

M4 junctions 3 to 12 smart motorway Preliminary environmental information report

Non technical summary

November 2014

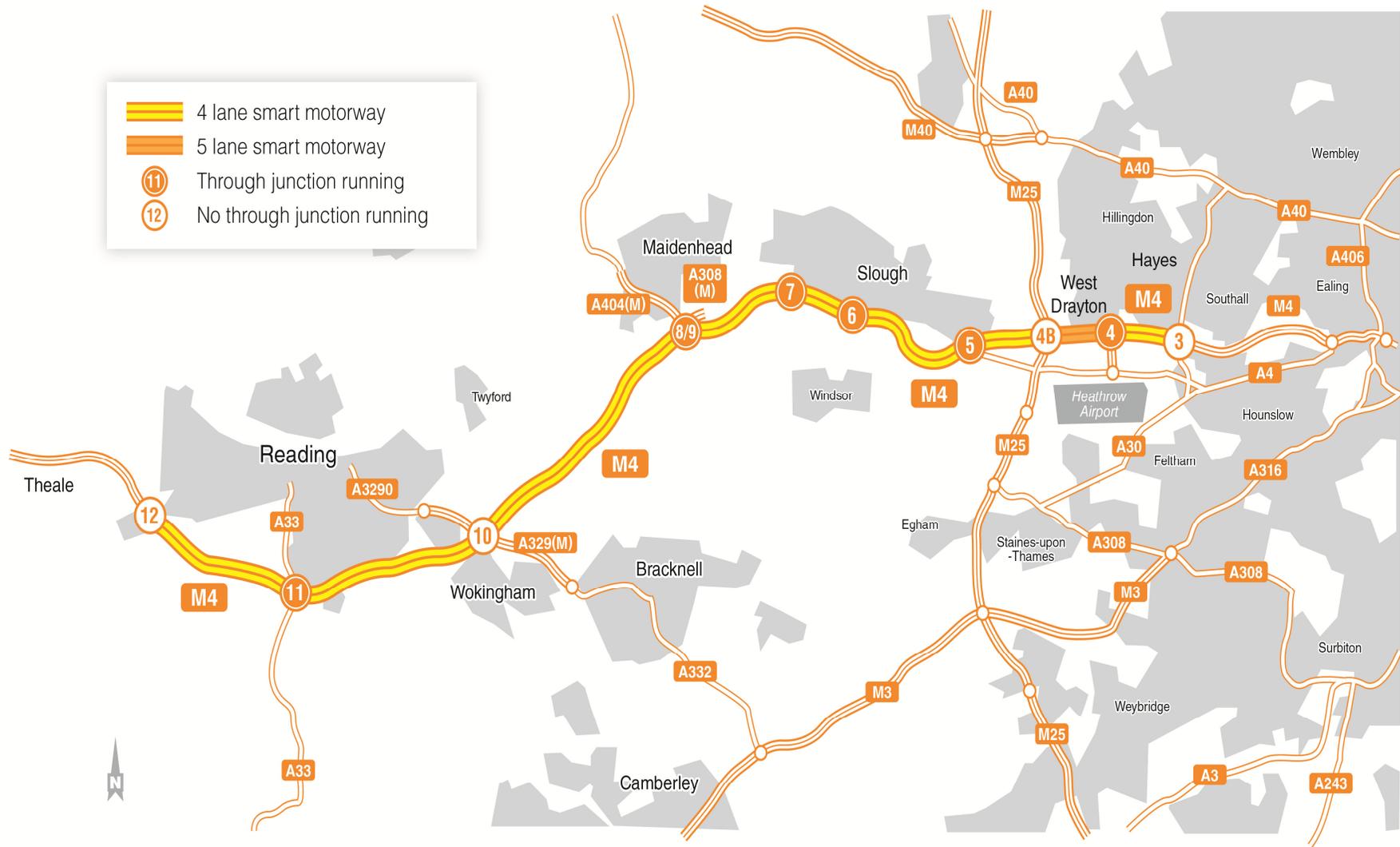


M4 junctions 3 to 12 smart motorway

Preliminary Environmental Information Report Non-Technical Summary

1 INTRODUCTION

- 1.1.1 This Non-Technical Summary (“NTS”) is intended to provide the key findings of the preliminary environmental information assembled to date for the purpose of consultation on the Scheme to improve the M4 motorway (“M4”) to a smart motorway (“the Scheme”) between junction 3 (Hayes) in west London, and junction 12 (Theale), near Reading.
- 1.1.2 A Preliminary Environmental Information (“PEI”) Report has been developed for the purposes of consultation prior to an application for development consent and presents information available to date on the Scheme’s Environmental Impact Assessment (“EIA”). Further investigations will be conducted during the EIA process and presented in an Environmental Statement (“ES”) submitted with the application for development consent.
- 1.1.3 The Scheme is a Nationally Significant Infrastructure Project (“NSIP”) to which the Planning Act 2008 (“PA 2008”) applies. This requires the Agency to make an application to the Secretary of State for development consent to build and operate the Scheme (the “Application”). Development consent is granted by the Secretary of State through a Development Consent Order (“DCO”) which sets out the powers to construct and operate the Scheme.



Inset 1: M4 J3-12 Smart Motorway Scheme extent

1.2 Scheme background and context

- 1.2.1 The M4 is the main strategic route between London and the west of England, and on to South Wales. Between junction 3 (Hayes) and junction 12 (Theale) the M4 currently suffers from heavy congestion, which leads to unpredictable journey times. Traffic flows are forecast to further increase, which will result in more severe congestion without road improvements.
- 1.2.2 Improvement of the M4 to a smart motorway will help to relieve congestion by permanently converting the hard shoulder to a running lane and using technology to vary speed limits and manage traffic. Signs and signals will be used to inform drivers of conditions on the highway network, when and where variable speed limits are in place, and when lanes are closed.

1.3 Scheme objectives

- 1.3.1 The Scheme involves improving both carriageways along approximately 32 miles (50km) of motorway to a smart motorway between junction 3 and junction 12 of the M4, and other works in that section of the M4. The Scheme's objectives are to:
- a) Reduce congestion, smooth the flow of traffic to improve journey times and make journeys more reliable;
 - b) Support and enhance the role of the M4 as a major national and inter-urban regional transport artery;
 - c) Support the economy and facilitate economic growth within the regions, by providing much needed capacity on the motorway; and
 - d) Continue to deliver a high level of safety performance of the network using smart motorway techniques.

1.4 Environmental objectives

- a) Where environmental impacts may be adverse, the Scheme will seek to address these by way of avoiding or minimising them through the Scheme design and the adoption of appropriate working practices; and
- b) Incorporating appropriate measures during the detailed design process.

2 SCHEME DESCRIPTION

- 2.1.1 The Scheme, approximately 32 miles (50 km) in length, will convert the hard shoulder of the M4 to a permanent running lane providing four lane all lane running ("ALR") with five lane carriageways proposed eastbound from Sutton Lane overbridge (just east of junction 5) to junction 4 and westbound between junctions 4 and 4b. This will be achieved within the existing motorway boundary where possible. Some widening may be required at junctions to accommodate slip roads and in areas where no hard shoulder exists. Necessary signing and technology to manage traffic using variable mandatory speed limits will also be provided.
- 2.1.2 Through Junction Running ("TJR") is proposed at junctions 4, 5, 6, 7, 8/9 and 11, and at the Reading Motorway Service Areas ("MSA") allowing long distance, strategic traffic to remain in lane 1 and not make successive lane changes, prior to and after each junction thereby reducing the number of lane changes and the associated hazards.
- 2.1.3 Emergency Refuge Areas ("ERAs"), similar to laybys, will be constructed to provide a safe area for vehicles to stop in an emergency without interrupting the flow of traffic. The current design is for 33 ERAs no more than 2.5km apart.
- 2.1.4 The Scheme will also include the demolition and replacement of 11 overbridges, and the extension of underbridges and culverts where carriageway widening is required.
- 2.1.5 The existing central reserve drainage system will be replaced with surface water channels or linear drains, and some sections of verge drainage will be replaced with new linear drains.
- 2.1.6 Environmental barriers, in the form of fencing to mitigate noise and visual impacts, will be included where the Scheme identifies this form of environmental mitigation is required. Vegetation lost to construction activities will be replanted where possible with locally appropriate species. Environmental enhancement will also be applied in appropriate circumstances. These will be developed through the preparation of an Environmental Masterplan, and secured by a requirement attached to the DCO.

3 ALTERNATIVES TO THE SCHEME

- 3.1.1 Various alternatives have been given consideration with funding provided in September 2013 to consider the best option for a Managed Motorway ALR Scheme.
- 3.1.2 In January 2014 work commenced to take the M4 junction 3 to junction 12 smart motorway Scheme (revised from Managed Motorway Scheme due to a change in terminology) through the Development phase to include preliminary design and preparation of an application for development consent.

4 ENVIRONMENTAL IMPACT ASSESSMENT

- 4.1.1 An assessment of the effects of the Scheme on people and the environment is being undertaken in accordance with the Infrastructure Planning (Environmental Impact Assessment) Regulations 2009 (“EIA Regulations”). The assessment methodology follows the Design Manual for Roads and Bridges, Volume 11, Environmental Assessment and supplementary Interim Advice Notes published by the Department for Transport.
- 4.1.2 A Scoping Report on the approach to the environmental assessment was issued to the Planning Inspectorate. The Inspectorate consulted widely on the Scoping Report and their response together with the Scoping Report have been published on the Inspectorate’s planning portal at: <http://infrastructure.planningportal.gov.uk/projects/south-east/m4-junctions-3-to-12-smart-motorway/?ipcsection=docs>.
- 4.1.3 The environmental assessment covers the effects of the Scheme on: air quality, cultural heritage, landscape, ecology and nature conservation, geology and soils, materials and waste, noise and vibration, effects on all travellers, community and private assets, road drainage and the water environment.

5 AIR QUALITY

- 5.1.1 The air quality assessment considers the potential air quality effects of the Scheme on local and regional air quality as a result of:
 - a) Dust from construction activities and a lesser extent emissions from plant and vehicles; and

- b) Changes in emissions due to improved vehicle flows once the Scheme is open.
- 5.1.2 The Scheme crosses or lies close to ten Air Quality Management Areas (“AQMAs”) and is within 200m of four Sites of Special Scientific Interest (“SSSI”). The short term air quality objectives for NO₂ and PM₁₀ are not anticipated to be breached from the implementation of the Scheme at the receptor locations modelled.
- 5.1.3 The overall impact of the Scheme on air quality during construction and operation is assessed as not significant.

6 CULTURAL HERITAGE

- 6.1.1 There are numerous valuable cultural heritage assets in the vicinity of the Scheme. There are two scheduled monuments, a Mesolithic occupation site and the Medieval Cippenham Court moated site, which are accorded a high value. There are seven conservation areas and three Grade II registered parks and gardens, classed as medium value heritage assets. Furthermore, there are 42 listed buildings and structures within 250m of the M4, of which three are Grade I (high value), two are Grade II* (high value), and 37 are Grade II (medium value).
- 6.1.2 On completion of construction, the new features of the Scheme are not expected to have an impact on the setting of the majority of cultural heritage sites, as many do not lie within the Zone of Visual Influence (“ZVI”). There is predicted to be a permanent, moderate adverse effect on St. Dunstan’s Church (a Grade II* listed building), and slight adverse effects on Littlefield Farmhouse (Grade II), Huntercombe Manor Conservation Area and registered park and garden (Grade II), Lake End House and associated buildings (Grade II), Cippenham Court Scheduled Monument, Harlington Conservation Area, and Grade II listed structures in Cranford Park.

7 LANDSCAPE

- 7.1.1 The M4 corridor lies within National Character Area No. 115 Thames Valley. This is a mainly low-lying area which includes the urban areas of Reading, Maidenhead and Slough, together with the south-west fringes of London. The North Wessex Downs Area of Outstanding Natural Beauty (“AONB”) lies to the west of junction 12 (Theale) with the western edge of

the Scheme, (west of junction 12) within the AONB. Between junction 10 (Winnersh) and junction 4b (M25) the M4 is mostly located within the Green Belt and in parts lies adjacent to the River Thames flood plain.

- 7.1.2 The new and modified scheme components such as new signage, replacement bridges, and ERAs will introduce new elements into the landscape. Appropriate location-specific mitigation, such as replacement planting will be adopted to minimise effects on the landscape, or on visual amenity, so far as possible.
- 7.1.3 It is anticipated, that with further development to the scheme design and proposals for mitigation, the effect of the Scheme on the landscape of the North Wessex Downs AONB and the Thames Valley National Character Area will be negligible, while the effects on the visual amenity could be slight adverse.

8 ECOLOGY AND NATURE CONSERVATION

- 8.1.1 The Scheme potentially lies within the area of influence of internationally, nationally and locally designated sites.
- 8.1.2 Baseline studies confirmed the presence of protected species of fauna, namely great crested newts, reptiles (grass snake and slow worm), bats, otters, water voles and badgers. Nesting birds were found in the vegetation alongside the motorway and on adjoining land. Dormice were not found.
- 8.1.3 The Scheme will not result in any direct impacts on designated sites and non-designated sites of nature conservation value, but those adjoining the M4 or along watercourses downstream of construction works, may be indirectly impacted by construction noise, night-time lighting, and dust, or as a result of connected hydrology and changes in water quality.
- 8.1.4 On Scheme opening, the main impact on fauna is likely to be increased mortalities due to the replacement of the existing central reserve with a concrete barrier. Air quality (nitrogen deposition) and noise levels from the Scheme are predicted to be negligible and unlikely to result in significant additional impacts. Once the new vegetation has matured, operation of the Scheme is not considered to change the current environment of the M4 corridor. The overall effects on nature conservation and ecology are assessed as neutral.

9 GEOLOGY AND SOILS

- 9.1.1 The majority of the Scheme is underlain by Palaeogene (Eocene) London Clay, with Palaeocene clays and sands of the Lambeth Group in the vicinity of junctions 6 to 8/9 and to the east of junction 12, and the Cretaceous Chalk Group limited to the immediate area of junction 12. There is one site designated for its geological interest close to the Scheme - Pincent's Kiln SSSI, an old quarry approximately 200m outside the Order limits and to the north of junction 12 (Theale). There are no designated sites within the scheme boundary.
- 9.1.2 Some groundwater Source Protection Zones ("SPZs") extend over the Scheme footprint indicating the relatively high vulnerability of aquifers (particularly the Chalk) to contamination.
- 9.1.3 The Scheme design comprises predominantly the reconfiguration of the existing earthworks within the M4 boundary. Mitigation of the impacts on geology as a result of new/modified earthworks is not possible as the geological material must be removed to facilitate the new carriageway alignment. There will be no impacts on the Pincent's Kiln SSSI.
- 9.1.4 Based on the present knowledge of the ground conditions, the overall effect on the geology and soils is considered to be neutral.

10 MATERIALS AND WASTE

- 10.1.1 A wide range of material resources will be required to construct the Scheme, comprising elements of the existing motorway which could be re-used or recycled.
- 10.1.2 The use of primary materials such as aggregate and lime will impact on natural resources, which will be mitigated by sourcing materials from licensed quarries and reducing demand for natural resources by reusing and recycling.
- 10.1.3 The effect of the use of material resources and disposal of wastes on the environment is assessed to be minor adverse.

11 NOISE AND VIBRATION

- 11.1.1 39 areas along the Scheme, have been identified where Action Plans have been published setting out proposals to manage noise. As a result of the Scheme no properties will experience a noise increase greater than negligible, as defined by an increase in noise levels of >3dB over 15 years.
- 11.1.2 Overall the significance of effect of the operation of the Scheme is assessed as slight adverse in the short-term and neutral in the long-term. The cumulative effect of future traffic growth, including committed development, is considered to be neutral.

12 EFFECTS ON ALL TRAVELLERS

- 12.1.1 The volume of traffic, the average speed of vehicles, and the percentage of heavy goods vehicles ("HGVs") result in high driver stress levels.
- 12.1.2 Temporary road and Public Rights of Way closures will be required at the overbridges and underbridges which will be re-built or extended to accommodate the Scheme. Five overbridges will be rebuilt on-line, resulting in temporary closure for 18 to 24 months. Six overbridges will be built off-line resulting in short duration closures. All of these works will be sequenced where possible and diversion routes and temporary traffic management will be agreed with the local authority to minimise the duration of severance.
- 12.1.3 The Scheme will provide additional capacity for travellers on the M4 but is not considered to change driver views materially. Additional driver information and intelligent traffic management technology will reduce the likelihood of severe congestion, and improve journey time reliability, therefore helping to alleviate driver stress. The Scheme will only have some minor effects on pedestrians, cyclists, equestrians or other non-motorway users.
- 12.1.4 Overall, the Scheme is assessed to have a beneficial effect on all travellers.

13 COMMUNITY AND PRIVATE ASSETS

- 13.1.1 The M4 corridor passes close to major settlements in the Thames Valley, with large numbers of community and private assets nearby which could be affected by the Scheme, in particular by the construction and the

requirement for permanent land requirement as well as temporary land for construction compounds.

- 13.1.2 The creation of temporary employment during the construction of the Scheme is assessed to have a short-term, large beneficial effect on local people and businesses.
- 13.1.3 On Scheme opening, the improvement to journey times and reliability is assessed to be large beneficial for local businesses, residents and visitors but, the small areas of permanent land-take are assessed to have a slight adverse impact on local residents and farm businesses.

14 ROAD DRAINAGE AND THE WATER ENVIRONMENT

- 14.1.1 The proposed works to the eight overbridges located within the floodplain could result in displacement of flood water and a localised increase in flood levels potentially requiring floodplain compensation to be provided. This will be assessed and quantified within the Flood Risk Assessment.
- 14.1.2 The Scheme design includes replacement of the existing drainage system where required and additional storage within the drainage system to maintain current discharge rates to outfalls. Consequently there will be no significant change resulting from the small increase in impermeable surface area from the creation of the ERAs, paving of the central reserve and any modifications for the slip and side roads. The operational impacts may range from moderate adverse (changes to the morphology of the River Thames at Bray Bridge) to slight beneficial (no deterioration in water quality despite an increase in traffic and potential for pollutants in the drainage water).
- 14.1.3 Overall the Scheme is unlikely to have a detrimental impact upon the existing surface and / groundwater resources.

15 CUMULATIVE EFFECTS

- 15.1.1 Few properties will be affected by two or more adverse effects of the Scheme. Two properties in Winnersh, one property in Dorney and one property in Dorney Reach are predicted to be affected by a moderate increase in air pollution above the NO₂ air quality objective and slight to large adverse visual impacts.

- 15.1.2 The combination of effects resulting from the implementation of other development projects in the vicinity of the Scheme in parallel with the implementation of the Scheme itself are currently being assessed based on a review of planning applications submitted to the relevant local and national authorities. The results will be reported in the ES.

16 NEXT STEPS

- 16.1.1 The PEI Report has been prepared to assist the public in understanding the potential impacts of the Scheme and mitigation measures proposed. A series of public information exhibitions are being held for members of the public giving them the opportunity to ask any questions and make comments on the proposals. All comments and responses will be taken into account in considering the need for further assessment and/or modification of the Scheme design or mitigation measures. The comments received will be used to produce a Consultation Report, which will also be submitted to the Planning Inspectorate with the Application for DCO, which will record comments and how they have been addressed in the Scheme design and the EIA.
- 16.1.2 Following submission of the Application, the Planning Inspectorate will consider, on behalf of the Secretary of State, whether it should be accepted for examination. When accepted, the public will be able to make further representations about the Scheme and its potential impacts. The documents accompanying the Application will be publically available on the Planning Inspectorate's website, and the public will be able to submit comments and objections. These will then be considered as part of the Examination into the application for development consent.