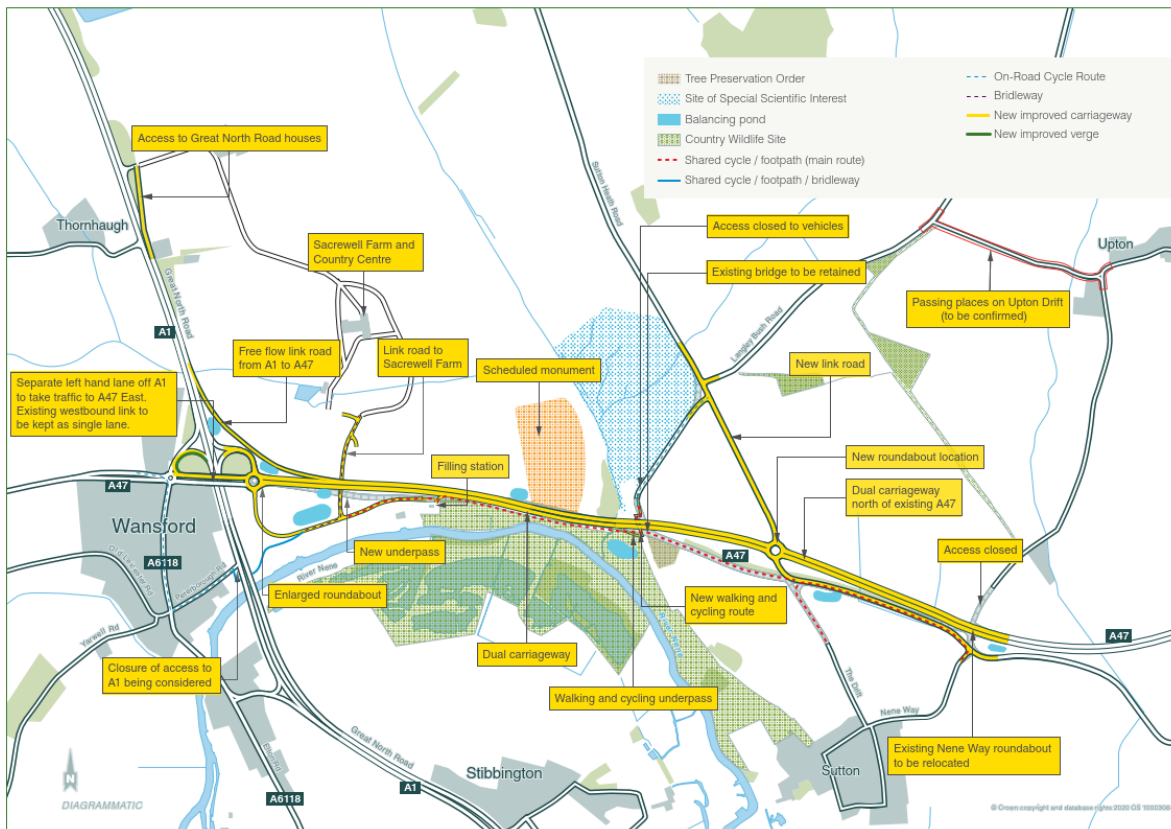


Figure 4-4: The 2020 Design

West of the scheduled monument

A1 southbound to A47 eastbound slip road

- 4.3.4 The alignment of the A1 southbound to A47 eastbound slip road was refined to reduce the amount of earthworks required to construct the slip road.
- 4.3.5 Due to the proximity of the proposed southbound A1 to A47 slip road, the 2020 design removed the bus stop and the direct access to the A1 from the properties adjacent to Windgate Way (see Figure 4-5).
- 4.3.6 The proposed access to the properties was via the existing A1 Sacrewell Lodge junction and utilises an existing former section of the A1 that runs south to the properties on Great North Road. This will increase the distance between the access to the properties and the slip road, required for safety reasons.

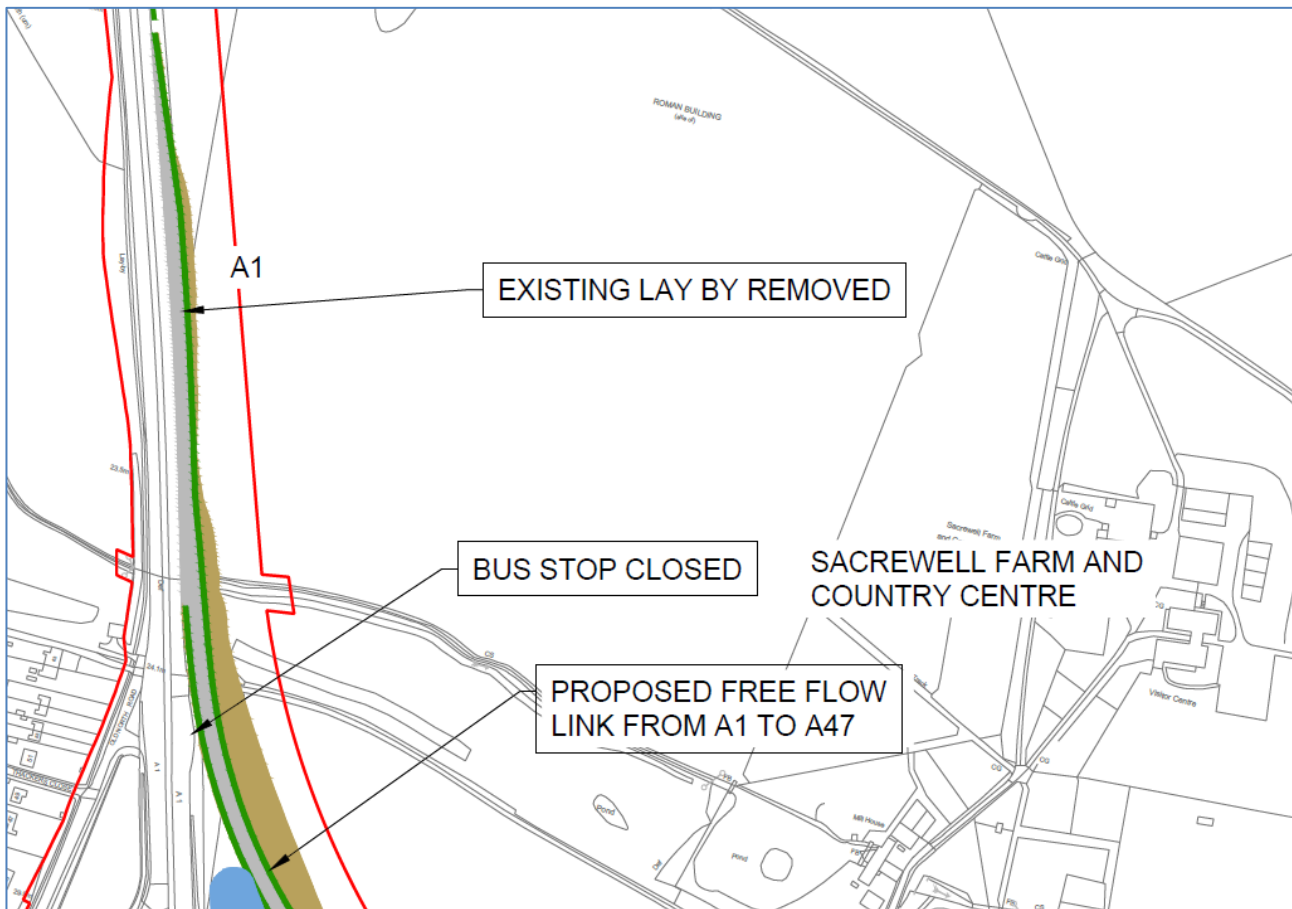


Figure 4-5: Proposals for the A1 southbound to A47 eastbound slip road

Wansford roundabouts

4.3.7 The proposals for the Wansford West roundabout were amended and included:

- improved entry from the A1 northbound diverge slip road
- improved exit to the A47 eastbound
- a new segregated left turn lane (SLTL) between A1 northbound slip road and A47 eastbound
- a new cycle crossing of the A47 west of the roundabout, removing cycle traffic from the A1 overbridge

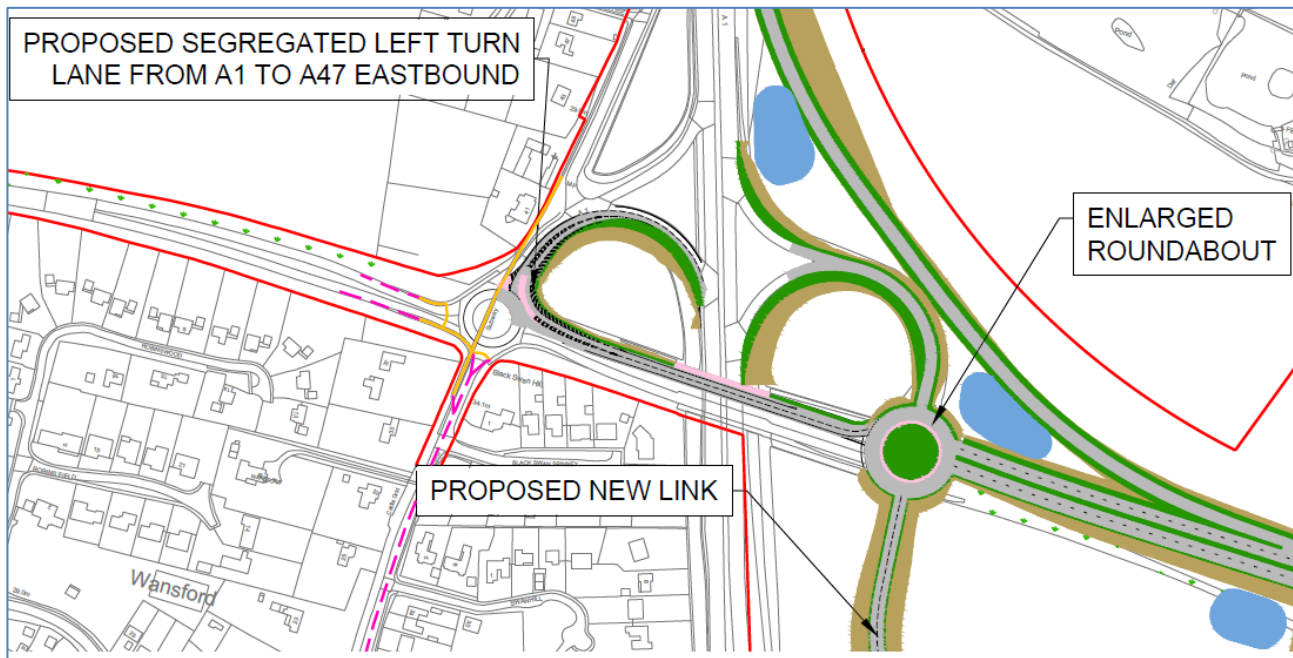


Figure 4-6: Proposals for the Wansford roundabouts (Extract from Appendix A to the Design Development Report 2020)

4.3.8 The proposals for the Wansford East roundabout included:

- an enlarged roundabout diameter
- a new arm to the south of the roundabout, providing access to Sacrewell Farm and the Service Station.

4.3.9 These improvements to the Wansford East roundabout at the A1 are largely similar to the 2018 design, except on the connector road between the roundabout and the A1. The large widened physical island between the lanes that was proposed in 2018 has been amended to include appropriate widening only.

4.3.10 The proposals for the Wansford roundabouts are shown in Figure 4-6 and Figure 4-7.

Side road strategy

4.3.11 The proposed Sacrewell Farm and BP filling station access roads are similar to the 2018 design. The 2020 design has a reduced skew length for the structure below the A47. The westbound A47 diverge to the Service Station has been moved west to reduce the required visibility widening at the scheduled monument. See Figure 4-7.

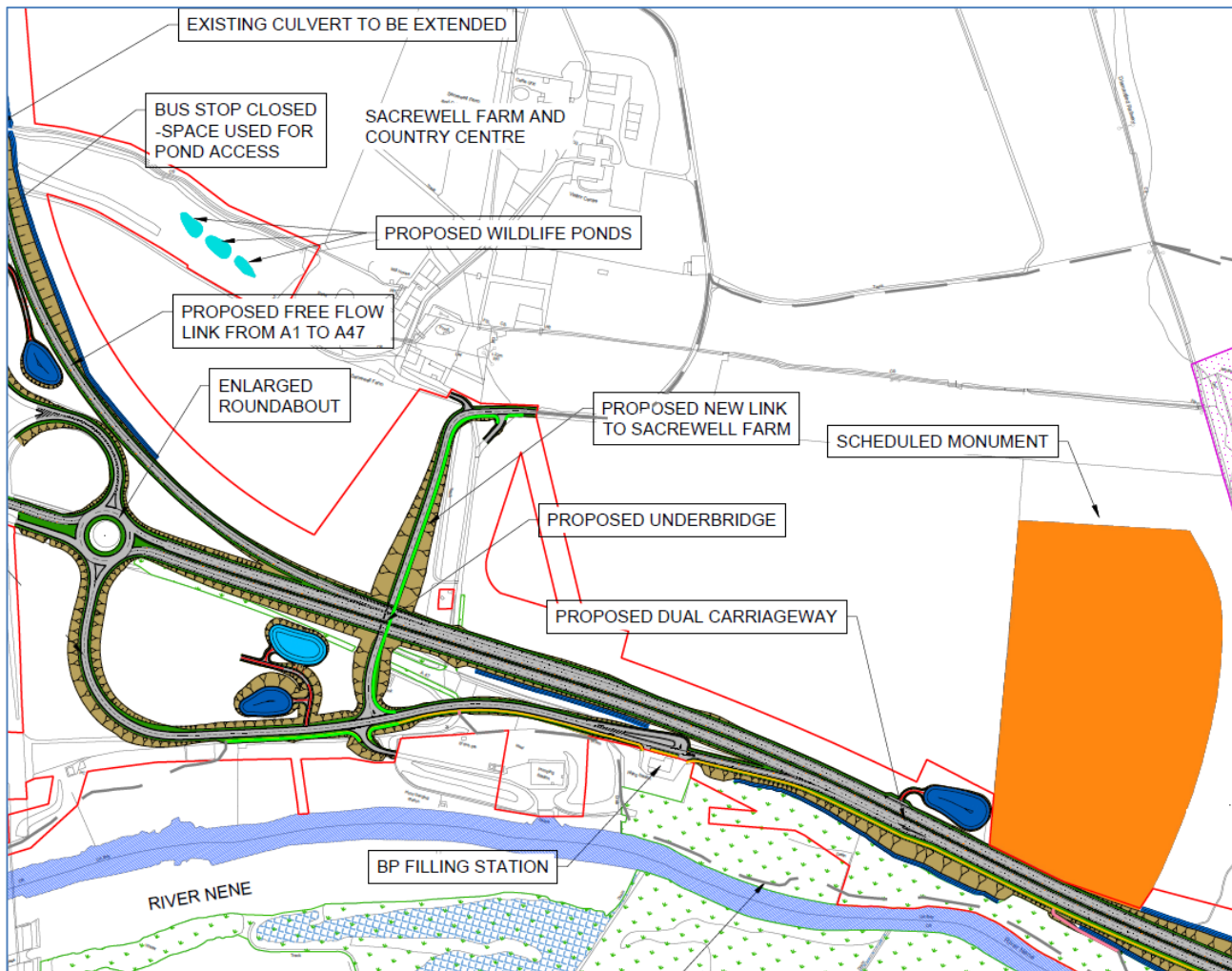


Figure 4-7: Proposals for the Wansford roundabouts (Extract from Appendix A to the Design Development Report 2020)

East of the scheduled monument

- 4.3.12 Feedback to the statutory consultation in 2018 was that many stakeholders would prefer the route to be aligned north of the existing A47. A route entirely north of the existing A47 between Wansford and Sutton was determined not to be feasible due to the environmental constraints. A route north of the existing A47 between Sutton Heath Road and the Nene Way roundabouts to the east of the scheduled monument was therefore designed and assessed.
- 4.3.13 Because this new alignment to the east was not considered during PCF Stage 2 (Option Selection), a full comparative assessment between the 2018 design and the alternative northern alignment to the east of the scheduled monument was undertaken. The comparative assessment involved consideration of Engineering, environment, traffic and costs in order to determine the best solution.
- 4.3.14 The comparison assessment concluded that the 2018 design and the 2020 northern alignment performed similarly. The outcome of the assessments suggested that the 2020 northern alignment performs marginally better. The 2020 northern alignment did not increase significant environmental effects on

wildlife, air quality, noise and vibration and accessibility for walkers and cyclists.

4.3.15 The comparative assessment was reported in the 2020 Design Development Report.

4.3.16 The 2018 design and the 2020 northern alignment are shown on Figure 4-8 and Figure 4.9 respectively.

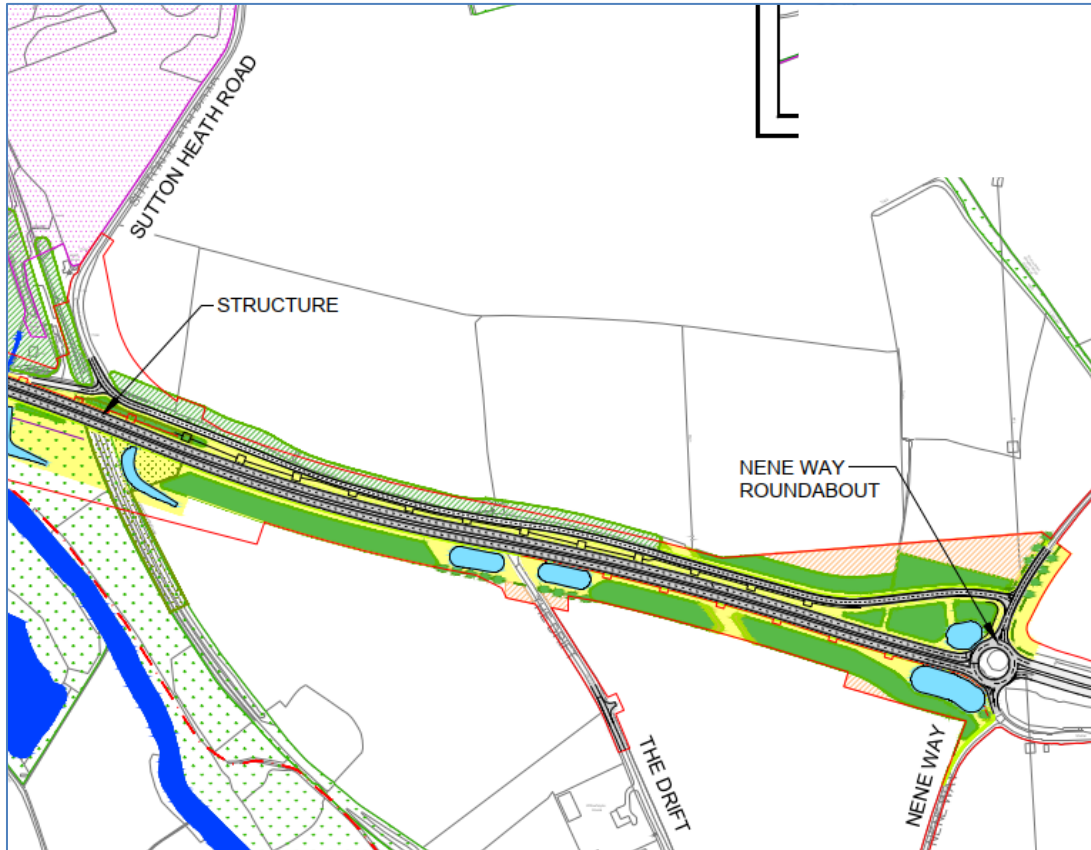


Figure 4-8: The 2018 design

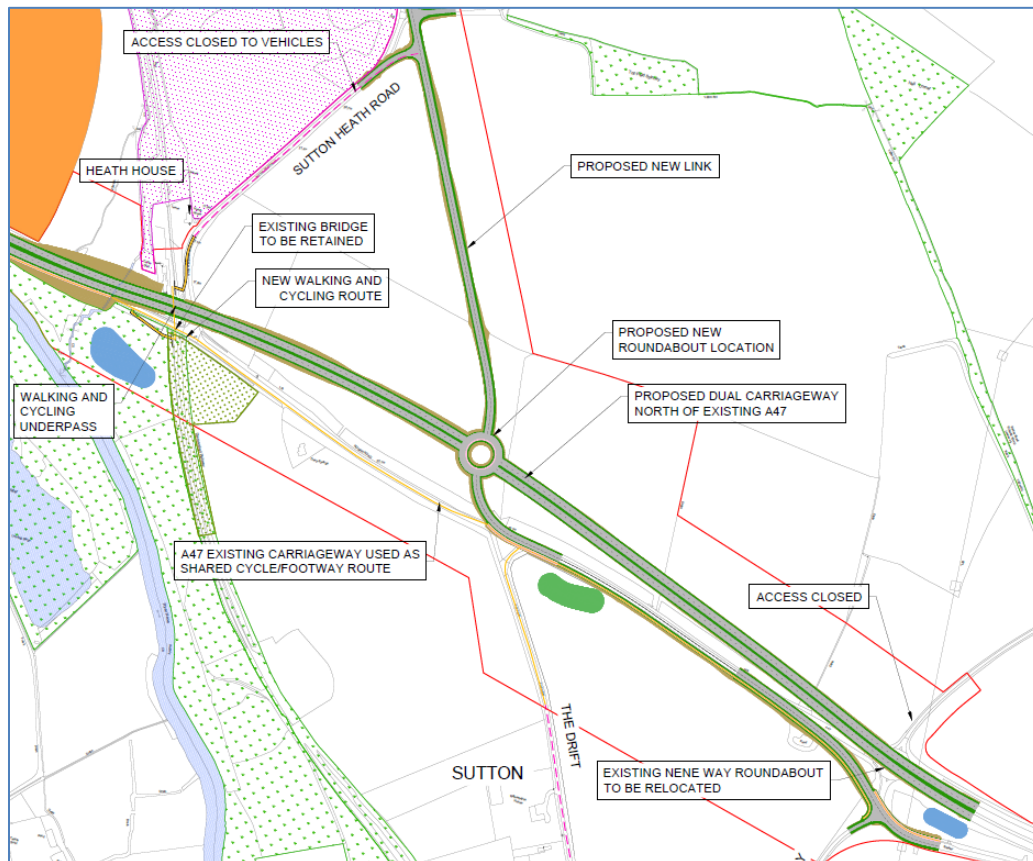


Figure 4-9: 2020 northern alignment

- 4.3.17 East of the scheduled monument, the 2018 design proposed an alignment on the south side of the bridge carrying the existing A47 over the disused Stamford to Wansford railway, running parallel to the existing A47 until the proposed alignment meets the Nene Way roundabout.
- 4.3.18 The 2020 northern alignment has an S-bend which takes it on the north side of the existing A47 railway bridge, avoiding an area subject to a Tree Preservation Order at the south-east corner between the A47 and the disused railway. The 2020 northern alignment runs parallel with the existing A47 on the north side, meeting a new roundabout and joining into the existing A47 dual carriageway east of the existing Nene Way roundabout.
- 4.3.19 The 2018 design included an enlargement to the existing Nene Way roundabout. The 2020 northern alignment removes the Nene Way roundabout and replaces it with a new roundabout approximately 700m west, with links to Sutton Heath Road and the existing A47.

- 4.3.20 As part of the 2018 design Sutton Heath Road would remain connected to the existing A47, west of Sutton Heath House. The existing A47 would continue for approximately 1km and connect with Upton Road, north of the upgraded Nene Way roundabout. The 2020 northern alignment provides a straight link from the new roundabout, joining the existing Sutton Heath Road at its junction with Langley Bush Road, with a new junction allowing access along the severed section to Heath House.
- 4.3.21 Peterborough Road runs from the south of the Nene Way roundabout eastward to Ailsworth. In the 2018 design only a short section was shown to connect it to the enlarged Nene Way roundabout. In the 2020 northern alignment, Peterborough Road will join the existing A47 through a short link, and a connection will be provided to the new roundabout as shown in Figure 4.9.
- 4.3.22 In both designs The Drift is closed to through traffic. In the 2020 northern alignment Upton Road will also be closed to through traffic.
- 4.3.23 The closure of Upton Road, as proposed in the PRD, will alleviate existing concerns that Upton Road would be used by traffic to access the A47 to avoid congestion at the Sutton Heath Road junction. The closure will however also result in an alteration to the route taken by the residents of Upton to access the A47. Access to the new A47 would only be via the Upton Drift and along the proposed link to the new roundabout.
- 4.3.24 Following concerns raised by Upton Village regarding the standard of the proposed single route to the A47, the following improvements were proposed as part of this Scheme:
- Provision of passing places along the Upton Drift, with an extended passing place at the eastern end of the Scheme to straighten out the relatively tight bend in this area.
 - Improvements to the layout of the junction of Sutton Heath Rd & Langley Bush Road, where the safety of the junction is improved with the straightened alignment. The new access to Sutton Heath House will be via a new T junction, staggered from the existing.
- 4.3.25 As these improvements are on the local highway network, the details of these improvements were discussed with Peterborough City Council.

4.4 Development of the design since the Scheme update and Engagement in 2020.

- 4.4.1 Further developments to the Scheme following the Scheme update and Engagement in 2020/2021 included the developments detailed in the following sections.

West of the scheduled monument

- 4.4.2 Following further feedback from Wansford Parish Council, an assessment of the benefits provided by the proposed A1 northbound slip road improvement was undertaken. This concluded that these improvements provided limited benefits to the scheme, mainly due to the relatively low volumes of traffic that travel from the A1 north to the A47 east.

- 4.4.3 The decision therefore taken to remove the A1 northbound slip road improvements from the Scheme. The improvements at the Wansford West roundabout are therefore limited to a two-lane eastbound exit only, as shown in Figure 4-10.

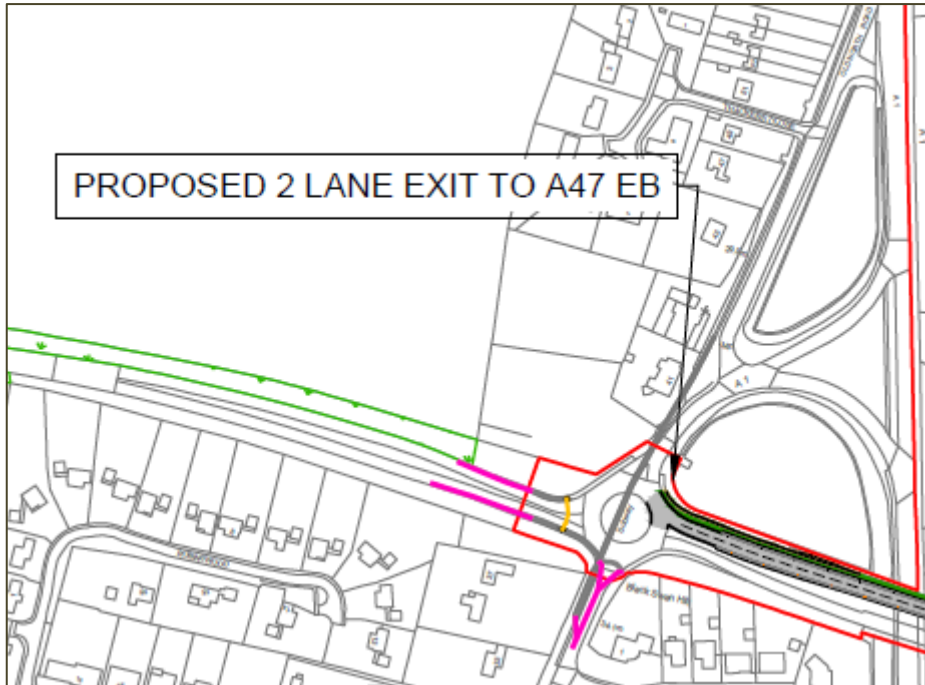


Figure 4-10: Improvements at the Wansford West roundabout are limited to a two-lane eastbound exit

East of the scheduled monument

- 4.4.4 The proposed dual carriageway crosses an area of flooding risk, Flood Zone 3. In order to mitigate the flood zone area taken, a flood storage area is required south of the dismantled railway.
- 4.4.5 From discussions with the landowner impacted by the proposed flood storage and Historic England, the alignment was therefore moved slightly north, encroaching at its maximum 9m into the south east corner of the scheduled monument. This amendment reduces the impact into the flood zone and therefore the volume required for the flood storage mitigation as shown in Figure 4-11.
- 4.4.6 Discussions were held with Peterborough City Council and the emergency services regarding the improvements to Upton Drift.
- 4.4.7 Peterborough City Council has confirmed that they don't have any technical objections to the design in Upton Drift. In a meeting with the emergency services they confirmed that they have no objections to the proposal.

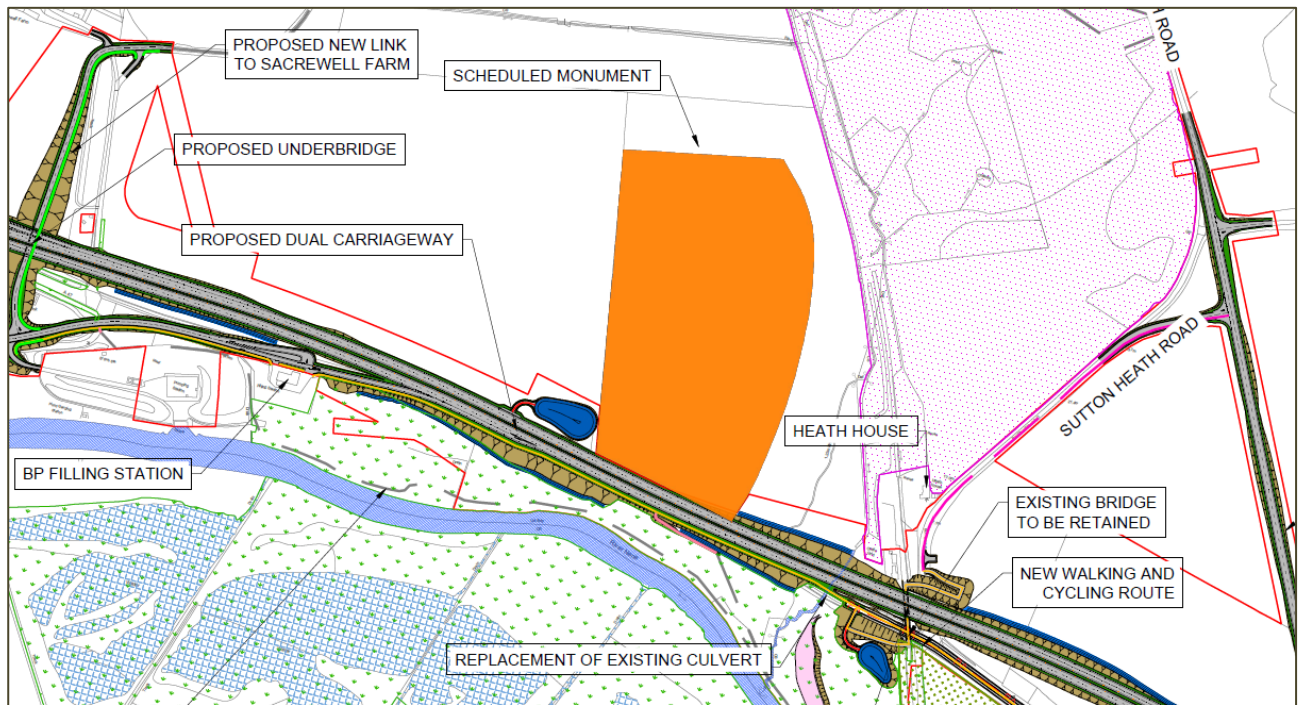


Figure 4-11: Alignment east of the scheduled monument

4.5 Walking, Cycling and Horse-Riding (WCH) Strategy

- 4.5.1 At the Wansford West roundabout the existing off-road cycle crossing will be replaced with a new crossing for cyclists on the A47 western arm and the southern arm on the Old North Road (A6118).
- 4.5.2 These new crossings will allow cyclists to connect between the existing A47 and the on-road cycle route into Wansford via the Old North Road (A6118). From here, pedestrians, cyclists and equestrians will be able to connect to the proposed routes to the east of the A1 via Peterborough Road, the A1 underpass, and the recently improved route to the Wansford picnic area. The walking, cycling and horse riding provisions are shown in Figure 4-12.

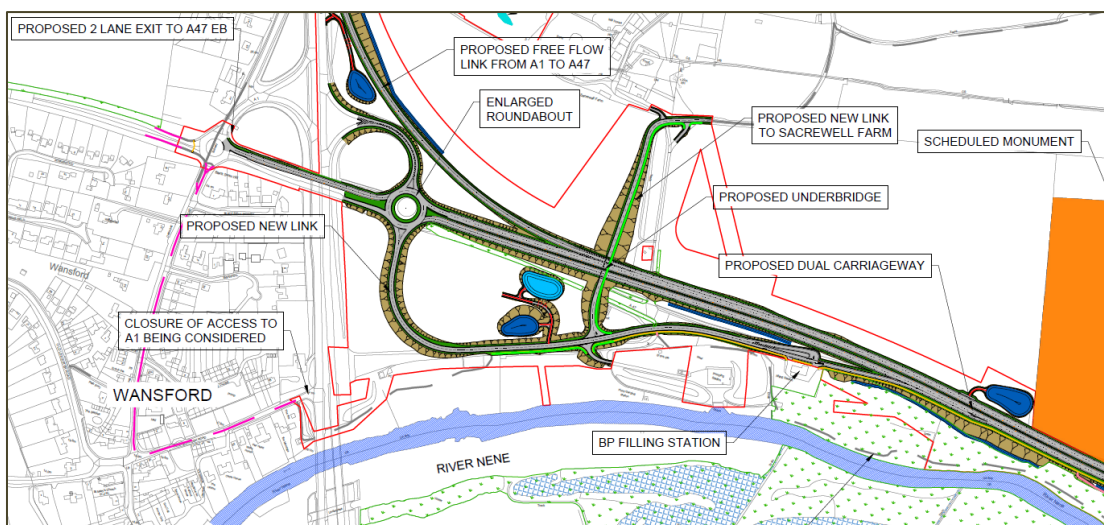


Figure 4-12: Walking, cycling and horse-riding strategy at the Wansford roundabouts

- 4.5.3 The route will continue eastwards from the Wansford picnic area adjacent to the alignment of the existing access road as far as the junction with the new access road serving Sacrewell Farm. From here, it will connect to another route adjacent to the Sacrewell Farm access road that passes under the A47.
- 4.5.4 Beyond the Sacrewell Farm access road junction, the route continues eastwards as a shared footway and cycleway on the southern side of the new A47 as far as the existing A47, close to its junction with Sutton Heath Road (see Figure 4-13).

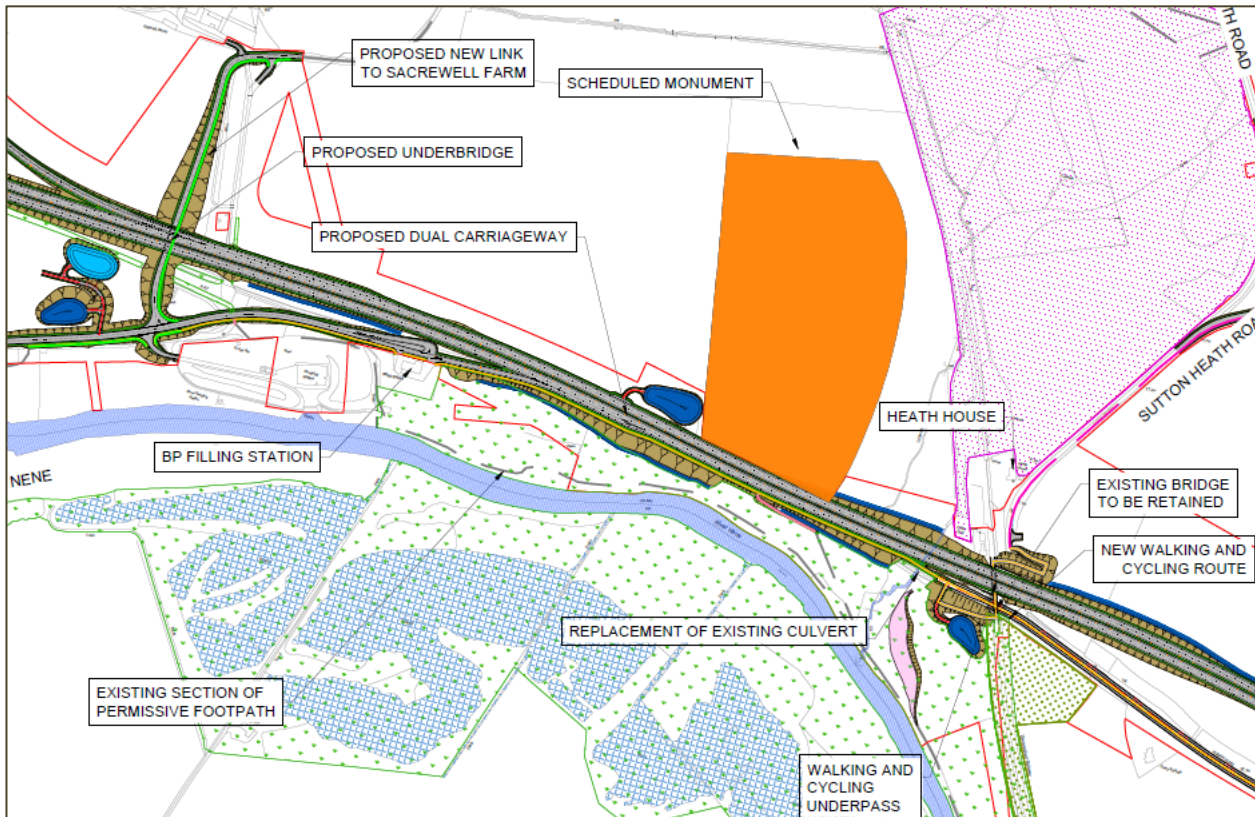


Figure 4-13: Walking, cycling and horse-riding strategy west of the scheduled monument

- 4.5.5 From the existing Sutton Heath Road, the redundant section of existing A47 will be converted to a shared footway and cycleway. It will give an onward connection to a shared footway and cycleway that will be provided parallel to the new section of side road which connects the proposed new A47 roundabout with Peterborough Road and the Nene Way.
- 4.5.6 In combination, the existing and proposed facilities will provide a continuous, segregated footway and cycleway between Peterborough Road at Wansford in the west and the Peterborough Road and the Nene Way roundabout at Sutton in the east (see Figure 4-14).

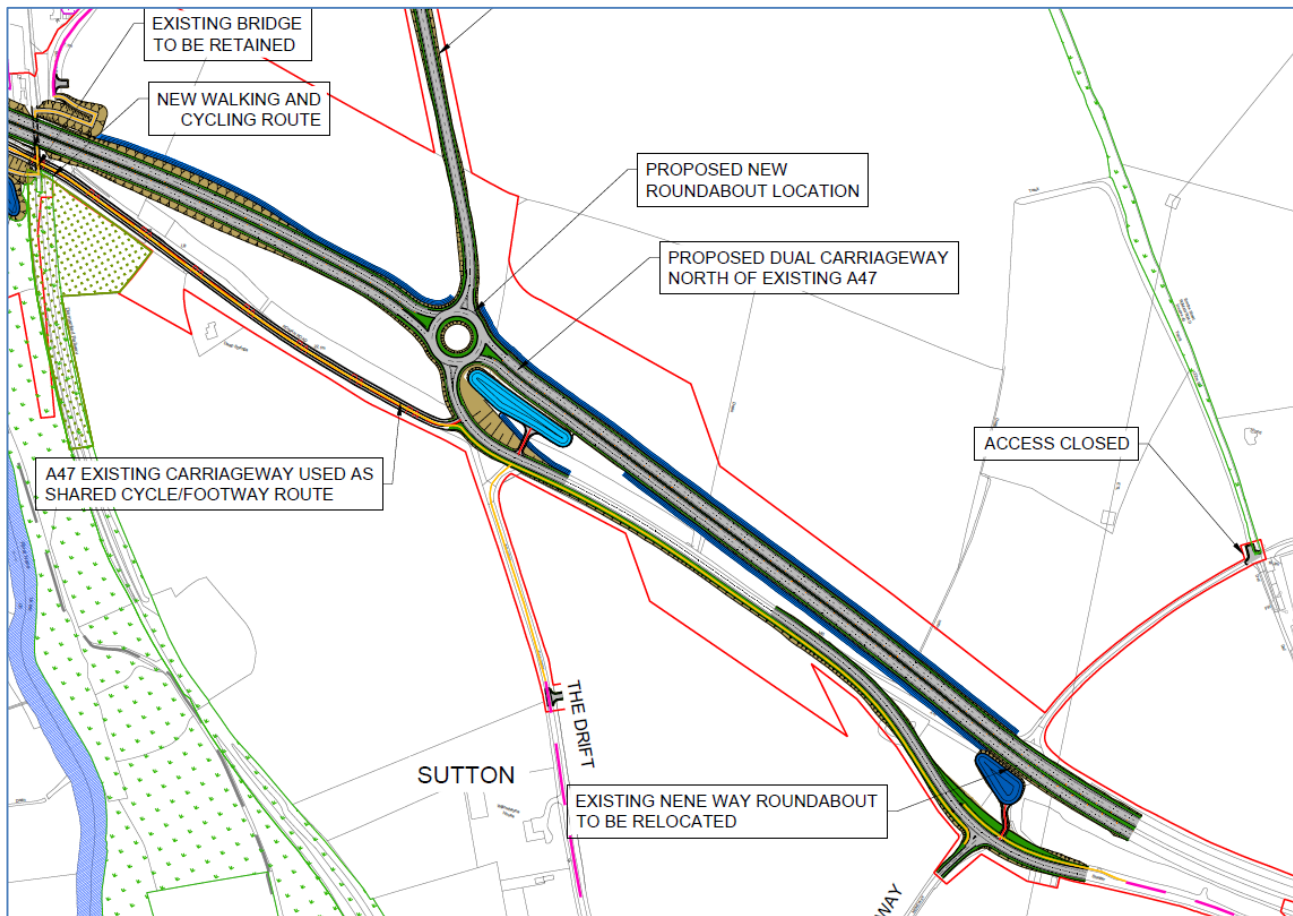


Figure 4-14: Walking, cycling and horse-riding strategy east of the scheduled monument

4.5.7 To facilitate safe north to south crossings of the new A47 by pedestrians and cyclists, and to also maintain the advisory cycle route between Sutton and Upton, a new connection will be provided between the proposed shared footway and cycleway on the south side of the A47 and Sutton Heath Road, which will be downgraded to an access road as part of the Scheme. The new connection will make use of a ramp arrangement and the disused railway to provide a grade separated crossing of the new A47 (see Figure 4-15).

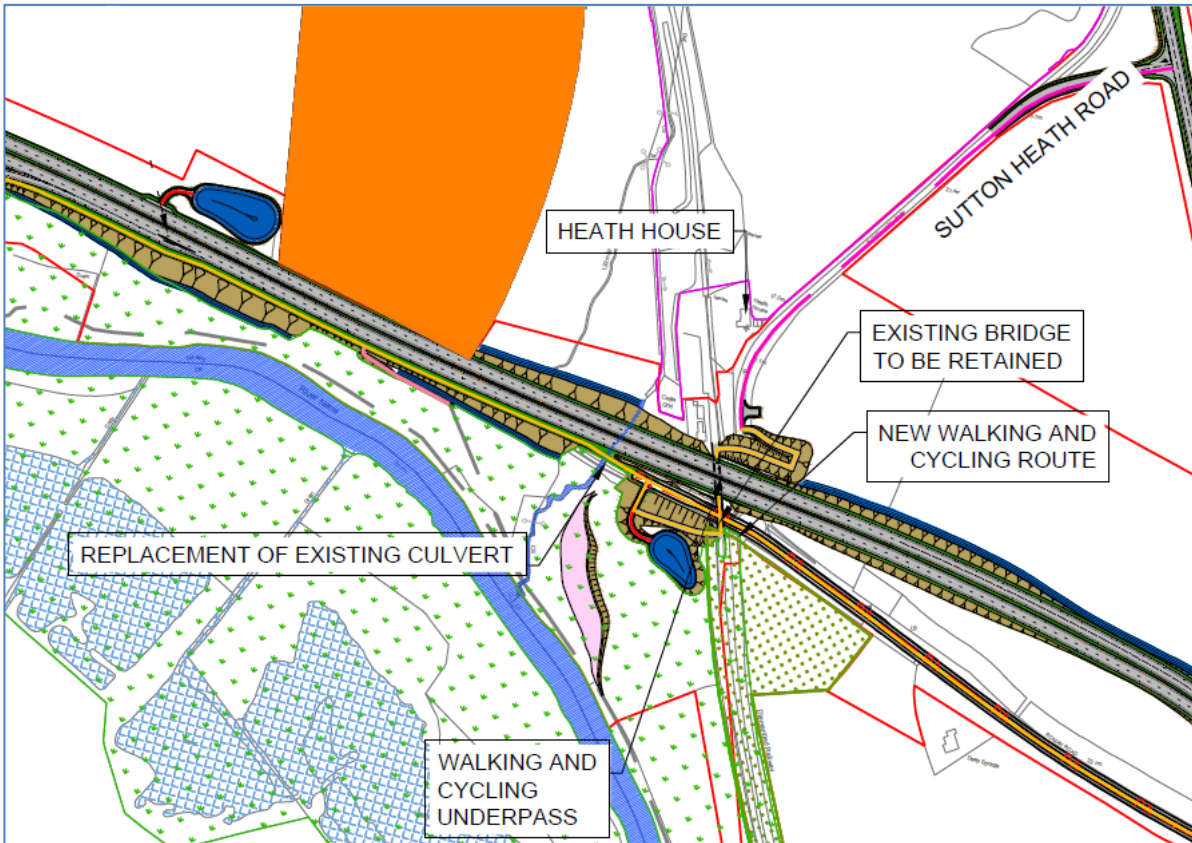


Figure 4-15: Walking, cycling and horse-riding strategy east of the scheduled monument

5 Scheme Design

5.1 Highway Design summary

5.1.1 The highway design is shown in detail in the General Arrangement Plans (**TR010039/APP/2.6**), and further described in Environmental Statement Chapter 2 The Proposed Scheme (**TR010039/APP/6.1**).

5.1.2 The following provides a summary of the highways design:

- the A1/A47 Wansford West roundabout will not be modified, other than tying in with the re-paved section of the A1 overbridge.
- a new free flow link is proposed connecting the A1 southbound carriageway with the A47 eastbound carriageway.
- a private access to Sacrewell Farm and Lodge will be replaced by a new connection from the expanded Wansford East roundabout. This will pass under the proposed A47 before connecting with Sacrewell Farm and Lodge
- a section of Sutton Heath Road will be stopped up, limiting use to non-motorised users and private landowners, with the junction with the A47 to be completely closed. A new section of road will connect Sutton Heath Road and Langley Bush Road to the A47 at a new roundabout junction (Sutton Heath roundabout), to the east of the existing alignment.
- a new roundabout, the Sutton Heath roundabout, will replace the existing Nene Way Roundabout 700m to the west. The southern access to the A47 from Nene Way and Peterborough Road will be maintained via a link road consisting of re-purposed section of the existing A47 alignment.
- the junction between 'The Drift' to the A47 will be stopped up with a new turning head provided. Traffic will be diverted via Nene Way and the relocated roundabout.
- the road from Upton which currently connects with the current Nene Way roundabout will be closed for vehicles. The alternative access to the A47, will be through Upton Drift Road and the new link that connects Sutton Heath Road and Langley Bush Road to the new A47 Sutton Heath roundabout.

5.2 De-trunking design

5.2.1 Where a road or route is no longer to be part of the strategic road network, also referred to as the trunk road network, it will be de-trunked and works may be completed to separate it from the trunk road network or to tie it in to the local road network.

5.2.2 These works are described as "de-trunking" works. Once a road has been de-trunked, it will be maintained by the local highway authority instead of Highways England.

5.2.3 The current route of the existing A47 has been designed to retain as much of the existing highway as possible to minimise disruption, retain access where possible, and to be utilised for walking, cycling and horse riding facilities.

- 5.2.4 Two sections of the existing A47 are to be de-trunked. The first section is around the BP petrol filling station to the south of the Scheme. This existing part of the A47 will now form part of a new link that connects the Wansford East roundabout with the Petrol Station and Sacrewell. In this location the new A47 dual carriageway is located to the north of the existing one.
- 5.2.5 The second part of the de-trunking occurs near the new Sutton Heath roundabout, where part of the existing A47 now forms a new link to the proposed Sutton Heath roundabout and Peterborough Road.

5.3 Structures design

5.3.1 Within the Scheme the following new structures are required:

- Wansford NMU (Non-Motorised User) Underpass (S02): a new skew bridge in the centre of the Scheme which will carry the proposed dual carriageway over a disused railway line, formerly the Stamford and Wansford railway. The disused railway line now is serving as a NMU path.
- Wansford Sluice Extension (S04): a new square culvert in the centre of the Scheme which will carry the proposed dual carriageway over Wittering Brook.
- Sacrewell Farm Underbridge (S05): a new square bridge at the western end of the Scheme to maintain the access to Sacrewell Farm once the proposed dual carriageway has been constructed. Sacrewell Farm is located north of the Scheme while the access entrance road is located south of the dual carriageway.

5.3.2 The Wansford NMU Underpass (S02) and Sacrewell Farm Underbridge (S05) are proposed as reinforced concrete boxes assembled with precast portal frame units and in-situ reinforced concrete floors. The integral structures follow the requirements of CD 350 "The Design of Highway Structures", ensuring that the structures are cost-effective and straightforward to construct and maintain. The new structures will be built off-line alongside the existing A47 with less construction constraints in terms of buried services or existing structures.

5.3.3 Wansford Sluice Extension (S04) is proposed as a precast reinforced concrete box. The proposed integral structure follows the requirements of CD 350 "The Design of Highway Structures", ensuring that the structure is cost-effective and straightforward to construct and maintain. The new structure will be built off-line parallel to the existing masonry culvert. The north half will be built first to enable the A47 traffic flow to move away from existing A47.

5.3.4 The historical borehole data and the recent ground investigation report have been utilised to determine the preliminary foundation design. Spread foundations are considered to be the suitable foundation type for all three structures.

5.3.5 Due to their quick construction time, cost and flexibility, reinforced soil wingwalls are proposed for Wansford NMU Underpass (S02) and Sacrewell Farm Underbridge (S05). In-situ or precast reinforced concrete wingwalls are proposed for the Wansford Sluice Extension (S04) as the structure is a small

sized culvert and will be buried deep in the embankment.

- 5.3.6 In addition, the existing drainage culvert under the A1 will need to be extended to accommodate the new A1 free flow link.

5.4 Drainage Design

Introduction

- 5.4.1 The drainage design for the Scheme is explained in outline below. Further information and assessment of the impacts of the design, are provided in the Drainage Strategy Report, (Environmental Statement Appendix 13.2 (TR010039/APP/6.2)).

Existing drainage

- 5.4.2 Where possible, existing drainage will remain in place at the tie-ins with the existing A47. Drainage ditches will be maintained where possible to allow existing flow routes to continue and new sections may be implemented to maintain the operation of the drainage on the existing A47.
- 5.4.3 Existing direct discharge outfalls to streams which are not taking any increased road run-off from the Scheme will remain in place.

Infiltration rates

- 5.4.4 Treatment in the form of filter drains, infiltration basins and spillage containment/pollution control valves will also form part of the drainage system.
- 5.4.5 Infiltration basins have been included in the design to receive surface water discharges from the new road and maintain existing discharge rates across the Scheme.

Flood impacts

- 5.4.6 The Scheme will be closer to the River Nene than the existing A47. Flood compensation storage areas will be provided where necessary. The surface water discharges from the Scheme will be controlled utilising the attenuation basins to reduce the likelihood of flooding downstream.

Structure drainage

- 5.4.7 Deck drainage will be provided on the bridges.
- 5.4.8 For the retaining walls back of wall drainage is proposed which will drain to the highway drainage network or drainage ditches.

Carriageway drainage

- 5.4.9 The new carriageway will drain to a combination of filter drains and carrier pipe systems and discharge to storage structures, maintaining existing discharge rates. The surface water flows will be discharged via infiltration or to the nearest watercourse.
- 5.4.10 Spillage containment at the discharge points has provided in the form of a flow control valve (penstock) where required.
- 5.4.11 The drainage systems include:

- kerbed sections of the mainline, which will be drained utilising gullies or a combined kerb and gulley system, discharging to the filter drains or carrier drains in the verges
- filter drains, which will be provided at the toe of any cuttings along the mainline to collect run-off from the slopes or carriageway
- central reserve drainage, to be provided where the road is in super-elevation
- toe drains where required, draining embankments greater than 1.5m in height. These will drain via ditches or along existing surface water pathways to a watercourse.

5.4.12 Side road links to the new carriageway will drain to a highway drainage system although over the edge drainage may be more appropriate when reviewed at Detailed Design (PCF Stage 5). The existing drainage system will continue to be used where possible. Detailed Drainage Surveys at Stage 5 will review existing outfalls and their utilisation in the drainage design. The assumptions made regarding the existing outfalls will be reviewed and updated at Stage 5.

5.4.13 Natural overland drainage and existing ditches / streams between the existing A47 and the proposed new mainline will be intercepted by new ditches and conveyed along the natural drainage paths as far as possible. This will involve pipe crossings of the proposed new mainline.

6 Utility Diversions

6.1 Number of diversions

- 6.1.1 The construction and operation of the Scheme requires the diversion, relocation, or protection of existing utility assets. Further information is provided in Schedule 1 to the Draft DCO (**TR010039/APP/3.1**) and the Works Plans (**TR010039/APP/2.3**).
- 6.1.2 A detailed review, assessing the impact of the Scheme design on the existing utility assets and the potential diversions has been completed. Using statutory undertaker records and communications and responses from the Statutory Undertakers areas where identified where utilities could be impacted or require access required to apparatus.
- 6.1.3 A conservative approach has been adopted to include sufficient areas for utility diversions and access. In identifying areas for diversions, the objective was to avoid or mitigate environmental effects, reduce temporary effects on landowners / occupiers and to mitigate potential impacts on the construction programme.
- 6.1.4 Table 6-1 summarises the Statutory Undertakers' apparatus which could be affected by the Scheme.

Table 6-1: Statutory Undertakers Apparatus Affected by the Scheme

Statutory Undertaker	Asset Type	Affected Asset
National Grid	Gas	High pressure gas main, crosses the A1 and the proposed new access road for the existing properties adjacent to the A1. A diversion of the main is unlikely, however, protection measures may be required from the construction activities.
Anglian Water	Potable and Raw Water	Significant strategic large diameter potable clean & raw water mains cross the Scheme and will require protection measures or diverting. Small potable water distribution mains adjacent to the A1 and along the A47 require diversions. There are no Anglian Water sewer assets affected by the Scheme.
BT Openreach	Telecoms	Substantial amount of trunk and localised assets affected
Gigaclear	Telecoms	Substantial length of trunk asset affected
Gtt	Telecoms	Substantial length of trunk asset affected
Vodafone	Telecoms	Substantial length of trunk asset affected
Western Power Distribution (WPD)	Electricity (buried cables and overhead lines)	A number of local Low and High voltage assets are affected.
National Grid	Electricity	National Grid electric lines (400kV) on pylons, cross the Scheme at 2 locations. Diversion and protection work is not required but working height clearances will require consideration.
Vodafone, O2, THREE & EE / Orange.	Mobile Mast Transmitter	4 No mobile mast sites have been identified within close proximity of the Scheme; none are expected to require relocation due to the construction or operation of the Scheme.

- 6.1.5 The following sections explore the options considered to manage the impacts on the utility assets described in Table 6.1, along with the key consultations, environmental constraints, technical and safety requirements.
- 6.1.6 These considerations have determined the method, route, and extent of works to relocate or alter these assets and have in turn influenced the DCO boundary.
- 6.1.7 Engagement with the Statutory Undertakers is ongoing, further refining the detailed design, programme, and construction methods.

6.2 National Grid - Gas

- 6.2.1 A National Grid High Pressure gas transmission pipeline crosses the Scheme under the A1 and proposed improved access road to the residential properties adjacent to the A1.
- 6.2.2 The Ø42" heavy wall steel pipeline operates at pressures between 40 to 80 bar (580 to 1160 psi). This is a strategic asset supplying the south east of England. The depth of cover of the pipeline, in relation to proposed construction activities along the access road, is not yet known. Initial dialogue with National Grid suggested the worst-case scenario would require a protection slab and their attendance for any construction activities within 3m of their asset.

6.3 Anglian Water

- 6.3.1 Strategic Anglian Water potable and raw water mains cross the Scheme at two locations. The twin Ø1600mm raw untreated water pipelines cross the Scheme from the pumping station, east of the existing junction of the A1 and A47, at approx. Ch500.
- 6.3.2 Twin Ø800mm potable water pipelines also cross the Scheme at approx. Ch2100 and follow Sutton Heath Road to the north. The twin Ø800mm pipelines also cross Langley Bush Road. Both locations will require protection measures from the construction activities, or in the worst case, diversion of the assets. These mains are subject to ongoing assessment with the asset owner.
- 6.3.3 A Ø3" PVC potable distribution main conflicts with the proposed new access for the properties adjacent to the A1 and may require diversion or protection works. This is also in close proximity of the National Grid High Pressure gas pipeline.
- 6.3.4 There is a Ø90mm distribution main fed from one of the Ø800mm pipelines, which heads south along Sutton Heath Road and west along the A47 to the fuel filling station. The main has three locations where it potentially conflicts with the Scheme; the new junction at Sutton Heath and Langley Bush Road, the new structure at the old railway cutting, and the dual carriageway alignment between the railway cutting and fuel filling station. All are likely to require diversions.
- 6.3.5 The proposed diversion route for the Ø90mm main within Sutton Heath Road, to avoid the revised layout of the footway / cycleway which provides access to the railway cutting, is to be agreed with Anglian Water. A Utility Corridor for Anglian Water, Openreach, Gigaclear, Gtt and WPD, through land owned by Homes England, is included within the DCO boundary and will be further developed through discussions with all the relevant parties.
- 6.3.6 Diversion design discussions continue with Anglian Water to minimise the local

impact, diversion cost and disruption to the Scheme and local stakeholders. Anglian Water are progressing trial holes on their strategic pipelines to determine if they can be retained in-situ, with protection slabs, thereby enabling the construction of the dual carriageway over these assets. Site trial hole investigations are required to determine the depth of cover and other aspects regarding the pipelines. Protection measures if appropriate would avoid the need for potentially disruptive and costly diversions.

- 6.3.7 Anglian Water's access and easement requirements, for their assets outside the adopted highway limits, are being reviewed.
- 6.3.8 Safe digging practices and suitable permitting will be required during the works, along with thorough site investigations prior to the works, to reinforce data from non-intrusive survey methods.

6.4 BT Openreach

- 6.4.1 The majority of the existing A47 contains BT Openreach apparatus which conflicts with the construction activities. Opportunities to reduce the scope will be developed further as the detailed Scheme design progresses and construction programme evolves.
- 6.4.2 BT Openreach has existing underground and overhead network apparatus throughout the length of the Scheme, with a significant network of trunk assets along both the A1 and A47. Their network consists of multiple duct routes, ranging from 1-way to 9-way configurations. The Openreach diversion scope has been separated into six locations where new apparatus may be required, along the Scheme. The locations may require co-ordinated activities to complete to cable diversions.
- 6.4.3 There are several areas requiring substantial diversions. The first location is within the new access road to the residential properties adjacent to the A1, where 2 No. cabinets conflict with the carriageway alignment. Relocating the cabinets will require a significant programme duration (potential 9 months). A review of the local road layout design to minimise the impact on the cabinets will be undertaken during Detailed Design.
- 6.4.4 The second major area affected by the Scheme is at the intersection of the A1 to A47 link road with the A1 southbound verge. The 6-way ducts and chambers conflict with the construction activities and will require a diversion.
- 6.4.5 BT Openreach network infrastructure also crosses the existing A47 at two locations; Sutton Heath Road & Upton Road. A new one-way duct route is to be provided including the supply to the residential property adjacent to railway cutting (Heath House). The proposed diversion route for the one-way duct along Sutton Heath Road, avoiding the revised layout of the footway / cycleway which provides access to the railway cutting, is to be agreed with Openreach.
- 6.4.6 Diversion design discussions are continuing with BT Openreach.
- 6.4.7 As noted above a Utility Corridor for Anglian Water, Openreach, Gigaclear, Gtt and WPD is included within the DCO boundary, through land owned by Homes England and will be further developed through discussions with all the relevant parties.

6.5 Gigaclear

- 6.5.1 Gigaclear has existing underground apparatus west of the A1, continuing within the north verge of A47 between the Anglian Water Pumping Station and along Sutton Heath Road, before heading north with Sutton Heath Road. Other Licenced Operators have network apparatus between the A1 and A47 through the picnic area.
- 6.5.2 The Gigaclear network apparatus will conflict with the construction activities along the A47 and at the new structure at the railway cutting. The final design of the diversion route at the cutting, to avoid the revised layout of the footway / cycleway which provide access to the railway cutting, is to be agreed with Gigaclear.
- 6.5.3 Diversion design discussions are continuing with Gigaclear.
- 6.5.4 As noted above a Utility Corridor for Anglian Water, Openreach, Gigaclear, Gtt and WPD is included within the DCO boundary, through land owned by Homes England and will be further developed through discussions with all the relevant parties.

6.6 Gtt

- 6.6.1 Gtt has existing underground apparatus west of the A1, continuing through the picnic area between the A1 and A47, within the north verge of A47 between the Anglian Water Pumping Station and along Sutton Heath Road, then heading north with Sutton Heath Road.
- 6.6.2 The Gtt network apparatus will conflict with the construction activities within the picnic area, along the A47 and at the new structure at the railway cutting. The final design of the diversion route at the cutting, to avoid the revised layout of the footway / cycleway which provide access to the railway cutting, is to be agreed with Gtt.
- 6.6.3 Diversion design discussions are continuing with Gtt.
- 6.6.4 As noted above a Utility Corridor for Anglian Water, Openreach, Gigaclear, Gtt and WPD is included within the DCO boundary, through land owned by Homes England and will be further developed through discussions with all the relevant parties.

6.7 Vodafone

- 6.7.1 Vodafone has existing underground apparatus west of the A1, continuing through the picnic area between the A1 and A47, within the north verge of A47 between the Anglian Water Pumping Station and residential property (Deep Springs), east of the abandoned railway cutting. From here the apparatus switches back & forth from northern and southern verges, across the existing roundabout and continues east along the A47.
- 6.7.2 The Vodafone network apparatus will conflict with the construction activities within the picnic area, along the A47 up to the abandoned railway cutting, further east at the new junction at The Drift and with the works to remove the existing roundabout.

6.7.3 Diversion design discussions are continuing with Vodafone.

6.8 WPD 11kV & Lower Voltage

6.8.1 Discussions are on-going with WPD to progress their diversion requirements. A total of 5 locations have been identified where WPD's 11kV (high voltage - HV) or low voltage (LV) network will conflict with the Scheme, and it is likely diversions will be required.

6.8.2 The diversions will be straight forward realignments of existing underground or overhead apparatus. Diversion routes have been identified within the DCO boundary. These will be developed further as the detailed Scheme design progresses and construction programme evolves.

6.8.3 The Scheme design maintains the Wansford Pump Substation in its current location and WPD require suitable unrestricted access. The need to relocate the substation has been avoided. The detailed cable alignment of the underground 11kV diversion from the A1 to the Wansford Pump Substation is to be agreed with WPD, avoiding the underpass cutting earthworks.

6.8.4 The pole mounted transformer, alongside improved access to the residential properties adjacent to the A1, may require relocating. Retaining the overhead line across the National Grid High Pressure gas pipeline would be the preferred option, avoiding excavations over the pipeline.

6.8.5 The 11kV overhead line between the fuel filling station and the abandoned railway cutting is to be moved south and a pole mounted transformer relocated away from an attenuation pond. Further investigations are required to determine if the 11kV cable within the abandoned railway cutting can be protected, retaining it along its current alignment. The diversion of the LV overhead line / supply to Heath House is to be agreed with WPD avoiding the revised layout of the footway / cycleway, which provides access to the railway cutting. As noted above a Utility Corridor for Anglian Water, Openreach, Gigaclear, Gtt and WPD is included within the DCO boundary, through land owned by Homes England and will be further developed through discussions with all the relevant parties.

6.8.6 The revised layout of the junction at Nene Way, adjacent to the National Grid pylon, clashes with the WPD pole mounted transformer and LV supply to the mobile phone transmitter which is located on the tower.

6.8.7 The proposed roundabout north of the Nene Way junction with the A47, is likely to require a new LV supply for the street lighting and a new substation located within close proximity.

6.8.8 All construction works near overhead electricity lines will be undertaken in accordance with standard safety protection measures and following consultation with the plant protection section of the asset owner.

6.9 National Grid – Electricity

6.9.1 National Grid 400kV overhead lines cross the Scheme on pylons, with works underneath these lines at two locations, the minor side road improvements at Upton Drift Road and the A47 dualling tie-in with adjacent works on Nene Way including the removal of the existing A47 roundabout. Diversion and protection

of the overhead lines is not required, but safe working clearances and controls (e.g., line surveys and goal posts) will be required to be considered within the Contractors method statements. Access to the pylons will be maintained at all times during the works, through consultation with the asset owner.

6.10 Mobile Mast Transmitters

6.10.1 Five mobile transmitter sites have been identified within close proximity of the Scheme, none of which are directly impact by the construction activities or requiring to be relocated. Future access to these locations may need to be altered, and the affected companies will be consulted with accordingly. The potential for these amendments has been included within the draft DCO.

7 Environmental Design

7.1 Introduction

7.1.1 The Scheme has been developed taking account of multiple stages of environmental assessment and appraisal throughout its progression. The Environmental Statement (**TR010039/APP/6.1**) sets out the full assessment of the Scheme as well as the need for design, mitigation and enhancement measures where there are identified effects. This has been fully incorporated into the design submitted as part of this application.

7.2 Mitigation design

7.2.1 The environmental mitigation identified for the Scheme has been summarised in each of the chapters of the Environment Statement (**TR010039/APP/6.1**). The relevant chapter section relating to mitigation is presented in Table 7-1 below along with a high-level summary of the design mitigation. Mitigations measures are also set out in the Record of Environmental Actions and Commitments (REAC), which is an appendix to the EMP (**TR010039/APP/7.5**) and secure by Requirement 4 in the draft DCO (**TR010039/APP/3.1**).

Table 7-1: Environmental mitigation references from the Environment Statement (**TR010039/APP/6.1**)

Environment Statement reference	High level mitigation summary
Chapter 5 – Air Quality (section 5.9)	No mitigation required. Construction length under 2 years and standard best practice measures of dust management control measures during construction detailed and secured through the Environmental Management Plan (EMP (TR010039/APP/7.5)).
Chapter 6 – Cultural Heritage (section 6.9)	Proposed planting is sensitive to the setting and location of heritage assets. Reduction in Scheme extents, removing effects on several heritage assets. While the former station building itself and the gate piers must be removed due to engineering concerns, there is a potential for the linesman’s hut and elements of the platform to be retained. Detailed design will include examination of options for retention of these elements in consultation with the Peterborough Council Conservation Officer as the relevant authority and Historic England as a technical advisor. Original building materials from demolition will be made available to reputable organisations for the purposes of historic building restoration and reclamation. Preference shall be given to local railway organisations or projects first.
Chapter 7 – Landscape and Visual Effects (section 7.9)	Primary landscape, planting and visual mitigation measures embedded in the Scheme design are shown in the Environmental Masterplan (TR010039APP/6.8).
Chapter 8 – Biodiversity (section 8.9)	Where planting is proposed as mitigation, refer to the Environmental Masterplan (TR010039/APP/6.8). Mitigation includes: <ul style="list-style-type: none"> replacement woodland planting.

Environment Statement reference	High level mitigation summary
	<ul style="list-style-type: none"> • habitat creation (bird / bat boxes, specialist planting, habitat piles, bat hotel, riparian habitat, [REDACTED] etc) • creation of a new wetland area at Sacrewell • mammal ledge on the new Wittering Brook culvert • underpass providing mammals a safe crossing under the A47 at the dismantled railway • carefully selected and located trees to guide bats over the A47 • timing of vegetation clearance to outside of the breeding season which runs from March to August (inclusive) • vegetation clearance undertaken under supervision • pollution during construction will be mitigated by using best practice methods for pollution prevention and water management (ES Chapter 13). This would be implemented as part of the Register of Environmental Actions and Commitments (REAC) and overall Environmental Management Plan (EMP) (TR010039/APP/7.5).
<p>Chapter 9 - Geology and Soils (section 9.9)</p>	<p>A Soil Management Plan and a Material Management Plan will be created and implemented prior to construction.</p> <p>Construction compound and working areas will have a clear boundary for the construction area to prevent access onto adjacent land.</p> <p>Excess soils will be saved and reused outside the Scheme where possible.</p> <p>Where necessary for protection from construction activities, agricultural soils will be stripped, stored and replaced to their baseline condition, as far as possible.</p>
<p>Chapter 10 – Material Assets and Waste (section 10.9)</p>	<p>The Scheme is designed to avoid and minimise the environmental impacts of material assets and waste (as far as reasonably practicable) through the process of the assessment of alternatives and ‘embedded mitigation’.</p>
<p>Chapter 11 – Noise and Vibration (section 11.9)</p>	<p>The A47 dual carriageway shall be surfaced with a low-noise road surface.</p> <p>Temporary noise barriers shall be provided in certain areas to reduce noise impacts to sensitive receptors.</p> <p>Standard best practice measures for reducing noise nuisance during construction will be detailed and secured through the Environmental Management Plan (EMP) (TR010039/APP/7.5).</p>
<p>Chapter 12 – Population and Human Health (section 12.9)</p>	<p>Provision of two new underpasses of the new A47 at Sacrewell Farm and the dismantled railway.</p> <p>Provision of a new shared footway / cycleway to connect Wansford and Sutton, and upgrade of existing PROW (Hereward Way) at Sacrewell with the provision of a new 3m footpath.</p> <p>The design, mitigation and enhancement measures that will be provided as part of the Scheme are shown in ES Figure 12.2 (TR010039/APP/6.3).</p>
<p>Chapter 13 – Road Drainage and Water Environment (section 13.9)</p>	<p>Mitigation for the Road Drainage and Water Environment has been incorporated in the Scheme’s drainage design. Section 6 of this report provides a summary of the scheme drainage design.</p>

Environment Statement reference	High level mitigation summary
Chapter 14 – Climate (section 14.9)	No additional mitigation identified.
Chapter 15 – Cumulative Effects (Table 15-6)	No additional mitigation identified due to cumulative effects.

8 Construction

8.1 Introduction

8.1.1 The approach to construction described below is indicative but representative of the likely approach to be adopted. Further provisions in relation to construction of the Scheme are provided in the Environmental Management Plan (EMP) (TR010039/APP/7.5).

8.2 Land required for the Scheme

8.2.1 The powers to compulsorily acquire the land required permanently and to use land temporarily to deliver the Scheme are being sought by Highways England through the DCO.

8.2.2 Temporary and permanent land requirements have been identified through a combination of the design-development, environmental assessment, buildability advice from Galliford Try (Highways England's appointed contractor) and through engagement with landowners that would be affected by the Scheme. The Land Plans identify the required land (TR010039/APP/2.2).

8.2.3 Land requirements include:

- 49.465 ha of permanent land taken
- 14.4333 ha of temporary land taken.
- 7.1732 ha of new rights.

8.3 Construction programme

8.3.1 The indicative construction programme for the Scheme has been informed by Galliford Try as Highways England's appointed contractor, although some aspects are likely to be refined during the detailed design stage.

8.3.2 The impacts of construction activities are considered in each chapter of the Environmental Statement (TR010039/APP/6.1). Standard best practice construction techniques that will be adopted are set out in the EMP (TR010039/APP/7.5).

8.3.3 Construction is anticipated to take approximately **19** months. This would be carried out in phases, so not all sections of the Scheme would be under construction for the full period.

8.3.4 The proposed phases of construction are set out in Table 8-1 (Construction phasing programme). Enabling and site preparation work would be largely carried out during Phase 0, with the main works carried out during Phases 1 to 7 before final compound removal in Phase 8.

Table 8-1: Construction phasing programme

Phase	Traffic management stage	Approximate programme	Key Construction Activities
0	Pre-Works: Site Clearance and Construction compound set-up	1 month (month 0) Mar 2023	Compound and welfare areas constructed for main works. Hardstanding areas would be constructed, no topsoil would be stripped but laid over with geotextile and subbase installed. The main welfare area and car parking would be established on existing surfaced area at the end of the existing picnic area
1a	Offline works to enable partial installation of utilities diversion – no changes to original traffic flows	<2 month (month 1 - 2)	Part of the offline works would be built to enable utility diversion works prior to the main works.
2a	Offline works with no changes to the original traffic flows along the existing A47 or A1. Traffic management at side roads undertaken as required to enable offline A47 construction works.	Main work activities: Approx. 4 months (month 1 - 4) Kerb, gullies, pavements & finishing works Approx. 6 months (month 7 – 12)	Work activities include construction of offline mainline, side roads, earthworks, drainage, subbases and bitumen bound layers, kerbs, gullies, pavements and finishing works (lamp columns, signs, top-soiling, line marking, road restraint systems, fencing and re-instatement earthworks) for landscaping.
2b	Offline works with no changes to the original traffic flows along the existing A47 or A1. Traffic management at side roads undertaken as required to enable offline A47 construction works.	Approx. 3 months (month 7 - 9)	Construction of the offline structure includes- Sacrewell underbridge (S05). Work activities include site clearance, construction of Sacrewell underpass, reinforced structures backfill, reinstatement earthworks, topsoiling
3a	A47 online works – Construction of alignment south of Sacrewell Farm to section west of the scheduled monument. Appropriate traffic diversions would be put in place to allow traffic to move between old and new A47 alignment.	Main work activities: Approx. 5 months (month 1- 5) Kerb, gullies, pavements & finishing works Approx. 4 months (month 9 -12)	Work activities include construction of mainline, earthworks drainage, subbases and bitumen bound layers, kerbs, gullies, pavements and finishing works (lamp columns, signs, top-soiling, line marking, road restraint systems, fencing and re-instatement earthworks) for landscaping.
3b	A47 online works – Construction of alignment tie-in to existing carriageway (eastern extent) and removal of Nene Way roundabout.	Main work activities: Approx. 4 months (month 2 - 7)	Work activities include construction of mainline, earthworks drainage, subbases and bitumen bound layers, kerbs, gullies, pavements and finishing works (lamp columns,

Phase	Traffic management stage	Approximate programme	Key Construction Activities
	Appropriate traffic diversions would be put in place to allow traffic to connect to the A47 between east and west and Nene Way roundabout.	Pavement & Finishing works Approx. 2 months (month 10 - 11)	signs, top-soiling, line marking, road restraint systems, fencing and re-instatement earthworks) for landscaping.
3c	A47 online works – Construction of alignment west of the Wansford East roundabout to section east of Sacrewell Farm access road. Traffic would be diverted along the southern link road and a ramp would connect the traffic to the new A47 southern carriageway.	Main work activities: Approx. 3 months (month 3 - 5) Kerb, gullies, pavements & finishing works Approx. 4 months (month 11 -13)	Work activities include construction of mainline, earthworks drainage, subbases and bitumen bound layers, kerbs, gullies, pavements and finishing works (lamp columns, signs, top-soiling, line marking, road restraint systems, fencing and re-instatement earthworks) for landscaping.
3d	A47 online works – construction of the Wansford Sluice (S04) Appropriate traffic diversions would be put in place to allow traffic to connect to the A47 between east and west and Nene Way roundabout.	Approx. 2 months (month 6 – 7)	Construction of the offline structure includes- Sacrewell underbridge (S05). Works include site clearance, earthworks; culvert installation; reinforced structure backfill; reinstatement earthworks and topsoiling
3e	A47 online works – Construction of alignment next to existing Sacrewell Farm access road. Appropriate traffic diversions would be put in place to allow traffic to move between old and new A47 alignment.	Main work activities: Approx. 4 months (month 9 - 12) Pavement & Finishing works Approx. 1 month (month 17)	Work activities include construction of mainline, earthworks drainage, subbases and bitumen bound layers, kerbs, gullies, pavements and finishing works (lamp columns, signs, top-soiling, line marking, road restraint systems, fencing and re-instatement earthworks) for landscaping.
3f	Demolition works – Demolition of Old Station House	Approx. 1 month (month 6) Aug 2023	Work activities include site clearance, utility works, demolition, reinstatement of earthworks and topsoiling Demolition would be phased and under the supervision of an Ecological Clerk of Works.
4a	Construction of side roads and tie-ins Sutton Heath roundabout to Sutton Heath Road; Sutton Heath roundabout to existing A47; and existing A47 to Peterborough Road Traffic management would be required for the construction of tie-ins for vehicles using the A47 from the surrounding side roads	Approx. 10 months (month 1 -11)	Work activities include construction of mainline, drainage, subbases and bitumen bound layers, kerbs, gullies, pavements and finishing works (lamp columns, signs, top-soiling, line marking, road restraint systems, fencing and re-instatement earthworks) for landscaping.
4b	Construction of Wansford WCH	Approx. 3 months	Construction of the offline structure

Phase	Traffic management stage	Approximate programme	Key Construction Activities
	underpass (S02).	Bat hotel construction 1 year prior	includes- Wansford WCH underpass (S02) Work activities include site clearance, earthworks, new structure works, bridge deck assembly, reinforced structures backfill, re-instatement earthworks and topsoiling
5	Construction of A1 alternative access to properties. Traffic management may be required to ensure safe working near A1	1 month (month 8)	Work activities include site clearance utility works (including diversion) and carriageway construction
6	Compound Removal	1 month (month 18)	Compounds and site welfare would be removed. Hardstanding areas would be removed and the site re-topsoiled. Area would be re-landscaped as required.

8.4 Construction compounds and site accesses

- 8.4.1 Construction compound locations have been identified in balance of practical locations near key areas of work and avoidance of environmental impact (such as retention of trees and hedgerows, fitting within context of the landscape).
- 8.4.2 The main construction Offices and welfare is proposed to the south west of Lingwood Lane the existing A47; within the Highways England owned land of the former picnic area with an available area for car park on the eastern side.
- 8.4.3 Three satellite construction compounds are proposed: The first construction compound within Sacrewell Farms field adjacent their new access road will service the western half of the Scheme from the A1 to west of the disused Railway cutting overbridge. The second construction compound will be sited east of the existing Sutton Heath Road and will service the eastern half of the Scheme from the construction of the disused railway cutting overbridge and the new tie-in pint to the existing A47 to the east. An additional compound to serve the west end link road from the Wansford East roundabout to the filling station will also be provided. The compounds would include temporary Site Supervisors & Engineer's offices, parking, and welfare facilities. Table 8-2 indicates indicative areas, access arrangements of use of each of the compound locations.

Table 8-2: Proposed compound details

Compound number	Approximate area (m ²)	Purpose / justification	Access arrangements
Main 1	5,814	Main project offices and welfare facilities. Also catering for traffic management and vehicle recovery operations. As a traffic management compound, it is required to be in operation on a '24/7' basis to service the traffic management and recovery requirements of the Scheme.	Off existing A47 within HE owned picnic area hardstanding
Sat 1	5,000	Satellite one will service the western half of the Scheme from the A1 to west of the disused railway cutting overbridge (welfare facilities, small offices, plant, equipment and materials storage)	Accessed via Main Sacrewell Farm existing access
Sat 2	5,000	Satellite two will be sited east of the existing Sutton heath road and will service the East half of the Scheme from the construction of the disused railway cutting overbridge and the new tie-in pint to the existing A47 to the east (welfare facilities, small offices, plant, equipment and materials storage)	Off Sutton Heath Road
Sat 3	1,750	Satellite three will be sited north of the proposed link road from the Wansford East roundabout to the filling station (welfare facilities, plant, equipment and materials storage)	Off link road to filling station

8.5 Material storage and stockpiles

- 8.5.1 Topsoil (and potentially subsoil) will need to be removed from the mainline alignment and then temporarily stockpiled until needed for re-use.
- 8.5.2 Stockpiling will also be required for imported general fill and aggregates for use in the permanent works.
- 8.5.3 The stockpiles would generally be located at the perimeter of working areas, approximately 2m to 3m in height (in accordance with British Standard BS3882: 2015), so that they would also screen the works from the public.
- 8.5.4 Soils removed from areas identified as being of designated archaeological importance would be subject to specific procedures, defined in the EMP (TR010039/APP/7.5).

8.6 Construction traffic

- 8.6.1 The haul routes would be located under the footprint of the Scheme for the works to the east of the Scheme where the new alignment is mostly at Grade. There will be dedicated haul routes to the west of the Scheme to service the A1 Culvert extension, A1 southbound / A47 eastbound free flow link and the works south of the scheduled monument.
- 8.6.2 Construction traffic arriving from off site would consist of vehicles delivering the products required for the construction of the Scheme, including concrete, bitumen, aggregates and pipes.

8.6.3 Some deliveries would arrive as abnormal loads, such as large construction plant and pre-cast units. In most cases these larger construction traffic movements, would be directly to the worksite. Site worker journeys would be directly to and from the main compound areas. Table 8-3 provides a summary of the likely heavy goods vehicle (HGV) movements.

Table 8-3: HGV daily totals during construction

Phase	Max number of lorry trips per day	Indicative locations	Approximate programme
0	75	Compounds	Six months (month 1 to 6)
1	150	Site wide	Twelve months (month 6 to 17)
2	25	Compounds and Waterlow	Four months (month 9 to 12)
3			Six months (month 12 to 17)
4	50	Compounds and cross-over locations	Two months (month 16 to 17)
5	50	Compounds and carriageway tie-in locations	One month (month 17)
6	150	Compounds and embankments north of existing A47	Five months (month 17 to 21)
7	100	Compounds and final tie-in locations	Two months (month 20 to 21)
8	75	Compounds	Two months (month 21 to 22)

8.6.4 It is assumed that 50% of all deliveries would go to the satellite construction compounds, and 50% to the work sites. Of the satellite compound deliveries, approx. 55% of these will be delivered to Sat 1, 40% to Sat 2, and 5% to Sat 3.

8.6.5 The Outline Traffic Management Plan (**TR010039/APP/7.6**) defines the measures used to reduce the impacts from construction traffic, including measures to reduce worker vehicle movements and to reduce HGV movements, particularly at peak periods. This will be implemented by the contractor.

8.6.6 The construction traffic will be managed to limit noise and dust (as well as mud and the cleanliness of the local roads), in line with industry best practice. This will include the use of wheel washing and similar controls as set out in the EMP (**TR010039/APP/7.5**). Specific management plans will be produced prior to the start of construction.

8.7 Existing A47 during construction

8.7.1 The Scheme is mostly an offline alignment, allowing traffic to continue to use the existing A47 as works progress on the main dualling section.

8.7.2 Appropriate traffic management measures would be put in place to ensure that traffic flows on the existing A47 and other local roads are maintained, whilst allowing safe working at the interface between the existing road network and the Scheme.

8.8 Construction methods

8.8.1 The construction of the Scheme would use typical construction techniques associated with major infrastructure projects.

8.8.2 Indicative timescales for daytime, night-time and weekend working for each phase (refer to Table 8-1 for details), are presented in Table 8-4.

Table 8-4: Indicative working times by phase

Phase	Indicative working hours	Indicative locations	Approximate programme
0	Predominantly daytime works. Overnight works to construct works accesses.	Compounds and site clearance	two months (Month 1 to 2)
1	Predominantly daytime works for stats. Overnight works to construct works accesses.	Site wide	Twelve months (month 1 to 6
2	Predominantly daytime works. Overnight and weekend works required to complete tie-ins.	Site wide	Thirteen months (month 3 to 15)
3	Predominantly daytime works. Overnight works if required.		Fifteen months (month 3 to 17)
4	Predominantly daytime works. Overnight works required to construct A47 cross-overs.	Site wide	Ten months (month4 to 14)
5	Daytime, overnight and weekend works required to complete A47 tie-ins.	Site wide	One month (month 17)
6	Predominantly daytime works. Overnight and weekend works required to complete A47 tie-ins.	Site wide	Two months (month 17 to 18)
7	Predominantly daytime works. Overnight works if required.	Compound removal	Two months (month 18 to 19 -)

8.8.3 Piling may be required to construct the support for the retaining wall and overbridges, and possibly elsewhere for the retained cuttings. Major bridge structures would be likely to be built using combinations of ‘cast-in-situ’ elements and imported ‘off-site’ pre-cast elements craned into place.

8.8.4 Earthworks, including cuttings and embankments, would be required to create the route alignment. The cuttings and embankments would be constructed using a ‘cut-and-fill’ approach, using the alignment to move materials along the route corridor. The formation of the road surface would use standard techniques, including construction of capping, sub-base and pavement layers.

8.9 Plant and equipment

8.9.1 Construction of the Scheme would require a large quantity of plant and equipment. The volume of earth to be moved would require large excavators, dump trucks, bulldozers, compactors, graders, bowsers and stabilising plant.

8.9.2 Plant numbers and usage will be determined by the chosen construction method. Preliminary plant lists have been used for the purposes of assessment to consider construction impacts as set out in Environmental Statement Chapter 11 Noise and Vibration (**TR010039/APP/6.1**).

8.10 Utilities

- 8.10.1 Construction of the Scheme will require the diversion, relocation or protection of existing utility assets as set out in section 6 of this report and as per the corridors shown in the Works Plans (**TR010039/APP/2.3**).

8.11 Demolition

- 8.11.1 The Scheme requires the demolition of Station House.

8.12 Excavated materials

- 8.12.1 Construction of the Scheme would require excavation in places to form cuttings for the highway, ground improvement, foundations, soakaways, other drainage and miscellaneous features. Where material is recoverable, it would be used to form embankments or for other fill requirements. This is considered in greater detail in ES Chapter 10 Material Assets and Waste (**TR010039/APP/6.1**).

8.13 Environmental Management Plan

- 8.13.1 An EMP (**TR010039/APP/7.5**) has been prepared to include construction, operational and maintenance good practice and mitigation measures. These have been identified in part by the assessments presented in the Environmental Statement (**TR010039/APP/6.1**). The EMP includes the Register of Environmental Actions and Commitments (REAC).
- 8.13.2 In line with DMRB LA 120 (Environmental Management Plan), the EMP establishes a suitable mechanism to link assessment assumptions, DCO Requirements and obligations. The EMP is secured by Requirement 4 to the Draft DCO (**TR010039/APP/3.1**) and is a live document which will be revised as more information becomes available throughout the lifetime of the Scheme.

8.14 Operation and long-term management

- 8.14.1 Once the Scheme is opened, it would form part of the A47 trunk road and the wider strategic road network.
- 8.14.2 The new A47 mainline would be managed by Highways England on a day-to-day basis using monitoring and control systems in accordance with the relevant design standards.
- 8.14.3 The Scheme has been designed with maintenance and safe operation in mind, incorporating feedback from Highways England's Operations Directorate (the day-to-day maintainers), at multiple points in the Scheme. Maintenance is defined as actions needed to inspect, repair, adjust, alter, remove, replace or reconstruct all aspects that relate to the Scheme.
- 8.14.4 Long-term maintenance and repairs to the highways and associated assets (including drainage) would be undertaken as required to maintain the appropriate standards for the relevant highway authority.

- 8.14.5 The three structures (the Wansford NMU Underpass S02, Wansford Sluice S04 and Sacrewell Farm Underbridge S05) have been designed as fully integral structures without bearings, reducing the maintenance requirements. Lane closures would be required to safely facilitate the principal inspection for Sacrewell Farm Underbridge. NMU traffic management will be required to safely carry out the principal inspection for Wansford NMU Underpass.
- 8.14.6 It is currently anticipated that the de-trunked A47 and new side roads would become the responsibility of Peterborough County Council as identified on the De-trunking Plans (TR010039/APP/2.9) and the Classification of Roads Plans (TR010039/APP/2.11).

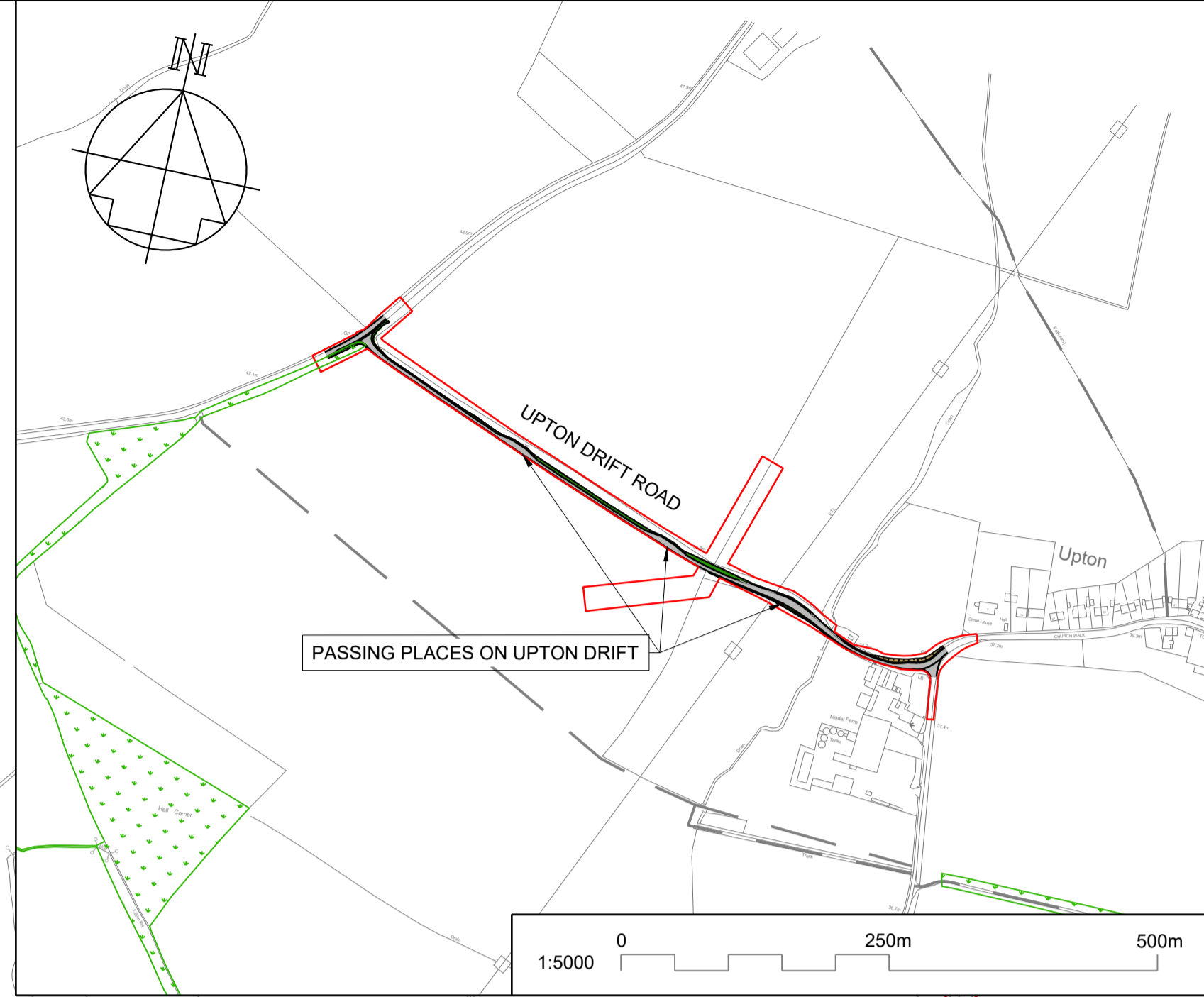
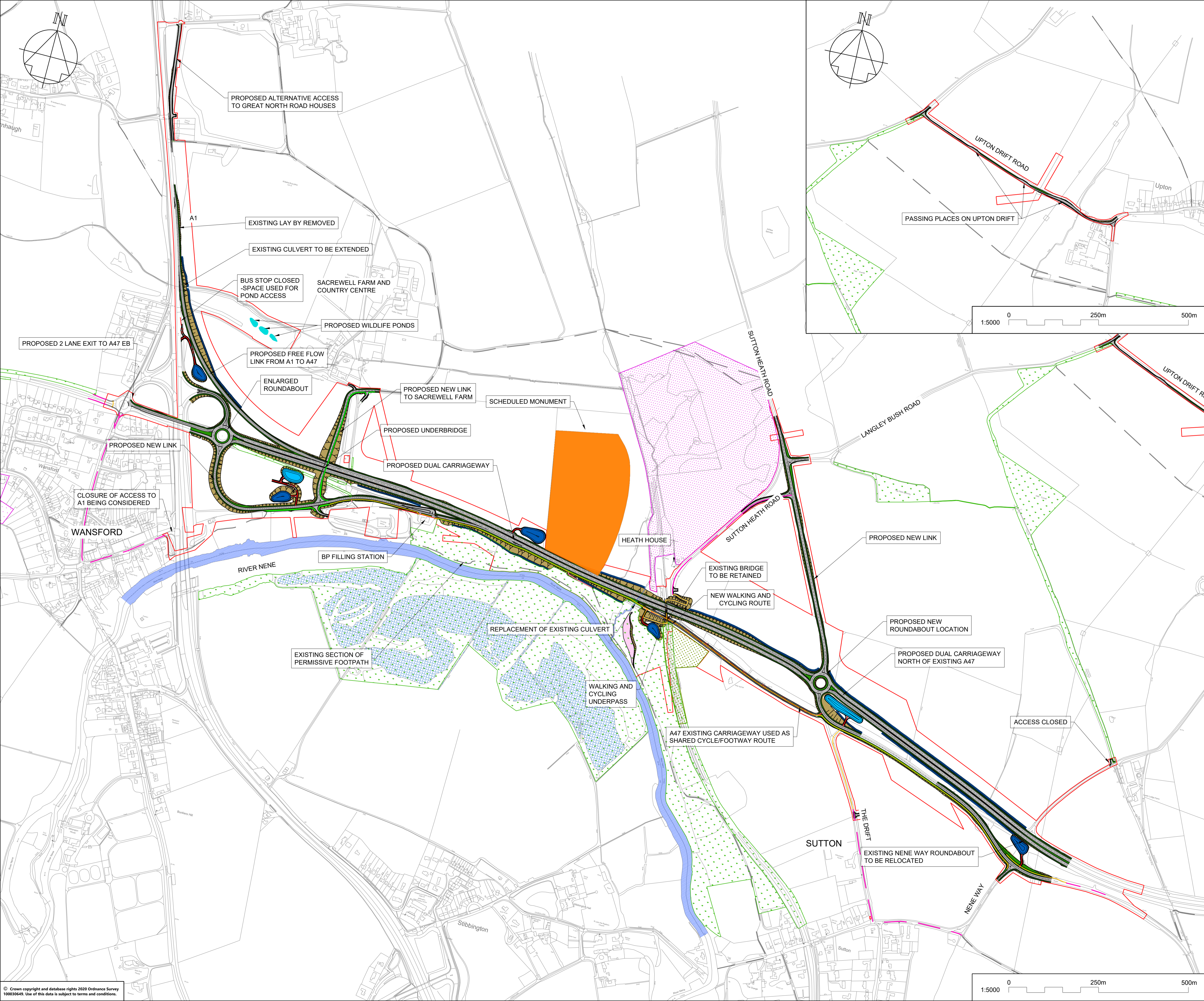
8.15 Decommissioning

- 8.15.1 It is considered highly unlikely that the Scheme would be demolished before the end of its design life of 60 years as the road would have become an integral part of the strategic road network.
- 8.15.2 In the event of the Scheme needing to be demolished, it would conform to the statutory process at that time, including Environmental Impact Assessment (EIA) if required.

Appendix A - Scheme Design



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- NOTES**
1. HEALTH AND SAFETY HAZARDS ARE IDENTIFIED ON THE DISCIPLINE SPECIFIC DRAWINGS.
 2. THIS DRAWING SHALL BE USED FOR THE PURPOSE SHOWN IN THE TITLE BOX ONLY.
 3. ALL DIMENSIONS ARE IN METRES UNLESS STATED OTHERWISE.
 4. DO NOT SCALE FROM THIS DRAWING.

KEY TO SYMBOLS

	SITE OF SPECIAL SCIENTIFIC INTEREST		COUNTY WILDLIFE SITE
	WATERCOURSE		TREE PRESERVATION ORDER
	ATTENUATION BASIN		FLOOD STORAGE BASIN
	INFILTRATION BASIN		PROPOSED DCO BOUNDARY
	PROPOSED DCO BOUNDARY		EXISTING NMU
	PROPOSED DCO BOUNDARY		ON-ROAD NMU ROUTE
	PROPOSED DCO BOUNDARY		PERMISSIVE BRIDLEWAY
	PROPOSED DCO BOUNDARY		SHARED CYCLE / FOOTWAY (MAIN ROUTE)
	PROPOSED DCO BOUNDARY		NEW FOOTPAH
	PROPOSED DCO BOUNDARY		NEW / IMPROVED VERGE
	PROPOSED DCO BOUNDARY		NEW / IMPROVED CARRIAGEWAY
	PROPOSED DCO BOUNDARY		NEW / IMPROVED EARTHWORKS
	PROPOSED DCO BOUNDARY		PROPOSED DITCH
	PROPOSED DCO BOUNDARY		PROPOSED POND ACCESSES

REV	DATE	REVISION NOTE	ORG	CHKD	APPD
P01	24/05/21	SGAR 3 ISSUE	CDye	AWoo	SCM
C01	24/05/21	SGAR 3 ISSUE	CDye	AWoo	SCM

DESIGNER
SWECO

CONTRACTOR
GallifordTry

CLIENT
highways england

PROJECT TITLE
A47 WANSFORD TO SUTTON DUALLING

PROJECT STAGE
PCF STAGE 3

DRAWING TITLE
**SCHEME LAYOUT PLAN
DESIGN FIX C**

SUITABILITY
AUTHORISED AS STAGE 3 COMPLETED

SHEET SIZE A1	SCALE 1:5000	STATUS A3	REVISION C01
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DRAWING NUMBER
HE551494-GTY-HGN-000-DR-CH-30023

Appendix B- Design Development Summary

	West of the scheduled monument		East of the scheduled monument
	A1 southbound to A47 eastbound slip road	Wansford roundabouts	
2018 Statutory Consultation Design		<p>Scheme extents extended to include improvements to the west of the A1:</p> <ul style="list-style-type: none"> - dualling of the A47 in both directions over the A1 - widening to the A47 to the west of the Wansford West roundabout 	<ul style="list-style-type: none"> - Existing location of the Nene Way Roundabout retained - Alignment located as far north as possible, whilst remaining south of the existing A47
2020 Design	<ul style="list-style-type: none"> - alignment refined to reduce the amount of earthworks required to construct the slip road - removal of the bus stop and the direct access to the A1 from the properties adjacent to Windgate Way - new access provided to the properties adjacent to Windgate Way via the existing A1 Sacrewell Lodge junction utilising the existing former section of the A1 that runs south to the properties 	<p>Wansford West roundabout design consists of:</p> <ul style="list-style-type: none"> - improved entry from the A1 northbound diverge slip road - a new segregated left turn lane between A1 northbound slip road and A47 eastbound - improved exit to the A47 eastbound - a new cycle crossing of the A47 west of the roundabout, removing cycle traffic from the A1 overbridge <p>Wansford East roundabout :</p> <p>The large widened physical island between the lanes on the connector road to the A1 that was proposed in 2018 amended to include appropriate widening only.</p>	<p>Following feedback from the 2018 statutory consultation:</p> <ul style="list-style-type: none"> - alignment to the east of the scheduled monument moved north of the existing A47 - roundabout location moved west (now referred to as the Sutton Heath roundabout) and to accommodate new northern alignment <p>New link road from Sutton Heath Road to new roundabout Upton Road to be closed Passing places being considered on the Upton Drift following feedback from Upton Village Improvements to the layout of the junction of Sutton Heath Rd & Langley Bush Road</p>
2021 DCO Submission Design	Inclusion of Water Vole mitigation area to the east of the A1 slip road	Removal of the changes to the A1 Northbound slip road	<p>Re - alignment of the carriageway further north, encroaching 9m into the south east corner of the scheduled monument.</p> <p>Confirmation of passing places on the Upton Drift and provision of widening to ensure minimum carriageway width of to 3.5m</p>
	Improvement to the access arrangement at the petrol filling station.		