

# **Smart Motorways Programme**

## **M56 Junction 6 to 8**

## **Project Design Report: SGAR3**

## **April 2018**

### **Notice**

This document and its contents have been prepared and are intended solely for Highways England's information and use in relation to the Smart Motorways Programme.



## M56 J6-8: Project Design Report SMP Stage 3 Report

### 1. INTRODUCTION

- 1.1.1 In accordance with Part 5.26 of the Highways England Licence<sup>1</sup>, all Smart Motorway Programme (SMP) schemes must have due regard to relevant principles and guidance on good design, to ensure that the development of the network takes account of environmental and socio-economic context.
- 1.1.2 This report sets out the context and approach taken for the M56 J6-8 (*the Proposed Scheme*, see Appendix, Figure 1) in respect to design considerations up to SGAR3. This document will be updated to reflect the contributions gained through detailed design and from engagement with the Delivery Partner.
- 1.2.1 The Proposed Smart Motorway Scheme is progressing towards SGAR3 currently scheduled for late March 2018. Details of the generic characterisation of Smart Motorway Programme Schemes (SMP) schemes can be found in the Design Panel Briefing Note<sup>2</sup>.
- 1.2.2 The Proposed Scheme will provide Through Junction Running (TJR) at Junction 6 on the westbound carriageway only. It is proposed to provide two ERAs<sup>3</sup> for the eastbound carriageway and two for westbound traffic. In addition, there will be the introduction of new signalling infrastructure, including:
- Ten new gantries (cantilevers, portal gantries, super cantilevers and super span gantries) to carry Advanced Motorway Indicators (AMIs), Variable Messaging Signs (MS4s), strategic signs MS3 or Advanced Directional Signs (ADS). Noting that five of these replace existing gantries.
  - Three existing cantilever gantries will be retained for strategic MS3s.
  - Two existing gantries (one portal gantry and one super span gantry) will be upgraded for AMIs, MS4s or ADS.
- 1.2.3 Details of the size of the signs and gantries can be found in the Design Panel Briefing Note.
- 1.2.4 The Proposed Scheme will require the total clearance of approximately 7 hectares of vegetation, within and adjacent to the highways boundary, to establish a working space

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<sup>1</sup> Department of Transport, 2015: Highways England: Licence,

[https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/431389/strategic-highways-licence.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/431389/strategic-highways-licence.pdf)

<sup>2</sup> A Design Panel Briefing Note on SMP schemes is to be issued to the Design Panel. This Note summarises how programme level considerations address the Design Principles and influence the opportunities available to the Principal Designer and Delivery Partner.

<sup>3</sup> approx. 300m<sup>2</sup> is the footprint of an ERA, but additional temporary land is required for its construction

to carry out earthwork alterations, install communication cabling and ducting and all other new infrastructure proposed.

1.3.1 The Highways England Licence and the Roads Investment Strategy (RIS) require schemes to achieve the best practicable environmental outcomes across its activities, while working in the context of sustainable development and delivering value for money. Consequently, all Smart Motorway schemes are to seek to:

- Reduce noise levels within noise Important Areas (nIA);
- Deliver no net loss in biodiversity;
- Enhance landscape setting;
- Improve the quality of runoff at priority outfalls;
- Maintain safety levels for all road users and explore opportunities to improve pedestrian and cyclist safety at junctions;
- Relieve congestion;
- Smooth traffic flow;
- Improve journey times and reliability;
- Support the economic health of the nation; and
- Contribute towards the delivery of environmental enhancements in line with the Highways England Licence and RIS objectives.

1.3.2 The following Proposed Scheme specific objectives were defined in the M56 Junction 6-8 Environmental Scoping Report:

- Explore opportunities where landscape integration could support adjacent habitats or provide local ecological connectivity;
- Explore rectification of priority outfalls to contribute to the objectives of the Water Framework Directive (WFD);
- Where sustainable rectify any existing water quality and flood risk issues to contribute towards the WFD objectives and deliver capacity to take account of climate change;
- Seek to achieve no increase in the volume and peak flow rates of surface water leaving the site, unless specific off-site arrangements are made;
- Avoid any detrimental changes to water quality or flood risk;
- Identify sites for candidate new noise barriers;
- Work towards zero breaches of air quality regulations;
- Contribute towards the delivery of environmental enhancements in line with the Highways England Licence and RIS objectives;

- Seek to achieve no direct or indirect effect upon statutory designated ecological sites;
- Seek to avoid loss or deterioration of irreplaceable habitats including ancient woodland and the loss of aged or veteran trees;
- Maximise opportunities to deliver beneficial biodiversity outcomes and contribute to the ecological objectives of nearby designated sites; and
- Establish new habitat within the soft estate that contributes towards the Client's Biodiversity Plan and Local Biodiversity Action Plans without comprising maintenance and renewal requirements; and
- Maintain functionality and connectivity of the green infrastructure network.

1.4.1 As safety is the top priority of Highways England, environmental survey practices associated with greenfield schemes are reviewed to ensure an absence of risk associated with exposing surveyors to live motorway traffic. Consequently, safety constraints have a bearing upon surveys of the soft estate.

1.4.2 The ability to deliver enhancements sought under the Highways England Licence is constrained by the frequently narrow width of soft estate and other objectives such as retention of screening vegetation. Equally, there may be geotechnical and other local constraints that reduce the opportunity for enhancements within the soft estate.

1.4.3 The design process imposes a series of constraints on the ability to deliver the design objectives. These include:

- Design of drainage and communication systems following SGAR3 can lead to challenges to the M56 Environmental Assessment Report based on Design Fix 3 (DF3);
- Provision of geotechnical data following DF4 can lead to different assumptions on the works areas within the soft estate;
- Late introduction of Operations Directorate works can alter the works to be undertaken; and
- Identification of supplementary enhancement measures post SGAR3 and thus be outwith the "consented" scheme definition.

## 2. CONTEXT

- 2.1.1 The Proposed Scheme is to upgrade approximately 6.5km of the M56 between Junction 6 Manchester Airport and Junction 8 A556 as an improvement under the Highways Act 1980 (see Figure 1). The Highways Act, as of December 2017, enacts the European Union (EU) Environmental Impact Assessment (EIA) Directive 2014/52/EU in the form of the EIA (Miscellaneous Amendments Relating to Harbours, Highways and Transport) Regulations 2017. A series of environmental constraints plans has been prepared to support the Environmental Assessment Report<sup>4</sup>, Figure 1 depicts the location of the scheme. Table 1 below summarises the relationship of the Proposed Scheme to designated sites.
- 2.2.1 Environmental and socio-economic receptors and context for the Proposed Scheme is described in detail in the M56 J6-8 Environmental Scoping Report and M56 J6-8 Environmental Assessment Report. A brief summary of the M56 J6-8 Environmental Assessment Report's observations is provided via Table 1 below.
- 2.2.2 A M56 Habitat Regulations Assessment (HRA) Stage 1 Screening Report was also completed for the Proposed Scheme. Natural England have confirmed conclusions that the Rostherne Mere Ramsar site is the only designated European/international site that is relevant to the HRA and that there is sufficient information to conclude that both in isolation and in-combination with other projects and plans, the Proposed Scheme will not have a likely significant effect on Rostherne Mere Ramsar site and therefore no further stages of the Habitat Regulation Assessment will be considered necessary.
- 2.3.1 There will be a permanent reduction in the amount of soft estate. The location of SMP infrastructure: gantries; Emergency Refuge Areas; Remotely Operated Temporary Traffic Management Signs (ROTTMS); technology; communications and drainage equipment could adversely affect receptors mainly as a result of the permanent or indirect loss of soft estate. In the medium term the advent of 'in car' technology and autonomous vehicles could reduce the need for signs, signals and gantries.
- 2.3.2 The cumulative effects inter-project assessment does not include a consideration of the preferred route for the Western leg of High Speed 2 (HS2) Phase 2b as the scheme is yet to be granted development consent.

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<sup>4</sup> [https://smpbim.withbc.com/bc/bc.cqi/0/4222?id=4222\\_1473187](https://smpbim.withbc.com/bc/bc.cqi/0/4222?id=4222_1473187)

**Table 1: Environmental and socio-economic Summary Table**

Aspect	Observation
<b>Air Quality</b>	<ul style="list-style-type: none"> <li>• Three Air Quality Management Areas within the M56 J6-8 Geographical Study area (refer to M56 J6-8 Environmental Assessment Report).</li> <li>• 136 human health receptors within the M56 J6-8 Geographical Study area.</li> </ul>
<b>Noise</b>	<ul style="list-style-type: none"> <li>• Six noise Important Areas nIAs are located within the operational Calculation Area (600m buffer of the Proposed Scheme), although only two are located on or adjacent to the Proposed Scheme.</li> <li>• There are several communities within the noise and vibration study area (300m and 100m buffer of the Proposed Scheme respectively).</li> <li>• There are 707 sensitive receptors within the Calculation Area of the Proposed Scheme, including places of worship, medical facilities, educational establishments, and hotels.</li> <li>• There is one existing noise barrier located near to the Proposed Scheme.</li> <li>• No new noise barriers have been proposed based on Value for Money calculations (see M56 J6-8 Environmental Assessment Report for calculations).</li> </ul>
<b>Biodiversity</b>	<ul style="list-style-type: none"> <li>• One internationally designated site for nature conservation, Rostherne Mere Ramsar lies within the Study Area (2km) but outside the Ecological Zone of Influence (EZol) (200m) for the Proposed Scheme (refer to M56 J6-8 Environmental Assessment Report)</li> <li>• The Rostherne Mere Site of Special Scientific Interest (SSSI) lies approximately 250m to the south of the M56 at its closest point which is within the Study Area but outside the EZol.</li> <li>• Two further statutory designated sites for nature conservation, Cotterill Clough SSSI (situated approximately 750m south of junction 6) and Dunham Park SSSI (situated approximately 1.5km NW of junction 7). Both sites lie within the Study Area but outside the EZol for the Proposed Scheme with no ecological pathways between the sites and the Proposed Scheme.</li> <li>• Thirteen non-statutory designated sites for nature conservation are situated within the Study Area. Seven of these lie within 200m of the Proposed Scheme or are hydrologically linked to the Proposed Scheme and therefore fall within the EZol.</li> <li>• Three areas of ancient woodland are present within 200m of the Proposed Scheme and located within the EZol (within 15m of the Proposed Scheme).</li> <li>• The following Habitats of Principal Importance have been identified within the study area (within 500m of the Proposed Scheme) and EZol adjacent to the Proposed Scheme: Deciduous Woodland, Hedgerows, Ponds and Rivers.</li> </ul>
<b>Landscape Character</b>	<ul style="list-style-type: none"> <li>• No nationally designated landscapes fall within the study area, however, following consultation with Cheshire East Council, the Bollin Valley and Parklands local landscape designation (previously Area of Special Countryside Value) has been included in the assessment.</li> </ul>
<b>Visual Intrusion</b>	<ul style="list-style-type: none"> <li>• A total of 14 key representative viewpoints deemed to be highly sensitive were assessed. Viewpoints are from Public Right of Ways, residential properties and farms.</li> </ul>
<b>Cultural Heritage</b>	<ul style="list-style-type: none"> <li>• One Scheduled Monument is located within the study area (1km from the Proposed Scheme for assets with exceptional sensitivity); Watch Hill Motte and Bailey Castle.</li> <li>• Three Grade II Listed Buildings are located within the study area (1km); Yew Tree House, Church of St Elizabeth and Sycamore Cottage.</li> </ul>
<b>Water Quality and</b>	<ul style="list-style-type: none"> <li>• Standard pollution prevention measures and best practice will be employed during construction. The scale of the proposed works and restriction to</li> </ul>

Aspect	Observation
<b>Flood Risk</b>	<p>within the existing highway boundary result in a low likelihood of a significant effect during construction.</p> <ul style="list-style-type: none"> <li>• Water volumes or pollutants will not increase at any existing outfalls.</li> <li>• The Proposed Scheme will include drainage improvements, in accordance with Interim Advice Note 161/15 such that discharges will be at existing established rates (up to the 1:100 year rainfall event).</li> </ul>
<b>Community</b>	<ul style="list-style-type: none"> <li>• Opportunities to enhance sight-lines and safety at junctions to be investigated.</li> </ul>
<b>Land use</b>	<ul style="list-style-type: none"> <li>• No direct effects upon land use as no permanent land take is required.</li> </ul>
<b>Climate</b>	<ul style="list-style-type: none"> <li>• Drainage system will accommodate increased rainfall intensity in accordance with standards which provide for climate change.</li> </ul>
<b>Population and human health</b>	<ul style="list-style-type: none"> <li>• No significant adverse air quality and noise effects are anticipated. Designs are to ensure vegetation clearance is to be mindful of the local community.</li> <li>• No effects anticipated.</li> </ul>
<b>Geology and soils</b>	<ul style="list-style-type: none"> <li>• Soils within soft estate not subject to productive use.</li> <li>• Effects are limited to geotechnical construction issues rather than compromising geological or soil resources.</li> </ul>
<b>Cumulative Effects</b>	<ul style="list-style-type: none"> <li>• No significant effects anticipated.</li> </ul>

2.4.1 While opportunities were identified within the M56 J6-8 Environmental Scoping Report specific to the Proposed Scheme as identified in section 1.2, during Design Fix 1 to 3, the proposed location of ERA and gantries were reviewed to select locations that will not contribute to significant environmental impacts due to proximity to designated sites; loss of vegetation; or visual impact. During this design period the following illustrate how the scheme has adapted to its context:

- Minimising the area of site clearance needed;
- Rationalised resurfacing proposals;
- Replacing retaining structures with regraded earthworks where space permits and where there will be no significant effect on highly sensitive viewpoints or loss of habitat; and
- Inclusion of native plant species to enhance screening and habitat value in proximity of the Proposed Scheme.

2.4.2 Additional opportunities associated with the sighting of SMP infrastructure, the design and treatment of retaining structures as well as landscape planting strategies exist during the detailed design phase prior to DF4. The following opportunities have been identified for consideration:

- The location of gantries and ERAs have been revised to comply with standards and improve safety and avoid sensitive features and address adverse views from nearby receptors;
- Designs ensure water volumes or pollutants do not increase at any existing outfalls;



- The Proposed Scheme will involve upgrading the existing network to ensure no change to existing discharge rates and therefore no change to the risk of pollutant loading; and
- Provision of low noise road surfacing on lanes 1 and 4.

### 3. DESIGN PRINCIPLES

- 3.1.1 SMP schemes are designed within the framework set by IAN 161/15 – Managed Motorways – All Lanes Running<sup>5</sup> and also the SMP Design Guide<sup>6</sup> which illustrate the context within which the design principles are to be addressed.
- 3.1.2 This section sets out how for each of the ten design principles have been applied and taken into account. Summary details of examples to illustrate the approach are provided supported by links to other documents and plans to demonstrate consideration and delivery.
- 3.1.3 For each of the ten design principles, a statement has been provided on the potential scope for each scheme to deliver supporting outcomes. Each principle is then supported by short statements demonstrating the steps that the Principal Designer has taken at DF3 or intends to take prior to DF4. Such statements are supported by appropriate documentary evidence.
- 3.2.1 Safety is fundamental to the design of an SMP scheme with safety considerations influencing during the design period DF0 to DF1 through IAN 161/15 which sets out a generic safety baseline and generic safety objectives for ALR schemes that cover road users and road workers. As noted in section 1.2 there is an expectation that safety improvements for Walkers, Cyclists and Horse-Riders at motorway junctions will be explored.
- 3.2.2 The M56 J6-8 has responded to the safety agenda through the following actions:
- Opportunities to improve sight lines for non-motorised users exist at junctions;
  - The location of gantries and ERAs have been revised to comply with standards and improve safety;
  - Key design decisions have been endorsed by the Project Safety Control Review Group at various stages throughout the design;
  - GD04/12 Safety Risk Assessments have been used to inform design decisions and form part of the application for Departures from Standards. These consider risks and hazards for workers, users and other parties who use the network;
  - Detailed Design Risk Assessment (DRA) is maintained;
  - High-risk items recorded in the DRA are shown on all the drawings; and
  - CDM advisor is consulted regularly on design aspects.

<sup>5</sup> [http://www.standardsforhighways.co.uk/ha/standards/ians/pdfs/IAN161\\_15.pdf](http://www.standardsforhighways.co.uk/ha/standards/ians/pdfs/IAN161_15.pdf)

<sup>6</sup> The Design Panel is referred to the Design Panel Briefing on SMP schemes.

- 3.3.1 While a motorway environment is not open to equal use by all on grounds of safety, a SMP scheme may necessitate the replacement of bridges, however it is noted that for the M56 scheme that the replacement of bridges is not proposed. There may also be situations where temporary diversions of motorway traffic are required during construction that may have a disproportionate impact upon potentially vulnerable communities living along the diversion routes.
- 3.3.2 For the M56 J6-8 the following steps have been, and are to be, taken to address the needs of all:
- Public Information Exhibitions are to be held to inform the public about the proposed works;
  - Principal Designer and Delivery Partner engagement with appropriate organisations;
  - Temporary construction diversion routes have been established and will be further developed ahead of construction start to minimise impact on the local community;
  - Local residents will be notified of potentially noisy construction works in advance of them starting; and
  - Liaison with promoters of other developments in the area will take place to minimise disruption.
- 3.3.3 There are several communities assessed within the M56 Junction 6-8 EAR, including Bowdon, Hale Barns and the villages of Warburton Green to the west of Junction 6 and Ashley to the south of the M56 between junctions 6 and 7.
- 3.3.4 Full carriageway closures and diversions will be advertised well in advance of the works to ensure regular users of the M56 are aware. This will act to deter some drivers from using the M56, but not all. The Delivery Partner should liaise with local authorities regarding planned carriageway closures in order to ensure that they do not coincide with planned maintenance works on the diversion route, for example. Consideration should also be given to alteration of timings of signal controlled junctions to avoid queuing traffic and to allow diverted motorway traffic to pass through the diversion route quicker.

- 3.4.1 The IAN 161/15 and the Design Guide sets out best practice to make a Smart Motorway intervention intuitive and legible. Work on the standardisation of design of infrastructure within the soft estate while intended to enhance delivery timescales and safety will also contribute towards reducing the amount of 'clutter'. Also, the Principal Designer is expected through the landscape planting strategy to communicate a 'sense of place' helping to deliver an understandable SMP scheme.
- 3.4.2 For the M56 J6-8 the following steps have been taken to deliver an understandable scheme:
- The road layout has been designed in accordance with latest standards and guidance and largely replicates the existing alignment that road users will be familiar with;
  - Liaison and consultation with Highways England SES were undertaken during the design;
  - Full carriageway closures and diversions will be advertised well in advance of the works to ensure regular users of the M56 are aware; and
  - The location of signs and signalling has been optimised to ensure good visibility for road users.
- 3.5.1 As an existing dominant feature in the landscape, the opportunity to respond to its local setting is constrained by alignment and safety considerations which drive the location of signage and Emergency Areas for example. Nevertheless, localised opportunities exist to relocate elements of SMP infrastructure such that sensitivity to landscape, biodiversity, heritage and local communities can be demonstrated. Also, opportunities exist to deliver enhancements where the existing motorway vegetation no longer provides an effective function or where measures can be taken to enhance biodiversity.
- 3.5.2 In the case of the M56 J6-8 the following steps have been taken to deliver a scheme that fits the context of the receiving environment:
- Native mitigation planting has been specified that relates to the density and species mixes within the local character. This is proposed to assist in reducing likely predicted impacts on sensitive receptors and replace any vegetation that has to be cleared as a result of the Proposed Scheme;
  - A diversity of proposed landscape elements has been specified to increase the opportunities for landscape and ecological enhancement; and
  - Where removed, screening vegetation (where site conditions allow) is proposed to be replaced to retain the wooded character of the wider motorway corridor.

- 3.6.1 While much of the design of a SMP scheme is dictated by the restricted width of the soft estate, some opportunities exist to deliver a design that is not only functional but also responds to its setting and enhancing the sense of place. For example, the design of retaining structures and landscape planting strategies can make contributions.
- 3.6.2 The M56 J6-8 has taken the following opportunities to enhance a 'sense of place' while reducing its dominance in the wider environment:
- Use of retaining structures to reduce losses of vegetation in sensitive locations;
  - Retention of existing vegetation wherever possible to protect the local area from intrusive views of the motorway;
  - Maintain (post construction) the current characteristics of the motorway corridor, these include a predominantly well screened motorway corridor set within the wider landscape. Rationalisation of gantries and signs to reduce their number; and
  - Optimised the spacing of signs and signalling to reduce the number of infrastructure elements on the motorway.
- 3.7.1 The environmental sustainability of SMP schemes is a function of several elements such as the delivery of a net environmental gain; design for future adaptation as well as the use of materials in a manner that contributes towards the circular economy in which material value is maximised through re-use and recycling.
- 3.7.2 The supporting Design Panel Briefing Note summarises the various requirements that IAN 161/15 and the SMP Design Guide sets out contributing towards a more sustainable road design.
- 3.7.3 When considering the design of the drainage network for the 1:5 year return period any additional impermeable areas (such as ERA's) are to be provided with an additional 20% contribution applied for climate change.
- 3.7.4 Apart from enhancing ecological connectivity and the landscape planting within the soft estate, aspects where materials efficiency and the circular economy can be promoted include:
- Placement of surplus fill materials on the soft estate to enhance screening opportunities subject to ecological considerations;
  - Establishing a re-use of any surplus materials prior to being designated as waste;
  - Sourcing construction materials and labour close to the scheme to reduce transport costs and greenhouse gas emissions; and
  - Designing of infrastructure to facilitate easy disassembly for recycling.
- 3.7.5 The M56 J6-8 design has taken the following steps to deliver a sustainable scheme:
- Reviews of the placement of signs and gantries has been undertaken in consultation with the environment team to minimise the removal and reduction of

established vegetation and to maintain habitat connectivity along the route;

- Drainage designed to cater for 1:5 storm return period;
- Attenuation with flow control provided ahead of all drainage outfalls;
- Vegetation is to be appropriately replaced with no specific areas with significant losses.
- Modular retaining walls are specified where possible;
- Modular Rigid Concrete Barrier under consideration; and
- Further opportunities to be explored during DF5 and construction phase.

3.7.6 The following candidate areas for off-site enhancements have been identified for the scheme and will be subject to separate delivery mechanisms:

- Infill gaps to planting to close off views beyond the highway boundary particularly at locations where gantries are on embankment or in close proximity to visual receptors.
- Provide improved off-site planting to local nature reserves and/or park areas to enhance local biodiversity and further limit the impact of the existing and proposed motorway, in particular within the Bollin Valley and Parkland Landscape north of Ashley and around Junction 7.
- Additional individual tree planting to key off site areas to break up existing views towards the motorway and integrate the motorway into the landscape around Warburton Green and along the edge of Ashley.

3.7.7 Further opportunities will be reviewed during DF5.

3.7.8 As noted in section 1.2 and section 4 of the Design Panel Briefing on SMP schemes, there are many opportunities to contribute towards sustainability. Table 2 below sets out a summary of the steps taken for the M56 J6-8 scheme.

**Table 2: Summary of Enhancement and Rectification Actions**

Theme	Scoping Report (DF1)	Env Assessment Report (DF3)	Specified in Works (DF4)	Commentary
<b>Noise</b>				
Candidate Noise Barriers	4	-	-	No new noise barriers have been proposed following assessment.
Enhancement to Existing Noise Barriers	-	-	-	Assessments have justified no requirement to enhance existing noise barriers.
Noise Reduction Other than by Barrier	Assumed that low noise surfacing will be used where resurfacing is required.	Provision of new low noise road surfacing on two of the lanes as part of the Proposed Scheme.	Lanes with low noise road surfacing to be specified.	New low noise road surfacing is to be used as applicable to accord with Highways England policy.
<b>Biodiversity</b>				
Enhancement Sites in Soft Estate	-	Protection and creation of sheltering and hibernation opportunities.	Protection and creation of sheltering and hibernation opportunities.	Proposals within soft estate include replanting and increasing species diversity in reinstated and retained habitats (refer to M56 J6-8 EAR for more detail)
Enhancement Sites beyond Soft Estate	-	Not proposed.	Not proposed.	Currently, there are no areas identified for off-site ecological enhancements.
Protected Species Enhancement	-	Protection and creation of sheltering and hibernation opportunities.	Protection and creation of sheltering and hibernation opportunities.	This includes creation of log piles from trees cut during site clearance and installation of nesting boxes.
<b>Landscape</b>				
Deliver landscape integration	-	-	-	Infill gaps and/or improve, existing planting to screen visual receptors and aid integration of the motorway into the local landscape through new planting within the highway estate.
Soften dominance of motorway in landscape	-	-	-	Replacement planting shall provide a similar or improved habitat type to that removed. Species shall be native and/or non-invasive and of a similar or improved species mix to that removed or representative of the wider area.  Solid barrier fencing or earth mounding may be considered at further design stages to improve or constrain existing views away from the motorway.  Alternative solutions to the design or the installation of a visual screen shall be explored to prevent a significant

Theme	Scoping Report (DF1)	Env Assessment Report (DF3)	Specified in Works (DF4)	Commentary
				effect.
Maximise green infrastructure	-	-	-	Where appropriate retain vegetation to minimise the amount of existing green infrastructure.  Infill gaps to planting to close off views beyond the highway boundary particularly at locations where gantries are on embankment or in close proximity to visual receptors.
Create a sense of place	-	-	-	Improve driver experience through planting to enhance the local character in opened out, restricted and filtered views of the landscape through which they are passing.  Where vegetation is required to be removed for installation and construction of the Proposed Scheme features, sight lines and safety requirements, replacement planting shall be provided wherever possible.
Deploy species rich grassland	-	-	-	Enhance/improve the existing species mix/habitat typology in otherwise poor quality areas to improve biodiversity and connectivity along the route taking the opportunity to tie into the local landscape through which the road passes. This is to be confirmed at detailed design.
<b>Water</b>				
Category A Priority Outfalls	1	-	-	Standard pollution prevention measures and best practice will be employed during construction; these measures will be detailed in the Construction Environmental Management Plan to be prepared and implemented by the Delivery Partner.  The Proposed Scheme is designed, and will be managed through the Outline Environmental Management Plan, to ensure water volumes or pollutants do not increase at any existing outfalls.
Category B Outfalls	6	-	-	Standard pollution prevention measures and best practice will be employed during construction; these measures will be detailed in the Construction Environmental Management Plan to be prepared and implemented by the Delivery Partner.

Theme	Scoping Report (DF1)	Env Assessment Report (DF3)	Specified in Works (DF4)	Commentary
				The Proposed Scheme is designed, and will be managed through the Outline Environmental Management Plan, to ensure water volumes or pollutants do not increase at any existing outfalls.
Category B Culverts	3	-	-	Standard pollution prevention measures and best practice will be employed during construction; these measures will be detailed in the Construction Environmental Management Plan to be prepared and implemented by the Delivery Partner.
Culverts assessed for upstream flood risk	-	-	-	The Proposed Scheme will include drainage improvements, in accordance with Interim Advice Note 161/15 such that discharges will be at existing established rates (up to the 1:100 year rainfall event).
Water Framework Directive				The localised works within the highway boundary result in a low risk of a significant effect on water quality during construction, and so this aspect was scoped out of the assessment.

3.8.1 Alongside the SMP Design Guide<sup>7</sup> that documents a continuous cycle of improvement in the design and delivery of SMP schemes, a series of Peer to Peer (P2P) meetings are held amongst the design community. Such P2P meetings seek to:

- Minimise the reinvention of existing solutions;
- Identify forthcoming problems that will benefit from a coordinated approach supported by revisions to the Design Guide; and
- Provide a channel of communication.

3.8.2 As Design Agents frequently operate with dispersed technical teams, the importance of communication between disciplines is paramount. The following points summarise how the communications across the design team has been organised to deliver good road design.

- Weekly calls between Assessment and Infrastructure teams during the preliminary design development;
- Regular meetings and design review sessions have been held between SMP Design and Delivery teams, the design has evolved in response to meeting outcomes; and
- The teams will be collocated in the M56 J6-8 site compound, the location of which will be confirmed during DF5 but it is unlikely to be adjacent to the M56.

<sup>7</sup> See Design Panel Briefing Note on Smart Motorways.



- 3.9.1 Innovation within SMP is managed at a programme level in order to deliver considered incremental improvements across a specific tranche of schemes<sup>8</sup>. While individual schemes are focused upon the production elements of scheme delivery, Design Agents are encouraged to suggest opportunities for innovation and improvement via the P2P meetings. Also, the Bright Ideas competition offers opportunities for the entire supply chain to propose innovative solutions that enhance scheme delivery processes.
- 3.9.2 Below is evidence on the points that the M56 J6-8 have contributed towards the cycle of good design and innovation:
- Technical note on treatment of longitudinal joints prepared by pavement design team. Recommendations were included in SMP pavement design guide.
  - Provision of low noise road surfacing on lanes 1 and 4.
  - Vegetation is to be appropriately replaced with no specific areas with significant losses.
- 3.10.1 The essence of the design of SMP schemes is to deliver a design that minimises the need to place maintenance staff at risk by activities that can be designed out through careful consideration earlier in the scheme delivery process. Such aspects are addressed at a programme level rather than scheme level and hence reference should be made to the Design Panel Briefing Note.
- 3.10.2 In the case of the M56 J6-8, the design team identified the following measures to create a scheme that is adaptable to future needs and technologies:
- Maintenance requirements addressed in the design;
  - Close working and communication with SMP Design and Engineering Services team; and
  - Regularly attended P2P meetings chaired by SMP to share information and identify best practices.
- 3.11.1 SMP contracts are set out to achieve a collaborative process. Design Agents are expected to avoid reinventing existing solutions, but are to engage with the SMP programme level team and through P2P meetings to communicate best practice.
- 3.11.2 During the design of the scheme, the design team has been in contact with the following teams and external organisations to achieve good road design, details of which are presented in the Communication Plan<sup>9</sup>:
- Highways England, Local Authorities, Natural England and the emergency services;
  - Design Agent environment and geotechnical teams have worked closely to develop solutions to reduce the number of costly retaining walls whilst avoiding significant losses of vegetation and habitat;

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<sup>8</sup> See Design Panel Briefing Note on Smart Motorways.

<sup>9</sup> [https://smpbim.withbc.com/bc/bc.cgi/d2147397/HE549345-JAJV-GEN-SG\\_MULTI-CM-ZM-0003.pdf](https://smpbim.withbc.com/bc/bc.cgi/d2147397/HE549345-JAJV-GEN-SG_MULTI-CM-ZM-0003.pdf)

- Design Agent environment teams integrated within highways design team to influence development of the scheme to ensure there were no significant environmental effects;
- Design Agent held regular all team coordination meetings to develop optimum design solutions; and
- The Design Agent acoustics team have worked closely with highways, geotechnical and other design teams to confirm that environmental noise barriers are not proposed for the Proposed Scheme.

## 4. DESIGN PANEL ENGAGEMENT

4.1.1 Highways England is to seek advice from the Design Panel:

- On the design of road improvement schemes, where these are in sensitive locations or expected to have a substantial impact on the surrounding landscape;
- On the development of relevant design standards concerning the visual impact of schemes; and
- At any other time where required by the Secretary of State.

4.1.2 In the case of the M56 J6-8 the assessment concludes that in the long term following establishment of mitigation planting, there will be no permanent significant effect on landscape.

4.1.3 The design standards for SMP infrastructure are developed at a programme level and applied at a scheme level, consequently such matters are to be explored through separate discussions.

4.1.4 The Secretary of State has not specified that the M56 J6-8 should be referred to the Design Panel for advice.

## 5. REFERENCE

- SMP M56 Junction 6-8 Environmental Scoping Report, July 2017.
- SMP M56 Junction 6-8 Environmental Assessment Report, February 2018.

## 6. DEFINITIONS AND ABBREVIATIONS

Term	Definition
ADS	Advance Directional Sign
ALR	All Lane Running
AMIs	Advanced Motorway Indicators
AQMA	Air Quality Management Area
ARN	Affected Road Network
DF	Design Fix
DRA	Design Risk Assessment
EAR	Environmental Assessment Report
EIA	Environmental Impact Assessment
ERAs	Emergency Refuge Areas
EU	European Union
EZoI	Ecological Zone of Influence
IAN	Interim Advice Notes
MS3	New Message Sign - strategic sign
MS4	New Message Sign - Variable Messaging Signs

Term	Definition
nIAs	Noise Important Areas
NO2	Nitrogen Dioxide
Nox	Oxides of Nitrogen
OEMP	Outline Environmental Management Plan
PM10	Particulate Matter smaller than 10µm
RIS	Road Investment Strategy
SMP	Smart Motorways Programme
SSSIs	Site of Special Scientific Interest
WFD	Water Framework Directive

Term	Definition
Design Fix	A stage within the design process when a specified level of design is to be reached.
Ramsar	A wetland site designated of international importance under the Ramsar Convention.
Highway estate	Full extent of land owned by Highways England.
Soft estate	Trees, shrubs and grassland areas managed by Highways England

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