A47 Wansford to Sutton Dualling

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6.1 Environmental Statement
Chapter 2 - The Proposed Scheme

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ENVIRONMENTAL STATEMENT
Chapter 2 – The Proposed Scheme

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2. The Proposed Scheme

2.1. The need for the Proposed Scheme

2.1.1. The Wansford to Sutton section of the A47 is approximately 2.6km long, located to the west of Peterborough between the existing junction with the A1 and the Nene Way roundabout near Sutton. Whilst around half of the A47 is already built to dual carriageway, the Wansford to Sutton section is not. This section of the A47 acts as a bottleneck, resulting in congestion, leading to longer journey times and a poor safety record.

2.1.2. Highways England aim to address these issues by making the A47 between Wansford and Sutton a dual carriageway. This would complete the dual carriageway between Wansford and Peterborough, supporting economic growth and easing congestion in the area.

2.1.3. The A47 corridor was identified as a key area in need of investment under the Roads Investment Strategy 2015-2020. The A47 currently experiences high levels of congestion especially at peak times and has a poor safety record.

2.1.4. There are several reasons for these delays. Investigations to date have highlighted the following issues:

- development in the local area
- road layout (single carriageway with limited opportunities to overtake)
- difficulty of accessing and crossing the A47 (due to the number of direct accesses from local side roads to the existing A47)
- standard of the road and junctions
- accident rates along the existing A47 which cause delays to local traffic
- traffic levels outgrowing the capacity of the road, causing tailbacks and delays
- limited opportunities for overtaking slower moving vehicles

2.1.5. In developing the Proposed Scheme, Highways England aim to address these issues by improving the traffic flow, reducing journey times on the route, increasing the route safety and resilience and improving the environment. Journey time improvements as a result of the Proposed Scheme are summarised within the Transport Assessment (**TR010039/APP/7.4**). The improvements to the Proposed Scheme would also support economic growth.

2.2. Proposed Scheme objectives

2.2.1. In line with the RIS 2, Highways England's Delivery Plan 2020 – 2025, the Proposed Scheme aims to meet the following objectives:

Supporting economic growth

2.2.2. The Proposed 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

2.2.3. 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

2.2.4. 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

2.2.5. Ensuring the proposals take into account the local communities access to the road network, and provide a safer route between the communities for walking, cycling, horse-riding and other road users.

2.3. Proposed Scheme location

2.3.1. The Proposed Scheme is located on the single-carriageway section of the A47 the runs from the A1 in the west, near Wansford (Grid reference: TL 07655 99754) to the dual-carriageway section near the village of Sutton in the east (Grid reference: TL 10131 99237). The location of the Proposed Scheme is shown on Figure 1.1, Scheme Overview (**TR010039/APP/6.2**).

2.3.2. 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.

2.3.3. The Proposed Scheme lies adjacent to the River Nene and the Nene Valley. 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.

2.3.4. There are a few residential properties adjacent to the A47. One is located on Sutton Heath Road (Heath House) and the other is north of the existing Nene Way roundabout (Lower Lodge Farm). Wansford, Sutton and Upton are the nearest residential areas to the Proposed Scheme.

2.3.5. Natural resources in the area of the Proposed Scheme include biodiversity habitats, agricultural soils, mineral and groundwater (aquifers) resources. Further details are provided in the following Environmental Statement (ES) Chapters:

- Chapter 8 (Biodiversity) (**TR010039/APP/6.1**)
- Chapter 9 (Geology and soils) (**TR010039/APP/6.1**)
- Chapter 10 (Material assets and waste) (**TR010039/APP/6.1**)
- Chapter 13 (Road drainage and the water environment) (**TR010039/APP/6.1**)

2.3.6. There are five statutory designated sites of national and local importance within 2km of the Proposed Scheme and one additional statutory designated sites of international importance, further than 2km from the Proposed Scheme boundary but hydrologically connected to the Proposed Scheme. There are also 10 non statutory designated County/Local Wildlife Sites (CWS) within 2km of the Proposed Scheme. Further detail is provided in Tables 2-1 and 2-2 and within ES Chapter 8, Biodiversity (**TR010039/APP/6.1**).

Table 2-1 Statutory designated sites

Statutory designated site	Approximate distance from Proposed Scheme boundary at closest point (m) and direction
Nene Washes Special Protection Area (SPA) and Ramsar (Wetlands of international importance)	11.9km east, hydrologically connected
Sutton Bog and Heath Site of Special Scientific Interest (SSSI)	North of Proposed Scheme boundary
Wansford Pasture SSSI	04km south
Old Sulehay Forest SSSI	1.1km south-west
West Abbot's and Lound Wood	1.5km north-east
Castor Hanglands SSSI	1.6km north-east

Table 2-2 Non-statutory designated sites

Non- statutory designated site	Approximate distance from Proposed Scheme boundary at closest point (m) and direction
Sutton Meadows CWS	Within Proposed Scheme boundary
Sutton Disused Railway CWS	Within Proposed Scheme boundary
River Nene Meadow CWS	50m south
A47/A1 Interchange Road Verges CWS	Within Proposed Scheme boundary
Stibbington Pits CWS	0.2km south
Heil Corner and Top Field Spinney CWS	0.6km south
Standens Pasture LWS	0.6km south
Yarwell Gravel Pit LWS	1.8km south
Andrews Quarry LWS	2.2km south
Yarwell Mill Lake LWS	2.4km south

2.4. Baseline scenario

Existing baseline scenario

2.4.1. The existing baseline scenario refers to the conditions that currently exist, as surveyed in 2019 and 2020, in the area within which the Proposed Scheme would be implemented. Surveys completed are summarised within the Transport Assessment (**TR010039/APP/7.4**) and the ES Chapters (**TR010039/APP/6.1**).

2.4.2. The A47 is ranked second nationally for fatalities on A roads and the accident severity ratio is above average. The existing road is single carriageway.

2.4.3. The section of the A47 between Wansford and Sutton currently has a significantly lower morning peak average speed compared to the daily average speed along this section of the A47. This is an indicator of congestion and affects journey times and journey time reliability on the road. Journey time improvements as a result of the Proposed Scheme are summarised within the Transport Assessment (**TR010039/APP/7.4**).

2.4.4. These indicators show that the section of the A47 Wansford to Sutton is already over capacity.

2.4.5. The resilience of this section of the A road is an issue as there are no alternative routes.

2.4.6. The existing conditions within the Proposed Scheme boundary and surrounding area relevant to each of the chapter topics, is reported in Chapters 5 to 14 of the ES (**TR010039/APP/6.1**) under 'Baseline Conditions'. A brief summary of the baseline is provided below, and the environmental constraints are provided in Figure 2.1 (**TR010039/APP/6.2**).

2.4.7. There are currently no Air Quality Management Areas (AQMAs) declared within the air quality study area (as defined in Chapter 5 Air quality (**TR010039/APP/6.1**)). The nearest AQMA declared by Peterborough City Council is located 6km east of the study area.

2.4.8. The Proposed Scheme intersects the south-west corner of a barrow cemetery with later roman enclosures. This is a Scheduled Monument which is a nationally significant archaeological asset.

2.4.9. Roman settlements, several villas, a fort, and an ironworking site have been recorded in the area surrounding the Proposed 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. Further information is provided in Chapter 6 Cultural heritage (**TR010039/APP/6.1**).

2.4.10. The Proposed Scheme extents (as defined in Chapter 7 Landscape and visual effects (**TR010039/APP/6.1**)) are predominantly arable farmland enclosed by interconnected narrow lanes and hedgerows. 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.

2.4.11. There are valuable habitats and species of nature conservation importance within the Proposed Scheme (as defined in Chapter 8 Biodiversity (**TR010039/APP/6.1**)). To the north of the Proposed Scheme, adjacent to Sutton Heath Road, is Sutton Heath and Bog SSSI (designated for the calcareous grassland). To the south of the Proposed Scheme, south of the A47 is the Sutton Meadows County Wildlife Site.

2.4.12. A wide range of habitats have been identified within the Proposed Scheme boundary which include but are not limited to:

- Improved / semi-improved natural grassland
- Broadland semi-natural woodland
- Hedgerows

- Dense and scattered scrub

2.4.13. There are protected species and species of principal importance, including fungi, [redacted] bats, breeding birds, migratory birds, wintering birds, barn owl, terrestrial and aquatic invertebrates, water vole, reptiles and their habitats

2.4.14. The agricultural land within the footprint of the Proposed Scheme contains:

- Grade 2 agricultural land (very good quality)
- Grade 3a agricultural land (good quality)
- Grade 3b agricultural land (moderate quality)

2.4.15. There are no sites that are designated for their geological or geomorphological importance within the Proposed Scheme boundary.

2.4.16. Sensitive receptors such as residential properties, in proximity to the Proposed Scheme have been identified. Approximately 400 noise sensitive receptors have been identified within 600m to the north and south of the Proposed Scheme. Some of these receptors are located close to the existing A47 so are currently exposed to relatively high noise levels due to road traffic.

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

2.4.18. The main water features within the study area are within the River Nene catchment. The Proposed Scheme is adjacent to the River Nene and approximately 15 metres away from the river to the embankment of the Proposed Scheme at its closest point. The A1 crosses Mill Stream north of Wansford and Mill Streams flows to Wittering Brooke for which the A47 crosses east of Sutton Heath Road.

2.4.19. A small proportion of the Proposed 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. These locations are predominately along the River Nene Corridor.

2.4.20. The groundwater conditions include the following aquifers:

- The Bilsworth Limestone and Lincolnshire limestone bedrock are the principal aquifers
- Alluvium classified as Secondary A aquifers
- Rutland classified as Secondary B aquifers

- River Terrace Deposits (classified as Secondary (undifferentiated) aquifer)

Future baseline scenario

2.4.21. Existing baseline conditions which would change and evolve without the implementation of the Proposed Scheme are included as part of the ES assessments and are referred to as the future baseline. Changes to the existing baseline conditions may occur due to a combination of influences, for example climate, traffic flows and new developments.

2.4.22. Peterborough, Cambridge and Norwich are amongst the fastest growing cities in the country. Without improvement, the current congestion and journey time reliability problems experienced on local roads and in particularly the existing A47 corridor.

2.4.23. The future baseline scenarios considered in the ES are defined in Chapter 4: Environmental assessment methodology (**TR010039/APP/6.1**) and a list of developments included as part of the future baseline is provided in Appendix 15.1 (**TR010039/APP/6.3**).

2.5. Proposed Scheme description

2.5.1. The preferred route for the Proposed Scheme was announced in August 2017. Since then, the Proposed Scheme design has been developed through an iterative process in parallel with the environmental assessment. The development of the Proposed Scheme design has been informed by knowledge of environmental constraints, the environmental assessment of emerging design proposals and engagement with stakeholders (including responses received during statutory consultation). The Proposed Scheme is shown in Figure 2.2 (**TR010039/APP/6.2**).

2.5.2. The key elements of the Proposed Scheme include:

- approximately 2.6km of new dual carriageway constructed partially 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 eastern 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 amendments for access to Sutton Heath Road and Langley Bush Road
- closure of the existing access to the A47 from Sutton Heath Road, Sutton Drift and Upton road
- new passing places and limited widening along Upton Drift Road (also referenced as Main Road)
- a new walking and cycling route connecting Wansford to Sutton. This includes a new underpass at the disused railway to connect to Sutton Heath Road
- 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 along the route of the new A47, such as, electricity lines, water pipelines and telecommunications lines
- temporary compounds, material storage areas and vehicle parking required during construction
- environmental mitigation measures.

2.5.3. An overview of the key design elements of the Proposed Scheme is presented below. Description text should be read in conjunction with:

- Figure 1.1 (Scheme Overview) (**TR010039/APP/6.2**)
- Figure 2.1 (Environmental Constraints) (**TR010039/APP/6.2**)
- Figure 2.2 (Proposed Works) (**TR010039/APP/6.2**)
- Environmental Masterplan (**TR010039/APP/6.8**)
- Work Plans (**TR010039/APP/2.3**)
- General Arrangement Drawings (**TR010039/APP/2.6**)

Mainline

2.5.4. The existing A47 single-carriageway is to be upgraded to dual-carriageway standard. After the tie-in at Wansford eastern roundabout (see Figure 1.1 Scheme Overview (**TR010039/APP/6.2**)), the Proposed Scheme main alignment would be constructed slightly to the north of the existing alignment for approximately 1.3km to join to Sutton Heath Road. The alignment is then moved entirely offline of the existing A47 to the north connecting to the new Sutton Heath roundabout. The alignment continues to be north of the existing alignment for before connecting back into the existing alignment as a dualled carriageway, west of the existing Nene Way roundabout which would be removed as part of the proposal. The new Sutton Heath roundabout would replace the existing Nene Way roundabout.

2.5.5. As part of the overall route strategy to improve safety and reliability there would be no direct access provided onto the proposed A47 mainline other than from the junctions and free flow link road connecting the A1 southbound to the A47 eastbound. Currently, Sacrewell Farm, Anglian Water pumping station, the petrol filing station, Sutton Heath Road, Sutton Drift, Peterborough Road and Upton Road can be accessed directly from the A47. As part of the Proposed Scheme, these accesses would be realigned.

Improvements along the A1

2.5.6. To the west of the Proposed Scheme, there are four properties located adjacent to the A1, north of Windgate Way. Access to these properties is directly from the A1 with no safe turning. As part of the overall route strategy to improve safety and reliability, the proposal is to provide safer access to the properties. It is proposed for access to be via the existing A1 Sacrewell Lodge junction and the existing former section of the A1 that runs south of the Sacrewell Lodge access. The former section of the A1 would be cleared of vegetation and extended to connect to the properties. Immediately in front of the properties, a safety barrier would be put to stop light spill from vehicles facing onto the A1.

2.5.7. Users of Windgate Way would be able to connect onto the new access road in front of the properties.

2.5.8. There is a bus stop directly outside the properties which is currently not served by any buses. As part of the Proposed Scheme, the bus stop would be removed.

2.5.9. A new free-flow slip road is to be constructed connecting the existing A1 southbound carriageway to the new A47 eastbound carriageway. The existing diverge lane off the A1 southbound is retained as part of these arrangements to connect to the Wansford eastern roundabout for all other movements.

Wansford junction

2.5.10. Improvements to the Wansford western roundabout include the addition of a second exit lane eastbound on the A1 overbridge, as permitted within the confines of the existing bridge width.

2.5.11. As part of the overall route strategy to improve safety and reliability, a new cycle crossing on A47 west of Wansford western roundabout is proposed, removing cycle traffic from the A1 overbridge. The cyclists would be directed into Wansford via Old North Road and Peterborough Road for access to Wansford Nene Way.

2.5.12. The Wansford eastern roundabout would be enlarged and the part-time traffic signals removed. The roundabout would include a new link to the south for access to Sacrewell Farm, the petrol filling station and the Anglian Water pumping station.

Sutton Heath roundabout

2.5.13. Sutton Heath roundabout would provide access to both Sutton and Upton. Access to Sutton from the new roundabout would be provided via a new link road using part of the existing A47 which would tie into Peterborough Road.

2.5.14. Access to Upton from the new roundabout would be provided via a new straight link road, linking into Sutton Heath Road and Langley Bush Road.

Side roads and accesses

2.5.15. As part of the overall route strategy to improve safety and reliability there would be no direct access provided onto the mainline other than from the roundabouts. As a result of this a number of existing side roads that currently have direct access onto the A47 would be closed as part of the works and these would be realigned to tie into the proposed new junctions (as shown on Figure 2.2) (**TR010039/APP/6.2**).

Sacrewell Farm, Anglian Water pumping station and the petrol filling station

2.5.16. As noted in paragraph 2.5.9 a new link road on the Wansford eastern roundabout is proposed providing access to Sacrewell Farm, the Anglian Water pumping station and the petrol filling station.

2.5.17. To enter Sacrewell Farm, a new access road and underpass (S05) to the west of the existing access road would be provided. Access to Sacrewell Farm buildings would be maintained. Where the existing access road would no longer be required, it would be reinstated to agricultural field.

Sutton Heath Road

2.5.18. Direct access to the A47 via Sutton Heath road would be severed as a result of the Proposed Scheme mainline. The link road from Sutton Heath Roundabout would connect to Sutton Heath Road and provide local vehicle access only (One resident and landowners). Cyclists and walkers would still be able to use the road which connects to the wider path network.

Sutton Drift

2.5.19. To improve safety, access to A47 via the Sutton Drift would be closed to vehicles. The road would remain open for agricultural access including access to the field in the east.

2.5.20. The road would become a part of the new shared footpath and cycleway. This section would have a reduced cross section to facilitate the inclusion of the new shared-use path.

Lower Lodge Farm

2.5.21. Access to the A47 via Lower Lodge Farm Road would be severed as a result of the Proposed Scheme mainline. Access along Lower Lodge Farm Road would be retained for agricultural and drainage maintenance. It is proposed that the Sutton Heath roundabout would provide access to A47 for Lower Lodge Farm via Sutton Heath Road/Langley Bush Road.

Nene Way

2.5.22. Nene Way and the Nene Way roundabout would be severed for users as a result of the Proposed Scheme mainline. Instead, the Nene Way would connect into Peterborough Road and the southern link road of the new Sutton Heath roundabout for access to and from the A47.

2.5.23. At the junction between Nene Way and Peterborough Road, a visibility-splay is proposed to improved visibility for users.

Upton Drift

2.5.24. It is proposed to upgrade the Upton Drift including resurfacing work, lmited widening and the inclusion of passing places and to allow vehicles to pass one another safely.

Fencing, barriers, road signage

2.5.25. Boundary fencing in the form of timber post and rail, would be provided to delineate the highway boundary and is indicated in Figure 2.2 (Scheme Overview) (**TR010039/APP/6.2**).

2.5.26. Anti-glare screening would also be provided at a number of points to mitigate the effects of headlight glare between sideroads and the proposed mainline. This screening would be achieved through close boarded fencing or a barrier mounted paddle system.

2.5.27. Safety barriers and road signage are also included in the Proposed Scheme.

2.5.28. Safety barriers would be provided in the verge on both the mainline and sideroads where necessary and following an appropriate risk assessment.

2.5.29. A double-sided steel barrier would be provided in the central reserve with the central reserve construction make-up being unpaved.

2.5.30. Road signage covering warning and regulatory signage as well as informative and advanced direction signage would be provided.

Walking, cycling and horse-riding (WCH)

2.5.31. Connectivity for pedestrians and cyclists would be improved through the provision of a network of shared use paths adjacent to the sideroads (both new and realigned). Where the shared use paths are located adjacent to a carriageway, a separation strip would provide a buffer between pedestrians and cyclists and the trafficked carriageway.

2.5.32. As part of the overall strategy to provide a safer route between communities the Proposed Scheme includes a cohesive east-west route between Wansford and Sutton for pedestrians and cyclists.

2.5.33. It is proposed to provide a continuation of the recently upgraded all-user route that connects Peterborough Road to the Wansford Picnic Area via the A1 underpass (as shown on Figure 2.2 The Proposed Scheme (**TR010039/APP/6.2**)). The proposed shared route would follow the alignment of the side road that continues on to as far as the petrol filing station and also provides a continuous link to Sacrewell Farm. The new alignment would no longer require the crossing of the A47. A safe crossing at the side road would be provided to allow access to Sacrewell Farm.

2.5.34. The new access to Sacrewell Farm would accommodate all users and a new 3m footway (2m at the underpass) would be provided. Speeds of vehicles would be limited to 15mph and signage notifying vehicles of cyclists and equestrian using the road. This new route would replace like-for like a section of the permissive Wansford Hereward Way Permissive 3.

2.5.35. The combined footway and cycleway along the new side road alignment past the petrol filling station would also replace a section of the permissive Wansford

footpath that passes in front of the Anglian Water pumping station. The route would continue past the petrol filling station following the southern frontage of the A47 alignment, to a point where the route joins the old alignment of the A47.

2.5.36. The route would allow connections to the Sutton 1 PRoW footpath heading south along the bank of the River Nene as well as the new underpass via the disused railway at Sutton Heath Road. The underpass at the disused railway line would provide a traffic free crossing of the new A47 alignment.

2.5.37. The shared path would continue from the old alignment of the A47 to Peterborough Road/Nene Way. Appropriate crossings and transitions would be provided to allow cyclists to return to the carriageway on Old Peterborough Road to the east. The section of the existing A47 between the disused railway and Sutton Drift would have a reduced 4m cross section to facilitate the shared-use path. The connection between the old alignment and Sutton Drift would be maintained as part of the shared-use path and Sutton Drift would also have a reduced width with a 4m wide cross section.

Road surfacing

2.5.38. The mainline pavement surface would be a Thin Surface Course System with any bridge decks requiring Hot Rolled Asphalt (HRA) as a surface course. The surfacing of any local authority roads would be developed during the detailed design stage. For the purposes of the environmental assessment, the local authority roads have been modelled as HRA. Similarly, the specification of the full pavement make-up (i.e. the specific aggregate base) for all roads within the Proposed Scheme would be refined during the detailed design stage.

Structures

2.5.39. The Proposed Scheme includes three new structures. These structures comprise:

- Wansford NMU Underpass (S02)
- Wansford Sluice Extension (S04)
- Sacrewell Farm Underbridge (S05)

2.5.40. The structures are described in further detail in the following sections. The structure parameters provided are the maximum worst case parameters for the environmental assessment needs.

Wansford NMU underpass (S02)

2.5.41. A new underbridge would be constructed immediately north of the existing disused railway bridge to serve pedestrians and cyclists. The underpass would

have an internal horizontal width of 5m and a minimum headroom of 2.7m plus an allowance for the deflection of the structure, in accordance with Design Manual for Roads and Bridges (DMRB) standard CD127. The structure would also satisfy the minimum headroom required for the walking, cycling and horse-riding route which is 2.7m, in accordance with DMRB standard CD143. The preferred structural option is a precast concrete jointed portal solution.

Wansford Sluice extension (S04)

2.5.42. The Wittering Brook currently passes through the A47 embankment via an existing masonry arch culvert, Wansford Sluice (S03). For improved buildability, upstream flood management and future maintenance requirements, the existing culvert would be replaced. The replacement structure, Wansford Sluice Extension (S04), would be constructed slightly west of the existing culvert with short inlet and outlet realignments. This would maintain the watercourse passage of Wittering Brook beneath the widened embankment of the new A47 dual carriageway alignment.

2.5.43. The proposed replacement structure is a buried reinforced concrete box with capacity for the 1/100 year + 65% Climate Change design flood event. The culvert is 54m in length, 2.5m in width and has and internal clear height of 2.45m. The structure also features mammal ledges for safe passage of wildlife to either side of the A47 embankment.

Sacrewell Farm Underbridge (S05)

2.5.44. A new underbridge would be constructed to the west of the existing Sacrewell access route to serve pedestrians, cyclists, equestrians and vehicle traffic. This underpass would have an internal horizontal width of 9m and a minimum headroom of 5.3m plus an allowance for the deflection of the structure, in accordance with DMRB standard CD127. The structure would also satisfy the minimum headroom required for the walking, cycling and horse riding route which is 2.7m, in accordance with DMRB standard CD143. The preferred structural option is a precast concrete jointed portal solution.

Lighting

2.5.45. The environmental assessment has considered the lighting design described below. This is a worst-case scenario approach to the assessment. Discussions with relevant stakeholders and further work would be completed in later stages of detailed design to reduce and eliminate road lighting where possible and safe to do so, thereby meaning the actual potential effect of the lighting would be reduced from that assessed.

Lighting design

2.5.46. The current lighting design proposed 10m height lighting columns with LED luminaires, located in verges (or at the back of footways where applicable) and oriented perpendicular to the carriageway. Luminaires would be mounted with zero-degree tilt and a minimum as installed luminous intensity of G4, to ensure glare and upward light spill is minimised.

2.5.47. The new A47 alignment and link roads in proximity to the proposed A47 Sutton Heath roundabout would require lighting to provide approximately five seconds of driving time at the expected speed.

Drainage

2.5.48. The drainage design for the Proposed Scheme has been developed with advice provided from the appropriate environmental specialists. The assessment of drainage in relation to the water environment is reported in Chapter 13 (Road drainage and the water environment) (**TR010039/APP/6.1**). Figure 2.1 shows the existing water environment features and the Engineering Drawings and Sections (**TR010039/APP/2.2**) show the Proposed Scheme drainage design including the proposed outfall locations (**TR010039APP/2.7**).

2.5.49. Two organisations have been consulted regarding the drainage of the Proposed Scheme:

- Environment Agency (EA)
- Peterborough City Council (PCC) as the Lead Local Flood Authority

Existing drainage

2.5.50. The existing drainage primarily is over the edge drainage discharging to a series of drainage ditches which follow the highway alignment linearly. Where possible, existing drainage flow routes would be retained.

2.5.51. Where existing direct discharges to streams are not taking any increased road run-off from the Proposed Scheme, these outfalls would remain in place.

Attenuation and infiltration basins

2.5.52. The Sustainable Drainage Systems (SuDS) systems have been designed to accommodate a 1 in 100 year storm event plus an uplift of 20% for climate change (an additional 20% added capacity over and above this volume has also been provided in accordance with DMRB CG 501).

2.5.53. These have a minimum of 300mm freeboard above the designed water level.

Drainage system

2.5.54. The new drainage system would meet design criteria of no surcharging of the pavement layers for a one in five-year event plus an additional 20% to allow for climate change.

Road drainage

2.5.55. The new mainline carriageway would drain to filter drains and discharge to a SuDS system located at low points along the route or where necessary for constraints such as structures or river crossings. The drainage system would provide treatment of the surface water run-off and not exceed existing discharge rates to receiving watercourses or groundwater.

2.5.56. Additional spillage containment would be provided where required at discharge points.

2.5.57. Outline proposed drainage systems include:

- The mainline would be drained by a combined carrier filter or carrier drains located in the verge or central reserve.
- Combined drains would be provided at the toe of any cuttings along the mainline. The combined drains would drain the cuttings and collect surface run-off from the carriageway.
- Central reserve drainage would be provided where the road is in super-elevation.

2.5.58. Toe drains, have been provided where required, draining embankments greater than 1.5m in height.

2.5.59. Sideroad links would be drained using filter drain, although over the edge treatment where the alignment allows should be considered at Stage 5 on the receipt of further survey, with surface runoff draining straight from the carriageway down adjacent embankments, matching the existing situation. Where over the edge drainage cannot be provided combined drains or a carrier drain with gulley's would be used to collect runoff and convey it to an outfall.

2.5.60. At sideroad tie-ins existing drainage would be used where possible subject to surveys of the existing drainage system.

2.5.61. Natural overland flow and existing ditches / streams would be intercepted by new ditches and conveyed along natural drainage paths as far as possible. This would involve pipe crossings of the proposed new mainline and sideroads.

Infiltration rates

2.5.62. Infiltration rates have been collected from testing undertaken during the ground investigation.

2.5.63. Infiltration basins would be considered in the detailed design stage, instead of detention basins, if suitable rates are available to allow. Any such infiltration basin would receive surface water discharges from the new road and would not exceed existing discharge rates.

2.5.64. Treatment in the form of filter drains and separate spillage containment would also form part of such a drainage system.

Landscaping and environmental design

2.5.65. Landscape features are described in more detail in Chapter 7 (Landscape and visual effects) and illustrated on the Environmental Masterplan (**TR0010039/APP/6.8**).

2.5.66. Appropriate landscape planting would be provided within the Proposed Scheme boundary to replace lost features, enhance visual amenity and provide visual screening to the operational scheme. The nature and type of planting is outlined in the Environmental Masterplan (**TR0010039/APP/6.8**).

2.6. Construction, operation and long-term management

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

Land required for the Proposed Scheme

2.6.2. The rights to compulsorily acquire the land required to deliver the Proposed Scheme are being sought by Highways England through the DCO.

2.6.3. Landowner engagement has been a key part of the development of the Proposed Scheme. Land acquisition would initially be sought through negotiation. The compulsory acquisition process would be the last resort.

2.6.4. Temporary and permanent land requirements have been identified through a combination of the design development and environmental assessment, and through engagement with landowners that would be affected by the Proposed Scheme. These are defined by the Order Limits illustrated in the Land Plans (**TR010039/APP/2.2**).

2.6.5. Land-take required for the Proposed Scheme is:

- 48.4 ha total permanent land-take required
- 15.1 ha total temporary land-take required
- 7. ha new rights land-take required.

Construction programme

2.6.6. The construction activities for the Proposed Scheme have been identified through close working with the Principal Contractor. Inevitably, some aspects of detailed design cannot be known at this stage. Where this is the case the description of the Proposed Scheme used in preparing the ES ensures that the effects of any works would have no greater environmental effects than those identified and assessed as part of the EIA process.

2.6.7. Construction is anticipated to take approximately 16 months. This would be carried out in construction phases, so not all sections of the Proposed Scheme would be under construction for the full period.

2.6.8. The proposed phases of construction are set out in Table 2-3 (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 5 before final compound removal in phase 6.

2.6.9. The two main construction compounds would be located south of Sacrewell Farm buildings and east of Sutton Heath Road, with a further satellite compound for the storage of materials located in an agricultural field east of the Anglian Water pumping station. The construction compounds are presented in Figure 2.3 (**TR010039/APP/6.2**). Each compound would include temporary site offices, parking, and welfare facilities. Table 2-3 indicates indicative timings of use and assumptions associated with each of the compound locations.

Table 2-3 Proposed construction phasing

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

Phase	Traffic management stage	Approximate programme	Key Construction Activities
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. Appropriate traffic diversions would be put in place to allow traffic to connect to the A47 between east and west and Nene Way roundabout.	**Main work activities:** Approx. 4 months (month 2 - 7) **Pavement & Finishing works** Approx. 2 months (month 10 - 11)	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.
3c	A47 online works – Construction of alignment west of the Wansford eastern 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	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.

Phase	Traffic management stage	Approximate programme	Key Construction Activities
		(month 11 -13)	
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 underpass (S02).	Approx. 3 months Bat hotel construction 1 year prior	Construction of the offline structure 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.

2.6.10. Access to the construction compounds is outlined in Table 2.2 above. Where access is to be derived from the existing A47, traffic management measures would be in place on the existing A47 and local roads.

2.6.11. All existing trees and hedgerows surrounding the proposed compound sites would be retained. Compound layouts, fencing and material storage would be located to avoid loss of, or damage to, roots of hedgerows and trees. Access to Sacrewell Farm and Health House (the two closest receptors) would be maintained throughout the construction period.

2.6.12. It is assumed that cabins would be no more than two storey and would be white, where practicable. Topsoil storage bunds would be a maximum height of 3m and positioned to provide visual screening for receptors, such as residential properties and PRoW users. Outside of core working hours during periods of darkness, lighting would be limited to low level and localised for security purposes. During core working hours during periods of darkness it is assumed the site would be fully floodlit.

Material storage and stockpiles

2.6.13. The mainline highways work for the Proposed Scheme would involve a significant proportion of earthworks associated with the construction and development of the designed alignment through excavation (cuttings) and filling (embankments). In addition, there are earthworks relating to necessary and ancillary construction works including structures (culverts, bridges, etc), drainage works, utilities and services placement and diversions, and various accommodation works which are required to support, enable and facilitate the mainline construction.

2.6.14. Topsoil (and potentially subsoil) would need to be removed from the proposed mainline alignment and then temporarily stockpiled until needed for re-use.

2.6.15. Stockpiling would also be required for imported general fill and aggregates for use in the permanent works.

2.6.16. Topsoil and subsoil 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. Specific material storage and stockpile areas are presented in Figure 2.3 (**TR010039/APP/6.2**).

2.6.17. Soils removed from areas identified as being of designated archaeological importance would be subject to specific procedures, defined in the Environmental Management Plan (**TR010039/APP/7.5**).

Excavated materials

2.6.18. Construction of the Proposed Scheme would require excavation in places to form cuttings for the highway and this material would then be used to form embankments. The design aims to balance these 'cut and fill' requirements as far as practicable. This is considered in greater detail in Chapter 10 (Material assets and waste) (**TR010039/APP/6.1**).

2.6.19. A combination of imported and site won earthworks materials would be used for the construction of the permanent works, including general fill, structural fills and aggregates. The use of site won materials would be determined by site ground conditions and engineering assessments to inform the suitability for re-use. Site processing would be implemented, as required, to ensure that site won materials can be re-used in the permanent works. Materials which cannot be sourced from site would be imported from a variety of sources, including nearby third party developments, supply chain partners and other A47 RDP or Highways England schemes. These imports would be on an 'as required' basis to meet the needs of the construction programmes and the Proposed Scheme permanent works designs.

Construction traffic

2.6.20. The haul routes would be located within the construction corridor, likely to be located off-line of the footprint of the Proposed Scheme mainline, as well as the use of the wider existing road network.

2.6.21. Construction traffic arriving from off site would consist of vehicles delivering the products required for the construction of the Proposed Scheme, including concrete, bitumen, aggregates and pipes.

2.6.22. All materials would arrive onto site along the existing A47. It is predicted that there would be a 50/50 split between materials coming from the east and west along the existing A47.

2.6.23. Some deliveries would arrive as abnormal loads, such as large construction plant. Regular abnormal load deliveries would be required throughout the construction works such as bridge beam delivery, earthworks plant delivery and removal.

2.6.24. It is assumed that over the course of works 50 to 150 heavy goods vehicles would access the site each day.

2.6.25. 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 would be implemented by the Principal Contractor.

Existing A47 during construction

2.6.26. The Proposed Scheme is slightly offline to the north with crossings of the A47 at locations and the tie ins.

2.6.27. 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 Proposed Scheme. Impacts to users of the existing A47 would be minimised during the works where possible.

Construction methods

2.6.28. The construction of the Proposed Scheme would use typical construction techniques associated with major infrastructure projects. Typical construction techniques would include rotary piling, cut to fill earthworks using large excavators, dozers, rollers and articulated dump trucks, reinforced concrete construction associated with new structures, road foundation and pavement construction using pavers and rollers, street furniture installation, drainage installation, service diversions using open cut and directional drilling techniques.

Indicative construction working hours

2.6.29. It is expected that the majority of construction works would normally take place between 07.00 – 19.00 Monday to Friday and 07.00 – 19.00 on Saturday. There may be exceptions to these hours for oversized deliveries, and junction tie-ins. Exceptions may include works taking place between 20:00hrs and 06:00hrs There are likely to be extended working hours in the summer months to take advantage of the daylight or weather. Any works undertaken out-with the hours stated above would be agreed with the local planning authority.

Plant and equipment

2.6.30. Construction of the Proposed 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.

2.6.31. Plant numbers and usage would be determined by the chosen construction methodology although for the purposes of assessment, preliminary plant lists have been used to consider construction impacts in Chapter 11 (Noise and vibration) (**TR010039/APP/6.1**).

2.6.32. Piling would likely be required to construct 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.

2.6.33. 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. The use of cement bound and hydraulically bound materials in the road pavement and foundations, would be used as required.

Wansford NMU Underpass (S02)

2.6.34. The construction of Wansford NMU underpass (S02) would be undertaken in line with the following construction sequencing.

- Pre-works- Access routes would be formed from the existing A47 on either side of the disused railway
- Stage 1 – A working platform would be constructed on the alignment of the Proposed Scheme on either side of disused railway
- Stage 2 - Controlled Modulus Columns (CMCs) (concrete columns which are placed in a network adapted to loads and setting criteria combined with granular bed to distribute to applied load between the ground and CMC) would be installed
- Stage 3 – Installation of permanent load transfer platform
- Stage 4 - Working platforms for bridge construction
- Stage 5 – Installation of box sheet piles
- Stage 6 – Lower diaphragm construction
- Stage 7 – Deliver, assemble and place braced pairs
- Stage 8 – Install remaining permanent framework
- Stage 9 – Complete deck construction and capping beams to wingwalls
- Stage 10 – Back of wall drainage, structural backfill and fill to approach embankments
- Stage 11 – Highway construction

Walking, Cycling and Horse-riding routes

2.6.35. Alternative paths and diversions for any WCH routes directly affected by construction activities would be provided during construction. These diversions would be agreed with Peterborough City Council. Any diversions must be safe for

all WCHs and for all. Temporary signage would be provided to inform members of the public of the diversions.

Utilities

2.6.36. Construction of the Proposed Scheme would require the diversion, relocation or protection of existing utility assets.

2.6.37. The Proposed Scheme would require the diversion of BT Openreach, National Grid, Anglian Water, UKPN and other utility assets. Details of the individual utility diversion would be developed during detailed design. For the purpose of the preliminary design, Work Plans (**TR010039/APP/2.3**) have been developed to provide spatial provision for utilities within the Proposed Scheme footprint.

Demolition

2.6.38. Nene Way roundabout would be demolished as a result of the Proposed Scheme. As stated in Section 2.5, the Proposed Scheme would provide a through flow of traffic in this location.

2.6.39. Old Station House would be stripped and demolished as a result of the Proposed Scheme construction.

2.6.40. The existing WCH route connecting Wansford Picnic area to Sacrewell Farm, crossing the existing A47 would be demolished and realigned to follow the new Sacrewell Farm access. This would provide a safer crossing of the A47 via the new Sacrewell Farm underpass (S05).

Environmental Management Plan

2.6.41. An Environmental Management Plan (EMP) (**TR010039/APP/7.5**) has been prepared in to include construction, operational and maintenance mitigation measures which have been defined in part by the requirements which arise from the assessments presented in this ES.

2.6.42. In line with the standards set out in DMRB LA 120 (Environmental Management Plan), the EMP (**TR010039/APP/7.5**) establishes a suitable mechanism to link assessment assumptions, planning conditions and obligations. The EMP (**TR010039/APP/7.5**) is a live document that is revised as more information becomes available throughout the lifetime of the Proposed Scheme.

Operation and long-term management

2.6.43. Once the proposed A47 mainline is open, it would form part of the A47 trunk road and the wider strategic road network.

2.6.44. The new road would be managed on a day to day basis using the monitoring and control systems in accordance with the relevant design standards.

2.6.45. Maintenance is defined as actions needed to inspect, repair, adjust, alter, remove, replace or reconstruct all aspects that relate to the Proposed Scheme.

2.6.46. Long-term maintenance and repairs would be undertaken as required to maintain the appropriate standards for the strategic road network.

2.6.47. The de-trunked A47 and new side roads would become the responsibility of Peterborough City Council.

Limits of Deviation

2.6.48. The design has been developed to a level of detail that is sufficient to provide confidence during examination of an application for a DCO, with due consideration given to aspects of the design that have not yet been fixed in the light of Planning Inspectorate Advice Note 9 'Using the Rochdale Envelope'. The assessments included within this ES are based on the design of the Proposed Scheme described within this chapter and presented in the General Arrangement Drawings (**TR010039/APP/2.6**).

2.6.49. Where appropriate, limits of deviation have been incorporated within the Order limits to allow minor modifications to be made to the Proposed Scheme during the detailed design and construction stages. Such flexibility is required, for example, to enable the Principal Contractor to alter their working procedures or make minor adjustments to the position of certain infrastructure in response to unforeseen conditions identified on-site.

2.6.50. The limits of deviation have been determined based on the design and construction factors and have been taken into consideration as part of the environmental assessment.

2.6.51. The vertical limits of deviation are referenced against the vertical profile levels indicated on the Engineering Drawings and Sections (**TR010039/APP/2.5**).

2.6.52. The vertical limit of deviation for the Proposed Scheme is 1m up and 1m down.

2.6.53. The new carriageway would not deviate past the limit of deviation shown on the Works Plans (**TR010039/APP/2.3**). In no case would the Proposed Scheme extend beyond the defined Order limits.

Decommissioning

2.6.54. It is considered highly unlikely that the Proposed Scheme would be decommissioned before the end of its design life of 60 years as the road would

have become an integral part of the strategic road network. Further detail is provided in Chapter 10 (Material assets and waste) (**TR010039/APP/6.1**).

2.6.55. In the event of the Proposed Scheme needing to be demolished, this would conform to the statutory process at that time, including EIA if required. Demolition of the Proposed Scheme is not therefore considered further in this ES.

2.7. Embedded environmental mitigation

2.7.1. The EIA team have worked closely with the design team to ensure a joined up approach throughout the assessment process. This method ensured that the majority of environmental mitigation measures were raised at an early stage as constraints and opportunities were identified and incorporated into the design. Embedded environmental mitigation measures have been discussed within the relevant section above which have included:

- WCH provision: enhancing connectivity providing an active travel route along the A47 between Wansford and Sutton, upgrade and provision of WCH paths, provision of disused railway underpass to maintain connectivity for walkers and cyclists
- Ecological measures:
    - reducing habitat fragmentation through mammal ledges and the provision of mammal fencing in suitable locations
    - creation of new habitat for protected species including new woodland planting and new replacement bat structures
    - creation of new wetland habitat at Sacrewell Farm
    - maintaining biodiversity connectivity via planting of trees and hedges in gaps of linear ecological features.
- Re-meandering and additional riparian planting along the Mill Stream, including new pond and ditches to create wetland habitat
- Landscaping: sensitive landscaping, including wildflower planting