Preliminary Environmental Information Report

M20 Junction 10a

October 2015

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Final

Revision Record

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1 Summary

1.1 Introduction

1.1.1 Highways England has commissioned this Preliminary Environmental Information Report ("PEIR") to be prepared as part of the environmental impact assessment ("EIA") of the proposed M20 Junction 10a scheme ("the Scheme"). The aim of this document is to provide statutory environmental bodies ("SEBs") with an update on the EIA process and preparation of the Environmental Statement ("ES"), so an informed response can be given as part of the consultation. A summary document for non-technical readers will be provided for the community consultation planned for later in the year.

1.1.2 It should be noted that the Scheme design is currently being developed and the process of gathering information and identifying how the environment might be affected by the Scheme is still underway. The information contained within this document is therefore preliminary only, and may be subject to change prior to the production of the full ES, as assessment work progresses.

1.2 Description of the Scheme

1.2.1 The M20 Junction 10a Scheme is required to accommodate traffic generated by the proposed future growth of Ashford and includes a new junction to the south of the existing M20 Junction 10 and a new link road to the A2070.

1.2.2 The proposed Scheme is presented in Appendix A and involves the following key elements:

- A new Junction 10a comprising a gyratory roundabout over the M20 approximately 700m east of the existing Junction 10, two bridges over the motorway each carrying three traffic lanes and four new slip roads to cater for all movements to and from the motorway;
- A new link road between the new Junction 10a and the A2070 Southern Orbital Road ("SOR") to the south of Ashford;
- Provision of a roundabout at the junction of the existing A2070 SOR and the new link road;
- Removal of the existing east facing slip roads at Junction 10;
- A new pedestrian/cyclist bridge over the M20 from Kingsford Street to the A20;
- Demolition of three properties (Clarks Nursery (disused), Wyevale Garden Centre and Highfield Cottage);
- Demolition and relocation of the sewage pumping station on Highfield Lane;
- Demolition of the existing Highfield Lane bridge, with non-motorised users ("NMU") rerouted to the new footbridge adjacent to Kingsford Street; and

- Replacement of the Church Road footbridge with one that is compliant with the Disability Discrimination Act 2005 and is suitable for cyclists.

1.3 Objectives of the Scheme

1.3.1 The overall (indicative) objectives for the Scheme are:

- Increase the capacity of the road network to support the proposed development areas in Ashford;
- Alleviation of congestion around the existing Junction 10 and improved safety, whilst creating the opportunity to enhance local transport facilities with specific cyclists and pedestrians;
- Providing a new route for traffic into Ashford by way of the new junction and dual carriageway link road;
- Minimising the environmental impact of the scheme and where possible allow enhancements to be made to the environment; and
- There are also a series of additional indicative Transport and Safety, Environmental, Economic and Integration Objectives outlined in Section 3.1 below.

1.4 Alternatives

1.4.1 Several potential options for the M20 Junction 10a have been considered and consulted on previously prior to the announcement of the Preferred Route in 2008. The design of the proposed Scheme has evolved through consideration of number of highway arrangement options against economic, social and environmental data.

1.5 Consultation

1.5.1 A Scoping Report was submitted to the Planning Inspectorate on the 20th January 2015, with a Scoping Opinion received on the 2nd March 2015. Consultation has been carried out subsequent to receipt of the Scoping Opinion with Ashford Borough Council ("ABC"), Kent County Council ("KCC"), the Environment Agency, Natural England, Historic England, the County Archaeologist, and appropriate actions have been taken as a result of the consultation.

1.6 Potential Environmental Effects

1.6.1 See Appendix B for the Environmental Constraints Plan.

Air Quality

1.6.2 Following its first phase of review and assessment between 1998 and 2001, ABC deemed it unnecessary to declare any Air Quality Management Areas ("AQMA") as all pollutants were achieving their respective objectives. Subsequent reviews carried out by ABC in 2003, 2009 and 2015 concluded that all air quality objectives are being met for all pollutants across the Borough and there was no need to declare any AQMAs. However, Scheme specific monitoring data undertaken by Highways England illustrates that the air quality objectives are exceeded at two

locations within the study area of the scheme: on the A20 near Summer Hill Road and the A2070 north of Junction 10.

1.6.3 An indicative construction assessment has been undertaken following best practice guidance using a risk based approach taking into account the dust raising potential of construction activities and the location of potentially sensitive receptors. The initial assessment identified a number of receptors which are potentially sensitive to dust emissions and located within 200m of construction activities and it is therefore recommended that mitigation measures be applied to avoid the risk of nuisance effects and/or loss of amenity.

1.6.4 At this stage of the proposed Scheme detailed traffic data is not available and therefore no assessment of the operational phase has currently been undertaken. However, operational effects are likely to include changes in emissions associated with changes in traffic flows (including composition and speed) on the local road network and changes in road layout which may bring road traffic emission sources closer to, or farther away from, sensitive receptors.

Cultural Heritage

1.6.5 There are several heritage assets which potentially could adversely be affected by the proposed Scheme, either directly through loss or damage during construction or indirectly through adverse effects on the setting and/or amenity value of assets.

1.6.6 The options for mitigation include designing the proposed Scheme to avoid or reduce impacts upon heritage assets. Archaeological investigation and historic building and landscape recording could be undertaken to record any heritage assets before loss, and careful design choices and landscaping would mitigate the effects upon the historic environment.

Landscape

1.6.7 Despite existing development there is potential for the Scheme to lead to a reduction in the quality of local landscape character, particularly during the construction phase when additional machinery and materials would exacerbate the presence of a new feature in the landscape. Large scale construction works, construction traffic, plant and site compounds would all be visible, forming new additions within the landscape and views afforded by local visual receptors.

1.6.8 Given the sensitivity of a number of nearby receptors there are likely to be significant adverse effects upon landscape character and visual amenity during construction, whilst other receptors would be affected to a lesser degree. The ES will address these receptors, identifying likely changes in the view for each receptor, the magnitude of change experienced, and the resulting significance of effect during construction.

Nature Conservation

1.6.9 There are valuable habitats and species present of nature conservation importance which could be affected by the proposed Scheme. The ongoing ecological surveys and EIA work will help identify mitigation measures to reduce the magnitude of impacts through sensitive design and construction methodologies, with a view to safeguard the conservation status of populations through both the construction and operational phases.

1.6.10 A number of measures have been recommended to guide the design process and identify mitigation requirements. However, these measures are not an exhaustive list and are likely to require a review and additional measures following completion of the survey and design work.

Geology and Soils

1.6.11 There is the potential for effects on geology and soils related receptors from the proposed Scheme. However, appropriate mitigation measures to limit or potentially completely remove these effects have been outlined, and these will be refined in the next stage of assessment. The significance of the effects will be determined using the guidance set out in the Highways Agency Design Manual for Roads and Bridges ("DMRB") Volume 11 Section 2 Part 5 HA (205/08) (Assessment and Management of Environmental Effects)[1]. This will ensure that the final mitigation measures set out in the ES are sufficient that all identified effects to receptors are reduced as much as is reasonably practicable within the constraints of the proposed Scheme and in accordance with all applicable legislation.

Materials

1.6.12 There is potential for significant effects due to material usage and waste arisings during construction of the Scheme. Through reusing and recycling all soil materials onsite there would be a reduction in materials required and wastes produced. In addition all concretes and metals to be used onsite would, where design constraints allow, contain high proportions of recycled content. Existing infrastructure such as ducts and cabinets would be reused where possible, reducing the need for new construction. All concrete, metal and plastics to be removed from site would be recycled and waste sent to landfill would be minimised.

Noise and Vibration

1.6.13 The proposed Scheme involves construction of a new motorway junction and its associated link roads, therefore a change in the magnitude of noise impact of 1dB due to traffic noise, affecting sensitive receptors on Scheme opening is considered likely.

1.6.14 Noise impacts due to the construction of the Scheme are expected to be perceptible at nearby sensitive receptors; particularly frontline properties along the M20, A20 and A2070 that are directly adjacent to the Scheme boundaries. Given

[1] Highways Agency, 2008: Design Manual for Roads and Bridges (DMRB), Volume 11, Section 2, Part 5 HA (205/08)

the proximity of some residential receptors to the Scheme there is potential for construction impacts to have a significant effect without careful management. .

Effects on All Travellers

1.6.15 At present congestion commonly occurs on the M20 and around Junction 10, leading to delays and increased traffic flows, resulting in driver stress for vehicle travellers. A number of Public Rights of Way have been identified within the study area, as noted above, but there are no public bridleways or byways open to all traffic ("BOAT") within the study area.

1.6.16 Construction stage effects for NMUs and vehicle travellers would be managed through the implementation of a Construction Environment Management Plan ("CEMP") and Community Relations Strategy. Once the Scheme is operational, it is anticipated that there would be some benefits for NMUs through the provision of new NMU facilities and safer access, although there may be some increase to journey times. Early consultation with KCC Rights of Way Officers has been held, which has aided the further development of mitigation and enhancement opportunities for NMUs. This consultation is ongoing, and will further inform the design as it progresses.

Community and Private Assets

1.6.17 At this stage it is expected that there would be significant effects on private property and associated land, community land, development land, agricultural land and community severance. Construction stage effects would be managed through the implementation of a CEMP, a Community Relations Strategy and a Traffic Management Plan.

Road Drainage and Water Environment

1.6.18 The water environment includes surface water features such as the Aylesford Stream and its associated flood plain, ponds and ditches, and the underlying groundwater. The options for mitigation of the potential effects on these waterbodies include the proposed drainage design, which incorporates attenuation storage for surface water run-off and pollution control measures such as oil interceptors and penstocks.

1.6.19 In addition, construction of the Scheme would be carried out in accordance with best practice to reduce the potential for pollution. Further assessments will be completed to inform the ES, including a Flood Risk Assessment ("FRA") and Preliminary Water Framework Directive ("WFD") assessment.

1.7 Combined and Cumulative Effects

1.7.1 Combined and cumulative effects result from multiple actions on receptors over time and are generally additive or interactive (synergistic) in nature. They can also be considered as effects resulting from incremental changes caused by other past, present or reasonably foreseeable actions together with the project, identified as:

- Combined effects from a single project (the interrelationship between different environmental factors); and
- Cumulative effects from different projects (with the project being assessed).

1.7.2 This chapter of the ES will bring together the principal findings of each of the topic chapters in order to identify and assess the combined effects of the Scheme and the cumulative effects of the Scheme in association with other existing or future major developments in the study area.

1.7.3 The main development that could cause cumulative effects is the proposed development to the north and west of Highfield Lane at Sevington ("the AXA/DMI development"). This is a mixed use development, for which a planning application is currently under consideration by ABC.

2 Introduction

2.1 The M20 Junction 10a Scheme

2.1.1 The M20 Junction 10a Scheme ("the Scheme") is required to accommodate traffic generated by the proposed future growth of Ashford and includes a new junction to the south of the existing M20 Junction 10 and a new link road to the A2070.

2.1.2 Ashford has been identified as a major growth area for the South East in the Government's Sustainable Communities Plan, with the provision of 31,000 additional homes and 28,000 new jobs in the area by 2031. The existing M20 Junction 10 suffers from congestion and delays, especially in peak periods, caused mainly by conflict between strategic and local traffic. It is predicted that the existing M20 Junction 10 will suffer from increased congestion and long delays in the future if additional capacity is not provided.

2.1.3 The proposed Scheme consists of a new gyratory roundabout over the motorway, to the west of Mersham and approximately 700m east of the existing Junction 10, and a new dual carriageway link road to the A2070 SOR to the south of Ashford. The scheme includes two bridges over the motorway each carrying three traffic lanes, four new slip roads to cater for all movements to and from the motorway, removal of the existing east facing slip roads at Junction 10 and a new footbridge across the motorway.

2.2 Environmental Impact Assessment

Scope and Content of the Preliminary Environmental Information Report

2.2.1 The Scheme meets the criteria to be considered as a Nationally Significant Infrastructure Project ("NSIP") under the Planning Act 2008 ("the Act") and The Highway and Railway (Nationally Significant Infrastructure Project) Order 2013.

2.2.2 The M20 Junction 10a is a 'highways' NSIP under section 22(5) of the Act (as amended) because it is an improvement of a highway that is wholly within England, where the Secretary of State ("SoS") is the Highway Authority, and because the Scheme is likely to have a significant effect on the environment, and therefore an ES is required.

2.2.3 As the Scheme is a NSIP, Highways England is required to make an application for Development Consent Order ("DCO") to the Planning Inspectorate. If granted, the DCO will provide the necessary authorisation to allow the Scheme to be constructed.

2.2.4 Following the completion of the Scoping Report, the EIA for a DCO is reported in two stages:

- The PEIR, prepared to inform the consultation with the public and other stakeholders about the proposed Scheme; and

- The ES, prepared to accompany the DCO application.

2.2.5 This PEIR is arranged into different topic chapters, which reflect the topic chapters in the DMRB that will be used for the ES, as follows:

- Air Quality;
- Cultural Heritage;
- Landscape;
- Nature Conservation;
- Geology and Soils;
- Materials;
- Noise and Vibration;
- Effects on All Travellers;
- Community and Private Assets; and
- Road Drainage and Water Environment.

2.2.6 In addition, an assessment of the potential combined and cumulative effects of the Scheme is included within this PEIR.

2.2.7 Each environmental topic chapter of this PEIR describes the local environment, and identifies any sensitive receptors such as designated sites, for example Sites of Special Scientific Interest ("SSSI"), AQMAs or Noise Important Areas ("NIA"). Baseline environmental surveys that have been carried for each topic are then described, along with detail of consultation with SEBs, Local Authorities and other stakeholders. Any likely impacts of the M20 Junction 10a scheme on the local environment are then described.

2.2.8 See Appendix B for the Environmental Constraints Plan.

2.3 Summary of the EIA Process

Screening

2.3.1 Under Regulation 6 of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2009 (as amended) ("the EIA Regulations") the applicant for a proposed NSIP is required to either submit a screening request to the Secretary of State, or notify the Secretary of State in writing of the intention to provide and ES in respect of the proposed NSIP.

2.3.2 A Regulation 6 notification was submitted to the Planning Inspectorate ("PINS") on the 16th January 2015, informing of the intention to submit an ES for the proposed M20 Junction 10a Scheme.

Scoping

2.3.3 The purpose of the Scoping process is to determine which topics should be included in the ES, and the level of detail to which they should be assessed. A

Scoping Report has been prepared for the Scheme, which set out the proposed assessment methodologies for the various topics and identified the key potential impacts. The M20 Junction 10a Scoping Report can be accessed from the following link:

- http://infrastructure.planninginspectorate.gov.uk/projects/south-east/m20-junction-10a/?ipcsection=docs

Identifying Baseline Conditions and Sensitive Receptors

2.3.4 An important stage in carrying out EIA is to establish the baseline conditions against which the assessment can be carried out. It should be noted that the baseline for the EIA is not necessarily the baseline at the time of the assessment; rather a future theoretical baseline is used, based on expert knowledge. This 'future' baseline reflects the conditions that would exist at the time of the proposed construction of the Scheme, but without the Scheme being in place. It reflects any other proposed development in the vicinity, and other changes that are likely to happen in the intervening period that are unrelated to the Scheme.

2.3.5 The identification of sensitive receptors, such as residential properties, designated sites, protected species or waterbodies, is integral to the establishment of the baseline conditions. Some receptors will be more sensitive to particular environmental impact than others, and the sensitive receptors are therefore identified separately for each topic chapter.

2.3.6 The process of identifying the baseline conditions and sensitive receptors is currently underway and this PEIR reports an interim stage in that process.

Mitigation and Enhancement

2.3.7 Two kinds of mitigation measures will be reported in the ES. The M20 Junction 10a Scheme has been designed to minimise environmental effects and therefore the construction design/methods take account of environmental considerations, including measures within the CEMP. Where such measures form part of the Scheme, they will be considered as embedded measures within the ES. Where the ES indicates significant adverse effects, having taken account of embedded measures, additional mitigation will be identified as appropriate.

2.3.8 In addition to mitigation measures, environmental enhancement measures will also be identified, as appropriate. Environmental enhancement measures will be identified in discussion with the key stakeholders and SEBs, in order to achieve improved environmental outcomes. The design and EIA processes will therefore be carried out in parallel, to ensure any required enhancement measures can be incorporated into the design.

Predicting Environmental Impacts

2.3.9 The ES will define impacts and effects as follows:

- Impact - a change in the physical attribute of a receptor.

- Effect - the environmental consequence of the change in attribute, either in terms of compliance with relevant legislation or consequences for a user of that waterbody.

2.3.10 All potential impacts and their effects will be identified using the Source-Pathway-Receptor model, whereby the source of impact is identified, followed by the potential impact or pollution pathways and the likely receptors. As discussed above, mitigation measures within the project design will be considered before the identification of potential environmental impacts. Should the ES show the potential for significant adverse impacts from the proposed Scheme, additional mitigation measures would be proposed within the ES.

Evaluating Significance

2.3.11 Potential environmental impacts and their resultant effects will be reported on a nine point scale:

- Very large adverse;
- Large adverse;
- Moderate adverse;
- Slight adverse;
- Neutral;
- Slight beneficial;
- Moderate beneficial;
- Large beneficial;
- Very large beneficial.

2.3.12 Effects that are moderate, large or very large are deemed to be significant; slight or neutral effects are not significant.

Reporting

2.3.13 EIA work is currently underway and the full results will be reported in the ES, which will accompany the DCO application. This PEIR reports an interim stage in the EIA process.

2.4 The Purpose of this Report

2.4.1 Regulation 2(1) of the EIA Regulations define PEI as '*information referred to in Part 1 of Schedule 4 (information for inclusion in environmental statements) which-*

- *(a) has been compiled by the applicant; and*
- *(b) is reasonably required to assess the environmental effects of the development (and of any associated development)'.*

2.4.2 The purpose of this PEIR is firstly to meet the requirements of the EIA Regulations, but also to inform stakeholders, landowners and SEBs of the ongoing EIA work, and provide an opportunity for consultation with the aforementioned.

Reporting on the progress of the EIA, particularly with regards to ongoing survey works, will ensure a comprehensive ES will be produced.

2.5 Availability of the PEIR

2.5.1 Copies of this PEIR will be available as part of the consultation material produced for the M20 Junction 10a public consultations to be carried out in autumn/winter 2015. Details of the consultation events are available in the Statement of Community Consultation ("SoCC") which can be accessed from the following link:

- http://infrastructure.planninginspectorate.gov.uk/projects/south-east/m20-junction-10a/?ipcsection=docs

3 Scheme Background

3.1 Objectives of the Scheme

3.1.1 The overall (indicative) objectives for the Scheme are:

- Increase the capacity of the road network to support the proposed development areas in Ashford.
- Alleviation of congestion around the existing Junction 10 and improved safety, whilst creating the opportunity to enhance local transport facilities with specific cyclists and pedestrians.
- Providing a new route for traffic into Ashford by way of the new junction and dual carriageway link road.
- Minimising the environmental impact of the Scheme and where possible allow enhancements to be made to the environment.
- There are also a series of additional indicative Transport and Safety, Environmental, Economic and Integration Objectives outlined below:

3.1.2 Transport and Safety:

- To deliver road improvement in support of the government agenda for economic and population growth in the Ashford region.
- To improve journey time reliability.
- To improve safety through the junction by reducing congestion.
- To reduce congestion (delay) at the junction.

3.1.3 Environmental:

- To offset the detrimental environmental effects of the scheme by mitigation measures, taking account of costs, availability of funding and statutory obligations.
- Where possible allow enhancements to be made to the environment.

3.1.4 Economic:

- To aim to support local development plans and the Regional Spatial Strategy.

3.1.5 Integration:

- To ensure that the scheme takes into account the improvements planned by ABC and KCC.
- To ensure Highways England's Network Operations and Development Directorate ("NDD") are consulted on the scheme design.
- To ensure that the relevant local councils and local emergency services are consulted on scheme design.

3.2 Scheme History

3.2.1 In November 2003, it was announced that the M20 Junction 10a Scheme had been added to the Government's Targeted Programme of Improvements, now known as the Programme of Major Schemes. Since then a number of further studies have been undertaken by the Highways Agency (now Highways England), KCC and ABC. The primary study was the Greater Ashford Development Framework[2] ("GADF"), which focused on transforming Ashford Town Centre and producing a master plan to facilitate Ashford's growth including new urban communities and its impact on surrounding rural villages.

3.2.2 During the initial phases it was identified that the existing Junction 10 would not be able to accommodate additional traffic generated by the proposed development of Ashford. As a result of this and the announcement in 2003, the Highways Agency was instructed to develop and appraise options for a Junction 10a.

3.2.3 Between 13th June and 5th September 2008, public consultation was held for three options. Views were sought on the 'Proposed Option' and two alternative options from the general public and other interested parties. The Proposed Option was selected as the preferred route following the public consultation.

3.2.4 Following the announcement of the preferred route, a 'Preferred Scheme' was developed as part of the preliminary design accommodating feedback from the public consultation. In 2011 the Preferred Scheme was reviewed, identifying value engineering opportunities and LEAN initiatives that would reduce the estimated cost. This subsequently generated an additional two sub-options, known as the 'Alternative Scheme' and the 'Modified Scheme'. The Modified Scheme was put forward as it showed the highest Benefit Cost Ratio ("BCR"); which is a systematic process for calculating and comparing benefits and costs of a project to determine if it is a sound investment and to see how it compares with alternate options. The Alternative Scheme was eliminated from the scheme review as it offered no benefits to the Highways Agency.

3.2.5 In May 2011 the progression of the Highways Agency's Modified Scheme was halted due to government funding. A third party developer, 'AXA/DMI', and KCC presented an interim scheme, which is now known as the 'SELEP' Scheme. The main objective of the SELEP Scheme was to provide access to the DMI/AXA development site, serving new industrial units and residential housing south of the M20 motorway, east of Ashford.

3.2.6 In August 2014, the Highways Agency resurrected the Modified Scheme and a formal DCO application is to be submitted in 2016 with a view to commence construction in 2017/2018. The SELEP scheme is on hold until the positive outcome of Highways England's DCO application. It is likely that the SELEP scheme will then be withdrawn. The proposed AXA/DMI development site is being processed under a separate planning application, currently under consideration by ABC.

[2] Greater Ashford Development Framework, Ashford Borough Council, 2005

4 Description of the Scheme

4.1 Overview

4.1.1 The proposed Scheme is presented in Appendix A and involves the following key elements:

- A new Junction 10a comprising a gyratory roundabout over the M20 approximately 700m east of the existing Junction 10, two bridges over the motorway each carrying three traffic lanes and four new slip roads to cater for all movements to and from the motorway;
- A new link road between the new Junction 10a and the A2070 SOR to the south of Ashford;
- Provision of a roundabout at the junction of the existing A2070 SOR and the new link road in lieu of a signal controlled junction.
- Removal of the existing east facing slip roads at Junction 10;
- A new pedestrian/cyclist bridge over the M20 from Kingsford Street to the A20;
- Demolition of three properties (Clarks Nursery (disused), Wyevale Garden Centre and Highfield Cottage);
- Demolition and relocation of the sewage pumping station on Highfield Lane;
- Demolition of the existing Highfield Lane bridge, with NMUs rerouted to the new footbridge adjacent to Kingsford Street; and
- Replacement of the Church Road footbridge with a new bridge that meets the requirements of the Disability Discrimination Act 2005 and is suitable for cyclists.

4.2 A2070 Link Road

4.2.1 A new single carriageway road would be constructed linking the new Junction 10a to the existing A2070 SOR. This would incorporate a signalised junction with the proposed AXA/DMI development, although at this stage the masterplan for the development is unavailable and so the exact location of the access is unknown.

4.2.2 Access to the area of land between the M20, A2070 SOR and A2070 link road to allow for watercourse and other maintenance would be via a small lane at the western end of the link road; again, the details of this are not known at this stage.

4.3 Junctions

New Junction 10a

4.3.1 The new Junction 10a would comprise a gyratory roundabout over the M20 approximately 700m east of the existing Junction 10, two bridges over the motorway each carrying three traffic lanes and four new slip roads to cater for all movements to and from the motorway.

A2070 Junction

4.3.2 The junction of the new A2070 link road and the existing A2070 SOR would comprise a roundabout; although the exact design of this is not known at this stage and the design of the roundabout is progressing.

Barrey Road Junction

4.3.3 The junction at Barrey Road would be slightly amended, although it would remain right-turn restricted. Traffic leaving Barrey Road to head south on the A2070 SOR would need to turn left and then turn round at the proposed new A2070 roundabout.

4.4 Structures

New Junction 10a interchange bridges

4.4.1 These would comprise two continuous spans with a built-in pier, which would create an integral or semi-integral structure. The decks would be formed from precast pre-tensioned concrete beams and one or both bridges would provide for services requiring diversion from the demolished Highfield Road bridge.

New Junction 10a slip road bridges

4.4.2 These two structures would be constructed one on either side of the existing Lacton Farm culvert, which carries the M20 over the Aylesford Stream, to carry the new west facing slip roads over the Aylesford Stream. The bridges would be single span bridges, with the new supports located outside of the flood plain of the Aylesford Stream to avoid any impacts on Flood Zones 2 and 3. However, partial demolition of the headwall of the Lacton Farm culvert would be required, to enable the new slip road to be constructed, which would necessitate working within the stream. The method for this would be agreed with the Environment Agency as part of the Flood Defence Consent included within the DCO.

New Kingsford Street footbridge

4.4.3 A new cycle/footbridge would span the M20 opposite Bockham Lane. This would be a pre-fabricated steel bridge 3.5m wide, with approach ramps with a 1-in-20 gradient.

Existing M20 Highfield Road bridge

4.4.4 The existing bridge crosses over the M20 and if left in place, would be inside the proposed Junction 10a roundabout. In addition, as the existing bridge supports were designed before current standards, strengthening works would be required which could restrict future works on the M20. It is therefore proposed to demolish the bridge, once diversion of the services within the bridge structure has been carried out and an alternative route for Kingsford Street residents to access the A20 has been provided.

Existing Lacton Farm Culvert

4.4.5 This is an existing large culvert (3.5m x 3.1m high) allowing the M20 to cross the Aylesford stream. No major changes to this structure are proposed, although a mammal ledge would be installed.

Existing A20 Swatfield bridge

4.4.6 This is the existing single span structure which carries the A20 over the Aylesford Stream. It is proposed to install a new structure over and around the existing structure to remove traffic loading from the existing bridge, which would negate the need for strengthening works that could affect the Aylesford stream and to keep the approach embankments to within acceptable gradients.

New A2070 Church Road footbridge

4.4.7 A new cycle/footbridge would span the A2070 to replace the existing footbridge. This is likely to be a pre-fabricated steel bridge, with approach ramps with a 1-in-20 gradient, which would be compliant with the Disability Discrimination Act 2005 and suitable for cyclists.

Provision for non-motorised users

4.4.8 A telephone meeting was held between KCC's Rights of Way Officer and MMGJV in March 2015. KCC noted that the Public Right of Way ("PRoW") AE339 is a defunct footpath prior to the construction of Barrey Road and Ashford Business Park. KCC requested that the rights are extinguished, as the public highway supersedes the need for AE393. The existing PRoW AU101 connecting into Junction 10 consists of a set of steps and KCC requested that this be replaced with a ramp if possible.

4.4.9 In accordance with this discussion, a new footbridge adjacent to Kingsford Street would be provided to compensate for the loss of the existing Highfield Lane bridge. The Church Road footbridge would be replaced with one that meets the requirements of the Disability Discrimination Act 2005 and is suitable for cyclists.

4.5 Lighting

4.5.1 Lighting would be provided for all new junctions in the scheme, including Junction 10a, the AXA/DMI development access junction with the A2070 Link road and the junction of the A2070 link road with the existing A2070. As these junctions are situated within four Stopping Sight Distance ("SSD") lengths of each other, they would also be illuminated.

4.5.2 The lighting design is ongoing, but it is currently assumed that there would be 12m lighting columns in the verge and junction splitter islands, whilst supporting LED lanterns for greater light control and longer life burning. The lanterns would be mounted at zero degree inclination to reduce upward light. Along the A2070 link road the columns are expected to be mounted at the back of verge.

4.5.3 Electrical works would include feeder pillars and outgoing circuit cabling runs direct buried in the verge and through ducting beneath carriageway.

4.6 Drainage

4.6.1 The proposed drainage strategy would retain the existing drainage systems where they would be unaffected by the proposed works and use the existing outfalls where possible. The existing drainage system would be modified to incorporate the Scheme layout and would be upsized where required to meet the design criteria of no flooding for the 1-in-100 year plus 30% climate change event, where site constraints allow.

4.6.2 The existing attenuation pond EXP1 to the west of the proposed Junction 10a would be retained, in order to provide additional treatment and settlement to surface water runoff, although its attenuation volume would be supplemented by proposed dry pond 1 (to be located south of Junction 10a discharging to the Aylesford Stream via the existing attenuation pond/wetland area), which would attenuate up to the 1-in-100 year event (1% Annual Event Probability AEP) plus 30% climate change allowance.

4.6.3 Proposed pond 2 (to be located north of the junction of the A2070 SOR and the new Link road) would also attenuate up to the 1-in-100 year event (1% AEP) plus 30% climate change allowance event, and would be a wet pond. The designed retention time (up to 72 hrs) would promote sediment removal and allow biological treatment to occur.

4.6.4 Proposed pond 3 (to be located between Junction 10a and the A20) is designed to be a normally dry pond. This will drain the two new slips to the west of J10a, which due to site levels cannot drain to the proposed new attenuation pond EXP1 without pumping. It is therefore proposed to discharge runoff from the short lengths west of the stream (the majority of the slip roads will discharge to the proposed attenuation ponds) directly to the Aylesford Stream, with discharge rates limited to match the existing discharge rates. It is not possible to provide a betterment to the existing run-off rates at these outfall points due to site constraints. However, the overall cumulative attenuation the scheme provides is a significant improvement in comparison to the existing scenario. The existing outfalls would be replaced.

4.6.5 Penstocks would be installed upstream and downstream of each pond to allow isolation in case of a spillage within the catchment. In addition, bypass oil interceptors would be installed upstream of the ponds.

4.7 Consideration of Alternatives

4.7.1 The evolution of the Scheme design, and alternatives considered prior to the Preferred Route announcement are described above in Section 3.2. Subsequent to the Preferred Route announcement, the following alternative design option has been considered:

- Signalised junction at A2070 SOR/link road junction. However, this was abandoned as the delays that the traffic signals would have caused to

traffic flows along the A2070 SOR would have resulted in a negative BCR, which would have adversely affected scheme funding.

4.7.2 The proposed Scheme design therefore differs slightly from that which was included in the Scoping Report. However, this is not considered to be a material change and therefore resubmission of the Scoping Report is not required.

4.8 Relationship with the AXA/DMI development

4.8.1 An application for outline planning permission was submitted to ABC on the 18th July 2014 by Friends Life Ltd for land on the north side of Highfield Lane, Sevington (application reference 14/00906/AS). The application is for:

- *"Development to provide a mixed use development comprising: Up to 140,387 sqm Class B8 use; Up to 5,239 sqm comprising mixed B1c (light industrial) / B8 (storage & distribution) floor space of 3,706.6sqm (including 959sqm of operational mezzanine); with ancillary retail (A1) 873.7sqm, and ancillary office (B1a) of 658.7sqm; Up to 5,390 sqm Class B1c; Up to 5,150 sqm Class B1a: Up to 1,450 sqm Class A3 and or Class D1 use 2. Utilities infrastructure; 3. Car parking; 4. Transport works infrastructure; 5. Open space landscaping and associated ground works; Together with all associated and ancillary works."*

4.8.2 Following comments received from consultation, most notably from Natural England with regards to the ecological survey scope and methodology, and from Historic England with regards to potential adverse effects on St Mary's Church in Sevington, an amended application for the development will be submitted.

4.8.3 While planning application reference 14/00906/AS is a separate scheme from the M20 Junction 10a Scheme, the two are linked and the cumulative and combined effects of the two schemes will therefore be considered in the ES.

5 Consultation

5.1.1 A Scoping Report was submitted to the Planning Inspectorate on the 20th January 2015, with a Scoping Opinion received on the 2nd March 2015. A copy of the Scoping Opinion can be found at the following link, and will not be replicated here:

- http://infrastructure.planninginspectorate.gov.uk/projects/south-east/m20-junction-10a/?ipcsection=docs

5.1.2 Table 5.1 below describes the consultation that has been carried out subsequent to receipt of the Scoping Opinion and describes any actions that have been taken as a result of this consultation.

Table 5.1: Post-scoping consultation

Consultee	Date	Topic	Discussion summary	Action
Environment Agency	17/02/15 (Meeting)	Proposed new structures	Requirements for new culverts, bridges, outfalls and access to watercourses for maintenance work	Incorporated into the Scheme design
		Flood Risk Assessment	Flood modelling not require for a new/extended culvert with the same dimensions as existing structure	Modelling will not be carried out for the FRA
		Drainage design	Attenuation of flows to 1-in-100 plus 30% climate change event would be sought, although it was noted that Highways England's guidance currently states that 20% climate change should be considered.	Drainage design includes attenuation to the 1-in-100 plus 30% event
		Water Framework Directive	New guidance on screening of WFD compliance assessment for rivers was provided.	New guidance will be used for the WFD compliance assessment
	02/09/15 (Meeting)	Drainage design	Drainage of new slips to the west of J10a will be direct to the Aylesford Stream, with discharge rates limited to match the existing discharge rates. It is not possible to provide betterment to the existing run-off rates at these outfall points due to site constraints. However, the overall cumulative attenuation the scheme provides is a significant improvement in comparison to the existing scenario.	
Ashford Borough Council	17/02/15 (Meeting)	Drainage design	Attenuation of flows to 1-in-100 plus 30% climate change event, with a maximum discharge rate of 4 l/s/ha south of M20 and 2 l/s/ha north of M20 would be sought, in accordance with ABC's Sustainable Drainage SPD	Drainage design includes attenuation to the 1-in-100 plus 30% event
Ashford Borough Council	18/02/15 (Meeting)	Scheme introduction	Introduction to the Scheme, comments and concerns from ABC, community perspective / concerns and communications and proposed public consultation	Comments taken into consideration when planning the public consultation
English Heritage	24/03/15 (Meeting)	Cultural heritage	Cumulative impacts with the AXA/DMI development must be considered in the ES. The screening of the new A2070	Cumulative assessment will consider the AXA/DMI

Consultee	Date	Topic	Discussion summary	Action
		assessment	link road will be key to minimising adverse effects on St Mary's Church in Sevington.	development
Kent County Council Rights of Way officer	27/03/15 (Phone call)	Rights of Way	AE339 is a defunct footpath and KCC requested that the rights are extinguished, as the public highway supersedes its need. AU101 connecting into Junction 10 has steps and a ramp would be preferable.	Incorporated into the Scheme design
Natural England	09/04/15 (E-mail)	Ecological surveys methodology and scope	The approach and methodology proposed in respect of the protected species surveys is acceptable, subject to minor queries about GCN survey locations. Comments were also made about Local Nature Reserves and potential air quality effects.	Additional information to be provided on GCN survey locations and air quality effects will be considered within the ES
ABC and KCC	08/06/15 (Meeting)	Steering Group meeting	Scheme design, traffic modelling, timing of M20 Junction 10a Scheme and AXA/DMI development and the potential development of Church Road, Scheme disbenefits and economic benefits	Incorporated into the Scheme design
Waterman Group	16/07/15 (Meeting)	AXA/DMI development	Potential for collaboration between the public consultation for the two schemes, also potential sharing of ecological survey data	Discussions ongoing

6 Air Quality

6.1 Introduction

6.1.1 This chapter describes the existing environment in the surrounding area with respect to the factors relevant to air quality. The chapter describes the potential effects upon air quality that are anticipated from preliminary studies in relation to the M20 Junction 10a Scheme and outlines measures to help mitigate these potential effects.

6.2 Legislation and Guidance

6.2.1 In the UK, the presence of pollutants in ambient air is managed through legislation (including that transposed from EU Directives) and Government policy. With respect to NO_x, NO_2, PM_{10} and $PM_{2.5}$ a key tool in this management process is the establishment of air quality 'limit values' and 'objectives'. Air quality limit values and objectives specify the ambient concentration of a pollutant, a time period over which that concentration is measured, and a date by which compliance with the limit value or objective should be achieved.

6.2.2 The air quality objectives specifically for use by local authorities in carrying out their air quality management duties are set out in the Air Quality (England) Regulations 2000 and the Air Quality (England) (Amendment) Regulations 2002. Reference should also be made to the Air Quality Standards Regulations 2010 which came into force in June 2010 implementing EU Directive 2008/50/EC on ambient air quality.

6.2.3 The Environment Act requires that the UK Government produces a national 'Air Quality Strategy' ("AQS") containing standards, objectives and measures for improving ambient air quality and to keep these policies under review. The current AQS was made in 2007 under Section 80 of the Environment Act 1995. Table 6.1 below presents the relevant air quality objectives against which the Scheme will be assessed.

Table 6.1: Relevant air quality objectives

Pollutant	Averaging Period	Concentration	Allowance	Attainment Date
Nitrogen Dioxide (NO_2)	1 hour	200 µg/m^3	18 per calendar year	31 December 2005[(a)(b)] 1 January 2010[(c)]
	Annual	40 µg/m^3	-	31 December 2005[(a)(b)] 1 January 2010[(c)]
Nitrogen Oxides (NOx)	Annual	30 µg/m^3	-	30 December 2000 [(b)(d)]
Particulates (PM_{10})	24 hour	50 µg/m^3	35 per calendar year	31 December 2004[(a)(b)] 1 January 2005[(c)]
	Annual	40 µg/m^3	-	31 December 2004[(a)(b)] 1 January 2005[(c)]

Notes: (a) Air Quality (England) Regulations 2000 (as amended)
(b) Air Quality Strategy 2007
(c) EU Directive 2008/50/EEC on ambient air quality and cleaner air for Europe and The Air Quality Standards Regulations 2010
(d) For the protection of vegetation and ecosystems

6.2.4 On 27 March 27th 2012 the coalition government announced the introduction of the National Planning Policy Framework ("NPPF"). This new framework replaced the existing planning guidance with immediate effect with the purpose of helping to achieve sustainable development. With regard to air quality the new planning guidance states that:

- *"Planning policies should sustain compliance with and contribute towards EU limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and the cumulative impacts on air quality from individual sites in local areas. Planning decisions should ensure that any new development in Air Quality Management Areas is consistent with the local air quality action plan".*

6.3 Baseline

6.3.1 Information on air quality in the UK can be obtained from a variety of sources including Local Authorities, national network monitoring sites and other published sources. This Section provides a review of information available on baseline pollutant concentrations relevant to the study area, which is a 200m buffer around the Scheme. This includes information available from ABC and a scheme specific NO_2 diffusion tube monitoring survey.

Local Authority Review and Assessment

6.3.2 Following its first phase of review and assessment between 1998 and 2001, ABC deemed it unnecessary to declare any AQMAs, as all pollutants were achieving their respective objectives. A 2003 Updating and Screening Assessment ("USA") recommended that a Detailed Assessment be carried out to investigate exceedences of the annual mean PM_{10} objective along the M20, between Junctions 9 and 10. The Detailed Assessment concluded that the annual mean objective was being met at receptors along Canterbury Road and no AQMA declaration was necessary.

6.3.3 A 2009 USA concluded that the annual mean NO_2 objective was being exceeded at two locations close to the M20 Junction 10: Canterbury Road and Lees Road. Further modelling showed NO_2 concentrations to be close to, but not exceeding, the annual mean NO_2 objective and no AQMA declaration was necessary.

6.3.4 ABC's latest Updating and Screening Assessment from April 2015 concluded that all air quality objectives are being met for all pollutants across the Borough and there was no need to undertake a Detailed Assessment for any pollutant.

Local Authority Automatic Monitoring

6.3.5 ABC currently undertakes no automatic air quality monitoring. An automatic monitor measuring NO_2 and PM_{10} was operational until April 2011 and therefore historic data has not been presented.

Local Authority Passive Diffusion Tube Monitoring

6.3.6 ABC undertakes NO_2 diffusion tube monitoring at 16 current sites within the Borough. Table 6.2 below presents the latest results for these sites and Figure 6.1 shows their location. It also provides historical data for sites which are no longer operational.

Table 6.2: ABC NO_2 Diffusion Tube Data for 2012-2014

Site ID	Site classification	NGR		Approximate Distance from Proposed Scheme (km)	Annual Mean Concentration µg/m^3		
		X	Y		2012 (0.84)	2013 (0.79)	2014 (0.80)
AS03	Roadside	600976	142547	3.3	20.0	20.7	19.2
AS04	Background	601021	142754	3.3	18.8	18.0	17.0
AS06	Roadside	603153	141990	1.1	31.1	33.3	29.3
AS07	Roadside	587945	133079	17.1	24.6	26.2	25.1
AS14	Roadside	601460	143509	3.4	25.9	27.3	22.8
AS15(a)	Roadside	603401	142081	1.0	38.6	32.5	37.1
AS18(a)	Roadside	601309	143569	3.5	29.2	31.7	29.3
AS21	Roadside	600734	142717	3.5	23.2	24.3	20.7
AS22	Roadside	601218	143491	3.5	32.3	31.6	30.7
AS23	Background	601431	142735	2.9	19.3	19.9	18.3
AS24	Roadside	600778	142915	3.6	23.2	22.3	21.1
AS25	Roadside	601805	143007	3.4	22.2	20.8	-
AS26	Roadside	601249	142975	3.2	30.5	33.0	29.4
AS27	Roadside	600794	142320	3.3	21.3	21.2	19.7
AS28	Kerbside	597558	140734	6.4	13.8	14.6	-
AS29	Kerbside	598803	140799	5.2	16.4	17.4	-
AS30	Background	599433	142371	4.7	-	-	18.1 (b)
AS31	Roadside	601828	141461	2.1	-	-	19.8
AS32	Kerbside	600973	143027	3.5	-	-	20.6

Source: Ashford Borough Council

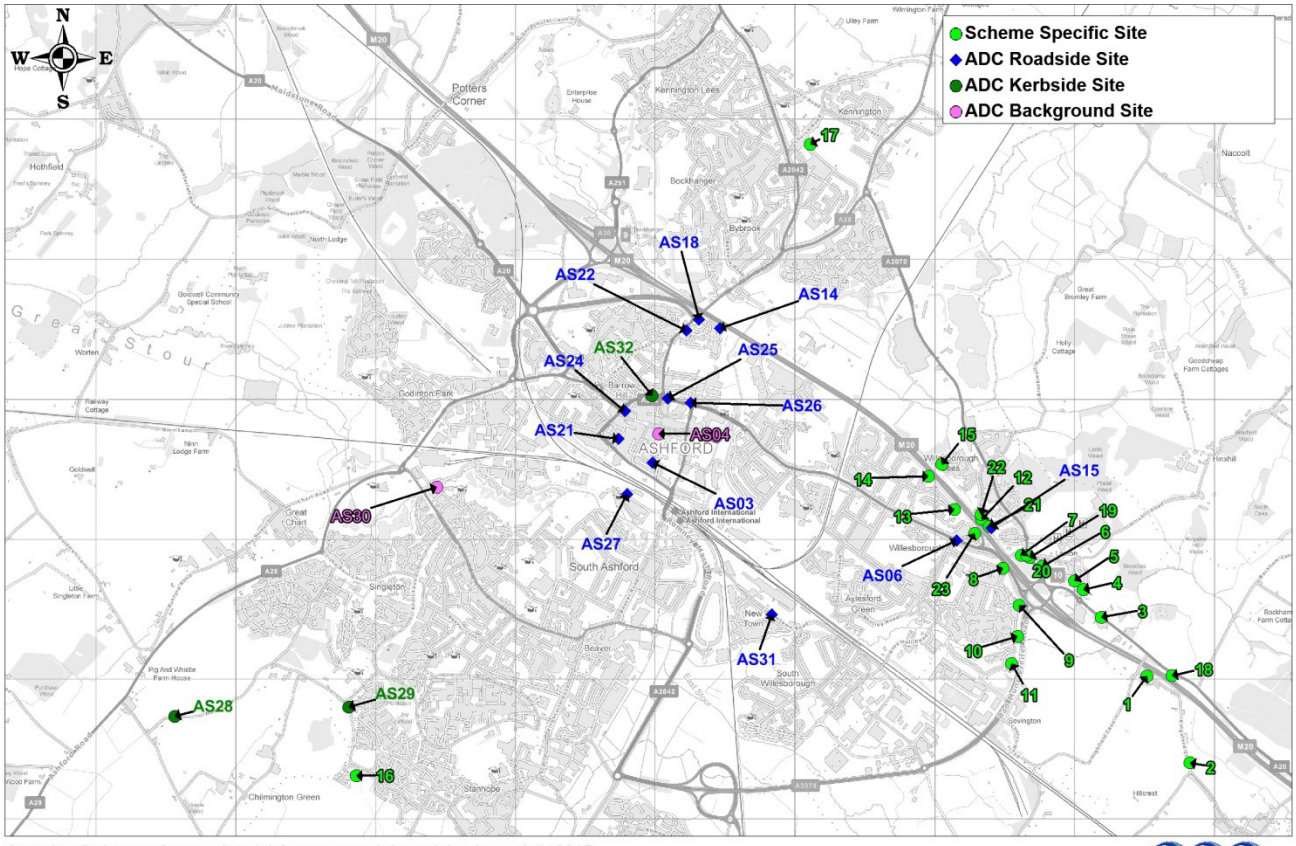
Note: Note: '-' indicates monitoring not undertaken in this year, data capture above 83% for 2014 at all sites with the exception of (b) (see below)

Bias adjustment factor in brackets next to year

(a) – Site AS15 and AS18 are triplicate sites: concentrations represent the average

(b) – Data capture <75%

Figure 6.1: Approximate locations of air quality measurements



Scheme Specific Diffusion Tube Monitoring

6.3.7 A Scheme NO2 diffusion tube monitoring survey commenced in September 2013 and was decommissioned in August 2014. Monitoring has been carried out and reported for 18 locations including properties near the M20 (see Figure 6.1 above). Table 6.3 below presents bias adjusted and annualised data for 2014 and is based on 7 months of data from January 2014 to August 2014.

Table 6.3: Scheme Specific Monitoring Results

Figure ID	Site Name	7 Month Average (µg/m³) (Bias Adjusted)	Equivalent Annual Mean (µg/m³)
1	M20J10A_001	18.0	19.8
2	M20J10A_002	17.9	19.7
3	M20J10A_003	36.8	**40.5**
4	M20J10A_004	23.1	25.4
5	M20J10A_005	24.7	27.2
6	M20J10A_006	38.3	**42.2**
7	M20J10A_007	26.9	29.6
8	M20J10A_008	24.8	27.3
9	M20J10A_009	24.0	26.5
10	M20J10A_010	23.4	25.8
11	M20J10A_011	24.5	27.0
12	M20J10A_012	31.4	34.6
13	M20J10A_013	21.9	24.1
14	M20J10A_014	20.7	22.8
15	M20J10A_015	21.2	23.3
16	M20J10A_016	10.7	11.8
17	M20J10A_017	17.9	19.6
18	M20J10A_018	35.6	39.1

6.3.8 In May 2014, 5 additional diffusion tube sites were established in order to provide additional data in areas where concentrations were elevated. This data is presented in Table 6.4 below and has been bias adjusted based on the national bias adjustment factor for 2014.

Table 6.4: Additional Scheme Specific Monitoring Results

Figure ID	Site Name	4 month Period Mean (µg/m³)
19	M20J10A_019	36.0
20	M20J10A_020	39.6[(a)]
21	M20J10A_021	37.4[(a)]
22	M20J10A_022	32.1[(a)]
23	M20J10A_023	26.8[(a)]

Notes:[(a)] = Based on 3 months of monitoring data only.

6.3.9 The Scheme monitoring data shows that concentrations are generally below the annual mean NO_2 objective within the study area. Monitored annual mean concentrations at sites 'M20J10A_003' and 'M20J10A_006' both exceed the NO_2 annual mean objective. M20J10A_003 appears to be affected primarily by the A20 (Hythe Road) and is located approximately 130m from the M20. M20J10A_006 appears to be affected primarily by the A2070 (Kennington Road) and is located 150m from the M20.

Defra Projected Background Concentrations

6.3.10 In addition to the data above, Defra provides estimates of background pollution concentrations for NO_X, NO_2 and PM_{10} across the UK for each one kilometre grid square, for every year from 2010 to 2030. Future year projections have been developed on the base year for the background maps, which is currently 2011. The maps include a breakdown of background concentrations by emission source, including road and industrial sources which have been calibrated against 2011 UK monitoring data. This data can be used to provide specific background pollutant concentrations at receptors included within the assessment and to supplement local monitoring data. The data shows that background pollutant concentrations are well below the air quality objectives.

Table 6.5: Defra Projected Background Concentrations of NO_x, NO_2 and PM_{10} and $PM_{2.5}$ at proposed Scheme (µg/m³)

Receptor Location (OS Grid Reference)		2014		
X	Y	NOx	NO2	PM10
603500	141500	23.9	17.7	18.3

Source: Defra: Air Information Resource (AIR)

Pollution Climate Mapping (PCM) Model

6.3.11 The PCM model is used to determine compliance in the UK with the EU limits values. A review of this model for the proposed project illustrates that NO_2 and PM_{10} concentrations are well below the EU limit value

Summary

6.3.12 Monitoring data from ABC in 2014 showed no exceedences of the NO_2 air quality objectives. Table 6.1 shows monitored annual mean NO_2 concentrations at the majority of sites have generally remained consistent or slightly decreased from 2012. No monitoring data for PM_{10} exists but it is concluded that concentrations of PM_{10} are well below the relevant air quality objectives in the study area.

6.3.13 Scheme specific monitoring data undertaken by Highways England illustrates that the air quality objectives are exceeded at two locations within the study area of the scheme.

Sensitive Receptors

6.3.14 At this stage potentially affected sensitive receptors have not been identified as the scheme traffic data is not currently available. However the key receptors will be residential properties and other receptors such as schools, hospitals and designated sites located within 200ms of roads which meet the DMRB affected roads criteria outlined below:

- Road Alignment will change by 5m or more; or
- Daily traffic flows will change by 1,000 AADT or more; or
- Heavy Duty Vehicle ("HDV") flows will change by 200 AADT or more; or
- Daily average speed will change by 10 km/h or more; or
- Peak hour speed will change by 20 km/hr or more.

6.3.15 The affected road network is defined based on a Do-Minimum (without Scheme) and Do-Something (with Scheme) scenario.

6.3.16 The study area for local air quality impacts also includes nature conservation sites ("Designated Sites") within 200m of affected roads. Designated Sites considered are Special Areas of Conservation ("SACs"), Special Protection Areas ("SPA"), SSSIs and Ramsar sites which have designated features that are sensitive to air pollutants, either directly or indirectly. Hatch Park SSSI, located 200m east of the Scheme footprint could experience a change in pollutant concentrations as a result of the Scheme, which will be assessed in the ES.

6.4 Consultation

6.4.1 Consultation has been undertaken through the Scoping Report submitted in January 2015, and the Scoping Opinion received from PINS in March 2015. As per the Scoping Opinion, further consultation will be undertaken with ABC to discuss the choice of receptors included in the assessment, once the affected road network can be defined.

6.5 Potential Mitigation Measures

6.5.1 The list of mitigation measures that are likely to be included within the CEMP are presented below:

- On-site vehicles will only operate on designated haul roads, which will be regularly damped down and swept;
- Minimising the need to transport and handle materials by placing adequate storage facilities close to working areas;
- A wheel wash will be installed for use by all vehicles exiting the site onto public highways;
- Drop heights of materials will be minimised;
- The number of times materials are handled will be minimised;

- Sheeting/covering of all trucks to prevent dust generation when accessing/leaving the site and to reduce any losses that could lead to build up of dust on highways;
- Speed restrictions of 5mph will be imposed on vehicles travelling around the site;
- All plant and vehicles will be maintained and conform to the relevant legislation and EU emission limits;
- Records of plant maintenance and defect reports will be maintained in a designated files, and made available on request; and
- Plant and equipment will not be left running for long periods of time when not in use to minimise exhaust emissions.

6.6 Potential Effects

Construction

6.6.1 An indicative construction assessment has been undertaken following best practice guidance using a risk based approach taking into account the dust raising potential of construction activities and the location of potentially sensitive receptors. The initial assessment identified a number of receptors which are potentially sensitive to dust emissions and located within 200m of construction activities and it is therefore recommended that mitigation measures be applied to avoid the risk of nuisance effects and/or loss of amenity. It is anticipated that following the assessment for the final design similar mitigation measures will be required within the CEMP.

Operation

6.6.2 At this stage of the proposed Scheme detailed traffic data is not available and therefore no assessment of the operational phase has currently been undertaken. However, possible operational effects could include

- Changes in emissions associated with changes in traffic flows (including composition and speed) on the local road network; and
- Changes in road layout which may bring road traffic emission sources closer to, or farther away from, sensitive receptors.

6.6.3 The Scheme is being designed to reduce congestion at peak times on and around M20 Junction 10 and at the entrance to the north bound on slip road on Hythe Road. Reducing congestion and increasing speeds can improve air quality, as can a reduction in traffic flows along roads. The redistribution of traffic as a result of the Scheme is likely to have both a positive and negative effect on air quality, depending on where the changes in flows occur. Roads which experience additional traffic or newly constructed roads will see a deterioration in air quality, while roads that have traffic removed and congestion at peak periods reduced will experience an improvement in air quality.

6.6.4 The Scheme is unlikely to cause an exceedance of the EU limit values but this will be assessed in full within the ES. The Scheme would have an effect on regional emissions, which will be assessed in full within the ES.

6.7 Chapter Summary

6.7.1 The Scheme would affect air quality around the M20 Junction 10 as a result of changes in the road layout and redistribution of traffic. Although detailed traffic data is not available for the purposes of this PEIR, and therefore the affected road network and affected sensitive receptors cannot be identified, it is likely that a number of sensitive receptors would be affected. A review of existing ambient monitoring data at locations close to the proposed Scheme shows that at the majority of locations the annual mean air quality objective for NO_2 would not be exceeded.

6.7.2 The Scheme could also have an effect on nearby receptors during the construction phase and the initial assessment has identified a number of mitigation measures that would be employed to reduce these impacts.

7 Cultural Heritage

7.1 Introduction

7.1.1 This chapter describes the potential effects upon the cultural heritage resource that are anticipated from the M20 Junction 10a Scheme and outlines proposed measures to help mitigate these potential effects.

7.2 Legislation and Guidance

7.2.1 The overarching legislation in relation to the historic environment in the UK is provided by:

- The Ancient Monuments and Archaeological Areas Act 1979; and
- The Planning (Listed Buildings and Conservation Areas) Act 1990.

7.2.2 The assessment will be undertaken in accordance with the published standards and guidance set out below:

- DCLG (2012) National Planning Policy Framework, Section 12 Conserving and enhancing the historic environment;
- DCLG (2013) National Planning Policy Guidance (NPPG);
- DfT (2007) Design Manual for Roads and Bridges, Environmental Assessment (Volume 11, Section 3, Part 2 – Cultural Heritage);
- English Heritage (now Historic England): Conservation Principles(2008);
- Historic England (2015) Historic Environment Good Practice Advice in Planning note 2 (GPA2) – Managing significance in decision taking in the historic environment);
- Historic England (2015).Historic Environment Good Practice Advice in Planning note 3 (GPA3) – The setting of heritage assets. and
- Chartered Institute for Archaeologists (2014) Standard and Guidance for historic environment assessment.

7.2.3 The local planning policies for the historic environment area contained in the Ashford Core Strategy (Adopted 2008) and include policy CS1(B): The Conservation and Enhancement of the historic environment and built heritage.

7.3 Baseline

Archaeological and Historical Overview

7.3.1 The study area of the assessment of effects on Cultural Heritage is a 1km buffer around the Scheme. The landscape currently consists of open regular fields, with a garden centre and a former nursery in the proposed location of Junction 10a. The Historic Landscape Character Assessment for the area notes that the landscape is dominated by post enclosure (late post-medieval) regular and wavy bounded fields indicative of extensive agricultural activity over the last 200+ years.

7.3.2 A significant historic landscape feature has been identified within the Scheme study area. The footpath located to the east of St Mary's Church in Sevington, has been identified by Historic England as a potential 'Pilgrim's Route'. These routes were laid out in the medieval period to guide pilgrims to Canterbury Cathedral, using the church spires and towers along the route as way markers. From the footpath to the east of the Scheme the spires of St Mary's Sevington and John the Baptist, Mersham, and the towers of St Mary's the Virgin Ashford and St Martins Aldington are visible. In addition the existing footbridge over the A2070 has maintained the historic 'Pilgrim's Route' link by maintaining a visual alignment with the spire of St Mary's (MM46) and the church tower at Ashford.

7.3.1 A single Upper Palaeolithic findspot is recorded within the study area (330m to the south west of the proposed Scheme). A findspot for Neolithic pottery and flints is recorded just to the east Highfield Lane (450m south of the proposed scheme). A Late Bronze Age field system was recorded during archaeological investigations for a balancing pond at Ashford Orbital Park (320m south west of the proposed Scheme), in addition Middle Bronze Age to late Iron Age agricultural features were recorded during investigation at Ashford Business Park (345m west of the Scheme).

7.3.2 Iron Age and Roman assets have been identified within the study area. These include a Late Iron Age (Belgic) settlement, Late Iron Age/Roman settlement features and five cremations at Ashford Orbital Park (320m south west of the proposed Scheme); Late Iron Age/Roman ditches and pits which were recorded during the construction of the A2070 (270m south of the proposed Scheme); A Late Iron Age settlement and field system recorded to the east of the A2070 (300m south of the proposed Scheme) and findspot for an Iron Age lead figurehead is recorded within the field to the east of the church.

7.3.3 Sevington and Mersham are recorded in the Domesday survey. Settlement in both parishes was most likely focused around the historic village cores. The Church of St Mary, Sevington is located within 100m of the western edge of Scheme and it is possible that associated medieval settlement may have extended north and west into the Scheme area. Trial trenching undertaken within the Scheme footprint (Wessex 2012b) recorded a medieval ditch to the north of the church (however no additional features were identified by the geophysical survey in this area).

7.3.4 As indicated by late post medieval historic maps (Ordnance Survey, Hasted's Map of Kent etc.), the proposed Scheme area was located within agricultural fields during the late post medieval period. This is supported by the Kent Historic Landscape Assessment, although structures associated with the farmsteads located along Hythe Road and Kingsford Street may have been present within Scheme footprint prior to the late post-medieval period.

7.3.5 The cartographic evidence depicts the development of quarries, commercial and urban development along the Hythe Road corridor during the late 19th/early 20th century. The late 20th century/early 20th century also saw the development of the

M20 and the A2070 within footprint of the scheme. However, much of the Scheme area is shown to have changed little since the mapping of the area began.

7.3.6 As discussed above geophysical survey and trial trenching has been undertaken within the Scheme footprint. These archaeological investigations identified undated features and recovered late prehistoric finds but did not identify any significant occupation features.

Designated Assets (Archaeology, Historic Buildings and Historic Landscapes)

7.3.7 There are a total 52 listed buildings located within 1km of the proposed Scheme. These include the Grade I Church of St Mary's at Sevington and the Grade II* windmill and Church of St Mary's at Willesborough.

7.3.8 Only one listed building is located within the footprint of the proposed Scheme; a Grade II milestone located in the area of the proposed new junction on the northern side of Hythe Road, opposite Highfield Lane. This asset however has been identified as missing and will therefore not be affected by the Scheme.

7.3.9 Two designated Conservation Areas lie within the 1km study area, covering the historic cores of Willesborough and Mersham. One Registered Park and Garden lies within the study area: Hatch Park.

Sensitive Receptors

7.3.10 Table 7.1 below sets out the key sensitive receptors that could be adversely affected by the proposed Scheme. The final ES will set out to assess the potential effects of the Scheme on the identified assets and provide recommendations for mitigation.

Table 7.1: Sensitive Cultural Heritage Receptors

Receptor	Location	Value/ Sensitivity	Description
Barn about 20 metres South East of Court Lodge (Grade II Listed Building)	TR 03614 40818	High (regional)	Barn. 18thC or earlier. Part of a group of buildings located in the historic core of the small medieval parish of Sevington. Has association with Court Lodge and is near St Mary's Church Located near busy A2070, however, retains some of its original rural character due to existing road screening and open fields located to the east.
Ransley Cottage (Grade II Listed Building)	TR 04731 40883	High (regional)	16thC timber framed clad cottage. Located on rural lane (Kingsford Street), with views across fields to south west and east. M20 visible in shallow cutting to north. Discernible road noise.
Redbur (Grade II Listed Building)	TR 04784 40755	High (regional)	16thC or earlier, clad 17th to 18thCand extended late 20thC. Located on rural Kingsford Street, with views across fields to west and east. Adjacent to M20 cutting but largely screened by tree line. Discernible road noise.
Barn/Garage about 20 metres West of Redbur (Grade II Listed Building)	TR 04774 40774	High (regional)	Barn, now garage, 17thC. Timber framed and weather boarded with plain tile roof. Hipped roof. Located in rear yard of Redbur (MM27).
Summerhill (Grade II Listed Building)	TR 04132 41449	High (regional)	18thC or earlier, L-shaped, former farmhouse. Located on the A20 and 50m north of the M20. Adjacent to supermarket and small residential development.
Church of St Mary, Sevington (Grade I Listed Building)	TR 03705 40875	High (National)	Parish church. 12thC, extended 13thC and 14thC, restored 1877 and 1936. Retains largely rural setting despite proximity to A2070 and M20. Spire visible from A2070, but A2070 is screened from the graveyard views by the intervening tree lines. M20 traffic slightly visible from northern edge of grave yard. Significant view of church from footpath (Pilgrim route) to the east of the church. Views of church spire and church tower at St Mary's Virgin, Ashford, are visible along foot path. View of St Mary Sevington spire from footbridge over A2070, and view of St Mary's the Virgin Ashford in other direction. Footbridge retains historic link with residential

Receptor	Location	Value/ Sensitivity	Description
			area and Willesborough to west. Church has strong links with the Court Lodge manorial complex, which as group represents a good example of a surviving small historic settlement.
Court Lodge, Sevington (Grade II Listed Building)	TR 03606 40845	High (regional)	House. 16thC or earlier clad 18th to 20thC. Part of a manorial group of buildings located in the historic core of the medieval parish of Sevington. Has association with Court Lodge barn and is near St Mary's Church. Located near A2070, but retains some of its rural settlement character due to the presence of existing road screening and open fields located to the east.
Barn at Court Lodge (Grade II Listed Building)	TR 03614 40818	High (regional)	Barn. 18thC or earlier. Part of a group of buildings located in the historic core of the small medieval parish of Sevington. Has association with Court Lodge and is near St Mary's Church. Located near busy A2070, however, retains some of its original rural character due to the presence of existing road screening and open fields located to the east.
Willesborough Windmill (Grade II* Listed Building)	TR 03129 42132	High (National)	Built in 1868 by John Hill of Ashford Mill-Wright. Rectangular brick base of 2 storeys. Above this is an octagonal smock mill of white weatherboarding with a platform and railing round, above the base. Bounded to east by a playing field but located within an urban area close to the M20. Located on a slight promontory and despite surrounding modern housing, the top of the windmill is visible in the surrounding landscape.
St Mary the Virgin, Willesborough (Grade II* Listed Building)	TR 02923 41529	High (National)	The Church of St Mary the Virgin, Willesborough, is a predominantly medieval church, with an early-13thC nave and tower, early-14thC chancel, and largely 15thC south aisle, which is believed to have replaced the original Saxon church. Originally a rural parish church now located within an area of 20thC development. Retains some of its rural character.
A moated site and associated garden earthworks 460m south east of Boys Hall (Scheduled Monument)	TR 02954 40766	High (National)	The monument includes a rectangular medieval moated site and associated garden earthworks situated on low lying ground on the northern side of the broad valley of the River East Stour. Partly overgrown. Isolated from the surrounding landscape by warehouses and bounded to the north by the railway.

Receptor	Location	Value/ Sensitivity	Description
Hatch Park (Grade II Registered Park and Garden	TR 05949 40578	High (regional)	The park was formed in the mid-18thC when the house was built and lies to its north, east, and west. It is partly under grass and partly under arable and is still grazed in places by a herd of fallow deer. The parkland to the north of the house represents the area of the medieval deer park. Here the land falls down to the north-east to the stew ponds, the largest of which forms a lake known as the Boat Pond c 400m north-east of the house. Beyond the Boat Pond the land rises gently to the perimeter belt. A generous scattering of parkland trees remains. Retains much of its planned 18thC character and setting and isolated from the surrounding landscape by the surrounding tree line.
Lacton Green Willesborough (Conservation Area)	TR 04020 41788	High (regional)	Originally a small rural hamlet located in the parish of Willesborough, located adjacent to (but not on) the Hythe Road (now the A20). Contains 14 Grade II listed buildings all of late post medieval date. Although located adjacent to the A20 and near the M20 the conservation area has retained much of its late post-medieval character, with the houses located behind high hedges along a winding road.
Mersham (Conservation Area)	TR 05380 39975	High (regional)	Mersham is a large rural village. Retains its historic character and setting.
'Pilgrim's Route'	TR 03465 41054 to TR 39931	Medium (county)	Potential historic pilgrim route to Canterbury. Church towers and spires were potentially used as wayleave markers along the route. Retains much of its historic rural setting. The church spires of St Mary (Sevington) and John the Baptist, Mersham and the church towers of St Mary the Virgin, Ashford and St Martin Aldington are visible at various points along the route within the study area. Current footbridge (over A2070) is aligned with Sevington and Ashford churches and the steeple and tower of the churches are visible along its length. View of Kent Downs from the asset (over area of proposed scheme footprint).
Undated archaeological features identified within Scheme footprint.	Scheme footprint	Low (local)	Archaeological features identified by geophysical survey and trial trenching and finds recovered during trial trenching.

Receptor	Location	Value/ Sensitivity	Description
Unknown (Late prehistoric to late post-medieval) archaeological remains within Scheme footprint.	Scheme footprint	Low (local)	Archaeological remains that may survive within the footprint of the scheme which weren't identified during the evaluation.

Baseline Surveys

7.3.11 A reconnaissance walkover of the proposed Scheme area was undertaken on 13th October 2014 to assess the ground conditions and overall historic environment potential of the study area; and a targeted walkover of the proposed Scheme area was undertaken on the 7th July 2015 to review the potential impacts on the key heritage receptors and wider historic landscape from the Scheme proposals (See Table 7.1 above).

7.3.12 No specific features of archaeological potential were identified within the footprint of the proposed Scheme during the walkovers. In addition the Listed milestone, (located on the junction of the A20 and Highfield Lane) located within the proposed Scheme footprint was found to be missing, which indicates that it has been removed or has been misallocated. This feature will therefore not be assessed further.

7.4 Consultation

7.4.1 Subsequent to the Scoping Opinion received in March 2015, a meeting was held on the 24th March 2015 to discuss the Scheme with the Historic England regional advisor, who noted the following should be assessed in the ES:

- Potential effects upon all designated historic assets and their settings, together with potential impacts on non-designated features of local historic, archaeological or architectural interest and value.
- The study area to be based on a 1km radius from the centre point of the Scheme, but should not rule out the potential for heritage assets outside of the study area being affected e.g. the spires of the parish churches at Ashford, Willesborough, Aldington and Sevington, which were designed to be seen and intervisible over large distances, along a pilgrimage route.
- The effects on the above heritage assets will need to be assessed in relation to physical impacts and changes within the assets' settings.
- The effects of the Scheme on the setting of the Grade I listed Church of St Mary, Sevington and the associated settlement that grew up around it.
- How aspects of the buildings' significance will be affected and, where appropriate, mitigated by the proposed development.
- Cumulative impacts of the Scheme and the AXA/DMI development.

7.4.2 In addition consultation has been undertaken with KCC's Historic Environment Service's archaeological advisor, to discuss the strategy to evaluate and mitigate (including archaeological investigation) the potential impact on the archaeological remains. The response received noted that main feature to be considered is St Mary's church in Sevington, and the impacts on this need to be assessed. Discussion with Historic England and KCC should continue throughout the EIA process. No further field work is needed at this stage, although archaeological works will be needed as part of any mitigation programme, which may involve preliminary evaluation and detailed stripping probably.

7.5 Potential Mitigation Measures

7.5.1 Construction will be carried out using industry best practice and in accordance with a CEMP to reduce any potential adverse effects. Mitigation measures for the historic environment will be incorporated throughout the design and construction stages. These could be controls imposed on construction activities, e.g. through the CEMP or further mitigation, such as compensatory measures or enhancement measures. This includes retaining aesthetics of the current (historic environment) landscape by reducing the impact on the setting of assets (conservation area, listed building etc.) and incorporating landscaping features and design features at the detailed design stage.

7.5.2 In addition to the identified scheme mitigation measures, archaeological investigation (such as excavation of buried remains) and built heritage/landscape surveys could be undertaken to help understand the value of assets where there is a potential loss.

7.6 Potential Effects

Construction

7.6.1 Construction impacts may arise as a result of the following activities:

- Temporary and permanent land take;
- Demolition and site clearance;
- Excavation, ground disturbance and compaction;
- Use of plant and machinery;
- Building up site levels with made-ground;
- Construction of new infrastructure or modification of existing infrastructure;
- Visual intrusion and disruption to access during construction;
- Creation of increased noise / dust during construction;
- Diversion/alteration of existing services or installation of new services; and
- Landscaping and planting.

7.6.2 These activities could lead to the following effects on the historic resource:

- Loss/damage or long term burial of archaeological remains;
- Structural damage to historic buildings due to proximity of works;
- Severance or loss of features such that the physical or visual integrity of a site is compromised and the ability to understand and appreciate the remaining elements is diminished;
- Long-term burial of archaeological remains;
- Temporary alteration and/or visual intrusion into the historic setting/character of a designated site or undesignated site of national or regional significance;

- Temporary effects on the access to, and amenity of, designated sites or undesignated sites of national or regional significance; and
- Opportunity to investigate and record archaeological remains and buildings of architectural or historic interest.

7.6.3 There may also be cumulative effects from the accumulation of different effects on the same resource, or accumulation of impacts on the same type of receptor.

Operation

7.6.4 Effects from the operational phase of the Scheme may arise as a result of the adverse or beneficial impacts upon the special architectural or historic interest of a designated site (or undesignated site of national importance) and its setting, character or appearance.

7.6.5 The Scheme could lead to the following effects on the historic resource:

- Increased visual intrusion both to and from sites/buildings of national or regional importance;
- Alteration to the historic setting/character of a designated site or undesignated site of national or regional significance;
- Increase or decrease in noise, vibration or dust such that the amenity or physical fabric of a nationally or regionally important site is either adversely affected or improved;
- Opportunities to enhance the character and setting of a designated site or undesignated site of national or regional significance; and
- Opportunities for heritage related education and tourism.

7.7 Chapter Summary

7.7.1 This chapter has identified that there are several heritage assets which potentially could adversely be affected by the proposed Scheme, either directly through loss or damage during construction or indirectly through adverse effect on the setting and/or amenity value.

7.7.2 The options for mitigation include designing the proposed Scheme to avoid or reduce impacts upon heritage assets. Archaeological investigation and historic building and landscape recording could be undertaken to record any heritage assets before loss. Careful design choices and landscaping can help to mitigate the effects upon the historic environment.

8 Landscape

8.1 Introduction

8.1.1 This chapter describes the existing environment in the surrounding area with respect to the factors relevant to the landscape within the study area, which is a minimum 1km buffer around the Scheme, although longer distance impacts are also considered where appropriate. The chapter describes the potential effects upon landscape that are anticipated from preliminary studies in relation to the M20 Junction 10a Scheme and outlines proposed design and other measures to help mitigate these potential effects.

8.2 Legislation and Guidance

8.2.1 No single prescribed methodology exists for assessing landscape and visual impact; however the assessment will follow best practice guidelines as set out in:

- Guidelines for Landscape and Visual Impact Assessment 3 produced by the Landscape Institute and Institute of Environmental Management and Assessment, third edition, 2013;
- Landscape Character Assessment Guidance for England and Scotland prepared jointly by the Countryside Agency and Scottish Natural Heritage, 2002; and
- Highways England's DMRB Volume 11: Environmental Assessment and Interim Advice Note 135/10.

8.2.2 Information has also been sought from Volume 2 of the Draft Environmental Statement[3] and Landscape Character Assessment Guidance for England and Scotland[4].

8.3 Baseline

8.3.1 The baseline assessment has been based on a study area encompassing a 1km offset from the centre line of the proposed Scheme. This is with the exception of the inclusion of the view from the highly elevated Devil's Kneading Trough some 4km north west from the scheme.

Local Environment

8.3.2 Transport corridors are dominant within the area, with the M20 running through the study area to the north east of Ashford and adjacent to the more southerly village of Mersham. The A2070 and A20 also form important transport corridors as they move through the centre of the study area, with the A2070 travelling south towards Romney Marsh and A20 running parallel with the M20. Likewise, the Channel Tunnel Rail Link ("CTRL") also traverses the landscape, although its impact is limited by running in cutting as it travels through the study area. The village of

[3] URS, 2010, Volume 2, Draft Environmental Statement
[4] Countryside Agency and Scottish Natural Heritage, 2002, available online at http://publications.naturalengland.org.uk/publication/2671754, accessed 28/07/2015

Willesborough has become adjoined with Ashford; a clear example of urban infilling extending south to previously outlying communities.

8.3.3 To the east of Ashford, built development has extended beyond the M20, characterised by a mixed land use of Willesborough Lees, the attractive village of Lacton Green, a designated Conservation Area, and dominating footprint of The William Harvey Hospital which sits on slightly elevated ground to the north of Lacton Green. A large Tesco superstore lies between the M20 and A20.

8.3.4 Away from the larger scale settlement of Ashford, the landscape is more open and rural in nature with irregular fields and blocks of woodland dominating, interspersed with small scale settlements such as the village of Mersham, also a Conservation Area, and isolated groups of houses. The Scheme in the most part is located in Natural England's National Character Area 120 Wealden Greensand, with a small proportion in Area 121, the Low Weald[5].

8.3.5 A number of PRoW traverse the landscape, particularly to the south east of the A2070 between the CTRL and the M20 running parallel to the north. There are no long distant footpaths within the study area.

Designated sites

8.3.6 Two Conservation Areas, at Lacton Green and Mersham, are located within the study area, to the north and south of the Scheme respectively. Other relevant designations include two Scheduled Monuments found within the study area. The first, Boys Hall Moat, a moated site and associated garden located immediately adjacent to the CTRL link just west of Ashford Industrial Estate. The second is a medieval moated site at Quarrington Manor located south of Quarrington Farm in the north eastern part of the study area

Sensitive Receptors

8.3.7 The significance of impact upon landscape character considers a combination of the magnitude of change against the quality, value and sensitivity to change of the affected landscape.

8.3.8 Landscape sensitivity considers the robustness of the landscape to accommodate change. The evaluation of the sensitivity of the landscape resource is based on factors and attributes which affect the value of the landscape and its susceptibility to change. These criteria will be set out in the ES chapter.

8.3.9 The visual sensitivity of individual receptors will depend upon the location and context of the view from the receptor, the activity associated with the receptor, and the importance of the view. Those receptors often considered to have a higher sensitivity to change include occupiers of residential properties and users of outdoor recreation/PRoW who are likely to be focused upon the surrounding

[5] National Character Area profiles, available online at https://www.gov.uk/government/publications/national-character-area-profiles-data-for-local-decision-making/national-character-area-profiles#ncas-in-south-east-england-and-london, accessed 16/10/2014. Accessed 14/08/2015

landscape. Other visual receptors which may be impacted to a lesser degree, due to a reduced level of visual sensitivity, include those where the vista is not the primary draw e.g. people involved in recreation activities such as sport, road users, and people in their place of work/school.

8.3.10 The sensitivity of individual landscape character areas and visual receptors will be included within the final ES.

Baseline Surveys

8.3.11 The landscape and visual baseline have been established through a desk study and site survey. The desk study used mapping and literature in order to gather an understanding of the study area and its surroundings. This included a review of Ordnance Survey mapping and several Landscape Character Assessments at a regional and local level, as well as the identification of any key designations that may be impacted by the scheme.

8.3.12 A ground modelling exercise has also been undertaken to understand the likely area in which the scheme would be visible. GLVIA 3 guidance states that the production of a Zone of Theoretical Visibility ("ZTV") should be undertaken. However, according to the guidance, the ZTV should only consider topography and does not include intervening built form or vegetation that may impact the extent to which a scheme may be visible. To give a more realistic reflection as to where the proposed scheme would be seen, both intervening built form and vegetation were included in the ground analysis model essentially creating what was previously known as a Zone of Visual Influence ("ZVI") in the 2nd edition of the GLVIA.

8.3.13 Site visits were undertaken by a Chartered Landscape Architect in March 2015 and June 2015 to undertake the baseline assessment of all visual receptors during winter and summer months, as well as capturing photographs from key viewpoints to establish the change in season.

8.4 Consultation

8.4.1 Contact was made with ABC to discuss the proposed methodology and receptors to be included within the landscape and visual assessment. The response received referred back to the issues presented within the scoping opinion. The team took these comments on board, capturing the long distance view from the highly elevated Devil's Kneading Trough to the east; being cognisant of the visual connectivity of the three spires of St Mary's Willesborough, St. Mary's Sevington and St. John the Baptist Church Mersham; and finally considering the setting of the St Mary's Church, Sevington.

8.5 Potential Mitigation Measures

8.5.1 A comprehensive environmental masterplan and subsequent detailed planting design will be produced in order to develop a robust landscape mitigation strategy.

Potential mitigation measures will seek to reduce impacts both during Construction and Operation phases. Measures could include the following:

8.5.2 Construction:

- Sensitive colouring of welfare facilities and temporary office units within site compounds;
- Keeping a tidy and organised site;
- Having materials delivered on as needed basis to prevent unnecessary stockpiles; and
- Protection of retained vegetation to be in accordance with BS 5837:2012.

8.5.3 Operation:

- Advance planting where possible;
- Use of screening vegetation to reduce views to the scheme;
- Use of native species appropriate to the local environment to aid integration with neighbouring landscape;
- Design of balancing ponds for landscape and ecological enhancement;
- Retention of visual connectivity between three spires of Mersham, Willesborough and Sevington;
- Sensitive planting design to protect setting of Sevington Church; and
- Top and tail embankments where space permits in order to soften earthwork profiles with surrounding landscape.

8.5.4 Mitigation planting incorporated into the environmental design would also aid screening of the route from nearby receptors and support the scheme's integration within the surrounding landscape. By Year 15, screening vegetation within the highway boundary would have established to form a mature belt of trees and shrubs, enclosing the scheme in these locations. The full screening potential will depend on the outcomes of the environmental design which is currently under development and will be further informed by the EIA process.

8.6 Potential Effects

Construction

8.6.1 Despite existing development there is potential for the Scheme to lead to a reduction in the quality of local landscape character, particularly during the construction phase when additional machinery and materials would exacerbate the presence of a new feature in the landscape. Large scale construction works, construction traffic, plant and site compounds would all be visible, forming new additions within the landscape and views afforded by local visual receptors.

8.6.2 Given the sensitivity of a number of nearby receptors there are likely to be significant adverse effects upon landscape character and visual amenity during Construction, whilst other receptors would be affected to a lesser degree. The ES

chapter will address these receptors, identifying likely changes in the view for each receptor, the magnitude of change experienced, and the resulting significance of effect during construction.

Operation

8.6.3 During operation there would be impacts upon both landscape character and visual amenity. The existing landscape is fragmented in places by the presence of the urban fringe of Ashford to the north and the existing M20 which forms a strong linear feature in the landscape. Despite this, the new junction and link road between the existing M20 and A2070 would bring a notable, although localised change to the existing agricultural landscape in this area.

8.6.4 Vehicles, including HGVs, would be visible travelling along the route, particularly in Year 1 when there are likely to be significant adverse effects, particularly for the immediate landscape character area and short distance visual receptors. The extent of visual intrusion would be limited given the changes in local topography which would contain views from the west and the south.

8.6.5 The detailed effects upon visual amenity and landscape character will be described in the ES, identifying the likely change in view during operation for each visual receptor and landscape character area, the magnitude of that change, and the resulting significance of effect.

8.7 Chapter Summary

8.7.1 This chapter has summarised the progress to date with regards to the production of the ES. It has stated the baseline conditions, mitigation and likely effects upon landscape character and visual amenity; concluding that significant adverse effects are likely during construction and the early years of the operational phase.

8.7.2 The final detailed assessment will account for the mitigation developments within the environmental design, having worked alongside the engineering design team to design out or reduce adverse impacts wherever possible. The final assessment will present detailed findings for landscape character and visual amenity clearly describing baseline conditions and likely changes during both construction and operation for all identified receptors.

9 Nature Conservation

9.1 Introduction

9.1.1 This chapter describes the existing environment in the surrounding area with respect to the factors relevant to nature conservation within the study area. The chapter describes the potential effects upon landscape that are anticipated from preliminary studies in relation to the M20 Junction 10a Scheme and outlines proposed design and other measures to help mitigate these potential effects.

9.2 Legislation and Guidance

9.2.1 The survey and assessment will be undertaken in line with guidelines set out in the following documents and sources:

- Bibby, C.J., Burgess, N.D., & Hill, D.A., 2000. Bird Census Techniques: 2nd Edition. London Academic Press.
- Bright, P. W., Morris, P. A., and Mitchell-Jones, A., 2006 (rev). Dormouse conservation handbook. English Nature.
- Edited by Gent, A. and Bray, R., 2001. Conservation and Management of Great Crested Newts. English Nature.
- English Nature, 2001. Great Crested Newt Mitigation Guidelines.
- Environment Agency, 1997. River Habitat Survey: Field Guidance Manual.
- Froglife, 1999. Reptile survey: an introduction to planning, conducting and interpreting surveys for snake and lizard conservation. Froglife Advice Sheet 10. Froglife, Halesworth.
- Harris, S., Cresswell, P. and Jefferies, D., 1989. Surveying Badgers. Mammal Society.
- Herpetofauna Groups of Britain and Ireland, 1998. Evaluating local mitigation/ translocation programmes: maintain Best practice and lawful standards. HGBI advisory notes for Amphibian and Reptile Groups (ARGs). HGBI, c/o Froglife, Halesworth. Unpublished.
- Highways England. DMRB, Volume 10 Environmental Design. HMSO, London.
- Highways England. DMRB, Volume 11 Environmental Assessment, Section 3 Part 4 Ecology & Nature Conservation. HMSO, London.
- Highways England (2009) Interim Advice Note ("IAN") 125/09 'Supplementary Guidance for uses of DMRB Volume 11 Environmental Assessment'.
- Highways England (2009a). IAN 126/09 'Environmental Impact Assessment: Reporting of Determination and Publication Notices'.
- Highways England (2010) IAN 130/10 'Ecology and Nature Conservation: Criteria for Impact Assessment'.

- Hundt, 2012 (2nd ed.). Bat Surveys, Good Practice Guidelines. Bat Conservation Trust
- Institute of Ecology and Environmental Management ("IEEM") (2006) Guidelines for Ecological Impact Assessment in the UK.
- IEEM Recommended Survey Methods.
- Joint Nature Conservation Committee, 2010. Handbook for Phase 1 Habitat Survey - a Technique for Environmental Audit. Reprinted by JNCC, Peterborough
- National Rivers Authority, 1992. River Corridor Surveys. Conservation Technical Handbook Number 1.
- Strachan, R., 2003 (rev). Water Vole Conservation Handbook. Wildlife Conservation Research Unit (WildCRU), Oxford University.

9.2.2 At national level, Section 11 of the NPPF, which relates to conserving and enhancing the natural environment, requires Local Authorities in England to conserve and enhance biodiversity, and protect habitats and species from decline. The Ashford Local Plan saved policies (Ashford Borough Council, 2010) Supplementary Planning Guidance and Core Strategy include a range of policies that put into effect the NPPF.

9.3 Baseline

9.3.1 The study area for the assessment of effects on Nature Conservation is a 2km buffer around the Scheme.

Local Environment

9.3.2 A Phase 1 Habitat Survey and Assessment was undertaken in November 2014, which identified arable, woodland (broad leaved plantation and broad leaved semi-natural), dense scrub, hedgerows, reed swamp, scattered trees and scrub, semi-improved grassland and standing water as being present.

Designated sites

9.3.3 Hatch Park/ Bockhanger Wood SSSI is located 170m east of the Scheme. The site is designated for its unimproved acidic grassland, a scarce habitat in Kent, and its ancient pollard woodlands, the latter supporting the richest epiphytic lichen community in the county. The woodlands are varied, but most are of ancient origin with pollarded oak and hornbeam predominating.

9.3.4 Ashford Green Corridor Local Nature Reserve ("LNR") is located 25m west of the Scheme and comprises an urban river corridor formed of a collection of green sites extending from the centre of Ashford to the surrounding countryside. Habitats include open water, wet grassland and mature bankside tree stands. The corridor supports a range of common riverine flora and fauna as well as protected species such as water vole, kingfishers, range of odonatans, and grass snakes.

9.3.5 Willesborough Lees and Flowergarden Wood Sites of Nature Conservation Interest ("SNCI") is located 600m north of the Scheme. The 40ha site includes wetland, pasture, rough grassland, and scrub and woodland habitats. The Woods near Brabourne SNCI is located 2km north-east of the Scheme, although no information is available about this site. South Willesborough Dykes SNCI is an important geological site supporting neutral and wet grassland species located 2km southwest of the Scheme.

9.3.6 The Great Stour is located 2km west of the Scheme and is designated as a Local Wildlife Site "(LWS") throughout much of its length. The Stour supports a range of habitats and rare aquatic and marginal plant life, including populations of birds, invertebrates and water voles.

9.3.7 The Highfield Lane/ Kingsford Street Junction, is located within the Scheme footprint and is designated under the Kent Road Verge Project, which was set up in 1994 to identify, protect and manage road verges of importance for wildlife. These support threatened habitats and wildlife, providing corridors for species such as reptiles, badger and pollinating insects.

Sensitive Receptors

9.3.8 In addition to the designated sites listed above, the following sensitive ecological receptors have been identified:

- Aylesford Stream Corridor;
- Arable;
- Poor Semi-Improved Grassland;
- Semi-Improved Grassland;
- Other Habitats (including tall ruderal, ephemeral/short perennial and scattered scrub);
- Broadleaved Plantation Woodland (Mixed and Sweet Chestnut Dominant);
- Broadleaved Semi-Natural Woodland;
- Species-Poor Hedgerows;
- Species-Rich or 'Important' Hedgerows (according to the hedgerow Regulations 1997);
- Standing Water and Reed-bed;
- Badgers (*Meles meles*);
- Bats;
- Breeding Birds;
- Water Vole (*Arvicola amphibious*);
- Dormouse (*Muscardinus avellanarius*);
- Great Crested Newt (*Triturus cristatus*);
- Invertebrates (ie white clawed crayfish, *Austropotamobius pallipes*); and

- Reptiles e.g. slow worm (*Anguis fragilis*), viviparous lizard (*Zootoca vivipara*), grass snake (*Natrix natrix*), and adder (*Vipera berus*).

9.3.9 Potential impacts on these will be assessed in the ES. Other species (otter (*Lutra lutra*), brown hare (*Lepus europaeus*), wintering birds, and fish) may also be assessed, following the completion of baseline surveys to determine their value within the context of the study area

Baseline Surveys

Badgers

9.3.10 Badgers have been recorded within the study area and wider surroundings, as identified in desk studies undertaken in 2005 and 2010, and following field surveys undertaken in 2007, 2010 and 2012. The field surveys in 2007 identified one active and seven inactive setts, and forty badger latrines. Field surveys repeated in 2010 confirmed that a sett previously identified was still in use, but with reduced badger activity. A further field survey in 2012 survey determined that three of the setts were no longer present, but one of the other setts did show signs of activity.

9.3.11 These findings are supported with information from Highways England's EnvIS environmental database, which has confirmed undated records of badger within 1km of the Scheme.

9.3.12 Updated surveys in 2015 confirmed an active badger sett within the Scheme footprint was still in use, due to evidence of bedding material outside one of the entrances. Infra-red, motion sensor camera surveys are currently underway to confirm levels of activity. A further sett was identified to the north of the M20 during the initial walkover. However, badger foraging surveys indicate that the badger territories do not currently overlap, although the evidence gathered did not provide a conclusive picture of their foraging area/s.

Bats

9.3.13 Desk studies previously undertaken in 2005, 2008 and 2010 identified records for pipistrelle (*Pipistrellus spp.*), brown long-eared (*Plecotus auritus*), noctule (*Nyctalus noctula*), Daubenton's (*Myotis daubentonii*), Natterer's (*Myotis nattereri*), whiskered / Brant's (*Myotis mystacinus / brandtii*), and serotine (*Eptesicus serotinus*) bats. Sixteen roosts were recorded within 2.5km of the Scheme.

9.3.14 Bat surveys were undertaken in 2008, 2010, 2012 and 2014. The 2008 surveys confirmed bat activity within the study area, with records of common (*Pipistrellus pipistrellus*) and soprano (*Pipistrellus pygmaeus*) pipistrelle bats. Common and soprano pipistrelle, *Myotis sp.*, Leisler's (*Nyctalus leisleri*) and noctule bats were recorded during surveys carried out in 2010, although no roosts were confirmed within any of the built structures or trees surveyed.

9.3.15 Surveys undertaken in 2012 recorded common pipistrelle, soprano pipistrelle, noctule, Leisler's and Natterer's bat. Three common pipistrelle bat roosts were thought to have been identified. These were located at Court Farm complex, St

Mary's Church and north of Sevington Church in a mature horse chestnut tree. The survey findings indicated that these locations were used by low numbers of bats. One building was surveyed in 2014 (Highfield Bungalow) but no bats were seen to have emerged or re-entered the building.

9.3.16 In 2015, habitat features were reassessed in order to determine whether any built structures or trees have potential to support bats. Buildings and trees considered to have potential have been surveyed. To date, one building has been confirmed as supporting a bat roost. Additionally, three transect routes have been surveyed on a monthly basis. Bats have been identified foraging and commuting throughout the study area.

Breeding and wintering birds

9.3.17 Previous desk studies were undertaken in 2005 and 2008 to ascertain records of bird species assemblage within the study area. Field surveys were undertaken in 2010 and 2012, which also recorded a range of birds, including breeding birds.

9.3.18 These surveys were updated in 2015, with 32 species recorded in March 2015, including kingfisher (*Alcedo atthis*). Three visits were undertaken as part of a breeding bird survey, with a total of 43 species recorded, including kingfisher and barn owl (*Tyto alba*). In addition, eight species were confirmed to be breeding on site; 20 species were considered to probably breed within the study area, and a further 11 species are possible breeders within the study area.

Brown hare

9.3.19 A desk study undertaken in 2010 returned records of brown hare (*Lepus europaeus*) approximately 1km and 1.5km from the Scheme. Historic consultation with Natural England confirmed that brown hare should be considered an ecological receptor. Although no specific surveys were undertaken for brown hare, there were sufficient opportunities for ad hoc sightings to have been made of their presence within the study area. No brown hare were recorded during any of the survey work to date.

Dormouse

9.3.20 A previous desk study confirmed records of dormice (*Muscardinus avellanarius*) 5km from the Scheme (undated). This is supported with records from the Highways England EnvIS database, which includes records of dormice approximately 1.5 and 1.6km north of the Scheme (undated) and further records of dormice located outside the 2km study area.

9.3.21 Field surveys for dormice have included a survey in 2010, but no dormice were found. A subsequent habitat assessment was undertaken in 2012 which identified habitats with potential for dormouse, but an updated survey was not undertaken as it was considered that dormouse presence within the Scheme footprint would be due to presence of a relic population that had become isolated.

9.3.22 Dormouse surveys were commenced in 2015 and are still on-going. Presence of dormice has been confirmed by the finding of dormice nests in the broadleaved semi-natural woodland and hedgerows in the vicinity of Kingsford Street. Ongoing survey visits are planned, which may provide evidence of dormice using other habitats within the study area.

Reptiles

9.3.23 Record searches and field surveys undertaken in 2005 confirmed presence of reptiles, including widespread reptile species slow worm; viviparous lizard; and grass snake. Reptile surveys in 2008 found slow worms across the site, with a peak count of nine individuals; viviparous lizards were recorded along the Aylesford Stream, with the rough grassland to the south-west of the stream and within a parcel of land between the M20 and the A20. Adders were also reported immediately north and south of the M20.

9.3.24 Subsequent surveys in 2010 recorded slow worm and viviparous lizard, and in 2012 peak counts of 32 viviparous lizards, 24 slow worms and two grass snakes as well as numerous juvenile reptiles. Additional areas surveyed later in 2012 also recorded viviparous lizards and slow worm.

9.3.25 A desk study that included the Highways England EnvIS confirmed records of grass snake within approximately 1.5km of the Scheme (no date of records). Updated surveys in 2015 identified slow worm, viviparous lizard and grass snake within the study area. These surveys are ongoing.

Great crested newt

9.3.26 Results from previous desk studies (2005, 2010) of great crested newts ("GCN") found a record of GCN presence approximately 1km from the Scheme. Pond surveys for GCN undertaken between April and June 2008, confirmed a small population of GCN in a garden pond 120m south of the Scheme. Surveys were then undertaken in 2012 as part of the AXA/DMI scheme.

9.3.27 Seven ponds were subject to Habitat Suitability Index ("HSI") assessments and GCN surveys. Of these, GCN were confirmed as present at two of the ponds, with a peak count of 31 GCN giving a Population Size Class Assessment of 'medium'. In 2015, surveys were again undertaken of accessible and suitable ponds. No GCN were found in the ponds surveyed, although two of the ponds where access was had not been agreed with the landowner were the two ponds where GCN presence had previously been confirmed (Ponds 20 and 21).

9.3.28 Other amphibians found during the surveys included one toad (*Bufo bufo*) by the bank along Aylesford Stream, and smooth (*Lissotriton vulgaris*) and palmate (*Lissotriton helveticus*) newts within Highfield Bungalow Pond, and Pond 2.

Otter

9.3.29 A previous desk study was undertaken in 2007, with a record returned of otter for 2 sites, the closest of which was Conningbrook, 2km north of the Scheme. A

recent report of an old spraint and fresh prints found at Conningbrook suggest that site is still being used. Field surveys undertaken in 2010 did not identify any signs of otter activity. Field surveys to identify otter activity were undertaken in 2015, in combination with the water vole survey, but no signs of otter were identified.

Water vole

9.3.30 Desk studies undertaken in 2005, 2007 and 2010 recorded presence of water voles within 0.2 km of the Scheme, and surveys undertaken in 2010 and 2012 confirmed presence of water voles along Aylesford Stream, within the study area, with ten water vole burrows found along the bank in 2010 along with other signs of water vole activity. These surveys were updated in 2015. Findings included 85 burrows; 28 latrines; feeding stations, and runs through the vegetation indicating activity at the time of the survey. The potential population of 19 water voles was estimated, based on the evidence found. On a subsequent site visit (during a bat survey in July 2015), two water vole were seen foraging.

White clawed crayfish

9.3.31 Previous desk studies undertaken in 2005 provided records of white clawed crayfish in the Great Stour River, of which Aylesford Stream is a tributary. Surveys undertaken in 2008, 2010 and 2015 did not find any evidence of presence.

Fish

9.3.32 A record of a European eel (*Anguilla anguilla*) and a bullhead (*Cottus gobio*) in the Aylesford Stream was produced during white clawed crayfish surveys. No surveys were undertaken in 2015 as presence of fish has been assumed.

Invasive species

9.3.33 Japanese knotweed (*Fallopia japonica*) was identified along the northern verge of the A20. Rabbits (*Oryctolagus cuniculus*) occur throughout the site extent, although the colonies are relatively localised and established.

9.4 Consultation

9.4.1 Prior to the start of the ecological surveys outlined above in Section 9.3, Natural England was consulted on the proposed scope of the surveys. The response from Natural England stated that "*The approach and methodology proposed in respect of the protected species surveys is acceptable to Natural England. Appropriate and relevant guidelines have been identified and the timings, frequency and numbers of proposed surveys are also acceptable to Natural England.*" However, queries were raised relating to the number of ponds to be surveyed GCN *"Your report dated 25th March 2015 makes reference to 23 ponds in respect of the Great Crested Newts surveys – pages 5 and 6. However, ponds 17 and 18 are not indicated as being proposed for survey, able to be accessed or discussions underway regarding access, or whether they have been scoped out – and the reason if they have. There is no indication as to what is happening with ponds 17 and 18 and it would be useful to clarify this in any future report."*

9.4.2 Ponds 17 and 18 are located more than 250m from the proposed works and are separated from the proposed scheme by the railway line. Although railway land can be suitable terrestrial habitat, in this case it is likely to pose a barrier to dispersal due to the high voltage supply and width of the railway, which offers with minimal shade and water retention potential.

9.4.3 The response from Natural England also highlighted the potential for air quality impacts on Hatch Park SSSI; this will be addressed by the air quality assessment. Consultation with other environmental organisations with regards to Nature Conservation is yet to be undertaken.

9.5 Potential Mitigation Measures

9.5.1 The detail of the proposed mitigation measures will be refined as the Scheme design progresses, and will consider the potential impacts of the proposed Scheme in combination with the proposed AXA/DMI development, but at this stage potential mitigation measures could include:

- Minimising loss of valuable semi natural habitats and maintain habitat connectivity where possible. Where habitat loss is inevitable, replacement habitats to be provided, providing habitat connectivity where possible.
- Providing mammal tunnels beneath the proposed link road to ensure animals such as badgers can gain access to the wider surrounds without having to resort to the Highway estate (ie the A2070 and M20 verges). This could be augmented with the planting of hedgerows to direct the animals to other suitable habitat within the wider landscape.
- Considerate design, such as the use of drainage infrastructure that is designed to avoid trapping amphibians, and the design of balancing ponds to minimise risks to wildlife during the operational phase, as maintenance operations have potential to cause harm to animals that colonise the ponds, particularly GCN.
- Minimising illumination where possible and ensuring that any lighting that is necessary is directed and localised to prevent detrimental effects to habitat quality and function.
- Sensitive working methodologies to be implemented during construction works, such as working under protected species mitigation licences, for e.g. badger, dormouse, GCN and bats. Other species not protected directly, but considered priority species, would require works to be undertaken in accordance with non-licenced mitigation strategies.

9.5.2 Mitigation may not be able to minimise all impacts to wildlife, particularly in regards to the cumulative impacts of the proposed Scheme with the proposed AXA/DMI development. As such compensation would be required, and measures could include:

- Provision of alternative habitats suitable for birds to be able to breed, forage and rest. Ground nesting birds, such as skylark (*Alauda arvensis*) may require offsetting to maintain the conservation status of the species at a district, rather than local, level.

- Enhancement of the wider landscape habitats to ensure species resilience within the remaining triangle of land created by the proposed link road, and consideration on the means of providing connectivity for species that may otherwise be isolated.
- Enhance and increase remaining habitats so that they are of a higher quality than those which were lost, to ensure a net gain for nature conservation.

9.6 Potential Effects

9.6.1 Following consideration of the possible mitigation measures outlined above, there is the potential for the following effects during construction and operation.

Construction

- Risk of killing, injury and disturbance of protected and notable species during construction works. Disturbance has the potential to cause stress to mammals and birds, reducing their resilience and breeding success, thereby affecting their conservation status locally.
- Isolation of a potential dormouse population, which could reduce resilience and increase risk to the conservation status of the population.
- Mitigation for the closure of the badger sett, loss of foraging habitat and isolation of badger territory would be required, although if rejected could result in evacuation of the area to search for a new territory with associated conflict with other badgers or collisions with vehicles.
- Loss or damage to designated sites, to habitats of varying intrinsic value and overall habitat extent and connectivity.

Operation

- Reduction in the quality of some habitats due to noise and vibration, illumination, change in character and presence of vehicles and people, and reduction in air quality, due to dust and emissions.
- Long term air quality effects may the effect lichen community, which is a designated feature of the Hatch Park SSSI.
- Badger/vehicle collisions, if they do not use the proposed mammal tunnel.
- Reduction of the local conservation status of bat populations, should individuals attempt to fly over the proposed link road to utilise semi-natural habitats within the remaining triangle of land for foraging purposes. Loss of potential roost opportunities due to the degradation of habitat quality.
- Bird mortalities due to road traffic collisions.

9.7 Chapter Summary

9.7.1 There are valuable habitats and species present of nature conservation importance which could be affected by the proposed Scheme. The ongoing ecological surveys and EIA work will help identify mitigation measures to reduce the magnitude of impacts through sensitive design and construction

methodologies, with a view to safeguard the conservation status of populations through both the construction and operational phases.

9.7.2 A number of measures have been recommended to guide the design process and identify mitigation requirements. However, these measures are not an exhaustive list and are likely to require a review and additional measures following completion of the survey and design work.

10 Geology and Soils

10.1 Introduction

10.1.1 This chapter describes the existing environment in the surrounding area with respect to the factors relevant to geology and soils within the study area, which is a 250m buffer around the Scheme. The chapter describes the potential effects that are anticipated from preliminary studies in relation to the M20 Junction 10a Scheme and outlines proposed design and other measures to help mitigate these potential effects.

10.2 Legislation and Guidance

10.2.1 The main legislative framework regarding geology and soils (including contaminated land) is set by the following legislation, guidance and best practice:

- Agriculture Act 1986;
- Construction (Design and Management Regulations) 2007;
- Contaminated Land (England) (Amendment) Regulations 2012;
- Control of Pollution (Oil Storage) (England) Regulations 2001;
- Control of Substances Hazardous to Human Health 2002 (as amended);
- Environmental Damage and Liability (Prevention and Remediation) Regulations 2009;
- Environmental Permitting Regulations (England and Wales) 2010;
- Environmental Protection Act 1990 (as amended by the Environment Act 1995);
- Environmental Protection (Duty of Care) Regulations 1991 (as amended 2003);
- Landfill Directive 1999/31/EC 1999;
- Hazardous Waste (England and Wales) Regulations 2005;
- Landfill Tax (Contaminated Land) Order 1996;
- Landfill (England and Wales) Regulations 2002;
- Town and Country Planning Act 1990;
- Water Act 2003;
- Water Resources Act 1991 (WRA 1991) and Amendment 2009; and
- Wildlife and Countryside Act 1981 and (Amendment) Act 1985 (as amended by the Countryside and Rights of Way Act 2000).

10.3 Baseline

Proven Ground Conditions

10.3.1 A Ground Investigation ("GI") has been undertaken in June and July 2015. The full details of this GI, including the final Factual Report were not available at the time of writing this PEIR. The proven ground conditions from this GI will inform the ES and the Phase 1 and Phase 2 Contaminated Land Risk Assessment Report ("CLRA"). The information provided below is therefore taken from a GI undertaken in 2010[6], and the British Geological Survey ("BGS") Geology of Britain viewer[7].

Made Ground

10.3.2 Made Ground was encountered up to 6.45m in thickness within the backfilled quarry near Highfield Lane Bridge. This comprised of sandy clayey gravelly silts and slightly gravelly clay with gravel of brick, clinker, charcoal, limestone and chalk and gravel sized fragments of metal. Made Ground was also encountered comprising of quarry spoil within the former nursery area. The deposits were encountered to a maximum depth of 1.3m and consisted of sand, gravel, cobbles and boulders of limestone.

Superficial Deposits

10.3.3 BGS mapping indicates that superficial deposits are absent across large regions of the site, with the exception of a band of Alluvium associated with the Aylesford stream, and occasional River Terrace Deposits to the north of Hythe Road and underlying the M20 carriageway approximately 650m to the south of Junction 10a

Bedrock Geology

10.3.4 BGS mapping indicates the geology underlying the site comprises of Folkestone Formation, Hythe Formation, Atherfield Clay Formation, and Sandgate Formation.

Soil Conditions

10.3.5 Based on the Cranfield Soil and Agrifood Institute Soilscapes online map8, the entire proposed Scheme is located over "Freely draining slightly acid but base-rich soils". According to the Agricultural Land Classification of England and Wales (Ministry of Agriculture, Fisheries and Food 1988)[9], the Scheme is located over land classified as Grade 2 (Very good quality agricultural land) and 3 (Good to moderate quality agricultural land).

10.3.6 Topsoil encountered is anticipated to be <1.00m in thickness. This was confirmed by the 2010 GI. Topsoil was encountered to a minimum depth of 0.60m and a maximum depth of 1.00m.

Designated sites

[6] URS Corporation Ltd., 2011: M20 Junction 10A Access to the South of Ashford, BDRP0014 Ground Investigation Report
[7] BGS Geology of Britain viewer: http://mapapps.bgs.ac.uk/geologyofbritain/home.html
[8] Cranfield University Soilscapes: http://www.landis.org.uk/soilscapes/, accessed May 2015
[9] Ministry of Agriculture, Fisheries and Food, 1988: "Agricultural Land Classification of England and Wales, Revised guidelines and criteria for grading the quality of agricultural land"

10.3.7 The nearest geologically important site is Wye and Crundale Downs SSSI, approximately 5km north of the Scheme, this includes the Devil's Kneading Trough. This site is one of the most important periglacial sites in Britain for its classic forms, erosional history and the biostratigraphy and lithostratigraphy of its associated deposits, although it is highly unlikely to be impacted due to its distance from the Scheme and the nature of the works being undertaken.

Contamination and Contaminated Land

10.3.8 The assessment of contaminated land takes account of the '*source-pathway-receptor*' approach which seeks to establish the potential for a link between a source of contamination and a receptor which may constitute a risk.

Potential Contamination Sources

10.3.9 The following potential contamination sources have been identified from a review of historical maps and other sources of information:

- **S1:** Historic quarry and later use as a landfill site (Mersham Quarry);
- **S2:** Unnamed quarry (Hythe Road Quarry) marked on the 1933-1939 OS map south of the Hythe Road;
- **S3:** Unnamed quarry (Nursery Quarry) marked on the 1907-1908 OS map in the same location as the existing disused plant nursery**;**
- **S4:** M20 carriageway construction (potentially contaminative construction materials during the original construction of the motorway);
- **S5:** Vehicle use and maintenance work on operational M20 carriageway;
- **S6:** Willesborough Garden Centre;
- **S7:** Disused plant nursery; and
- **S8:** Potential for gas generation form organic materials including peat layer identified in URS GI log for Trial Pit 06.

10.3.10 Potential off-site sources:

- **S9:** Farms and associated agricultural practices

Potential Contamination Transport Pathways

10.3.11 The following potential contamination transport pathways have been identified:

- **P1:** Human Uptake Pathways (derived from the CLEA model for commercial uptake land use): Ingestion of exposed soils/waters during construction; inhalation of soil/dust/volatised compounds; and dermal contact with exposed soils/waters.
- **P2:** Vertical migration of leachates in unsaturated zone;
- **P3:** Vertical and horizontal migration of contaminants in the saturated zone;
- **P4:** Man-made contaminant transport pathways (e.g. the creation of new contaminant transport pathways through piling operations or excavations);

- **P5:** Overland flow;
- **P6:** Direct contact of the proposed below ground structures and associated infrastructure with site soils;
- **P7:** Plant uptake pathways;
- **P8:** Horizontal and vertical migration of volatile vapours and ground gas; and
- **P9:** Windblown Dust.

Potential Receptors

10.3.12 The following potential receptors to contamination have been identified:

- **R1a:** Groundwater: the Hythe Formation, classified as a Principle Aquifer;
- **R1b:** Groundwater: River Terrace Deposits and Alluvium, both classified as Secondary A Aquifers;
- **R2:** Surface water: including Aylesford stream, small ponds and ditches associated with nearby farmland and a pond within woodland fed by Aylesford stream;
- **R3:** Construction and maintenance workers;
- **R4:** General Public - residents and general public in the vicinity of the site (during the construction phase only);
- **R5:** Structures and utilities; the proposed Scheme and associated infrastructure; and
- **R6:** Flora and fauna; during landscaping/re-vegetation of easement land surrounding the proposed Scheme.

10.3.13 Table 10.1 below describes all the expected source-pathway-receptor linkages:

10.3.14 Contamination testing undertaken as part of the 2015 GI will identify the type and quantity of contamination that is present at the site. This information will then be utilised in quantitative assessments of risks to the identified receptors. Full details of these assessments will be presented in the Phase 1 and Phase 2 CLRA Report to be included in the technical appendices of the ES.

10.4 Consultation

10.4.1 The Scoping Opinion received in March 2015 noted the following Environment Agency recommendations:

- As the site overlies a chalk aquifer, any pathways for contamination must be strictly controlled to avoid pollution of the principle from any historic contamination identified on the site from previous uses.
- Requirements of the NPPF are followed. Paragraph 109 of the NPPF states that the planning system should contribute to and enhance the natural and local environment by preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels water pollution;

- A risk-based framework set out in the Model Procedures for the Management of Land Contamination (CLR 11) should be applied and the guidance in that document should be followed so that the best decisions are made for the site;
- Refer to the Environment Agency guidance on requirements for land contamination reports;
- Use BS 10175 2001, Investigation of potentially contaminated sites – Code of Practice as a guide to undertaking the desk study and site investigation scheme; and
- Use MCERTS accredited methods for testing contaminated soils at the site.

10.4.2 The above recommendations have been applied in full in the assessments undertaken to date and will be carried through to the ES.

10.5 Potential Mitigation Measures

Construction

10.5.1 The construction phase would be carried out in accordance with a CEMP. The CEMP would include a Soil Management Plan ("SMP"), incorporating guidance provided by the Code of Practice for the Sustainable Use of Soils on Construction Sites[10], to ensure the use of best practice measures for soil handling. Other possible mitigation measures could be the use of a proprietary geotextile membrane to protect the existing ground condition, a layer of inert crushed granular material on the membrane to form temporary running surfaces for construction plant and reinforcement of access tracks.

10.5.2 The CEMP would also contain a Materials Management Plan ("MMP") which would outline a cut and fill balance method that can be employed to ensure as much material as possible that is removed from the area of the Scheme is re-used in the Scheme. An earthworks specification would also be produced, which would provide geotechnical and chemical acceptability criteria to which site won and imported materials should comply before being used during construction.

10.5.3 Dust from construction activities would be suppressed using best practice methods such as the use of netting, wheel washing facilities and road sweeping vehicles to prevent the spread of potentially contaminated windblown material.

10.5.4 Mobilisation of contaminants, either from existing sources or from spillages during works, would be mitigated by the implementation of best practice measures set out in the CEMP. Hazardous substances such as excavated contaminated land, fuels, chemicals, waste and construction materials will be stored, handled, transported and disposed of in accordance with the CEMP. This should also outline emergency procedures to respond to potential accidental spillages and leaks. To

[10] DEFRA, 2009: Code of Practice for the Sustainable Use of Soils on Construction Sites: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69308/pb13298-code-of-practice-090910.pdf, accessed November 2014

mitigate short-term (acute) risks appropriate construction methods would be adopted to minimize exposure to potentially harmful substances, and suitable Personal Protective Equipment ("PPE") employed.

10.5.5 Where open excavations are anticipated in areas of former landfill of quarrying ground, excavations should be lined in order to inhibit water percolation and subsequent leachate generation. Where piling or penetrative ground improvement is required through potentially contaminated ground, the works should be carried out in accordance with the Environment Agency publications "Piling into contaminated sites"[11] and "Piling and Penetrative Ground Improvement Methods on Land Affected by Contamination: Guidance on Pollution Prevention"[12] and a Foundation Works Risk Assessment may need to be undertaken.

Operation

10.5.6 The construction of a drainage system designed to the specifications set out in the DMRB, including oil interceptors and penstocks, would reduce adverse effects from increased surface water run-off.

10.6 Potential Effects

Construction

10.6.1 There would be a loss of agricultural land associated with the proposed Scheme; some of that land is likely to be classified as Grade 2 and Grade 3 land. There may also be deterioration and compaction of existing soil resource, due to storage and handling or due to vehicle movements during construction and loading.

10.6.2 Contamination of site soils could occur during construction, relating to potential spills and leakages from plant and processes, or, through existing contaminant mobilisation from other areas of the Site relating to construction activities (e.g. improperly stored contaminated soils, mobilisation of free product etc.). Pollution of the Aylesford Stream or underlying groundwater could also result from spills and leakages or mobilisation of existing areas of contamination.

10.6.3 Construction of the proposed Scheme is anticipated to encounter the superficial and Secondary A Aquifers (Alluvium and River Terrace Deposits) and the bedrock Principal Aquifer (Hythe Formation), with the potential for creation of transport pathways between contaminants in site soils and these controlled water receptors.

10.6.4 Direct / indirect impacts on hydrogeological conditions, including the underlying Hythe Formation classified as a Principal Aquifer, most likely in relation to mobilisation of existing contaminants during construction. New contaminant pathways or mobilisation of existing contaminants may result from exposure of soils/ alteration of groundwater flow routes/ increases in rainwater infiltration through changes in ground cover/ in excavations.

[11] EA, 2002: Piling into Contaminated Sites
[12] EA, 2001: Piling and Penetrative Ground Improvement Methods on Land Affected by Contamination: Guidance on Pollution Prevention

10.6.5 Construction activities could create dust, which combined with ground preparation and earthworks, soil handing and vehicle movements could disturb or spread existing contaminated soils.

Operation

10.6.6 In general, geology and soils impacts from road schemes primarily tend to be limited to the construction phase; however an increase in hardstanding cover has the potential to lead to increased surface water runoff and subsequent soil erosion during operation. Potential contamination may arise from fuel spills associated with use of the new road.

10.7 Chapter Summary

10.7.1 This chapter has identified various potential effects on geology and soils related receptors that could result from the proposed Scheme. However, appropriate mitigation measures to limit or potentially completely remove these effects have been outlined, and these will be refined in the next stage of assessment. The significance of the effects will be determined using the guidance set out in the DMRB Volume 11 Section 2 Part 5 HA (205/08) (Assessment and Management of Environmental Effects)[13]. This will ensure that the final mitigation measures set out in the ES are sufficient that all identified effects to receptors are reduced as much as is reasonably practicable within the constraints of the proposed Scheme and in accordance with all applicable legislation.

[13] Highways Agency, 2008: Design Manual for Roads and Bridges (DMRB), Volume 11, Section 2, Part 5 HA (205/08)

11 Materials

11.1 Introduction

11.1.1 This chapter describes the existing environment in the surrounding area with respect to the factors relevant to materials within the Scheme. The study area for this assessment is determined by the influence of the Scheme, rather than a set geographical area. The chapter describes the potential effects that are anticipated from preliminary studies in relation to the M20 Junction 10a Scheme and outlines proposed design and other measures to help mitigate these potential effects.

11.2 Legislation and Guidance

11.2.1 A wide range of legislation, policies and guidance that regulate the control and management of waste have been considered. The key legislation and policies relevant to the project include the following:

- The Waste (England and Wales) Regulations 2011;
- Environmental Permitting Regulations 2010 (as amended);
- Environmental Protection Act 1990;
- Waste Strategy for England 2007;
- Clean Neighbourhoods and Environment Act 2005;
- Hazardous Waste (England and Wales) Regulations 2005 (as amended);
- List of Waste Regulations 2005;
- Site Waste Management Plans; and
- Waste Framework Directive 2008/98/EC.

11.2.2 The Waste (England and Wales) Regulations (2011) state that a Site Waste Management Plan ("SWMP") must be produced for a project on any one construction site with an estimated cost greater than £300,000 excluding VAT. However, as of 1st December 2013 SWMPs are no longer mandatory for projects commencing after 1st December 2013. They are, however, recommended, and the principles behind the regulations remain best practice. A SWMP would be adopted and should include details of the amount and types of waste that would be produced on site and how it would then be reduced, re-used and disposed of, by whom and where. The contractor should prepare the SWMP and adopt the waste hierarchy for the disposal of waste. The waste hierarchy ensures that waste is dealt with in the following order of priority:

- Prevention;
- Preparing for re-use;
- Recycling;
- Other recovery, for example energy recovery; and
- Disposal, only as a last resort.

11.2.3 In addition to this there is the Kent Joint Municipal Waste Management Strategy, authored by the Kent Waste Partnership ("KWP"). The KWP is made up of the thirteen local authorities in Kent and the key activities are:

- To ensure delivery of the Kent Joint Municipal Waste Management Strategy;
- Provide a platform for cooperative and joint working to improve services;
- Act as a single voice for strategic waste issues for Kent local authorities;
- Increase awareness of waste as a resource, promote waste minimisation and achieve an economically, environmentally and socially sustainable waste strategy; and
- Work with stakeholders who are developing, supporting and influencing the future direction of sustainable waste/ resource management.

11.2.4 The assessment for the ES will be undertaken in accordance with the guidance provided by Highways England in IAN153/11 Guidance on the Environmental Assessment of Materials Resources, and aims to help meet the following priority, which is established within Highways England's Environmental Strategy contained within Highways England's Strategic Plan (2010-15) '*To seek out new ways to use materials efficiently through reuse, recycling and designing out waste and adopt initiatives*'.

11.3 Baseline

Local Environment

11.3.1 An initial assessment of the waste disposal sites in the area has shown that there are six active landfill sites between 23km to 39km from the Scheme, with 16 sites able to accept inert waste within 60km.

11.4 Consultation

11.4.1 No consultation has been undertaken at this stage for this assessment, though it will be undertaken as part of the ES.

11.5 Potential Mitigation Measures

11.5.1 A consistent potential impact associated with the disposal of the materials identified is the eventual contribution to landfill and subsequent risk of damage to local hydrological systems, and the emissions associated with necessary transport. When considering the requirement for material usage onsite, sources and suppliers should be identified within close proximity to the site of proposed works to reduce fuel requirements and cost. Materials will be recycled where possible, and the Scheme designed to minimise material usage, but where material must be taken to a recycling/disposal site, licensed sites within as close proximity to the works as possible should be identified and used. The closest disposal sites will be identified within the ES. This information should be included within the Specification for Highways Works, and the appointed Contractor should

use this information to produce a CEMP to reduce impacts associated with the construction phase of the proposed Scheme.

11.5.2 In addition, the requirement for a SWMP must be included within the Specification for Highways Works, to be produced by the appointed Contractor. The preparation of the SWMP and a CEMP will ensure that adverse impacts associated with materials use and the transport of materials are minimised. In addition, whilst potential impacts may arise from incorrect disposal of contaminated soils and vegetation arisings, the assessment for Geology and Soils (see Section 10 above) has recommended site investigations of contaminated land to establish the contaminants present and identify the method of treatment if necessary is undertaken.

11.5.3 Through reusing and recycling of all soil materials onsite there should be a reduction in materials required and wastes produced. In addition all concretes and metals to be used onsite would, where design constraints allow, contain high proportions of recycled content. Existing infrastructure such as ducts and cabinets would be reused where possible, reducing the need for new construction. All concrete, metal and plastics to be removed from site would be recycled and waste sent to landfill would be minimised.

11.6 Potential Effects

11.6.1 Significant environmental effects are likely to arise from those materials or wastes which arise in the largest quantities, which have hazardous properties or comprise a large proportion of the value of the project.

Construction

11.6.2 During site remediation and earthworks preparation, there are potential impacts associated with the transportation of materials and potentially unnecessary imports of primary aggregates and/or fill material.

11.6.3 With the demolition of existing structures there would be impacts associated with the transportation of construction material and the disposal of waste associated with the removal of existing material. In addition, to realign the carriageway there may be waste arising from activities such as carriageway planings from resurfacing of the existing carriageway, replacement of trenched cables with ducting and bridge replacement.

11.6.4 The construction of new highway and structures, including a roundabout, culverts and bridges would require a substantial amount of materials, which have the potential to generate significant effects and will be quantified as part of the ES.

11.6.5 During construction, waste arisings such as small quantities of spoil from piling, timber shuttering, existing steel safety barriers and cut and fill material may have a significant effect.

11.6.6 Materials, waste arisings and transportation during construction all produce carbon dioxide either directly, as in the case of transportation, or indirectly as embodied

carbon of the materials used. As part of the materials chapter for the ES a carbon assessment of construction will be undertaken using Highways England's Carbon Calculation Tool for Major Projects.

Operation

11.6.7 Material usage associated with the annual maintenance regime is expected to be on average minimal. Waste arisings during operation and maintenance are also expected to be minimal.

11.7 Chapter Summary

11.7.1 This chapter has identified that there is the potential for significant effects due to material usage and waste arisings during construction of the Scheme. The ES will expand on this and seek to quantify the materials to be used and waste produced. In addition, a carbon assessment will be carried out using Highways England's Carbon Calculation Tool for Major Projects.

11.7.2 Through reusing and recycling all soil materials onsite there would be a reduction in materials required and wastes produced. In addition all concretes and metals to be used onsite would, where design constraints allow, contain high proportions of recycled content. Existing infrastructure such as ducts and cabinets would be reused where possible, reducing the need for new construction. All concrete, metal and plastics to be removed from site would be recycled and waste sent to landfill would be minimised. The implementation of a SWMP and CEMP would identify these opportunities to reduce the use of materials and re-use materials where practicable.

12 Noise and Vibration

12.1 Introduction

12.1.1 This chapter describes the existing environment in the surrounding area with respect to the factors relevant to noise and vibration within the study area, which is a minimum 1km buffer around the Scheme. The chapter describes the potential noise and vibration effects that are anticipated from preliminary studies in relation to the M20 Junction 10a Scheme and outlines proposed design and other measures to help mitigate these potential effects.

12.2 Legislation and Guidance

12.2.1 The following legislation, standards and best practice guidelines are considered to be relevant to the proposed Scheme.

- The National Planning Policy Framework 2012;
- The Noise Policy Statement for England 2010;
- The Draft National Policy Statement for National Networks 2013;
- The Land Compensation Act 1973 Part 1;
- The Noise Insulation Regulations 1975 (amended 1988);
- Sections 60 and 61 of The Control of Pollution Act 1974;
- British Standard (BS) 5228-1:2009+A1:2014 ‘Code of practice for noise and vibration control on construction and open sites – Part 1: Noise’;
- BS5228-2:2009 'Code of construction practice for noise and vibration control on construction and open sites - Part 2: Vibration';
- Design Manual for Roads and Bridges (DMRB) Volume 11, Section 3, Part 7 ‘Noise and Vibration’ (HD213/11 – Revision 1) 2011;
- Calculation of Road Traffic Noise (CRTN) 1988; and,
- Guidelines for Noise Impact Assessment, Institute of Environmental Management & Assessment (IEMA) 2014.

12.2.2 The above list is not exhaustive and further guidance will be referred to if necessary.

12.2.3 Guidance within DMRB, HD213/11 (HA, 2011) will be followed in assessing the noise and vibration impacts for the proposed Scheme. The key decisions are summarised using the flow chart in Annex 1 of DMRB HD 213/11. Given that new link roads and an additional junction would be constructed, it is anticipated that this would result in a change in the magnitude of traffic noise at receptors of 1dB or more on Scheme opening, triggering the requirement for a Detailed assessment in accordance with DMRB.

12.3 Baseline

Local Environment

12.3.1 The desktop study has identified that the dominant source of environmental noise affecting the majority of the study area is road traffic on the M20, A2070, A291 and A20 and their connecting link roads. Noise from building services and activities associated with light industrial/commercial premises adjacent to the above road links are also expected to contribute to the baseline noise climate.

12.3.2 The desktop study has also identified that the area of Sevington within the 1km study area is mainly comprised of mixed commercial and industrial land uses. Willesborough and Willesborough Lees is a predominantly residential area, but with two hospitals located at the north east. Mersham is predominantly a residential area.

12.3.3 From an initial examination of the area, there are absorptive acoustic barriers of differing states of repair alongside the A2070 on its approach to Junction 10 and continuing for some distance around the interchange towards Hythe Road. These barriers are of approximately 2m height.

Noise Sensitive Areas

12.3.4 Under Environmental Noise Directive (2002/49/EC) member states were required to draw up action plans for major roads to aid in management of environmental noise. As part of this process, 'Important Areas' have been identified in the vicinity of the proposed scheme. One of those areas corresponds to the area identified above as having existing acoustic barriers. The second area comprises the area surrounding approximately 2km of the M20 north of Junction 10.

Sensitive Receptors

12.3.5 The previous Scoping Report identified that in addition to residential properties, there are nine other potentially noise-sensitive receptors within 600m of the centre line of the Scheme, as identified below in Table 12.1.

Table 12.1: Sensitive receptors for noise and vibration

Resource/Receptor	Location	Value/ Sensitivity
Caloundra	Kingsford Street	High
Court Lodge	Sevington	High
Copperfield	Kingsford Street	High
Downs View	Kingsford Street	High
Hatch Park/Bockhanger Wood SSSI	North of Mersham	Medium
Highfield Community Church	Sevington	High
Highfield Court & Mews	A20 Hythe Road	High
Highfield House Nursing Home	A20 Hythe Road	High
Kenistone	Kingsford Street	High
Kingsford Hall	Kingsford Street	High
Orchard Cottage	Kingsford Street	High
Pilgrims Hospice	A20 Hythe Road	High
Ransley House (Listed Building)	Kingsford Street	High
Redburr (Listed Building)	Kingsford Street	High
Saint Mary's Church	Sevington	High
Spencer Private Hospital Ashford	Willesborough Lees	High
Summerhill Park	A20 Hythe Road	High
The Firs	A20 Hythe Road	High
The Lilacs	A20 Hythe Road	High
William Harvey Hospital	Willesborough Lees	High

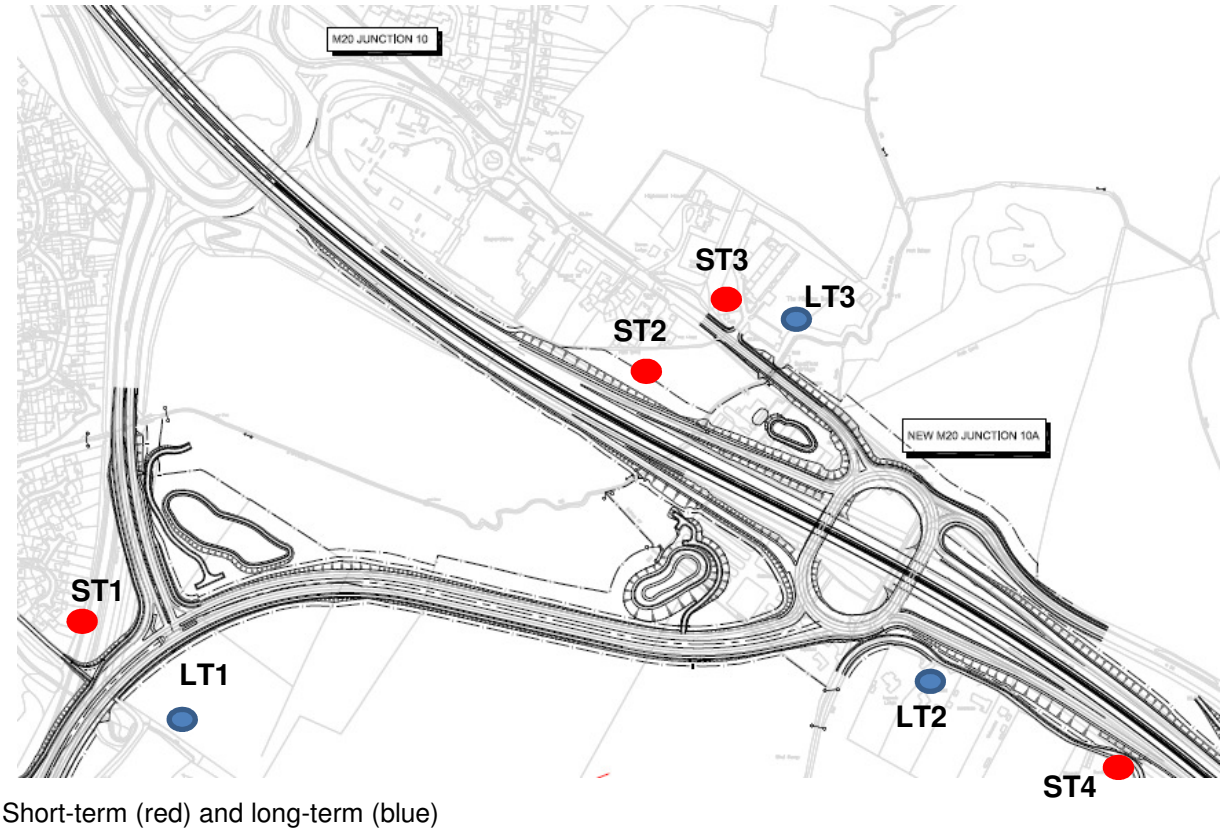
Baseline Surveys

12.3.6 Noise measurement surveys were carried out between 4th March and 13th May 2015. These measurements were comprised of three unattended long-term measurements, selected to provide a comprehensive baseline data representation of the nearest noise sensitive receptors to the Scheme. These locations were further supplemented with four attended short-term measurements which were selected to complement the long term measurements. The measurement locations are detailed further in Table 12.2 and Figure 12.3 below.

Table 12.2: Short and Long-Term noise measurement locations

Location Reference	Location Description	OS Grid Reference
LT1	Sevington Church	TR 03686 40877
LT2	Lagonda Lodge, Kingsford Street	TR 04487 41006
LT3	Pilgrims Hospice	TR 04337 41398
ST1	Grass verge of A2070, adjacent to Nightingale Close	TR 03573 41026
ST2	Garden centre field south of residences of Hythe Road	TR 04216 41353
ST3	Pilgrims Hospice	TR 04296 41418
ST4	Opposite Ransley House, Kingsford Street	TR 04748 40887

Figure 12.3: Approximate locations of noise measurements



Short-term (red) and long-term (blue)

12.4 Consultation

12.4.1 To date no direct consultation has been undertaken in relation to this scheme. However comments received from Ashford Borough Council following the Scoping Opinion were received below:

- "*…importance of considering impacts on local residents, including vulnerable residents of Pilgrims Hospice...*" and "*...particularly on the noise on Highfield Estate and Sevington Church...*"

12.4.2 The assessment has therefore incorporated these comments into the assessment of the Scheme and it has been ensured that the baseline survey has sufficiently encompassed these areas for further consideration during the ES. Further consultation with ABC will be carried out throughout the completion of the ES in order to ensure all impacts are considered fully.

12.5 Potential Mitigation Measures

12.5.1 Potential adverse noise effects during construction would be mitigated through measures included within the CEMP, which will be prepared alongside the ES.

12.5.2 Acoustic barriers can be effective at reducing noise for receptors close to the source, during both construction and operation, and will be considered in the ES for sensitive receptors that may be affected by the Scheme. Low noise surfacing will be considered within the Scheme design, as will acoustic bunds, if required.

12.6 Potential Effects

Construction

12.6.1 It is anticipated that the on-site construction works would commence in 2017 and the works will take approximately 18 months, with the Scheme scheduled to be fully open to traffic in 2018/2019. The main activities during the construction phase which would generate noise and vibration are:

- Demolition of existing structures and carriageway;
- Excavation, compaction and foundations works;
- Construction of bridges, retaining structures, services, drainage and the new carriageway;
- Surfacing; and
- Installation of noise barriers, signage, gantries and road markings.

12.6.2 Vehicles accessing the site and compounds for the delivery of materials and equipment, muck away, attendance of site personnel etc. would also generate noise.

12.6.3 Noise impacts due to the construction of the Scheme are expected to be perceptible at nearby sensitive receptors; particularly frontline properties along the M20, A20 and A2070 that are directly adjacent to the Scheme boundaries. Residential properties which are particularly close to the proposed Scheme are those located on a section south of the proposed new Junction 10a and west of existing A2070 in Willesborough.

12.6.4 The variable nature of construction noise is such that it is difficult to accurately predict the noise impacts at given receptors over the period of the construction phase. However, given the proximity of some residential receptors to the Scheme boundaries and the possibility that some phases of work would require night work there is potential for impacts to have significant effects without careful

management. Vibration impacts may also arise during demolition of existing structures, piling and surfacing if vibratory rollers are used.

Operation

12.6.5 Operational impacts from noise and vibration could arise from changes in traffic composition and/or flow, new carriageways and re-alignment of existing carriageways. Road traffic may generate effects associated with vibration due to ground-borne or airborne impacts. All newly-constructed carriageways would comply with current specifications, therefore ground-borne vibration from the proposed link roads and new junction are unlikely to generate significant levels of perceptible vibration. Relatively high levels of noise are required to cause perceptible levels of airborne vibration and therefore noise-induced vibration is only likely to occur at properties close to heavily-trafficked road links.

12.7 Chapter Summary

12.7.1 This chapter has identified the key noise and vibration impacts of the Scheme both short-term temporary impacts associated with construction activities and long-term permanent impacts due to road traffic noise. Sensitive receptors in proximity to the Scheme have been identified.

12.7.2 Noise impacts due to the construction of the Scheme are expected to be perceptible at nearby sensitive receptors; particularly frontline properties along the M20, A20 and A2070 that are directly adjacent to the Scheme boundaries. Given the proximity of some residential receptors to the Scheme there is potential for construction impacts to have a significant effect without careful management. The proposed Scheme involves construction of a new motorway junction and its associated link roads, therefore a change in the magnitude of noise impact of 1dB due to traffic noise, affecting sensitive receptors on Scheme opening is considered likely.

12.7.3 The full effects of noise and vibration will be further assessed in detail in the full ES and mitigation measures proposed in the document reviewed and updated as required.

13 Effects on All Travellers

13.1 Introduction

13.1.1 This chapter describes the existing environment in the surrounding area with respect to the factors relevant to Effects on All Travellers, both NMUs and vehicle travellers, within the study area, which is a minimum 250m buffer around the Scheme. The chapter describes the effects that are anticipated from preliminary studies in relation to the Scheme and outlines proposed design and other measures to help mitigate these potential effects.

13.2 Legislation and Guidance

13.2.1 The Effects on All Travellers topic is identified as a DMRB topic within IAN 125/09 Supplementary guidance for users of DMRB Volume 11 'Environmental Assessment'. However, the guidance for DMRB Volume 11 Section 3 has not yet been updated. As a result, the Effects of All Travellers assessment incorporates two of the "old" DMRB topics, as suggested by IAN 125/09. These are:

- Volume 11 Section 3 Part 8, Pedestrians, Cyclists, Equestrians and Community Effects (note that the Community Effects/ Community Severance element is included within chapter 14 of this ES); and
- Volume 11 Section 3 Part 9, Vehicle Travellers.

13.2.2 Following the guidance contained within these two DMRB chapters, the overall approach for the assessment of Effects on All Travellers will consider the following:

- The impact of the Scheme for vehicle travellers that are not included in the cost-benefit economic analysis as quantifiable effects. To accord with DMRB volume 11, Section 3, Part 9, impacts considered in the assessment are changes in driver stress. However, the view from the road for vehicle travellers (drivers and passengers) travelling on the existing M20 and intersecting roads is considered within Chapter 8 Landscape and Visual Impact. To avoid assessing and counting these impacts twice, no further consideration of views from the road has been included within this Effects on All Travellers chapter.
- The impact of the Scheme on NMUs as a result of changes to the local road network, footpaths and cycleways. NMUs include pedestrians, equestrians and cyclists, including users with mobility issues. The assessment considers changes in journey length, the provision of new amenities such as PRoW and cycle-ways and journey experience as a result of the Scheme and associated traffic changes on affected routes.

13.3 Baseline

Non-motorised users

13.3.1 No public bridleways have been identified within the study area. Previous NMU surveys completed in 2006 indicated low usage of PRoW by equestrians within the

study area. However, given the time elapsed since then, further NMU surveys have been carried out to accurately determine current baseline conditions, see below. No bridleways or BOATs have been identified within the study area. Table 13.1 below shows NMU amenities within 250m of the Scheme.

13.3.2 NMU surveys previously undertaken in 2006 indicated that NMU usage of the A2070 SOR, A20 Hythe Road and Kingsford Street was light. Further NMU surveys were undertaken in June 2015, as described below.

Vehicle Travellers

13.3.3 The existing M20 forms part of the trans-European network of roads and provides a major transport link for the transfer of freight and passengers between the ports of Dover, the Channel Tunnel and the rest of the UK. Currently there are two local access points to the M20 from Ashford; Junction 9, which lies due north of the town, provides the interchange between the motorway and the A20 Fougeres Way, whilst from Junction 10 to the southeast traffic can join the A20 (T) Hythe Road and the A2070 SOR.

13.3.4 There are currently bus routes (numbers 125 and 111) from Mersham to Ashford Town Centre running along Kingsford Street, across Highfield Lane Bridge to the A20 and Tesco superstore. There is an alternative route from Mersham that buses could use, across the M20 via The Street, but this is less direct.

Driver Stress

13.3.5 At present congestion commonly occurs on the M20 and around Junction 10, leading to delays and increased traffic flows. This means that vehicle travellers, particularly at peak times, experience driver stress as a result of the inability to travel at a speed with which they are comfortable with in relation to the general standard of the road.

13.3.6 The existing A2070 SOR is a rural 'Dual All-purpose Road' and provides access for high volumes of traffic travelling to and from Hastings and Rye via the M20 at Junction 10. It is an unrestricted road and the national speed limit applies. The Barrey Road junction on the western approach link to Junction 10 has restricted movements (no right-turn out) and provides access to the Ashford Business Park and parts of Sevington; minor accidents occur frequently and it is perceived as an accident 'black spot'. Highfield Lane and Kingsford Street are narrow single carriageway rural roads running south of the A2070 and M20 used as a cut through by local traffic to cross the M20 at the existing Highfield Lane Bridge to access the A20 Hythe Road west, avoiding the congestion around Junction 10.

13.3.7 There are currently bus routes (numbers 125 and 111) from Mersham to Ashford Town Centre running along Kingsford Street, across Highfield Lane Bridge to the A20 and Tesco superstore. There is an alternative route from Mersham that buses could use, across the M20 via The Street, but this is less direct.

Sensitive Receptors

Table 13.1: NMU amenities within 250m

Type/ Description	Status	Grid Reference	Relationship to proposed Scheme
PRoW	AE338	603959:141097	Intersects AE337 and would also partially be permanently closed off with a new uncontrolled at grade crossing positioned close by. Also a stile located along this PRoW located at NGR 603955:141069.
PRoW	AE337A	603822: 140935	Would be intersected by proposed A2070 Link Road and be partially closed off permanently. Also a stile along this PRoW at NGR 603879:141117.
PRoW	AE636	604315: 141165	Running alongside nursery. Would be permanently closed as a result of the Scheme. Also a stile and steps located along this PRoW at NGR 604273:141187.
PRoW	AU53	603744:141478	Runs up to the M20 gyratory from the South, intersects AU63C and AE636. Part of the footpath would be permanently affected to the east.
PRoW	AU63C	603753:141372	Unaffected, just north of the Scheme/ south of M20 J10 gyratory.
PRoW	AU65	603933:141321	North of Aylesford Stream, south of M20, approximately 75m north of proposed Scheme.
PRoW	AU53A	603998: 141425	North of the M20 running nearby to superstore.
PRoW	AU65A	604074:141415	North of the M20, between M20 and A20 next to Tesco superstore.
PRoW	AE175	604426:141293	North of the A20 opposite Highfield Lane.
PRoW	AE340	603703:140883	South of church to Church Road, ~150m south.
PRoW	AE639	603739:140792	Between Church and Highfield Lane ~ 200m south
PRoW	AE339	603510: 140879	Path adjacent to Barrey Road may be slightly affected by proposed Scheme.
PRoW	AE342	FP	Route between Church Road A2070 SOR junction and Willesborough. Northwest-southeast movement crossing the A2070 SOR / CTRL.
PRoW	AE342B	603469:140705	Approximately 175m south adjacent to Church Road.
PRoW	AE342A	603427:140725	Adjacent to Ashford business Park ~180m south.
PRoW	AU103	603636: 141493	Just South of the existing M20 Junction 10 gyratory, approximately 150m north of the proposed M20 Junction 10a Scheme.

Type/ Description	Status	Grid Reference	Relationship to proposed Scheme
PRoW	AU63B	FP	Route between William Harvey Hospital and Tesco Superstore roundabout
PRoW	AE357	FP	Part of route between Mersham and AONB, via Mersham Lane Overbridge and FP AE172. FP is between A20 and Bockham Lane.
PRoW	AE172	FP	Part of route between Mersham and AONB, following on from FP AE357. FP starts at Bockham Lane, opposite Bockham Farm Cottage and continues onto the North Downs and AONB.
PRoW	AE363	FP	Continues the northwest-southeast movement of AE639 between Sevington and Mersham.
PRoW	AU101	FP	Route between M20 J10 (TN44) and Willesborough. West-east movement.
Footbridge	Church Road Footbridge	603572:140972	Would be demolished as part of the proposed Scheme and replaced with either an at-grade crossing or a new footbridge.
Bridge	Highfield Lane Bridge	604487:141125	Would form the new junction 10a gyratory, but would remain operational.

Baseline Surveys

13.3.8 Two NMU counts were undertaken in May and June 2015, over 10 hour periods, one on a weekday and one on a weekend, to assess the NMU usage around the scheme area. The date of the weekend survey was chosen to coincide with a service being held at St Mary's Church, Sevington.

13.3.9 Seven sites were chosen for the surveys including Church Road Footbridge and Highfield Lane Bridge. Additional NMU movements were assessed for Barrey Road, A20 Hythe Road and Kingsford Street (see Tables 13.2 and 13.3 below for a summary of NMU survey results). The seven site locations are as follows:

- Site 1 - Junction of PRoWs AE337A / AE639;
- Site 2 - Junction of Barrey Road and A2070;
- Site 3 – St Marys Church;
- Site 4 – A20 opposite Pilgrim's Hospice;
- Site 5 – Junction of Highfield Lane and Kingsford Street;
- Site 6 - Junction of A20 Hythe Road and Highfield Lane; and
- Site 7 - Junction of A20 Hythe Road and Bockham Lane.

Table 13.2: NMU survey Results (May 2015)

Date: Thursday, 21st May 2015, Weather: sunny, Direction : Total Junction										
Site	**Peds***	**With Dogs**	**Buggy**	**Impairment**	**Wheelchair**	**Jogger**	**Cyclist**	**Equestrian**	**Other**	**Total**
1	0	0	0	0	0	0	0	0	0	0
2	33	2	0	0	0	5	4	0	0	44
3	2	3	0	0	0	3	19	0	0	27
4	0	0	0	0	0	0	0	0	0	0
5	8	0	0	0	0	4	31	0	0	43
6	14	0	0	0	0	6	49	0	0	69
7	7	0	0	0	0	6	46	0	0	59
Total	64	5	0	0	0	24	149	0	0	242

Table 13.3: NMU survey Results (June 2015)

	Date: Sunday, 7th June 2015, 0800-1800, Weather: sunny, Direction : Total Junction									
Site	**Peds***	**With Dogs**	**Buggy**	**Impairment**	**Wheelchair**	**Jogger**	**Cyclist**	**Equestrian**	**Other**	**Total**
1	0	0	0	0	0	0	0	0	0	0
2	10	0	0	0	0	1	6	0	0	17
3	21	4	0	0	0	1	32	0	0	58
4	21	1	0	2	0	13	63	0	0	100
5	6	0	0	0	0	8	61	0	0	75
6	10	0	0	2	0	10	94	0	0	116
7	2	0	0	2	0	7	74	0	0	85
Total	70	5	0	6	0	40	330	0	0	451

*Peds = Pedestrians

13.4 Consultation

13.4.1 A telephone meeting was held with KCC's Rights of Way Officer in March 2015. Potential changes to existing NMU routes, as well as opportunities for mitigation, enhancements and improvements for pedestrians, equestrians and cyclists were discussed in the context of the Scheme design.

13.4.2 KCC noted that the PRoW AE339 is a defunct footpath prior to the construction of Barrey Road and Ashford Business Park. KCC requested that the rights are extinguished, as the public highway supersedes the need for AE393. The existing PRoW AU101 connecting into Junction 10 consists of a set of steps and KCC requested that this be replaced with a ramp if possible. In addition, the provision of NMU access through the proposed Junction 10a was discussed, with the safety of NMUs being top priority. It was agreed that with the provision of a new pedestrian footbridge at Kingsford Street (see Section 13.5.5 below), NMU access across Junction 10a would not be required due to high safety risk.

13.4.3 The ownership and future maintenance of any new NMU facilities included within the Scheme design was also raised as a point for future discussion.

13.5 Potential Mitigation Measures

13.5.1 During construction, a CEMP would be prepared by the appointed contractor and implemented during construction. The CEMP would ensure that the construction of the Scheme would be undertaken in a sensitive manner with regards to All Travellers. The CEMP would include a Community Relations Strategy, ensuring that communication with the general public would be managed and maintained prior to and during all construction works. The Scheme would be delivered in accordance with the Considerate Constructors Scheme, and would ensure that local residents, businesses and other sections of the community are kept informed about the Scheme. This would include local road users and NMUs.

13.5.2 Traffic Management would be the main measure for minimising effects upon vehicle travellers during the construction period. All diversion routes and road closures would be sign posted clearly, to minimise driver stress derived from driver frustration and route uncertainty.

13.5.3 Effects upon NMUs would be minimised by ensuring that all temporary diversions for NMUs around the work site would be clearly signed, with alternative access arrangements maintained through the full construction period, as required. Existing crossings would only be closed once diversions are in place or the new arrangement has been established, Signs would be erected requesting that pedestrians use the designated routes only.

13.5.4 Further potential mitigation and enhancement opportunities for NMUs during operation of the Scheme will be developed as the design progresses, but at present, opportunities include the following:

- NMU provision around St Mary's Church: the existing bridge would be retained for use by pedestrians. At present, the current bridge deck does not comply with the vertical alignment requirements for cyclists. To achieve the required gradients would require reconstruction of the entire bridge. An alternative solution would be to accommodate cyclists at ground level through the provision of a toucan crossing at Barrey Road. A new connection for cyclists would also be made at the end of the access road for St Mary's Church.
- Kingsford Street footbridge: The current Scheme design includes the provision of a pedestrian and cycle bridge over the M20, connecting Kingsford Street with Hythe Road, which would provide safer access for NMUs than making use of the new Junction 10a. The Kingsford Street bridge would also provide access for equestrians, to allow a continuous link between HS1 and Bockham Lane. The provision of a new footway along Kingsford Street is also recommended, so as to provide improved and safer NMU access along this existing narrow road. This is necessary due to the likely increase in NMU movements due to the provision of the proposed Kingsford Street bridge.

13.6 Potential Effects

Construction

13.6.1 During construction there is the potential for NMU amenities to be affected as a result of the proposed M20 Junction 10a Scheme. Potential effects may result from the temporary closure or diversion of existing NMU routes and bridges, resulting in increased journey lengths and times, reduced journey experience and access issues to nearby community facilities (for further detail see Chapter 14 Communities and Private Assets below). Four PRoWs (AE636, AE338, AE337A and AU53) would be directly affected during construction and there is the potential for access to be restricted temporarily and permanently. Some NMUs may be deterred from making non-essential journeys as a result of construction activities.

13.6.2 Construction traffic movement and traffic management, which would lead to speed restrictions and narrow lanes on roads directly affected by the proposed M20 Junction 10a Scheme, are anticipated to cause delays and increases in traffic flow leading to increased driver frustration during the construction phase. Possible increases in the number of HGV and construction machinery may also contribute to driver stress. The presence of traffic management and the likely resultant congestion may lead to vehicle travellers choosing other routes altering traffic flows in the study area and wider area.

Operation

13.6.3 Once operational, the proposed M20 Junction 10a Scheme is anticipated to significantly alter traffic flow and speeds in the area, potentially increasing driver stress and frustration. The change in signage, new signalling, possible NMU flow increases, possible permanent change in speed limits, change in road structure and number of junctions may all anticipated to contribute to driver frustration, fear of accidents and route uncertainty.

13.6.4 The proposed Scheme would result in the permanent closure and realignment of a number of PRoWs, namely AE636, AE338, AE337A and AU53. In addition the existing Church Road footbridge may be demolished and replaced with a new footbridge, or adapted to meet the requirements of the 1995 Disability Discrimination Act. Therefore there is the potential for journey lengths, times and amenity to be significantly affected for pedestrians and cyclists once the Scheme is operational. However, although journey lengths and times may increase as a result of the proposed Scheme for vehicle travellers, permanent access to key community facilities is unlikely to be altered for both vehicle travellers and NMUs.

13.7 Chapter Summary

13.7.1 At present congestion commonly occurs on the M20 and around Junction 10, leading to delays and increased traffic flows, resulting in driver stress for vehicle travellers. A number of PRoWs have been identified in the study area, as noted above. No public bridleways or BOATs have been identified within the study area.

13.7.2 Construction stage effects for NMUs and vehicle travellers would be managed through the implementation of a CEMP and Community Relations Strategy. Once the Scheme is operational, it is anticipated that there would be some benefits for NMUs, through the provision of new NMU facilities and safer access, although there may be some increase to journey times. Early consultation with KCC Rights of Way Officers has been held, which has aided the further development of mitigation and enhancement opportunities for NMUs. This consultation is ongoing, and will further inform the design as it progresses.

14 Community and Private Assets

14.1 Introduction

14.1.1 This chapter describes the existing environment in the surrounding area with respect to the factors relevant to Community and Private Assets within the study area, which is a minimum 250m buffer around the Scheme. The chapter describes the effects that are anticipated from preliminary studies in relation to the M20 Junction 10a Scheme and outlines proposed design and other measures to help mitigate these potential effects.

14.1.2 Following receipt of the Scoping Opinion, the scope of the Community and Private Assets topic has been expanded to consider socio-economic and economic development as a result of the Scheme, specifically the potential employment opportunities of the Scheme in relation to both construction and operation.

14.2 Legislation and Guidance

14.2.1 The DMRB topic 'Community and Private Assets' is identified within Highways England's IAN125/09. There is no topic specific guidance with regards to the Community and Private Assets assessment, instead IAN125/09 points to the relevant sections of two defunct DMRB topics:

- Volume 11, Section 3, Part 6 Land Use (HA, 2001b); and
- Volume 11, Section 3, Part 8 'Pedestrians, Cyclists and Community Effects' (HA, 1993a) (Community Effects element only).

14.2.2 Therefore the assessment will be carried out in accordance with the relevant sections of DMRB Volume 11, Section 3, Part 6 and Part 8 which provide guidance on:

- Demolition of private property and associated land take;
- Loss of land used by the community;
- Effects on development land;
- Effects on agricultural land; and
- Community severance.

14.2.3 There is currently no DMRB guidance on the assessment of local and wider socio-economic impacts. However potential socio-economic and economic development effects as a result of the Scheme will be considered using a process based on the HM Treasury Green Book principles. The socio-economic and economic development aspects will be assessed in relation to the way that development land is influenced and economic activity supported which delivers benefit to local communities and the local economy.

14.2.4 An initial assessment of socio-economic conditions (demographics, business structure, employment, unemployment, deprivation, skills etc.) will be undertaken together with a policy review that focuses on land use planning (and land

utilisation) and economic growth policy. This contextual work will then be supplemented with some discussion with ABC's Planning and Economic Development Officers and key actors in the local development sector (landowners and property agents) to provide details on individual sites. These will then be input into the Transparent Economic Assessment Model ("TEAM") and Gross Value Added ("GVA") arising from the land unlocked by the scheme will be produced.

14.3 Baseline

Land Use

Private Assets

14.3.1 Approximately 230 residential dwellings have been identified within 200m of the proposed Scheme within the communities of Willesborough, Willesborough Lees and Sevington and Mersham, all to the eastern extents of Ashford. The proposed Scheme is located within two parishes; Mersham and Sevington (with Ashford not a parish) and three wards; Highfield, North Willesborough and Weald East.

14.3.2 To the northern extents of the Scheme a large amount of land is owned by the Hinxhill Estate who also own developments such as Court Lodge, located 50m east of the proposed Scheme. Ashford Business Park is located to the southern extents of the proposed Scheme, west of Barrey Road. Several business/ charities are located along the A20 road including Pilgrims Hospice, Willesborough Garden Centre, Sweatman Mowers and Tesco superstore. There is an Equine Vets located at Court Lodge Farm on Church Lane.

Land used by the community

14.3.3 Land used by the community has been identified to the west of the A2070 by Aylesford Stream. This land, along with land surrounding Ashford Business Park has been identified within ABC's 2000 Local Plan as open space to be protected. In addition, to the eastern extents of the Scheme there is Hatch Park Grade II Registered Park and Garden.

Development land

14.3.4 The Phase 2 (2011 – 2021) and Phase 3 (2021 – 2031) Development Areas of the GADF Final Masterplan Report indicate that the majority of phased development within the study area (to the south of the proposed link road) would be for industrial and commercial use. The proposed junction 10a and A2070 link road were noted as integral to this growth, without which future development would be unlikely to proceed.

14.3.5 The proposed Scheme and development is also noted in ABC's 2000 Local Plan together with several other documents:

- Core Strategy, Adopted July 2008 (Policies CS2 and CS15);
- Ashford Employment Land Review, Final report – Stages 1 / 2 (August 2008) Nathaniel Lichfield and Partners;

- Ashford Strategic Economic Framework (January 2010a) ABC; and
- Strategic Employment Options Report (March 2012) ABC.

14.3.6 There are two areas of allocated development land within the study area identified in the Urban Sites and Infrastructure Development Plan adopted in October 2012 (U19 Sevington and U14 Land at Willesborough Lees).

14.3.7 A review and update of the development land and planning permissions within the Study area will be carried out for the ES in line with the developments listed in Chapter 16 Cumulative Effects. Particular reference will be made to Planning Application references 14/00910/AS and 14/00906/AS, which relate to the AXA/DMI development.

Agricultural land (viability)

14.3.8 Land to the north and south of the M20 Junction 10 is predominantly agricultural. A detailed Agricultural Land Classification ("ALC") survey was undertaken between December 1989 and January 1990. This survey identified the majority of agricultural land to the south of the M20 as Grade 2 and Grade 3a land and agricultural land to the north of the A20 as Grade 2, Grade 3a and Grade 3b. Therefore a large amount of land within the Scheme's study area is considered to be the 'best and most versatile' by Defra standards.

14.3.9 The majority of the agricultural land within the Scheme's study area is used for arable production; particularly to the south, although smaller areas of land are believed to be used as permanent pasture, parkland and woodland. Land to the south of the M20 within the study area is likely to be under arable production, with a block of young plantation woodland adjacent to the A2070, just north of Sevington and several fields used for grazing. Land to the north of the A20 is a variety of arable land, parkland, equestrian use and permanent pasture.

Community Facilities

14.3.10 There are a number of community facilities within 250m of the Scheme including:

- Tesco Superstore (<10m north of the M20);
- Highfield House Care Home (60m north of the M20, on Hythe Road);
- St. Mary's Church (85m south of proposed A2070 link road);
- Pilgrims Hospice (172m north of M20);
- Willesborough (Retail) Garden Centre (within the Scheme footprint); and
- Sweatman Mowers (within the Scheme footprint).

14.3.11 There are currently bus routes (numbers 525, 526 and 813) from Mersham to Ashford Town Centre running along Kingsford Street, across Highfield Lane Bridge and then onwards to Tesco superstore. There are four bus stops located within the Schemes extents (two opposite the Hospice) and two on Kingsford Street. In addition, there are a number of existing NMU amenities surrounding the entire

proposed Schemes extent including steps, stiles, gates, bridges, PRoW and footbridges (see Chapter 13 Effects on All Travellers).

Socio-economic and economic development

14.3.12 No work has been undertaken to date with regards to socio-economic and economic development, which will be progressed in the ES through the use of TEAM.

Sensitive Receptors

14.3.13 Sensitive community and private assets within the vicinity of the Scheme are given below in Table 14.1.

Table 14.1: Sensitive receptors

Receptor	Value/ Sensitivity	Description
Private Assets	Medium to low (Non-residential Private Property) High (Residential Property)	The assessment of the demolition of private property and loss of land used by the community applies to direct effects only and therefore considers a specific area on and immediately adjacent to the Scheme alignment. This includes the proposed construction compound location(s).
Community Land	High (Designated) Low (Undesignated)	
Development Land	The Scoping Report (2015) noted that value was to be based on professional judgement with development allocations considered to be of Low sensitivity to change. This will be reviewed in light of the inclusion of potential socio-economic and economic development effects.	The Scoping Report (2015) noted that the assessment would consider the effects of the Scheme on unimplemented planning permissions and upon development allocations in ABC Local Plan (saved policies) within 250m of the proposed Scheme together with the proposed construction compound location(s). This will be reviewed following receipt of the Scoping Opinion and clarity in terms of Adopted Development Plans for Ashford in light of the inclusion of potential socio-economic and economic development effects.
Agricultural Land	To be assigned on a case by case basis following further assessment	The assessment on Agricultural Land will extend to a 250m buffer of the Scheme alignment and will include the proposed construction compound location(s).
Community Severance	High (Facilities 'needed' by the local community) Low (Facilities 'desired' by the local community)	The assessment on community severance will extend to a 250m buffer of the Scheme alignment and will include the proposed construction compound location(s).
Socio-economic and economic development	To be confirmed.	To be confirmed.

Baseline Surveys

14.3.14 Two NMU counts were undertaken at seven sites in May and June 2015, the results of which are reported in Chapter 13 Effects on All Travellers. This information will be used to inform the baseline for community severance. The NMU survey counts for Barry Road will also be used to inform usage of Ashford Green Corridors LNR, a small amount of community land to the west of the existing A2070 and north of Barry Road. A usage survey has not yet been undertaken for the Community Land to the west of the A2070 by Aylesford Stream; however a survey will be undertaken to inform the ES baseline.

14.3.15 Confidential questionnaires will be issued to landowners/ tenant farmers in relation to Agricultural Land to inform the full ES. The questionnaires will ensure that the ES is based on accurate and reliable information regarding existing land use operations in the area.

14.4 Consultation

14.4.1 The Scoping Opinion noted the need to assess employment opportunities associated with the scheme, in particular with respect to local effects and consideration of the types of jobs generated in the context of the available workforce in the area during construction and operational. Other items of relevance included:

- Status updates on a number of Planning Applications (Planning Application Ref 14/00255/AS, 14/00910/AS and 14/00906/AS)
- Clarification with regards to Planning Policy including a breakdown of the Development Plan which comprises the saved policies in the adopted Ashford Borough Local Plan 2000, the adopted LDF Core Strategy 2008, the adopted Ashford Town centre Action Area Plan 2010, the Tenterden and Rural Sites DPD 2010, the Urban Sites and Infrastructure DPD 2012 and Chilmington Green AAP 2013and its adopted policies.

14.4.2 No additional consultation has been undertaken to date however, as noted above, confidential questionnaires will be issued to landowners/ tenant farmers in relation to Agricultural Land. Discussion with the ABC Planning and Economic Development Officers and key actors in the local development sector (landowners and property agents) will also take place.

14.5 Potential Mitigation Measures

14.5.1 During construction, a CEMP would be prepared by the appointed contractor and implemented during construction, which would ensure construction is undertaken in as sensitive a manner as possible with regards to the Community and Private Assets. The CEMP would include a Community Relations Strategy, ensuring that communication with both the general public and local businesses would be managed and maintained prior to and during all construction works. The Scheme would be delivered in accordance with the Considerate Constructors Scheme, and would ensure that local residents, businesses and other sections of the community are kept informed about the Scheme.

14.5.2 A Traffic Management Plan ("TMP") would also be produced. All diversion routes and road closures would be sign posted clearly and severance from community facilities for local residents and other pedestrians during construction would be minimised by ensuring that all temporary diversions for pedestrians around the work site would be clearly signed, with alternative access arrangements maintained through the full construction period, as required. Existing crossings would only be closed once diversions are in place or the new arrangement has been established. Signs would be erected requesting that pedestrians use the designated routes only.

14.6 Potential Effects

Construction

Demolition of private property and land take

14.6.1 The majority of temporary land acquisition associated with the construction works would be from AXA/DMI, the Secretary of State, KCC and the Knatchbull Estate. Temporary land acquisition from AXA/DMI, the Secretary of State and Kent County Council would be required. The residential properties that lie to the west of the existing A2070 in the district of Willesborough would not experience land-acquisition. Instead a number of dwellings would potentially benefit from the proposed Scheme with the A2070 corridor moved further from their rear gardens.

14.6.2 The Scoping Report reported the potential for Lagonda Lodge to the south of Kingsford Street to fall within the Scheme footprint, but following a review this property will not fall within the Scheme boundary. The Scoping Report also reported potential land take associated with properties at Church Road and land titles 'The Hanchins' which was incorrect and will not be required.

Community Land

14.6.3 A small amount of community land to the west of the existing A2070 and north of Barrey Road would be temporarily affected during construction

Development Land

14.6.4 Potential temporary impacts on development land (unimplemented planning permissions and development allocations in the Local Planning Authority development designations) will be assessed for the ES.

Agricultural Land (viability)

14.6.5 The Scheme would result in temporary potentially significant effects on agricultural land and farming businesses during construction as a result of potential severance, loss of access and disruption to drainage together with effects resulting from the potential temporary reduction in farm size and/or manageability and/or income as a result of temporary land take or severance. Note however that a number of plots likely to be affected have already been purchased for the DMI/AXA development.

Community Severance

14.6.6 Community severance effects are anticipated as a result of temporary closures or diversions of existing NMU routes during construction, resulting in increased journey lengths and times, temporary changes to journey experience and traffic flows. There is also the potential for significant access issues to Highfield Lane and Kingsford Street during construction, although impacts would be mitigated through the production of a TMP and CEMP.

Socio-economic and economic development

14.6.7 Potential impacts during construction will be addressed within the ES.

Operation

Demolition of private property and land take

14.6.8 Approximately 1ha of the 13ha required to accommodate the Scheme would be land acquisition or demolition of non-agricultural private assets, including the demolition of Highfield Cottage, Wyevale Garden Centre and Beauchamp Clark Nurseries. The latter is not currently an operational business so the impact in this case would be in relation to the land only. Permanent land acquisition would also be required from the Knatchbull Estate located to the north and south of the M20 and to the east of the proposed new junction.

14.6.9 The landscape mitigation design proposals are likely to require some limited acquisition of land from the Hinxhill Estate that borders the A20 to the north. Permanent land take is also likely to be required to the south of the M20 and east of Bad Munstereifel Road and would include land associated with Ransley House and Court Lodge Farm, and land on the east side of A2070 SOR.

Community Land

14.6.10 A small amount of community land, to the west of the existing A2070 SOR and to the north of Barrey Road would see the current carriageway alignment moved to the west with the kerb line boundary moved further away from the highway boundary and therefore further away from the community land boundaries. It is proposed that the landscape design for mitigation planting include the reclamation of the redundant section of existing A20 which could potentially provide an opportunity to enhance the Public Open Space and extend the existing ‘green corridor’, although the details of this are not known at this time.

Development Land

14.6.11 Policy U19 from the Urban Sites and Infrastructure Development Plan is part of ABC’s Core Strategy with future plans to integrate this area into an employment area. The proposed A2070 Scheme is included within this policy therefore the Scheme would help to realise this and result in a beneficial impact on current planning applications associated with Policy 19 (i.e. AXA/DMI development).

Agricultural Land (viability)

14.6.12 The Scheme would result in permanent significant effects on agricultural land and farming businesses as a result of land take and the potential severance and loss of access, disruption to drainage and effects resulting from reductions in farm size and/or manageability and/or income as a result of land take, severance or loss of buildings. Note however that a number of plots likely to be effected have already been purchased for the AXA/DMI development.

Community Severance

14.6.13 Once operational the proposed Scheme would introduce new NMU infrastructure along the new A2070 trunk road including new footpaths and NMU at grade and uncontrolled crossing points, as well as with the Kingsford Street footbridge and associated footpath. It would also result in traffic flow changes. As such there is the potential for significant effects in terms of community severance.

Socio-economic and economic development

14.6.14 Potential impacts during operation will be addressed within the ES.

14.7 Chapter Summary

14.7.1 This chapter describes the existing environment within the study area with respect to the factors relevant to Community and Private Assets. The assessment incorporates two of the “defunct” DMRB topics as suggested by IAN 125/09 - Volume 11 Section 3 Part 6, Land Use and Volume 11 Section 3 Part 8, Pedestrians, Cyclists, Equestrians and Community Effects (Community Effects/ Community Severance elements only). Following receipt of the Scoping Opinion (The Planning Inspectorate, 2015) the scope of the chapter is to be expanded to also consider potential socio-economic and economic development as a result of the Scheme.

14.7.2 At this stage it is expected that there would be significant effects on private property and associated land, community land, development land, agricultural land and community severance. Construction stage effects would be managed through the implementation of a CEMP, a Community Relations Strategy and a TMP.

15 Road Drainage and Water Environment

15.1 Introduction

15.1.1 This chapter describes the existing environment in the surrounding area with respect to the factors relevant to Road Drainage and Water Environment within the study area, which is a 1km buffer around the Scheme plus downstream waterbodies. The chapter describes the effects that are anticipated from preliminary studies in relation to the M20 Junction 10a Scheme and outlines proposed design and other measures to help mitigate these potential effects.

15.2 Legislation and Guidance

15.2.1 The following legislation, standards and best practice guidelines are considered to be relevant to the proposed Scheme.

- The NPPF[14] and its associated Technical Guidance[15];
- Highways (Environmental Impact Assessment) Regulations 2007 (EIA Highways Regulations 2007);
- Directive 2000/60/EC of the European Parliament and of the Council establishing a framework for the Community action in the field of water policy;
- Water Environment (Water Framework Directive) (England and Wales) Regulations 2000;
- Groundwater protection: principles and practice (GP3)[16];
- Land Drainage Act 1991 and 1994;
- Flood and Water Management Act (2010); and
- Ashford Borough Council Local development Framework Sustainable Drainage SPD[17].

15.2.2 The Road Drainage and Water Environment impacts of the Scheme will be assessed using Highways England's DMRB Volume 11 Section 2, Part 5 Environmental Impact Assessment (HA208/08) and technical guidance provided in the DMRB Volume 11, section 3, Part 10 (HD 45/09): Road Drainage and the Water Environment (hereafter referred to as HD45/09).

15.2.3 The FRA will be carried out in accordance with the requirements of the NPPF and its accompanying Technical Guidance, and the Environment Agency's 'Climate

[14] National Planning Policy Framework, Communities and Local Government, 2012, available online at http://planningguidance.planningportal.gov.uk/, accessed 28/07/2015
[15] National Planning Policy Framework Technical Guidance, Communities and Local Government, 2012, available online at http://planningguidance.planningportal.gov.uk/, accessed 28/07/2015
[16] Groundwater protection: principles and practice (GP3), Environment Agency, 2013, available online at https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/297347/LIT_7660_9a3742.pdf, accessed 28/07/2015
[17] Ashford Borough Council Local development Framework Sustainable Drainage SPD, available online at http://www.ashford.gov.uk/sustainable-drainage-spd, accessed 22/07/2015.

change allowances for planners' NPPF supporting guidance[18]. The WFD assessment will be carried out in accordance with the Environment Agency documents 'Assessing new modifications for compliance with WFD[19] 2011 and its accompanying Detailed Supplementary Guidance[20] note. The results of the HD45/09 groundwater, surface water and spillage risk assessments will inform the WFD assessment.

15.3 Baseline

Local Environment

15.3.1 The main water feature within the study area is the Aylesford Stream, a tributary of the Stour, which flows northeast to southwest under the A20, M20 and A2070. The watercourse is culverted under the three roads; known as the Swatfield bridge culvert, Lacton Farm culvert and the A2070 culvert respectively. Runoff from the existing A2070 and some areas of the M20 drain unattenuated, without treatment or pollution control measures, into the Aylesford Stream via ten outfalls.

15.3.2 Based on the BGS Map, Sheet 289, Solid and Drift, the proposed Junction 10a site is underlain predominantly by Lower Greensand deposits, overlain by Alluvium along the river. Groundwater is often present within these geological formations and according to the Environment Agency's online maps there are areas of Secondary A aquifer in the superficial deposits. These support water supplies at a local rather than strategic scale, and in some cases may contribute to base flow to rivers. There are also Principal and Secondary A aquifers in the deeper bedrock geology. These layers have high groundwater storage capacity due to high intergranular and/or fracture permeability and can therefore provide a high level of water storage. They may support water supply and/or river base flow on a strategic scale.

15.3.3 The Scheme lies within Flood Zones 1, 2 and 3 of the Aylesford Stream. Flood Zone 1 is land having a less than 1-in-1,000 annual probability of river or sea flooding. Flood Zone 2 is land having between a 1-in-100 and 1-in-1,000 annual probability of river flooding. Flood Zone 3 is land having a 1-in-100 or greater annual probability of river flooding.

Designated sites

15.3.4 There are no water dependent designated sites within 1km of the Scheme. Stodmarsh Ramsar, SPA and SAC site lies over 25km downstream and is a 481 ha complex site comprising inland, marine and coastal wetlands. Thanet Coast SAC, Sandwich Bay SAC, and Thanet Coast and Sandwich Bay SPA and Ramsar

[18] Climate change allowances for planners, Guidance to support the National Planning Policy Framework, Environment Agency, September 2013, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/296964/LIT_8496_5306da.pdf, accessed 28/07/2015

[19] Assessing new modifications for compliance with WFD, Environment Agency, 2010

[20] Assessing new modifications for compliance with WFD: detailed supplementary guidance, Environment Agency, 2010

sites lies over 45km downstream and is a coastal site, consisting of a long rocky shore and adjoining estuary, reef with submerged or partially submerged sea caves, dune, maritime grassland, and saltmarsh and grazing marsh. However, significant changes in water supply or quality are highly unlikely to result from the proposed Scheme, and there is therefore no potential for impacts to the two sites.

15.3.5 Hatch Park SSSI lies immediately to the north of the M20, although as this is designated for its unimproved acidic grassland ancient pollard woodlands there is no potential for the site to be affected by the road drainage and water environment elements of the proposed scheme. Potential effects on these sites are discussed in Section 9: Nature Conservation and will not be considered further here.

Sensitive Receptors

15.3.6 The South East River Basin Management Plan[21] (RBMP) provides information on four WFD waterbodies within the study area that have the potential to be affected:

- The Aylesford Stream (GB107040019650), which flows under the M20 to the west of the new proposed Junction 10a, which is a tributary of;
- The East Stour (GB107040019640), which is located approximately 2km to the southwest of the Scheme, although it will be considered here as it is a downstream waterbody, which is a tributary of;
- The Great Stour between Ashford and Wye (GB107040019741), which lies approximately 5km to the north of the Scheme, although it will be considered here as it is a downstream waterbody; and
- The Kent Greensand Eastern (GB40701G501400) groundwater body, which underlies the whole scheme.

15.3.7 The Kent Greensand Eastern waterbody is at Poor (quantitative and qualitative) status, due to resource balance and impacts on surface waters, and is noted to be at risk due to hazardous Substances and other pollutants, nutrients and abstraction and other artificial flow pressures.

15.3.8 The Aylesford Stream is currently at Good overall status, with supporting elements at either Good or High status. The East Stour is currently at Moderate status, as the fish supporting element is Moderate. All other supporting elements are either Good or High status. The Great Stour between Ashford and Wye is currently at Moderate status, as the fish, dissolved oxygen and phosphate supporting elements are Moderate. All other supporting elements are either at Good or High status. All three waterbodies are not designated as artificial or heavily modified waterbodies, meaning their hydromorphology is near natural.

15.3.9 OS maps show a few ponds in the Aylesford Stream catchment, including one approximately 300m north of the proposed Junction 10a and two at Hatch Park and Jacob's Plantation, 1.5km east of the proposed junction. In addition, a balancing pond (EP2) just south of the M20 and west of Willesborough Garden

[21] South East River Basin Management Plan, Environment Agency, 2009, available online at https://www.gov.uk/government/publications/south-east-river-basin-management-plan, accessed 31/07/2015

Centre serves to attenuate highway runoff and possibly to reduce the risk of pollution to Aylesford Stream.

15.3.10 Sensitive water environment receptors are given below in Table 15.1.

Table 15.1: Sensitive water environment receptors

Receptor	Location	Value/ Sensitivity
Aylesford Stream (GB107040019650)	Flows under the M20 to the west of Junction 10A	High
East Stour (GB107040019640)	Approximately 2km southwest (downstream)	Medium
Great Stour between Ashford and Wye (GB107040019741)	Approximately 5km north (downstream)	Medium
Kent Greensand Eastern (GB40701G501400)	Underlies Scheme	Low
Flood plain of the Aylesford Stream	Flows under the M20 to the west of Junction 10A	High
Balancing pond EXP1 (existing)	Adjacent to M20 and Aylesford Stream	Low
Balancing pond EXP2 (existing)	Within Junction 10	Low
Balancing pond 1 (proposed)	Adjacent to existing EXP1	Low
Balancing pond 2 (proposed)	At proposed A2070/Link Road junction	Low
Balancing pond 3 (proposed)	Between M20 and A20 at Junction 10a	Low
Other ponds	1 no. 300m north and 2 no. 1.5km east of Junction 10a	Low

Baseline Surveys

15.3.11 No water quality or ecological surveys were carried out for this PEIR, and it is assumed that the information available on the water environment within the RBMP is representative of the general conditions at the Scheme location.

15.4 Consultation

15.4.1 A meeting was held on the 17th February 2015 with the Environment Agency and ABC, to give an update on the progress of the scheme and discuss the proposed methodology for the EIA, WFD compliance assessment and FRA. The Environment Agency's requirements for any proposed culvert extensions were discussed, to inform the design for carrying the Junction 10a slip roads over the Aylesford Stream, although the preference for the use of clear span bridges was noted by both the Environment Agency and Scheme designers. Should clear span bridges be used, it was noted that flood modelling would not be required. Access requirements to the Aylesford stream for maintenance were also discussed.

15.4.2 ABC's requirements for run-off attenuation, as described in the Sustainable Drainage Strategic Policy Document[22] were discussed. This requires attenuation to the 1-in-100 year (1% AEP) event plus 30% climate change, with run-off to be restricted to 4 l/s/ha south of M20 and 2 l/s/ha north of M20.

15.4.3 The proposed scope of the ES chapter and WFD compliance assessment were discussed, and new guidance on screening criteria for the WFD assessment were provided by the Environment Agency, which will be used to screen which aspects of the Scheme could affect the WFD status of the waterbodies and therefore need to be assessed for WFD compliance.

15.4.4 A further meeting was held with the Environment Agency on the 2nd September 2015, to discuss the updated drainage design. It was noted that the two new slips to the west of J10a were previously intended to drain to the proposed new attenuation pond, but subsequent design work has shown this to be infeasible without pumping. It is therefore proposed to discharge runoff from the short lengths west of the stream (the majority of the slip roads will discharge to the proposed attenuation ponds) directly to the Aylesford Stream, with discharge rates limited to match the existing discharge rates. It is not possible to provide a betterment to the existing run-off rates at these outfall points due to site constraints. However, the overall cumulative attenuation the scheme provides is a significant improvement in comparison to the existing scenario.

15.5 Potential Mitigation Measures

15.5.1 During construction, best practice for pollution prevention and water management will be implemented as part of the overall CEMP, which will incorporate best practice in relation to pollution prevention and water management, as set out in CIRIA's Environmental good practice on site[23]; and Environment Agency Pollution Prevention Guidelines[24].

15.5.2 The potential for impacts to occur as a result of storage of materials would be minimised by locating compounds for the storage of construction materials or temporary stockpiling of excavated soils away from surface watercourses and drains. Drums and barrels would be properly labelled and fitted with flow control taps and stored in a designated, bund-shielded, safe area within the site compound.

15.5.3 Before any discharge of water is made from the site, appropriate silt settlement techniques would be used. All roads and hardstanding would be kept clean and tidy in order to prevent the build-up of pollutants, although the use of water sprays for reducing dust or washing construction areas would be carefully regulated in order to avoid washing substantial quantities of silt (etc.) into surface water drains.

[22] Ashford Borough Council Local development Framework Sustainable Drainage SPD, available online at http://www.ashford.gov.uk/sustainable-drainage-spd, accessed 22/07/2015.
[23] Environmental good practice on site (third edition) (C692), Audus, Charles and Evans, December 2010.
[24] Environment Agency Pollution Prevention Guidelines, available online at https://www.gov.uk/government/collections/pollution-prevention-guidance-ppg, accessed 30/04/2015

Where appropriate, watercourses would be shielded by bunds in order to prevent contamination from surface water runoff.

15.5.4 The potential for impacts to occur as a result of contamination from accidental spillages would be minimised by the inclusion of emergency response procedures in the CEMP to handle any leakages or spillages of potentially contaminating substances. Spill kits would be located on sites near to watercourses and within the works compounds and staff would be trained in their use.

15.5.5 Potential impacts upon groundwater during earthworks would be minimised by exposing subsoil for a minimum length of time after topsoil strip. Cut-off trenches, where necessary, would be excavated in order to prevent massive surface water runoff into watercourses. Cut-off trenches would discharge into sediment lagoons, with discharge to watercourses subject to the prior consent of the Environment Agency.

15.5.6 Piling works would be planned in accordance with best practice guidance[25]. Piling operations would be subject to risk assessment and any potential to cause pollution to the aquifer would be covered by measures to be detailed in the piling method statements.

15.6 Potential Effects

Construction

15.6.1 The potential effects of the Scheme during construction include the following:

- Damage to aquatic ecosystems due to pollution of watercourses and groundwater from mobilised suspended solids, heavy metal contamination and spillages of fuel, oil concrete or cement products;
- Increased risk of flooding due to changes in the extent of the floodplain or changed/new flood pathways due to temporary barriers created by construction works e.g. topsoil stockpiles; and
- Temporary effects on local structures, including property and infrastructure, due to subsidence arising from changes in groundwater level, for example due to dewatering or piling.

Operation

15.6.2 The potential effects of the Scheme during the operational phase without mitigation include:

- Potential increase in the rate of runoff and flood risk from an increase in impermeable surfaces;
- Pollution to groundwater or surface water associated with highway runoff discharges including contaminants associated with vehicle wash off and accidental spillages from traffic collisions;

[25] Piling and Penetrative Ground Improvement Methods on Land Affected by Contamination: Guidance on Pollution Prevention, Environment Agency National Groundwater & Contaminated Land Centre Report NC/99/73

- Changes to land drainage, surface water runoff and associated flood risk; and
- Foundations and piles providing potential pathways for contaminant migration and localised barriers to groundwater flow.

15.7 Chapter Summary

15.7.1 The potential for the Scheme to affect water receptors will be assessed using the methodology given in DMRB Volume 11, Section 3, Part 10 (HA45/09). A preliminary WFD assessment will be undertaken alongside this assessment, as an appendix to the ES, to establish the potential for effects on WFD status and the need for a full WFD assessment.

15.7.2 A Level 2 FRA will be undertaken as an appendix to the ES, including an estimate of time to inundate, and an assessment of flood warning procedures. An assessment of the potential for the Scheme to affect groundwater will be carried out in the ES, which will inform the design of the Scheme and will consider the potential impacts on groundwater receptors during the construction and operation phases, as well as the impact of mitigation measures. The assessment will consider both groundwater level and quality impacts in accordance with the requirements of the WFD.

16 Consideration of Combined and Cumulative Effects

16.1 Introduction

16.1.1 Combined and cumulative effects result from multiple actions on receptors over time and are generally additive or interactive (synergistic) in nature. They can also be considered as effects resulting from incremental changes caused by other past, present or reasonably foreseeable actions together with the project, identified as:

- Combined effects from a single project (the interrelationship between different environmental factors); and
- Cumulative effects from different projects (with the project being assessed).

16.2 Legislation and Guidance

16.2.1 The requirement to address the combined and cumulative effects of a project upon environmental receptors is outlined within Schedule 4 of the EIA Regulations 2011 (as amended), which requires that the ES addresses:

"… The aspects of the environment likely to be significantly affected by the development, including, in particular, population, fauna, flora, soil, water, air, climatic factors, material assets, including the architectural and archaeological heritage, landscape and the interrelationship between the above factors, and provides a description of the likely significant effects of the development on environment, which should cover the direct effects and any indirect, secondary, cumulative, short, medium and long term, permanent and temporary, positive and negative effects of the development."

16.2.2 The assessment of the combined and cumulative effects of the Scheme will draw upon the guidance provided by the DMRB Volume 11 Section 2 Part 5: Assessment and Management of Environmental Effects. Cumulative effects will be reported in accordance with the guidance provided in paragraph 3.23 of HD48/08[26].

16.3 Consultation

16.3.1 A summary of the Scoping Opinion comment relating to the assessment of combined and cumulative effects is provided below in Table 16.1, with a brief explanation as to how each have been addressed.

[26] Volume 11, Environmental assessment, Section 2 Environmental Impact Assessment, Part 6, HD 48/08, Reporting of environmental impact assessments, available at http://www.standardsforhighways.co.uk/ha/standards/dmrb/vol11/section2/hd4808.pdf, accessed 28/07/2015

Table 16.1: Scoping opinions

Scoping Opinion	How this will be addressed in the assessment
Canterbury City Council: *"The council wish any future Environmental Statement to consider the following strategic sites that are being proposed as part of Canterbury City Council's emerging local plan. These include Site 1 (South Canterbury including a new junction to the A2), Site 9 (Land at Howe Barracks) and Site 10 (Land at Kent and Canterbury Hospital)".*	The suggested sites for inclusion in the assessment of cumulative effects lie approximately 20km from the proposed Scheme, and so will not be taken forward into the EIA.
Ashford Borough Council: *"Other schemes beyond the Ashford Borough Council's boundaries such as the Lydd Airport Expansion development may need to be considered".*	The suggested site for inclusion in the assessment of cumulative effects lies approximately 20km from the proposed Scheme, and so will not be taken forward into the EIA.
Natural England: *"The ES should include an impact assessment to identify, describe and evaluate the effects that are likely to result from the project in combination with other projects and activities that are being, have been or will be carried out. The following types of projects should be included in such an assessment (subject to available information):* *(a) Existing or completed projects;* *(b) Approved but uncompleted projects;* *(c) Ongoing activities;* *(d) Plans or projects for which an application has been made and which are under consideration by the consenting authorities; and,* *(e) Plans and projects which are reasonably foreseeable, i.e. projects for which an application has not yet been submitted, but which are likely to progress before completion of the development and for which sufficient information is available to assess the likelihood of cumulative and in-combination effects".*	In terms of existing or completed projects, these will be included as part of the baseline data for this assessment. All other points have been taken into consideration and will be assessed.

16.3.2 It is anticipated that the submission of this chapter will also provide an opportunity for stakeholders to review an updated list of proposed future development projects (given below in Table 16.2) and to comment on the status of the proposed developments. This will inform the ES.

Study Area

16.3.3 Two study areas have been chosen for the assessment of cumulative effects. Major planning applications within a 1.5km radius of the proposed Scheme have been identified, reflecting the local impacts of proposed developments and the allocation of developments included in Local Development Frameworks and Core Strategies produced by ABC, all of which fall within Ashford Borough.

16.4 Preliminary Identification of Key Developments

16.4.1 The identified proposed major developments at this stage are shown in Table 16.2 below. These have been identified using ABC's 2008 Adopted Core Strategy[27] 2008, ABC's 2012 Local Development Framework Urban Sites and Infrastructure Development Plan Document[28], and Ashford Borough Council's 2013/2014 Local Development Framework Authority Monitoring Report[29], as well as using ABC's Planning Application Interactive Map System[30].

16.4.2 Following finalisation of the proposed major developments to be included in this assessment, a map showing the location of these proposed major developments will be produced for the ES.

[27] ABC's Local Development Framework, Core Strategy, Adopted 2008, available online at http://www.ashford.gov.uk/core-strategy-2008, accessed 28/07/2015
[28] ABC's Local Development Framework, Urban Sites and Infrastructure Development Plan Document, available online at http://www.ashford.gov.uk/urban-sites-dpd, accessed 28/07/2015
[29] ABC's Authority Monitoring Reports, available online at http://www.ashford.gov.uk/authority-monitoring-reports, accessed 28/07/2015
[30] http://newmaps.ashford.gov.uk/EXTPlanningMap/default.aspx, accessed 28/07/2015

Table 16.2: Proposed Major Developments for inclusion within the ES

Development Name	Description of proposed development	Phasing/ Planning Application date
Sevington	The Core Strategy identifies the Sevington site between the M20 and the CTRL as an expanded focus for employment development to the south-east of the town. This site is more suited to the delivery of B2 and B8 uses and has the space to accommodate large buildings. This is the AXA/DMI development, for which two planning applications are described below.	2016-2031
Land West of Highfield Lane and East and North of, Church Road, Sevington (14/00910/AS)	Erection of a commercial unit of 5,239sqm comprising light industrial (B1c) and storage and distribution (B8) of 3706.6sqm (including 959sqm of operational mezzanine); with ancillary retail (A1) 873.7sqm, and ancillary office (B1a) of 658.7sqm with associated car parking, landscape and drainage works.	19 Aug 14
Land On The North Side Of, Highfield Lane, Sevington, Kent (14/00906/AS)	Development to provide a mixed use development comprising: Up to 140,387 sqm Class B8 use; Up to 5,239 sqm comprising mixed B1c (light industrial) / B8 (storage & distribution) floor space of 3,706.6sqm (including 959sqm of operational mezzanine); with ancillary retail (A1) 873.7sqm, and ancillary office (B1a) of 658.7sqm; Up to 5,390 sqm Class B1c; Up to 5,150 sqm Class B1a: Up to 1,450 sqm Class A3 and or Class D1 use 2. Utilities infrastructure; 3. Car parking; 4. Transport works infrastructure; 5. Open space landscaping and associated ground works; Together with all associated and ancillary works.	26 Aug 14
Newtown Road (former railway works)	Mixed use neighborhood based on the former railway works with an indicative capacity of 700 residential units (225 up to 2017) and up to 7,000m^2 of A1-A5, B1, D1 and D2 (limited to gymnasium) uses. It is noted in the Urban Sites and Infrastructure DPD that no more development than would be generated by the equivalent of 225 dwellings shall be built and occupied in advance of the construction and opening to traffic of the proposed M20 Junction 10a, and until additional capacity has been provided at the Orbital Park A2070 junction.	2016-2031
K College, Jemmett Road	This site is currently a further education college campus located on Jemmett Road within walking distance of the town centre, railway station and Victoria Park. The site is currently in use as an important educational facility for the borough but the College is pursuing a scheme	2016-2031

	to re-locate to a site within the town centre (Policy U6A) and hence there is the potential to redevelop this site once the relocation has taken place.	
Land at Willesborough Lees	This site to southeast of the William Harvey Hospital is suitable for residential development with an indicative capacity of 200 dwellings.	2016-2031
Orbital Park	The Orbital Park site is designated in the Core Strategy as a strategic employment location. The majority of the site has now been developed, but there are still several vacant plots where new development could take place, although confirmation of their size is required.	2016
Eureka Business Park	The Eureka Business Park is suitable principally for strategic employment uses. Parts of the site have already been developed, with a high-quality 'local centre' providing a range of local shops and services. At present, there remain large areas of land available, some of which has detailed planning permission for a new office development and a private hospital.	2016-2031
Cheeseman's Green	It is envisaged that the main neighbourhood centre will be located to the south-east of the wood, with a local centre serving the area to the north-west. Work has also started on the urban extension site of Cheeseman's Green (known as Finberry), which has planning permission for 1100 dwellings and other facilities including retail units, school, community hall, cycle routes, landscaping and public open space. Applications for reserved matters on this site have already been permitted for 428 dwellings.	2016-2031
Land at Cheeseman's Green (14/01075/AS)	Construction of 113 new dwellings with associated access, parking, landscaping and Captain's Wood locally equipped area of play.	21 Aug 14
Chilmington Green (12/00400/AS)	Outline planning permission has been granted, subject to a Section 106 Agreement, for a comprehensive mixed use development on land at Chilmington Green, on Ashford Road, comprising up to 5,750 residential units, a secondary school covering approximately 8ha and up to 4 primary schools up to 2.1 ha each, community uses, leisure uses, and provision of areas of formal and informal open space.	2016-2031 Pending permission
Repton Park	49 dwellings have already been constructed. Development is due to continue over the next few years, although further detail of this is required.	2016-2031
Town Centre	Policy CS3 of the Core Strategy sets out the aims for the future role of Ashford Town Centre, with specific site allocations being made through the Ashford Town Centre Area Action Plan (ATCAAP) (2010) for employment, leisure and residential uses. Further detail of this is required.	2016-2031

Waterbrook	An urban extension area identified in the Local Development Framework Authority Monitoring Report (2013/14). Further detail of this is required.	2016-2031
Conningbrook Lakes	Granted planning permission in May 2013 for a lakeside v lakeside village of 300 homes, plus country park.	
Ashford Designer Outlet	Extension of Ashford Designer Outlet, to create up to 14,800 jobs, plus vehicle journeys associated with the retail development.	
Eureka Park	The Eureka Business Park is proposed primarily for B1 office uses, comprising in excess of 27,800m2 of built business space with outline consent for a further 100,000 m2 (approx) with associated car parking.	
Orbital Park	The Orbital Park site is designated in the Core Strategy as a strategic employment location. Although the majority of the site has now been developed, there are still several vacant plots where new development could take place for B1, B2 and B8 uses. Other sui generis uses that generate a significant employment output may also be acceptable.	
Charter House	Comprising 232 high-quality homes, The Panorama (formerly Charter House)offers a mix of one and two bedroom apartments across 9 floors, with 14 luxury penthouses and a further 8 outstanding duplex penthouses on levels 8 and 9.	
3rd Urban Extension/Post 2017 Urban Allocations	The Core Strategy (Policy CS2) accepts the need for a third urban extension to Ashford to be identified (2009 SHLAA), assumed in the traffic model (Realistic scenario) to comprise 23,850 dwellings and 7,155 jobs.	

16.5 Potential Effects

16.5.1 The ES will assess the potential combined effects based upon the results of baseline surveys and data collection for each environmental discipline assessed and any key developments identified.

16.5.2 Potential combined and cumulative impacts may include:

- Incremental noise increases;
- Incremental loss of agricultural land;
- Fragmentation of wildlife corridors; and
- Incremental air quality increases.

16.6 Chapter Summary

16.6.1 This chapter of the ES will bring together the principal findings of each of the topic chapters in order to identify and assess the combined effects of the Scheme and the cumulative effects of the Scheme in association with other existing or future major developments in the study area.

16.6.2 The main development that could cause cumulative effects is the proposed development to the north and west of Highfield Lane at Sevington (the AXA/DMI development). This is a mixed use development, for which planning applications are currently with ABC.

17 Conclusions

17.1 Potential Effects

17.1.1 Based on this preliminary assessment, the scale and location of the proposed Scheme mean that several different aspects of the environment would potentially be affected. Some of these effects would occur during construction, such as the loss of land, vegetation and wildlife habitat, and the generation of dust and noise. Other impacts would occur during operation, such as noise from traffic, changes travel conditions and development of new habitats from the landscape and ecological mitigation proposals.

17.1.2 The ongoing EIA will consider these effects and assess their significance, taking into account proposed mitigation measures. This will be presented in the ES.

17.2 Next Steps

17.2.1 Highways England wishes to obtain the views of statutory consultees and other stakeholders on the draft proposals for the M20 Junction 10 a Scheme, given the amendments to the proposed design since the submission of the Scoping Report. A public consultation will be held in early 2016.

17.2.2 After the consultation period, all responses will be considered in finalising the proposed Scheme design and the ES. A report will be prepared on the responses received and how they have been taken into account, including whether or not they led to changes in the proposed Scheme.

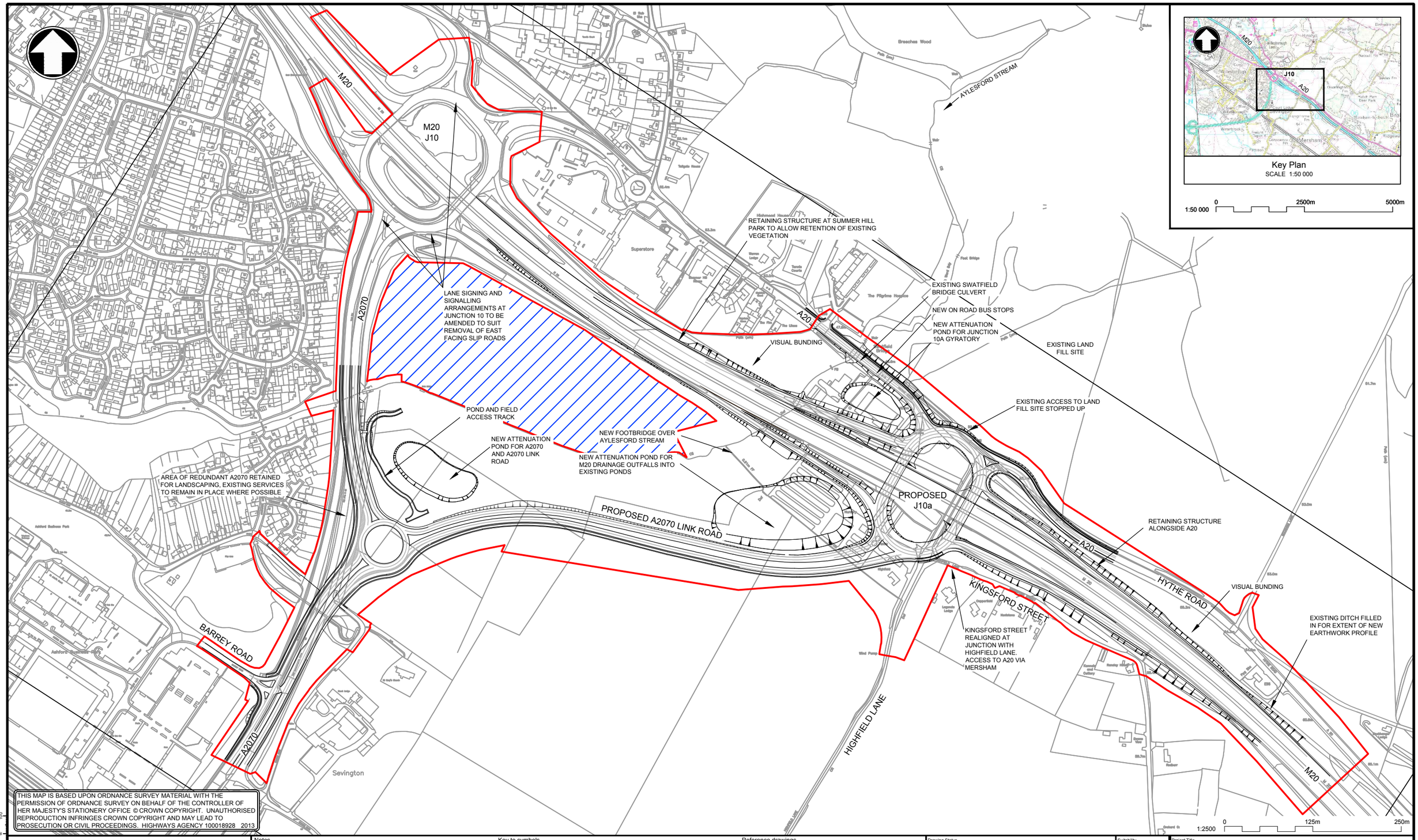
18 Glossary

AADT	Annual Average Daily Traffic
AAWT	Annual Average Weekday Traffic
ABC	Ashford Borough Council
AEP	Annual Event Probability
ALC	Agricultural Land Classification
APC	Areas of Potential Concern (with respect to contamination)
AQMA	Air Quality Management Area
BAP	Biodiversity Action Plan
BCR	Benefit Cost Ratio
bgl	Below ground level
BGS	British Geological Survey
BPM	Best Practicable Means
CEMP	Construction Environmental Management Plan
CLRA	Contaminated Land Risk Assessment
CTRL	Channel Tunnel Rail Link
DCO	Development Consent Order
DfT	Department for Transport
DMRB	Design Manual for Roads and Bridges
EIA	Environmental Impact Assessment
ES	Environmental Statement
FRA	Flood Risk Assessment
GADF	Greater Ashford Development Framework
GCN	Great Crested Newts
GI	Ground Investigation
GVA	Gross Value Added
HDV	Heavy Duty Vehicle
HGV	Heavy Goods Vehicle
HER	Historic Environment Record
HRA	Habitats Regulation Assessment
HSI	Habitat Suitability Index
IAN	Interim Advice Note
IEEM	Institute for Ecology and Environmental Management
IPC	Infrastructure Planning Committee
JNCC	Joint Nature Conservation Committee

KCC	Kent County Council
KWP	Kent Waste Partnership
LBAPs	Local Biodiversity Action Plans
LCA	Landscape Character Areas
LDF	Local Development Framework
LNR	Local Nature Reserve
LOAEL	Lowest Observed Adverse Effect Level
LQMA	Local Air Quality Management
LSE	Likely Significant Effects
LWS	Local Wildlife Site
MMGJV	Mott Macdonald Grontmij Joint Venture
NDD	Network Operations and Development Directorate
NMU	Non-Motorised User
MMP	Materials Management Plan
NIA	Noise Important Area
NPPF	National Planning Policy Framework
NPS	National Policy Statement
NPSE	Noise Policy Statement for England
NSIP	Nationally Significant Infrastructure Project
PCM	Pollution Climate Mapping
PEIR	Preliminary Environmental Information Report
PINS	Planning Inspectorate
PRoW	Public Rights of Way
PPE	Personal Protective Equipment
RBMP	River Basin Management Plan
SAC	Special Areas of Conservation
SEB	Statutory Environmental Bodies
SMP	Soil Management Plan
SNCI	Site of Nature Conservation Interest
SPA	Special Protection Area
SoCC	Statement of Community Consultation
SOR	Southern Orbital Road
SoS	Secretary of State
SSD	Stopping Sight Distance
SSSI	Site of Special Scientific Interest

SPZ	Source Protection Zone
SWMP	Site Waste Management Plan
USA	Updating and Screening Assessment
TEAM	Transparent Economic Assessment Model
TMP	Traffic Management Plan
WFD	Water Framework Directive
ZTV	Zone of Theoretical Visibility
ZVI	Zone of Visual Influence

19 Appendix A - Scheme Layout



Key Plan
SCALE 1:50 000

1:50 000 0 2500m 5000m

Notes

Key to symbols

- DCO BOUNDARY
- HATCHED AREA EXCLUDED FROM DCO BOUNDARY

Reference drawings

REV.	DATE	AMENDMENT DETAILS	ORIG	CHK'D	APP'D
P2	17.09.15	DESIGN REVISED	DL	CP	
P1	14.11.14	PRELIMINARY ISSUE	DL	CH	

Drawing Status: PRELIMINARY

Suitability: S0

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Client: highways england driving forward

Project Title: M20 JUNCTION 10a

Drawing Title: SCHEME LAYOUT

FIGURE 1

Scale	Designed	Drawn	Checked	Authorised
1:2500	C POSTLETHWAITE	D LEE	A HOOPER	F TRESIDDER
Original Size	**Date**	**Date**	**Date**	**Date**
A1	20.11.14	20.11.14	20.11.14	20.11.14

Drawing Number: HA PIN | Originator | Volume | Location | Type | Role | Number
HA514442 - MMGJV - GEN - SMW - DR - EN - 30001

Project Ref. No.: 341755

Revision: P2

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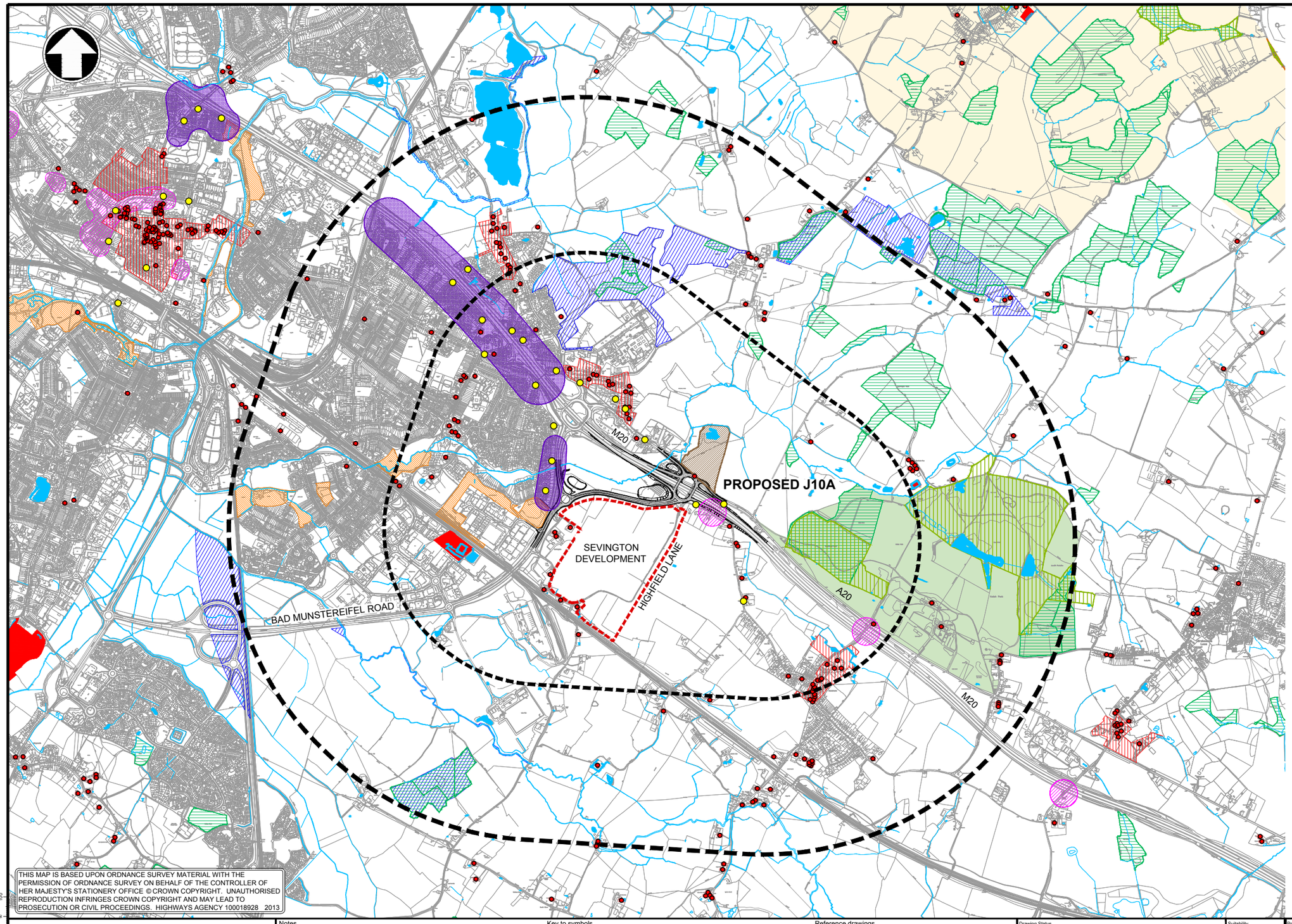
20 Appendix B - Environmental Constraints Plan



KEY:

- 1KM SCHEME BUFFER
- 2KM SCHEME BUFFER
- APPROX. BOUNDARY ADJACENT SEVINGTON DEVELOPMENT
- LISTED BUILDINGS
- SCHEDULED ANCIENT MONUMENTS
- CONSERVATION AREA
- SITE OF SPECIAL SCIENTIFIC INTEREST (SSSI)
- SITE OF IMPORTANCE FOR NATURE CONSERVATION (SINC)
- LOCAL AND NATIONAL NATURE RESERVES (LNR)
- LANDFILL
- ANCIENT WOODLANDS
- REGISTERED PARKS AND GARDENS
- AREA OF OUTSTANDING NATURAL BEAUTY (AONB)
- PONDS, LAKES AND RUNNING WATER
- NOISE - FIRST PRIORITY AREAS (ROADS)
- NOISE - OTHER IMPORTANT AREAS (ROADS)
- AIR QUALITY DIFFUSION TUBE LOCATIONS

1:12500 0 625m 1250m

Notes

Key to symbols

Reference drawings

REV.	DATE	AMENDMENT DETAILS	ORIG	CHK'D	APP'D
P2	17.09.15	DESIGN REVISED	DL	AH	
P1	20.11.14	PRELIMINARY ISSUE	DL	AH	

Drawing Status: PRELIMINARY

Suitability: S0

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Client: HIGHWAYS AGENCY

Project Title: M20 JUNCTION 10a

Drawing Title: ENVIRONMENTAL CONSTRAINTS PLAN

FIGURE 2

Scale	Designed	Drawn	Checked	Authorised
1:12500	C POSTLETHWAITE	D LEE	A HOOPER	F TRESIDDER
Original Size	**Date**	**Date**	**Date**	**Date**
A1	20.11.14	20.11.14	20.11.14	20.11.14

Drawing Number: HA514442 - MMGJV - GEN - SMW - DR - EN - 30002

(HA PIN | Originator | Volume | Location | Type | Role | Number)

Project Ref. No.: 341755

Revision: P2

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