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1. Introduction

This document presents a Habitat Regulations Assessment (HRA) that evaluates the implications of the proposed M27 junction 4 to 11 smart motorway programme (SMP) scheme (herein referred to as the 'scheme') on the nature conservation interests of European Sites. A European Site includes sites designated as a Special Area of Conservation (SAC) or candidate SAC (cSAC); a Special Protection Area (SPA) or potential SPA (pSPA); or a Wetland of International Importance (Ramsar site).

HRA is an iterative process, which for this project has commenced at scheme inception to ensure that information regarding the implications of the proposals on European Sites has been systematically collected, assessed, reported and taken into account throughout the project lifecycle. This document functions to screen the likelihood of significant effects resulting from the scheme upon European Sites, and the associated requirement for more detailed Appropriate Assessment (AA).

Natural England have been consulted on the HRA and their comments have been taken into account within this final iteration of the report. Natural England have confirmed that they are satisfied the scheme, as currently proposed, will not incur an adverse effect upon qualifying features of the designated sites screened into the assessment. Further information on the consultation with Natural England is provided in Section 6.

2. The scheme

The scheme is to upgrade a 23.5km section of the existing M27 to a smart motorway between junction 4 of the M27 at the interchange with the M3, north of Southampton, and junction 11, connecting with the A27 north of Fareham. The scheme will provide 4 permanent running lanes by converting the hardshoulder into lane 1 between junctions 4 to 7 and 8 to 11, junction 7 to 8 is already dual 4-lane with hardshoulder. Intra-junction 9 eastbound and westbound carriageways and junction 5 westbound carriageway will remain as dual 3-lane with hardshoulder.

The All Lane Running (ALR) will be supported through the installation of technology to monitor conditions and inform drivers, including overhead gantries and Enhanced Messaging Signs (EMS). Cameras and detectors will also provide information to support the technology. Delivery of the scheme requires the implementation of the following elements, which are also shown on Figure 6.2b and 6.2d in Appendix A.

Smart Motorway All Lane Running

Implementation of the All Lane Running on the M27 from junctions 4 to 11 will permanently convert the hardshoulder into a live traffic lane. The physical design elements of the ALR include:

- Conversion of the hardshoulder to a permanent traffic lane - making 4 lanes of 13.75m overall width. The operational width of the road would be 2.75m wider than existing
- Provision of a nearside hardstrip of approximately 0.5m width with enhanced edge drainage
- A new low noise surface in the opening year for all areas and for the concrete section between junction 5 to 7. A new low noise surface will also be laid on lanes 1 and 4 for the rest of the scheme
- Re-configuring of junction layouts to accommodate the fourth lane

Where space within the highway boundary is limited and surrounding ground levels require, retaining walls will be constructed to accommodate Emergency Refuge Areas (ERAs), communications cabinet sites, and gantries.

Emergency refuge areas

Emergency refuge areas (ERAs) will be introduced at regular intervals along the motorway to provide drivers with a safe stopping area for emergency use. The exceptions to this are junctions 7 to 8 which already has 4-lane running and a hardshoulder which will be retained, and intra-junction 5 westbound and intra-junction 9 which will remain as 3-lane motorway with hardshoulder.

It is proposed to provide 7 ERAs[1] on the eastbound carriageway and 6 for westbound traffic. In addition to this it is proposed to build a safe refuge area on the eastbound junction 5 diverge slip road.

Gantries, variable message signs and signals

Five new superspan gantries spanning both carriageways and 35 super cantilever gantries spanning 4-lanes will be installed. 41 Message Sign (MS), and 4 flag type gantries will be installed at various locations across the scheme. Remotely Operated Temporary Traffic Management Signs (ROTTMS) will be deployed at intervals of 1 mile, 800 yards, 600 yards, 400 yards and 200 yards[2] from the fixed taper point positions on each carriageway.

The proposed sign and signal gantries and emergency refuge areas would be constructed within the existing highway boundary.

Lighting

No significant new lighting, such as new motorway lighting, is proposed as part of the scheme. There will be some additional lighting in the form of LED lights on gantries, although this will not increase levels of artificial light due to the scheme. Removal of the lighting along the slip roads and mainline at junctions 7 and 8 will be considered. Along slip roads, the length of lighting may be reduced to avoid a lit slip road connecting with an unlit mainline.

Drainage

The scheme will include the installation of:

- New carrier and filter drains as required
- Category 4 and 5 drainage defects rectified
- Attenuation in the form of over-sized pipes as required
- Pollution treatment provision as required
- Pollution control and containment as required
- Flow control measures as required

[1] Approx. 300m^2 is the footprint of an ERA, but additional temporary land is required for its construction.
[2] There may be change to the standard arrangement for deployment of ROTTM signs.

- New surface water channel as required
- New bridge deck drainage as required
- New linear drainage system as required

The area of impermeable and permeable surfacing that drain to each outfall is provided within the Method A Highways Agency Water Risk Assessment Tool (HAWRAT) assessment, which is included as Appendix F.1 to the EAR (also included at Appendix B to this report). The increase in impermeable area (derived from hydraulic models) will be 7.5 hectares, which represents 3.7% of the total contributing catchment area within the drainage design. The drainage system would accommodate predicted increases in flows due to greater impermeable surface areas and climate change, such that no increase in run-off rates would arise.

No works to existing outfalls are anticipated.

Where modifications are required to the existing drainage system, spare capacity would be utilised where possible to attenuate increased flows, with a number of networks requiring flow control devices being installed. Oversized pipes would be installed to attenuate increased flows where required, with a number of networks requiring flow control devices being installed.

ERAs would be drained via kerb-drain that will discharge to the existing motorway drainage system which include existing pollution control devices comprising oil separators, in the event of a spillage within the ERA. These existing pollution control measures would provide sufficient protection from any polluted run-off during construction, with the Priority Outfalls passing the HAWRAT assessments (see Appendix B).

Where drainage is required in the central reserve, all existing central reserve filter material would be removed and replaced with new surface water channels or, at pinch points, with new linear drainage system. Existing filter drain pipework would be utilised where practically possible.

Existing cross carriageway drains would be retained and utilised where practically possible.

Where drainage is required in the verge, all existing retained filter drains would be treated or modified where they fall within 1m of the trafficked edge of the edge line, mitigating against stone scatter and stranded errand vehicles.

In addition, subject to securing funding, it is the intention of Highways England to provide improvements to the outfalls to the River Hamble, comprising a separate scheme that would:

- collect runoff from the bridge deck (currently drains directly to Hamble) using a suspended drainage system below the deck and convey this to the main drainage outfall to the east of the bridge deck; and
- install petrol interceptors and penstocks upstream of the existing outfalls.

These works would improve the quality of the discharges to the River, which forms part of the Solent Maritime SAC, and the Solent and Southampton Water SPA and Ramsar site. These works would not form part of the M27 Smart Motorway and would be progressed as a separate scheme.

Environmental Design

ERAs and gantries have been located as far away from designated sites and watercourses as possible. Only two ERAs are proposed within 8m of streams, which is required for safety reasons, and the nearest gantry is 10m from the River Hamble.

Drainage has been designed to maintain existing rates of flow and water quality, to avoid impacts on rivers forming designated sites which flow under the scheme.

Noise barriers have been positioned to maintain a 12-15m buffer between designated sites and the proposed barrier.

A new surface water drainage system would collect, attenuate and convey surface water run-off from all new areas of hard standing.

Existing filter drains in the central reserve would be replaced with new surface water channels or, at pinch points, with a new linear drainage system.

A containment system would be incorporated into the drainage system to capture oils in the event of a spillage within ERAs.

Where necessary, oversized pipes would be installed to attenuate flow from additional areas of hardstanding and limit run-off to existing discharge rates.

Temporary works

Construction of the scheme will require the following works and sequencing:

- **Site mobilisation and site clearance:** Establishment of temporary fencing, utility relocations and establishment of construction compound site(s) and access and vegetation clearing and stripping, stockpiling and management of topsoil and unsuitable material.
- **Paving Works:** Works associated with the re-surfacing of carriageways and hardshoulders are envisaged to be undertaken during night-time operations to minimise traffic disruption. Carriageway paving would typically progress between 22:00 and 05:00. The Planer would tend to operate from 22:00 to 03:00 with the Paver operating from 23:30 to 05:00. Paving of ERAs is likely to be undertaken during the day where this is necessary.
- **Main works:** Establishing the ground levels and undertaking ground works including drainage systems and constructing and installing the ERAs, gantries and rigid concrete barrier construction. Resurfacing of the existing surface and other pavement works.
- **Directional drilling:** Directional drilling sites are required to provide cabling ducts beneath the motorway between smart motorways technology installations. These sites can vary by up to 250m either side of the technology installation, hence there is scope to avoid such operations being located close to sensitive receptors (such as European Sites).
- **Landscaping and decommissioning:** Vegetation planting, installation of safety barriers, fencing, pavement marking and removal of site compound and site tidy up.

Throughout the scheme, the works will be contained within the highway boundary, with no physical work outside of the highway boundary or within the Natura 2000 sites.

Legislative Pollution Control during Construction

Under the Water Resources Act 1991, it is an offence to knowingly pollute any controlled waters. Therefore, in order to meet legislative requirements, pollution prevention and control measures will be adopted during the construction phase. These measures will avoid any potential pollution to water features that are located in close proximity of the scheme, or water features that are hydraulically linked to the scheme (including identified statutory designated sites), and will be managed through the implementation of a Construction Environmental Management Plan (CEMP). The CEMP details the procedures and methods that must be followed to manage the risk of pollutants entering the drainage system or discharging directly to surface water features, as required under the Water Resources Act 1991. The CEMP also describes the procedures in the event of an environmental emergency such as a fuel or chemical spillage.

A summary of the control measures required in order to accord with the Water Resources Act 1991 is set out below.

Site management

- Records of dust and air quality complaints to be kept, including likely causes and mitigation measures to reduce impacts if appropriate
- Keep site perimeter, fences etc. clean
- Visual inspections of off-site dust deposition (daily). This may need to be supplemented by automatic monitoring of PM_{10} if the risk of impacts increases e.g. during prolonged dry weather

Site planning

- Consideration of weather conditions, dust generating potential of material to be excavated prior to commencement of works
- Plan site layout to maximise distance from plant / stockpiles etc. to sensitive receptors
- Dusty materials should be removed from site as soon as possible

Construction traffic

- Loads entering and leaving the site with dust generating potential should be covered and wheel washing facilities made available
- No idling of vehicles
- Vehicles to comply with site speed limits (15mph on hard surfaces, 10mph on unconsolidated surfaces)
- Water assisted sweeping of local roads to be undertaken if material tracked out of site
- Install hard surfacing as soon as practicable on site and ensure that they are maintained in good condition

Site activities

- Exposed soils should be protected from winds until sealed or re-vegetated
- Minimise dust generating activities, particularly near residential receptors / sensitive ecosystems during prolonged dry, dusty weather unless damping / other suppressants are used
- Ensure an adequate water supply to site and use water as dust suppressant where applicable
- Ensure any site machinery is well maintained and in full working order
- Sand and aggregates should be stored away from sensitive receptors and screened / shielded. Similarly, concrete batching should take place away from receptors

3. Identification of European Sites

The Design Manual for Roads and Bridges (DMRB) Vol 11 Section 4 Part 1 requires a HRA where a scheme:

- is within 2km of a European Site
- within 30km of European Sites which include bats as a qualifying feature and/or
- where there is a likely impact pathway between a scheme and a European Site, for example, due to hydrological connectivity

The approach to the scheme's HRA is consistent with DMRB guidance, and includes European Sites which are within 200m[3] of the Affected Road Network (ARN)[4] and which are sensitive to air quality impacts.

Ten European Sites have been identified in accordance with these search criteria. Table 3-1 presents those sites which are included within the HRA.

Table 3-1. Sites included in the scheme HRA

Site Name	Location	Direction	Distance from scheme (km)	Reason for Inclusion in Assessment
Mottisfont Bats SAC	North west of Romsey	NW	12.3	Within 30km and designated for bats.
Briddlesford Copses SAC	On Isle of Wight	SE	15.7	Within 30km and designated for bats.
Singleton and Cocking Tunnels SAC	In South Downs, north of Chichester	NE	21.9	Within 30km and designated for bats.
River Itchen SAC	Between junction 5 to 7 adjacent to Southampton Airport	N and S	0	Within 2km of the scheme.
Solent Maritime SAC	Between junction 8 to 9 near Bursledon	N and S	0	Within 2km of the scheme.
Solent and Dorset Coast pSPA	Between junction 8 tod 9	N and S	0	Within 2km of the scheme.
Solent and Southampton Water SPA and Ramsar	Closet point between junction 8 to 9 between Bursledon	N	0.25	Within 2km of the scheme.
Portsmouth Harbour SPA and Ramsar	South of junction 11	S	0.94	Within 2km of the scheme.

4. Supporting information

The scheme is subject to environmental review and assessment in line with the DMRB Volume 11 and associated updates, Interim Advice Notes (IAN) and guidance to establish whether significant environmental effects are likely to arise during its construction and operational phases. The results of these assessments are presented within the scheme Scoping Report[5] and the Environmental Appraisal Report.

Various ecological studies have been undertaken to inform the scheme's EAR, including:

- A Preliminary Ecological Appraisal (PEA) (undertaken July 2017), comprising a desk study and field surveys to locations where significant works to the Highways England soft estate are proposed e.g. ERA and gantry locations

[3] The Design Manual for Roads and Bridges - Volume 11 Section 3 Air Quality states that 200m is the limit of air quality impacts associated with roads.
[4] This includes roads where traffic modelling predicts there will be a significant increase (>1,000 vehicles) in the Annual Average Daily Traffic (AADT) due to the M27 junction 4 to 11 SMP scheme.
[5] Highways England (2017) Smart Motorways Programme: M27 Junction 4 to 11 Environmental Scoping Report. July 2017

- Targeted surveys for otter and habitat suitability assessments for bats have been undertaken.

Available survey information has been reviewed to inform the scheme's HRA. The results of the ecological assessment for the scheme is presented within chapter 6 and accompanying appendices of the scheme's EAR.

In addition, the following technical studies and chapters of the scheme EAR have been reviewed to inform the HRA:

- Air Quality (chapter 5) – air quality modelling has been undertaken to predict the likely change in air quality along the scheme's ARN
- Noise and Vibration (chapter 8) – noise modelling has been undertaken to determine the change in noise levels during the operation of the scheme. Noise levels associated with various construction activities, including resurfacing and construction of ERAs, have also been reviewed to determine likely construction phase noise impacts
- Road Drainage and the Water Environment (chapter 9) – the anticipated changes in the volume, rate, and quality of water run-off attributed to the scheme have been reviewed

5. In-combination assessment

The scheme Scoping Report has also been reviewed to identify other projects which may interact with the scheme to generate in-combination effects. The following projects and plans were identified and have been considered in the scheme's HRA:

- The interaction of the M3 SMP scheme upon local air quality
- The interaction of the Southampton Clean Air Zone on the M27

No other projects have been identified as having likely significant in-combination effects with the scheme.

The M27 SMP traffic modelling (the basis of the air quality modelling and water assessment that have informed the assessment presented in this report) has been undertaken in accordance with DfT guidance (WebTAG unit M4) with regard to an uncertainty log, which lists out the development included within the M27 SMP traffic forecast (see Appendix B). The uncertainty log was assembled through collating information about specific development sites from the various local authorities based on these levels of future development commitment. These developments are therefore already built into this assessment.

The approach taken to assessing in-combination effects aligns with current guidance, as it has been carried out in accordance with DMRB Volume 11 Section 2 Part 5 'Assessment and Management of Environmental Effects'.

6. Consultation with Natural England

Highways England consulted Natural England on version P02 this HRA screening report. As a result of the Court of Justice of the European Union (CJEU) in the matter of People Over Wind and Sweetman v Coillte Teoranta (C-323/17) (the 'Sweetman case'), Natural England considered further information was required to demonstrate that Appropriate Assessment was not required, with respect to the topics of air quality and water quality, for both the scheme alone and in combination with other projects.

Following the initial response from Natural England, Highways England provided further information (including the full list of developments included in the traffic data, HAWRAT assessment, the OEMP and Drainage Strategy) and updated this report accordingly. Appendix B provides a summary of the points of clarification between Highways England and Natural England. Subsequently, Natural

England confirmed in an email dated 3rd September 2018 that they were satisfied the scheme, as currently proposed, will not incur an adverse effect upon qualifying features of the designated sites screened into the assessment.

Further information on the consultation with Natural England is provided in Section 6.

7. HRA – matrices

A screening matrix for each of the 10 European Sites scoped in to the HRA are presented below. The screening matrices are based on the table template taken from Annex C: Screening Matrix, DMRB Volume 11 Section 4 Part 1 HS 44/09.

Mottisfont Bats SAC

Scheme Name:	M27 Junction 4 to 11 Smart Motorways Programme	
European Site Consideration:	Mottisfont Bats SAC	
Date:	**Author (Name/Organisation)**	**Verified (Name/Organisation)**
22 January 2018	[redacted] WSP Principal Ecologist	[redacted] WSP Technical Director
Description of the scheme: Describe any likely direct, indirect or secondary impacts of the scheme (either alone or in combination with other plans or schemes) on the European Site by virtue of:		
Size and scale (road type and probable traffic volume)	The scheme comprises an upgrade of approximately 23.5km of the M27 between junction 4 to 11 to a smart motorway. The works will be entirely within the existing highways boundary. The hardshoulder will be converted to an All Running Lane (ALR) and various smart technologies will be installed. During operation of the scheme, there will be a significant increase (>1,000 vehicles) in the Annual Average Daily Traffic (AADT) between junction 4 to 11 of the M27 and along sections of the Affected Road Network (ARN) (see chapter 5 Air Quality of the scheme's Environmental Assessment Report (EAR)).	
Land-take	The scheme will not require any land take from the SAC.	
Distance from the European Site or key features of the site (from the edge of the scheme assessment corridor)	The closest part of the scheme (M27 junction 4) is approximately 12.3 km to the south-east of the SAC. The scheme is not hydrologically connected to the SAC. The SAC is not within 200m of the ARN. The location of the SAC is presented on Figure 6.2c in appendix A.	
Resource requirements (from the European Site or from areas in proximity to the site, where of relevance to consideration of impacts)	The scheme does not require resources from the SAC.	
Emissions (e.g. polluted surface water run-off – both soluble and insoluble pollutants, atmospheric pollution)	**Construction:** During the construction phase, the scheme has potential to generate water-borne and air-borne pollution. This includes suspended solids and particulates, hydrocarbons and other chemicals which may arise from construction plant and activities, such as construction of ERAs, gantries, and resurfacing. During construction, there is likely to be an increase in light, noise, vibration and human disturbance along the extent of the scheme, particularly in the vicinity of proposed ERAs, gantries, and areas to be resurfaced. However, considering the intervening distance between the scheme and the SAC (12.3km), these impacts will not affect the SAC or its qualifying features. **Operation:** Given the intervening distance between the SAC and the scheme (approximately 12.3km), and absence of hydrological connectivity, adverse effects associated with water-borne pollution will not occur. The SAC is also not within 200m[6] of the ARN, and adverse effects associated with air-borne pollution will not occur. The scheme is not hydrologically connected to the SAC. Any changes to surface water run-off volume or quality during the scheme's operational lifecycle will therefore not affect the SAC.	

[6] The Design Manual for Roads and Bridges - Volume 11 Section 3 Air Quality states that 200m is the limit of air quality impacts associated with roads.

Transportation requirements	Construction of the scheme will require some motorway closures at the weekend or at night, requiring the diversion of motorway traffic onto local roads. However, the nature of SMP construction is that these are only used occasionally. As construction activities would not require diversion routes beyond a few intermittent night-time or weekend closures, there will not be a significant or long-term change to traffic volumes along affected routes. Construction traffic would access the construction areas via the existing road network and will not be of a volume that will result in significant changes in noise levels or air quality along these routes. Considering the above and the intervening distance between the SAC and the scheme, no adverse effects associated with construction transportation traffic (including increased noise, vibration, vehicle disturbance) will occur.
Duration of construction, operation etc.	Construction is predicted to commence in spring 2018 [redacted] Construction will however be phased, and construction at a given location, for example an ERA or gantry location, is unlikely to take longer than 4 weeks.
Other	No new operational lighting is proposed. There will therefore not be a significant increase in levels of artificial light during operation of the scheme. Noise modelling for the scheme predicts operational noise will either remain unchanged or will be reduced across the majority of the scheme (see chapter 8 Noise and Vibration of the scheme's EAR). Considering this and the intervening distance between the scheme and the SAC, no adverse effects associated with changes in operational noise levels will occur.
Description of Avoidance and/or Mitigation Measures: Describe any assumed (plainly established and uncontroversial) mitigation measures, including information on:	
Nature of proposals	No mitigation measures are required.
Location	N/A
Evidence for effectiveness	N/A
Mechanism for delivery (legal conditions, restrictions or other legally enforceable obligations)	N/A
Characteristics of European Site: A brief description of the European Site should be produced, including information on: Information with respect to the Mottisfont Bats SAC has been sourced from the site's Natura 2000 Standard Data Form[7].	
Name of European Site and its EU code	Mottisfont Bats SAC (UK0030334).
Location and distance of the European Site from the proposed works	The closest point of the SAC is c.12.3km to the north west of the nearest point of the scheme at junction 4 of the M27. The location of the SAC is presented on Figure 6.2c in appendix A.
European Site size	196.55 ha (area).
Key features of the European Site including the primary reasons for selection and any other qualifying interests (Taken from Natura 2000 Standard Data Form[8])	The following Annex II species is the primary reason for selection of the site: 1308 Barbastelle bat (*Barbastella barbastellus*) The Mottisfont woodland supports an important population of the rare barbastelle bat. It is 1 of only 6 known maternity sites in the UK (2002 data) and the only 1 in Hampshire. Mottisfont contains a mix of woodland types including hazel coppice with standards, broadleaved plantation and coniferous plantation which the bats use for breeding, roosting, commuting and feeding.

[7] Natura 2000 Database (2015). Standard Data Form for Mottisfont Bats Special Area of Conservation (Site Code: UK0030334). http://jncc.defra.gov.uk/protectedsites/sacselection/n2kforms/UK0030334.pdf.
[8] Found at http://jncc.defra.gov.uk

Vulnerability of the European Site – any information available from the standard data forms on potential effect pathways	The key factors reported with important negative effects on the SAC are: • Forest and plantation management and use • Changes in biotic conditions
European Site conservation objectives – where these are readily available	The conservation objectives are to ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring: • The extent and distribution of habitats of qualifying species • The supporting processes on which habitats of qualifying species rely • The populations of qualifying species • The distribution of qualifying species within the site[9]
Assessment Criteria: Describe the individual elements of the scheme (either alone or in combination with other plans or schemes) likely to give rise to impacts on the European Site.	
Construction of ERAs, gantries, and resurfacing may generate noise, light, and vibrational disturbance which could affect barbastelle foraging and commuting away from roost sites within the SAC. No other elements of the scheme, including during the construction or operational lifecycle, are likely to affect features for which the SAC is designated.	
Initial Assessment: The key characteristics of the site and the details of the European Site should be considered in identifying potential impacts. Describe any likely changes to the site arising as a result of:	
Reduction in habitat area	The scheme will not result in any land take or habitat loss from the SAC.
Disturbance to key species	Construction activities, including construction of ERAs and gantries, will generate noise and vibration and visual disturbance. However, such impacts will not adversely affect the bat population supported within the SAC given the intervening distance between the scheme and the SAC[10]. Barbastelle are known to have a large home range (e.g. 1 estimate of this species home range is between 1km and 20km from the centre of a territory[11]). However, the Bat Conservation Trust (BCT) cite the Core Sustenance Zone[12] for barbastelle as 3km. The routine distance that this species travels to commute and forage is therefore generally far less than the 20km upper limit. It is therefore not likely that barbastelle bats roosting in the SAC would regularly utilise habitats within the vicinity of the scheme.
Habitat or species fragmentation	Considering the intervening distance between the scheme and SAC (12.3km) and the routine commuting and foraging distances for barbastelle (described above), construction or operation of the scheme will not fragment habitat for barbastelle supported within the SAC.
Reduction in species density	The scheme would not result in a reduction in species density as it will not affect species in the SAC, as discussed above.
Changes in key indicators of conservation value (water quality etc.)	Direct or indirect impacts upon the key indicators of conservation value (e.g. air quality, woodland quality) in the SAC will not occur, due to the intervening distance between the scheme and the SAC and absence of hydrological connectivity.
Climate change	The SAC will not be significantly affected by the scheme. Adverse effects to the SAC and qualifying features due to climate change interactions with the scheme will not occur.

[9] Natural England (2014 – version 2, replaces earlier version dated 2012). European Site Conservation Objectives for Singleton and Cockings Tunnels Special Area of Conservation (Site Code: UK0030337). http://publications.naturalengland.org.uk/file/6270221568442368

[10] Johnathon Cox Associates, 2010. Mottisfont Bats Special Area of Conservation (SAC) Protocol for Planning Officers

[11] Zeale, M., Davidson-Watts, I and Jones, G. (2012). Home range use and habitat selection by barbastelle bats (*Barbastella barbastellus*): implications for conservation. *Journal of Mammamology*. 93(4):1110-1118

[12] Collins, J. (Ed). (2016). *Bat surveys for professional ecologists: Good practice guidelines* (3rd Edition). BCT. London

Interference with the key relationships that define the structure of the site	Structure is taken to mean the distribution and abundance of habitats in the SAC used by bats. Relationships which define the habitats and would affect the woodland structure, such as soil, light and disturbance levels, will not be affected due to the intervening distance between the scheme and the SAC.
Interference with the key relationships that define the function of the site	Function is taken here to mean the capacity of the SAC to support the bat population for which it was designated. The extent and quality of the woodland habitat in and around the site will not be affected by the scheme, as discussed above. Therefore, it will not be an interference in these relationships.
Indicate the significance as a result of the identification of impacts set out above in terms of:	
Reduction of habitat area	Not significant - There will be no reduction of habitat area within the SAC due to the scheme.
Disturbance to key species	Not significant - Disturbance to barbastelle bats during construction or operation of the scheme will not be significant, given the intervening distance between the scheme and the SAC.
Habitat or species fragmentation	Not significant - There will be no fragmentation of habitat within the SAC or functionally important habitat for commuting or foraging bats.
Loss	Not significant - There will be no significant loss of habitat or species for which the SAC is designated.
Disruption	Not significant - The scheme will not significantly disrupt the structure or function of the SAC.
Disturbance	Not significant - The scheme will not significantly disturb the species for which the SAC is designated.
Change to key elements of the site (e.g. water quality, hydrological regime etc.)	Not significant - There will be no change to habitats within the SAC due to the scheme.
Describe from the above those elements of the scheme, or combination of elements, where the above impacts are likely to be significant or where the scale or magnitude of impacts is not known	
The scheme will not result in a significant effect on the SAC given the intervening distance between the SAC and the scheme (12.3km) and absence of hydrological connectivity. Significant in-combination effects between the scheme and other projects will not occur.	
Outcome of screening stage (delete as appropriate)	~~Significant Effects are Likely~~ ~~Sufficient Uncertainty Remains~~ Not Likely to be Significant Effects.
Are the appropriate statutory environmental bodies in agreement with this conclusion (delete as appropriate and attach relevant correspondence)	No consultation has been undertaken to date.

Briddlesford Copses SAC

Scheme Name:	M27 junction 4 to11 Smart Motorways Programme	
European Site Consideration:	Briddlesford Copses SAC	
Date:	**Author (Name/Organisation):**	**Verified (Name/Organisation):**
22 January 2018	[redacted] WSP Principal Ecologist	[redacted] WSP Technical Director
Description of the Scheme: Describe any likely direct, indirect or secondary impacts of the scheme (either alone or in combination with other plans or schemes) on the European Site by virtue of:		
Size and scale (road type and probable traffic volume)	The scheme comprises an upgrade to approximately 23.5km of the M27 between junction 4 to 11 to a smart motorway. The works will be entirely within the existing highways boundary. The hardshoulder will be converted to an All Running Lane (ALR) and various smart technologies will be installed. During operation of the scheme, there will be a significant increase (>1,000 vehicles) in the Annual Average Daily Traffic (AADT) between junction 4 to 11 of the M27 and along section of the Affected Road Network (ARN) (see chapter 5 Air Quality of the scheme's Environmental Assessment Report (EAR)).	
Land-take	The scheme will not include any land take from the SAC.	
Distance from the European Site or key features of the site (from the edge of the scheme assessment corridor)	The closest part of the scheme (M27 junction 4) is approximately 15km to the north of the SAC, and separated from it by The Solent. The scheme is not hydrologically connected to the SAC. The SAC is not within 200m of the ARN. The location of the SAC is presented on Figure 6.2c in appendix A.	
Resource requirements (from the European Site or from areas in proximity to the site, where of relevance to consideration of impacts)	The scheme does not require resources from the SAC.	
Emissions (e.g. polluted surface water run-off – both soluble and insoluble pollutants, atmospheric pollution)	**Construction:** During the construction phase, the scheme has potential to generate water-borne and air-borne pollution. This includes suspended solids and particulates, hydrocarbons and other chemicals which may arise due to construction plant and activities, such as construction of ERAs, gantries, and resurfacing. During construction, there is likely to be an increase in light, noise, vibration and human related disturbance along the scheme, particularly in the vicinity of proposed ERAs, gantries, and areas to be resurfaced. **Operation:** Considering the intervening distance between the SAC and the scheme (approximately 15km), and absence of hydrological connectivity, adverse effects associated with water-borne pollution will not occur. The SAC is also not within 200m[13] of the ARN, and adverse effects associated with air-borne pollution will not occur. The scheme is not hydrologically connected to the SAC. Any changes to surface water run-off volume or quality during the scheme's operational lifecycle will therefore not affect this site.	

[13] The Design Manual for Roads and Bridges - Volume 11 Section 3 Air Quality states that 200m is the limit of air quality impacts associated with roads.

Transportation requirements	Construction of the scheme will require some motorway closures at the weekend or at night, requiring the diversion of motorway traffic onto local roads. However, the nature of SMP construction is that these are only used occasionally. As construction activities would not require diversion routes beyond a few intermittent night-time or weekend closures, there will not be a significant or long-term change to traffic volumes along affected routes. Construction traffic would access the construction areas via the existing road network and will not be of a volume that will result in significant changes in noise levels or air quality along these routes. Considering the above and the intervening distance between the SAC and the scheme, no adverse effects associated with construction transportation traffic (including increased noise, vibration, vehicle disturbance) are likely.
Duration of construction, operation etc.	Construction is predicted to commence in spring 2018 [redacted] Construction will, however, be phased and construction at a given location, for example and ERA or gantry location, is unlikely to take longer than 4 weeks.
Other	No new operational lighting is proposed. There will therefore not be an increase in levels of artificial light during operation as a result of the scheme. Noise modelling for the scheme predicts operational noise will either remain unchanged or will be reduced across the majority of the scheme (see chapter 8 Noise and Vibration of the scheme's EAR). Considering this and the intervening distance between the scheme and the SAC, no adverse effects associated with changes in operational noise levels will occur.
Description of Avoidance and/or Mitigation Measures: Describe any assumed (plainly established and uncontroversial) mitigation measures, including information on:	
Nature of proposals	No mitigation measures are required.
Location	N/A
Evidence for effectiveness	N/A
Mechanism for delivery (legal conditions, restrictions or other legally enforceable obligations)	N/A
Characteristics of European Site: A brief description of the European Site should be produced, including information on: Information with respect to the Briddlesford Copses SAC has been sourced from the site's Natura 2000 Standard Data Form[14].	
Name of European Site and its EU code	Briddlesford Copses SAC (UK0030328).
Location and distance of the European Site from the proposed works	The closest part of the scheme (M27 junction 4) is approximately 15km to the north of the SAC, and separated from it by The Solent. The scheme is not hydrologically connected to the SAC. The SAC is not within 200m of the ARN. The location of the SAC is presented on Figure 6.2c in appendix A.
European Site size	165.44 ha (area).
Key features of the European Site including the primary reasons for selection and any other qualifying	The following Annex II species is the primary reason for selection of the site: 1323 Bechstein`s bat (*Myotis bechsteini*). The Briddlesford Copse complex of woodlands represents the most varied, structurally diverse and species-rich cluster of ancient broadleaved woodland on the Isle of Wight and supports an important breeding

[14] Natura 2000 Database (2015). Standard Data Form for Briddlesford Copses Special Area of Conservation (Site Code: UK0030328). http://jncc.defra.gov.uk/protectedsites/sacselection/n2kforms/UK0030328.pdf.

interests (Taken from Natura 2000 Standard Data Form[15])	population of the rare Bechstein's bat. The bats use holes and crevices in mature trees for roosting and the interconnecting woodlands for feeding.
Vulnerability of the European Site – any information available from the standard data forms on potential effect pathways (taken from Natura 2000 standard Data form)	The key factors reported with important negative effects on the SAC are: • Modification of cultivation practices • Forest and plantation management and use • Air pollution, airborne pollutants • Changes in biotic conditions
European Site conservation objectives – where these are readily available	The conservation objective of the SAC is to ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its qualifying features, by maintaining or restoring: • The extent and distribution of the habitats of qualifying species • The structure and function of the habitats of qualifying species • The supporting processes on which the habitats of qualifying species rely • The populations of qualifying species • The distribution of qualifying species within the site
Assessment Criteria: Describe the individual elements of the scheme (either alone or in combination with other plans or schemes) likely to give rise to impacts on the European Site.	
Construction of ERAs, gantries, and resurfacing may generate noise, light, and vibrational disturbance which could affect Bechstein's bat foraging and commuting away from roost sites within the SAC. No other elements of the scheme, including during the construction or operational lifecycle, are likely to affect features for which the SAC is designated.	

[15] Found at http://jncc.defra.gov.uk

Initial Assessment: The key characteristics of the site and the details of the European Site should be considered in identifying potential impacts. Describe any likely changes to the site arising as a result of:	
Reduction in habitat area	The scheme will not result in any land take or habitat loss from the SAC.
Disturbance to key species	During the construction phase, construction activities will generate noise and vibration, and visual disturbance. Studies have shown that the routine commuting distance for Bechstein's bat is approximately 1.5km[16], with individuals generally foraging within this distance from a roost. The Bat Conservation Trust (BCT) cites the Core Sustenance Zone (CSZ) for Bechstein's bat as 1 km[17]. It is therefore not likely that Bechstein's bat roosting in the SAC would utilise habitats in and around the scheme.
Habitat or species fragmentation	The scheme, is located 15km from the SAC, and the Bechstein's bat has a routine commuting distance of approximately 1.5km. The scheme will therefore not significantly fragment habitat or affect populations of Bechstein's bat supported within the SAC.
Reduction in species density	The scheme would not cause a reduction in species density as it will not affect species in the SAC, as discussed above.
Changes in key indicators of conservation value (water quality etc.)	Direct or indirect impacts to the key indicators of conservation value (e.g. air quality, woodland quality) in the SAC will not occur due to the distance of the scheme from the SAC, and the physical separation by the Solent.
Climate change	Cumulative impacts associated with climate change will not occur, as the SAC will not be affected by the scheme.
Interference with the key relationships that define the structure of the site	Structure is taken to mean the distribution and abundance of habitats in the site used by Bechstein's bat. Relationships which define the habitats and would affect the woodland structure, such as soil, light and disturbance levels, will not be affected by the scheme due to its distance from the site.
Interference with the key relationships that define the function of the site	Function is taken here to mean the capacity of the SAC to support the Bechstein's bat population for which it was designated. The extent and quality of the woodland habitat in and around the site will not be affected by the scheme, as discussed above, therefore there will not be interference in these relationships.
Indicate the significance as a result of the identification of impacts set out above in terms of:	
Reduction of habitat area	Not significant - There will be no reduction of habitat area within the SAC due to the scheme.
Disturbance to key species	Not significant - Disturbance to Bechstein's bats during construction or operation of the scheme will not be significant, given the intervening distance between the scheme and the SAC.
Habitat or species fragmentation	Not significant - There will be no fragmentation of habitat within the SAC or to functionally important habitat for commuting or foraging bats.
Loss	Not significant - There will be no loss of species for which the SAC is designated.
Fragmentation	Not significant - The scheme will not significantly disrupt the structure or function of the SAC.
Disruption	Not significant - The scheme will not significantly disrupt the structure or function of the SAC.
Disturbance	Not significant - The scheme will not significantly disturb species for which the SAC is designated.

[16] Greenaway, F. (2008). Barbastelle bats in the Sussex West Weald 1997 – 2008. Report to Sussex Wildlife Trust
[17] Collins, J. (Ed). (2016). *Bat surveys for professional ecologists: Good practice guidelines* (3rd Edition). BCT. London.

Change to key elements of the site (e.g. water quality, hydrological regime etc.)	Not significant - There will be no significant loss of species (or the habitats on which they depend) for which the SAC is designated.
Describe from the above those elements of the scheme, or combination of elements, where the above impacts are likely to be significant or where the scale or magnitude of impacts is not known	
The scheme will not result in a significant effect on the SAC or its qualifying features. Significant in-combination effects between the scheme and other projects are not likely.	
Outcome of screening stage (delete as appropriate)	~~Significant Effects are Likely~~ ~~Sufficient Uncertainty Remains~~ Not Likely to be Significant Effects.
Are the appropriate statutory environmental bodies in agreement with this conclusion (delete as appropriate and attach relevant correspondence)	No consultation has been undertaken to date.

Singleton and Cocking Tunnels SAC

Scheme Name:	M27 junction 4 to 11 Smart Motorways Programme	
European Site Consideration:	Singleton and Cocking Tunnels SAC	
Date:	**Author (Name/Organisation):**	**Verified (Name/Organisation):**
22 January 2018	[redacted] WSP Principal Ecologist	[redacted] WSP Technical Director
Description of the Scheme: Describe any likely direct, indirect or secondary impacts of the scheme (either alone or in combination with other plans or schemes) on the European Site by virtue of:		
Size and scale (road type and probable traffic volume)	The scheme comprises an upgrade to approximately 23.5km of the M27 between junction 4 to 11 to a smart motorway. The works will be entirely within the existing highways boundary. The hardshoulder will be converted to an All Running Lane (ALR) and various smart technologies will be installed. During operation of the scheme, there will be a significant increase (>1,000 vehicles) in the Annual Average Daily Traffic (AADT) between junction 4 to 11 of the M27 and along section of the Affected Road Network (ARN) (see chapter 5 Air Quality of the scheme's Environmental Assessment Report (EAR)).	
Land-take	The scheme will not require any land take from the SAC.	
Distance from the European Site or key features of the site (from the edge of the scheme assessment corridor)	The closest part of the scheme (M27 junction 11) is approximately 28km to the south west of the SAC. The scheme is not hydrologically connected to the SAC. The SAC is not within 200m of the ARN. The location of the SAC is presented on Figure 6.2c in appendix A.	
Resource requirements (from the European Site or from areas in proximity to the site, where of relevance to consideration of impacts)	The scheme does not require resources from the SAC.	
Emissions (e.g. polluted surface water run-off – both soluble and insoluble pollutants, atmospheric pollution)	**Construction:** During the construction phase, the scheme may generate water-borne and air-borne pollution. This includes suspended solids and particulates, hydrocarbons and other chemicals which may arise due to construction plant and activities, such as construction of ERAs, gantries, and resurfacing. During construction, there is likely to be an increase in light, noise, vibration and human related disturbance along the scheme, particularly in the vicinity of proposed ERAs, gantries, and areas to be resurfaced. Considering the intervening distance between the scheme and the SAC (28km), these impacts will not affect the SAC. **Operation:** Considering the intervening distance between the SAC and the scheme (approximately 28km), and absence of hydrological connectivity, adverse effects associated with water-borne pollution will not occur. The SAC is also not within 200m[18] of the ARN, and adverse effects associated with air-borne pollution will not occur.	

[18] The Design Manual for Roads and Bridges - Volume 11 Section 3 Air Quality states that 200m is the limit of air quality impacts associated with roads.

	The scheme is not hydrologically connected to the SAC. Any changes to surface water run-off volume or quality during the scheme's operational lifecycle will therefore not affect this site.
Transportation requirements	Construction of the scheme will require some motorway closures at the weekend or at night, requiring the diversion of motorway traffic onto local roads. However, the nature of SMP construction is that these are only used occasionally. As construction activities would not require diversion routes beyond a few intermittent night-time or weekend closures, there will not be a significant or long-term change to traffic volumes along affected routes. Construction traffic would access the construction areas via the existing road network and will not be of a volume that will result in significant changes in noise levels or air quality along these routes. Considering the above and the intervening distance between the SAC and the scheme, no adverse effects associated with construction transportation traffic (including increased noise, vibration, vehicle disturbance) are likely.
Duration of construction, operation etc.	Construction is predicted to commence in spring 2018 [redacted]. Construction will however be phased, and construction at a given location, for example and ERA or gantry location, is unlikely to take longer than 4 weeks.
Other	No new operational lighting is proposed. There will therefore not be an increase in levels of artificial light during operation as a result of the scheme. Noise modelling for the scheme predicts operational noise will either remain unchanged or will be reduced across the majority of the scheme (see chapter 8 Noise and Vibration of the scheme's EAR). Considering this and the intervening distance between the scheme and the SAC, no adverse effects associated with changes in operational noise levels will occur.
Description of Avoidance and/or Mitigation Measures: Describe any assumed (plainly established and uncontroversial) mitigation measures, including information on:	
Nature of proposals	No mitigation measures are required
Location	N/A
Evidence for effectiveness	N/A
Mechanism for delivery (legal conditions, restrictions or other legally enforceable obligations)	N/A
Characteristics of European Site: A brief description of the European Site should be produced, including information on: Information with respect to the Singleton and Cocking Tunnels SAC has been sourced from the site's Natura 2000 Standard Data Form[19].	
Name of European Site and its EU code	Singleton and Cocking Tunnels SAC (UK0030337).
Location and distance of the European Site from the proposed works	The closest point of the SAC is c.28km to the north east of the nearest point of the scheme at junction 11 of the M27. The location of the SAC is presented on Figure 6.2c in appendix A.
European Site size	1.88ha (area).
Key features of the European Site including the primary reasons for selection and any	Annex II species present as a qualifying feature, but are not a primary reason for selection of this SAC: • 1308 Barbastelle bat

[19] Natura 2000 Database (2015). Standard Data Form for Singleton and Cocking Tunnels Special Area of Conservation (Site Code: UK0030337). http://jncc.defra.gov.uk/protectedsites/sacselection/n2kforms/UK0030337.pdf.

other qualifying interests (Taken from Natura 2000 Standard Data Form[20])	Hibernating populations of barbastelle bat occur in disused railway tunnels. • 1323 Bechstein's bat Hibernating populations of Bechstein's bat occur in disused railway tunnels.
Vulnerability of the European Site – any information available from the standard data forms on potential effect pathways (taken from Natura 2000 standard Data form)	The principal threats to this SAC are the: • Modification of cultivation practices • Changes in biotic conditions • Outdoor sports and leisure activities, recreational activities • Other ecosystem modifications
European Site conservation objectives – where these are readily available	The conservation objectives are to ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring: • The extent and distribution of habitats of qualifying species • The supporting processes on which habitats of qualifying species rely • The populations of qualifying species • The distribution of qualifying species within the site[21]
Assessment Criteria: Describe the individual elements of the scheme (either alone or in combination with other plans or schemes) likely to give rise to impacts on the European Site.	
Construction of ERAs, gantries, and resurfacing may generate noise, light, and vibrational disturbance which could affect barbastelle and bechstein's bat foraging and commuting away from roost sites within the SAC. No other elements of the scheme, including during the construction or operational lifecycle, are likely to affect features for which the SAC is designated.	
Initial Assessment: The key characteristics of the site and the details of the European Site should be considered in identifying potential impacts. Describe any likely changes to the site arising as a result of:	
Reduction in habitat area	The scheme will not result in any land take or habitat loss from the SAC.
Disturbance to key species	During the construction phase, activities will generate noise and vibration, and visual disturbance. Barbastelle is known to have a large home range (e.g. 1 estimate of this species home range is between 1km and 20km from the centre of a territory[22]). However, as the scheme is located beyond the upper limits of the distances these bats are known to fly from roosting sites, the habitats around the scheme would be peripheral to the population in the SAC. The BCT cite the CSZ for barbastelle as 3km. It is therefore not likely that barbastelle bats roosting in the SAC would regularly utilise habitats within the vicinity of the scheme and this species will not be significantly disturbed. Bechstein's bat is strongly associated with large areas of semi-natural woodland[23] and typically has a home range which is markedly less than the distance between the scheme and the SAC. The Bat Conservation Trust (BCT) cites the Core Sustenance Zone (CSZ) for Bechstein's bat as 1 km[24].

[20] Found at http://jncc.defra.gov.uk

[21] Natural England (2014 – version 2, replaces earlier version dated 2012). European Site Conservation Objectives for Singleton and Cockings Tunnels Special Area of Conservation (Site Code: UK0030337). http://publications.naturalengland.org.uk/file/6270221568442368

[22] Zeale, M., Davidson-Watts, I and Jones, G. (2012). Home range use and habitat selection by barbastelle bats (*Barbastella barbastellus*): implications for conservation. *Journal of Mammamology*. 93(4):1110-1118.
[23] Bat Conservation Trust (undated). Bechstein's bat facts. [on-line] http://www.bats.org.uk/pages/bechsteins_bat_facts.html (accessed February 2016).
[24] Collins, J. (Ed). (2016). *Bat surveys for professional ecologists: Good practice guidelines* (3rd Edition). BCT. London.

	Bechstein's bat supported within the SAC are, therefore, not likely to utilise habitats in the vicinity of the scheme and will not be significantly disturbed.
Habitat or species fragmentation	No fragmentation effects will occur to barbastelle or bechstein's bats due to the scheme, due to the intervening distance between the SAC and the scheme.
Reduction in species density	The scheme would not result in a reduction in species density as it will not affect species in the SAC as discussed above.
Changes in key indicators of conservation value (water quality etc.)	Direct or indirect impacts to the key indicators of conservation value (e.g. air quality, woodland quality) in the SAC will not occur due to the distance of the scheme area from the SAC.
Climate change	Cumulative impacts associated with climate change will not occur, as the SAC will not be affected as a result of the scheme.
Interference with the key relationships that define the structure of the site	Structure is taken to mean the distribution and abundance of habitats in the site used by bats. Relationships which define the habitats and would affect the woodland structure, such as soil, light and disturbance levels, will not be affected by the scheme due to its distance from the SAC.
Interference with the key relationships that define the function of the site	Function is taken here to mean the capacity of the SAC to support the bat population for which it was designated. The extent and quality of the woodland habitat in and around the site will not be affected by the scheme, as discussed above. There will, therefore, not be interference in these relationships.
Indicate the significance as a result of the identification of impacts set out above in terms of:	
Reduction of habitat area	Not significant - There will be no reduction of habitat area within the SAC due to the scheme.
Disturbance to key species	Not significant - Disturbance to barbastelle and Bechstein's bats during construction or operation of the scheme will not be significant, given the intervening distance between the scheme and the SAC.
Habitat or species fragmentation	Not significant - There will be no fragmentation of habitat within the SAC or functionally important habitat for commuting or foraging bats. The effect is therefore not significant.
Loss	Not significant - There will be no significant loss of habitat or species for which the SAC is designated.
Fragmentation	Not significant - The scheme will not fragment habitat or species flight lines, due to the intervening distance.
Disruption	Not significant - The scheme will not disrupt the structure or functioning of the SAC or its qualifying features.
Disturbance	Not significant - The scheme will not significantly disturb species for which the SAC is designated.
Change to key elements of the site (e.g. water quality, hydrological regime etc.)	Not significant - There will be no change to the key elements which support the SAC, due to the intervening distance between the SAC and the scheme.
Describe from the above those elements of the scheme, or combination of elements, where the above impacts are likely to be significant or where the scale or magnitude of impacts is not known	
The scheme will not result in a significant effect on the SAC or its qualifying features. Significant in-combination effects between the scheme and other projects will not occur.	
Outcome of screening stage (delete as appropriate)	~~Significant Effects are Likely~~ ~~Sufficient Uncertainty Remains~~ Not Likely to be Significant Effects.

Are the appropriate statutory environmental bodies in agreement with this conclusion (delete as appropriate and attach relevant correspondence)	No consultation has been undertaken to date.

River Itchen SAC

Scheme Name:	M27 junction 4 to 11 Smart Motorway Programme	
European Site Consideration:	River Itchen SAC	
Date:	**Author (Name/Organisation):**	**Verified (Name/Organisation):**
22 January 2018	David Kirby WSP Principal Ecologist	Andy Bascombe WSP Technical Director
12/09/18	Clare Postlethwaite WSP Associate	David Kirby WSP Associate
Description of the Scheme: Describe any likely direct, indirect or secondary impacts of the scheme (either alone or in combination with other plans or schemes) on the European Site by virtue of:		
Size and scale (road type and probable traffic volume)	The scheme comprises an upgrade of approximately 23.5km of the M27 between junction 4 to 11 to a smart motorway. The works will be entirely within the existing highways boundary. The hardshoulder will be converted to an All Running Lane (ALR) and various smart technologies will be installed. During operation of the scheme, there will be a significant increase (>1,000 vehicles) in the Annual Average Daily Traffic (AADT) between junction 4 to 11 of the M27 and along section of the Affected Road Network (ARN) (see chapter 5 Air Quality of the scheme's Environmental Assessment Report (EAR)).	
Land-take	The scheme will not include any land take from the River Itchen SAC.	
Distance from the European Site or key features of the site (from the edge of the scheme assessment corridor)	The scheme crosses directly over the SAC at 2 locations (Ch18150 and Ch18000). An ERA is proposed on the southbound carriageway (Ch18200), approximately 48m from the SAC, and a gantry is proposed on the northbound carriageway, approximately 70m from the SAC (Ch18200). The next closest works location is a gantry located approximately 180m north of the SAC (Ch17800). The SAC flows beneath M27 and is hydrologically connected to the scheme. The SAC is located adjacent to the M27 at a location which is within the ARN.	
Resource requirements (from the European Site or from areas in proximity to the site, where of relevance to consideration of impacts)	The scheme does not require resources from the SAC.	
Emissions (e.g. polluted surface water run-off – both soluble and insoluble pollutants, atmospheric pollution)	**Construction:** All works will be carried out within the existing highways boundary and all surface water runoff during construction will be routed through the existing highways drainage system. Pollution control measures within the existing drainage system would provide sufficient protection from any polluted run-off during construction, with the Priority Outfalls passing the HAWRAT assessments (see Appendix B). This will ensure that there will not be an increase in water-borne pollution from construction related fuel spillage or material wash-off and air-borne pollution from dust generation during construction of the ERA at Ch18200 (located approximately 48m from the SAC at its closest point), gantries at Ch18200 and Ch17800 (approximately 70m and 180m at the closest point, respectively), and resurfacing works. **Operation:**	

	Air quality The SAC is located adjacent to the M27 at a location which is within the ARN. Air quality modelling predicts that the scheme, alone and in-combination with the M3 SMP, is likely to increase atmospheric concentrations of NOx and nitrogen depostion within the SAC. The effect of air quality impacts on the SAC and its qualifying features are discussed further within the '*Changes in key indicators of conservation value*' section, below. Chapter 5 Air Quality of the scheme's EAR presents the scheme's air quality assessment in detail. *Water quality* There are 6 outfalls to the River Itchen SAC south of junction 5. No works are proposed to the outfalls which discharge into this watercourse. During operation, there will be an increase in impermeable surface area due to the scheme and there will be an increase in the volume of run-off entering the SAC. However, upgrades to the drainage system will accommodate predicted increases and there will be no increase in the rate of discharge into the SAC. Furthermore, traffic volumes are predicted to increase by 13% due to the scheme and other projects. This is below the 20% threshold at which, in accordance with DMRB guidance[25], increased traffic volumes may have a significant adverse effect on the quality of water run-off. Based on the magnitude of the anticipated increase in traffic volume, the Road Drainage and the Water Environment assessment for the scheme (chapter 6 of the EAR) assesses the effect of the scheme on water quality within the River Itchen as being of Negligible significance.
Transportation requirements	Construction of the scheme will require some motorway closures at the weekend or at night, requiring the diversion of motorway traffic onto local roads. However, the nature of SMP construction is that these are only used occasionally. As construction activities would not require diversion routes beyond a few intermittent night-time or weekend closures, there will not be a significant or long-term change to traffic volumes along affected routes. Construction traffic would access the construction areas via the existing road network and will not be of a volume that will result in significant changes in noise levels or air quality along these routes. Considering the above, no adverse effects associated with construction transportation traffic (including increased noise, vibration, vehicle disturbance) are likely.
Duration of construction, operation etc.	Construction is predicted to commence in spring 2018 [redacted]s. Construction will however be phased, and construction at a given location, for example an ERA or gantry location, is unlikely to take longer than 4 weeks.
Other	**Construction:** During construction, there will be a short-term increase in construction related light, noise, vibration and human related disturbance within the vicinity of the proposed ERA, gantries, and along the extent of the scheme during resurfacing. In the absence of mitigation, there is potential for construction activity to indirectly affect otter through disturbance, a sensitive species for which the SAC is designated, as the scheme is within approximately 50m of the site. **Operation:** No significant new operational lighting, such as additional motorway lighting, is proposed, although new gantries will have LEDs. The scheme, located within an urban environment, will therefore not alter significantly the levels of artificial light within its vicinity.

[25] DMRB Volume 11 Section 3 Part 10 HD 45/09 Road Drainage and the Water Environment, Highways Agency et al., 2009

	Noise modelling for the scheme indicates that there will be a reduction in traffic related noise within the vicinity of the SAC. No adverse effects due to changes in noise are therefore expected during the operational phase.
Description of Avoidance and/or Mitigation Measures: Describe any assumed (plainly established and uncontroversial) mitigation measures, including information on:	
Nature of proposals	No mitigation measures are required.
Location	N/A
Evidence for effectiveness	N/A
Mechanism for delivery (legal conditions, restrictions or other legally enforceable obligations)	N/A
Characteristics of European Site: A brief description of the European Site should be produced, including information on: Information with respect to the River Itchen SAC has been sourced from the site's Natura 2000 Standard Data Form[26].	
Name of European Site and its EU code	River Itchen; SAC (UK0012599).
Location and distance of the European Site from the proposed works	The scheme crosses directly over the SAC. An ERA is proposed on the southbound carriageway, approximately 48m from the SAC, and a gantry is proposed on the northbound carriageway, approximately 70m from the SAC. The next closest works location is a gantry located approximately 180m north of the SAC. The SAC is located adjacent to the M27 at a location which is within the ARN. The location of the SAC is presented on Figure 6.2b and 6.2d in appendix A.
European Site size	303.98 ha (area).
Key features of the European Site including the primary reasons for selection and any other qualifying interests (Taken from Natura 2000 Standard Data Form[27])	Primary reasons for selection: • Presence of Annex I habitat: ▪ water course of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation • Presence of species on Annex II of Directive 92/43/EEC: ▪ Bullhead (Cottus gobio) ▪ Southern damselfly (Coenagrion mercuriale) Annex II species which are present as qualifying features but not a primary reason for selection include: • Brook lamprey (Lampetra planeri) • Atlantic salmon (Salmo salar) • Otter (Lutra lutra) • White-clawed crayfish (Austropotamobius pallipes) The Annex 1 habitat is described as follows: • The Itchen is a classic example of a sub-type 1 chalk river. The river is dominated throughout by aquatic Ranunculus spp. The headwaters contain pond water-crowfoot Ranunculus peltatus, while 2 Ranunculus species occur further downstream: stream water-crowfoot R. penicillatus ssp. pseudofluitans, a species

[26] Natura 2000 Database (2015). Standard Data Form for River Itchen Special Area of Conservation (Site Code: UK0012599). http://jncc.defra.gov.uk/protectedsites/sacselection/n2kforms/UK0012599.pdf.

[27] Found at http://jncc.defra.gov.uk

	especially characteristic of calcium-rich rivers, and river water-crowfoot R. fluitans
Vulnerability of the European Site – any information available from the standard data forms on potential effect pathways	A number of key factors affect the River Itchen SAC; these can be summarised from the 2015 Natura form as follows: Negative effects: • Grazing • Pollution to groundwater (point sources and diffuse sources) • Human induced changes in hydraulic conditions
European Site conservation objectives – where these are readily available	Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring: • The extent and distribution of qualifying natural habitats and habitats of qualifying species • The structure and function (including typical species) of qualifying natural habitats • The structure and function of the habitats of qualifying species • The supporting processes on which qualifying natural habitats and the habitats of qualifying species rely • The populations of qualifying species • The distribution of qualifying species within the site
Assessment Criteria: Describe the individual elements of the scheme (either alone or in combination with other plans or schemes) likely to give rise to impacts on the European Site.	
From the above, the following possible impacts have been identified: **Construction:** • Increased water-borne pollution from construction related fuel spillage or wash-off during construction of the ERA and gantry at Ch1820, the gantry at Ch17800, and resurfacing of the M27 between Ch17650 and Ch18450, in particular at the crossing locations at Ch18150 and Ch18000; • Increased air-borne pollution from dust generation during construction works at the above locations; • Disturbance caused by short-term light, noise, vibration and human activity within approximately 50m of the SAC. **Operation**: • Where the SAC is within 200m of the ARN, the effect of air quality impacts; • The effect of increased operational traffic volumes on the volume, rate, and quality of water run-off entering the River Itchen. The above effects have been considered both alone and in-combination with the M3 SMP.	
Initial Assessment: The key characteristics of the site and the details of the European Site should be considered in identifying potential impacts. Describe any likely changes to the site arising as a result of:	
Reduction in habitat area	The scheme will not result in any land take from the SAC.
Disturbance to key species	**Construction:** Construction related noise, light, and human disturbance is restricted to the near vicinity of the works locations. The following key habitats and species are a sufficient distance (at least 48m) from works such that they will not be disturbed: • Annex I habitat: Ranunculion fluitantis and Callitricho-Batrachion vegetation; • Bullhead (*Cottus gobio*) • Southern damselfly (*Coenagrion mercuriale*) • Brook lamprey (*Lampetra planeri*) • Atlantic salmon (*Salmo salar*) • White-clawed crayfish (*Austropotamobius pallipes*)

	Construction of the gantry at ERA at Ch18200 has the potential to disturb individual otter (*Lutra lutra*) that use the River Itchen (located approximately 48m at its closest point). A walkover survey of the proposed ERA location and land up to 100m away was undertaken in October 2017. No signs of otter within the survey area were recorded, although suitable habitat for otter to rest and shelter was recorded along the banks of the River Itchen, approximately 50m from the proposed ERA. No evidence to suggest a holt is present within the vicinity of this location was recorded. Otter could potentially be disturbed during the construction of the ERA and resurfacing works, due to elevated levels of noise, light, and human presence in the vicinity of works area. However, otter is a mobile species, and will not be significantly affected by construction activities, given the scale of the works, their location in relation to the SAC, and the abundance of similar or better quality habitat for otter within the wider area. Any effects that occur on individual otters would not affect the status of this species within the SAC or the integrity of the site. **Operation:** During operation, there will not be an increase in noise or light levels within the vicinity of the SAC due to the scheme. Disturbance to species for which the SAC is designated will therefore not occur.
Habitat or species fragmentation	The closest works to the SAC are the ERA at Ch18200 located 48m from the SAC. All other works, such as resurfacing, are restricted to the M27 carriageway. No habitat fragmentation will therefore occur to the site or to functionally connected habitats.
Reduction in species density	No reduction in species density is likely to occur due to construction of the scheme. Loss of key species including brook lamprey, Atlantic salmon, otter, southern damselfly, and bullhead, and degradation to habitats for which the SAC is designated will not occur. Following construction of the scheme there will not be an increase in noise or light levels within the vicinity of the SAC. A significant reduction in species density as a result of the scheme will therefore not occur.
Changes in key indicators of conservation value (water quality etc.)	**Construction:** *Water Quality* Increased water-borne pollution may arise from construction related fuel spillage or wash-off during construction of the ERA and gantry at Ch18200, the gantry at Ch17800, and resurfacing of the M27 between Ch17650 and Ch18450, in particular at the crossing locations at Ch18150 and Ch18000. This has the potential to affect the following key species of the SAC: • Annex I habitat: Ranunculion fluitantis and Callitricho-Batrachion vegetation; • Bullhead (*Cottus gobio*) • Southern damselfly (*Coenagrion mercuriale*) • Brook lamprey (*Lampetra planeri*) • Atlantic salmon (*Salmo salar*) • White-clawed crayfish (*Austropotamobius pallipes*) • Otter (*Lutra lutra*) During the construction phase, potential impacts to water features that are located in close proximity of the scheme, or water features that are hydraulically linked to the scheme (including identified statutory designated sites), will be managed through the pollution control measures within the existing highways drainage system, to which all runoff will drain during construction (which has been tested through the HAWRAT). In addition, the pollution management measures required under the Water Resources Act 1991 will be implemented through a CEMP (as described in Section 1 of this report). *Air Quality*

Dust generation during construction at the ERA at Ch18200 (located approximately 48m from the SAC at its closest point), gantries at Ch18200 and Ch17800 (approximately 70m and 180m at the closest point, respectively), and resurfacing, has the potential to affect the SAC. Effects of dust generation would be limited to the immediate area of the works. Species that are present in this area and which could be affected by uncontrolled dust emissions are:

- Annex I habitat: Ranunculion fluitantis and Callitricho-Batrachion vegetation;
- Bullhead (*Cottus gobio*)
- Southern damselfly (*Coenagrion mercuriale*)
- Brook lamprey (*Lampetra planeri*)
- Atlantic salmon (*Salmo salar*)
- White-clawed crayfish (*Austropotamobius pallipes*)
- Otter (*Lutra lutra*)

The CEMP details the procedures and methods that must be followed to manage the risk of pollution occurring, in accordance with requirements of the Water Resources Act 1991 (see Section 1).

Operation:

Air quality

The SAC is within 200m of the ARN where the scheme crosses the River Itchen. In accordance with DMRB guidance[28], an assessment has been undertaken to determine the effect of air quality impacts on the SAC and its qualifying features.

The assessment has included a review of air quality modelling which has determined / predicted the following:

- Background and Baseline levels of atmospheric NOx and nitrogen deposition within the SAC up to 200m from the edge of the ARN; and,
- The predicted change in atmospheric NOx and nitrogen deposition within the SAC due to the scheme alone and in-combination with the M3 SMP.

Information provided by the Air Pollution Inventory System (APIS) with respect to the River Itchen has been reviewed to determine the sensitivities of the SAC to NOx and nitrogen deposition. This has included a review of the relevant Critical Levels and Critical Loads for the SAC's qualifying features.

To determine the likely distribution of the qualifying features within the SAC, the Multi-Agency Geographic Information for the Countryside[29] (MAGIC) database has been reviewed. This included a review of relevant Site of Special Scientific Interest (SSSI) Units and habitat information which fall within and are functionally connected to the SAC designation.

<u>SAC Sensitivities</u>

Habitats within the SAC that are within 200m of the M27 include flowing freshwater (the River Itchen) and fen, marsh, and swamp. The River Itchen flows beneath the M27 and is therefore located within 0m from the road. The fen, marsh, and swamp habitat are located approximately 20m from the M27 at their closest point.

The above habitats and distances relate to the SAC's qualifying features as follows:

- The River Itchen comprises Annex I habitat - Watercourses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation (located 0m from the ARN at closest point)

[28] DMRB Volume 11 Section 3 Part 1 HD 207/07 Rev. 1 Air Quality, Highways Agency et al., 2007

[29] http://www.natureonthemap.naturalengland.org.uk/MagicMap.aspx

- White-clawed crayfish, brook lamprey, Atlantic salmon, and bullhead are all restricted to the in-channel River Itchen (located 0m from the ARN at closest point)
- Southern damselfly is potentially supported within the River Itchen and with areas of fen, marsh and swamp (these habitats are located 0m and 50m from the ARN, respectively)
- Otter is potentially located throughout the SAC (habitat located within 0m at closest point).

Information provided by APIS with respect to relevant Critical Levels and Critical Loads for each qualifying habitat / species have been reviewed to assist in defining the significance of air quality impacts on the SAC due to the scheme alone and in-combination.

Assessing Atmospheric Concentrations of NOx

Fen, marsh, and swamp habitat has been identified as the nearest habitat type to the ARN which is likely to support a species for which the SAC is designated (Southern damselfly) and which is sensitive to the effects of atmospheric NOx. This point is located at Easting = 445018; Northing = 115866, approximately 19m from the M27.

This habitat is not within the SAC, but is functionally connected to the SAC at the locations identified above. At this point, it is a relatively narrow wetland habitat which makes contact with the SAC at Easting = 444990; Northing = 115839. Where the area of functionally connected habitat meets the SAC, it is approximately 60m from the M27.

The wet habitats which constitute the SAC, namely the River Itchen itself, has not been in the assessment, as aquatic habitats are not sensitive to the effects of atmospheric nitrogen, particularly when considering nitrogen inputs from catchment land-use[30,31,32].

The table below presents the atmospheric NOx concentrations at a modelled point located approximately 20m from the M27 (Easting = 445282, Northing = 115773).

Feature	Annual Mean NOx Concentrations (µg/m³) in Opening Year (2021)			
	Background (Average NOx within 5km x 5km Grid Square)	Without Scheme	With M27 Scheme	Change
Fen, Marsh, and Swamp	18.7	44.1	45.0	0.90

In line with the advice set out in Section 2.6 of Interim Advice Note (IAN) 174/13 “Evaluating Significant Air Quality Effects”, as the total NOx concentrations are above 30µg/m³ with the scheme in 2021 and there is a change of more than 0.4µg/m³ of NOx associated with the operation of the scheme, there is a requirement to calculate a change in nitrogen (N) deposition. The outcomes of the N deposition inform the professional judgement as to whether there are likely to be a significant effect on the designated habitat.

Calculating Nitrogen Deposition

A critical load range of 10 to 15 kg N/ha/yr has been adopted for the Fen, Marsh, and Swamp habitat, as per APIS guidance.

The table below presents the Nitrogen deposition at a modelled point located approximately 20m from the M27 (Easting = 445282, Northing = 115773).

[30] Strong, K.M.; Lennox, S.D.; Smith, R.V. **1997** Predicting nitrate concentrations in Northern Ireland rivers using time series analysis Journal of Environmental Quality 26 1599-1604

[31] Smith, R.V.; Stewart, D.A. 1989 A regression model for nitrate leaching in Northern Ireland. Soil Use and Management 5 71-76

[32] Foy, R.; Smith, R.V.; Stevens, R.J. **1982** Identification of factors affecting nitrogen and phosphorus loadings to Lough Neagh Journal of Environmental Management 15 109-129

Designated Feature	Nitrogen Deposition (kg/ha/yr) in Opening Year (2021)					
	Background (Average N Deposition within 5km x 5km Grid Square)[33]	Without Scheme	With M27 Scheme Alone	Change	M27 & M3	Change
Fen, Marsh, and Swamp	14.91	16.45	16.49	0.04	16.51	0.06

Assessing the Likely Significance of Effects

The increased deposition described above equates to the following in terms of the adopted 10 kg N/ha/yr Critical Load:

- A percentage change of <1% of the Critical Load at the closest point of contact with the Fen, Mars, and Swamp habitat due to the scheme;
- A percentage change of <1% of the Critical Load at the closest point of contact with the Fen, Mars, and Swamp habitat due to the scheme in combination with the M3 SMP.

Although background levels of N deposition currently exceed the Critical Load for Fen, Marsh, and Swamp, an increase of 0.04 kg/ha/yr due to the scheme is minimal and will not result in adverse changes to the fen, marsh, swamp habitat which may support Southern Damselfly. Southern Damselfly potentially supported within this habitat will therefore not be affected.

The conclusions above are made with a relatively high degree of confidence, particularly as the Critical Load used for this assessment is considered to be precautionary given that the habitats identified as fen, marsh, and swamp habitats are likely to be more closely represented as 'Rich Fens', which have a higher Critical Load of between 15 and 30 kg N ha-1 year-1.

Significant effects to the SAC as a result of increased NOx or nitrogen deposition due to the scheme, alone or in-combination, will therefore not occur.

Water Quality

The volume of discharge of run-off will increase during the operational life of the scheme due to an increase in the impermeable surface area of the M27 motorway within the scheme limits. However, the rate of the run-off discharging into the River Itchen will not change significantly as upgrades to the M27 drainage system, implemented as part of the scheme, will accommodate the predicted increases in the volume of run-off. With regards water quality, traffic volumes on the M27 are predicted to increase by 13% due to the scheme in-combination with other projects (specifically the M3 SMP). This increase in traffic is predicted to have a negligible effect on the quality of the water discharging into the River Itchen, and there will therefore not be a significant change in the key indicators of conservation value within the site.

Climate change	The scheme's drainage system has been designed to accommodate predicted increases in flows due to greater impermeable surface areas and climate change such that no change to the discharge parameters will arise. Cumulative impacts associated with climate change will therefore not occur.

[33] Total deposition, reduced by 2% / year, including contribution from roads.

Interference with the key relationships that define the structure of the site	Structure is taken to mean the distribution and abundance of habitats in the SAC site. Interference with the relationships which define the habitats in the site such as river flow speed, direction and water quality will not occur as a result of the scheme as there will be no land take or direct impact on the river channel or adjacent habitats.
Interference with the key relationships that define the function of the site	Function is taken here to mean the capacity of the SAC site to support the vegetation, otter, fish and invertebrate populations for which it was designated. Interference with this capacity will not occur as the scheme would not affect the habitats on which species depend (as discussed above regarding 'reduction in species density').
Indicate the significance as a result of the identification of impacts set out above in terms of:	
Reduction of habitat area	Not significant - There will be no reduction of habitat area within the SAC due to the scheme. Functionally connected habitat will also not be directly affected by the scheme.
Disturbance to key species	Not significant – otter and other species for which the SAC is designated would not be significantly disturbed during the construction of the scheme.
Habitat or species fragmentation	Not significant - No fragmentation of habitat within the SAC, or to functionally connected habitat, will occur during the construction or operation of the scheme.
Loss	Not significant - There will be no habitat loss to the SAC or functionally connected habitat due to the scheme. The scheme will not result in a significant loss of any species for which the SAC is designated.
Fragmentation	Not significant - No fragmentation of habitat within the SAC, or to functionally connected habitat, will occur during the construction or operation of the scheme.
Disruption	Not significant - Construction or operation of the proposed scheme will not disrupt the structure or function of the SAC.
Disturbance	Not significant - Considering the scale and duration of the proposed works significant disturbance to species for which the SAC is designated will not occur.
Change to key elements of the site (e.g. water quality, hydrological regime etc.)	Not significant - There will be not significant change to water quality, volumes, or flows to the River Itchen. Functionally connected habitat will not change significantly.
Describe from the above those elements of the scheme, or combination of elements, where the above impacts are likely to be significant or where the scale or magnitude of impacts is not known	
Significant effects to the SAC and its qualifying features as a result of the scheme are not likely. In-combination effects between the scheme and other projects, including the M3 SMP scheme, are not likely.	
Outcome of screening stage (delete as appropriate)	~~Significant Effects are Likely~~ ~~Sufficient Uncertainty Remains~~ Not Likely to be Significant Effects.
Are the appropriate statutory environmental bodies in agreement with this conclusion (delete as appropriate and attach relevant correspondence)	Natural England have been consulted and agree with the conclusions of this assessment.

Solent Maritime SAC

Scheme Name:	M27 junction 4 to 11 Smart Motorway Programme	
European Site Consideration:	Solent Maritime SAC	
Date:	**Author (Name/Organisation):**	**Verified (Name/Organisation):**
22 January 2018	David Kirby WSP Principal Ecologist	Andy Bascombe WSP Technical Director
12/09/18	Clare Postlethwaite WSP Associate	David Kirby WSP Associate
Description of the Scheme: Describe any likely direct, indirect or secondary impacts of the scheme (either alone or in combination with other plans or schemes) on the European Site by virtue of:		
Size and scale (road type and probable traffic volume)	The scheme comprises an upgrade to approximately 23.5km of the M27 between junction 4 to 11 to a smart motorway. The works will be entirely within the existing highways boundary. The hardshoulder will be converted to an All Running Lane (ALR) and various smart technologies will be installed. During operation of the scheme, there will be a significant increase (>1,000 vehicles) in the Annual Average Daily Traffic (AADT) between junction 4 to 11 of the M27 and along section of the Affected Road Network (ARN) (see chapter 5 Air Quality of the scheme's Environmental Assessment Report (EAR)).	
Land-take	The scheme will not require any land take from the Solent Maritime SAC.	
Distance from the European Site or key features of the site (from the edge of the scheme assessment corridor)	The M27 crosses directly over the SAC where the River Hamble flows beneath the M27 at Ch26350. Two gantries are proposed within the vicinity of the SAC, located approximately 100m (Ch26450) and 160m (Ch26150) at the closest point to the site. The next closest works location is an ERA located approximately 250m west of the SAC at Ch26050. The SAC is hydrologically connected to the scheme via the River Hamble. The SAC is crossed by the A27 at Bridge Road which, although outside of the scheme construction footprint, is part of the ARN. The location of the SAC is presented on Figure 6.2b and 6.2d in appendix A.	
Resource requirements (from the European Site or from areas in proximity to the site, where of relevance to consideration of impacts)	The scheme does not require resources from the SAC.	
Emissions (e.g. polluted surface water run-off – both soluble and insoluble pollutants, atmospheric pollution)	**Construction:** All works will be carried out within the existing highways boundary and all surface water runoff during construction will be routed through the existing highways drainage system. Pollution control measures within the existing drainage system would provide sufficient protection from any polluted run-off during construction. This will ensure that there will not be an increase in water-borne pollution from construction related fuel spillage or material wash-off and air-borne pollution from dust generation during construction at 2 gantries (located 100m and 160m from the SAC), an ERA (located approximately 250m from the SAC), and resurfacing works. **Operation:** *Air quality*	

	The M27 crosses directly over the SAC where the River Hamble flows beneath the M27 at Ch26350. It is also crossed by the A27 at Bridge Road which, although outside of the scheme construction footprint, is part of the ARN. Air quality modelling for the scheme indicates that it will cause an increase in atmospheric NOx concentrations within its vicinity. The effect of this increase on the SAC and its qualifying features is discussed further below. *Water quality* There are 3 outfalls from the M27 to the River Hamble, none of which are identified for upgrades. During operation, there will be an increase in impermeable surface area due to the scheme and there will be an increase in the volume of run-off entering the SAC. However, upgrades to the drainage system will accommodate predicted increases and there will be no increase in the rate of discharge into the SAC. Furthermore, traffic volumes are predicted to increase by 13% due to the scheme and other projects. This is below the 20% threshold at which, in accordance with DMRB guidance[34], increased traffic volumes may have a significant adverse effect on the quality of water run-off. Based on the magnitude of the anticipated increase in traffic volume, the Road Drainage and the Water Environment assessment for the scheme (chapter 6 of the EAR) assess the effect of the scheme on water quality within the River Hamble as being of Negligible significance.
Transportation requirements	Construction of the scheme will require some motorway closures at the weekend or at night, requiring the diversion of motorway traffic onto local roads. However, the nature of SMP construction is that these are only used occasionally. As construction activities would not require diversion routes beyond a few intermittent night-time or weekend closures, there will not be a significant or long-term change to traffic volumes along affected routes. Construction traffic would access the construction areas via the existing road network and will not be of a volume that will result in significant changes in noise levels or air quality along these routes. Considering the above, no adverse effects associated with construction transportation traffic will occur (including increased noise, vibration, vehicle disturbance, or atmospheric pollution).
Duration of construction, operation etc.	Construction is predicted to commence in spring 2018 a[redacted] Construction will however be phased, and construction at a given location, for example an ERA or gantry location, is unlikely to take longer than 4 weeks.
Other	**Construction:** During construction, there will be a short-term increase in construction related light, noise, vibration and human disturbance within the vicinity of the proposed ERA, gantries, and along the extent of the scheme during resurfacing. However, the SAC is designated for habitats only, and these impacts would therefore not affect the SAC. **Operation:** No significant new operational lighting, such as additional motorway lighting, is proposed, although new gantries will have LEDs. The scheme, located within an urban environment, will therefore not alter significantly levels of artificial light within its vicinity. Noise modelling for the scheme indicates that there will be a reduction in traffic related noise within the vicinity of the SAC. No adverse effects due to changes in noise are therefore expected during the operational phase (see Chapter 8 Noise and Vibration of the scheme's EAR).

[34] DMRB Volume 11 Section 3 Part 10 HD 45/09 Road Drainage and the Water Environment, Highways Agency et al., 2009

Description of Avoidance and/or Mitigation Measures: Describe any assumed (plainly established and uncontroversial) mitigation measures, including information on:	
Nature of proposals	No mitigation measures are required.
Location	N/A
Evidence for effectiveness	N/A
Mechanism for delivery (legal conditions, restrictions or other legally enforceable obligations)	N/A
Characteristics of European Site: A brief description of the European Site should be produced, including information on: Information with respect to the Solent Maritime SAC has been sourced from the site's Natura 2000 Standard Data Form[35].	
Name of European Site and its EU code	Solent Maritime; SAC (UK0030059).
Location and distance of the European Site from the proposed works	The M27 crosses directly over the SAC where the River Hamble flows beneath the M27 at Ch26350. Two gantries are proposed within the vicinity of the SAC, located approximately 100m (Ch26450) and 160m (Ch26150) at the closest point to the site. The next closest works location is an ERA located approximately 250m west of the SAC at Ch26050. The SAC is hydrologically connected to the scheme via the River Hamble. The SAC is crossed by the A27 at Bridge Road which, although outside of the scheme construction footprint, is part of the ARN. The location of the SAC is presented on Figure 6.2b and 6.2d in appendix A.
European Site size	11243.12 ha (area).
Key features of the European Site including the primary reasons for selection and any other qualifying interests	**General site character:** Marine areas, Sea inlets (14%) Tidal rivers, Estuaries, Mud flats, Sand flats, Lagoons (including salt work basins) (59%) Salt marshes, Salt pastures, Salt steppes (23%) Coastal sand dunes, Sand beaches, Machair (0.5%), Shingle, Sea cliffs, Islets (3%) Broadleaved deciduous woodland (0.5%). **Primary reason for selection of this site:** Annex I habitats that are a primary reason for selection of this site **1130 Estuaries** The Solent encompasses a major estuarine system on the south coast of England with 4 coastal plain estuaries (Yar, Medina, King's Quay Shore, Hamble) and 4 bar-built estuaries (Newtown Harbour, Beaulieu, Langstone Harbour, Chichester Harbour). The site is the only 1 in the series to contain more than 2 sub-type of estuary. The Solent and its inlets are unique in Britain and Europe for their hydrographic regime of 4 tides each day, and for the complexity of the marine and estuarine habitats present within the area. Sediment habitats within the estuaries include extensive estuarine flats, often with intertidal areas supporting eelgrass Zostera spp. and green algae, sand and shingle spits, and natural shoreline transitions. The mudflats range from low and variable salinity in the upper reaches of the estuaries to very sheltered almost fully marine muds in Chichester and Langstone Harbours. Unusual features include the presence of very rare sponges in the Yar estuary and a sandy reef of the polychaete *Sabellaria spinulosa* on the steep eastern side of the entrance to Chichester Harbour. **1320 Spartina swards (Spartinion maritimae)**

[35] Natura 2000 Database (2015). Standard Data Form for Solent Maritime Special Area of Conservation (Site Code: UK0030059). http://jncc.defra.gov.uk/protectedsites/sacselection/n2kforms/UK0030059.pdf.

	Solent Maritime is the only site for smooth cord-grass *Spartina alterniflora* in the UK and is 1 of only 2 sites where significant amounts of small cord-grass *S. maritima* are found. It is also 1 of the few remaining sites for Townsend's cord-grass *S. x townsendii* and holds extensive areas of common cord-grass *Spartina anglica*, all 4 taxa therefore occurring here in close proximity. It has additional historical and scientific interest as the site where *S. alterniflora* was first recorded in the UK (1829) and where *S. x townsendii* and, later, *S. anglica* first occurred. **1330 Atlantic salt meadows (Glauco-Puccinellietalia maritimae)** The Solent contains the second-largest aggregation of Atlantic salt meadows in south and south-west England. Solent Maritime is a composite site composed of a large number of separate areas of saltmarsh. In contrast to the Severn estuary, the salt meadows at this site are notable as being representative of the ungrazed type and support a different range of communities dominated by sea-purslane *Atriplex portulacoides*, common sea-lavender *Limonium vulgare* and thrift *Armeria maritima*. As a whole the site is less truncated by man-made features than other parts of the south coast and shows rare and unusual transitions to freshwater reedswamp and alluvial woodland as well as coastal grassland. Typical Atlantic salt meadow is still widespread in this site, despite a long history of colonisation by cord-grass *Spartina* spp.
Vulnerability of the European Site – any information available from the standard data forms on potential effect pathways	A number of key factors affect the Solent Maritime SAC; these can be summarised from the 2015 Natura form as follows: Negative effects: • Pollution to groundwater (point sources and diffuse sources) • Changes in abiotic conditions • Changes in biotic conditions • Fishing and harvesting aquatic resources • Outdoor sport and leisure activities, recreational activities
European Site conservation objectives – where these are readily available	Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring: • The extent and distribution of qualifying natural habitats and habitats of qualifying species • The structure and function (including typical species) of qualifying natural habitats • The structure and function of the habitats of qualifying species • The supporting processes on which qualifying natural habitats and the habitats of qualifying species rely • The populations of qualifying species • The distribution of qualifying species within the site

Assessment Criteria: Describe the individual elements of the scheme (either alone or in combination with other plans or schemes) likely to give rise to impacts on the European Site.

From the above, the following possible impacts have been identified:

Construction:

- Increased water-borne pollution from construction related fuel spillage or wash-off during construction of gantries located approximately 100m (Ch26450) and 160m (Ch26150) away, and where the River Hamble flows beneath the M27 at Ch26350;
- Increased air-borne pollution from dust generation during construction works at the above locations;

Operation:

- Where the SAC is within 200m of the ARN, the effect of air quality impacts;
- The effect of increased operational traffic volumes on the volume, rate, and quality of water run-off entering the Solent Maritime SAC.

The above effects have been considered both alone and in-combination with the M3 SMP.

Initial Assessment: The key characteristics of the site and the details of the European Site should be considered in identifying potential impacts. Describe any likely changes to the site arising as a result of:	
Reduction in habitat area	The scheme will not result in any land take or habitat loss from the SAC or within areas of functionally connected habitat.
Disturbance to key species	The SAC is designated for habitats and there will therefore not be disturbance to species as a result of the scheme.
Habitat or species fragmentation	No habitat loss to the SAC will occur as a result of the scheme. The works locations within the vicinity of the SAC are relatively limited in extent and will not result in increased fragmentation within the site or to functionally connected habitat.
Reduction in species density	**Construction:** *Water Quality* Increased water-borne pollution may arise from construction related fuel spillage or wash-off during construction of gantries located approximately 100m (Ch26450) and 160m (Ch26150) away, and where the River Hamble flows beneath the M27 at Ch26350. This has the potential to affect the Annex I habitats within the SAC. During the construction phase, potential impacts to water features that are located in close proximity of the scheme, or water features that are hydraulically linked to the scheme (including identified statutory designated sites), will be managed through the pollution control measures within the existing highways drainage system, to which all runoff will drain during construction. In addition, the pollution management measures required under the Water Resources Act 1991 will be implemented through a CEMP. *Air Quality* Dust generation during construction of gantries located approximately 100m (Ch26450) and 160m (Ch26150) away, and where the River Hamble flows beneath the M27 at Ch26350, have the potential to affect the SAC. Effects of dust generation would be limited to the immediate area of the works. The CEMP details the procedures and methods that must be followed to manage the risk of pollution occurring, in accordance with the Water Resources Act 1991 (see Section 1). **Operation:** *Air quality* The M27 crosses the Solent Maritime SAC at the crossing point of the River Hamble (449688, 110161). In accordance with DMRB guidance[36], an assessment has been undertaken to determine the effect of air quality impacts on the SAC and its qualifying features. The assessment has included a review of air quality modelling which has determined / predicted the following: • Background and Baseline levels of atmospheric NOx and nitrogen deposition within the SAC up to 200m from the edge of the ARN; and, • The predicted change in atmospheric NOx and nitrogen deposition within the SAC due to the scheme alone and in-combination with the M3 SMP. Information provided by the Air Pollution Inventory System (APIS) with respect to the Solent Maritime SAC has been reviewed to determine the sensitivities of the SAC to NOx and nitrogen deposition. This has included a review of the relevant Critical Levels and Critical Loads for the SACs qualifying features. <u>SAC Sensitivities</u>

[36] DMRB Volume 11 Section 3 Part 1 HD 207/07 Rev. 1 Air Quality, Highways Agency et al., 2007

Habitats within 200m of the M27 include approximately 4ha of river and intertidal mudflat, amounting to approximately 0.02% of the total area of the SAC. The UK Air Pollution Inventory System (APIS) does not provide a critical load for mudflat, but there is a critical load for 'saltmarsh', which has a minimum critical load of 20 kgN/ha/yr.

The table below presents the atmospheric NOx concentrations at a modelled point located to the M27 (Easting = 449671, Northing = 110178).

Feature	Annual Mean NOx Concentrations (µg/m³) in Opening Year (2021)			
	Background (Average NOx within 5km x 5km Grid Square)	Without Scheme	With M27 Scheme	Change
Saltmarsh	18.92	63.4	66.8	3.4

In line with the advice set out in Section 2.6 of Interim Advice Note (IAN) 174/13 "Evaluating Significant Air Quality Effects", as the total NOx concentrations are above 30µg/m³ with the scheme in 2021 and there is a change of more than 0.4µg/m³ of NOx associated with the operation of the scheme, there is a requirement to calculate a change in nitrogen (N) deposition. The outcomes of the N deposition inform the professional judgement as to whether there are likely to be a significant effect on the designated habitat.

Calculating Nitrogen Deposition

A Critical Load range of 20 to 30 kg N/ha/yr has been adopted for the Saltmarsh habitat, as per APIS guidance.

The table below presents the Nitrogen deposition at a modelled point located adjacent to the M27 (Easting = 449671, Northing = 110178).

Designated Feature	Nitrogen Deposition (kg/ha/yr) in Opening Year (2021)					
	Background (Average N Deposition within 5km x 5km Grid Square)[37]	Without Scheme	With M27 Scheme Alone	Change	M27 & M3	Change
Saltmarsh	13.8	15.93	16.08	0.15	16.11	0.18

Assessing the Likely Significance of Effects

The increased deposition described above equates to the following in terms of the adopted 20 kg N/ha/yr Critical Load:

- A percentage change of <1% of the Critical Load at the closest point of contact with saltmarsh habitat due to the scheme;
- A percentage change of <1% of the Critical Load at the closest point of contact with the saltmarsh habitat due to the scheme in combination with the M3 SMP

Saltmarsh and intertidal mudflats are theoretically vulnerable to nitrogen deposition, however, inputs of nitrogen to these systems are overwhelmingly dominated by marine and fluvial sources, with atmospheric nitrogen deposition making a minimal contribution to overall nitrogen inputs. The APIS website states that '*Overall, N deposition [from atmosphere] is likely to be of low importance for these systems as the inputs are probably significantly below the large nutrient loadings from river and tidal inputs*'[38].

[37] Total deposition, reduced by 2% / year, including contribution from roads.

[38] http://www.apis.ac.uk/node/968

	Considering the low sensitivity of coastal saltmarsh habitats to atmospheric nitrogen inputs, and their locations in the Hamble estuary relative to the M27 and the SAC boundary, adverse effects on the integrity of the SAC are unlikely to result from increasing traffic flows at this location. The twice daily washing of mudflats within and adjacent to the SAC, further reduces the likelihood of significant adverse effects due to atmospheric nitrogen. The scheme, alone or in-combination with the M3 SMP, will therefore not significantly affect habitats for which the SAC is designated.
Changes in key indicators of conservation value (water quality etc.)	**Construction:** Potential impacts to water quality due to construction related pollution will be avoided through the pollution control measures within the existing highways drainage, to which all surface water will discharge during construction. In addition, the pollution management measures required under the Water Resources Act 1991 will be implemented through a CEMP. Changes to key indicators as a result of construction related impacts will therefore not occur. **Operation:** *Air quality* There will be no significant change to indicators of conservation value due to air quality impacts (see Reduction in Species Density assessment, above). *Water quality* The volume of run-off will increase during the operational life of the scheme due to an increase in the impermeable surface area of the M27 within the scheme limits. However, although there will be an increase in volume, the rate of the run-off discharging into the River Hamble will not change significantly due to upgrades to the M27 drainage system which will accommodate the predicted increases in the volume. With regards water quality, traffic volumes on the M27 are predicted to increase by 13% due to the scheme in-combination with other projects (specifically the M3 SMP). This increase in traffic is predicted to have a negligible effect on the quality of the water discharging into the River Hamble, and there will therefore not be a significant change in the key indicators of conservation value within the site.
Climate change	The scheme's drainage system has been designed to accommodate predicted increases in flows due to greater impermeable surface areas and climate change such that no change to the discharge parameters would arise. Cumulative impacts associated with climate change are therefore not likely.
Interference with the key relationships that define the structure of the site	Structure is taken to mean the distribution and abundance of habitats in the SAC site. Interference with the relationships which define the habitats in the site such as river flow speed, direction and water quality would not occur as a result of the scheme as there will be no land take or direct impact on the river channel or adjacent habitats.
Interference with the key relationships that define the function of the site	Function is taken here to mean the capacity of the SAC site to support the habitats for which it is designated. The scheme will not significantly affect the habitats on which species depend (as discussed above regarding reduction in species density).
Indicate the significance as a result of the identification of impacts set out above in terms of:	
Reduction of habitat area	Not significant - There will be no reduction of habitat area within the SAC due to the scheme. Functionally connected habitat will also not be significantly affected by the scheme.
Disturbance to key species	Not significant - The SAC is not designated for species which are sensitive to light, noise, or vibration disturbance.
Habitat or species fragmentation	Not significant - There will be no habitat or species fragmentation due to the scheme. Works are of a scale, type, or distance from the SAC that fragmentation effects to habitats for which the SAC is designated will not occur.

Loss	Not significant - No loss of habitat within the SAC, or to functionally connected habitat, will occur during the construction or operation of the scheme.
Fragmentation	Not significant - No fragmentation of habitat within the SAC, or to functionally connected habitat, will occur during the construction or operation of the scheme.
Disruption	Not significant - No disruption to key processes within the SAC, or to functionally connected habitat, will occur during the construction or operation of the scheme.
Disturbance	Not significant - the SAC is designated for habitats only, therefore disturbance is not a potential effect.
Change to key elements of the site (e.g. water quality, hydrological regime etc.)	Due to the scheme, there will be no significant change to key elements of the site, such as water quality.
Describe from the above those elements of the scheme, or combination of elements, where the above impacts are likely to be significant or where the scale or magnitude of impacts is not known	
Significant effects to the SAC due to the construction or operation of the scheme are not likely. In-combination effects between the scheme and other projects, including the proposed M3 SMP scheme, are not likely.	
Outcome of screening stage (delete as appropriate)	~~Significant Effects are Likely~~ ~~Sufficient Uncertainty Remains~~ Not Likely to be Significant Effects.
Are the appropriate statutory environmental bodies in agreement with this conclusion (delete as appropriate and attach relevant correspondence)	No consultation has been undertaken to date.

Solent and Dorset Coast pSPA

Scheme Name:	M27 junction 4 to 11 Smart Motorways Programme	
European Site Consideration:	Solent and Dorset Coast pSPA	
Date:	**Author (Name/Organisation):**	**Verified (Name/Organisation):**
22 January 2018	David Kirby WSP Principal Ecologist	Andy Bascombe WSP Technical Director
12/09/18	Clare Postlethwaite WSP Associate	David Kirby WSP Associate
Description of the Scheme: Describe any likely direct, indirect or secondary impacts of the scheme (either alone or in combination with other plans or schemes) on the European Site by virtue of:		
Size and scale (road type and probable traffic volume)	The scheme comprises an upgrade to approximately 23.5km of the M27 between junction 4 to 11 to a smart motorway. The works will be entirely within the existing highways boundary. The hardshoulder will be converted to an All Running Lane (ALR) and various smart technologies will be installed. During operation of the scheme, there will be a significant increase (>1,000 vehicles) in the Annual Average Daily Traffic (AADT) between junction 4 to 11 of the M27 and along section of the Affected Road Network (ARN) (see chapter 5 Air Quality of the scheme's Environmental Assessment Report (EAR)).	
Land-take	The scheme will not require any land take from the pSPA.	
Distance from the European Site or key features of the site (from the edge of the scheme assessment corridor)	The M27 crosses directly over the pSPA where the River Hamble flows beneath the M27. Two gantries are proposed within the vicinity of the pSPA at this location, approximately 30m (Ch26500) and 130m (Ch26150) at the closest point to the pSPA. The next closest works at this location is an ERA located approximately 240m west of the SAC (Ch26050). The pSPA is hydrologically connected to the scheme where the M27 crosses the River Hamble (Ch2600), the River Itchen (Ch18000), the River Wallington (Ch36250), and the River Meon (Ch31950). At these points, the scheme is located approximately 0m, 960m, 740m, and 5.8km from the pSPA, respectively. The pSPA is located within 130m of the A3024, crossed by the A27 at Bridge Road and Delme Roundabout. Although outside of the scheme construction footprint, these routes are part of the ARN where an increase of >1,000 vehicles AADT is anticipated. The location of the pSPA is presented on Figure 6.2b and 6.2d in appendix A.	
Resource requirements (from the European Site or from areas in proximity to the site, where of relevance to consideration of impacts)	The scheme does not require resources from the pSPA.	
Emissions (e.g. polluted surface water run-off – both soluble and insoluble pollutants, atmospheric pollution)	**Construction:** All works will be carried out within the existing highways boundary and all surface water runoff during construction will be routed through the existing highways drainage system. Pollution control measures within the existing drainage system would provide sufficient protection from any polluted run-off during construction. This will ensure that there will not be an increase in	

	water-borne pollution from construction related fuel spillage or material wash-off and air-borne pollution from dust generation during construction of: • Crossing point of the River Hamble (crosses directly over pSPA and 2 gantries are proposed within the vicinity of the pSPA, 30m and 130m from the site) • Crossing point of the River Itchen (960m from the pSPA) • Crossing point of the River Wallington (740m from the pSPA) • Crossing point of the River Meon (5.8km from the pSPA) There is likely to be an increase in light, noise, vibration and human related disturbance at the above location **Operation:** *Air quality* The pSPA is located within 200m of the ARN where the scheme crosses the River Hamble and where the A27 crosses the River Hamble. Air quality modelling for the scheme predicts that the rate of NOx deposition will increase due to the proposed scheme. The effect of the increase in the rate of nitrogen deposition on habitats within the pSPA is presented below. See chapter 5 Air Quality of the scheme EAR for further detail. *Water quality* There are 6 outfalls which discharge into the River Itchen, 3 which discharge into the River Hamble, and 5 which discharge into the River Wallington. There are no outfalls which discharge into the River Meon. No works are proposed to any of the outfalls which discharge into these watercourses. During operation, there will be an increase in impermeable surface area due to the scheme and there will there be in increase in the volume of run-off entering the pSPA. However, upgrades to the drainage system will accommodate predicted increases and there will be no increase in the rate of discharge into the pSPA. Furthermore, traffic volumes are predicted to increase by 13% due to the scheme and other projects. This is below the 20% threshold at which, in accordance with DMRB guidance, increased traffic volumes may have a significant adverse effect on the quality of water run-off. Based on the magnitude of the anticipated increase in traffic volume, the Road Drainage and the Water Environment assessment for the scheme (chapter 6 of the EAR) assess the effect of the scheme on water quality within the River Itchen, the River Meon, the River Hamble, and the River Wallington, as being of Negligible significance.
Transportation requirements	Construction of the scheme will require some motorway closures at the weekend or at night, requiring the diversion of motorway traffic onto local roads. However, the nature of SMP construction is that these are only used occasionally. As construction activities would not require diversion routes beyond a few intermittent night-time or weekend closures, there will not be a significant or long-term change to traffic volumes along affected routes. Construction traffic would access the construction areas via the existing road network and will not be of a volume that will result in significant changes in noise levels or air quality along these routes. Considering the above, no adverse effects associated with construction transportation traffic (including increased noise, vibration, vehicle disturbance) will occur.
Duration of construction, operation etc.	Construction is predicted to commence in spring 2018 [redacted] Construction will however be phased, and construction at a given location, for example an ERA or gantry location, is unlikely to take longer than 4 weeks.
Other	No significant new operational lighting, such as additional motorway lighting, is proposed, although new gantries will have LEDs. The scheme, located within an urban environment, will therefore not significantly increase levels of artificial light within its vicinity.

	Noise modelling for the scheme indicates that there will be a reduction in traffic related noise within the vicinity of the pSPA. No adverse effects due to changes in noise are therefore expected during the operational phase.
Description of Avoidance and/or Mitigation Measures: Describe any assumed (plainly established and uncontroversial) mitigation measures, including information on:	
Nature of proposals	No mitigation measures are required.
Location	N/A
Evidence for effectiveness	N/A
Mechanism for delivery (legal conditions, restrictions or other legally enforceable obligations)	N/A
Characteristics of European Site: A brief description of the European Site should be produced, including information on: Information with respect to the Solent and Dorset Coast pSPA has been sourced from the site's Natura 2000 Standard Data Form[39].	
Name of European Site and its EU code	Solent and Dorset Coast pSPA (this is a potential SPA and is currently undergoing consultation).
Location and distance of the European Site from the proposed works	The M27 crosses directly over the pSPA where the River Hamble crosses the M27. Two gantries are proposed within the vicinity of the pSPA at this location, approximately 30m (Ch26500) and 130m (Ch26150) at the closest point to the pSPA. The next closest works at this location is an ERA located approximately 240m west of the SAC (Ch26050). The scheme is hydrologically connected to the pSPA where the M27 crosses the River Itchen (Ch18000), the River Wallington (Ch36250), and the River Meon (Ch31950). At these points, the scheme is located approximately 960m, 740m, and 5.8km from the pSPA, respectively. The pSPA is located within 130m of the A3024, crossed by the A27 at Bridge Road and Delme Roundabout. Although outside of the scheme construction footprint, these routes are part of the ARN where an increase of >1,000 vehicles AADT is anticipated. The location of the pSPA is presented on Figure 6.2b and 6.2d in appendix A.
European Site size	89,078.02 ha (area).
Key features of the European Site including the primary reasons for selection and any other qualifying interests	The site qualifies under article 4 of the directive by regularly supporting more than 1% of the Great Britain (GB) breeding populations of 3 species listed in Annex 1 of the Birds Directive: • *Sterna albifrons* Little tern: 3.31% of the GB breeding population, 63 pairs (126 breeding adults), 2009-2014 • *Sterna hirundo*, Common tern: 4.77% of the GB breeding population, 492 pairs (984 breeding adults), 2009-2014 • *Sterna sandvicensis*, Sandwich tern: 4.01% of the GB breeding population, 441 pairs (882 breeding adults), 2008-2014
Vulnerability of the European Site – any information available from the standard data forms on potential effect pathways (taken from Natura 2000 standard Data form)	No information available.

[39] Natura 2000 Database (2016). Standard Data Form for Solent and Dorset Coast potential Special Area of Conservation (Site Code: UK0030XXX).

European Site conservation objectives – where these are readily available	The conservation objective of the site is described as: Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring: • The extent and distribution of the habitats of the qualifying features • The structure and function of the habitats of the qualifying features • The supporting processes on which the habitats of the qualifying features rely • The population of each of the qualifying features • The distribution of the qualifying features within the site
Assessment Criteria: Describe the individual elements of the scheme (either alone or in combination with other plans or schemes) likely to give rise to impacts on the European Site.	
From the above, the following possible impacts have been identified: **Construction:** • Increased water-borne pollution from construction related fuel spillage or wash-off during construction of gantries located at Ch26500 (30m from the pSPA) and Ch26150 (130m from the pSPA), and at habitats within the pSPA at locations where the scheme crosses the River Itchen (Ch18000), the River Wallington (Ch36250), and the River Meon (Ch31950); • Increased air-borne pollution from dust generation during construction works at the above locations; • Disturbance caused by short-term light, noise, vibration and human activity at gantries at Ch26500 (30m from the pSPA) and Ch26150 (130m from the pSPA), and resurfacing of the M27 where the motorway crosses the pSPA at the River Hamble. **Operation**: • Where the pSPA is within 200m of the ARN, the effect of air quality impacts; • The effect of increased operational traffic volumes on the volume, rate, and quality of water run-off entering watercourses that are hydrologically connected to the Solent and Dorset Coast pSPA. The above effects have been considered both alone and in-combination with the M3 SMP.	
Initial Assessment: The key characteristics of the site and the details of the European Site should be considered in identifying potential impacts. Describe any likely changes to the site arising as a result of:	
Reduction in habitat area	The scheme will not result in any land take or habitat loss from the pSPA.
Disturbance to key species	**Construction:** Construction related noise, light, and human disturbance is restricted to the near vicinity of the works locations. The following key species could potentially be subject to disturbance: • *Sterna albifrons* Little tern: 3.31% of the GB breeding population, 63 pairs (126 breeding adults), 2009-2014 • *Sterna hirundo*, Common tern: 4.77% of the GB breeding population, 492 pairs (984 breeding adults), 2009-2014 • *Sterna sandvicensis*, Sandwich tern: 4.01% of the GB breeding population, 441 pairs (882 breeding adults), 2008-2014. Land within the pSPA at the locations of the proposed works is subject to relatively high levels of human related disturbance (including boat traffic and the presence of a marina adjacent to the M27 near the crossing of the Hamble). Considering the scale of the proposed works, and distance from the pSPA (in the case of the gantries) significant disturbance to birds for which the pSPA is designated will not occur. **Operation:** During operation, there will not be a significant increase in noise or light levels within the vicinity of the pSPA due to the scheme. No new lighting is proposed, apart from gantry LEDs, and noise levels are anticipated to be lower during the operational life of the scheme. The increase in traffic along the ARN, in particular M27, A27 and the A3024, experience existing relatively high traffic volumes and birds for which the site will potentially be

	designated are likely to have habituated to traffic disturbance along these routes. Birds for which the pSPA is designated will, therefore, not be significantly affected by the scheme.
Habitat or species fragmentation	No land take to the pSPA will occur as a result of the scheme, and the operational increase in traffic on the M27, A3024 and A27 is not of a magnitude that will affect the ability of birds to cross either side of these routes or lead to greater habitat fragmentation.
Reduction in species density	No land take or degradation to habitats within the pSPA will occur and disturbance to species during the construction or operational phase of the scheme is not anticipated for the reasons outlined above. A reduction in species diversity due to the scheme will therefore not occur.
Changes in key indicators of conservation value (water quality etc.)	*Air quality* A lower limit Critical Load of 20 kg N/ha/yr has been used for this site, the Critical Load for Coastal Saltmarsh habitats provided by APIS. Nitrogen deposition rates within the pSPA are not predicted to increase by >1% of Critical Load at 5m from the edge of the M27. The habitats within the pSPA where the M27 crosses the River Hamble and at Bitterne Road and Delme Roundabout locations (mudflats) are relatively insensitive to impacts associated with air quality (e.g NOx). Mudflats are high nutrient habitats, regularly flushed by tidal waters, and atmospheric pollution arising during construction or operation will not significantly affect water and habitat quality and the species density elsewhere in the pSPA. Adverse effects to the pSPA and its qualifying features due to atmospheric nitrogen deposition will therefore not occur during construction or operation of the scheme. *Water quality* During construction, adverse effects on water quality within the pSPA will be managed through the pollution control measures within the existing highways drainage system, to which all runoff will drain during construction. In addition, the pollution management measures required under the Water Resources Act 1991 will be implemented through a CEMP. During operation of the scheme, the change in the quality of water run-off entering the River Itchen, the River Meon, River Hamble, and River Wallington is predicted to be negligible, as discussed above. Significant changes to the water quality of watercourses which either constitute the pSPA (the River Hamble) or flow into the pSPA (the River Itchen, River Meon, River Wallington) will not occur due to the scheme alone, in-combination with other projects.
Climate change	Cumulative impacts associated with climate change will not occur, as there will be no direct or indirect effects on the extent of the pSPA habitats or adjacent river walls or habitats as a result of the scheme. Therefore, if for example sea level rise results in a change in the location or the extent of the mudflats, this will not be constrained or affected by the scheme.
Interference with the key relationships that define the structure of the site	Structure is taken to mean the distribution and abundance of habitats in the pSPA site. Interference with the relationships which define the habitats in the pSPA site such as water levels, flows, sediment deposition and tidal cycle as a result of the scheme will not occur.
Interference with the key relationships that define the function of the site	Function is taken here to mean the capacity of the pSPA site to support the bird populations for which it was designated. The key relationship which defines the function of the site in supporting populations of overwintering birds is the provision of foraging habitat. The extent of the foraging habitat will not be affected by the scheme, and the quality of the habitat will not be significantly affected, as discussed above.
Indicate the significance as a result of the identification of impacts set out above in terms of:	

Reduction of habitat area	Not significant - There will be no reduction of habitat area within the pSPA or to functionally connected habitats.
Disturbance to key species	Not significant - Habitats within close proximity to the scheme and proposed works locations, for example in the vicinity of the River Hamble, are already subject to high levels of human and boat-traffic related disturbance. Significant disturbance to birds will therefore not occur.
Habitat or species fragmentation	Not significant - The scheme will not result in habitat or species fragmentation.
Loss	Not significant - There will be loss of species (or their habitat) due to the construction or operation of the scheme.
Fragmentation	Not significant - There will be no significant habitat or species fragmentation due to construction or operation of the scheme.
Disruption	Not significant - Construction or operation of the proposed scheme will not disrupt the structure or function of the key relationships within the pSPA.
Disturbance	Not significant - Measures contained within the CEMP will avoid significant disturbance to birds for which the pSPA is designated.
Change to key elements of the site (e.g. water quality, hydrological regime etc.)	Not significant - There will not be a significant change to key elements of the site. There will be no reduction in habitat area, or changes to flow, water quality, or coastal processes which support the site's designation.
Describe from the above those elements of the scheme, or combination of elements, where the above impacts are likely to be significant or where the scale or magnitude of impacts is not known	
The scheme is not likely to have a significant effect on the pSPA and its qualifying features. Furthermore, in-combination effects between the scheme and other projects, for example the proposed M3 SMP scheme, are not likely.	
Outcome of screening stage (delete as appropriate)	~~Significant Effects are Likely~~ ~~Sufficient Uncertainty Remains~~ Not Likely to be Significant Effects.
Are the appropriate statutory environmental bodies in agreement with this conclusion (delete as appropriate and attach relevant correspondence)	No consultation has been undertaken to date.

Solent and Southampton Water SPA

Scheme Name:	M27 junction 4 to 11 Smart Motorways Programme	
European Site Consideration:	Solent and Southampton Water SPA	
Date:	**Author (Name/Organisation):**	**Verified (Name/Organisation):**
22 January 2018	David Kirby WSP Principal Ecologist	Andy Bascombe WSP Technical Director
12/09/18	Clare Postlethwaite WSP Associate	David Kirby WSP Associate
Description of the Scheme: Describe any likely direct, indirect or secondary impacts of the scheme (either alone or in combination with other plans or schemes) on the European Site by virtue of:		
Size and scale (road type and probable traffic volume)	The scheme comprises an upgrade to approximately 23.5km of the M27 between junction 4 to 11 to a smart motorway. The works will be entirely within the existing highways boundary. The hardshoulder will be converted to an All Running Lane (ALR) and various smart technologies will be installed. During operation of the scheme, there will be a significant increase (>1,000 vehicles) in the Annual Average Daily Traffic (AADT) between junction 4 to 11 of the M27 and along section of the Affected Road Network (ARN). See chapter 5 Air Quality of the scheme's Environmental Assessment Report (EAR)).	
Land-take	The scheme will not require any land take from the SPA.	
Distance from the European Site or key features of the site (from the edge of the scheme assessment corridor)	At its closest point, the scheme is located approximately 230m from the SPA, where a gantry is proposed near Hamble Bridge at the crossing of the M27 and the River Hamble (Ch26150). The next closest works locations are a gantry (Ch26150) and ERA (Ch26000) which are located approximately 420m and 500m from the SPA, respectively. The scheme crosses the River Hamble at Hamble Bridge (Ch26300) and is hydrologically connected to the SPA via the River Hamble. It is also hydrologically connected to the SPA where the M27 crosses the River Meon (Ch31950) and the River Itchen (Ch18150). The SPA is located 180m from the A3024 which, although outside of the scheme construction footprint, is part of the ARN where an increase of >1,000 vehicles AADT is anticipated. The location of the SPA is presented on Figure 6.2b and 6.2d in appendix A.	
Resource requirements (from the European Site or from areas in proximity to the site, where of relevance to consideration of impacts)	The scheme does not require resources from the SPA.	
Emissions (e.g. polluted surface water run-off – both soluble and insoluble pollutants, atmospheric pollution)	**Construction:** All works will be carried out within the existing highways boundary and all surface water runoff during construction will be routed through the existing highways drainage system. Pollution control measures within the existing drainage system would provide sufficient protection from any polluted run-off during construction. This will ensure that there will not be an increase in water-borne pollution from construction related fuel spillage or material wash-off and air-borne pollution from dust generation during construction of associated with:	

	• Gantry is proposed near Hamble Bridge (Ch26150) (approximately 230m from the site) • Crossing point of the River Hamble (Ch26150) • Crossing point of the River Itchen (Ch18150) • Crossing point of the River Meon (Ch31590) There is likely to be an increase in light, noise, vibration and human related disturbance at the above locations. **Operation:** *Air quality* The SPA is within 180m of a road link, the A3024 Bitterne Road West, where there is anticipated to be an increase in the AADT. Air quality modelling for the scheme indicates that it will cause an increase in atmospheric NOx concentrations within its vicinity. The effect of this increase on the SPA and its qualifying features is discussed further below. See chapter 5 Air Quality of the scheme's EAR for further detail. *Water quality* There are 6 outfalls which discharge into the River Itchen and 3 which discharge into the River Hamble. There are no outfalls discharging into the River Meon. No works are proposed to any of the outfalls which discharge into these watercourses. During operation, there will be an increase in impermeable surface area due to the scheme and there will be an increase in the volume of run-off entering the SPA. However, upgrades to the drainage system will accommodate predicted increases and there will be no increase in the rate of discharge into the SPA. Furthermore, traffic volumes are predicted to increase by 13% due to the scheme and other projects. This is below the 20% threshold at which, in accordance with DMRB guidance, increased traffic volumes may have a significant adverse effect on the quality of water run-off. Based on the magnitude of the anticipated increase in traffic volume, the Road Drainage and the Water Environment assessment for the scheme (chapter 6 of the EAR) assess the effect of the scheme on water quality within the River Itchen, the River Meon, and the River Hamble as being of Negligible significance.
Transportation requirements	Construction of the scheme will require some motorway closures at the weekend or at night, requiring the diversion of motorway traffic onto local roads. However, the nature of SMP construction is that these are only used occasionally. As construction activities would not require diversion routes beyond a few intermittent night-time or weekend closures, there will not be a significant or long-term change to traffic volumes along affected routes. Construction traffic would access the construction areas via the existing road network will not be of a volume that will result in significant changes in noise levels or air quality along these routes. Considering the above, no adverse effects associated with construction transportation traffic (including increased noise, vibration, vehicle disturbance) will occur.
Duration of construction, operation etc.	Construction is predicted to commence in spring 2018 [redacted] Construction will however be phased, and construction at a given location, for example an ERA or gantry location, is unlikely to take longer than 4 weeks.
Other	No significant new operational lighting is proposed, such as additional motorway lighting. New gantries will, however, have LEDs. The scheme, located within an urban environment, will therefore not significantly increase artificial light levels within its vicinity. Noise modelling for the scheme indicates that there will be a reduction in traffic related noise within the vicinity of the SPA. No adverse effects due to changes in noise are therefore expected during the operational phase.

Description of Avoidance and/or Mitigation Measures: Describe any assumed (plainly established and uncontroversial) mitigation measures, including information on:	
Nature of proposals	No mitigation measures are required.
Location	N/A
Evidence for effectiveness	N/A
Mechanism for delivery (legal conditions, restrictions or other legally enforceable obligations)	N/A
Characteristics of European Site: A brief description of the European Site should be produced, including information on: Information with respect to the Solent and Southampton Water SPA has been sourced from the site's Natura 2000 Standard Data Form[40].	
Name of European Site and its EU code	Solent and Southampton Water; SPA (UK9011061).
Location and distance of the European Site from the proposed works	At its closest point, the scheme is located approximately 230m from the SPA, where a gantry is proposed near Hamble Bridge (Ch26150). The next closest works locations are a gantry (Ch26150) and ERA (Ch26000) which are located approximately 420m and 500m from the SPA, respectively. The scheme crosses the River Hamble at Hamble Bridge (Ch26300) and is hydrologically connected to the SPA via the River Hamble. It is also hydrologically connected to the SPA where the M27 crosses the River Meon (Ch31950) and the River Itchen (Ch18150). The SPA is located 180m from the A3024 which, although outside of the scheme construction footprint, is part of the ARN where an increase of >1,000 vehicles AADT is anticipated. The location of the SPA is presented on Figure 6.2b and 6.2d in appendix A.
European Site size	5505.86 ha (area).
Key features of the European Site including the primary reasons for selection and any other qualifying interests (Taken from Natura 2000 Standard Data Form[41])	The site qualifies under article 4.1 of the directive by supporting populations of European importance of the following species listed on Annex 1 of the Directive: During the breeding season the area regularly supports: • Larus melanocephalus, Mediterranean gull 15.4% of the GB breeding population 5-year peak mean, 1994-1998 • Sterna albifrons Little tern (Eastern Atlantic - breeding) ,2% of the GB breeding population, 5-year peak mean, 1993-1997 • Sterna dougallii Roseate tern (Europe - breeding), 3.1% of the GB breeding population, 5-year peak mean, 1993-1997 • Sterna hirundo, Common tern (Northern/Eastern Europe - breeding), 2.2% of the GB breeding population, 5-year peak mean, 1993-1997 • Sterna sandvicensis, Sandwich tern (Western Europe/Western Africa), 1.7% of the GB breeding population, 5-year peak mean, 1993-1997 The site also qualifies under Article 4.2 by supporting the following populations of European importance of the following migratory species: Over winter the area regularly supports:

[40] Natura 2000 Database (2015). Standard Data Form for Solent and Southampton Water Special Protection Area (Site Code: UK9011061). http://jncc.defra.gov.uk/pdf/SPA/UK9011061.pdf.

[41] Found at http://jncc.defra.gov.uk

	• Anas crecca, Teal (North-western Europe),1.1% of the population, 5-year peak mean, 1992/3-1996/7 • Branta bernicla bernicla, Dark-bellied brent goose (Western Siberia/Western Europe), 2.5% of the population, 5-year peak mean, 1992/3-1996/7 • Charadrius hiaticula, Ringed plover (Europe/Northern Africa - wintering), 1.1% of the population, 5-year peak mean, 1992/3-1996/7 • Limosa limosa islandica, Black-tailed godwit (Iceland - breeding), 1.6% of the population, 5-year peak mean, 1992/3-1996/7 Assemblage qualification: a wetland of international importance The area qualifies under Article 4.2 of the Directive by regularly supporting at least 20,000 waterfowl. Over winter the area regularly supports: • 51361 waterfowl (5-year peak mean 01/10/1998) • Including: Branta bernicla bernicla, Anas crecca, Charadrius hiaticula, Limosa limosa *islandica*.
Vulnerability of the European Site – any information available from the standard data forms on potential effect pathways (taken from Natura 2000 standard Data form)	A number of key factors affect the Solent and Southampton Water SPA; these can be summarised from the 2015 Natura form as follows: • Fishing and harvesting aquatic resources • Outdoor sports, and leisure activities, recreational activities • Pollution to ground waters • Changes in abiotic conditions • Changes in biotic conditions
European Site conservation objectives – where these are readily available	The conservation objective of the site is described as: Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring; • The extent and distribution of the habitats of the qualifying features • The structure and function of the habitats of the qualifying features • The supporting processes on which the habitats of the qualifying features rely • The population of each of the qualifying features • The distribution of the qualifying features within the site
Assessment Criteria: Describe the individual elements of the scheme (either alone or in combination with other plans or schemes) likely to give rise to impacts on the European Site.	
From the above, the following possible impacts have been identified: **Construction:** • Increased water-borne pollution from construction related fuel spillage or wash-off during construction of the gantry at Ch26150 and at locations where the scheme crosses the River Itchen (Ch18000), the River Wallington (Ch36250), and the River Meon (Ch31950); • Increased air-borne pollution from dust generation during construction works at the above locations; • Disturbance caused by short-term light, noise, vibration and human activity during construction of the gantry at Ch26150 and resurfacing of the M27 where the motorway crosses the SPA at the River Hamble. **Operation**: • Where the SPA is within 200m of the ARN, the effect of air quality impacts; • The effect of increased operational traffic volumes on the volume, rate, and quality of water run-off entering watercourses linked to the SPA. The above effects are considered both alone and in-combination with the M3 SMP.	
Initial Assessment: The key characteristics of the site and the details of the European Site should be considered in identifying potential impacts. Describe any likely changes to the site arising as a result of:	
Reduction in habitat area	The scheme will not result in any land take or habitat loss from the SPA.

Disturbance to key species	During construction, there will be short-term (approximately 4 weeks) increase in construction related noise and disturbance within the vicinity of the proposed gantry at the River Hamble crossing. Given the intervening distance between the scheme and the SPA at this location (230m at its closest point), construction related noise, vibration, and human disturbance will not significantly affect any of the species for which the SPA is designated. All other works locations, including areas of the M27 to be resurfaced, are over 250m from the SPA or functionally important habitat for species for which the site is designated. Increase in traffic along the M27 and the A3024 during operation will not result in significantly elevated levels of disturbance to birds for which the SPA is designated. The intervening distance between the SPA and the ARN is relatively large (170m at its closest point) and the affected routes experience relatively high traffic volumes.
Habitat or species fragmentation	No land take to the SPA will occur as a result of the scheme, and the operational increase in traffic on the M27 and A3024 is not of a magnitude that will affect the ability of birds to cross either side of these routes or lead to greater habitat fragmentation.
Reduction in species density	No land take or degradation to habitats within the SPA will occur and disturbance to species during the construction or operational phase of the scheme is not anticipated for the reasons outlined above. A significant reduction in species diversity due to the scheme is therefore not likely.
Changes in key indicators of conservation value (water quality etc.)	*Air quality* A Critical Level of 30 μgm^{-3} has been adopted to assess the likely effect of the scheme on the SPA and its qualifying features. Air quality modelling predicts that the scheme increase atmospheric NOx concentrations by 0.1% of the Critical Level at the closest point of contact between the scheme and the SPA. In-combination with the M3 SMP this is predicted to increase to 0.1% of the Critical Level. Habitats within the SPA at this location (mudflats) are relatively insensitive to impacts associated with air quality (e.g NO_X). Mudflats are high nutrient habitats, regularly flushed by tidal waters, and it is therefore unlikely that atmospheric pollution arising during construction or operation of the scheme in the vicinity of the SPA would significantly affect water and habitat quality, and the species density elsewhere in the SPA. The scheme, alone or in-combination with the M3 SMP, will therefore not significantly affect habitats for whicht the SPA is designated. *Water quality* There are 6 outfalls which discharge into the River Itchen and 3 which discharge into the River Hamble. However, there will be no significant reduction in the quality of the water run-off entering these watercourses due to scheme alone or in-combination with other projects. There will also be no increase in the rate of discharge entering these watercourses. Significant adverse changes in water quality will therefore not occur due to the scheme, alone or in-combination.
Climate change	Cumulative impacts associated with climate change will not occur, as there will be no direct or indirect effects on the extent of the SPA habitats or adjacent river walls or habitats as a result of the scheme. Therefore, if for example sea level rise results in a change in the location or the extent of the mudflats, this will not be constrained or affected by the scheme.
Interference with the key relationships that define the structure of the site	Structure is taken to mean the distribution and abundance of habitats in the SPA site. Interference with the relationships which define the habitats in the SPA, such as water levels, sediment deposition and tidal cycle, will not occur as a result of the scheme as there will be no land take or direct impact on the estuary or river channel.

Interference with the key relationships that define the function of the site	Function is taken here to mean the capacity of the SPA site to support the bird populations for which it was designated. The key relationship which defines the function of the site in supporting populations of overwintering birds is the provision of foraging habitat. The extent of the foraging habitat, either within the site or within functionally connected habitat, will not occur. The quality of the habitat is also unlikely to be affected, as discussed above. There will therefore not be any interference with key relationships that define the site.
Indicate the significance as a result of the identification of impacts set out above in terms of:	
Reduction of habitat area	Not significant - There will be no reduction in habitat area within the SPA or to functionally connected habitat as a result of the construction or operation of the scheme.
Disturbance to key species	Not significant - Disturbance of birds for which the SPA is designated will not be significant given the intervening distance between the scheme and the SPA and the scale and duration of proposed works.
Habitat or species fragmentation	Not significant - There will be no fragmentation to species or habitats during the construction or operation of the scheme. Works are either contained within the M27 motorway carriageway, or are of a scale and extent that is unlikely to fragment habitats within the SPA or functionally connected habitat associated with the SPA.
Loss	Not significant - There will be no significant loss of habitat or species due to the construction or operation of the scheme.
Fragmentation	Not significant - There will be no significant fragmentation to habitats due to the construction or operation of the scheme.
Disruption	Not significant - Construction or operation of the proposed scheme will not disrupt the structure or function of the key relationships within the SPA.
Disturbance	Not significant - Significant disturbance to birds for which the SPA is designated will not occur, given the location and extent of works in relation to the SPA.
Change to key elements of the site (e.g. water quality, hydrological regime etc.)	There will not be a significant change to key elements of the site. There will be no reduction in habitat area, or changes to flow, water quality, or coastal processes which support the site's designation.
Describe from the above those elements of the scheme, or combination of elements, where the above impacts are likely to be significant or where the scale or magnitude of impacts is not known	
The scheme will not give rise to likely significant effects on the SPA and its qualifying features. Furthermore, significant in-combination effects are not likely to occur due to the scheme and other projects, including the proposed M3 SMP scheme.	
Outcome of screening stage (delete as appropriate)	~~Significant Effects are Likely~~ ~~Sufficient Uncertainty Remains~~ Not Likely to be Significant Effects.
Are the appropriate statutory environmental bodies in agreement with this conclusion (delete as appropriate and attach relevant correspondence)	No consultation has been undertaken to date.

Solent and Southampton Water Ramsar Site

Scheme Name:	M27 junction 4 to 11 Smart Motorways Programme	
European Site Consideration:	Solent and Southampton Water Ramsar site	
Date:	**Author (Name/Organisation):**	**Verified (Name/Organisation):**
22 January 2018	David Kirby WSP Principal Ecologist	Andy Bascombe WSP Technical Director
12/09/18	Clare Postlethwaite WSP Associate	David Kirby WSP Associate
Description of the Scheme: Describe any likely direct, indirect or secondary impacts of the scheme (either alone or in combination with other plans or schemes) on the European Site by virtue of:		
Size and scale (road type and probable traffic volume)	The scheme comprises an upgrade to approximately 23.5km of the M27 between junction 4 to11 to a smart motorway. The works will be entirely within the existing highways boundary. The hardshoulder will be converted to an All Running Lane (ALR) and various smart technologies will be installed. During operation of the scheme, there will be a significant increase (>1,000 vehicles) in the Annual Average Daily Traffic (AADT) between junction 4 to 11 of the M27 and along section of the Affected Road Network (ARN) (see chapter 5 Air Quality of the scheme's Environmental Assessment Report (EAR)).	
Land-take	The scheme will not include any land take from the Ramsar site.	
Distance from the European Site or key features of the site (from the edge of the scheme assessment corridor)	At its closest point, the scheme is located approximately 230m from the Ramsar site, where a gantry is proposed near Hamble Bridge (Ch26150). The next closest works locations are a gantry (Ch26150) and ERA (Ch26000) which are located approximately 420m and 500m from the Ramsar site, respectively. The scheme crosses the River Hamble at Hamble Bridge (Ch26300) and is hydrologically connected to the Ramsar site via the River Hamble. It is also hydrologically connected to the Ramsar site where the M27 crosses the River Meon (Ch31950) and the River Itchen (Ch18150). The Ramsar site is located 180m from the A3024 which, although outside of the scheme construction footprint, is part of the ARN where an increase of >1,000 vehicles AADT is anticipated. The location of the Ramsar site is presented on Figure 6.2b and 6.2d in appendix A.	
Resource requirements (from the European Site or from areas in proximity to the site, where of relevance to consideration of impacts)	The scheme does not require resources from the Ramsar site.	
Emissions (e.g. polluted surface water run-off – both soluble and insoluble pollutants, atmospheric pollution)	**Construction:** All works will be carried out within the existing highways boundary and all surface water runoff during construction will be routed through the existing highways drainage system. Pollution control measures within the existing drainage system would provide sufficient protection from any polluted run-off during construction. This will ensure that there will not be an increase in water-borne pollution from construction related fuel spillage or material wash-off and air-borne pollution from dust generation during construction of:	

	• Gantry is proposed near Hamble Bridge (Ch26150) (approximately 230m from the site) • Crossing point of the River Hamble (Ch26150) • Crossing point of the River Itchen (Ch18150) • Crossing point of the River Meon (Ch31590) There is likely to be an increase in light, noise, vibration and human related disturbance at the above locations. **Operation:** *Air quality* The Ramsar is within 180m of a road link, the A3024 Bitterne Road West, where there is anticipated to be an increase in the AADT. Air quality modelling for the scheme indicates that it will cause an increase in atmospheric NOx concentrations within its vicinity. The effect of this increase on the Ramsar and its qualifying features is discussed further below. See chapter 5 Air Quality of the scheme's EAR for further detail. *Water quality* There are 6 outfalls which discharge into the River Itchen and 3 which discharge into the River Hamble. There are no outfalls discharging into the River Meon. No works are proposed to any of the outfalls which discharge into these watercourses. During operation, there will be an increase in impermeable surface area due to the scheme and there will there be in increase in the volume of run-off entering the Ramsar. However, upgrades to the drainage system will accommodate predicted increases and there will be no increase in the rate of discharge into the Ramsar. Furthermore, traffic volumes are predicted to increase by 13% due to the scheme and other projects. This is below the 20% threshold at which, in accordance with DMRB guidance, increased traffic volumes may have a significant adverse effect on the quality of water run-off. Based on the magnitude of the anticipated increase in traffic volume, the Road Drainage and the Water Environment assessment for the scheme (chapter 6 of the EAR) assess the effect of the scheme on water quality within the River Itchen, the River Meon, and the River Hamble as being of Negligible significance.
Transportation requirements	Construction of the scheme will require some motorway closures at the weekend or at night, requiring the diversion of motorway traffic onto local roads. However, the nature of SMP construction is that these are only used occasionally. As construction activities would not require diversion routes beyond a few intermittent night-time or weekend closures, there will not be a significant or long-term change to traffic volumes along affected routes. Construction traffic would access the construction areas via the existing road network and will not be of a volume that will result in significant changes in noise levels or air quality along these routes. Considering the above, adverse effects associated with construction transportation traffic (including increased noise, vibration, vehicle disturbance) will not occur.
Duration of construction, operation etc.	Construction is predicted to commence in spring 2018 [redacted] Construction will however be phased, and construction at a given location, for example an ERA or gantry location, is unlikely to take longer than 4 weeks.
Other	No significant new operational lighting is proposed, such as additional motorway lighting. New gantries will, however, have LEDs. The scheme, located within an urban environment, will therefore not significantly increase artificial light levels within its vicinity. Noise modelling for the scheme indicates that there will be a reduction in traffic related noise within the vicinity of the Ramsar site. No adverse effects due to changes in noise are therefore expected during the operational phase.

Description of Avoidance and/or Mitigation Measures: Describe any assumed (plainly established and uncontroversial) mitigation measures, including information on:	
Nature of proposals	No mitigation measures are required.
Location	N/A
Evidence for effectiveness	N/A
Mechanism for delivery (legal conditions, restrictions or other legally enforceable obligations)	N/A
Characteristics of European Site: A brief description of the European Site should be produced, including information on: Information with respect to the Solent and Southampton Water Ramsar site has been sourced from the site's Information Sheet[42].	
Name of European Site and its EU code	Solent and Southampton Water; Ramsar site (UK11063).
Location and distance of the European Site from the proposed works	At its closest point, the scheme is located approximately 230m from the Ramsar, where a gantry is proposed near Hamble Bridge (Ch26150). The next closest works locations are a gantry (Ch26150) and ERA (Ch26000) which are located approximately 420m and 500m from the Ramsar site, respectively. The scheme crosses the River Hamble at Hamble Bridge (Ch26300) and is hydrologically connected to the Ramsar site via the River Hamble. It is also hydrologically connected to the Ramsar site where the M27 crosses the River Meon (Ch31950) and the River Itchen (Ch18150). The Ramsar site is located 180m from the A3024 which, although outside of the scheme construction footprint, is part of the ARN where an increase of >1,000 vehicles AADT is anticipated. The location of the Ramsar site is presented on Figure 6.2b and 6.2d in appendix A.
European Site size	5346.44 ha (area).
Key features of the European Site including the primary reasons for selection and any other qualifying interests (Taken from Natura 2000 Standard Data Form[43])	**General site character:** The area covered extends from Hurst Spit to Gilkicker Point along the south coast of Hampshire and along the north coast of the Isle of Wight. The site comprises estuaries and adjacent coastal habitats including intertidal flats, saline lagoons, shingle beaches, saltmarsh, reedbeds, damp woodland and grazing marsh. The diversity of habitats supports internationally important numbers of wintering waterfowl, important breeding gull and tern populations and an important assemblage of rare invertebrates and plants. The site is designated under 4 separate Ramsar criteria which are the primary reason for selection of the site: • Criterion 1 – Internationally important wetland characteristic of the Atlantic biogeographical region: saline lagoons, saltmarshes, estuaries, intertidal flats, shallow coastal waters, grazing marshes, reedbeds, coastal woodland and rocky boulder reefs. The site is 1 of the few major sheltered channels between a substantial island and mainland in European waters, exhibiting an unusual strong double tidal flow and has long periods of slack water at high and low tide. • Criterion 2 – The site supports an important assemblage of rare plants and invertebrates. At least 33 British Red Data Book

[42] RIS (2008). Information Sheet on Ramsar Wetlands for Solent and Southampton Water Ramsar site (Site Code: UK11063). http://jncc.defra.gov.uk/pdf/RIS/UK11063.pdf.

[43] Found at http://jncc.defra.gov.uk

	invertebrates and at least 8 British Red Data Book plants are represented on site. • Criterion 5 – The site supports an assemblage of international importance: peak count in winter of 51,343 waterfowl (5-year peak mean 1998/99 – 2002/03). • Criterion 6 – The site supports species / populations occurring at levels of international importance: ringed plover (*Charadrius hiaticula*), dark-bellied brent goose (*Branta bernicla bernicla*), Eurasian teal (*Anas crecca*), black-tailed godwit (*Limosa limosa islandica*).
Vulnerability of the European Site – any information available from the standard data forms on potential effect pathways	The key factor reported to affect the Solent and Southampton Water Ramsar site is erosion. Measures that have been implemented or proposed to mitigate the effect of erosion include: coastal defence strategies, regulation of private coastal defences, shoreline management plans and Coastal Habitat Management Plans (CHaMPs).
European Site conservation objectives – where these are readily available	The conservation objective of the Ramsar site as described in the Solent European Marine site advice report[44] includes, subject to nature change: • Maintain the internationally important wetland characteristic of the Atlantic biogeographical region in favourable conditions, in particular – estuaries, saline lagoons, saltmarsh, intertidal reefs • Maintain the wetland hosting an assemblage of rare, vulnerable or endangered species in favourable condition, in particular – saline lagoons, saltmarsh and cord grass swards • Maintain the wetland regularly supporting 20,000 waterfowl species in favourable condition, in particular saltmarshes, intertidal mudflats and sandflats, boulder and cobble shores, mixed sediment shores • Maintain the wetland supporting important populations of waterfowl species, in particular: saltmarshes, sand and shingle, shallow coastal waters, intertidal mudflats and sandflats, boulder and cobble shores, mixed sediment shores
Assessment Criteria: Describe the individual elements of the scheme (either alone or in combination with other plans or schemes) likely to give rise to impacts on the European Site.	
From the above, the following possible impacts have been identified: **Construction:** • Increased water-borne pollution from construction related fuel spillage or wash-off during construction of the gantry at Ch26150 and at locations where the scheme crosses the River Itchen (Ch18000), the River Wallington (Ch36250), and the River Meon (Ch31950); • Increased air-borne pollution from dust generation during construction works at the above locations; • Disturbance caused by short-term light, noise, vibration and human activity during construction of the gantry at Ch26150 and resurfacing of the M27 where the motorway crosses the River Hamble. **Operation**: • Where the Ramsar is within 200m of the ARN, the effect of air quality impacts; • The effect of increased operational traffic volumes on the volume, rate, and quality of water run-off entering watercourses linked to the Ramsar. The above effects are considered both alone and in-combination with the M3 SMP.	
Initial Assessment: The key characteristics of the site and the details of the European Site should be considered in identifying potential impacts. Describe any likely changes to the site arising as a result of:	
Reduction in habitat area	The scheme will not result in any land take or habitat loss from the Ramsar site.
Disturbance of key species	During construction, there will be short-term (approximately 4 weeks) increase in construction related noise and disturbance within the vicinity of

[44] English Nature (2001) *Solent European Marine Site – English Nature's advice given under Regulation 33 (2) of the Conservation (Natural Habitats &c.) Regulations 1994.*

	the proposed gantry at the River Hamble crossing. Given the intervening distance between the scheme and the Ramsar at this location (230m at its closest point), construction related noise, vibration, and human disturbance will not significantly affect any of the species for which the Ramsar is designated. All other works locations, including areas of the M27 to be resurfaced, are over 250m from the Ramsar or functionally important habitat for species for which the site is designated. Disturbance of birds for which the Ramsar is designated will not be significant, given the intervening distance between the scheme and the Ramsar and the scale and duration of proposed works.
Habitat or species fragmentation	No land take from the Ramsar site will occur as a result of the scheme, and the operational increase in traffic on the M27 and A3024 is not of a magnitude that will affect the ability of birds to cross either side of these routes or lead to greater habitat fragmentation. No fragmentation to habitats or species will therefore occur due to the scheme or in-combination with other projects.
Reduction in species density	No land take or degradation of habitats within the Ramsar site will occur and disturbance of species during the construction or operational phase of the scheme is not anticipated for the reasons outlined above. A reduction in species diversity as a result of the scheme will therefore not occur.
Changes in key indicators of conservation value (water quality etc.)	*Air quality* A Critical Level of 30 μgm^{-3} has been adopted to assess the likely effect of the scheme on the Ramsar and its qualifying features. Air quality modelling predicts that the scheme will increase atmospheric NOx concentrations by 0.1% of the Critical Level at the closest point of contact between the scheme and the Ramsar. In-combination with the M3 SMP this is predicted to increase to 0.1% of the Critical Level. Habitats within the Ramsar at this location (mudflats) are relatively insensitive to impacts associated with air quality (e.g NO_X). Mudflats are high nutrient habitats, regularly flushed by tidal waters, and it is therefore unlikely that atmospheric pollution arising during construction or operation of the scheme in the vicinity of the Ramsar would significantly affect water and habitat quality, and the species density elsewhere in the Ramsar. The scheme, alone or in-combination with the M3 SMP, will therefore not significantly affect habitats for whicht the Ramsar is designated. *Water quality* There are 6 outfalls which discharge into the River Itchen and 3 which discharge into the River Hamble. However, there will be no significant reduction in the quality of the water run-off entering these watercourses due to scheme alone or in-combination with other projects. There will also be no increase in the rate of discharge entering these watercourses. Significant adverse changes in water quality will therefore not occur due to the scheme, alone or in-combination.
Climate change	Cumulative impacts associated with climate change will not occur, as there will be no direct or indirect effects on the extent of the habitats within the Ramsar site or adjacent river walls or adjacent habitats as a result of the scheme. Therefore, if for example sea level rise results in a change in the location or the extent of the mudflats, this will not be constrained or affected by the scheme.
Interference with the key relationships that define the structure of the site	Structure is taken to mean the distribution and extent of habitats in the Ramsar site. Interference with the relationships which define the habitats in the Ramsar site such as water levels, sediment deposition and tidal cycle due to the scheme, will not occur. There will therefore be no adverse effect to the structure of the Ramsar site due to the scheme or with other projects in-combination.
Interference with the key relationships that define the function of the site	Function is taken here to mean the capacity of the Ramsar site to support the habitats and species for which it was designated. The key relationship which defines the function of the site in supporting the extent and quality of

	the habitats supported within the site, and their functioning, will not be affected by the scheme, either alone or in-combination with other project (see rationale provided above).
Indicate the significance as a result of the identification of impacts set out above in terms of:	
Reduction of habitat area	Not significant - There will be no reduction in habitat area within the Ramsar or to functionally connected habitat as a result of the construction or operation of the scheme.
Disturbance of key species	Not significant - Disturbance of birds for which the Ramsar is designated will not be significant, given the intervening distance between the scheme and the Ramsar and the scale and duration of proposed works.
Habitat or species fragmentation	Not significant - There will be no fragmentation to species or habitats during the construction or operation of the scheme. Works are either contained within the M27 carriageway, or are of a scale and extent that is unlikely to fragment habitats within the Ramsar or functionally connected habitat associated with the Ramsar.
Loss	Not significant - There will be no significant loss of habitat or species due to the construction or operation of the scheme.
Fragmentation	Not significant - There will be no significant fragmentation to habitats due to the construction or operation of the scheme.
Disruption	Not significant - Construction or operation of the proposed scheme will not disrupt the structure or function of the key relationships within the Ramsar site.
Disturbance	Not significant - Significant disturbance to birds and invertebrates for which the Ramsar site is designated will not occur, given the location and extent of works in relation to the Ramsar.
Change to key elements of the site (e.g. water quality, hydrological regime etc.)	Not significant - There will not be a significant change to key elements of the site. There will be no reduction in habitat area, or changes to flow, water quality, or coastal processes which support the site's designation.
Describe from the above those elements of the scheme, or combination of elements, where the above impacts are likely to be significant or where the scale or magnitude of impacts is not known	
The scheme will not give rise to likely significant effects on the Ramsar and its qualifying features. Furthermore, significant in-combination effects are not likely to occur due to the scheme and other projects, including the proposed M3 SMP scheme.	
Outcome of screening stage (delete as appropriate)	~~Significant Effects are Likely~~ ~~Sufficient Uncertainty Remains~~ Not Likely to be Significant Effects.
Are the appropriate statutory environmental bodies in agreement with this conclusion (delete as appropriate and attach relevant correspondence)	No consultation has been undertaken to date.

Portsmouth Harbour SPA

Scheme Name:	M27 junction 4 to 11 Smart Motorways Programme	
European Site Consideration:	Portsmouth Harbour SPA	
Date:	**Author (Name/Organisation):**	**Verified (Name/Organisation):**
22 January 2018	David Kirby WSP Principal Ecologist	Andy Bascombe WSP Technical Director
Description of the Scheme: Describe any likely direct, indirect or secondary impacts of the scheme (either alone or in combination with other plans or schemes) on the European Site by virtue of:		
Size and scale (road type and probable traffic volume)	The scheme comprises an upgrade to approximately 23.5km of the M27 between junction 4 to 11 to a smart motorway. The works will be entirely within the existing highways boundary. The hardshoulder will be converted to an All Running Lane (ALR) and various smart technologies will be installed. During operation of the scheme, there will be a significant increase (>1,000 vehicles) in the Annual Average Daily Traffic (AADT) between junction 4 to 11 of the M27 and along section of the Affected Road Network (ARN) (see chapter 5 Air Quality of the scheme's Environmental Assessment Report (EAR)).	
Land-take	The scheme will not require any land take from the SPA.	
Distance from the European Site or key features of the site (from the edge of the scheme assessment corridor)	At its closest point, the scheme is approximately 1km from the SPA at junction 11 of the M27 (Ch36850). The SPA is hydrologically connected to the scheme via the River Wallington, which flows beneath the M27 at Ch36250. There is a gantry proposed approximately 50m from the River Wallington at this location. The SPA is located adjacent to the A27. Although this is outside of the physical extent of the works for the scheme, it is part of the ARN.	
Resource requirements (from the European Site or from areas in proximity to the site, where of relevance to consideration of impacts)	The scheme does not require resources from the SPA.	
Emissions (e.g. polluted surface water run-off – both soluble and insoluble pollutants, atmospheric pollution)	**Construction:** All works will be carried out within the existing highways boundary and all surface water runoff during construction will be routed through the existing highways drainage system. Pollution control measures within the existing drainage system would provide sufficient protection from any polluted run-off during construction. This will ensure that there will not be an increase in water-borne pollution from construction related fuel spillage or material wash-off and air-borne pollution from dust generation during construction and resurfacing works in the vicinity of the the River Wallington. **Operation:** *Air quality* The SPA within 200m of the ARN where the A27 intersects with the A32 (458001, 105980). Although this is outside of the physical extent of the works for the scheme, it is part of the ARN. Air quality modelling for the scheme indicates that it will cause an increase in atmospheric NOx concentrations within its vicinity. The effect of this increase on the SPA and its qualifying features is discussed further below. See chapter 5 Air Quality of the scheme's EAR for further detail.	

	Water quality Five outfalls discharge into the River Wallington which is hydrologically connected to the SPA. No works are proposed to any of the outfalls which discharge into this watercourse. During operation, there will be an increase in impermeable surface area due to the scheme and there will there be in increase in the volume of run-off entering the SPA. However, upgrades to the drainage system will accommodate predicted increases and there will be no increase in the rate of discharge into the River Wallington. Furthermore, traffic volumes are predicted to increase by 13% due to the scheme and other projects. This is below the 20% threshold at which, in accordance with DMRB guidance , increased traffic volumes may have a significant adverse effect on the quality of water run-off. Based on the magnitude of the anticipated increase in traffic volume, the Road Drainage and the Water Environment assessment for the scheme (chapter 6 of the EAR) assess the effect of the scheme on water quality within the River Wallington as being of Negligible significance.
Transportation requirements	Construction of the scheme will require some motorway closures at the weekend or at night, requiring the diversion of motorway traffic onto local roads. However, the nature of SMP construction is that these are only used occasionally. As construction activities would not require diversion routes beyond a few intermittent night-time or weekend closures, there will not be a significant or long-term change to traffic volumes along affected routes. Construction traffic would access the construction areas via the existing road network and will not be of a volume that will result in significant changes in noise levels or air quality along these routes. Considering the above, no adverse effects associated with construction transportation traffic (including increased noise, vibration, vehicle disturbance) are likely.
Duration of construction, operation etc.	Construction is predicted to commence in spring 2018 [redacted] Construction will however be phased, and construction at a given location, for example an ERA or gantry location, is not likely to take longer than 4 weeks.
Other	No significant new operational lighting is proposed, such as additional motorway lighting. New gantries will however have LEDs. The scheme, located within an urban environment, will, therefore, not significantly increase artificial light levels within its vicinity. Noise modelling for the scheme indicates that there will be a reduction in traffic related noise within the vicinity of the SPA. No adverse effects due to changes in noise are therefore expected during the operational phase.
Description of Avoidance and/or Mitigation Measures: Describe any assumed (plainly established and uncontroversial) mitigation measures, including information on:	
Nature of proposals	No mitigation measures are required.
Location	N/A
Evidence for effectiveness	N/A
Mechanism for delivery (legal conditions, restrictions or other legally enforceable obligations)	N/A
Characteristics of European Site: A brief description of the European Site should be produced, including information on: Information with respect to the Portsmouth Harbour SPA has been sourced from the site's Natura 2000 Standard Data Form[45].	

[45] Natura 2000 Database (2015). Standard Data Form for Portsmouth Harbour Special Protection Area (Site Code: UK9011051). http://jncc.defra.gov.uk/pdf/SPA/UK9011051.pdf.

Name of European Site and its EU code	Portsmouth Harbour SPA (UK9011051).
Location and distance of the European Site from the proposed works	At its closest point, the scheme is approximately 1km from the SPA at junction 11 (Ch36850). The SPA is hydrologically connected to the scheme via the River Wallington, which flows beneath the M27 at Ch36250. There is a gantry proposed approximately 50m from the River Wallington at this location. The SPA is located adjacent to the A27. Although this is outside of the physical extent of the works for the scheme, it is part of the ARN.
European Site size	1249.6 ha (area).
Key features of the European Site including the primary reasons for selection and any other qualifying interests	The site qualifies under article 4.1 of the directive by supporting populations of European importance of the following species listed on Annex 1 of the Directive: Over winter the area regularly supports: • Dark-bellied Brent Goose *Branta bernicla bernicla* • Dunlin *Calidris alpina alpina* • Black-tailed Godwit *Limosa limosa islandica* • Red-breasted Merganser *Mergus serrator*
Vulnerability of the European Site – any information available from the standard data forms on potential effect pathways (taken from Natura 2000 standard Data form)	A number of key factors affect the Portsmouth Harbour SPA; these can be summarised from the 2015 Natura form as follows: • Fishing and harvesting aquatic resources • Outdoor sports, and leisure activities, recreational activities • Pollution to ground waters • Changes in abiotic conditions • Changes in biotic conditions
European Site conservation objectives – where these are readily available	The conservation objective of the site is described as: Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring: • The extent and distribution of the habitats of the qualifying features • The structure and function of the habitats of the qualifying features • The supporting processes on which the habitats of the qualifying features rely • The population of each of the qualifying features • The distribution of the qualifying features within the site

Assessment Criteria: Describe the individual elements of the scheme (either alone or in combination with other plans or schemes) likely to give rise to impacts on the European Site.

From the above, the following possible impacts have been identified:

Construction:

- Increased water-borne pollution from construction related fuel spillage or wash-off during construction of the gantry at Ch36250 and resurfacing of the M27 where the motorway crosses the River Wallington;
- Disturbance caused by short-term light, noise, vibration and human activity during construction works at the above locations.

Operation:

- Where the SAC is within 200m of the ARN, the effect of air quality impacts;
- The effect of increased operational traffic volumes on the volume, rate, and quality of water run-off entering watercourses linked to the SPA;
- Disturbance of qualifying species.

The above effects are considered both alone and in-combination with the M3 SMP.

<table>
<tr><th colspan="2">Initial Assessment: The key characteristics of the site and the details of the European Site should be considered in identifying potential impacts. Describe any likely changes to the site arising as a result of:</th></tr>
<tr><td>Reduction in habitat area</td><td>The scheme will not result in any land take or habitat loss from the SPA.</td></tr>
<tr><td>Disturbance of key species</td><td>Construction:
The proposed works are of a relatively small scale and are located a sufficient distance from the SPA (1,050m at its closest point). As a result, impacts on qualifying species would not occur.
Operation:
During operation, there will not be an increase in noise or light levels within the vicinity of the SPA as a result of the scheme. No new lighting is proposed as part of the scheme and noise levels are predicted to be lower during the operational life of the scheme.
Increased traffic along the A27, which is adjacent to the SPA, during operation will not result in increased disturbance of birds for which the SPA is designated. The A27 experiences relatively high traffic volumes which birds within the SPA will have habituated to. Furthermore, the Wallington Viaduct West Coastway Railway is also between the A27 and the SPA providing a buffer and additional source of visual and noise disturbance which the birds are likely to have habituated to.</td></tr>
<tr><td>Habitat or species fragmentation</td><td>No land take to the SPA will occur due to the scheme, and the operational increase in traffic on the A27 is not of a magnitude that will affect the ability of birds to cross either side of these routes or lead to greater habitat fragmentation within the SPA or to functionally connected habitat.</td></tr>
<tr><td>Reduction in species density</td><td>No land take or degradation of habitats within the SPA will occur and disturbance of species during the construction or operational phase of the scheme will not occur, for the reasons outlined above. A reduction in species diversity as a result of the scheme will therefore not occur.</td></tr>
<tr><td>Changes in key indicators of conservation value (water quality etc.)</td><td>Air quality
Habitats within 200m of the ARN where the A27 intersects with the A32 (458001, 105980) include mudflats. The UK Air Pollution Inventory System (APIS) does not provide a Critical Load for mudflat, but there is a Critical Load for ‘saltmarsh’, which has a minimum Critical Load of 20 kgN/ha/yr.
<u>Calculating Nitrogen Deposition</u>
The table below presents the Nitrogen deposition at a modelled point located approximately 20m from the M27 (Easting = 458000, Northing = 105912).
<table><tr><th rowspan="2">Designated Feature</th><th colspan="6">Nitrogen Deposition (kg/ha/yr) in Opening Year (2021)</th></tr><tr><th>Background (Average N Deposition within 5km x 5km Grid Square)[46]</th><th>Without Scheme</th><th>With M27 Scheme Alone</th><th>Change</th><th>M27 & M3</th><th>Change</th></tr><tr><td>Littoral Sediment</td><td>13.06</td><td>15.98</td><td>16.03</td><td>0.05</td><td>16.05</td><td>0.07</td></tr></table>
<u>Assessing the Likely Significance of Effects</u>
The increased deposition described above equates to the following in terms of the adopted 20 kg N/ha/yr Critical Load:
• A percentage change of <1% of the Critical Load at the closest point of contact with the littoral sediment habitat due to the scheme;</td></tr>
</table>

[46] Total deposition, reduced by 2% / year, including contribution from roads.

	• A percentage change of <1% of the Critical Load at the closest point of contact with the littoral sediment habitat due to the scheme in combination with the M3 SMP. Habitats within the SPA at this location (mudflats) are relatively insensitive to impacts associated with air quality (e.g. NO_X). Mudflats are high nutrient habitats, regularly flushed by tidal waters. It is therefore unlikely that atmospheric pollution arising during operation of the scheme in the vicinity of the SPA would significantly affect water and habitat quality, and the species density elsewhere in the SPA. *Water quality* Five outfalls discharge into the River Wallington which is hydrologically connected to the SPA. However, as described above, there is anticipated to be no significant reduction in the quality of the water run-off entering this watercourse due to scheme alone or in-combination with other projects. There will also be no increase in the rate of discharge entering these watercourses. Significant adverse changes in water quality will therefore not occur due to the scheme, alone or in-combination.
Climate change	Cumulative impacts associated with climate change are unlikely, as there will be no direct effects on the extent of the SPA habitats or adjacent river walls or habitats as a result of the scheme. Therefore, if for example sea level rise was to cause change in the location or the extent of the mudflats, this will not be constrained or affected by the scheme.
Interference with the key relationships that define the structure of the site	Structure is taken to mean the distribution and abundance of habitats in the SPA site. Interference with the relationships which define the habitats in the SPA site such as water levels, sediment deposition and tidal cycle will not be affected due to the scheme. The structure of the SPA will therefore not be affected by the scheme.
Interference with the key relationships that define the function of the site	Function is taken here to mean the capacity of the SPA site to support the bird populations for which it was designated. There will be no change in the extent or quality habitats within the SPA and they will therefore still support the birds for which the SPA is designated. There will therefore not be an effect on the function of the SPA due to the scheme.
Indicate the significance as a result of the identification of impacts set out above in terms of:	
Reduction of habitat area	There will be no reduction in habitat area within the SPA or to functionally connected habitat as a result of the construction or operation of the scheme.
Disturbance of key species	Disturbance of birds for which the SPA is designated will not be significant, given the intervening distance between the scheme and the SPA and the scale and duration of proposed works.
Habitat or species fragmentation	There will be no fragmentation to species or habitats during the construction or operation of the scheme. Works are either contained within the M27 carriageway, or are of a scale and extent that is unlikely to fragment habitats within the SPA or functionally connected habitat associated with the SPA.
Loss	There will be no significant loss of habitat or species due to the construction or operation of the scheme.
Fragmentation	There will be no significant fragmentation to habitats due to the construction or operation of the scheme.
Disruption	Construction or operation of the proposed scheme will not disrupt the structure or function of the key relationships within the SPA.
Disturbance	Significant disturbance to birds for which the SPA is designated is unlikely, given the location and extent of works in relation to the site.
Change to key elements of the site (e.g. water quality, hydrological regime etc.)	There will not be a significant change to key elements of the site. There will be no reduction in habitat area, or changes to flow, water quality, or coastal processes which support the site's designation.

Describe from the above those elements of the scheme, or combination of elements, where the above impacts are likely to be significant or where the scale or magnitude of impacts is not known	
The scheme will not give rise to likely significant effects on the SPA and its qualifying features. Furthermore, significant in-combination effects are not likely to occur due to the scheme and other projects, including the proposed M3 SMP scheme.	
Outcome of screening stage (delete as appropriate)	~~Significant Effects are Likely~~ ~~Sufficient Uncertainty Remains~~ Not Likely to be Significant Effects.
Are the appropriate statutory environmental bodies in agreement with this conclusion (delete as appropriate and attach relevant correspondence)	No consultation has been undertaken to date.

Portsmouth Harbour Ramsar Site

Scheme Name:	M27 junction 4 to 11 Smart Motorways Programme	
European Site Consideration:	Portsmouth Harbour Ramsar Site	
Date:	**Author (Name/Organisation):**	**Verified (Name/Organisation):**
22 January 2018	David Kirby WSP Principal Ecologist	Andy Bascombe WSP Technical Director
12/09/18	Clare Postlethwaite WSP Associate	David Kirby WSP Associate
Description of the Scheme: Describe any likely direct, indirect or secondary impacts of the scheme (either alone or in combination with other plans or schemes) on the European Site by virtue of:		
Size and scale (road type and probable traffic volume)	The scheme is to upgrade approximately 23.5km of the M27 between junction 4 to 11 to a smart motorway. The works will be entirely within the existing highways boundary. The hardshoulder will be converted to an All Running Lane (ALR) and various smart technologies will be installed. During operation of the scheme, there will be a significant increase (>1,000 vehicles) in the Annual Average Daily Traffic (AADT) between junction 4 to 11 of the M27 and along section of the Affected Road Network (ARN) (see chapter 5 Air Quality of the scheme's Environmental Assessment Report (EAR)).	
Land-take	The scheme will not require any land take from the Ramsar site.	
Distance from the European Site or key features of the site (from the edge of the scheme assessment corridor)	At its closest point, the scheme is approximately 1km from the Ramsar site at junction 11 (Ch36850). The Ramsar site is hydrologically connected to the scheme via the River Wallington, which flows beneath the M27 at Ch36250. There is a gantry proposed approximately 50m from the River Wallington at this location. The Ramsar site is located adjacent to the A27. Although this is outside of the physical extent of the works for the scheme, it is part of the ARN.	
Resource requirements (from the European Site or from areas in proximity to the site, where of relevance to consideration of impacts)	The scheme does not require resources from the Ramsar site.	
Emissions (e.g. polluted surface water run-off – both soluble and insoluble pollutants, atmospheric pollution)	**Construction:** All works will be carried out within the existing highways boundary and all surface water runoff during construction will be routed through the existing highways drainage system. Pollution control measures within the existing drainage system would provide sufficient protection from any polluted run-off during construction. This will ensure that there will not be an increase in water-borne pollution from construction related fuel spillage or material wash-off and air-borne pollution from dust generation during construction and resurfacing works in the vicinity of the the River Wallington. **Operation:** *Air quality* The Ramsar within 200m of the ARN where the A27 intersects with the A32 (458001, 105980). Although this is outside of the physical extent of the works for the scheme, it is part of the ARN. Air quality modelling for the scheme indicates that it will cause an increase in atmospheric NOx concentrations within its vicinity. The effect of this increase on the Ramsar	

	and its qualifying features is discussed further below. See chapter 5 Air Quality of the scheme's EAR for further detail. *Water quality* Five outfalls discharge into the River Wallington which is hydrologically connected to the Ramsar. No works are proposed to any of the outfalls which discharge into this watercourse. During operation, there will be an increase in impermeable surface area due to the scheme and there will there be in increase in the volume of run-off entering the Ramsar. However, upgrades to the drainage system will accommodate predicted increases and there will be no increase in the rate of discharge into the River Wallington. Furthermore, traffic volumes are predicted to increase by 13% due to the scheme and other projects. This is below the 20% threshold at which, in accordance with DMRB guidance[47], increased traffic volumes may have a significant adverse effect on the quality of water run-off. Based on the magnitude of the anticipated increase in traffic volume, the Road Drainage and the Water Environment assessment for the scheme (chapter 6 of the EAR) assess the effect of the scheme on water quality within the River Wallington as being of Negligible significance.
Transportation requirements	Construction of the scheme will require some motorway closures at the weekend or at night, requiring the diversion of motorway traffic onto local roads. However, the nature of SMP construction is that these are only used occasionally. As construction activities would not require diversion routes beyond a few intermittent night-time or weekend closures, there will not be a significant or long-term change to traffic volumes along affected routes. Construction traffic would access the construction areas via the existing road network and will not be of a volume that will result in significant changes in noise levels or air quality along these routes. Considering the above, no adverse effects associated with construction transportation traffic (including increased noise, vibration, vehicle disturbance) will occur.
Duration of construction, operation etc.	Construction is predicted to commence in spring 2018 [redacted] Construction will however be phased, and construction at a given location, for example an ERA or gantry location, is unlikely to take longer than 4 weeks.
Other	No significant new operational lighting is proposed, such as additional motorway lighting. New gantries will, however, have LEDs. The scheme, located within an urban environment, will therefore not significantly increase artificial light levels within its vicinity. Noise modelling for the scheme indicates that there will be a reduction in traffic related noise within the vicinity of the Ramsar site. No adverse effects due to changes in noise are therefore expected during the operational phase.
Description of Avoidance and/or Mitigation Measures: Describe any assumed (plainly established and uncontroversial) mitigation measures, including information on:	
Nature of proposals	No mitigation measures are required.
Location	N/A
Evidence for effectiveness	N/A
Mechanism for delivery (legal conditions, restrictions or other legally enforceable obligations)	N/A

[47] DMRB Volume 11 Section 3 Part 10 HD 45/09 Road Drainage and the Water Environment, Highways Agency et al., 2009

Characteristics of European Site: A brief description of the European Site should be produced, including information on: Information with respect to the Portsmouth Harbour Ramsar site has been sourced from the site's Information sheet[48].	
Name of European Site and its EU code	Portsmouth Harbour Ramsar site (UK11055).
Location and distance of the European Site from the proposed works	At its closest point, the scheme is approximately 1km from the Ramsar site at junction 11 (Ch36850). The Ramsar site is hydrologically connected to the scheme via the River Wallington, which flows beneath the M27 at Ch36250. There is a gantry proposed approximately 50m from the River Wallington at this location. The Ramsar site is located adjacent to the A27. Although this is outside of the physical extent of the works for the scheme, it is part of the ARN.
European Site size	1248.77 ha (area).
Key features of the European Site including the primary reasons for selection and any other qualifying interests (Taken from Natura 2000 Standard Data Form[49])	Portsmouth Harbour is a large industrialised estuary and includes 1 of the 4 largest expanses of mudflats and tidal creeks on the south coast of Britain. The mudflats support large beds of narrow-leaved and dwarf eelgrass, extensive green alga and sea lettuce. The harbour has only a narrow connection to the sea via the Solent, and receives comparatively little freshwater, giving it an unusual hydrology. The site supports internationally important numbers of wintering dark-bellied Brent geese and nationally important numbers of grey plover, dunlin and black-tailed godwit. The site is designated under 2 separate Ramsar criteria which are the primary reason for selection of the site: • Criterion 3 - Species assemblage of importance to maintaining biogeographic biodiversity • Criterion 6 - Overwintering – Dark-bellied Brent goose *Branta bernicla bernicla*
Vulnerability of the European Site – any information available from the standard data forms on potential effect pathways (taken from Natura 2000 standard Data form)	Portsmouth Harbour Ramsar site is vulnerable to: • Eutrophication • Various types of development within the vicinity of the site, including urban expansion and industrial development • Coastal squeeze
European Site conservation objectives – where these are readily available	The conservation objective of the site is to: Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring: • The extent and distribution of the habitats of the qualifying features • The structure and function of the habitats of the qualifying features • The supporting processes on which the habitats of the qualifying features rely • The population of each of the qualifying features • The distribution of the qualifying features within the site
Assessment Criteria: Describe the individual elements of the scheme (either alone or in combination with other plans or schemes) likely to give rise to impacts on the European Site.	
From the above, the following possible impacts have been identified:	

[48] RIS (2008). Information Sheet on Ramsar Wetlands for Portsmouth Harbour Ramsar site (Site Code: UK11055). http://jncc.defra.gov.uk/pdf/RIS/UK11055.pdf.

[49] Found at http://jncc.defra.gov.uk

Construction:

- Increased water-borne pollution from construction related fuel spillage or wash-off during construction of the gantry at Ch36250 and resurfacing of the M27 where the motorway crosses the River Wallington;
- Disturbance caused by short-term light, noise, vibration and human activity during construction works at the above locations.

Operation:

- Where the Ramsar is within 200m of the ARN, the effect of air quality impacts;
- The effect of increased operational traffic volumes on the volume, rate, and quality of water run-off entering watercourses linked to the Ramsar;
- Disturbance of qualifying species.

The above effects are considered both alone and in-combination with the M3 SMP.

Initial Assessment: The key characteristics of the site and the details of the European Site should be considered in identifying potential impacts. Describe any likely changes to the site arising as a result of:	
Reduction in habitat area	The scheme will not result in any land take or habitat loss from the Ramsar site.
Disturbance of key species	**Construction:** The proposed works are of small scale and located at distance from the Ramsar site (1,050m at its closest point). As a result, impacts on qualifying species would not occur. **Operation:** During operation, there will not be an increase in noise or light levels within the vicinity of the Ramsar site as a result of the scheme. No new lighting is proposed as part of the scheme and noise levels are anticipated to be lower than at present during the operational life of the scheme. The increase in traffic along the A27 during operation, which is adjacent to the Ramsar site, will result in increased disturbance of birds for which the Ramsar site is designated. The A27 experiences relatively high traffic volumes which birds within the Ramsar site will be habituated to. The Wallington Viaduct West Coastway Railway lies between the A27 and the Ramsar site. The presence of this feature, which is an additional source of visual and noise disturbance which the birds are likely to have habituated to, means that any effects of changes to the A27 would be less apparent at the Ramsar site.
Habitat or species fragmentation	No land take from the Ramsar site will occur as a result of the scheme. No severance or fragmentation of habitats would occur. The operational increase in A27 traffic is not of a magnitude that will affect the ability of birds to move within the wider area.
Reduction in species density	No land take or degradation to habitats within the Ramsar site will occur and disturbance of species during the construction or operational phase of the scheme is not anticipated for the reasons outlined above. A reduction in species diversity as a result of the scheme will therefore not occur.
Changes in key indicators of conservation value (water quality etc.)	*Air quality* Habitats within 200m of the ARN where the A27 intersects with the A32 (458001, 105980) include mudflats. The UK Air Pollution Inventory System (APIS) does not provide a Critical Load for mudflat, but there is a Critical Load for 'saltmarsh', which has a minimum Critical Load of 20 kgN/ha/yr. <u>Calculating Nitrogen Deposition</u> The table below presents the Nitrogen deposition at a modelled point located approximately 20m from the M27 (Easting = 458000, Northing = 105912).

	<table><tr><td rowspan="2">Designated Feature</td><td colspan="6">Nitrogen Deposition (kg/ha/yr) in Opening Year (2021)</td></tr><tr><td>Background (Average N Deposition within 5km x 5km Grid Square)[50]</td><td>Without Scheme</td><td>With M27 Scheme Alone</td><td>Change</td><td>M27 & M3</td><td>Change</td></tr><tr><td>Littoral Sediment</td><td>13.06</td><td>15.98</td><td>16.03</td><td>0.05</td><td>16.05</td><td>0.07</td></tr></table> <u>Assessing the Likely Significance of Effects</u> The increased deposition described above equates to the following in terms of the adopted 20 kg N/ha/yr Critical Load: • A percentage change of <1% of the Critical Load at the closest point of contact with the littoral sediment habitat due to the scheme; • A percentage change of <1% of the Critical Load at the closest point of contact with the littoral sediment habitat due to the scheme in combination with the M3 SMP. Habitats within the Ramsar at this location (mudflats) are relatively insensitive to impacts associated with air quality (e.g. NO_X). Mudflats are high nutrient habitats, regularly flushed by tidal waters. It is therefore unlikely that atmospheric pollution arising during operation of the scheme in the vicinity of the Ramsar would significantly affect water and habitat quality, and the species density elsewhere in the Ramsar. *Water quality* Five outfalls discharge into the River Wallington which is hydrologically connected to the Ramsar. However, as described above, there is anticipated to be no significant reduction in the quality of the water run-off entering this watercourse due to scheme alone or in-combination with other projects. There will also be no increase in the rate of discharge entering these watercourses. Significant adverse changes in water quality will therefore not occur due to the scheme, alone or in-combination.
Climate change	Cumulative impacts associated with climate change will not occur, as there will be no direct or indirect effects on the habitats within the Ramsar site, or adjacent river walls or adjacent habitats as a result of the scheme. Therefore, if, for example, sea level rise results in a change in the location or the extent of the mudflats, this will not be further constrained or affected by the scheme.
Interference with the key relationships that define the structure of the site	Structure is taken to correspond to the distribution and abundance of habitats in the Ramsar site. Interference with the relationships which define the habitats in the Ramsar site such as water levels, sediment deposition and tidal cycle will not be affected by the scheme, as there will be no land take or direct impact on the estuary or river channel.
Interference with the key relationships that define the function of the site	Function is taken here to mean the capacity of the Ramsar site to support the habitats and bird species for which the site is designated. The quality and extent of habitats within the Ramsar site will not be affected by the scheme alone or in-combination with other projects. Therefore, no effect on the function of the site is anticipated.
Indicate the significance as a result of the identification of impacts set out above in terms of:	

[50] Total deposition, reduced by 2% / year, including contribution from roads.

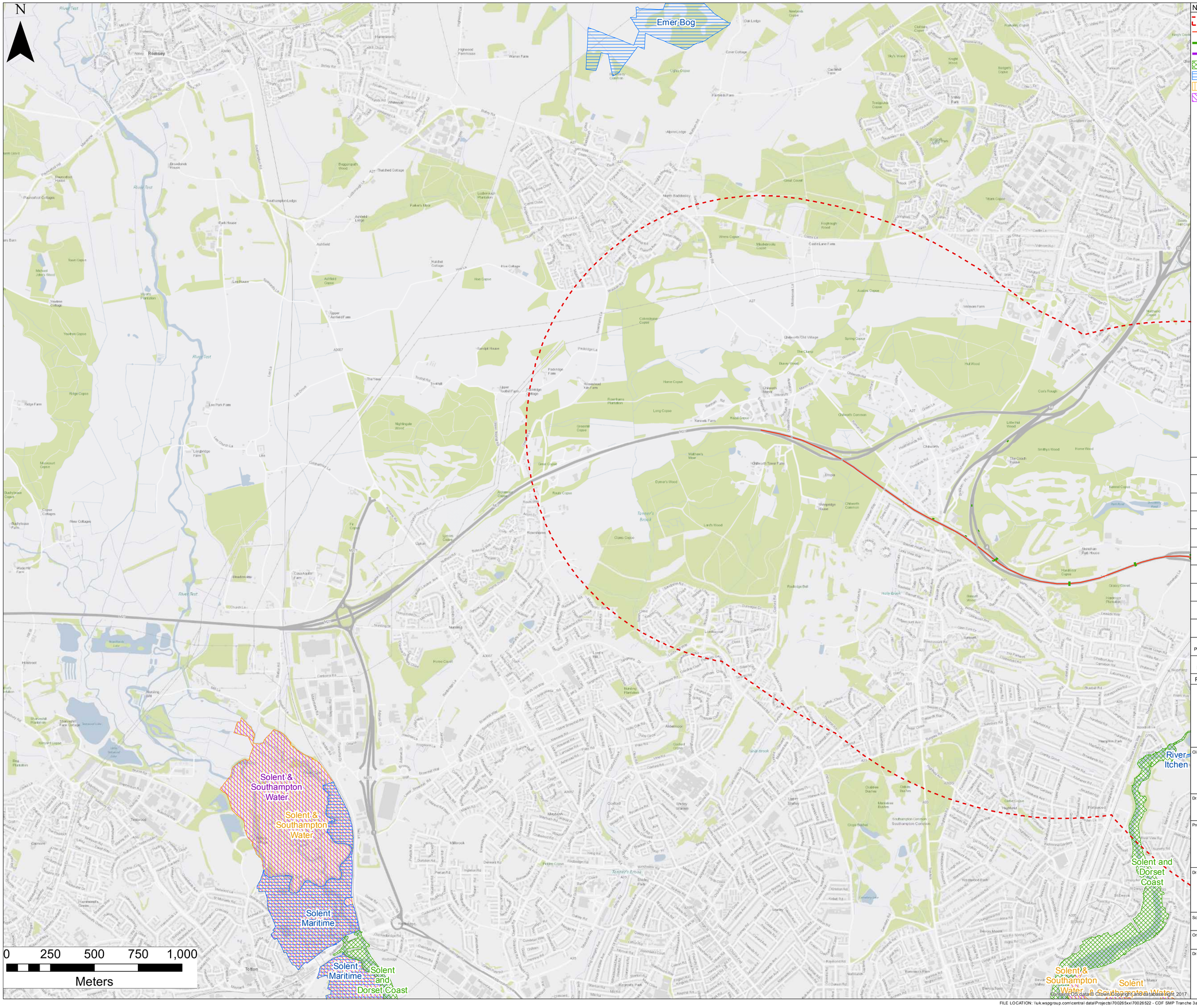
Reduction of habitat area	Not significant - There will be no reduction in habitat area within the Ramsar site or to functionally connected habitat as a result of the construction or operation of the scheme.
Disturbance of key species	Not significant - Disturbance of birds for which the Ramsar is designated will not be significant, given the intervening distance between the scheme and the site and the scale and duration of proposed works.
Habitat or species fragmentation	Not significant - There will be no fragmentation to species or habitats during the construction or operation of the scheme. Works are either contained within the M27 motorway carriageway, or are of a scale and extent that is unlikely to fragment habitats within the Ramsar site or functionally connected habitat associated with the Ramsar site.
Loss	Not significant - There will be no significant loss of habitat or species due to the construction or operation of the scheme.
Fragmentation	Not significant - There will be no significant fragmentation to habitats due to the construction or operation of the scheme.
Disruption	Not significant - Construction or operation of the scheme will not disrupt the structure or function of the key relationships within the Ramsar site.
Disturbance	Not significant - Significant disturbance to birds for which the Ramsar site is designated will not occur, given the location and extent of works in relation to the site.
Change to key elements of the site (e.g. water quality, hydrological regime etc.)	Not significant - There will not be a significant change to key elements of the site. There will be no reduction in habitat area, or changes to flow, water quality, or coastal processes which support the site's designation.
Describe from the above those elements of the scheme, or combination of elements, where the above impacts are likely to be significant or where the scale or magnitude of impacts is not known	
The scheme will not give rise to likely significant effects on the Ramsar site. Furthermore, significant in-combination effects are not likely to occur due to the scheme and other projects, including the proposed M3 SMP scheme.	
Outcome of screening stage (delete as appropriate)	~~Significant Effects are Likely~~ ~~Sufficient Uncertainty Remains~~ Not Likely to be Significant Effects.
Are the appropriate statutory environmental bodies in agreement with this conclusion (delete as appropriate and attach relevant correspondence)	No consultation has been undertaken to date.

Appendix A

Figure 6.2b – Internationally Designated Sites *(HE549344-MMSJV-EBD-000-RP-LB-0014)*.

Figure 6.2c – Special Areas of Conservation Designated for Bats within the 30km of the scheme *(HE549344-MMSJV-EBD-000-RP-LB-0013)*.

Figure 6.2d – European Sites with Works Locations within 250m of European Site



Notes

- M27 2km Study Area
- M27 Centre Line
- Gantries
- ERA
- Potential Special Protection Areas
- Special Area of Conservation (Eng)
- Special Protection Area (Eng)
- Ramsar Site - Wetland of International Importance (Eng)

Rev	Date	Amendment Details	Drawn	Chk'd	App'd
P02	12/02/2018	First Issue	JA	MM	VT
P02	14/05/2018	Second Issue	JA	MM	VT

Mott MacDonald Sweco

Client: highways england

Drawing Status: For Stage Approval

Suitability: S4

Project Title: SMART MOTORWAY PROGRAMME
SMP M27

Drawing Title: Figure 6-2b:
Internationally Designated Sites
Map 1 of 4

Scale	Designed	Drawn	Checked	Approved
1:15,000	JA	JA	MM	VT
Original Size A1	Date	Date	Date	Date

Drawing Number: HE PIN | Originator | Volume
123456 - MMSJV - VOL -
000 - DR - LA - 00003
Location | Type | Role | Number

Project Ref. No.: HE549344

Revision: P02

FILE LOCATION: \\uk.wspgroup.com\central data\Projects\700265xx\70026522 - CDF SMP Tranche 3and4 Design\E Models and Drawings\GIS\Mxd\EAR_MAPS\Figure 6.2b Internationally designated sites_New_Template.mxd

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Solent & Southampton Water

Solent Maritime

Solent and Dorset Coast

0 250 500 750 1,000

Meters

Notes

- M27 2km Study Area
- M27 Centre Line
- Gantries
- ERA
- Potential Special Protection Areas
- Special Area of Conservation (Eng)
- Special Protection Area (Eng)
- Ramsar Site - Wetland of International Importance (Eng)

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Mott MacDonald Sweco

Client: highways england

Drawing Status: For Stage Approval

Suitability: S4

Project Title: SMART MOTORWAY PROGRAMME
SMP M27

Drawing Title: Figure 6-2b:
Internationally Designated Sites
Map 2 of 4

Scale	Designed	Drawn	Checked	Approved
1:15,000	JA	JA	MM	VT
Original Size A1	Date	Date	Date	Date

Drawing Number: HE PIN | Originator | Volume | Location | Type | Role | Number
123456 - MMSJV - VOL - 000 - DR - LA - 00003

Project Ref. No.: HE549344

Revision: P02

FILE LOCATION: \\uk.wspgroup.com\central data\Projects\70026xx\70026522 - CDF SMP Tranche 3and4 Design\E Models and Drawings\GIS\Mxd\EAR_MAPS\Figure 6.2b Internationally designated sites_New_Template.mxd

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Solent & Southampton Water

Portsmouth Harbour

Solent and Dorset Coast

0 250 500 750 1,000

Meters

Notes

- M27 2km Study Area
- M27 Centre Line
- Gantries
- ERA
- Potential Special Protection Areas
- Special Area of Conservation (Eng)
- Special Protection Area (Eng)
- Ramsar Site - Wetland of International Importance (Eng)

Rev	Date	Amendment Details	Drawn	Chk'd	App'd
P02	12/02/2018	First Issue	JA	MM	VT
P02	14/05/2018	Second Issue	JA	MM	VT

Mott MacDonald Sweco

Client: highways england

Drawing Status: For Stage Approval

Suitability: S4

Project Title: SMART MOTORWAY PROGRAMME
SMP M27

Drawing Title: Figure 6-2b:
Internationally Designated Sites
Map 3 of 4

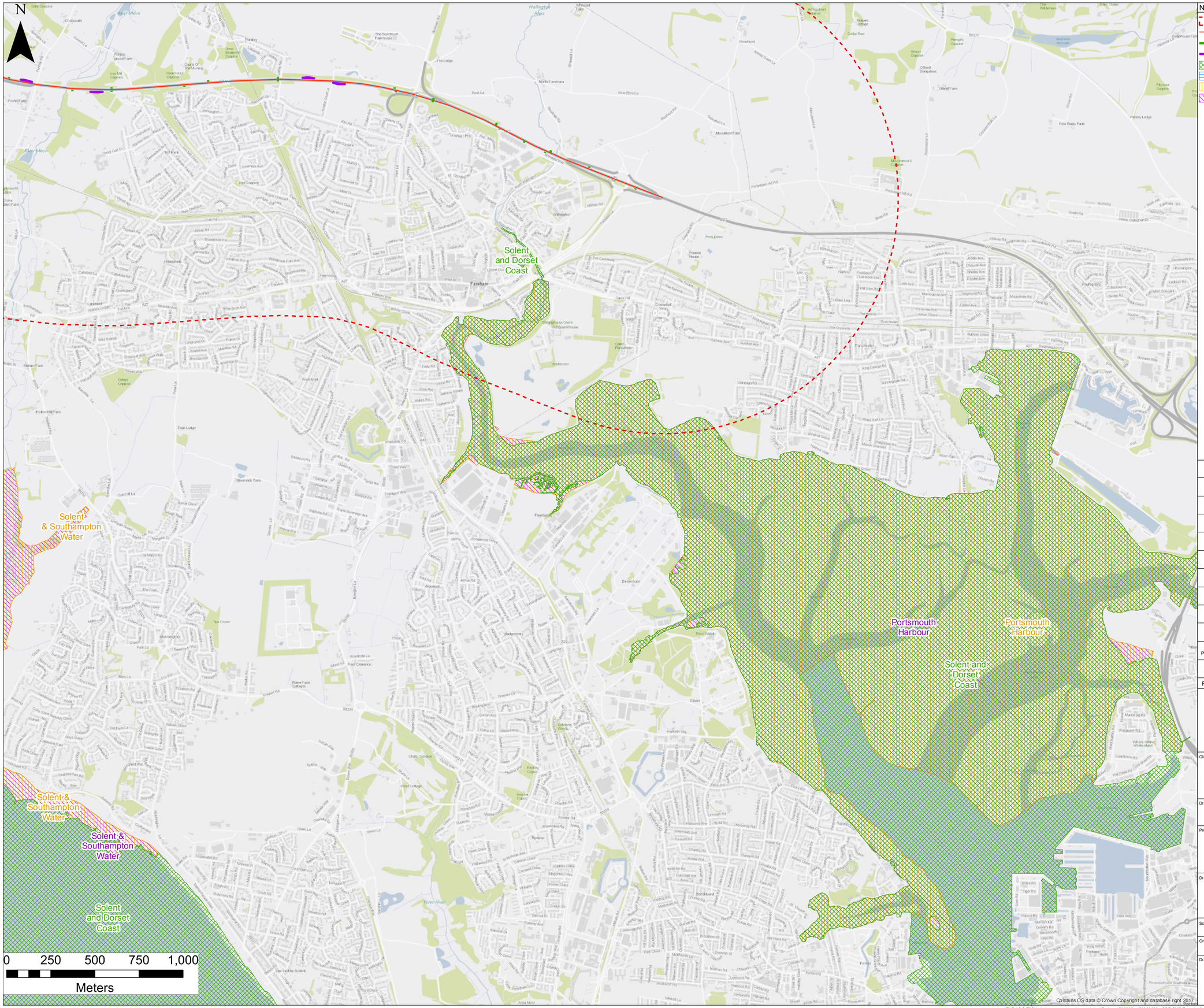
Scale	Designed	Drawn	Checked	Approved
1:15,000	JA	JA	MM	VT
Original Size A1	Date	Date	Date	Date

Drawing Number: HE PIN | Originator | Volume
123456 - MMSJV - VOL -
000 - DR - LA - 00003
Location | Type | Role | Number

Project Ref. No.: HE549344

Revision: P02

FILE LOCATION: \\uk.wspgroup.com\central data\Projects\700265xx\70026522 - CDF SMP Tranche 3and4 Design\E Models and Drawings\GIS\Mxd\EAR_MAPS\Figure 6.2b Internationally designated sites_New_Template.mxd



Notes

- M27 2km Study Area
- M27 Centre Line
- Gantries
- ERA
- Potential Special Protection Areas
- Special Area of Conservation (Eng)
- Special Protection Area (Eng)
- Ramsar Site - Wetland of International Importance (Eng)

Rev	Date	Amendment Details	Drawn	Chk'd	App'd
P02	12/02/2018	First Issue	JA	MM	VT
P02	14/05/2018	Second Issue	JA	MM	VT

Mott MacDonald Sweco

Client: highways england

Drawing Status: For Stage Approval

Suitability: S4

Project Title: SMART MOTORWAY PROGRAMME
SMP M27

Drawing Title: Figure 6-2b:
Internationally Designated Sites
Map 4 of 4

Scale	Designed	Drawn	Checked	Approved
1:15,000	JA	JA	MM	VT
Original Size: A1	Date	Date	Date	Date

Drawing Number: HE PIN 123456 - Originator MMSJV - Volume VOL - Location 000 - Type DR - Role LA - Number 00003

Project Ref. No.: HE549344

Revision: P02

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N

Mottisfont Bats

Briddlesford Copses

Singleton and Cocking Tunnels

New Forest National Park

South Downs National Park

0 2.5 5 10 15 20
Kilometers

Notes

- M27 Centre Line
- Affected Route Network
- 30km from M27 Centre Line
- Special Area of Conservation Designated for Bats

Rev	Date	Amendment Details	Drawn	Chk'd	App'd
P02	12/02/2018	First Issue	JA	MM	VT
P02	14/05/2018	Second Issue	JA	MM	VT

Mott MacDonald Sweco

Client: highways england

Drawing Status: For Stage Approval

Suitability: S4

Project Title: SMART MOTORWAY PROGRAMME
SMP M27

Drawing Title: FIGURE 6.2C:
Special Areas of Conservation
Designated for Bats within 30km

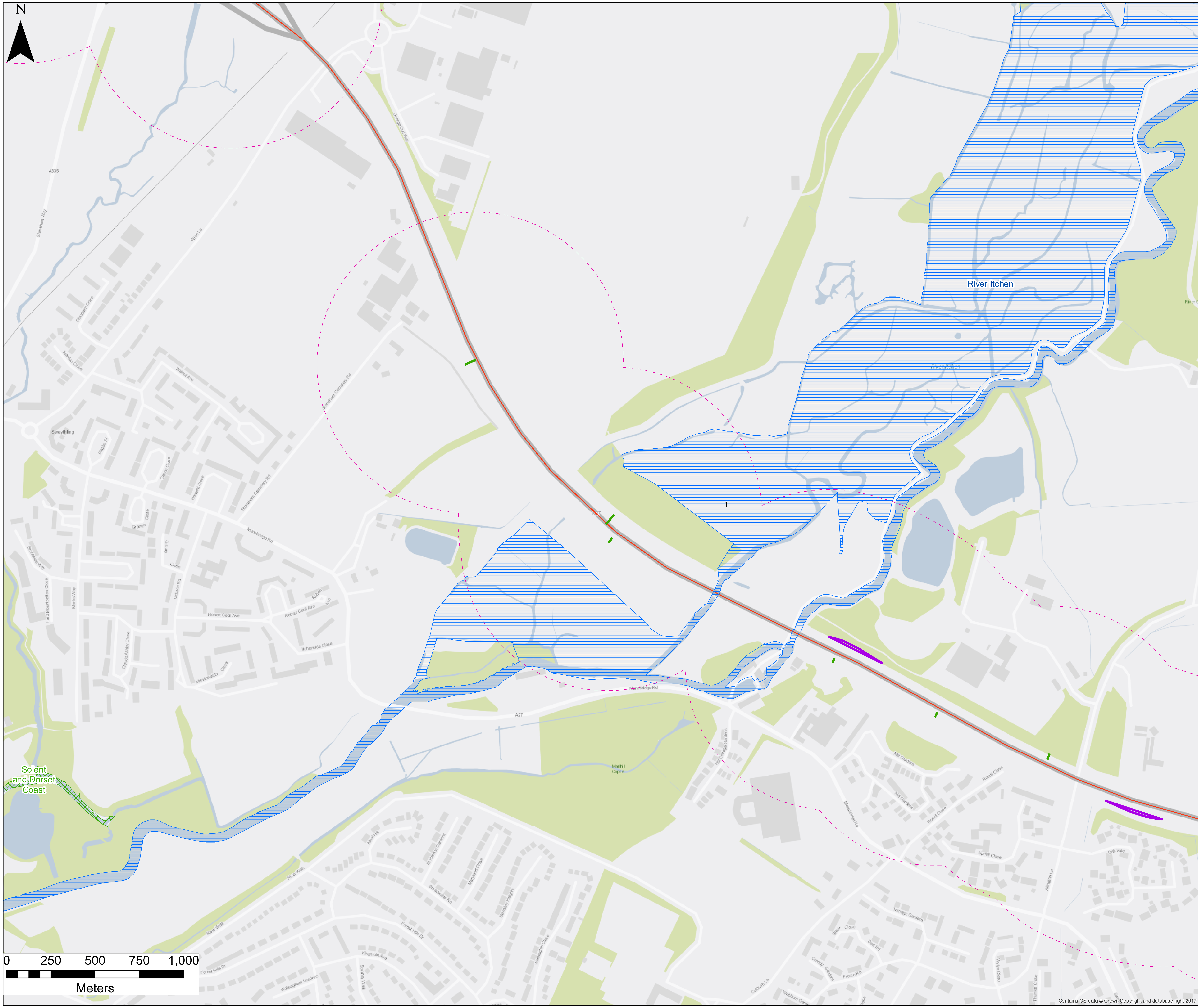
Scale	Designed	Drawn	Checked	Approved
1:138,095	JA	JA	MM	VT
Original Size A1	Date	Date	Date	Date

Drawing Number: HE PIN 123456 - | Originator MMSJV - | Volume EGN - | Location 000 - | Type DR - | Role LA - | Number 00007

Project Ref. No.: HE549344

Revision: P02

FILE LOCATION: \\uk.wspgroup.com\central data\Projects\700265xx\70026522 - CDF SMP Tranche 3and4 Design\E Models and Drawings\GIS\Mxd\EAR_MAPS\Figure 6.2c Special Areas of Conservation Designated for Bats within the 30km of the Proposed Scheme_New_Template.mxd



Notes

- M27 Centre Line
- M27 2km Study Area
- Work Locations 250m Buffer
- Gantries
- ERA
- Potential Special Protection Areas
- Special Area of Conservation (Eng)
- Special Protection Area (Eng)
- Ramsar Site - Wetland of International Importance (Eng)

Rev	Date	Amendment Details	Drawn	Chk'd	App'd
P02	12/02/2018	First Issue	JA	MM	VT
P02	14/05/2018	Second Issue	JA	MM	VT

Mott MacDonald Sweco

Client: highways england

Drawing Status: For Stage Approval

Suitability: S4

Project Title: SMART MOTORWAY PROGRAMME SMP M27

Drawing Title:
Figure 6-2b:
Internationally Designated Sites
Map 1 of 2

Scale	Designed	Drawn	Checked	Approved
1:3,000	JA	JA	MM	VT
Original Size: A1	Date	Date	Date	Date

Drawing Number: HE PIN 123456 - Originator MMSJV - Volume EGN - Location 000 - Type DR - Role LA - Number 00005

Project Ref. No.: HE549344

Revision: P02

FILE LOCATION: \\Client\C$\ArcGIS\M27\Figure 6.2d European Sites with works locations within 250m of site_New_Template.mxd

Notes

- M27 Centre Line
- M27 2km Study Area
- Work Locations 250m Buffer
- Gantries
- ERA
- Potential Special Protection Areas
- Special Area of Conservation (Eng)
- Special Protection Area (Eng)
- Ramsar Site - Wetland of International Importance (Eng)

Rev	Date	Amendment Details	Drawn	Chk'd	App'd
P02	12/02/2018	First Issue	JA	MM	VT
P02	14/05/2018	Second Issue	JA	MM	VT

Mott MacDonald Sweco

Client: highways england

Drawing Status: For Stage Approval

Suitability: S4

Project Title: SMART MOTORWAY PROGRAMME
SMP M27

Drawing Title: Figure 6-2b:
Internationally Designated Sites
Map 2 of 2

Scale	Designed	Drawn	Checked	Approved
1:3,000	JA	JA	MM	VT
Original Size: A1	Date	Date	Date	Date

Drawing Number: HE PIN 123456 - Originator MMSJV - Volume EGN - Location 000 - Type DR - Role LA - Number 00005

Project Ref. No.: HE549344

Revision: P02

FILE LOCATION: \\Client\C$\ArcGIS\M27\Figure 6.2d European Sites with works locations within 250m of site_New_Template.mxd

Appendix B

Natural England/Highways England Comments log

Email from Natural England dated 3rd September 2018

NE Comment (05/07/18)	HE Response (19/07/18)	NE Comment (24/07/18)	HE Response (03/09/18)
Construction phase impacts			
A Construction Environmental Management Plan (CEMP) is proposed as part of the scheme, however this has not been provided as part of the HRA review. The potential effects, such as dust and water pollution, arising from the construction are an integral part of the project, and construction should be carried out using industry best practice supported by evidence of avoidance of harm to the natural environment. With this in place, Natural England advises these impacts may reasonably be screened out of the AA (i.e. they do not have to be assessed as part of the AA).	The Outline Environmental Management Plan (OEMP) is provided in support of this response, which sets out the control measures to be adopted during the construction works. It should be noted that the OEMP provide the minimum measures required to manage construction phase impacts, and the OEMP will be updated into a Construction Environmental Management Plan (CEMP) by the contractor prior to the commencement of the works.	**Water quality impacts**: Water clause WA-01 of the OEMP specifically refers to measures to be put in place during construction to offset potential water quality impacts on the River Itchen Special Area of Conservation (SAC). As this is a specific measure, this will need to be addressed within the Appropriate Assessment of the Habitats Regulations Assessment (HRA) to remain in line with recent case law (Sweetman II) – this need not be onerous and simply refer to the OEMP. However, it is advised minimum required methods of pollution control are detailed in the OEMP to ensure measures to offset identified impacts have been considered adequately.	Throughout the Scheme, the works will be contained within the highway boundary, with no physical work outside of the highway boundary or within the Natura 2000 sites. All surface water run-off during the construction work will be contained and managed within the existing highways drainage system as described in Appendix C. Any works required to the drainage system as part of the Scheme would be carried out offline and connected to the outfalls when work is complete.
Operational phase impacts			
In-combination assessment: It appears that in-combination assessments within the HRA only include the neighbouring M3 Smart Motorway Programme. Separately, it has been noted the Environmental Assessment Report (EAR) outlines a study area of 300m along the SMP route within which committed development was considered for cumulative impacts.	The M27 SMP traffic modelling has been undertaken in accordance with DfT guidance (WebTAG unit M4) with regard to an uncertainty log, which lists out the development included within the M27 SMP traffic forecast (see Appendix A). These developments are categorised as either (i) near certain or (ii) more than likely. By "more than likely" the specific development application is within the	**In-combination assessment**: The list of developments in Appendix A used in the traffic modelling appears limited. For example, no development within Eastleigh borough appears to have been included, despite their emerging local plan that provides for over 30,000 houses. It is still our advice that total housing targets outlined	Department for Transport guidance[1] (TAG Unit M4) was adhered to in developing the uncertainty log for the future year traffic model scenarios. The Core model scenario therefore included future housing that is built, under construction, has planning approval granted, or has a planning application that has been

[1] https://www.gov.uk/government/publications/webtag-tag-unit-m4-forecasting-and-uncertainty-july-2017 (superseded in May 2018, but valid at the time of use)

NE Comment (05/07/18)	HE Response (19/07/18)	NE Comment (24/07/18)	HE Response (03/09/18)
	consent process or a planning application submission is imminent. The uncertainty log was assembled through collating information about specific development sites from the various local authorities (all of those listed in the PUSH document with the exception of East Hampshire and Isle of Wight) based on these levels of future development commitment. These developments are therefore already modelled into the noise, AQ, and road drainage and water environment assessments. The detail on the developments included within the traffic forecasting is therefore in much more detail than the figures provided in the PUSH Statement. The PUSH statement is dated June 2016 and the input into the traffic model on developments, provided by the local authorities, supersedes this document. It should also be noted that the PUSH document relates to housing/employment **need** and is more of a vision document with non-specific development locations, and is not adopted policy. We are satisfied that the planning assumptions we have used for the traffic forecasting for the M27 SMP are the	within the PUSH spatial strategy are used in the traffic modelling as a worst-case scenario. The model should outline the resulting number of Average Annual Daily Traffic flow (AADT) on the M27 which can be used to inform the air quality assessment. E-mail received 25/07/18: I should amend the figure I cited in my response relating to housing being brought forward through the Eastleigh local plan – the figure is actually 14,950 (not 30,000!)	or is about to be submitted, at the time when the Councils were asked for this information (i.e. developments classed as 'completed', 'near certain' and 'more than likely' by TAG Unit M4). An additional Optimistic model scenario was also produced, as a sensitivity test, which additionally included developments that are classed as 'reasonably foreseeable' by TAG Unit M4. It is agreed that the June 2016 PUSH Spatial Position Statement[2] Table H1: Distribution of housing states that 14,950 net additional homes are required in Eastleigh Borough in 2011-2036. However, these are aspirational targets and do not meet the criteria within DfT TAG Unit M4, described above. Even if the PUSH targets could be classed as 'reasonably foreseeable' in accordance with TAG Unit M4, they could not have been included within the Optimistic model scenario as the traffic modelling requires geographic positioning of known developments to properly model journeys. It is therefore not possible
It is Natural England's advice that planned development from a larger radius along the M27 corridor should be taken into account when assessing impacts on European sites. It is recommended the current figures within the PUSH (Planning for Urban South-Hampshire) Spatial Position statement are used. PUSH also commissioned an air quality report that ran a traffic model so detailed traffic data is available.			

[2] https://www.push.gov.uk/wp-content/uploads/2018/05/PUSH-Spatial-Position-Statement-2016.pdf

NE Comment (05/07/18)	HE Response (19/07/18)	NE Comment (24/07/18)	HE Response (03/09/18)
	reliable and are appropriate for traffic forecasting. The approach taken to assessing in-combination effects aligns with current guidance, as it has been carried out in accordance with DMRB Volume 11 Section 2 Part 5 'Assessment and Management of Environmental Effects'.		to model the impacts of traffic based on allocations at a Borough wide level and identified 'need'. Eastleigh Borough Council (EBC) was contacted to provide data on the future housing provision within the Borough. For Eastleigh there are 3,751 additional houses between 2015 and 2036 in the Core scenario and 3,951 houses in the Optimistic scenario. While these figures are someway short of the 14,950 PUSH target, given the fact that they were provided by EBC using the DfT guidance criteria, it is considered that they represent the best data available to inform the air quality assessment. Finally, it should be noted that future year traffic demand is constrained to the Department for Transport's forecast National Trip End Model growth at the district level for future year model scenarios. It is therefore considered the approach to the traffic modelling accords with NE's national position, as given in paragraph 1.13 of the NE advice note (July 2018) and the traffic model will not be updated.

NE Comment (05/07/18)	HE Response (19/07/18)	NE Comment (24/07/18)	HE Response (03/09/18)
Air Quality: The HRA currently concludes no significant adverse effects upon the European sites as background levels already exceed the nitrogen-deposition critical load for fen, marsh and swamp (River Itchen SAC) and saltmarsh (Solent Maritime SAC) and the scheme will incur an increase of less than 1% of these levels. However, the in-combination assessment will have to be reapplied taking account of planned development in the area. If the percentage increase is found to be less than 1% in all cases, Natural England would have no further concerns.	Highways England have established a consistent approach with Natural England regarding the assessment of air quality impacts in accordance with the methodology set out in DMRB, Volume 11, Section 3, Part 1, Annex F (Assessment of Designated Sites) and DMRB Volume 11, Section 4 (Assessment of Implications on European Sites). This does not rely on a 1% threshold and it is not clear what the evidence is to suggest that this is an appropriate figure to base the assessment on. Clarity is provided above on the in-combination assessment based on the developments included within the traffic forecasting.	**Air quality assessment**: The 1% threshold is equivalent in pollution levels arising to 1000 AADT vehicles or 200 AADT HDV, and comes from NE advice (July 2018) to competent authorities when assessing impacts of air quality on European sites. Therefore, this threshold is more appropriate to use in the context of the Itchen and Hamble than DMRB guidelines. Therefore, as advised previously, the in-combination assessment should be reapplied taking account of planned development in the area as outlined above. If the percentage increase is found to be less than 1% in all cases, Natural England would have no further concerns. **E-mail received 23/08/18:** Having received further advice from Natural England colleagues (senior specialist in air quality and principle advisor in major infrastructure development) following recent communications between contacts at Highways England (cc'd) and Natural England, my concerns regarding the in-combination assessment and air quality assessment have now been addressed. I am satisfied the processes followed by Highways England are acceptable and that the risk associated with adverse impacts	N/A

NE Comment (05/07/18)	HE Response (19/07/18)	NE Comment (24/07/18)	HE Response (03/09/18)
		from air quality as a result of the scheme is low.	
Water Quality: The scheme has the potential to have adverse effects upon the European designated sites (listed above) from poor water quality. Water quality of surface run-off discharge into the protected sites may be worsened via increased flow of traffic predicted as a result of the scheme, and through increase in impermeable surface (particularly during a storm event or during a chemical/fuel spillage incident on the road during the operational phase). There is the potential for pollutants associated with traffic, such as hydrocarbons and chemical pollutants (e.g. heavy metals, grit salts, particulates, oils), to damage features of interest for which the protected sites have been designated.	The area of impermeable and permeable surfacing that drain to each outfall is provided within the Method A Highways Agency Water Risk Assessment Tool (HAWRAT) assessment, which is included as Appendix F.1 to the EAR (see Appendix B). This does not show changes in impermeable area, which are associated with the new ERAs and the hardening of the central reserve. For clarity for the purposes of the HRA review, the increase in impermeable area (derived from hydraulic models) will be 7.5 hectares, which represents 3.7% of the total contributing catchment area within the drainage design.	**Water quality**: based on the further information provided, Natural England has no further concerns on this aspect of the proposed scheme.	N/A
The HRA outlines that "traffic volumes are predicted to increase by 13% due to the scheme and other projects. This is below the 20% threshold at which, in accordance with DMRB guidance, increased traffic volumes may have a significant adverse effect on the quality of water run-off" and that "this increase in traffic is predicted to have a negligible effect on the quality of the water discharging into the River Itchen, and there will therefore not be a significant change in the key indicators of conservation value within the site". The 20% figure cited from the DRMB guidance is not considered to have an ecological basis and therefore it	The traffic volumes assessed within the EAR are provided within the Method A HAWRAT assessment, which is included as Appendix F.1 to the EAR. The 20% threshold was derived from Highways England's extensive runoff monitoring which underpins HAWRAT. Statistical analysis of levels of pollution in highway runoff showed that this order of change in traffic was the kind that would necessitate the need to assess risks again. This was agreed with the Environment Agency. It is unlikely you would see any change in modelled		

NE Comment (05/07/18)	HE Response (19/07/18)	NE Comment (24/07/18)	HE Response (03/09/18)
is Natural England's opinion that the use of this threshold should not apply when assessing impacts of increased traffic against the conservation objectives of a European designated site. In this case a 1% critical load threshold or increase of 1000 AADT/200HDV are considered to be appropriate benchmarks for the sensitive ecological receptors.	pollutant loads with a change in flows of 1,000 - only with an increase in >20% would the M27 SMP scheme be seen to be making things worse and therefore undertake an assessment otherwise out of scope.		
The drainage section of the EAR outlines that Emergency Refuge Areas (ERAs) "would be drained via kerb-drain units to the back, with required provision for pollution control and containment". The EAR has identified existing cumulative dissolved copper and chronic impacts along a 1km stretch of the River Hamble catchment (concerning outfalls discharging to Whiteley stream and Woodhouse Gully). However it is understood that no pollution control measures have been proposed as part of the scheme.	Section 9.10.14 of the EAR notes that "*Consultation with Highways England, Hampshire County Council and the Area 3 team has identified an existing dissolved copper issue in the watercourses close to junction 9, believed to be associated with surface water run-off from the M27*". Neither the Whiteley Stream nor the Woodhouse Gully, mentioned in the EAR as suffering chronic impacts, are listed within the South East River Basin Management Plan (RBMP) (Cycle 2), but the RBMP does state that the water quality of the Main River Hamble (GB107042016250) over which the M27 passes is Good, with the Chemical component element of the overall waterbody status at Good (i.e. meet the Water Framework Directive (WFD) targets), and the copper and zinc component element of the overall waterbody status at High status (i.e. very low levels of the two metals within the water).		

NE Comment (05/07/18)	HE Response (19/07/18)	NE Comment (24/07/18)	HE Response (03/09/18)
	The Southampton Water waterbody (GB520704202800), which lies immediately downstream of the Main River Hamble is at Moderate overall status, although this is due to the levels of Brominated diphenylether (BDPE) Calc, Benzo(a)pyrene and Tributyltin Compounds. Any water quality problems within the SAC therefore cannot be attributed to copper and zinc contained within runoff from the M27, both due to geography (i.e. the waterbody over which the M27 passes is at Good status) and chemistry (i.e. the Environment Agency monitoring used to inform the RBMP does not show elevated copper or zinc levels). The drainage design for the scheme, including the new ERAs, is described in the Drainage Strategy Report (provided). This was written in conjunction with the EAR which therefore contains the information relating to the relevant sections of the Drainage Strategy Report. Section 9.7 of the EAR describes the design and mitigation measures that are applicable to the Road Drainage and Water Environment assessment, including the following description of the proposed drainage of the ERAs: *9.7.4 The proposed scheme will also require new drainage to serve the proposed ERAs. This will comprise kerb drains that will discharge to the existing*		

NE Comment (05/07/18)	HE Response (19/07/18)	NE Comment (24/07/18)	HE Response (03/09/18)
	motorway drainage system. A containment system will be incorporated into the drainage system to capture oils in the event of a spillage within the ERA. Therefore, while no new pollution control devices are included in the drainage design for the ERAs, they will benefit from the protection afforded by the pollution control devices that are already present in the drainage network. These existing pollution control devices comprise oil separators, with the Priority Outfalls passing the HAWRAT assessments. Subject to securing funding, it is the intention of Highways England to provide improvements to the outfalls in this location, comprising a separate scheme that would: a) collect runoff from the bridge deck (currently drains directly to Hamble) using a suspended drainage system below the deck and convey this to the main drainage outfall to the east of the bridge deck; and b) install petrol interceptors and penstocks upstream of the existing outfalls. These works would improve the quality of the discharges to the river, which forms		

NE Comment (05/07/18)	HE Response (19/07/18)	NE Comment (24/07/18)	HE Response (03/09/18)
	part of the Solent Maritime SAC, and the Solent and Southampton Water SPA and Ramsar site. However, these works would not form part of the M27 Smart Motorway and would be progressed as a separate scheme.		
It is Natural England's advice that this impact has not been adequately addressed within the EAR or the HRA. Therefore we are not currently satisfied that likely significant effects can be ruled out. Therefore the HRA will need to proceed to the Appropriate Assessment stage, as required following Sweetman II, where water quality impacts on protected sites can be assessed in more detail. For Water Quality effects this should include details of the current drainage situation and proposed Sustainable Urban Drainage Systems (SuDS), as well as potential enhanced mitigation measures to show how adverse effects on protected sites will be avoided/mitigated (i.e. how surface run-off will be treated prior to discharge into the watercourse).	Based on the above responses, we propose to update the HRA Screening with supplementary information on the items listed and re-submit to Natural England for their consideration as to whether or not the assessment needs to proceed to Appropriate Assessment. Clarity is sought on the fundamental points of the advice provided by Natural England which must be addressed in the updated HRA Screening. In light of the supplementary information provided, Highways England is confident that likely significant effects due to the M27 Smart Motorway (alone or in-combination) can be screened out and an Appropriate Assessment is not required. The HRA screening will be updated in due course to reflect the additional information provided within the note, but in the in order to aid Natural England's review, it is considered appropriate to provide these responses in advance.		Please note that we do not propose to re-submit the HRA screening document to Natural England for approval, as it is considered that this memo provides Natural England with the information required to rule out likely significant effects on the European designated sites.
Alternatively, the drainage design for the entire scheme could automatically incorporate SuDS features to clean surface run-off of pollutants prior to discharge into protected sites, such as those described in	It is considered that the measures proposed in the Drainage Strategy Report, as described above, will provide sufficient treatment of the run-off and no additional		Appendix C below describes the existing and proposed pollution control measures within the highways drainage network. All construction work will be contained

NE Comment (05/07/18)	HE Response (19/07/18)	NE Comment (24/07/18)	HE Response (03/09/18)
sections 9.10.11 and 9.10.12 of the EAR. Provided the proposed SuDS features are adequate (including consideration of the more extreme weather events likely to be anticipated due to Climate Change), no extra mitigation would be needed to offset water quality impacts on the European sites and it would be possible to screen this aspect out of an Appropriate Assessment of the project.	SUDS features are required in the drainage design.		within the highway boundary, with all surface water run-off during the construction work contained and managed within the existing highways drainage system.

Appendix A - Developments included in the M27 SMP Traffic Forecast Model

No.	Development	Land Use Type	Total Size (Sqm/no. of dwellings)	Local Planning Authority	Uncertainty
1	Land to the south of Peters Road, Locks Heath, Hampshire	C-Housing	218	Fareham Borough Council	Near Certain
2	Rowner Regeneration area, Grange Road, Gosport	C-Housing	219	Gosport Borough Council	Near Certain
3	Mayfield Buildings, Mumby Road, Gosport, Hampshire, PO12 1BG	C-Housing	48	Gosport Borough Council	Near Certain
		A1-Retail	1,775		
4	Haslar Hospital, Haslar Road, Gosport	C-Housing	590	Gosport Borough Council	More than Likely
		B1- Business Office	1,333		
		A1-Retail	1,333		
		D2-Mixed	1,333		
5	Daedalus Gosport	C-Housing	232	Gosport Borough Council	More than Likely
		A1-Retail	2,910		
		C1-Hotels_Area	8,320		
		D2-Museum/Entertainment	2,321		
		B1- Business Office	18,812		
		B2 - Industry	18,812		
		B8-Storage & Distribution	18,812		
6	Berewood Phase 2 Development Site, London Road, Purbrook, Waterlooville	C-Housing	246	Havant Borough Council	Near Certain
7	Market Parade	C-Housing	211	Havant Borough Council	More than Likely
8	Woodcroft Farm	C-Housing	288	Havant Borough Council	More than Likely
9	Land at Hanger Farm, Totton	C-Housing	330	New Forest District Council	Near Certain
10	Number One 8 Surrey Street, Portsmouth, PO1 1EJ	C-Housing	576	Portsmouth City Council	More than Likely
11	Ex West Wing & Maternity Block St Marys Hospital, Milton Road, Portsmouth, PO3 6AD	C-Housing	251	Portsmouth City Council	Near Certain
12	Former Kingston Prison, Milton Road, Portsmouth, PO3 6AS	C-Housing	230	Portsmouth City Council	More than Likely
13	12 - 40 Isambard Brunel Road, Portsmouth, PO1 2DR	C-Housing	484	Portsmouth City Council	Near Certain

No.	Development	Land Use Type	Total Size (Sqm/no. of dwellings)	Local Planning Authority	Uncertainty
		A1-Retail	352		
		B1- Business Office	352		
14	Land at Dugald Drummond Street/Greetham Street, Portsmouth, PO1 2BB	C-Housing	836	Portsmouth City Council	More than Likely
		B8-Storage & Distribution	1,249		
15	Zurich House, Stanhope Road	C-Housing	595	Portsmouth City Council	Near Certain
		A1-Retail	186		
16	North Whiteley Urban Extension Botley Road (A3051) Curbridge, Hampshire	C-Housing	3,500	Winchester City Council	More than Likely
		A1-Retail	666		
		B1- Business Office	666		
		D2-Mixed	666		
17	Gosport Waterfront and Town Centre	C-Housing	200	Gosport Borough Council	Reasonably Foreseeable
		B1- Business Office	33,000		
		A1-Retail	6,500		
18	Port Solent and Horsea Island	C-Housing	1,000	Portsmouth City Council	Reasonably Foreseeable
19	Tipner	C-Housing	480	Portsmouth City Council	Reasonably Foreseeable
		A1-Retail	1,000		
20	Somerstown and North Southsea	C-Housing	539	Portsmouth City Council	Reasonably Foreseeable
21	Portsmouth City Centre-	C-Housing	1,600	Portsmouth City Council	Reasonably Foreseeable
		A1-Retail	47,000		
22	Land at Lower Whitenap, Romsey	C-Housing	1,300	Test Valley Borough Council	Reasonably Foreseeable
23	Dunsbury Hill Farm - Phase 1	B8-Storage & Distribution	14,360	Havant Borough Council	More than Likely
24	Dunsbury Hill Farm - Phase 2	B1- Business Office	10,851	Havant Borough Council	Reasonably Foreseeable
		B2 - Industry	34,462		
25	Harts Farm Way	B1- Business Office	7,137	Havant Borough Council	More than Likely
		B2 - Industry	7,137		

No.	Development	Land Use Type	Total Size (Sqm/no. of dwellings)	Local Planning Authority	Uncertainty
26	Stanbridge Road	B1- Business Office	5,340	Havant Borough Council	More than Likely
		B8-Storage & Distribution	5,340		
27	Merlin Park	B1- Business Office	3,781	Portsmouth City Council	More than Likely
		B2 - Industry	7,563		
		B8-Storage & Distribution	3,781		
28	Voyager Park	B1- Business Office	13,332	Portsmouth City Council	More than Likely
		B2 - Industry	13,332		
		B8-Storage & Distribution	13,332		
29	Daedalus - Fareham	B1- Business Office	8,794	Fareham Borough Council	More than Likely
		B2 - Industry	34,857		
		B8-Storage & Distribution	13,042		
30	Welborne Plan Allocation - Fareham	B1- Business Office	4,400	Fareham Borough Council	Reasonably Foreseeable
		B2 - Industry	7,950		
		B8-Storage & Distribution	7,950		
31	Brockhurst Gate	B1- Business Office	4,200	Gosport Borough Council	Reasonably Foreseeable
		B8-Storage & Distribution	4,200		
32	Lakeside Business Park, Western Road, Cosham, Portsmouth, Hampshire, PO6 3EN	B1- Business Office	60,000	Portsmouth City Council	Reasonably Foreseeable
33	Land at Whitenap, Romsey	B1- Business Office	18,000	Test Valley Borough Council	Reasonably Foreseeable
		B2 - Industry	6,000		

Appendix B – HAWRAT Assessment

DMRB METHOD A HAWRAT ASSESSMENT OF POLLUTION IMPACTS FROM ROUTINE RUNOFF TO SURFACE WATERS

Outfall Reference	Outfall Number (SWECO Drainage Drawings and Drained Areas Information)	Outfall Status	Location	Receiving Watercourse	Existing Pollution Control (obtained from HAGDMS)	Q95 Flow (m^3/s)	Base Flow Index (BFI)	Hardness (mg CaCO3/l)	AADT DM 2036	AADT DS 2036	Impermeable Area Drained to the Outfall (ha)	Permeable Area Drained to the Outfall (ha)	River Width (m) (measured in HAGDMS)	D/S Structure within 100m of Outfall?	Discharge in or within 1km U/S of a Designated Site?	Non Cumulative HAWRAT Results with Existing Pollution Prevention Measures	Cumulative Assessment Required?	Outfalls for Cumulative Assessment
SU4814_1811	Outfall 15 Note: 4 outfalls are located in close proximity to each other in HAGDMS, but only one outfall is identified on drainage drawing HE549344-MMSJV-HDG-000-M2-CD-00009	Priority D Overall Status/ Not Determined Outfall Action Status	Between Junctions 5 and 7, Marker 24/2, CH21600. Outfall located immediately D/S of an existing balancing pond.	Tributary of Woodhouse Gully conveyed beneath M27	Catchpits, gullies	0.001	0.445	High ≥ 200 Value informed by review of previous HAWRAT assessments undertaken between Junctions 4 and 11.	50,000 ≤ AADT ≤ 100,000	50,000 ≤ AADT ≤ 100,000	0.15	0.04	2.4	N	N	Passed	Y	Outfall 15 + Outfall 17 (SU4814_2407) + Outfall 18 (SU4814_2407) Outfall 16 (SU4814_1703) ('c' or 'f' as both are shown as outfalls to the pond) is located U/S of the balancing pond and an interceptor is also fitted at the outfall of the balancing pond. Discharge from Outfall 16 is considered to be sufficiently treated and therefore it has not been included in the cumulative assessment Cumulative impact undertaken at Outfall 18
SU4813_2055am	Outfall 25 (or Outfall 24) Note: 7 outfalls are identified in close proximity to each other in HAGDMS. The drainage drawing identifies 2 outfalls at this location. It is not clear which outfall number relates to SU4813_2055am	Priority D Overall Status/ Not Determined Outfall Action Status	Between Junctions 5 and 7, Marker 24/7, CH22100	Tributary of Woodhouse Gully conveyed beneath M27	Unclear	0.001	0.394	High ≥ 200 Value informed by review of previous HAWRAT assessments undertaken between Junctions 4 and 11.	10,000 ≤ AADT ≤ 50,000	10,000 ≤ AADT ≤ 50,000	0.06	0.23	1.5 Obtained from sketch of outfall SU 4813_2055r in HAGDMS (believed to be Outfall 24)	N	N	Passed	Y	Outfall 20 + Outfall 21 + Outfall 22+ Outfall 23 + Outfall 24 + Outfall 25 Cumulative assessment to be undertaken at Outfall 24 or 25 as they are located in close proximity to each other
SU4910_5715b	Outfall 28	Priority B Overall Status	Between Junctions 8 and 9, Marker 28/9, CH26250	River Hamble	Catchpits, gullies, filter strip, ditch	0.282 (no gauge data) 0.246 (with gauge data) As the outfall is located in the tidal reach of the River Hamble, Q95 was calculated 5km US of the outfall at tidal limit	0.654	Medium 50-200 Value obtained from previous HAWRAT assessment undertaken for Outfall 28. Date of assessment unknown.	≥100,000	≥100,000	5.91	5.06	83	N Note: Previous HAWRAT assessment included D/S structure but its type and location is not given	Y (Solent Maritime Special Area of Conservation, Solent and Dorset Coast Special Protection Area)	HAWRAT passed, but alert raised due to protected area with 1km D/S of outfall and potential need for additional pollution prevention	Y	Outfall 28 + Outfall 29 (SU4910_7907a)+ Outfall 30 (SU4910_8709b) Cumulative impacts to be undertaken at Outfall 29
SU4910_7907a	Outfall 29	Priority B Overall Status	Between Junctions 8 and 9, Marker 28/9	River Hamble	Catchpits, gullies, filter strip	0.282 (no gauge data) 0.246 (with gauge data) As the outfall is located in the tidal reach of the River Hamble, Q95 was calculated 5km U/S of the outfall at tidal limit	0.654	Medium 50-200 Value obtained from previous HAWRAT assessment undertaken for Outfall 28. Date of assessment unknown.	≥100,000	≥100,000	4.01	2.5	83	N Note: Previous HAWRAT assessment included D/S structure but its type and location is not given	Y (Solent Maritime Special Area of Conservation, Solent and Dorset Coast Special Protection Area)	HAWRAT passed, but alert raised due to protected area with 1km D/S of outfall and potential need for additional pollution prevention	Y	Outfall 28 + Outfall 29 (SU4910_7907a)+ Outfall 30 (SU4910_8709b) Cumulative impacts to be undertaken at Outfall 29
SU5208_2965b	Outfall 38	Priority B Overall Status	Immediately to the west of Junction 9, Marker 32/0, CH29500	Whiteley Stream, and eventually River Hamble	Gullies, catchpits, ditch, filter drain	0.001 Obtained from a previous HAWRAT assessment undertaken in 2013 for Priority X Outfall (reference SU5208_3064b) located adjacent to the subject outfall	0.612 see comment for Q95	High ≥ 200 Value obtained from previous HAWRAT assessment undertaken for Outfall 39 in 2013	50,000 ≤ AADT ≤ 100,000	50,000 ≤ AADT ≤ 100,000	0.98	0.07	3.4 Value obtained from previous HAWRAT assessment undertaken for Outfall 39 in 2013	N	N	Passed	Y	Outfall 38 + Outfall 39 (SU5208_3064b) + Outfall 40 (SU5208_3774d) + Outfall 41 (not identified in HAGDMS) + Outfall 42 (not identified in HAGDMS) Cumulative impact to be assessed at Outfall 40
SU4047_6791a	Outfall 44 Note: 2 No outfalls are identified in close proximity to each other in HAGDMS. The drainage drawing identifies only one outfall. It is not clear whether the outfall identified on the drainage drawing relates to SU5407_6791a or SU5407_6790a	Priority D Overall Status/ Not Determined Outfall Action Status	Between Junctions 9 and 10, Marker 34/5, CH31980	River Meon	Interceptor, ditch, gullies, catchpits	0.408 (gauge data used)	0.853	High ≥ 200 Value informed by review of previous HAWRAT assessments undertaken between Junctions 4 and 11.	≥100,000	≥100,000	6.47	2.5	6.2	N	N	Passed	Y	Outfall 44 + Outfall 47 (SU5407_7090b) + Outfall 45 (SU5407_6679e) + Outfall 46 (SU5407_6779b) Cumulative assessment to be undertaken at Outfall 45 or 46 as they are located in close proximity to each other
SU5807_8225j	Outfall 54 Note: 2 No outfalls are identified in close proximity to each other in HAGDMS. The drainage drawing identifies only one outfall. It is not clear whether the outfall identified on the drainage drawing relates to SU5807_8225j or SU5807_8225b	Priority C Overall Status / Not Determined Outfall Action Status	Between Junctions 10 and 11, Marker 38/8, CH36260	River Wallington	Gullies, filter drains, catchpits	0.428 (gauge data used)	0.64	High ≥ 200 Value informed by review of previous HAWRAT assessments undertaken between Junctions 4 and 11.	50,000 ≤ AADT ≤ 100,000	50,000 ≤ AADT ≤ 100,000	0.76	0.77	7.3		Y (Marine Conservation Zone, Solent and Dorset Coast Special Protection Area)	HAWRAT passed, but alert raised due to protected area with 1km D/S of outfall and potential need for additional pollution prevention	Y	Outfall 54 + Outfall 53 (SU5807_8125c) + Outfall 51 (SU5807_8432c) + Outfall 52(SU5807_8431c) Cumulative assessment to be undertaken at Outfall 54 Note: gullies, catchpits and filter drains identified U/S of these outfalls

DMRB METHOD A HAWRAT AS

Outfall Reference	Outfall Number (SWECO Drainage Drawings and Drained Areas Information)	Additional Notes	Q95 Cumulative Flow (m3/s)	BFI Cumulative	Cumulative AADT DM 2015	Cumulative AADT DM 2036	Cumulative AADT DS 2036	Impermeable Area Drained to the Outfalls for Cumulative Assessment (ha)	Permeable Area Drained to the Outfalls for Cumulative Assessment (ha)	River Width (m) (measured in HAGDMS)	Existing Pollution Prevention Measures	Cumulative HAWRAT Results with Existing Pollution Prevention Measures	Proposed Pollution Prevention Measure (effectiveness of the measure obtained from Table 8.1 of DMRB HD45/09)	HAWRAT Results with Proposed Pollution Prevention Measures
SU4814_1811	Outfall 15 Note: 4 outfalls are located in close proximity to each other in HAGDMS, but only one outfall is identified on drainage drawing HE549344-MMSJV-HDG-000-M2-CD-00009	The outfall is located in close proximity to a groundwater abstraction used for spray irrigation located within 150m on the west side of the M27 and on the north side of J7. The GW abstraction point is located upstream of the outfalls and it is unlikely that the outfalls will have an impact on groundwater resources. Catchment boundary was derived manually to be used in LowFlow2	Flow assumed to be the same as that used for Outfall 15 - distance between Outfall 15 and Outfall 18 is c.80m 0.001	0.445	≥100,000	≥100,000	≥100,000	0.19	0.21	1	Outfall 15: Catchpits, gullies Outfall 17: Filter drain, catchpits Outfall 18: Ditch	Passed	No additional measures proposed	Non-cumulative and cumulative assessment passed
SU4813_2055am	Outfall 25 (or Outfall 24) Note: 7 outfalls are identified in close proximity to each other in HAGDMS. The drainage drawing identifies 2 outfalls at this location. It is not clear which outfall number relates to SU4813_2055am	Outfalls 20-23 are not identified as outfalls in HAGDMS.	0.001	0.394	≥100,000	≥100,000	≥100,000	5.90	3.77	1.5 Obtained from sketch of outfall SU 4813_2055r in HAGDMS (believed to be Outfall 24)	Outfall 20: Ditch, oil interceptor Outfalls 21 - 23: Catchpits, filter drains, gullies Outfall 24: Oil interceptor, ditch, gullies Outfall 25: None identified	Failed	Oil interceptors for all outfalls; Replacement of existing concrete ditches connected to Outfalls 20 & 24 with vegetated ditches; Catchpits U/S of all outfalls	Failed
SU4910_5715b	Outfall 28	Previous HAWRAT assessment for Outfall 28 is based on lower Q95 and BFI values (Q95 = 0.1 and BFI = 0.309). The previous assessment also includes a drainage area smaller than those provided in 2017.	0.282 (no gauge data) 0.246 (with gauge data) Q95 calculated 5km U/S of the outfall	0.654	≥100,000	≥100,000	≥100,000	9.95	7.66	83	Outfall 28: ditch, gullies, catchpits, filter drain Outfall 29: gullies, channel, filter drain Outfall 30: filter drain, catchpits	HAWRAT passed, but alert raised due to protected area with 1km D/S of outfall and potential need for additional pollution prevention	Inclusion of additional measures would not alter assessment result.	HAWRAT passed, but alert raised due to protected area with 1km D/S of outfall and potential need for additional pollution prevention
SU4910_7907a	Outfall 29	Previous HAWRAT assessment for Outfall 28 is based on lower Q95 and BFI values (Q95 = 0.1 and BFI = 0.309). The previous assessment also includes a drainage area smaller than those provided in 2017.	0.282 (no gauge data) 0.246 (with gauge data) Q95 calculated 5km U/S of the outfall	0.654	≥100,000	≥100,000	≥100,000	9.95	7.66	83	Outfall 28: ditch, gullies, catchpits, filter drain Outfall 29: gullies, channel, filter drain Outfall 30: filter drain, catchpits	HAWRAT passed, but alert raised due to protected area with 1km D/S of outfall and potential need for additional pollution prevention	Inclusion of additional measures would not alter assessment result.	HAWRAT passed, but alert raised due to protected area with 1km D/S of outfall and potential need for additional pollution prevention
SU5208_2965b	Outfall 38	Outfalls 40-42 are located D/S of the subject outfall.	0.001 Obtained from a previous HAWRAT assessment undertaken in 2013 for Priority X Outfall (reference SU5208_3064b) located adjacent to Outfall 38. Catchment cannot be generated in Catchments UK - too small. Q95 assumed to be the same as Q95 U/S of the M27 used to inform assessment of Outfall 38.	0.612 see comment for Q95	≥100,000	≥100,000	≥100,000	9.71	6.33	3.4	Outfall 38: filter drain, gullies, catchpit Outfall 39: gullies, SW channel, ditch Outfall 40: gullies, SW channel Outfall 41: ditch, catchpits, gullies Outfall 42: filter drain, SW channel, catchpits	Cumulative Soluble - Acute Impact Copper - Failed Cumulative Soluble - Acute Impact Zinc - Failed Cumulative Sediment - Chronic Impact - Failed	Interceptors, gullies and catchpits U/S of all outfalls; Pond D/S of Outfall 40	Cumulative Soluble - Acute Impact Copper - Failed Cumulative Soluble - Acute Impact Zinc - Passed Cumulative Sediment - Chronic Impact - Failed
SU4047_6791a	Outfall 44 Note: 2 No outfalls are identified in close proximity to each other in HAGDMS. The drainage drawing identifies only one outfall. It is not clear whether the outfall identified on the drainage drawing relates to SU5407_6791a or SU5407_6790a		0.408	0.851	≥100,000	≥100,000	≥100,000	9.54	5.80	5.2	Outfall 44: interceptor, ditch, gullies, catchpits Outfall 45: interceptor, ditch, filter drains, catchpits Outfall 46: interceptor, ditch, catchpits, filter drain Outfall 47: ditch, interceptor, gullies, catchpits	Passed	No additional measures proposed	Passed
SU5807_8225j	Outfall 54 Note: 2 No outfalls are identified in close proximity to each other in HAGDMS. The drainage drawing identifies only one outfall. It is not clear whether the outfall identified on the drainage drawing relates to SU5807_8225j or SU5807_8225b		0.428 (gauge data used)	0.64	≥100,000	≥100,000	≥100,000	24.66	21.72	7.3	Outfall 51: ditch, gullies, catchpits, filter drains Outfall 52: gullies, filter drain, catchpits Outfall 53: ditch, gullies, catchpits Outfall 54: gullies, catchpits, filter drains	HAWRAT passed, but alert raised due to protected area with 1km D/S of outfall and potential need for additional pollution prevention	Inclusion of additional measures would not alter assessment result.	HAWRAT passed, but alert raised due to protected area with 1km D/S of outfall and potential need for additional pollution prevention

Appendix C – Drainage system outfalls and details of works within catchments

Outfall	Description of existing pollution control measures	Description of proposed pollution control measures	Receiving watercourse and downstream designated site	Additional comments
1	Catchpits, gullies, filter drains and ditches.	As existing	Monks Brook River Itchen SAC, Solent Maritime SAC, Solent and Southampton Water SPA/Ramsar	The EAR concluded no further assessment or works proposed as the 2016 works to J5 would have improved this outfall. Pollution control measures (PCM) within the existing drainage system would provide sufficient protection from any polluted run-off during construction. There would therefore be no likely significant effects on the integrity of the downstream designated sites.
2	Catchpits, gullies, filter drains and ditches.	As existing	Monks Brook River Itchen SAC, Solent Maritime SAC, Solent and Southampton Water SPA/Ramsar	The EAR concluded no further assessment or works proposed as the 2016 works to J5 would have improved this outfall. Not part of mainline network therefore no works within this catchment.
3	Catchpits and gullies.	As existing	Monks Brook River Itchen SAC, Solent Maritime SAC, Solent and Southampton Water SPA/Ramsar	The EAR concluded no further assessment or works proposed as the 2016 works to J5 would have improved this outfall. PCM within the existing drainage system would provide some protection from any polluted run-off during construction. While the PCM are more limited than on other outfalls, the pathway to the River Itchen is 1.7km via the Monks Brook, which flows through an urbanised area and discharges to the Itchen adjacent to the Portswood sewage treatment works (STW). Over this distance any effects of siltation arising from construction of the proposed scheme would be negligible and are not likely to have a significant effect on the integrity of the SAC.

4	Catchpits, gullies and drains catchment area of <10m^2 therefore very low risk	As existing	Monks Brook River Itchen SAC, Solent Maritime SAC, Solent and Southampton Water SPA/Ramsar	Pollution control measures within the existing drainage system would provide sufficient protection from any polluted run-off during construction. In addition, the outfall drains catchment area of <10m^2. There is therefore a very low risk of pollution arising during construction and there would therefore be no likely significant effects on the integrity of the downstream designated sites.
5	Oil interceptor, catchpits and filter drains	As existing	Itchen River Itchen SAC, Solent Maritime SAC, Solent and Southampton Water SPA/Ramsar	Pollution control measures within the existing drainage system would provide sufficient protection from any polluted run-off during construction. There would therefore be no likely significant effects on the integrity of the downstream designated sites.
6	Oil interceptor, balancing/settlement pond, catchpits, filter drains and gate valve	As existing	Itchen River Itchen SAC, Solent Maritime SAC, Solent and Southampton Water SPA/Ramsar	Pollution control measures within the existing drainage system would provide sufficient protection from any polluted run-off during construction. There would therefore be no likely significant effects on the integrity of the downstream designated sites.
6a	Filter drains.	As existing	Itchen River Itchen SAC, Solent Maritime SAC, Solent and Southampton Water SPA/Ramsar	Not part of mainline network therefore no works within this catchment.
7	Oil interceptor, balancing/settlement pond, catch pits, filter drains and gate valve	As existing	Unknown watercourse, tributary of the Itchen River Itchen SAC, Solent Maritime SAC, Solent and Southampton Water SPA/Ramsar	The EAR concluded no further assessment or works proposed. Pollution control measures within the existing drainage system would provide sufficient protection from any polluted run-off during construction. There would therefore be no likely significant effects on the integrity of the downstream designated sites.

8	No pollution control devices, but drains catchment area of <10m^2	As existing	Allington Lane Stream River Itchen SAC, Solent Maritime SAC, Solent and Southampton Water SPA/Ramsar	Outfall drains catchment area of <10m^2. There is therefore a very low risk of pollution arising during construction and there would therefore be no likely significant effects on the integrity of the downstream designated sites.
9	No pollution control devices, but drains catchment area of <10m^2 therefore very low risk	As existing	Allington Lane Stream River Itchen SAC, Solent Maritime SAC, Solent and Southampton Water SPA/Ramsar	Pollution control measures within the existing drainage system would provide sufficient protection from any polluted run-off during construction. There would therefore be no likely significant effects on the integrity of the downstream designated sites.
10	No pollution control devices, but drains catchment area of <10m^2 therefore very low risk	As existing	Allington Lane Stream River Itchen SAC, Solent Maritime SAC, Solent and Southampton Water SPA/Ramsar	Pollution control measures within the existing drainage system would provide sufficient protection from any polluted run-off during construction. There would therefore be no likely significant effects on the integrity of the downstream designated sites.
11	Oil interceptor, balancing/settlement pond and gate valve	As existing	Allington Lane Stream River Itchen SAC, Solent Maritime SAC, Solent and Southampton Water SPA/Ramsar	Pollution control measures within the existing drainage system would provide sufficient protection from any polluted run-off during construction. There would therefore be no likely significant effects on the integrity of the downstream designated sites.
12	Oil interceptor, balancing/settlement pond, catch pits, filter drains and gate valve	As existing	Moorgreen Stream River Itchen SAC, Solent Maritime SAC, Solent and Southampton Water SPA/Ramsar	Pollution control measures within the existing drainage system would provide sufficient protection from any polluted run-off during construction. There would therefore be no likely significant effects on the integrity of the downstream designated sites.
13	Oil interceptor, catchpits and filter drains	As existing	Unknown watercourse, tributary of the Hamble	Pollution control measures within the existing drainage system would provide sufficient protection from any polluted run-off during construction. There would therefore be no likely significant effects on the integrity of the downstream designated sites.

			Solent Maritime SAC, Solent and Southampton Water SPA/Ramsar	
14	Oil interceptor, balancing/settlement pond, catch pits, filter drains and gate valve	As existing	Unknown watercourse, tributary of the Hamble Solent Maritime SAC, Solent and Southampton Water SPA/Ramsar	Pollution control measures within the existing drainage system would provide sufficient protection from any polluted run-off during construction. There would therefore be no likely significant effects on the integrity of the downstream designated sites.
15	Catchpits and filter drains	As existing	Town Hill Stream (Culverted watercourse under Hedge End retail park), tributary of the Hamble Solent Maritime SAC, Solent and Southampton Water SPA/Ramsar	A HAWRAT assessment was carried out as part of the EAR, which passed, concluding no adverse effects on the water quality of the receiving watercourse. Pollution control measures within the existing drainage system would provide sufficient protection from any polluted run-off during construction. There would therefore be no likely significant effects on the integrity of the downstream designated sites.
16	Oil interceptor, balancing/settlement pond, catchpits, filter drains and gate valve	As existing	Town Hill Stream (Culverted watercourse under Hedge End retail park), tributary of the Hamble Solent Maritime SAC, Solent and Southampton Water SPA/Ramsar	A HAWRAT assessment was carried out as part of the EAR, which passed, concluding no adverse effects on the water quality of the receiving watercourse.
17	Catchpits and filter drains.	As existing	Town Hill Stream (Culverted watercourse under Hedge End retail park), tributary of the Hamble	Not part of mainline network therefore no works within this catchment.

			Solent Maritime SAC, Solent and Southampton Water SPA/Ramsar	
18	Ditches	As existing	Town Hill Stream (Culverted watercourse under Hedge End retail park), tributary of the Hamble Solent Maritime SAC, Solent and Southampton Water SPA/Ramsar	Not part of mainline network, therefore no works within this catchment.
19	Filter drains.	As existing	Town Hill Stream (Culverted watercourse under Hedge End retail park), tributary of the Hamble Solent Maritime SAC, Solent and Southampton Water SPA/Ramsar	Not part of the mainline network therefore no works within this catchment
20	Oil interceptor, gullies and ditches.	As existing	Town Hill Stream (Culverted watercourse under Hedge End retail park), tributary of the Hamble Solent Maritime SAC, Solent and Southampton Water SPA/Ramsar	Not part of the mainline network therefore no works within this catchment
21	Catchpits and filter drains	As existing	Town Hill Stream (Culverted watercourse under Hedge End retail	Pollution control measures within the existing drainage system would provide sufficient protection from any polluted run-off during construction. There would therefore be no likely significant effects on the integrity of the downstream designated sites.

			park), tributary of the Hamble	
22	Catchpits and filter drains	catchpits	Town Hill Stream (Culverted watercourse under Hedge End retail park), tributary of the Hamble Solent Maritime SAC, Solent and Southampton Water SPA/Ramsar	Pollution control measures within the existing drainage system would provide sufficient protection from any polluted run-off during construction. There would therefore be no likely significant effects on the integrity of the downstream designated sites.
23	Catchpits and filter drains	As existing	Town Hill Stream (Culverted watercourse under Hedge End retail park), tributary of the Hamble Solent Maritime SAC, Solent and Southampton Water SPA/Ramsar	Pollution control measures within the existing drainage system would provide sufficient protection from any polluted run-off during construction. There would therefore be no likely significant effects on the integrity of the downstream designated sites.
24	Ditches and gullies.	As existing	Town Hill Stream (Culverted watercourse under Hedge End retail park), tributary of the Hamble. Solent Maritime SAC, Solent and Southampton Water SPA/Ramsar	Not part of the mainline network therefore no works within this catchment.
25	Catchpits and filter drains.	As existing	Town Hill Stream (Culverted watercourse under Hedge End retail park), tributary of the Hamble	A HAWRAT assessment was carried out as part of the EAR, which passed, concluding no further works proposed. Not part of the mainline network therefore no works within this catchment.

			Solent Maritime SAC, Solent and Southampton Water SPA/Ramsar	
26	Catchpits, ditches and filter drains	As existing	Town Hill Stream (Culverted watercourse under Hedge End retail park), tributary of the Hamble Solent Maritime SAC, Solent and Southampton Water SPA/Ramsar	Pollution control measures within the existing drainage system would provide sufficient protection from any polluted run-off during construction. There would therefore be no likely significant effects on the integrity of the downstream designated sites.
27	Catchpits and filter drains, and an oil interceptor in ditch	As existing	Ditch Solent Maritime SAC, Solent and Southampton Water SPA/Ramsar	Pollution control measures within the existing drainage system would provide sufficient protection from any polluted run-off during construction. There would therefore be no likely significant effects on the integrity of the downstream designated sites.
28	Catchpits, ditches and filter drains	As existing	Hamble Solent Maritime SAC, Solent and Southampton Water SPA/Ramsar	A HAWRAT assessment was carried out as part of the EAR, which passed (with warning), concluding no further works proposed. Pollution control measures within the existing drainage system would provide sufficient protection from any polluted run-off during construction. There would therefore be no likely significant effects on the integrity of the downstream designated sites.
29	Catchpits, gullies and ditches.	As existing	Hamble Solent Maritime SAC, Solent and Southampton Water SPA/Ramsar	Pollution control measures within the existing drainage system would provide sufficient protection from any polluted run-off during construction. There would therefore be no likely significant effects on the integrity of the downstream designated sites. This is also a priority outfalls subject to a separate improvement scheme.
30	Catchpits and filter drains	As existing	Hamble	Pollution control measures within the existing drainage system would provide sufficient protection from any polluted run-off during construction.

			Solent Maritime SAC, Solent and Southampton Water SPA/Ramsar	There would therefore be no likely significant effects on the integrity of the downstream designated sites.
31	Catchpits	As existing	Unknown watercourse, tributary of the Hamble Solent Maritime SAC, Solent and Southampton Water SPA/Ramsar	Pollution control measures within the existing drainage system would provide sufficient protection from any polluted run-off during construction. There would therefore be no likely significant effects on the integrity of the downstream designated sites.
32	Catchpits and filter drains	As existing	Unknown watercourse, tributary of the Hamble Solent Maritime SAC, Solent and Southampton Water SPA/Ramsar	Pollution control measures within the existing drainage system would provide sufficient protection from any polluted run-off during construction. There would therefore be no likely significant effects on the integrity of the downstream designated sites.
33	Ditches and gullies	As existing	Unknown watercourse, tributary of the Hamble Solent Maritime SAC, Solent and Southampton Water SPA/Ramsar	PCM within the existing drainage system would provide some protection from any polluted run-off during construction. While the PCM are more limited than on other outfalls, the pathway to the River Hamble is 1.5km culverted through an urban area and discharging at the Swanwick Marina. Over this distance any effects of siltation arising from construction of the proposed scheme would be negligible and are not likely to have a significant effect on the integrity of the SAC.
34	No pollution control devices	Ditch	Solent Maritime SAC, Solent and Southampton Water SPA/Ramsar	Outfall of ditch only, does not contain road drainage.
35	No pollution control devices	Ditch	Solent Maritime SAC, Solent and Southampton Water SPA/Ramsar	Outfall of ditch only, does not contain road drainage.
36	Ditches and gullies	As existing	Unknown watercourse, tributary of the Hamble	PCM within the existing drainage system would provide some protection from any polluted run-off during construction. While the PCM are more limited than on other outfalls, the pathway to the River Hamble is 1.8km culverted through an urban area and discharging at the Swanwick Marina. Over this distance any effects of siltation arising from construction of the

			Solent Maritime SAC, Solent and Southampton Water SPA/Ramsar	proposed scheme would be negligible and are not likely to have a significant effect on the integrity of the SAC.
37	Filter drains, gullies and ditches	As existing	Unknown watercourse, tributary of the Hamble Solent Maritime SAC, Solent and Southampton Water SPA/Ramsar	Pollution control measures within the existing drainage system would provide sufficient protection from any polluted run-off during construction. There would therefore be no likely significant effects on the integrity of the downstream designated sites.
38	Catchpits and gullies	As existing	Whitely Stream, tributary of the Hamble Solent Maritime SAC, Solent and Southampton Water SPA/Ramsar	A HAWRAT assessment was carried out as part of the EAR, which passed, concluding no further works proposed. PCM within the existing drainage system would provide some protection from any polluted run-off during construction. While the PCM are more limited than on other outfalls, the pathway to the River Hamble is over 4km, culverted through an urban area and discharging at the Swanwick Marina. Over this distance any effects of siltation arising from construction of the proposed scheme would be negligible and are not likely to have a significant effect on the integrity of the SAC.
39	Catchpits and gullies	As existing	Whitely Stream, tributary of the Hamble Solent Maritime SAC, Solent and Southampton Water SPA/Ramsar	PCM within the existing drainage system would provide some protection from any polluted run-off during construction. While the PCM are more limited than on other outfalls, the pathway to the River Hamble is over 4km, culverted through an urban area and discharging at the Swanwick Marina. Over this distance any effects of siltation arising from construction of the proposed scheme would be negligible and are not likely to have a significant effect on the integrity of the SAC.
40	Catchpits and gullies	As existing	Whitely Stream, tributary of the Hamble Solent Maritime SAC, Solent and Southampton Water SPA/Ramsar	PCM within the existing drainage system would provide some protection from any polluted run-off during construction. While the PCM are more limited than on other outfalls, the pathway to the River Hamble is over 4km, culverted through an urban area and discharging at the Swanwick Marina. Over this distance any effects of siltation arising from construction of the proposed scheme would be negligible and are not likely to have a significant effect on the integrity of the SAC.

41	Catchpits, gullies and filter drains	As existing	Whitely Stream, tributary of the Hamble Solent Maritime SAC, Solent and Southampton Water SPA/Ramsar	Pollution control measures within the existing drainage system would provide sufficient protection from any polluted run-off during construction. There would therefore be no likely significant effects on the integrity of the downstream designated sites.
42	Catchpits, gullies and filter drains	As existing	Whitely Stream, tributary of the Hamble Solent Maritime SAC, Solent and Southampton Water SPA/Ramsar	Pollution control measures within the existing drainage system would provide sufficient protection from any polluted run-off during construction. There would therefore be no likely significant effects on the integrity of the downstream designated sites.
43	Catchpits and ditches	As existing	Whitely Stream, tributary of the Hamble Solent Maritime SAC, Solent and Southampton Water SPA/Ramsar	Pollution control measures within the existing drainage system would provide sufficient protection from any polluted run-off during construction. There would therefore be no likely significant effects on the integrity of the downstream designated sites.
44	Oil interceptor, catchpits, filter drains and ditches	As existing	River Meon Solent Maritime SAC, Solent and Southampton Water SPA/Ramsar	The EAR concluded no further assessment or works proposed. Pollution control measures within the existing drainage system would provide sufficient protection from any polluted run-off during construction. There would therefore be no likely significant effects on the integrity of the downstream designated sites.
45	Oil interceptor, catchpits, filter drains and ditches	As existing	River Meon Solent Maritime SAC, Solent and Southampton Water SPA/Ramsar	Pollution control measures within the existing drainage system would provide sufficient protection from any polluted run-off during construction. There would therefore be no likely significant effects on the integrity of the downstream designated sites.
46	Oil interceptor, catchpits, filter drains and ditches	As existing	River Meon Solent Maritime SAC, Solent and Southampton Water SPA/Ramsar	Pollution control measures within the existing drainage system would provide sufficient protection from any polluted run-off during construction. There would therefore be no likely significant effects on the integrity of the downstream designated sites.

47	Oil interceptor, catchpits, filter drains and ditches	As existing	River Meon Solent Maritime SAC, Solent and Southampton Water SPA/Ramsar	A HAWRAT assessment was carried out as part of the EAR, which passed, concluding no further works proposed. Pollution control measures within the existing drainage system would provide sufficient protection from any polluted run-off during construction. There would therefore be no likely significant effects on the integrity of the downstream designated sites.
48	Catchpits and filter drains	As existing	River Meon Solent Maritime SAC, Solent and Southampton Water SPA/Ramsar	Pollution control measures within the existing drainage system would provide sufficient protection from any polluted run-off during construction. There would therefore be no likely significant effects on the integrity of the downstream designated sites.
49	Catchpits and filter drains	As existing	Unknown watercourse, tributary of the Meon Solent Maritime SAC, Solent and Southampton Water SPA/Ramsar	A HAWRAT assessment was carried out as part of the EAR, which passed, concluding no further works proposed. Pollution control measures within the existing drainage system would provide sufficient protection from any polluted run-off during construction. There would therefore be no likely significant effects on the integrity of the downstream designated sites.

Thorpe, Vanessa

From: Aziz, Rebecca (NE) <Rebecca.Aziz@naturalengland.org.uk>
Sent: 03 September 2018 15:21
To: Postlethwaite, Clare
Cc: Thorpe, Vanessa; Kirby, Dave
Subject: RE: M27 SMP - HRA screening update

Dear Clare
CC'd Dave Kirby and Vanessa Thorpe

Thank you for sending me through the updated OEMP, Drainage Strategy and a summary of NE's comments with responses from Highways England.

I can confirm I have no further concerns regarding water quality (during construction) and the air quality and in-combination assessments (regarding operational impacts), and I am satisfied the scheme, as currently proposed, will not incur an adverse effect upon qualifying features for which the River Itchen and Solent European sites have been designated.

This concludes Natural England's advice under the Quotation and Agreement dated 23 July 2018.

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

Best wishes
Becky Aziz

Becky Aziz ACIEEM
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Please note my non-working day is Friday

www.naturalengland.org.uk

We are here to secure a healthy natural environment for people to enjoy, where wildlife is protected and England's traditional landscapes are safeguarded for future generations.

In an effort to reduce Natural England's carbon footprint, I will, wherever possible, avoid travelling to meetings and attend via audio, video or web conferencing

Natural England offers two chargeable services – The Discretionary Advice Service (DAS) provides pre-application, pre-determination and post-consent advice on proposals to developers and consultants as well as pre-licensing species advice and pre-assent and consent advice. The Pre-submission Screening Service (PSS) provides advice for protected species mitigation licence applications.

These services help applicants take appropriate account of environmental considerations at an early stage of project development, reduce uncertainty, reduce the risk of delay and added cost at a later stage, whilst securing good results for the natural environment.

From: Postlethwaite, Clare [mailto:clare.postlethwaite@wsp.com]
Sent: 03 September 2018 11:13
To: Aziz, Rebecca (NE) <Rebecca.Aziz@naturalengland.org.uk>
Cc: Marsland, Susan J <Susan.Marsland@mottmac.com>; Owens, John <john.owens@sweco.co.uk>; Thorpe, Vanessa <Vanessa.Thorpe@wsp.com>; Kirby, Dave <david.kirby@wsp.com>; Bascombe, Andy <Andy.Bascombe@wsp.com>; Nelson, Hannah (hannah.nelson@highwaysengland.co.uk) <hannah.nelson@highwaysengland.co.uk>
Subject: M27 SMP - HRA screening update

Dear Rebecca,

Further to the previous discussion on the M27 HRA screening, I am pleased to be able to send you a further update to address your comments. I have also attached an updated version of the REAC, which reflects the changed approach to consideration of mitigation measures required during construction for water quality effects.

I understand that there are 3.5 hours remaining in the current DAS, which I would be grateful if you could use for your review.

Please don't hesitate to contact Vanessa, Dave or me if you would like to discuss the attached, but in the meantime we look forward to your response at your earliest convenience, as this is time critical for Highways England.

Kind regards,

Clare

Clare Postlethwaite ***MSc CEnv CSci MCIWEM***
Associate

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