



Environmental Statement SCOPING REPORT

Woodside Connection, Houghton Regis

300117/041/01 (20 September 2012)



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Job No.: 300117

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Woodside Connection, Houghton Regis

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1 Introduction

1.1 General

- 1.1.1 This report relates to the proposed Woodside Connection ('the scheme'). The location of the scheme is to the north of Dunstable and Houghton Regis, and it is intended to provide a more direct route for traffic between the primary road network (the M1 motorway and the A5) and the Woodside area of Dunstable / Houghton Regis, a major employment area.
- 1.1.2 The Highways Agency (HA) is currently promoting a northern link road (the A5-M1 Link) between the A5 (north of its junction with the A505) and the M1, at a new junction (referred to as Junction 11A) between the existing junctions 11 and 12. The scheme would run from this new junction into the Woodside area.
- 1.1.3 Development work in 2008/09 by Central Bedfordshire Council on potential solutions for the Woodside Connection examined 3 corridors (West, Central and East). Following a Stage 1 Report and Public Consultation the 'East' corridor (connecting into M1 Junction 11A) was selected for further development.
- 1.1.4 A subsequent Stage 2 assessment of three alternative route options for the scheme (referred to as the Blue, Green and Orange Routes) was undertaken in 2010, but was not completed at that time, as work on the scheme was suspended owing to the delay in the programme for the A5-M1 Link as part of the government's October 2010 Comprehensive Spending Review. Following the decision to continue with the promotion of the A5-M1 Link, with a Public Inquiry held in February 2012, work on the scheme was recommenced. The Stage 2 Environmental Assessment Report (EAR), setting out the results of the comparative assessment of route options, was completed in August 2012 (highways schemes are usually assessed at three stages, where Stage 1 is an initial appraisal of broad route corridors, Stage 2 is a comparative assessment of route options, and Stage 3 is a more detailed assessment of the preferred route, usually leading to the production of an Environmental Statement). Following the adoption of a preferred route for the scheme, further design work will proceed in parallel with a more detailed Stage 3 environmental assessment, leading to the planned submission of an application for development consent for the scheme, to be accompanied by an Environmental Statement (ES), early in 2013. This Scoping Report sets out the proposed scope of that assessment, and of the content of the ES which will report that assessment.
- 1.1.5 This Scoping report is based on a preferred route, which was selected by Central Bedfordshire Council in June 2012, although the route is not expected to be formally adopted until October 2012. The Scoping Report has been prepared on that basis, with the route shown on Figures 2.1 and 2.2 and described in section 2.3. As all of the options considered at Stage 2 pass through the same narrow corridor in the southern part of the route (between the urban areas of Luton and Houghton Regis), and through the same broad corridor in the northern part (between Houghton Regis and the M1 motorway), the proposed scope of assessment would not differ significantly if another option were to be adopted. Similarly, it is



possible that as the scheme design is refined during the summer of 2012, the adopted route may be amended slightly in alignment (both vertical and horizontal) from that considered at Stage 2, but again this would not significantly affect the proposed scope of assessment set out in this report.

1.1.6 The scheme lies almost entirely within the administrative area of the unitary authority of Central Bedfordshire Council (CBC) within the parishes of Houghton Regis and Chalton, with a small area at the southern end of the scheme within the area of Luton Borough Council (LBC) - see Figure 1.

1.2 Purpose of the Scoping Report

- 1.2.1 The scheme is being promoted by Central Bedfordshire Council, in conjunction with Luton Borough Council. The general methodology and guidance for the design and environmental assessment of the scheme is that set out in the HA's Design Manual for Roads and Bridges (DMRB), with Volume 11 ('Environmental Assessment') of the DMRB providing specific guidance on the preparation of Scoping Reports. The following sections of Volume 11 are of particular reference:
 - <u>Section 2, Part 4, Scoping of Environmental Impact Assessments (HA 204/08)</u>. This guidance sets out the process for determining the appropriate scope for environmental assessment, based on the scale and nature of the project and the sensitivity of the receiving environment.
 - <u>Section 2, Part 6, Reporting of Environmental Impact Assessments (HD 48/08)</u>. This guidance is concerned with reporting, and contains a section on the methodology for, and presentation of, Scoping Reports. It states in section 2.4 that:

'The Scoping Report should be circulated to statutory environmental bodies and may be circulated to other key stakeholders as appropriate to the project.'

- 1.2.2 However, as the scheme is connected to a Trunk Road, it is being progressed as a Nationally Significant Infrastructure Project under the Planning Act 2008, so the Environmental Assessment will be prepared under The Infrastructure Planning (Environmental Impact Assessment) Regulations 2009, as amended in 2011 and 2012, referred to hereafter as the IP(EIA) Regulations,
- 1.2.3 The IP(EIA) Regulations contain 'screening' provisions to determine whether a given development should be subject to EIA. These are essentially that it should either be a project of the type described in Schedule 1 to the Regulations, or be of a type described in Schedule 2 and which is '*likely to have significant effects on the environment by virtue of factors such as its nature, size or location*'. Schedule 2 includes the construction of roads, and Schedule 3 contains a list of selection criteria for screening Schedule 2 development, which includes factors such as the size of the development, and whether '*densely populated*



areas' would be affected. As the area of the works for the scheme would be around 8ha, some of which would be in close proximity to residential properties at the southern end of the scheme, and as some significant effects are likely to occur, the decision has been taken by CBC that the scheme is EIA development and that an Environmental Statement should be prepared.

- 1.2.4 Regulation 8 of the IP(EIA) Regulations makes provision (though it is not mandatory to do so) for the opinion of the Infrastructure Planning Commission (whose duties have now been taken over by the Planning Inspectorate National Infrastructure Directorate, NID) to be sought on the appropriate scope for an Environmental Impact Assessment (EIA, the process) and also of the content for the resultant Environmental Statement (ES, the document formally reporting the EIA and setting out the environmental effects likely to result from the construction and operation of the proposed development).
- 1.2.5 The purpose of this Scoping Report is therefore to set out the appropriate level of environmental assessment for the scheme, so that the proposed level of assessment can be agreed with the NID, can be discussed with the various consultation bodies and that provision for the assessment can be made in terms of the scheme programme and budget.
- 1.2.6 There is a slight conflict between the DMRB guidance (which suggests that the promoter of the scheme carries out the Scoping consultation directly) and Regulation 8 (which assumes that the NID will consult the appropriate bodes and collate their responses into an overall Scoping Opinion). However, as the DMRB has been followed in respect of technical guidance for the assessment, but the application procedure is governed by the IP(EIA) Regulations, the provisions of Regulation 8 take precedence, and it is assumed that the NID will carry out the consultation exercise.
- 1.2.7 This follows a similar exercise undertaken in 2010 as part of the Stage 2 assessment, in which useful responses on the proposed scope of that assessment were received from bodies including English Heritage, the Environment Agency, Natural England, CBC, Bedfordshire Wildlife Trust, the Campaign to Protect Rural England, the Ramblers and Sustrans. These responses were taken on board in the Stage 2 environmental assessment.
- 1.2.8 The objectives of the Scoping process are to avoid unnecessary work and detail, but to ensure that potentially significant effects are assessed, and to focus assessment on any effects which are likely to be relevant to an important project decision.

1.3 Structure of the Scoping Report

- 1.3.1 This report sets out, in accordance with Regulation 8:
 - A brief description of the nature and purpose of the development, in section 2.
 - A brief summary of the possible effects of the development on the environment, by environmental topic, in section 4.



- A plan identifying the land on which the development would take place (see Appendix A).
- 1.3.2 In addition to the requirements of Regulation 8, and in order to provide more information for the various consultation bodies upon which to base their scoping response, this report also summarises the various environmental constraints which apply to the area around the proposed development and the proposed scope of assessment, under a range of environmental topic headings (in section 4).
- 1.3.3 Section 2 of this report describes the scheme in terms of the likely preferred route, including summary information on the engineering proposals, lighting, provision for non-motorised users and the provision of replacement open space. Section 3 summarises the consultation which has taken place to date and that which is proposed. Section 4 then sets out information on the study area, the baseline situation, existing environmental resources and receptors, potential effects, the proposed level and scope of assessment and the proposed methodology for each environmental topic in turn, using the topic headings given in the DMRB.



2 The Project

2.1 Background to the Project

- 2.1.1 A Stage 1 assessment of options for a new route to improve access to and from the Woodside area was carried out in 2007 by the Amey (Owen Williams) Hereford office. Three basic routes were further developed during 2008, and were subject to public consultation in 2009. The preference expressed was for an eastern route from the proposed M1 Junction 11A to the Poynters Road/ Park Road North junction. The Luton & South Bedfordshire Joint Committee (the body then responsible for development planning within the local authority areas of Luton Borough Council and the part of Central Bedfordshire Council which was formerly South Bedfordshire Council) resolved in March 2009 that this eastern route corridor should be adopted as the preferred corridor, and this has formed the basis for the route options which were assessed at Stage 2 of the scheme. The scheme is included within the Local Transport Plan 3 published by Central Bedfordshire Council in April 2011.
- 2.1.2 Three options were assessed; these were referred to as the Blue, Green and Orange Routes. These routes follow similar alignments to the south of Parkside Drive, but diverge to a greater extent to the north, before each terminating in a junction at the proposed Junction 11A on the M1. A combination of the Green Route and the Blue Route (see Figures 2.1 and 2.2) has been adopted as the preferred route for the scheme and progressed towards detailed design and environmental assessment in preparation for an application for Development Consent.
- 2.1.3 The Luton and southern Central Bedfordshire Core Strategy envisaged substantial development in an area to the north and east of Houghton Regis, extending from the A5 in the west to the M1 in the east, and extending as far north as the proposed A5-M1 Link (this area is known as the North Houghton Regis Strategic Site Specific Allocation, or SSSA). This was in accordance with Regional Planning Guidance and the Milton Keynes and South Midlands Sub Regional Strategy. The Core Strategy has now been withdrawn, but the broad policy expectation is still that development in this area will come forward. The extent and nature of development has yet to be confirmed, but the implications for the scheme are that it is likely (in due course) to pass through an area of mixed employment and residential development, rather than the open fields which presently exist along the majority of the route. An outline planning application for the development is expected to be made in the autumn of 2012.
- 2.1.4 As the North Houghton Regis SSSA is not yet committed or formally allocated, the Stage 3 assessment will proceed on the basis that the receiving environment is as it presently stands, but the assessment will note where effects would be expected to differ significantly in the event that the development takes place.
- 2.1.5 The Public Inquiry for the A5-M1 Link road was held in February 2012 and the Inspector's Report is expected in autumn 2012, with a potential start of work on site for the A5-M1 Link



in 2014. The intention is to seek Development Consent for Woodside Connection (via the Planning Act 2008 process) in 2013, with the intention to commence work in 2014.

2.2 Site Location and Description

2.2.1 The new road would run from the existing junction of Park Road North, Sandringham Drive, Wheatfield Road, Poynters Road and Porz Avenue in Houghton Regis to the north east, through a narrow corridor of mixed amenity woodland, developing scrub and rough grass, between houses along Sandringham Drive to the north and Wheatfield Road to the south (see photographs A to D). The route runs alongside two overhead electricity transmission lines as far as a small substation just to the south of Parkside Drive, a single carriageway road which is now closed to traffic. The area beneath and around the electricity transmission lines has not been developed, and their presence appears to be the reason why this undeveloped corridor extends out into the countryside to the north east. Parkside Drive is accessible to pedestrians and cyclists, and provides a link to other cycle and pedestrian routes. It appears to be well used by local residents, and is part of National Cycle Network Route 6. The following photographs provide an overview of the area around the site.



A.

View north east along the line of the route, with Sandringham Drive on the left.





B. View north west across the line of the route to the new area of housing around Holyrood Avenue, to the west of Sandringham Drive.



C. View east across the line of the routes from south of Parkside Drive.





D. View west from Parkside Drive showing the electricity substation. The route runs behind the trees.

2.2.2 To the north of Parkside Drive the overhead electricity transmission lines diverge and the route crosses a gently sloping area of large arable fields, extending to the M1 motorway in the east. The motorway traffic is visible (and usually audible) across the flat, open landscape, and this section of the M1 is currently being improved by the HA as part of the M1 Junctions 10 to 13 improvement scheme. This is a Hard Shoulder Running (HSR) scheme, in which the hard shoulder is used as an additional traffic lane during peak periods, with new signs and gantries to control and direct traffic. The scheme also includes some improvements to Junctions 11 and 12, which are also currently under way.



E. View north along the line of the route from just to the east of Parkside Drive.





View north east along the line of the route - the Houghton Brook runs along the line of trees on the left of the view.



G. View north towards the northern end of the route - Chalton Cross Farm is in the centre of the view.

2.2.3 The area around the route corridor is broadly flat (though with some small scale local variations in topography) as far as Parkside Drive, and then rises gently to the north, towards Chalton Cross Farm and a local high point of around 135m AOD (above Ordnance Datum, or mean sea level) close to the location of the proposed Junction 11A (see photograph G above).

2.3 The Proposed Scheme

2.3.1 The new route would be to wide single carriageway standard, consisting of two 5.0m lanes and 1.0m hardstrips. Verges would be 2.5m minimum width, with appropriate provision for non-motorised users. The design speed of the road is 85kph. The new road would connect into the Highways Agency's (HA's) proposed roundabout which forms part of the Junction 11A scheme. This link will be designed to dual carriageway standard comprising a 2.5m central reserve and two 3.35m lanes, with a 1.0m hardstrip and 2.5m verge to each side.



Chainage measurements in the following description of the route which is likely to be adopted are from zero at the south western end of the scheme.

- 2.3.2 At the south western end of the scheme the new route would connect into the existing road network at Poynters Road by means of a new four arm roundabout to replace the existing junction. As direct access to Wheatfield Road would be removed from the roundabout, a new priority junction would be provided 250m to the north east.
- 2.3.3 From Poynters Road the route heads in a north easterly direction following the corridor of open land running between housing estates to the north and south. The road would be mainly at the same level as the land to the north. The route shares the corridor with two high voltage overhead power lines services, one a 400kV supply and the second a 132kV supply, both of which influence the horizontal alignment of the road.
- 2.3.4 After about 850m the road reaches Houghton Brook. To avoid placing the road on an embankment to cross Houghton Brook, the brook would be diverted to the north-west for about 300m. At about 950m provision has been made for a connection to Parkside Drive, a possible future link. This would connect to the main route by a priority junction.
- 2.3.5 The road then continues eastwards to a roundabout at about Chainage 1500, then turns north. From here the road would be carried on embankment approximately 2.5m in height before crossing the Houghton Brook (Chainage 1700).
- 2.3.6 The vertical alignment of the road as it crosses the Houghton Brook valley has been fixed to ensure the carriageway does not flood in the 1 in 100 year flood event, and the highway drainage system does not surcharge in the 1 in 5 year flood event (see also chapter 6). At the structures a minimum 600mm freeboard is needed to meet the requirements of the Environment Agency. In addition the headroom under the structures must be sufficient to allow access for maintenance, and a shared use footway / cycleway on the south side.
- 2.3.7 As the road continues to head north away from the watercourse, the existing ground level gradually begins to rise. From Chainage 1900 the road would begin to cut into the existing landscape, to a maximum depth of approximately 1.5m.
- 2.3.8 At Chainage 2500 a three arm roundabout would be constructed. The northern arm, which would consist of a 350m length of dual carriageway section, heads north and connects at grade into the HA's Junction 11A proposals. In order for this link to tie in to the proposed HA roundabout the link changes from cutting to embankment of approximately 2.4m in height. The west arm, consisting of a 450m long dual carriageway, would connect into Sundon Road by means of a new roundabout. This section of road would be in cutting to a maximum depth of 0.5m.



2.3.9 The total length of the route would be about 3.3km, which includes 0.5km for the link to Sundon Road. The heights of embankment or depth of cuttings relate to the existing ground level, but as the area will probably be subject to development in the future the level of the road relative to final ground level may be different.

Road Lighting

2.3.10 The first 1.0km of the route would need to be lit due to the presence of priority junctions and pedestrian at-grade crossing facilities. For the north eastern end of the route only the junctions would be lit. The proposed lighting would consist of 10m high columns with full cut-off lanterns to minimise light overspill and environmental intrusion.

Noise Barriers

2.3.11 As the Stage 2 assessment indicated that significant noise effects were likely in the absence of mitigation (see section 4.10 below) between Chainages 400 to 1000, it is likely that noise barriers will be required to each side of the road in this location. The precise extent, location, height and materials of the barriers will be determined as part of the Stage 3 work, and the design will aim to reduce any noise increases to acceptable levels.

Provision for Non Motorised Users

- 2.3.12 Where the route crosses existing public rights of way or other significant pedestrian routes, at grade crossing points would be provided. Where practicable the crossing points would be located at the junctions.
- 2.3.13 The current intention is that the existing National Cycle Network Route 6 (which currently runs along Kestrel Way, Pastures Way and then across the line of the route via Parkside Drive) would be diverted to run across the open land to the north of Kestrel Way, and would then pass under the route at the Houghton Brook crossing point before continuing along the north side of the new road.

Exchange Land

2.3.14 The area to the south of the Houghton Brook (just to the south of Parkside Drive) is used for informal recreation. It is designated as a proposed urban open space in the South Bedfordshire Local Plan (see section 4.8). Policy R3 of the Local Plan describes the proposal as:



'ENHANCEMENT AND APPROPRIATE MANAGEMENT OF EXISTING OPEN AREA FOR A MIX OF FORMAL AND INFORMAL RECREATION IN ACCORDANCE WITH DETAILED PROPOSALS TO BE DRAWN UP BY THE DISTRICT PLANNING AUTHORITY'

- 2.3.15 Where a road scheme would result in the loss of '*land forming part of a common, open space, or fuel or field garden allotment*', there is provision under the Highways Act (1980) and other legislation for land to be acquired which will be provided as open space in exchange for the land to be lost this is known as Exchange Land. In this case, while the land to the south of the Houghton Brook may not be a formal Public Open Space, parts of it are an open space in the general sense, as they are used by the local community and the area is proposed to be developed as an urban open space. The decision has therefore been taken that Exchange Land should be provided, on an equivalent area basis, for the land taken by the scheme to the south of the Houghton Brook.
- 2.3.16 It is likely that an area of approximately 5.0 to 5.5ha of Exchange Land would be required, but no attempt has been made to date to accurately calculate the areas required, or to show exactly where this land would be provided, as that exercise will form part of the Stage 3 work, in conjunction with discussions with affected landowners. The Stage 2 landscape drawings show some indicative areas for Exchange Land provision, but that provision will be refined and amended as required to suit the adopted route during Stage 3.

2.4 Scheme Implementation and Programme

- 2.4.1 The current programme is for design development to continue over the summer of 2012, with a view to preparing the Stage 3 design and assessment, including an ES and other information needed for a development consent application, early in 2013.
- 2.4.2 Subject to approval of the development consent application, any required advance mitigation measures (including archaeological works) could commence in 2014, and be completed by 2015. Construction of the new road could then commence in 2015 or 2016, dependent on approval for the construction funding and also on how the construction would be linked to that of the A5-M1 Link, which is programmed to commence in 2014.
- 2.4.3 Once completed, the road would be maintained by Bedfordshire Highways as part of the local highway network.

2.5 Alternatives Considered

2.5.1 The Stage 1 assessment considered three route corridor options, one to the east and two to the west of Houghton Regis, and each with some minor variations. These routes were subject to extensive public consultation in 2009. The preference from the consultation was for an eastern route.



2.5.2 The Stage 1 environmental assessment also concluded that an eastern route would be preferable in terms of likely effects, and that eastern option became the preferred route corridor, with the objective of the Stage 2 assessment being to choose between the three route options then under consideration within that corridor. A fourth option was discounted early in the Stage 2 assessment as it was very similar to the Blue Route.

2.6 Mitigation and Enhancement

- 2.6.1 An important part of the environmental assessment process is that it should be iterative, with continued feedback of the results of the assessment into the scheme design, with the intention of designing out, as far as possible, adverse effects. This can be by amendment of the design such that adverse effects are avoided, or by the incorporation within the scheme of measures designed to mitigate (or reduce) the effects. Finally, where effects cannot be avoided or reduced, it may be possible to provide some compensation for adverse effects by the provision of an appropriate benefit elsewhere.
- 2.6.2 This has been considered in the scheme design to date, and further opportunities for additional mitigation or for enhancement will continue to be considered into Stage 3, with the aim of further reducing adverse effects.



3 Consultation

3.1 General

- 3.1.1 Volume 11 of the DMRB suggests that the statutory environmental bodies (i.e. the 'principal council' (in this case Central Bedfordshire Council), Natural England, English Heritage and the Environment Agency) and also local authorities and other public authorities with environmental responsibilities and other key stakeholders should be consulted to check that the proposed scope of assessment and issues to be addressed are appropriate.
- 3.1.2 Volume 11 also states that the Scoping Report, once prepared, should be circulated to statutory environmental bodies and other key stakeholders in order to obtain consensus on the proposed level of assessment.
- 3.1.3 The IP(EIA) Regulations also contain (by reference to the Infrastructure Planning (Applications; Prescribed Forms and Procedure) Regulations 2009) a longer list of consultation bodies which the NID will consult as to the proposed scope of an EIA.

3.2 Consultation Undertaken to Date

3.2.1 A number of statutory and local bodies were consulted during the Stage 2 environmental assessment, as noted in section 1.2.7 above.

3.3 Proposed Consultation

- 3.3.1 It is proposed to undertake the following further consultation during Stage 3 of the scheme design and assessment:
 - Once this Scoping Report has been approved by the NID, it will be circulated to the consultation bodies by the NID, for information and comment on the proposed scope of assessment any comments can be taken on board as the assessment proceeds. These bodies include local authorities within whose area the scheme is located (CBC and LBC) and any local authorities whose areas border CBC or LBC, and also the bodies listed (where relevant) in Schedule 1 of the Infrastructure Planning (Applications; Prescribed Forms and Procedure) Regulations, including:
 - o Natural England
 - English Heritage
 - Environment Agency
 - o Commission for Architecture and the Built Environment
 - Highways Agency
 - Town and Parish Councils



- o Internal Drainage Boards
- Chilterns Area of Outstanding Natural Beauty (AONB) Conservation Board
- A number of other bodies not included in Schedule 1, who were consulted as part of the Stage 2 exercise, will also be consulted by Amey as part of a parallel process, again for information and comment on the proposed scope. These include:
 - CPRE (Campaign to Protect Rural England)
 - o Bedfordshire Wildlife Trust
 - o British Horse Society
 - Ramblers
 - Friends of the Earth
 - o Sustrans
- 3.3.2 Further consultation will then take place during Stage 3 of the scheme design and assessment. This will include continuing informal consultation with the statutory environmental bodies and key stakeholders as the environmental assessment proceeds towards publication of the Environmental Statement for the scheme, in order to obtain information for the assessment and to seek the views of those bodies on the appropriate level of assessment and the emerging effects. It will also include a public information/consultation exercise in November 2012.
- 3.3.3 On completion of a draft Environmental Statement, the Statutory Consultation and Community Consultation will be undertaken by CBC as required by the Planning Act 2008, and a wider range of interested parties will be consulted at that stage to establish whether they have any comments on the proposed scheme.



4 Scoping

4.1 General

- 4.1.1 Volume 11 (HD48/08, Reporting of Environmental Impact Assessments) sets out the coverage for a Scoping Report, and states that for each environmental topic the report should include coverage of:
 - The study area.
 - Existing and baseline knowledge.
 - Value of environmental resources and receptors.
 - Potential effects.
 - Proposed level and scope of assessment.
 - Proposed methodology including significance.
- 4.1.2 That information also satisfies the requirements of Regulation 8 of the IP(EIA) Regulations. This section of the Scoping Report therefore sets out the above information for each topic in turn. For each topic, the appropriate level of assessment to be undertaken (none, Simple or Detailed, as defined in the DMRB) is set out.
- 4.1.3 Volume 11 is in the process of updating and revision, with some topics having been updated relatively recently (for example Noise and Vibration in November 2011), while others are now somewhat outdated. Sections 1 and 2 of Volume 11, which provide overall guidance on environmental assessment and the structuring of environmental reports, have been revised, and some of the individual topic guidance does not now conform with this overall advice. In order to cope with this situation, the DfT have issued Interim Advice Note (IAN) 125/09, 'Supplementary Guidance for Users of DMRB Volume 11'.
- 4.1.4 This IAN states that the new reporting structure should be followed, introducing new topic headings such as 'Effects on All Travellers', and that where new guidance to match those topic headings has not been prepared, a combination of relevant aspects of the existing topic guidance should be followed as appropriate. Where the existing topic guidance is dated, the IAN suggests that other industry best practice or published guidance may be used. This advice will be followed for the Stage 3 assessment.
- 4.1.5 The assessment will focus on the likely <u>significant</u> effects on the environment. While it is necessary to assess all potential effects to some degree in order to determine which of them may be significant, the assessment will identify which of the effects assessed should be regarded as of enough significance to be taken into account in the decision making process. Each of the following sections therefore sets out the criteria under which the significance of the effects for that topic has been assessed. Where possible this is by reference to published guidance or good practice, and Table 4.1.1 below is a general guide to how this



Table 4.1.1 ~ Determining the Significance of Effects (General)											
_			Magnitude of Impact (Degree of Change)								
		No change	Negligible	Minor	Moderate	Major					
	Neutral Slight		Moderate or Large	Large or Very Large	Very Large						
ısitivity	High	Neutral	Slight Slight or Moderate		Moderate or Large	Large or Very Large					
nental Ser	Neutral Beginservert		Neutral or Slight	Slight	Slight or Moderate	Moderate or Large					
Environ	Lower	Neutral	Neutral or Slight	Neutral or Slight	Slight	Slight or Moderate					
	Negligible	Neutral	Neutral	Neutral or Slight	Neutral or Slight	Slight					

has been carried out, based on the interaction between the sensitivity of the resource affected and the magnitude of the change/impact to it.

Notes:

1. The above is reproduced from DMRB Volume 11 Section 2 part 5 (HA 205/08).

4.2 Geology and Soils

The Study Area

4.2.1 The study area for this topic will be an area 500m to either side of the centre line of the route.

Existing and Baseline Knowledge

- 4.2.2 The Stage 2 EAR sets out baseline data on geology and soils in the area around the scheme, and also summarises the results of a ground investigation which was undertaken in March 2010 for the three route options then under consideration.
- 4.2.3 This includes the following:
 - The 1:50,000 Solid and Drift Geology plan of Leighton Buzzard indicates that the area of Houghton Regis is underlain by outcropping Lower Chalk (though this term has now been superseded) of the Upper Cretaceous period. The geological long



section indicates that the Lower Chalk under the site lies between 80 and 20 m AOD. The Lower Chalk overlies Lower Cretaceous formations.

- An outcrop of Totternhoe Stone (2 4.5m in thickness) is shown to the north of Houghton Regis (with a southwest to northeast strike) running along the northern edge of the town. An outcrop of Melbourn Rock (2 - 3m in thickness) is shown to the south of the town, marking the boundary with the Middle Chalk that underlies Dunstable. An outcrop of Limestone, up to 300m wide, running in a southwest to northeast orientation, is also shown approximately 250m north of the Melbourn Rock outcrop.
- No geological SSSIs were found to be located in the area during the Stage 2 assessment, and this will be updated and verified for the Stage 3 assessment.
- In the ground investigation the chalk was not differentiated to Formation level. Chalk was encountered underlying the majority of the scheme summarised as 'a grey medium density chalk' with 'a high clay content and flints are uncommon'.
- Superficial deposits were encountered in the area around Chalton Cross Farm, where they were described as 'sand and gravel', probably till. Undifferentiated superficial deposits, probably alluvium, were encountered in low lying areas around Houghton Brook. Here they were described as 'generally poorly stratified containing clay, silt, sand and gravel of chalk and flint' and were encountered with a thickness of less than 1m.
- Agricultural land quality along the line of the route was found to be Grades 2 and 3a in the Stage 2 assessment.
- There are no previous records of contaminated land in the area around the route, but the ground investigation found evidence of hydrocarbons in trial pits at the south end of the scheme near Poynters Road, and the Stage 2 assessment found that this could present a risk to controlled waters. An exceedence of water quality standards was also found in one borehole - both of these areas will be further investigated at Stage 3.

Value of Environmental Resources and Receptors

- 4.2.4 The most sensitive aspect of this topic is concerned with hydrogeology, and the major aquifer underlying the scheme, which is considered in section 4.3 below.
- 4.2.5 Other important factors include the potential for high grade soils to be lost or affected by the scheme and the potential for some areas of contaminated ground and water to be present.



Potential Effects

- 4.2.6 Agricultural soil would be lost as a result of the scheme, though some of that soil would be retained and re-used as part of the scheme landscape works, and the remainder could be beneficially used elsewhere.
- 4.2.7 There is also the potential for the mobilisation of any contamination within areas of made ground, once they are disturbed by the works, and further areas of as yet undetected made or contaminated ground may also be present.

Proposed Level and Scope of Assessment

- 4.2.8 The Stage 2 assessment found that there would be no adverse geological effects, as there are no existing designated geological sites in the study area. However, it noted that geologically important sites may develop as strata are exposed for cuttings, drainage ponds and structures. If geological features are detected, they would be compared with existing designated sites and their potential values would be assessed. In order to undertake this, geological monitoring would be undertaken during the earthworks phase of construction.
- 4.2.9 No further assessment of the soil resource is proposed, as this was investigated at Stage 2, but the Stage 3 design will include proposals for the careful handling and management of soils to ensure that there would be no absolute loss of agricultural soils and that any loss of quality would be minimised.
- 4.2.10 A Phase 1 contaminative land assessment will be undertaken as part of the Stage 3 assessment. Contaminative land assessment undertaken to date has identified a potential risk to controlled waters in the area around two trial pits, and an exceedence of water quality standards around one borehole. Further investigation of potential groundwater contamination both at these locations and in general will be undertaken to assess seasonal fluctuations of contamination concentration. CBC have confirmed (June 2012) that this course of action will be acceptable, given they have no records of specific or proven contaminated land in the area around the scheme.
- 4.2.11 These assessments will be at a Detailed level in current DMRB terminology, but each will be quite narrow in terms of its geographical extent.

Proposed Methodology Including Significance

4.2.12 The methodology to be used for the assessment will be as set out in the DMRB Volume 11 Section 3 Part 11.



4.3 Road Drainage and the Water Environment

The Study Area

4.3.1 This topic considers potential effects on surface water, groundwater and flood risk. As such the study area will include an area up to 500m from the centre line of the route, extending as appropriate where features such as aquifers or surface watercourses which could potentially be affected extend beyond that distance.

Existing and Baseline Knowledge

- 4.3.2 The main watercourses within the study area are the Ouzel Brook and Houghton Brook and tributaries (see Figure 3.1). There are also a number of other minor drainage ditches which are not marked on Ordnance Survey mapping. The rivers within the study area no longer show typical chalk river characteristics of sustained and moderate flow, nor support the flora and fauna associated with chalk rivers. This is due to physical modifications which constrain the channel, previous dredging works and the urban pollution associated with runoff from roads and mis-connections between the sewer and surface water systems.
- 4.3.3 The Houghton Brook appears to originate near Houghton Hall to the west of the study area. It flows in a general easterly/ south easterly direction across arable land then under the M1, north of Junction 11 and east of the route alignments. The watercourse is approximately 4.4km long from its source to its confluence with the River Lee, downstream of the study area. Houghton Brook is the only designated Main River within the study area.
- 4.3.4 The Ouzel Brook rises in agricultural land west of Chalton Cross Farm, draining in a general westerly/south westerly direction to the River Ouzel, and is fed by springs and land drainage ditches in the upper catchment.
- 4.3.5 A natural open channel runs through agricultural fields in the northern portion of the study area collecting drainage from a number of field drains. This stream connects to the Houghton Brook in the middle of the study area.
- 4.3.6 Houghton Brook is designated by the EA as Main River and there is therefore a need to obtain a Flood Defence Consent for works in, over or under a Main River under the Water Resources Act (1991) and Land Drainage Act (1991). The Flood Defence Consent is required prior to any construction work taking place and will be applied for from the EA as part of the preparation for seeking Development Consent. In addition, the EA must be given 7 days written notice of any intention to temporarily divert the flow of any watercourse, carry out works within the river channel or commence any operations in the river channel so that the appropriate arrangements can be made concerning aquatic life.
- 4.3.7 No water quality monitoring is undertaken by the EA within the study area. The nearest EA water quality monitoring point is on the River Lee approximately 12 km downstream of the study area. Monitoring indicates chemical water quality in 2008 was Class B 'Good' and biological water quality was Class A 'Very Good'. The previous five years of monitoring data



indicate water quality has not significantly changed. However, within the study area, the Houghton Brook has been classified under the Water Framework Directive (WFD) as a Heavily Modified Water Body (due to flood protection and urbanisation) with moderate ecological potential overall. Water quality, flow conditions and ecological quality all fail to meet good potential, as defined under WFD. It is expected that the WFD objective of good potential will also not be met by 2015, due to reasons of technical infeasibility and disproportionate cost in implementing the measures required to achieve this.

- 4.3.8 The central part of the route crosses an area which is at risk of flooding. Two sections of the Houghton Brook are designated by the EA as Flood Zone 2 (indicating a 1% flood risk see Figure 3.1). The Luton Borough Council and South Bedfordshire District Council Strategic Flood Risk Assessment (SFRA) also confirms the area around the confluence of Houghton Brook with the Upper River Lee (within the Luton Borough Council administrative boundary) is known to experience flooding problems.
- 4.3.9 The study area does not contain any major flood defence structures, however the EA are currently assessing the utilisation of an area upstream of the M1 culvert as a flood storage area (see Figure 3.1).
- 4.3.10 The study area is underlain by an extensive and highly productive aquifer. Under the WFD classification this aquifer is classed as a Principal aquifer, noted to have high intergranular and/or fracture permeability usually providing a high level of water storage. Principal aquifers may support water supply and/or river base flow on a strategic scale.
- 4.3.11 The route also lies within a groundwater Source Protection Zone (SPZ), Zone III (Total Catchment). This is the total area needed to support the discharge from the protected groundwater source, and is designed to protect water quality within aquifers which are used for abstraction (see Figure 3.1).
- 4.3.12 Groundwater monitoring as part of the Stage 2 assessment has indicated that the depth to groundwater is variable throughout the study area although generally it was found to be near the ground surface, about 1m below ground level (mbgl) over the majority of the route alignment. It deepens to about 7 to 8mbgl at the northern and southern extent of the route alignments, where the ground surface is higher. The water table is between 117 to 128m above Ordnance Datum (AOD) throughout the extent of the route alignment.
- 4.3.13 The site also lies within a Nitrate Vulnerable Zone (NVZ). NVZs are areas which have been designated to protect drinking water supplies from nitrate pollution, where water is being polluted or is at risk of being polluted by nitrates (usually derived from agricultural fertilisers).



Value of Environmental Resources and Receptors

4.3.14 Major aquifers are a high value resource and should be regarded as being of high sensitivity. Avoidance of flood risk must also be given high priority within the overall environmental assessment. Water features and attributes are summarised in Table 4.3.1 below.

Table 4.3.1 ~ Summary of Water Features, Attributes and Indicators of Quality							
Feature	Attribute	Indicator of Quality	Possible Measure				
Houghton Brook	Water quality	Chemical water quality	Maintain or improve Moderate Ecological Status.				
	Conveyance of flow & material	Presence of watercourses	Flow of Houghton Brook to River Lee				
	Biodiversity	Biological water quality	Maintain or improve Moderate Ecological Status.				
Floodplain	Conveyance of flood flow	Presence of Houghton Brook floodplain and rate of flood flow	Flooding events - 1 in 100 year chance or greater of flooding by a river each year. Construction of structures within floodplain.				
Groundwater	Water supply/ quality	Principal aquifer used for water supply	Groundwater quality and quantity within SPZ III				
	Conveyance of flood flows	Groundwater levels	Ongoing groundwater monitoring				

Potential Effects

- 4.3.15 Potential effects on the water environment include pollution of groundwater (if drainage is allowed to soak into the ground) from either surface water drainage or unforeseen spills, pollution of surface watercourses from the same sources, or flooding due to increased discharges, or accelerated rates of discharge from the new road. It is also possible that existing ground or surface water flows could be interrupted or otherwise disturbed by a new road.
- 4.3.16 As well as the potential effects which may arise during the operation of the completed road, there are a range of effects (including both pollution and flood risk) which can arise during the construction period.
- 4.3.17 In order to mitigate any potential adverse effects to surface waters and groundwater during the construction phase, the following measures would be adopted:
 - Management of construction works so as to comply with the necessary standards and consent conditions as identified by the EA, Central Bedfordshire Council and Luton Borough Council.
 - All construction workers would be briefed on the importance of



maintaining water quality, the location of surface water features and the location and use of accidental spill kits as part of the site induction.

- The construction drainage network would incorporate measures (e.g. potentially an interceptor) to prevent the discharge of hydrocarbons to surface or ground water systems.
- In areas where there is increased risk of hydrocarbon/chemical spillage and around hazardous substance stores, additional precautions would be taken. These would include bunding (in accordance with EA PPG 8: Safe storage and disposal of used oil), impermeable bases, suitable drainage systems and sited away from any open drainage channels.
- Any stockpiled materials would be stored within enclosed areas to enable the runoff to be stored and treated where required.
- Any concrete works would be carefully controlled and where required any concrete transporting vehicles will be washed out in controlled areas.
- All plant and machinery would be maintained in a good condition and any maintenance required would be undertaken within safe areas.
- A Pollution Prevention and Spill Response Procedure should be developed by the contractor and a spill kit and clean up equipment maintained on site.
- Wheel washers and dust suppression measures will be used to prevent the migration of pollutants.
- 4.3.18 Sustainable Drainage System (SuDS) principles will be adopted in the drainage design, which will include measures such as grass swales, pollution control valves, oil and petrol interceptors, forebays and attenuation ponds.

Proposed Level and Scope of Assessment

4.3.19 The Stage 2 assessment found that, given the proposed mitigation, there would be no significant effects in terms of surface water for the Green or Blue Routes, and that the adoption of appropriate mitigation measures for the construction phase would also avoid any significant adverse effects on groundwater. However, due to the general sensitivity of the water environment in the area around the scheme, a Detailed Assessment is proposed for Stage 3 to check that those findings hold good for the adopted route. This will include the following elements:



- A Flood Risk Assessment (FRA) in accordance with EA requirements, including an allowance for the effects of climate change. The road will be elevated above flood levels by means of embankments, but the effects of those structures on the local flood plain will need to be assessed.
- An assessment of compensatory flood storage will also be undertaken in order to provide an estimate of the area required for floodplain compensation. Any compensation should provide the same volume, on a 'level for level' or 'direct' compensation basis, as the lost storage. Any loss of flood storage would be due to construction of the new carriageway and bridge structure in the floodplain and ideally any replacement storage would be created immediately next to the new permanent structure. The land acquired for the construction of the scheme will need to provide adequate space for the flood storage areas.
- A Detailed Assessment of the final route using the Highways Agency Water Risk Assessment Tool (HAWRAT) to determine impacts on water quality due to surface runoff and spillage risk. Additional assessment will be undertaken to develop appropriate mitigation measures to prevent adverse impacts on groundwater.
- Water quality monitoring of the Ouzel and Houghton Brooks will be undertaken during the Stage 3 assessment to gain an appreciation of the existing water quality. A detailed site walkover will be carried out to map the drainage ditches and minor watercourses in order to fully assess impacts on the water environment.
- Consideration of appropriate pollution prevention measures for surface water runoff will be an important component of the assessment as it feeds back into the design process. The scheme design will need to provide appropriate mitigation for both routine runoff from the road and accidental spillages.
- A Construction Environmental Management Plan (CEMP) will be prepared to control and limit potential effects during the construction period.
- Further consultation with the Environment Agency will be required as the design progresses to establish any requirement for hydraulic modelling or hydrological flow assessment.
- One of the most important elements of the assessment will be to feed back into the design process, so that the eventual detailed design includes appropriate mitigation measures.

Proposed Methodology Including Significance

4.3.20 The methodology will be that set out in the DMRB Volume 11 Section 3 Part 10 (HA 45/09), and HAWRAT will also be used. The Flood Risk Assessment will also comply with the



guidelines contained in the National Planning Policy Framework (NPPF) and the Technical Guidance to the NPPF.

4.4 Materials

The Study Area

4.4.1 There is no specific study area for this topic, though consideration will be given to the area within which materials may be sourced or waste disposed of.

Existing and Baseline Knowledge

4.4.2 The Stage 2 EAR provided information on the regulatory and policy framework and on local sources of aggregate and other construction materials - this will be reviewed and updated for Stage 3. It also noted that, as a result of the generally flat topography along the line of the route coupled with the potential for flooding in some areas, the new road would need to (on average) be raised above existing levels. This was estimated to lead to a shortfall in earthworks materials of 19,500m³ for the Blue Route. This was subsequently reduced by eliminating 2 crossings of Houghton Brook.

Value of Environmental Resources and Receptors

4.4.3 The principal environmental resource and receptor in this case will be the local materials resource and the local capacity and facilities for waste disposal.

Potential Effects

4.4.4 The main effect of the scheme will be in the need to source and import a large quantity of material suitable for earthworks fill. As there is no extensive demolition or net excavation involved, the disposal of waste should not be a major issue, though good practice in terms of the minimisation and disposal of construction waste will still need to be adopted.

Proposed Level and Scope of Assessment

- 4.4.5 A review will be undertaken of the scheme design and the earthworks balance, to assess how much material would need to be imported. The potential for the use of recycled materials will also be assessed, though the scheme does not involve significant demolition or the taking up of existing carriageways.
- 4.4.6 Consideration will also be given to the possibility of linking the scheme requirements for earthworks materials with other projects in the surrounding area which may potentially generate an earthworks surplus.



- 4.4.7 A Site Waste Management Plan (SWMP) would be produced, a mandatory requirement in England for schemes with a value exceeding £300,000. The SWMP would be updated regularly by the contractor for the scheme. All site personnel and specialist contractors would be briefed on the content and requirements of the SWMP. The Net Waste Tool is a freely accessible online resource available through the WRAP website (WRAP, 2010), which also provides guidance on resource management and templates and guidance for SWMPs.
- 4.4.8 Where possible, any additional fill materials that are required would be sourced from local quarries and suppliers to reduce the length of the haulage route. This practice would have its own economic benefits and would aid in the reduction of airborne pollutants and greenhouse gas emission from transport. A reduction in waste leaving the site for landfill would also have significant cost savings and long term environmental benefits.
- 4.4.9 Materials that cannot be re-used within the construction of the scheme or another project are termed waste. The disposal of waste materials would be assessed in terms of where and how they can be disposed and the associated impact of this disposal. Materials which may be classified as waste include the following.
 - Construction and demolition materials not suitable for re-use such as hazardous waste.
 - Excavated material classified as hazardous waste due to the presence of contaminants.
 - Fuel runoff and sediments collected by interceptors.
 - Waste products arising from the presence of construction staff on site e.g. effluent from portable toilets, food waste and packaging.
- 4.4.10 All waste materials would be segregated into waste streams. Waste materials would then be transported by a licensed waste carrier and either treated or disposed of at an appropriate site. All documentation would be provided to ensure compliance with the current waste legislation, and there is a Duty of Care under Part II of the Environmental Protection Act (EPA) on those responsible for waste. There are a number of waste transfer, disposal and treatment centres within the local area.

Proposed Methodology Including Significance

- 4.4.11 The methodology will be as set out in the HA document IAN 153/11, 'Guidance on the Environmental Assessment of Material Resources'. This sets out 2 levels of assessment following initial Scoping Simple or Detailed. In this case, while the quantity of material which is likely to need to be imported is large, the situation in relation to materials is not complex, and it is proposed to undertake a Simple assessment, which would identify:
 - The materials required for the project and the quantities involved.



- The anticipated waste arisings from the project, including quantities and type.
- Any impacts which may arise in relation to materials and waste.
- The results of any consultation.
- 4.4.12 A decision would then be taken as to whether a Detailed assessment would provide further useful information, but at the moment it is not thought likely to be appropriate.

4.5 Cultural Heritage

The Study Area

4.5.1 Information was gathered for the Stage 1 assessment for a wide area around Houghton Regis. In 2010, a programme of archaeological works was undertaken to inform the Stage 2 report. It focussed on a 100m-wide corridor, referred to as the Development Area (DA), within which the actual line of the road was expected to be located. The work was undertaken in accordance with a Written Scheme of Investigation (WSI) (reproduced in Appendix B), which was approved by the Central Bedfordshire Council Archaeologist. The archaeological works undertaken to inform the Stage 2 report comprised: fieldwalking (i.e. the systematic collection of surface artefacts from the ploughsoil), geophysical survey in the form of detailed magnetometry and the archaeological observation of the geotechnical test-pitting.

Existing and Baseline Knowledge

- 4.5.2 The Stage 1 report showed that the route crosses or passes close to 3 Archaeological Notification Areas (ANAs) in the arable fields to the west of the M1. ANAs represent significant surviving archaeological remains recorded in the Bedfordshire Historic Environment Record (HER).
- 4.5.3 The Written Scheme of Investigation for the Stage 2 work also included a desk-based study which summarised extant knowledge on the historic environment.
- 4.5.4 The Stage 2 report identified a series of heritage assets (HA), potentially affected by the route:
 - HA1 lies partly within the northern part of the DA. It comprises sub-surface pits and linear features, identified by geophysical survey. Some of the linears line up with features shown on the 1797 Toddington inclosure map. Early post-medieval (16th-17th century) pottery and medieval/post-medieval ceramic building material were recovered from the ploughsoil in this area.
 - HA2 lies in the central part of the DA. It comprises two components. HA2.1 is the site of a suspected Roman farmstead, identified from roof tile, ceramic building materials



and iron smelting slag found during fieldwalking (Historic Environment Record (HER) 15812). HA2.2 comprises a number of discrete and linear sub-surface geophysical anomalies, likely to represent pitting and field boundaries and small enclosures respectively. Some of the linears may represent features depicted on the 1762 Houghton Regis estate map.

- HA3 lies partly within the DA, around 400m south of Chalton Cross Farm. It comprises the site of suspected Roman occupation, identified from pottery, tile and ceramic building material during fieldwalking (HER15501).
- HA4 represents a number of hedgerows within the DA that are first recorded on the 1796 Houghton Regis and 1797 Toddington inclosure maps or the first edition Ordnance Survey maps of 1880 and 1882.
- HA5 represents a number of hedgerows within the DA shown on the Houghton Regis estate map of 1762. Prominent among the few surviving elements of these preinclosure field-systems is the parish boundary which lies within the western part of the DA.
- HA6 comprises the undesignated Chalton Cross Farm, which is first recorded on an OS map of 1880. Its layout is similar to that of a mid 19th-century model farm.

Value of Environmental Resources and Receptors

4.5.5 The heritage assets identified in the Stage 2 report are of low to medium value. However, to date, their characterisation has been based solely on non-intrusive survey. Trial trenching will be required as part of the Stage 3 assessment in order to fully assess their value. It is also possible that there may be further sub-surface archaeological remains within the DA, which will only be revealed by the trial trenching.

Potential Effects

4.5.6 The Stage 2 report indicated that the development will potentially have minor to major negative impacts on the heritage assets identified within the DA. The proposed mitigation would reduce that impact to a minor negative residual effect. However, the impact of the development and its residual effects cannot be fully characterised until the Stage 3 work is complete.

Proposed Level and Scope of Assessment

4.5.7 The DMRB states that a detailed assessment will be required '*where there is the potential for significant effects on cultural heritage resources*'. The Stage 2 report indicates that the DA contains heritage assets of low to medium value. The results of the non-intrusive archaeological works, in particular the geophysical survey, will be used to design a



programme of trial trenching, which will be agreed in advance with the Central Bedfordshire Council Archaeologist. Where the line of the road deviates from the DA defined for the Stage 2 works, the results of the geophysical survey on the Houghton Regis North development will be used to help design the trial trench layout. The trial trenching will be confined to the scheme boundary.

Proposed Methodology Including Significance

- 4.5.8 The trial trenching will be carried out in accordance with the methodology set out in the DMRB Volume 11 Section 3 Part 2, 'Cultural Heritage' (HA 208/07), and also as described in the WSI (see Appendix B).
- 4.5.9 Significance will be assessed according to the interaction between the value of the resource affected and the magnitude of the impact upon it, using the matrix shown in Table 5.1 of the DMRB.

4.6 Nature Conservation

The Study Area

- 4.6.1 The wider study area encompasses an area within 2km of the route within this area a desktop search was made for designated sites and records of protected species as part of the Stage 2 assessment, and this will be updated for Stage 3.
- 4.6.2 Reference has also been made to the ecology chapter of the Environmental Statement for the proposed A5-M1 Link, produced by the Highways Agency, which sets out detailed information, including on the presence of protected or rare species, for the area just to the north of the scheme, and overlapping to some extent with it.
- 4.6.3 The area around the 3 route options was surveyed in the summer of 2010 as part of the Stage 2 assessment, and those surveys will be updated and refined where required for the adopted route, but will not be repeated where there is no need to do so.

Existing and Baseline Knowledge

- 4.6.4 The Stage 2 assessment found that there are no designated sites located within or immediately adjacent to the proposed route, but that 9 statutory sites designated as Sites of Special Scientific Interest (SSSIs) occur within 5km (see Figure 3.2). The closest statutory site is Sundon Chalk Quarry SSSI and County Wildlife Site (CWS). It is around 0.7km north of the site and is separated from it by the M1, the mainline railway and Luton Road (the B579). No direct or indirect effects are anticipated on this statutory wildlife site.
- 4.6.5 Natural England expressed some concern about potential effects (as a result of possible groundwater connectivity) on the Houghton Regis Marl Lakes SSSI in their response to the



Stage 2 Scoping Report. This was considered in the Stage 2 assessment; as the scheme drainage would be via a kerb and gulley system to lined grass swales and thence to pre-treatment and attenuation ponds, and then into the Houghton Brook, there would be no discharge to groundwater, no connectivity with the SSSI, and no effects upon it.

- 4.6.6 Seven CWSs occur within 2km of the route, the closest being the River Lea CWS, located around 0.7km to the east, starting at the source of the River Lea to the east of the M1 motorway and the railway line. Whilst there would not be any direct impact on the River Lea, there is some potential for an indirect impact on this CWS, as the Houghton Brook joins the River Lea as a tributary, thus any contamination or pollution of the brook could result in off site impacts.
- 4.6.7 The Stage 2 surveys found the following habitats/species of interest around the line of the route:
 - Semi-improved grassland to the south of Parkside Drive.
 - Areas of herb rich flora at the base the main hedgerows running north to south, in the northern part of the route.
 - Small populations of scarce arable weed species in the northern part of the route. These species tend to be transient (appearing and disappearing in any one location according to agricultural practice, with the seeds remaining dormant in the soil).
 - A single bat roost was confirmed at Chalton Cross Farm. This was for a lone pipistrelle bat in a gap between the bricks in the northern apex of one of the farm outbuildings. The overall level of bat activity in the wider survey area was found to be low.
 - There are known to be badger populations to the north and east of the site, but badger activity observed was restricted to two outlier sets to the north west of the survey area, and occasional snuffle holes, latrines and mammal paths in the rest of the site.
 - Through the Stage 2 surveys it has been established that there is a small water vole population present in Houghton Brook.
 - The breeding bird survey revealed that there is a varied population of breeding birds in the area around and including the scheme. However it was not found to be notable or significant, but adverse effects would result from removal of nesting habitat in the southern part of the route.
 - The survey results indicated that a very low, isolated population of slow-worm is present in the area of the site just to the north of Parkside Drive adjacent to the housing area and amongst rough grassland and scrub. This area is not crossed by the route.



 No evidence of white-clawed crayfish was found during the survey of Houghton Brook, and the majority of the watercourse was not deemed to be suitable habitat for this species.

Value of Environmental Resources and Receptors

4.6.8 The Stage 2 assessment found that the various designated sites, habitats and species which could be affected were of the values shown in Table 4.6.1 below:

Table 4.6.1 ~ Stage 2 Summary of Ecological Interests and Effects					
Interest	Value	Nature of Potential Effect			
SSSIs	National	No effects.			
CWSs	County	Possible indirect effect on River Lea as a			
		Houghton Brook.			
Grassland Flora	Local	Loss of semi-improved grassland at the southern end of the scheme.			
Scarce Arable Plants	Local/District	Direct loss of plants in some areas, and also loss of soil seed bank and reduction in potential habitat.			
Bats	Local	Loss of one roost site (Green and Orange Routes only), loss or severance of flight lines, loss of foraging areas.			
Badgers	Local	Potential fatalities on new road, loss of foraging opportunities and dispersal routes.			
Water Voles	Local	Loss of burrows, loss or fragmentation of habitat.			
Birds	Local	Disturbance of breeding birds, loss of nesting opportunities or habitat.			
Reptiles	Local	Killing of animals, loss of habitat.			
White-clawed Crayfish	Local	Destruction of burrows, loss of habitat.			

Potential Effects

- 4.6.9 The Stage 2 assessment concluded that, given the proposed mitigation measures, there would be no more than minor negative effects on grassland flora, scarce arable plants, bats and badgers, and temporary minor adverse effects on water voles, birds and reptiles.
- 4.6.10 These conclusions will be reviewed for the adopted route in the light of the further survey and assessment work outlined below.

Proposed Level and Scope of Assessment

- 4.6.11 The following further surveys are proposed (or have already commenced) during the summer of 2012. The previous Stage 2 assessment will then be updated and revised in the light of this further work.
 - Bats, Inspection and Emergence this will involve three site survey visits by four



surveyors during the May-August period. This information will be required to inform the Environmental Statement and to allow a European Protected Species licence to be obtained in due course and prior to any demolition. Any mature trees which may be lost or otherwise affected by the works would also be inspected for possible use by bats, though at the moment it is considered that no such trees would be affected.

- <u>Bat Activity Surveys (static detectors)</u> new guidelines by the Bat Conservation Trust (March 2012) have increased the level of bat activity survey work that may be required. The guidelines suggest a much greater use of static recorders than before, spread across the survey season. The present proposal is to set out four static detectors at key points along the route on the same nights as the emergence survey work, to minimise time input. This is a lower level of survey input than the new guidelines may suggest, but (because of the generally low level of activity found at Stage 2) the proposed level of input is believed to be reasonable in this case.
- <u>Badgers</u> a general survey to check for any new or changed setts or usage.
- <u>Water voles</u> an update survey will be carried out to determine current levels of usage. This is important as populations can fluctuate, and water levels and flow in Houghton Brook do vary - the western end of the brook is currently dry, but flow may recommence, and the eastern end was observed to be flowing as at April 2012.
- <u>Birds</u> no further survey work is proposed, as the Stage 2 work should be adequate.
- <u>Reptiles</u> a further survey will be undertaken of the area where reptiles were previously found, to assess the current status of the population. The relevant guidelines suggest 20 survey visits to obtain an estimate of population size, but a lower survey effort is normally accepted and a more modest 10 visit survey is proposed in this case to assess likely numbers.
- <u>White-clawed crayfish</u> no further work is proposed, as the Stage 2 work should be adequate. No evidence of white-clawed crayfish was found during the survey of Houghton Brook, and the majority of the watercourse was not deemed to be suitable habitat for this species.
- 4.6.12 As the scheme design develops in parallel with the proposed surveys and assessment, further consideration will also be given to appropriate mitigation and the possibility for enhancement.
- 4.6.13 A draft landscape and ecology management plan will be produced for the adopted route option as part of the Stage 3 assessment, and a detailed plan will then be produced prior to



commencement of construction. This will aim to ensure that new and retained habitats are managed into the future to maximise their establishment and nature conservation value.

Proposed Methodology Including Significance

- 4.6.14 The assessment will be carried out in accordance with the methodology set out in IAN 130/10, 'Ecology and Nature Conservation: Criteria for Impact Assessment', and also other relevant guidance such as the 'Guidelines for Ecological Impact Assessment' (2006), produced by the Institute of Ecology and Environmental Management (IEEM). These guidelines promote a scientifically rigorous and transparent approach to the ecological assessment process.
- 4.6.15 The geographic frame of reference used for assigning value to ecological features is based on that recommended in the IEEM guidelines, where ecological resources are assessed as having value at the following levels:
 - International
 - UK
 - National
 - Regional
 - County
 - District (or Borough)
 - Local (or Parish), or
 - Within the zone of influence only.
- 4.6.16 Valuing ecological features can be complex. Other considerations include their potential value, social value to the local community, any important function they serve within a wider ecosystem and the level of legal protection they receive. Effects on ecological features based on the scale of values above will be considered as part of the assessment.
- 4.6.17 The significance of an ecological effect, whether adverse or beneficial, will be assessed in accordance with the IEEM guidelines. An effect is considered to be significant if it is likely to result in a change in the conservation status or degree of integrity of any ecological feature of Local value or above. Thus, any effect considered likely to change the value (up or down) of an ecological feature within the scale described above would be considered significant.
- 4.6.18 The guidance on environmental design in respect of nature conservation in general and also in respect of protected species, as set out in Volume 10 of the DMRB, will also be followed.



4.7 Landscape

The Study Area

- 4.7.1 The study area for the assessment of landscape and visual effects will comprise the area from within which views of the new road can be obtained, based on the assessment carried out at Stage 2. This found that:
 - Views are largely limited to a relatively small area around the scheme, bounded by the urban edge of Houghton Regis and Luton to the west and south (with the visual envelope drawn very tightly around the scheme, along the edges of the wedge of open land in the area to the south of Parkside Drive) and Luton Road (just to the east of the motorway) to the east.
 - The visual envelope is less well defined to the north, and extends to the southern edge of the village of Chalton.
 - There are also some more limited, longer distance views from beyond this area, with
 partial views from land around Chalgrave to the north west, tall blocks of flats in
 Luton to the south east and from the high ground of Dunstable Downs to the south.
 In these views, the area around the scheme can be seen, and the new road would
 therefore be visible, but it would form a small part only of a wide, expansive view
 which already contains a number of large scale and intrusive urban elements.

Existing and Baseline Knowledge

- 4.7.2 The question of the appropriate baseline for the assessment is an important one at the moment the northern part of the route is within the countryside, and crosses open, arable fields. However, it is likely that all of that area will be developed at some time in the future, as discussed in section 2 above. Until such time as the development is committed, it is appropriate to assess landscape and visual effects against a baseline of the existing landscape, and to develop landscape mitigation proposals on the basis that the road runs across an open, arable landscape as presently. However, if the surrounding development is committed, with a clear timescale for implementation, before the ES for the Woodside Connection has been completed, then the assessment would be revised to be against a baseline of that development being in place.
- 4.7.3 The Stage 2 assessment included a review of the existing published assessments of landscape character and other relevant studies for the area around the scheme, including:
 - In terms of wider landscape character, the site lies just within an area identified as 'The Chilterns' in the Countryside Agency's (now Natural England) 'Countryside Character Volume 7: South East and London' (this is a national assessment of landscape character, published as a series of regional volumes). This is an extensive area, strongly related to the underlying geology, running from Reading in



the south west to Hitchin in the north east. Key characteristics are noted as including the scarp/dip slope topography, chalk hills and plateau and the '*enclosed and intimate landscapes of the valleys contrasting with the more open plateau top*'.

- However, although the site lies within this area, it has more of the characteristics of the adjoining area to the north, the 'Bedfordshire and Cambridgeshire Claylands'. This is a large area extending to Peterborough in the north and Cambridge in the east, and is described as 'an empty gently undulating lowland landscape with expansive views of large scale arable farmland, contained either by sparse trimmed hedgerows, open ditches or streamside vegetation'.
- Bedfordshire County Council (BCC) have published a landscape character assessment ('Bedfordshire County Landscape Character Assessment', 2003) for the county. This assessment identifies 12 generic Landscape Character Types, with the site being within an area described as 'Rolling Chalk Farmland', extending in a narrow strip to the north of Houghton Regis and in a broader strip to the north of Luton, east of the M1. The county assessment is not currently available following the reorganisation of local government within Bedfordshire in April 2009, and has been largely superseded by the more detailed assessments noted below.
- The former South Bedfordshire District Council (SBDC) published the 'South Bedfordshire District Landscape Character Assessment', jointly with BCC, in 2009. This assessment adds detail to the BCC assessment and again places the site in the 'Rolling Chalk Farmland' landscape character type, within Landscape Character Area 10B, the 'Houghton Regis North Luton Rolling Chalk Farmland'. This area includes the route corridor to the north of Parkside Drive (but not to the south that area is shown as being within the urban area), and also a larger area to the east of the M1, extending from the edge of Luton towards the villages of Sundon and Streatley.
- The Chalk Arc Initiative (CAI) is a government funded programme set up to secure greenspace within and around the large scale growth areas envisaged for Luton, Dunstable, Houghton Regis and Leighton Linslade over the next 10 to 15 years. It has promoted various studies and initiatives, including the Chalk Arc Landscape Character Assessment (2007). This detailed assessment builds upon the South Bedfordshire District Landscape Character Assessment to provide a finer grain landscape character assessment of those areas falling within the Chalk Arc, and concentrates on the urban fringe. Within the district landscape character area noted above ('Houghton Regis North Luton Rolling Chalk Farmland'), this study identifies a series of smaller character areas, with the area of the route (north of Parkside Drive) lying within Area 26, 'Houghton Park Low-lying Farmland'. This is described as 'a level, open area of arable farmland located between the edge of Houghton Regis and the M1.'



- In parallel with the above assessment a report entitled 'Historic Environment Characterisation' was produced by Albion Archaeology for the (then) County Council and the CAI in December 2007. This defines a series of Historic Environment Character Areas which are determined by the amalgamation of the four main strands of the historic environment, namely Historic Landscape Character Areas, Archaeological Character Areas, Historic Urban Character Areas and Rural Built Environment Character. The study places the area around the route in Historic Environment Character Area 10.
- The Bedfordshire and Luton Strategic Green Infrastructure Plan (2007), produced by the Bedfordshire and Luton Green Infrastructure Consortium. This plan assesses the extent of 'Strategic Accessible Greenspace' and regards the area around the scheme as being deficient in this respect, and in need of new provision of Accessible Greenspace and general improvement in Green Infrastructure provision. The 'Chalk Arc Corridor' is one of the main corridors for provision of new or enhanced Green Infrastructure identified in the plan.
- The Luton and South Bedfordshire Green Space Strategy (February 2008) this sets out the future vision for the planning and management of green spaces both within and around the urban areas. The plan accompanying the strategy shows the area of the scheme to the south of Parkside Drive as 'Natural and semi-natural Greenspace', and indicates a 'Potential Major Green Corridor Linkage' leading roughly along the line of the scheme and then to the north west, to what the strategy identifies as an 'Opportunity Area' for strategic green space provision.
- An Environmental Sensitivity Assessment covering southern Bedfordshire was prepared by Bedfordshire County Council's Heritage and Environment Service and was completed in April 2008. In terms of landscape, the assessment graded areas from high to low sensitivity, on a four point scale, and the area around the route options for the scheme (to the north of Parkside Drive only) was graded as grade 3 (the second lowest grade) or grade 2 in a strip alongside the existing urban edge. By combining consideration of landscape, biodiversity, archaeology and historic landscape, the assessment identified a series of areas for potential development, including the area of the scheme north of Parkside Drive.
- A more detailed 'spatial vision' for a Green Infrastructure network in South Bedfordshire and Luton is set out in the 'Luton and southern Bedfordshire Green Infrastructure Plan' (2009). In the area around the scheme, it identifies a strip along the urban edge to the south and west of the line of the routes as having potential for 'urban fringe enhancements', and also shows a broad corridor alongside the Houghton Brook (including the section to the south of Parkside Drive) as a 'priority opportunity area'.
- A Scoping Report produced in December 2009, as part of the Chalk Arc Initiative, for



'Multi-functional Greenspace in Luton and Southern Bedfordshire'. This was intended to begin the process of identifying options for the delivery of new strategic, multi-functional green space. The study identified the 'Chalton Cross Farm flood plain, north of Dunstable' (around the southern end of the scheme, along the Houghton Brook) as a potential area for strategic provision.

4.7.4 In general terms, the area around the scheme has two distinct characters; the area to the north of Parkside Drive is gently undulating, open arable farmland with little vegetation or enclosure and is strongly affected by the motorway and its traffic, the lines of pylons, large scale buildings to the east of the motorway and the existing urban edge. As part of the baseline for the assessment, it will also be affected by the new Junction 11A on the M1 - this will be a large scale dumb-bell junction arrangement, with roundabouts to each side of the motorway. The western roundabout will be located on relatively high ground just to the north of Chalton Cross Farm. The area to the south of Parkside Drive is much more enclosed, and is generally unmanaged with an urban fringe character; it is also strongly affected by the overhead electricity transmission lines.

Value of Environmental Resources and Receptors

- 4.7.5 The landscape around the line of the route does not carry any designations for landscape quality, and the southern part of the route is regarded by the South Bedfordshire District Landscape Character Assessment as being within the urban area of Houghton Regis rather than in the countryside. However, landscapes of lower quality can still have significant value, and the narrow triangle of land stretching into Houghton Regis which is followed by the proposed route is likely to have some significant local landscape/townscape value as a green corridor and link to the countryside to the north east. However, its landscape <u>quality</u> is quite low, as it is crossed by two overhead electricity transmission lines, has existing areas of housing overlooking it from both north and south, and has a generally disturbed, urban fringe character.
- 4.7.6 Another factor to be considered in the assessment is that all of the land which the route runs across is within the Green Belt (see Figure 3.3). This is a planning designation rather than an indicator of landscape quality, but government policy as set out in the new NPPF does state that the openness of the Green Belt should be protected from development. While the land around the scheme is at the moment within the Green Belt, the boundary will be redrawn to allow the development to the north and east of Houghton Regis to take place.
- 4.7.7 There are high level, national designations for landscape quality in the wider area around the scheme the Chilterns Area of Outstanding Natural Beauty (AONB) lies within 2km of the scheme to the south, with an outlier of the AONB a similar distance to the north east (see Figure 3.3), though there is no intervisibility between the site and this part of the AONB. It is not thought likely that there would be any effects on the AONB, as it is separated from the scheme by the urban areas of Dunstable and Houghton Regis, but its presence will be taken



into account in the assessment.

Potential Effects

- 4.7.8 In landscape and visual assessments, a distinction is normally drawn between landscape effects (i.e. effects on the character or quality of the landscape, irrespective of whether there are any views of the landscape, or viewers to see them) and visual effects (i.e. effects on people's views of the landscape, principally from residential properties, but also from public rights of way and other areas with public access). Thus, a development may have extensive landscape effects but few visual effects (if, for example, there are no properties or public viewpoints), or few landscape effects but significant visual effects (if, for example, the landscape is already degraded or the development is not out of character with it, but can clearly be seen from many residential properties). Both landscape and visual effects will be considered in the assessment.
- 4.7.9 The effects will be assessed against the change brought about by the scheme, taking into account the various mitigation measures which form part of the proposals. The mitigation measures will be developed in an iterative manner together with the scheme design as part of the Stage 3 work. The mitigation measures were as follows at Stage 2:
 - The provision of Exchange Land as compensation for the areas of proposed open space to be lost in the southern part of the route these areas would be designed and managed as natural open space with public access.
 - Planting along the line of the road to screen and integrate the new road corridor and its traffic. Planting would be of locally appropriate native species.
 - The use and design of acoustic barriers at the southern end of the scheme.
 - The landscape treatment of the proposed scheme drainage features while the primary function of these areas would be as part of the drainage system for the new road, they would be designed to appear as natural wetland features and to have some nature conservation value.
 - Proposals for the treatment and management of the residual areas alongside the road as it passes through the green corridor to the south of Parkside Drive here the new road would run through a corridor of undeveloped land associated with the overhead power lines, and would (to varying degrees) truncate or sever the green areas alongside them. The scheme therefore allows for the design and management of the residual areas alongside it for amenity and nature conservation benefit. This is on the basis that the new road would introduce a significant change into this green corridor, and that appropriate mitigation for that change should include a comprehensive design and management approach to the entire corridor to the south of Parkside Drive, combining landscape, ecology and access considerations. Initial discussions were held with CBC landscape officers about the



design and management of these areas at Stage 2, and further discussions will be held at Stage 3, with the aim of developing designs which will not only mitigate the effects of the road, but would also assist with the delivery of the Local Plan policy of developing this area as a new urban open space for formal and informal recreation.

4.7.10 The effects arising from the loss of vegetation as a result of the scheme will also be assessed. Any such loss will be minimised as part of the scheme design, but some loss of vegetation will be inevitable at the southern end of the scheme.

Proposed Level and Scope of Assessment

- 4.7.11 The Stage 2 assessment found that there would be slight to moderate adverse landscape effects to the south of Parkside Drive in the winter of the first year after completion of the scheme, declining to slight adverse by the summer of year 15. Effects to the north of Parkside Drive were assessed as being slight adverse only. The assessment also found that around 250 properties would experience slight adverse or greater visual effects in year 1, reducing to around 170 by year 15. Users of public rights of way crossed by the scheme were assessed as receiving moderate adverse visual effects in year 1, reducing to slight to moderate adverse by year 15.
- 4.7.12 A full landscape and visual impact assessment is proposed, to review and update that undertaken at Stage 2, and to add more detail in terms of visual effects as required by IAN 135/10 (see below). The assessment will include effects on the character of the local landscape, assessment of potential visual effects on nearby residential properties and also other visual receptors such as public rights of way, and consideration of effects on the openness and visual amenity of the Green Belt, although the Green Belt boundary will be redrawn to exclude this area to allow the proposed large scale development to the north and east of Houghton Regis to go ahead.
- 4.7.13 As parts of the scheme would be lit, the assessment will include a night time assessment of potential lighting effects.
- 4.7.14 The assessment will also include a winter assessment of the baseline landscape and views and assessment of effects in the winter of the first year following completion of the scheme, and the summer of 15 years following completion, by which time the proposed planting will have begun to mature.
- 4.7.15 In current DMRB terminology the above would constitute a Detailed assessment.

Proposed Methodology Including Significance

4.7.16 The assessment will be based on the methodology set out in IAN 135/10 ('Landscape and Visual Effects Assessment'), which replaced the methodology set out in the DMRB Volume 11 Section 3 Part 5, 'Landscape Effects'. It will also be in accordance with the 'Guidelines'



for Landscape and Visual Impact Assessment', produced jointly by the Institute of Environmental Management and Assessment and the Landscape Institute ('the GLVIA', 1995, revised 2002).

4.7.17 The significance of landscape effects will be judged in accordance with Tables 3 and 4 of Annex 1 to IAN 135/10, and visual effects will be assessed in accordance with Tables 3 and 4 of Annex 2.

4.8 Community and Private Assets

The Study Area

4.8.1 This topic will cover demolition of private property, effects on agricultural land and development land, and direct or indirect effects on community facilities. The study area will be a corridor 500m to either side of the route, together with any land beyond that corridor which is within the same ownership, so that potential effects on farm operation can be taken into account, and also any facilities beyond that distance where the catchment for the facility extends to the far side of the route.

Existing and Baseline Knowledge

- 4.8.2 Land use along the line of the scheme differs to the south and north of Parkside Drive. To the south it is urban fringe open space with no formal usage, and to the north it is open arable farmland, managed as part of the Chalton Cross Farm holding. Land to the south of the Houghton Brook (just south of Parkside Drive) is within an area subject to an Open Space Proposal (Policy R3) under the Urban Open Space Strategy of the South Bedfordshire Local Plan, and this policy has been retained and is therefore still current. The Policy proposes to improve the area for a mix of formal and informal recreation.
- 4.8.3 There are a number of community assets, including schools, within the urban areas to either side of the scheme, but none which would be directly affected by the scheme other than the area of informal open space to the south of Parkside Drive. A pedestrian count for one route across this open space as part of the Stage 2 assessment showed significant movement of pedestrians and cyclists in the morning peak.
- 4.8.4 The proposals make provision for at grade crossings to continue existing routes on their current alignments wherever possible, though some minor diversions of public rights of way may be required. The proposals have been designed to minimise conflicts with existing underground services or overhead power lines, though again some minor diversions are likely to be required.
- 4.8.5 The Stage 2 assessment found that the Blue Route would lead to the loss of around 5.5ha of best and most versatile (Grade 2 or Subgrade 3a) agricultural land, and also the loss of some farm buildings at Chalton Cross Farm and severance of agricultural land. Effects for



the other two route options in terms of loss of best and most versatile land were found to be at a slightly lower level.

Value of Environmental Resources and Receptors

- 4.8.6 The new NPPF notes the importance of best and most versatile agricultural land, and states that its presence should be taken into account when determining planning applications.
- 4.8.7 Community assets and land of actual or potential use for recreation should also be considered as of high value, and the DMRB (Volume 11 Section 3 Part 6) contains a specific section on assessing the loss of land used by the community.

Potential Effects

- 4.8.8 Potential effects on agricultural land include landtake, severance and vulnerability to trespass and abuse. These matters were considered at Stage 2, and that assessment will be reviewed as part of the Stage 3 assessment.
- 4.8.9 Potential effects on land used for recreation or community facilities could include direct landtake and therefore loss of the land or facility concerned, severance in terms of increased difficulty of access to the land or facility, or loss of amenity such that the use is less pleasant and attractive.
- 4.8.10 There may also be beneficial effects in terms of land use the scheme would provide access to parts of the proposed wider development area to the north and east of Houghton Regis, and in that respect would help to facilitate some of the land use changes envisaged by the developing LDF.

Proposed Level and Scope of Assessment

- 4.8.11 The Stage 2 assessment contained a specialist report on effects on agricultural land and farm operations, and that assessment is expected to still hold good, subject to a check on current farming operations and review of the quantities of land to be taken.
- 4.8.12 As there would be some land take from the area to the south of the Houghton Brook which is currently used for informal recreation and proposed in the Local Plan as an area of open space, an equal area of land would be provided as Exchange Land, and the remainder of the residual areas alongside the road would be laid out as open space as part of the scheme, such that an area equal to the total proposed as open space under the Local Plan policy would be provided, either alongside the new road, or on adjacent land. The Stage 2 design included some illustrative areas for this Exchange Land, and a detailed calculation of the area required and locations available will be made as part of the Stage 3 assessment.
- 4.8.13 As part of the Stage 2 assessment, a sample count of pedestrian and cycle usage along one route which would be affected by the scheme showed that there was significant use, and that



on each occasion there were more southbound journeys than northbound. This was thought likely to reflect a net movement south to schools in Luton, and a check in the afternoon will be made at Stage 3 to see if there is a net northbound movement in the afternoon. The design of the scheme at Stage 3 will include a full Non-Motorised Users (NMU) Assessment to inform the provision of appropriate measures.

4.8.14 In current DMRB terminology, the above would constitute a Detailed assessment.

Proposed Methodology Including Significance

- 4.8.15 The current DMRB guidance is that effects should be grouped under the above heading, but the extant topic guidance is still under the separate headings (dating from 1993) of 'Land Use' and 'Pedestrians, Cyclists, Equestrians and Community Effects'. IAN 125/09 states that assessments should be reported under the new heading but that the assessment should be based on relevant extracts from the existing topic guidance.
- 4.8.16 The specialist assessment of local agricultural land quality at Stage 2 followed the methodology established by the (then) Ministry of Agriculture, Fisheries and Food (MAFF) in 1988, which involves an examination of published geological, topographical, soil and climatic information, with a detailed field survey using auger borings and soil observation pits. The findings of this assessment will be reviewed as part of the Stage 3 work, but at present there is not thought to be any need to repeat the fieldwork.

4.9 Air Quality

The Study Area

4.9.1 The study area for the Stage 2 air quality assessment was within 200m of the proposed route or other affected roads, as required by the DMRB, and the same study area will be used for the Stage 3 assessment. A wider area will be also considered both in general terms, as a check for the presence of any Air Quality Management Areas (AQMAs), and as part of the DMRB assessment for potential regional impacts on air quality.

Existing and Baseline Knowledge

4.9.2 The proposed scheme may potentially have local air quality impacts in both the CBC and LBC areas. Both these local authorities identify nitrogen dioxide (NO₂) and particulate matter less than 10 microns (PM₁₀) as the pollutants of concern in the Updating and Screening Assessment (USA) and Progress Reports for Local Air Quality Management (LAQM). Local authority monitoring data shows ongoing exceedances of the NO₂ annual mean objective of 40µgm⁻³ (microgrammes per cubic metre) at a number of diffusion tube sites in the Central Bedfordshire region. Sites at Dunstable and Chalton are calculated to exceed the NO₂



annual mean objective at residential receptors. Central Dunstable has been declared an Air Quality Management Area (AQMA) for NO_2 (see Figure 3.4).

- 4.9.3 The Dunstable AQMA incorporates Dunstable Town Centre, the A505 (from the town centre to the junction of Poynters Road/Dunstable Road), the A5 (from Union Street to Borough Road), and the B489 West Street from the town centre to St Mary's Gate.
- 4.9.4 An Air Quality Action Plan for the Dunstable AQMA is currently being produced, in compliance with the Environment Act 1990, and PG03 (Policy Guidance 03, produced by Defra to help local authorities with their local air quality management duties under Part IV of the Environment Act 1995). Following exceedances at NO₂ diffusion tube site SB41 (Chalton Cross Cottages), and a Detailed Assessment for Chalton Cross (west of the proposed bypass near to the M1), an AQMA has been recommended to be declared around Chalton Cross Cottages and Long Meadow Farm. The M1 Junction 11A scheme and the proposed scheme for Luton Northern Bypass are both within the area of exceedance of the annual mean NO₂ objective but the relevant residential (dwellings) receptors at Chalton Cross Cottages will be removed as they are within the footprint of both these schemes. Long Meadow Farm is further than 200m from the footprint of the Woodside Connection scheme and any identified affected roads, and will not therefore be considered further as part of the Stage 3 air quality assessment.
- 4.9.5 The scheme runs partly within the area of LBC at the roundabout junction with Poynters Road. LBC has two AQMAs, declared for annual mean NO₂, both located towards the northwest of Luton, adjacent to the M1 motorway. Luton AQMA No.1 comprises 24 dwellings in the vicinity of the M1 motorway. Luton AQMA No.2 covers an area encompassing 431 premises in the vicinity of the M1 motorway either side of Junction 11 (see Figure 3.4). The closest diffusion tube to the scheme in LBC is tube M14 at Copperfield which had an annual mean NO₂ of 34.42µgm⁻³ in 2010. No AQMA is located within 200m of the scheme, but the affected road of Poynters Road cannot be fully identified as at this stage the traffic model does not extend sufficiently geographically to identify the link of Poynters Road at the junction with Luton Road.

Value of Environmental Resources and Receptors

4.9.6 The residential properties noted above are sensitive receptors and should be considered in any assessment of potential air quality effects, but there are no especially sensitive receptors such as schools, hospitals or old people's homes within 200m of the scheme or affected roads (though this may change following final identification of affected roads).

Potential Effects

4.9.7 There is the potential for air quality to be adversely affected for properties adjacent to the proposed route, where the scheme would introduce new traffic to areas which currently experience very low levels of vehicle movements. However, much of this traffic would have



been displaced from existing roads, and air quality would therefore be likely to be improved on existing roads which would be relieved of traffic.

- 4.9.8 The Stage 2 Assessment established that increased traffic emissions are likely in the area around the scheme. However, there was no indication that air quality objectives would be exceeded, just that ambient concentrations of air pollution would be likely to increase.
- 4.9.9 In contrast, removal of traffic (especially HGVs) from congested roads where ambient concentrations of air pollution are already high, in particular those roads that presently comprise the AQMA within Dunstable town centre will reduce traffic emissions and represent a beneficial effect.
- 4.9.10 There is also the potential for air quality to be affected during construction, due to dust created by earthworks and emissions caused by plant or vehicle movements. This will be reduced through good construction practice and appropriate mitigation, such as dust prevention measures and designated construction traffic routes which avoid residential areas.
- 4.9.11 The scheme is unlikely to adversely affect air quality in any AQMA due to its distance from the designated areas. On the contrary, it is likely to improve air quality in the Dunstable AQMA due to the diversion of a proportion of the traffic currently using the routes within it to the new route. This should improve air quality in Dunstable town centre through reduced traffic emissions, and this assumption will be assessed as part of the Stage 3 assessment.

Proposed Level and Scope of Assessment

- 4.9.12 The DMRB requires either a Simple or a Detailed assessment of air quality effects, and a Simple assessment was undertaken at Stage 2. This showed that there would be no predicted exceedances of the air quality objectives and EU limit values in the opening year of the scheme (2016) in both the Do-Minimum and Do-Something scenarios. Nevertheless, existing monitoring data indicates exceedances of the annual mean NO₂ objective at receptors at Chalton Cross for 2010, which would require dispersion modelling. However these dwellings will be removed as part of the M1 Junction 11A scheme. Background and roadside diffusion tube data close to the route will be collected between Stage 2 and Stage 3.
- 4.9.13 At Stage 3, a Scoping assessment will be conducted based on the revised traffic model and any newly identified affected roads. A Simple assessment will then be conducted for the adopted route, and the assessment may proceed to a Detailed assessment with dispersion modelling if required by guidance in HA 207/07.
- 4.9.14 The regional impact was not assessed at Stage 2, as the traffic model had not fully identified affected roads, so this exercise will be carried out at Stage 3. Though the creation of a new road would lead to an extra area of emission, the relief of congestion could lead to an overall reduction in emissions of regional air pollutants and greenhouse gases in the area of



the scheme.

4.9.15 A Construction Environmental Management Plan (CEMP) will be produced prior to the commencement of work on site, with the intention of minimising possible air quality effects during construction. It will incorporate measures from the best practice guidance into the management of the site. Daily visual inspections of dust will be made and dust gauges can be used to measure the levels of dust deposited at nearby receptors.

Proposed Methodology Including Significance

- 4.9.16 The air quality assessment will assess the changes in emissions and the resultant changes in pollutant concentrations using the methodology as set out in the DMRB, Volume 11 Section 3 Part 1(HA 207/07). The local air quality assessment involves identifying properties and designated sites within 200m of roads affected by the project. Affected roads are defined as those for which:
 - Road alignment will change by 5m or more.
 - Daily traffic flows will change by 1,000 annual average daily traffic (AADT) or more.
 - Heavy duty vehicle flows will change by 200 AADT or more.
 - Daily average speed will change by 10km/h or more.
 - Peak hour speed will change by 20km/h or more.
- 4.9.17 HA 207/07 requires either a Simple or Detailed assessment of air quality effects a Simple assessment was carried out at Stage 2, and is normally considered sufficient if it confidently establishes that the environmental effects would not be a fundamental issue in the decision making process. In contrast, a Detailed assessment is conducted where the scheme has the potential to cause significant effects, or where the scheme cannot be assessed using Simple methods.
- 4.9.18 Screening calculations at Stage 2 indicated that, despite increases in emissions along the route, exceedances of air quality objectives were not forecast and therefore the Simple assessment was sufficient for Stage 2. This process will therefore be repeated for Stage 3, as noted above.
- 4.9.19 The steps that would be undertaken, as identified by HA2 07/07 for a Simple assessment, would therefore be as follow:
 - 1. Update the number of properties in the required distance bands, taking account of any recently constructed properties.



- 2. Use the DMRB 'Local' Screening Method to calculate pollutant concentrations at a wide range of properties that are likely to be affected by the proposals, including those adjacent to the route as well as those along affected roads.
- 3. Compare the base year model results with any available measured concentrations and adjust results as necessary.
- 4. If any air quality objectives are predicted to be exceeded, proceed to a Detailed Assessment.
- 5. Consider emissions during the construction phase and likely mitigation requirements.
- 6. Prepare an air quality report setting out the results of the above, in accordance with the DMRB.
- 4.9.20 Impacts will be described by reference to guidance published by the Institute of Air Quality Management (IQMA), as summarised in the following table:

Table 4.9.1 ~ Criteria for the Description of Impacts (Source IAQM)						
Absolute Concentration in Relation to Objective/Limit Value	nge in Concentrati	ion				
	Small	Medium	Large			
Incre	ase With Scheme					
Above Objective/Limit Value With Scheme (>40µgm ⁻³)	Slight Adverse	Moderate Adverse	Substantial Adverse			
Just Below Objective/Limit Value With Scheme (36-40µgm ⁻³)	Slight Adverse	Moderate Adverse	Moderate Adverse			
Below Objective/Limit Value With Scheme (30-36µgm ⁻³)	Negligible	Slight Adverse	Slight Adverse			
Well Below Objective/Limit Value With Scheme (<30µgm ⁻³)	Negligible	Negligible	Slight Adverse			
Decre	ease With Scheme					
Above Objective/Limit Value With Scheme (>40µgm ⁻³)	Slight Beneficial	Moderate Beneficial	Substantial Beneficial			
Just Below Objective/Limit Value With Scheme (36-40µgm ⁻³)	Slight Beneficial	Moderate Beneficial	Moderate Beneficial			
Below Objective/Limit Value With Scheme (30-36µgm ⁻³)	Negligible	Slight Beneficial	Slight Beneficial			
Well Below Objective/Limit Value With Scheme (<30µgm ⁻³)	Negligible	Negligible	Slight Beneficial			

4.9.21 The overall determination of significance will then be based on the magnitude of change, description of impacts and the factors shown in Table 4.9.2 below.



Table 4.9.2 ~ Factors to Consider When Assessing Significance of Impact on Air Quality (Source: IAQM)

The magnitude of the changes and the descriptions of the impacts at the receptors i.e. Table of Magnitude of Change and Changes in relation to objectives.

Number of people affected by increases and/or decreases in concentrations and the judgement of overall balance.

Whether or not the study area exceeds an objective or limit value and this exceedance is removed or the exceedance area is reduced.

Uncertainty, including the extent to which worst-case assumptions have been made.

The extent to which an objective or limit value is exceeded e.g. an annual mean NO_2 of $41\mu gm^{-3}$ should attract less significance than an annual mean of $51\mu gm^{-3}$.

4.9.22 It should be noted that not all the affected roads were identified at Stage 2, as speed data was not included in the traffic model produced at Stage 2. That traffic model also did not cover the roads in the Dunstable Air Quality Management Area (AQMA). As a result of this an expanded traffic model will be used to identify affected roads to be assessed at Stage 3.

4.10 Noise and Vibration

The Study Area

- 4.10.1 The study area used in this assessment will be the area where the roads are predicted to be subject to a change in noise level of more than 1dB(A) as a result of the scheme. In accordance with the DMRB (Volume 11 Section 3 Part 7, HD 213/11), a change in noise level of 1dB L_{A10,18h} is equivalent to a 25% increase or a 20% decrease in traffic flow, assuming other factors remain unchanged, and a change in noise level of 3dB L_{A10,18h} is equivalent to a 100% increase or a 50% decrease in traffic flow. Therefore the study area will be up to 300m from the extent of the scheme and from any other affected roads where the traffic is predicted to change significantly.
- 4.10.2 For dwellings and other sensitive receptors that are within 600 to 1,000m of the scheme extent, a qualitative assessment will be undertaken.

Existing and Baseline Knowledge

4.10.3 The scheme is mainly located in a suburban environment with the northern end located in a more rural locality. The noise environment throughout is dominated by the M1 motorway which runs in a general north-south direction along the eastern side of the study area. No designated sites for nature conservation are located within 600m of the scheme.



4.10.4 It can therefore be seen that the number of properties within 2km of the route will be very large, though in practice any noise effects would tend to be limited to the houses closest to the scheme, and noise changes would not be felt by houses which are further away, where they are shielded by intervening properties.

Value of Environmental Resources and Receptors

- 4.10.5 Sensitive receptors are defined as locations where members of the public are regularly present and are likely to be exposed to traffic noise for a prolonged period. This includes residential properties, schools, hospitals and care homes, where people are likely to be present for long periods.
- 4.10.6 The area around the southern end of the scheme is densely populated with a significant number of residential properties and 28 community sensitive receptors such as schools, hospitals or old people's homes within 600m of the scheme and affected roads.

Potential Effects

- 4.10.7 The Stage 2 noise assessment indicated that in the opening year the scheme would result in significant noise increases for approximately 1,812 properties, with slight reductions in noise levels for around 852 properties located mainly along Park Road North. These initial predictions were undertaken with no mitigation measures in place, but it is envisaged that measures such as noise barriers and a noise-reducing carriageway surface will be included in the scheme design, and these would significantly reduce overall noise levels. The Stage 3 assessment will take mitigation measures into account.
- 4.10.8 The assessment indicates that the scheme will produce the most significant impacts between Chainages 400 and 1000, for residents located both to the north and south of this section of the new road. It is likely that a noise barrier will be required to mitigate the noise impact for residents at least between these Chainages, and possibly extending to the start of the scheme at the southern end.
- 4.10.9 There is also the potential for adverse noise and vibration effects during construction, due to construction plant or vehicle movements. This would be reduced through good construction practice and appropriate mitigation, such as noise suppression or screening, and designated construction traffic routes which avoid residential areas. All these measures will be included in the Construction Environmental Management Plan (CEMP) produced as part of the next stage in the assessment process.

Proposed Level and Scope of Assessment

4.10.10 Since the current indications are that significant noise effects are likely, and that they will cause noise increases greater than 1dB(A) in the baseline year with the scheme, the Stage 3 assessments will be undertaken in accordance with the DMRB requirements for Detailed



assessments, which are summarised below. Many of those matters covered by the Detailed assessment are also required in any event by a Simple assessment, and the principal differences relate to the assessment years/comparisons and the reporting of the noise effects.

- 4.10.11 The steps to be undertaken for the Stage 3 noise and vibration assessment, as required by the DMRB Detailed assessment procedures, are as follows:
 - 1. A noise measurement survey to establish ambient noise levels at sample noisesensitive receptors adjacent to the route corridor.
 - 2. Define the study area (the area where roads are predicted to experience a change in noise level of more than 1dB(A) due to the opening of the scheme).
 - 3. Identify those affected roads within, for urban situations, 1km of the project boundary (2km for rural areas), and undertake noise calculations for dwellings and other sensitive receptors within a maximum distance of 600m either side of the centreline of affected roads. Calculations to be undertaken as first floor façade noise levels for the Do-Minimum conditions in the baseline and future year, and the Do-Something condition in the future year, and to take account of agreed mitigation measures.
 - 4. The numbers of dwellings experiencing increases and decreases in noise level and nuisance level to be categorised within noise change bands and presented for each option. The assessment for daytime noise levels should comprise:
 - i) the Do-Minimum condition in the baseline year against the Do-Minimum condition in the future year,
 - ii) the Do-Minimum condition in the baseline year and Do-Something condition in the baseline year, and
 - iii) the Do-Minimum condition in the baseline year against the Do-Something condition in the future year.
 - 5. Assessment of night-time noise levels for scenarios i) and iii) above.
 - 6. A qualitative assessment of the noise and vibration effects for dwellings and other sensitive receptors that are more than 600m from an affected route but within 1km.
 - 7. For affected routes that lie outside the area of the noise calculations, an assessment based on the Basic Noise Level (BNL) and counts of dwellings and other sensitive receptors within 50m of the road centreline.
 - 8. Preparation of Tables showing numbers of dwellings and other sensitive receptors subject to a change in noise level.



- 9. An assessment of traffic-induced vibration.
- 10. Assessment to determine the requirement for and specification of any noise mitigation measures required to reduce noise to an acceptable level.
- 11. Consideration of temporary noise and vibration effects during construction. This will depend on the level of detail available on the proposed construction methodology.
- 12. Assessment of cumulative noise and vibration impacts, identifying where impacts are expected from combined action of noise and/or vibration with other environmental impacts upon sensitive receptors.
- 13. Presentation of the above in a report together with an indication of dwellings likely to be eligible for noise insulation under the Noise Insulation Regulations.

Proposed Methodology Including Significance

4.10.12 As noted above, the methodology used will be as set out in the DMRB Volume 11, Section 3 Part 7, 'Noise and Vibration' (HA 213/11, revised November 2011). The significance of effects will be judged using the DMRB suggested significance criteria repeated below in Table 4.10.2 (short term) and Table 4.10.3 (long term).

Table 4.10.2: Classification of Magnitude of Noise Impacts (Short Term)				
Noise Change Band L _{A10 (18 hour)} dB	Magnitude of Impact			
0	No Change			
0.1 to 0.9	Negligible			
1 to 2.9	Minor			
3 to 4.9	Moderate			
5 or more	Major			

Table 4.10.3: Classification of Magnitude of Noise Impacts (Long Term)					
Noise Change Band L _{A10 (18 hour)} dB	Magnitude of Impact				
0	No Change				
0.1 to 2.9	Negligible				
3 to 4.9	Minor				
5 to 9.9	Moderate				
10 or more	Major				



4.10.13 The above studies require the most likely Annual Average Weekday Traffic (AAWT) flows, percentage of HGVs and average speeds for those road links where traffic volumes will increase by at least 25% or decrease by 20% as a consequence of the scheme, which is equivalent to a 1dB(A) noise change. The traffic flow information will be required for Do-Minimum situations in the base/opening year and the future 15 years after opening, and for a Do-Something situation for the base/ opening year and 15 years after opening.

4.11 Effects on All Travellers

The Study Area

4.11.1 The nominal study area for vehicle travellers is the local road network, extending to the proposed Junction 11A in the north, Junction 11 of the M1 to the south east, Dunstable town centre to the south west and the proposed junction of the new A5-M1 Link road with the A5 to the north west. For other travellers (pedestrians, cyclists and equestrians), the study area is a corridor 500m to either side of each route option, though this may be extended where a given right of way or other route which may be affected extends beyond the 500m limit.

Existing and Baseline Knowledge

The Local Road Network

- 4.11.2 The local road network includes the following main existing components or proposed new roads (see Figure 3.5):
 - The M1 motorway, with junctions at Toddington (Junction 12) to the north, Dunstable/Luton (Junction 11) to the south east and Luton Airport (Junction 10) further to the south. There is also the proposed Junction 11A just to the north, into which the scheme would connect. The motorway is currently being improved between Junctions 10 and 13, as a 'Hard Shoulder Running' (i.e. with live traffic using the existing hard shoulder at peak times) scheme, with some further improvements also proposed to Junctions 11 and 12.
 - The A5, which runs through the centre of Dunstable, from Milton Keynes in the north to Junction 9 of the M1 to the south east.
 - The A6, which runs northwards from the centre of Luton to Bedford.
 - The A505, which runs from the centre of Dunstable eastwards through Luton and on to Hitchin and Royston.
 - The A5120 which runs from the A5 in Houghton Regis northwards to Toddington and Junction 12 of the M1.



- Sundon Road, which runs from the village of Sundon on the east side of the M1 and into the Parkside area of Houghton Regis.
- The proposed A5-M1 Link, running from the proposed Junction 11A on the M1, westwards to the north of Houghton Regis to connect with the A5.
- The Luton Northern Bypass this road would run to the east from the new Junction 11A on the M1, to connect with the A6 to the north of Luton and then the A505 to the north east. This road has no current funding and no firm timescale for implementation.
- 4.11.3 The existing urban areas of Dunstable and Houghton Regis are already congested at peak times, with a high proportion of HGVs using the existing network to access the Woodside Industrial Area (to the south of the Porz Avenue/Park Road North roundabout at the south end of the scheme). The existing levels of congestion would be likely to increase with the planned growth to the north of Houghton Regis and also elsewhere around Dunstable and Luton, and the objective of the scheme is to avoid or reduce such congestion as far as possible, and to provide an alternative route to reduce the number of HGV movements along the A5 and A505 through Dunstable town centre.
- 4.11.4 No specific assessment has been undertaken, and no data is available, but it is likely that the congestion on the existing network would contribute to driver stress.

Public Footpaths

- 4.11.5 The Ordnance Survey (OS) 1:25,000 mapping shows the following routes, with numbers from the CBC Definitive Map for routes close to or crossed by the scheme (see Figure 3.5):
 - Footpath FP17 runs northwards from close to the electricity substation south of Parkside Drive. It runs towards Chalton Cross Farm but terminates to the south of it.
 - A further route (FP7) runs to the north, again towards the farm, from a point close to the Houghton Brook. It divides to the south of the farm, with one branch running north east to terminate at the edge of the motorway, and the other (FP6) running north west, across Sundon Road to the village of Chalton. The branch running to the north east would be diverted as part of the HA's Junction 11A proposals. There is a network of rights of way around the village and connections with Upper Sundon to the north east and Toddington to the north west.
 - A third route (FP8) runs to the east from close to the Houghton Brook to the motorway, where there is a connection beneath the M1 to the Leagrave area of Luton.
 - There is also a short section of public footpath (FP39) at the southern end of the scheme, running parallel to Sandringham Drive.



Cycle Routes

4.11.6 Parkside Drive forms part of the National Cycle Network Route 6, connecting with Luton to the east (via the motorway underpass at the east end of Kestrel Way) and Leighton Buzzard to the west. There is also a short section of cycleway along the south side of Sandringham Drive, close to the roundabout on Park Road North.

Bridleways

4.11.7 There are no bridleways in the area around the scheme, and there is not thought to be any significant use of local roads or tracks by equestrians.

Informal Access Routes

- 4.11.8 As noted above, the existing public footpath routes between Parkside Drive and Sundon Road appear to have some gaps, and some of them terminate at apparently random points. The route shown on the OS mapping as running to the east from Houghton Brook to the motorway also runs across the middle of a field, and is not present on the ground. However, there appears to be a more coherent and comprehensive network of routes which are actually in use than the theoretical network shown on the mapping. These routes run along the field margins and also alongside the Houghton Brook, and appear to be used for informal recreation and for dog walking in particular. There are also well used tracks through the areas of rough grass which run alongside the urban edge to the west of the scheme.
- 4.11.9 Parkside Drive is used by pedestrians as well as by cyclists, and the area to the south of it is criss-crossed by informal routes and appears to be well used by pedestrians and also to some extent by cyclists. The main informal routes include those crossing the line of the scheme at the south end of Windsor Drive and the north end of Tomlinson Avenue. There is also a formal, surfaced footpath running to the north from just to the east of Tomlinson Avenue, northwards towards Fensome Drive.

Value of Environmental Resources and Receptors

4.11.10 All public rights of way should be treated as of high value, regardless of their levels of use. In general the assessment has focused on the effects which are considered most likely to matter to local people - these include potential effects on existing public rights of way or cycle routes, and on levels of congestion and driver stress on existing local roads.

Potential Effects

4.11.11 Potential effects on public rights of way can include severance if the right of way is closed (either temporarily or permanently), inconvenience if it has to be diverted to accommodate the scheme, and loss of amenity if it remains on its original route but is affected in terms of views of or noise from the new road.



- 4.11.12 Potential effects on the local road network include the relief of existing congestion (which is one of the principal objectives of the scheme), the creation or worsening of congestion in other areas, or severance if roads or access points are closed.
- 4.11.13 The scheme contains the following features which have been designed to cater for journeys whether in vehicles or by 'non-motorised users' (NMUs):
 - Connectivity of side roads would be maintained in all cases apart from Wheatfield Road, where the existing link to the Park Road North/ Poynters Road roundabout would be lost, and a new junction linking Wheatfield Road with the new Woodside Connection would be provided. The remaining 200m or so of Wheatfield Road to the south west of this junction would become a dead end. There is also a possibility, which will be investigated further at Stage 3, that a connection from the new road into Parkside Drive to the north could be provided. The scheme would also provide a connection between the proposed Junction 11A and Sundon Road without the Woodside Connection there would be no connectivity between the two.
 - Where the route crosses existing public rights of way or other significant pedestrian routes, at grade crossing points would be provided wherever possible. Where practicable the crossing points would be located at the junctions, but dedicated at grade crossing points would also be provided.
 - Where public rights of way cross the route, and at grade crossing points are not possible, diversions to maintain the connectivity of the route would be provided. In the central part of the scheme there would be the potential for some enhancement to the existing situation, with new links between the rights of way, connections to the existing informal routes and improved waymarking and surfacing for the formal and informal routes.
 - It is understood that the existing National Cycle Network Route 6 (which currently runs along Kestrel Way, Pastures Way and then across the line of the route via Parkside Drive) is to be diverted (by others) to run across the open land to the north of Kestrel Way. The scheme design would enable the diverted route to pass under the new road at the Houghton Brook crossing point before continuing along the north side of the new road. This crossing would also make provision for pedestrian use.

Proposed Level and Scope of Assessment

4.11.14 The Stage 2 assessment found that the scheme would relieve congestion, improve air quality and promote regeneration in the adjacent urban areas. It also noted that the detailed design of the scheme would ensure that there would be no adverse effect on the immediate local road network - that aim will be carried forward and tested as part of the Stage 3 work.



- 4.11.15 The Stage 2 assessment also found that the scheme would require some diversion of existing public rights of way, with minor diversions of the southern ends of FP8 and FP17, which would cross the scheme by means of a river crossing underbridge. At the north end of the scheme, FP7 would be stopped up near Chalton Cross Farm but a connection to the north would be provided by means of FP6, which would link with the diversion proposed under the A5-M1 Link scheme. This would lead to adverse effects on the local footpath network, but the effects would be to some extent balanced by improved waymarking and connectivity for the formal (and also the informal) routes at the southern end of the scheme, particularly those within and around the proposed area of Exchange Land. Effects would be greater during the construction period, and some routes may need to be closed for a period if temporary diversions cannot be provided. These findings will be reviewed as part of the Stage 3 work.
- 4.11.16 Sustrans are considering a diversion of National Cycle Network Route 6 to the north of Kestrel Way, around the area within which the Environment Agency are planning a flood alleviation scheme. On this new alignment, the route would be able to pass beneath the new road by means of the proposed Houghton Brook crossing, in which case there would be no significant adverse effects on cycle routes in the medium to long term. However there would be some short term disruption during the construction period, and temporary diversions would be necessary to maintain the route during construction. This will be reviewed as part of the Stage 3 assessment.
- 4.11.17 There would be some effects on the informal routes both to the south of Parkside Drive in the area of informal open space, and to the north, around the field margins and alongside the Houghton Brook. These routes are unofficial and have no status, but are nevertheless well used. There would be some disruption to this use, both during construction and as a result of the completed scheme, but this would be minimised by means of the various crossing points and footpath diversions noted above, and there would also be some beneficial effects in terms of improved surfacing and connectivity at the southern end of the scheme. The Stage 2 assessment found that, on balance, effects would be slight adverse, and this will be reviewed as part of the Stage 3 assessment.
- 4.11.18 The design of the scheme at Stage 3 will include a full Non-Motorised Users (NMU) Assessment to inform the provision of appropriate measures.
- 4.11.19 No specific assessment is proposed in terms of driver stress as the objective of the scheme is to improve access and minimise congestion, it would be expected to result in a net overall decrease in driver stress on the local road network.
- 4.11.20 As the new road would be relatively short in terms of length and travel time along it, considerations of potential driver boredom and the need to introduce some variety of experience as part of the view from the road would not be particularly relevant, though the Stage 3 assessment will include consideration of views for drivers on the new road.
- 4.11.21 In current DMRB terminology, the above would constitute a Detailed assessment.



Proposed Methodology Including Significance

- 4.11.22 The current DMRB guidance is that effects should be grouped under the heading of 'Effects on All Travellers', but the extant topic guidance is still under the separate headings (dating from 1993) of 'Vehicle Travellers' and 'Pedestrians, Cyclists, Equestrians and Community Effects'. IAN 125/09 states that assessments should be reported under the new heading but that the assessment should be based on relevant extracts from the existing topic guidance.
- 4.11.23 This assessment topic will therefore cover the following areas, using the methodologies set out in the existing DMRB guidance, as appropriate:
 - 'View from the road' this is set out in the DMRB as a potential benefit where a new road may enable people to see an attractive landscape, or an adverse effect where the view obtained is generally unattractive. The views which users of the new road would experience is therefore included in the assessment, but is given relatively little weight in comparison with views <u>of</u> the new road and the effects which it may have on the surrounding landscape.
 - 'Driver stress' is the other main topic area covered by the extant DMRB guidance on vehicle travellers, and is defined in the DMRB as 'the adverse mental and physiological effects experienced by a driver traversing a road network'. Driver stress is noted as being due to three main components; frustration, fear of potential accidents and uncertainty as to the route being followed. The DMRB suggests levels of driver stress (high, moderate or low) according to the type of road in question, the traffic flows and the average journey speed, with slow journeys on very busy roads leading to higher levels of stress.
 - Journeys by pedestrians, cyclists and equestrians under the new DMRB structure any such journeys relating to access to community facilities will be covered by the assessment set out above in section 4.8, so the assessment here will be of effects on specific routes and on general accessibility within the area around the scheme. The DMRB suggests that assessments are made of changes in journey times, and also of any changes in the amenity of the journeys concerned. Effects can be adverse, where a new road interrupts or affects the amenity of existing journeys, but can also be beneficial - the new road would be open to cyclists and would create a new route. It would also relieve traffic flows on existing roads, thereby improving conditions for pedestrians and cyclists.



4.12 Cumulative Effects

- 4.12.1 The aim of this part of the assessment will be:
 - To consider whether any of the effects identified during the assessments outlined above may be cumulative, or may interact in such a way that the combined effects on any given receptor are greater than the sum of the individual effects.
 - To place the assessment in the wider context of other schemes in the area, and consider whether the effects of the scheme may interact with those of other schemes.
- 4.12.2 Potential interactions between environmental topics and issues discussed in the Scoping Report are shown in the matrix below.

Table 4.12.1 ~ Potential Interactions Between Environmental Topics										
	Geology and Soils	Road Drainage & the Water Environment	Materials	Cultural Heritage	Nature Conservation	Landscape	Community and Private Assets	Air Quality	Noise & Vibration	Effects on All Travellers
Geology and Soils		· ·								
Road Drainage & the Water Environment										
Materials										
Cultural Heritage										
Nature Conservation										
Landscape		· ·		· · ·						
Community and Private Assets										
Air Quality										
Noise & Vibration										
Effects on All Travellers										

Proposed Level and Scope of Assessment

4.12.3 The DMRB Volume 11 Section 2, Part 5 notes that the individual topic effects on a given receptor may not necessarily be significant, but that when all of the various topic effects are



considered together, then the overall, cumulative effects on a receptor may be significant. The following is a reproduction of Table 2.6 from the DMRB guidance, which suggests criteria for determining the significance of cumulative effects in terms of their impact on project decision making.

Tabl	Table 4.12.2 ~ Determining the Significance of Cumulative Effects					
Significance	Effect					
Severe	Effects that the decision-maker must take into account as the receptor/resource is irretrievably compromised.					
Major	Effects that may become key decision-making issues.					
Moderate	Effects that are unlikely to become issues on whether the project design should be selected, but where future work may be needed to improve on current performance.					
Minor	Effects that are locally significant.					
Not Significant	Effects that are beyond the current forecasting ability or are within the ability of the resource to absorb such change.					

- 4.12.4 Individual receptors which may experience effects in terms of more than one topic include properties close to the southern part of the route which could potentially experience effects in terms of air quality, noise, visual effects and also loss of land used for informal recreation. There would therefore be some potential for cumulative effects on these properties. The assessment will therefore take this into account, and address the potential cumulative effects on these receptors, and any others which may experience a variety of effects.
- 4.12.5 Potential interactions with other projects will also be considered, including:
 - The A5-M1 Link, for which construction is now anticipated to commence in 2014.
 - The new M1 Junction 11A, which would form part of the A5-M1 Link scheme.
 - The M1 is currently being improved between Junctions 10 and 13, as a 'Hard Shoulder Running' scheme, with some further improvements also proposed to Junctions 11 and 12.
 - The planned wider employment and residential development to the north and east of Houghton Regis.
 - The Environment Agency Houghton Brook Flood Storage Area (FSA) scheme near the M1.

4.13 Programme

- 4.13.1 The Stage 3 Environmental Assessment has already commenced with some seasonal ecology surveys, and will continue until October, with reporting and preparation of the Environmental Statement following on after that time.
- 4.13.2 Any scoping responses received will be taken into account as the assessment proceeds.



5 Summary and Conclusions

- 5.1 This Scoping Report sets out the proposed level of environmental assessment for the Woodside Connection scheme, as part of the preparation of the Environmental Statement which will accompany the application for development consent. The intention is that the appropriate level of assessment can be agreed with Central Bedfordshire Council and can be discussed with the various statutory consultees so that provision for the assessment can be made in terms of the scheme programme and budget.
- 5.2 The objective is to focus assessment on any effects which are likely to be significant or relevant to an important project decision. The latest DMRB guidance is for the level of environmental assessment at each stage of the project to be determined according to what is appropriate and necessary in order to establish the likely level of environmental effects which may inform a project decision, and that this level of assessment may vary between topics.
- 5.3 The report notes the results of the Stage 2 environmental assessment carried out to date, and sets out what further survey and assessment work is proposed for Stage 3, together with any seasonal or other constraints, and information which will be required for the assessment is also summarised.
- 5.4 The Scoping Report therefore sets out, for each environmental topic in turn, coverage of:
 - The study area for that topic.
 - Existing and baseline knowledge.
 - Value of environmental resources and receptors.
 - Potential effects.
 - Proposed level and scope of assessment, whether Simple or Detailed.
 - Proposed methodology including significance.
- 5.5 Once the Scoping Report has been approved and comments have been received from the various consultees, it will then form the basis of the environmental assessment work to be undertaken during Stage 3 of the project.

