Environmental Impact Assessment

On behalf of:
Jaytee (Rainton) LLP

In respect of:
Ripon Services at Baldersby Gate

Date:
April 2010

Reference:
PG/ML/1076309/R004pg
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1.0 Introduction

1.1 This Environmental Statement ("the ES") has been submitted as part of an Environmental Impact Assessment ("the EIA") made in conjunction with an outline planning application for a junction Motorway Service Area (hereafter referred to as a "MSA") located on the junction of the A1 and A61 in North Yorkshire.

1.2 The application seeks outline planning permission with all matters reserved except access for the erection of a MSA at the junction of the A1 and A61, comprising of an amenity building, hotel, filling station, sewage treatment plant, new access from the A61, landscaping, pond and associated works.

1.3 The site is known as Ripon Services at Baldersby Gate ("Ripon Services") and a site location plan is provided at Figure 1.1. The application is submitted on behalf of Jaytee (Rainton) LLP.

Requirement for an EIA and ES

1.4 In identifying if there is a need for an EIA, the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999 has been reviewed and this defines development types into three categories; Schedule 1, Schedule 2 and changes or extensions to Schedule 1 or 2 developments. The Regulations require that any proposed development falling within the description of a ‘Schedule 2 development’ will be required to be subject to an EIA where such development is considered to have ‘significant’ effects on the environment by virtue of such factors as its nature, size or location.

1.5 The proposed development falls within Schedule 2 Section 10(p) "Motorway Service Areas". The relevant threshold for Section 10(p) is stated as “the area of the development exceeds 0.5 hectare.”

1.6 In considering if Schedule 2 development requires an EIA the following criteria are important:
The characteristics of the development;

The environmental sensitivity of the location;

The characteristics of the potential impacts; and

If the development is in, or partially in, a ‘sensitive area’ e.g. an Area of Outstanding Natural Beauty or Site of Special Scientific Interest

1.7 Following a request from the applicant for a Screening Opinion, Harrogate Borough Council ("HBC") have confirmed (Appendix 1.1) that an Environmental Impact Assessment is required for the proposed development. HBC's reason for this opinion is as follows:

"This is a major development which is of more than local importance"

1.8 A Scoping Report was sent to the Local Planning Authority ("the LPA"), under Part IV, Section 10 of the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999, on the 17th February 2010. The report requested a scoping opinion from the Council in relation to the MSA and the comments received from the various statutory and non-statutory consultees have been incorporated into the ES. The relevant responses received can be found in Appendix 1.2.

1.9 This ES has been prepared in accordance with the 1999 Environmental Impact Regulations and DETR Circular 02/99 – ‘Environmental Impact Assessments’. The ES is accompanied by a Non-Technical Summary which is formatted as a separate stand alone document.

What is an EIA?

1.10 An EIA is an evaluation of the likely consequences of a proposed project and of the measures to be taken to minimise any significant environmental effects that might arise. This is the process by which environmental information is collected, published and taken into account in determining a relevant planning application.
1.11 The purpose of an ES is to therefore identify the likely significant effects that may arise, by comparing the existing situation (baseline) with the situation once the proposal is developed.

1.12 The ES provides a comprehensive review of the development proposal in terms of likely significant environmental impacts and identifies, where necessary, appropriate mitigation measures. These potential issues include:

- Planning Policy
- Need and Alternative Sites
- Traffic and Transport
- Noise
- Air Quality
- Agricultural Land
- Landscape and Visual
- Archaeology and Heritage
- Ecology and Nature Conservation
- Drainage and Flood Risk

**Content and Format of the ES**

1.13 The chapters of the ES comprise an assessment of these identified issues and are structured as follows:
Chapter 2 identifies the site location and context, alongside outlining the development proposal.

Chapter 3 considers the planning context of the site and assesses the scheme against policy at the national, regional, sub-regional and local level.

Chapter 4 examines the need for an additional MSA.

Chapter 5 examines transport issues relating to the development and is based upon the findings of a Transport Assessment.

Chapter 6 considers the noise environment of the locality, how this might affect the proposed scheme and how the proposed development would affect the surrounding area.

Chapter 7 identifies the potential air quality impacts that may result from the construction and operation of the proposed MSA.

Chapter 8 assesses the loss of agricultural land and the potential agricultural impact of the proposal on the surrounding farm land.

Chapter 9 considers how the landscape would be affected by the proposed development and examines the visual effects of the proposal upon the surrounding countryside.

Chapter 10 reviews the archaeology and cultural heritage of the site and the land surrounding it.

Chapter 11 provides an ecological assessment to ascertain the general ecological value of the development area and identifies any significant habitats and associated flora and fauna which require conservation and enhancement.

Chapter 12 considers the effects of the scheme on drainage and flood risk issues.
Chapter 13 sets out the effects that the construction and operation of the MSA and its associated infrastructure may have on the geology and hydrogeology of the area and identifies certain mitigation measures to avoid, reduce and offset any adverse effects.

Chapter 14 provides an overview and summary of the ES's findings and conclusions.

1.14 Where appropriate the layout of each chapter will be as follows:

- Introduction
- Scope of Assessment
- Legislation and Policy
- Consultation
- Methodology
- Baseline Conditions
- Identification of Impacts
- Mitigation
- Residual Impacts
- Cumulative Impacts
- Summary and Conclusions
- References
1.15 For continuity, the appendices are arranged using the same reference numbers as
the chapters. The Appendices provide supportive background and technical
information and are contained in Volume 2 of the ES.
2.0 Site Context and Proposed Development

Introduction

2.1 This chapter of the ES describes the location of the site and the development proposal. Further details on the proposed development are also contained within the accompanying Design and Access Statement.

Site Context

2.2 The site is located approximately 5.5km to the north east of Ripon and the proposed development lies in approximately 18.80ha of agricultural land. The site is located on the western side of the A1 and to the south and east of the A61 and is roughly triangular in shape. The site is partly screened from views from the east by the A1 as well as from the west and north by the embankment to the A61. The site is currently in agricultural use.

2.3 In terms of the existing site context, the eastern boundary of the site, adjacent to the A1, has a low fence running along its entire length. Agricultural fields are located further to the east along with Rainton village (approximately 1.7km to the east).

2.4 Low level fields are located to the south of the site which are currently in agricultural use. The southern and western boundaries are not clearly defined by vegetation or fencing, but the A61 runs parallel to the western boundary and further agricultural fields are located beyond this. Melmerby village lies approximately 2km to the north west of the site, with Melmerby Industrial Estate located 1.5km to the west.

2.5 To the north of the site there is a balancing pond, associated with the A1 improvements. Further north is the A61 / A1 junction with agricultural fields beyond. Baldersby village is located approximately 2.6km away to the north east. Sinderby village is located approximately 6km to the north.

2.6 As indicated above the site is approximately 18.80ha in size (excluding land used for highway works). Within the site the ground levels rise towards the south east. Site
levels vary by approximately 5.4m within the site, between approximately 44.6m and 50.0m Above Ordnance Datum ("AOD"). The highest part of the site is the south eastern corner, and the lowest part of the site is along the northern edge of the site.

**Wider Site Context**

2.7 The site is located between two existing MSA’s, Barton Truck Stop (A1 J56) and Wetherby Services (A1 J46). The distance between these service areas is approximately 64km or 40 miles.

**Existing Highway Network**

2.8 The A1 is currently undergoing improvement works as part of the A1(M) Dishforth to Barton Improvement Scheme. Construction of Phase 1 (Dishforth to Leeming) began in March 2009 and is expected to take three years to complete. Phase 2 (Leeming to Barton) is due to commence in 2014. The proposal will result in the A1 being upgraded to a dual 3-lane highway that is of a motorway standard.

2.9 The A61 is a single lane carriageway which provides a link to Ripon and Thirsk and crosses over the A1. The carriageway is approximately 7.5 metres wide and has a speed limit of 60mph along the site frontage.

**The Proposed Development**

2.10 This application seeks outline planning permission with all matters reserved except access for the erection of a MSA at the junction of the A1 and A61, comprising of an amenity building, hotel, filling station, sewage treatment plant, balancing pond, new access from the A61, parking, landscaping and associated works.

2.11 As this is an outline planning application with all matters reserved except for access, the proposal are therefore illustrative but nevertheless designed to accommodate all of the elements of a core MSA which are required as set out in Circular 01/2008. The EIA has however specifically assessed the scheme against the following application drawings:
2.12 The proposed development is for a junction MSA, which will serve users on both sides of the A1 and the A61.

2.13 The proposed development will take up a total land take of 18.80ha with the actual developed area of the site being 5.17ha (27.5% of the total land). This includes the built structures and the areas dedicated to car parking. The remaining land (13.63ha or 82.5% of the total land take) will be landscaped. The proposed site layout can be found at Figure 2.1.

2.14 In accordance with Circular 01/2008, the following elements will be included as part of the MSA:

- Site Layout - Drawing Reference TSP 00-315-001I
- Food Court Plan - Drawing Reference TSP 00-315-002B
- Food Court Elevations - Drawing Reference TSP 00-315-003
- Food Court Elevations - Drawing Reference TSP 00-315-004A
- Redline Plan - Drawing Reference TSP 00-315-005B
- Filling Station Elevations - Drawing Reference TSP 00-315-006
- Filling Station Plan Layout - Drawing Reference TSP 00-315-007A
- Hotel Plan Layouts - Drawing Reference TSP 00-315-008
- Hotel Elevations - Drawing Reference TSP 00-315-009
- Sections - Drawing Reference TSP 00-315-010A
- Location Plan - Drawing Reference TSP 00-315-011
• Food court building;

• A filling station;

• A 80 bed hotel;

• Free parking including parking provision for abnormal loads;

• A picnic area; and

• A play area for children.

2.15 The food court building will be 2,250m² in size and will be open 24 hours a day, 365 days a year providing an indoor seating area, free toilets and hand-washing facilities, parent / carer and child facilities containing baby-changing amenities and public telephones. All facilities will also be accessible for disabled users.

2.16 A separate HGV shower and WC building will be provided as part of the development along with segregated parking areas for cars / caravans, motorcycles, coaches, HGVs and abnormal loads.

2.17 The MSA has been designed to minimise the risk of conflict between vehicles and pedestrians. As such the main amenity building and filling station have been segregated to reduce potential conflicts and a route is provided for vehicles who just wish to access the filling station.

2.18 The filling station (open 24 hours a day, 365 days a year) will have a kiosk that is 257m² in size and has been positioned for easy ingress and egress for all vehicle types and separate forecourts are provided for cars and HGVs either side of the filling station. The filling station will be accessible from the main access route and via the car park which will enable all users to access the facility.

2.19 The parking areas will be available 24 hours a day, 365 days a year and will be segregated depending on vehicle type, but safe easy access will be provided to all public buildings. In terms of overall parking figures, Table 2.1 shows the proposed
breakdown of spaces.

Table 2-1: Proposed car parking provision

<table>
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<th>Vehicle type</th>
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<tr>
<td>Cars</td>
<td>293 (including 15 disabled spaces)</td>
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<tr>
<td>Heavy Goods Vehicles</td>
<td>74</td>
</tr>
<tr>
<td>Coaches</td>
<td>15</td>
</tr>
<tr>
<td>Caravans</td>
<td>9 (including 2 disabled spaces)</td>
</tr>
<tr>
<td>Motorcycles</td>
<td>9</td>
</tr>
<tr>
<td>Abnormal Loads</td>
<td>1</td>
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2.20 In terms of the scale of the buildings, the food court building will be the largest at approximately 8m at its tallest point and then 4.5m at its lowest point. The hotel is approximately 7.5m in height and the filling station canopy is 7m high.

2.21 The MSA be accessed from the A1(M) north and southbound via the A61 and the existing merges and diverges from the A1(M) dumbbell junctions. The proposed site access has been designed in accordance with the Design Manual for Roads and Bridges.

2.22 There will be one primary access to the site via a four arm roundabout on the A61, which will be approximately 150 metres to the south west of the western A1(M) dumbbell.

2.23 The internal circulation of the MSA has been designed to incorporate left turns and a one way system, which will further reduce the risk of conflict between vehicles and pedestrians.

2.24 Servicing of the site will be at the rear of the food court building in a designated service yard. This will serve the food court building and hotel. Access to the service yard will be via the HGV parking area, which will be accessed from the main internal access road.

2.25 Emergency access to the site will be from the main internal access road directly from the A61 site access four arm roundabout.
2.26 With regards to opening hours, the filling station, amenity building and hotel will be open 24 hours a day, 365 days a year to comply with Highways Agency MSA Policy. All car parking spaces will also be available 24 hours a day.

2.27 In terms of landscaping, the removal of hedgerows will be kept to a minimum and replacement planting will also be undertaken where gaps in existing hedgerow exist. The development will include a diverse mixture of tree and hedgerow species native to the locality and the planting of this will be planned to provide the greatest possible ecological diversity and naturalness. To ensure that the site fits in with the surrounding landscaping a review of the species already growing in the surrounding landscape will be undertaken to guide the tree and shrub planting. Non-native plants will not be introduced.

**Job Creation**

**Employment Effects**

2.28 This section seeks to quantify the net employment likely to be generated / created by proposed development of the site. The assessment considers the following employment effects:

- Construction employment impacts (short term)
- Permanent (Operational) employment impacts (long term)

**Construction Employment Impact**

2.29 The construction stage will be temporary and the economic impacts arising will as a consequence be short-lived. Jaytee (Rainton) LLP anticipate the overall programme for redevelopment of the site will be in the region of 12-18 months and although the construction works will be relatively short lived, they will involve the following employment impacts:

- Direct employment on site;
Secondary employment as either indirect employment relating to the supply of materials and services to the construction process, or induced employment generated by the expenditure of incomes earned in the direct and indirect employment.

**Construction Phase - Direct Employment**

2.30 The proposal will create construction and construction related jobs on site. The amount of employment created is a function of the scale and type of construction expenditure.

2.31 Overall it is expected that the proposed MSA will directly employ approximately 100 people in the construction phase of the development.

2.32 These jobs are considered to be short-term in that they will last some or all of the construction period of the project. This makes it difficult to describe the jobs in terms of Full Time Equivalent jobs and they can therefore only be described as a total number of jobs. The job creation comprises on site and local area employment as well as more remote employment, comprising professional advisors, pre fabrication and building product manufacturing jobs and other building/construction service providers.

**Construction Phase - Secondary Employment (Indirect and Induced Employment)**

2.33 Direct construction employment will support further employment in the local economy, through indirect or supplier effects and induced or income multiplier effects. The magnitude of these effects will depend upon a number of factors including the availability of local supplies and the contractors’ supply processes. Whilst a proportion of construction services and products will be purchased / employed locally, more technical components and critical construction products will be purchased from national or indeed global markets.

2.34 The extent of indirect and induced temporary employment generated within the local economy is based upon proportions of the direct construction jobs created. The number of indirect jobs created is worked out on the basis of 0.05% of the total.
direct jobs and equates to five on this occasion. The number of induced jobs is then based on a percentage of direct and indirect jobs and is expected to be two. This results in a total of seven indirect and inducted jobs that will be created.

**Summary of Construction Employment Effects**

2.35 The total construction employment opportunities generated by construction of the development will be:

- Direct Jobs 100
- Indirect / Induced Jobs 7
- **Total Jobs** 107

2.36 It should be recognised that not all of these jobs will or indeed could be taken up by local people living in the immediate area of the MSA. There are a number of prefabrication elements involved which will be manufactured off site, away from the local area. There are also a number of specialist trades required in the construction process and they are likely to be sourced from outside the area.

**Conclusion of Construction Employment Effects**

2.37 Notwithstanding the above the construction phase presents a significant number of short-term employment opportunities and skill learning possibilities for the local area population which will significantly benefit the local economy.

**Permanent Employment Impacts**

2.38 In addition to the temporary employment created by the construction of the MSA, it is anticipated that about 200 new jobs will be created by the final operator. This will include the following roles: operational managers, retail managers, catering managers, supervisors, administration staff, maintenance staff, general assistants and catering staff.
2.39 The applicant has indicated that the majority of these jobs will be filled by local people, which will be a positive contribution to the employment opportunities available in the local area.

2.40 Due to the opening hours of the development, the MSA will operate a three shift pattern. The majority of people will be employed in the first two shifts, representing the morning and early evening period.

**Construction Method Statement**

**Programme of Works**

2.41 It is presently proposed that the construction programme will span approximately 12-18 months for the development. The exact details of construction methodology, the type and quantity of plant equipment required and the duration of construction will be subject to change as the detailed design work progresses.

2.42 The sequence of construction will generally be as follows:

- Site establishment;
- Construction of access roads and new roundabout;
- Bulk earthworks;
- Provision of temporary and permanent surface water management systems;
- Construction of working platforms and pavements;
- Construction of structures;
- Provision of services;
- Construction of hard paving; and
- Final landscaping

2.43 Site establishment will include the provision of fencing and porta-cabins as well as temporary services and haul roads. Access for the site establishment will be gained from the existing road network with details to be agreed at a later date.

2.44 The construction of the new access roads and roundabout will be the next stage of development as this will be used for all site access once complete.

2.45 Bulk earthworks will involve re-profiling the site to enable to construction of the buildings and car parking area.

2.46 Surface water drainage systems will include managing surface water run-off during construction, and thereafter implementation of the SUDS scheme.

2.47 Working platforms and pavements, will involve providing a safe access route across the site to be used by visiting vehicles.

2.48 Services such as water, gas and electricity will have to be provided onto the site.

2.49 The penultimate stage of construction will be to provide hard paving areas for the main access roads, the petrol filling station, car parks, service areas and footpaths.

2.50 Finally, landscaping will provided on the site, this includes tree and shrub planting.

**Construction Hours**

2.51 The hours of construction are to be agreed with the LPA, but are likely to be between 0800 and 18.00 Monday to Friday and 0800 – 1300 for Saturdays. It is not expected at this stage for there to be any requirement to work on Sundays or on bank holidays. All work outside these hours will be subject to prior agreement with Harrogate Borough Council. Night time working will be further restricted.
Plant

2.52 The types of plant that are likely to be used during the construction works will be typical for this type of development.
3.0 Planning Policy Review

Introduction

3.1 This chapter of the ES reviews the relevant policies at a national, regional and local level which will then set the context for the remaining chapters in the report.

3.2 Under the Planning & Compulsory Purchase Act 2004, the Development Plan for Harrogate Borough Council is the Yorkshire and Humber Plan - Regional Spatial Strategy ("the RSS") which was adopted in May 2008, the Harrogate District Local Plan ("HDL Plan") which was amended in May 2004 and the Harrogate Core Strategy ("HCS") which was adopted in February 2009. In accordance with section 38 (6) of the Planning & Compulsory Purchase Act 2004, any determination must be made in accordance with the provisions of the development plan unless material considerations indicate otherwise.

3.3 The chapter will set out the relevant guidance and then address how the proposed development meets these requirements. The following documents have been considered as part of this policy review:

National Planning Policy

- Circular 01/2008: Policy on Service Areas and Other Roadside Facilities on Motorways and all Purpose Trunk Roads in England - Published in April 2008

- Circular 02/2007: Planning for the Strategic Road Network - Published in March 2007

- Department for Transport Road Safe Research Report Number 57 - Effectiveness of Motorway Service Areas in Reducing Fatigue Related and Other Accidents - Published in April 2006

- Planning Policy Statement 1: Delivering Sustainable Development ("PPS1") - Published in January 2005
• Supplement to Planning Policy Statement 1: Planning and Climate Change - Published in December 2007

• Planning Policy Statement 4: Planning for Sustainable Economic Development ("PPS4") - Published in December 2009

• Planning Policy Statement 5: Planning for the Historic Environment ("PPS5") - Published in March 2010

• Planning Policy Statement 7: Sustainable Development in Rural Areas ("PPS7") - Published in August 2004

• Planning Policy Statement 9: Biodiversity and Geological Conservation ("PPS9") - Published in August 2005

• Planning Policy Guidance 13: Transport ("PPS13") - Published in April 2001

• Planning Policy Statement 22: Renewable Energy ("PPS22") - Published in August 2004

• Planning Policy Statement 23: Planning and Pollution Control ("PPS23") - Published in November 2004

• Planning Policy Statement 24: Planning and Noise ("PPS24") - Published in October 1994

• Planning Policy Statement 25: Development and Flood Risk ("PPS25") - Published in December 2006

**Regional Planning Policy**

• The Yorkshire and Humber Plan Regional Spatial Strategy to 2026 ("the RSS") - Adopted in May 2008
Local Planning Policy

- Selective Alteration to the Harrogate District Local Plan ("HDLP")
  Incorporating Policies Saved by the Secretary of State - Adopted in May 2004
  / Policies Saved September 2007

- Harrogate Core Strategy ("HCS") - Adopted in February 2009

- Harrogate Landscape Character Assessment ("HLCA") - Published in February 2004

- North West Yorkshire Strategic Flood Risk Assessment - Published in October 2006

3.4 This policy assessment has been split into the different thematic areas that are of relevance to the proposed MSA and each subsection sets out the relevant national, regional and local planning policy before assessing the proposed MSA against these policies. The thematic areas are:

- MSA Guidance;

- Protection of the Countryside;

- Renewable Energy Guidance;

- Design Guidance;

- Economic Guidance;

- Noise and Vibration Guidance;

- Air Quality Guidance;

- Agricultural Guidance;
Landscape and Visual Impact Guidance;

Archaeology and Heritage Guidance;

Ecology and Nature Conservation Guidance;

Drainage and Flood Risk Guidance; and

Geology and Hydrogeology Guidance

3.5 The relevant policy documents for these themes are set out below.

**MSA Guidance**

**National Planning Policy**

Circular 01/2008 - Policy on Service Areas and Other Roadside Facilities on Motorways and all Purpose Trunk Roads in England

3.6 Circular 01/2008 was published in April 2008 and sets out policy on the provision, standards and signing of roadside facilities on the Strategic Road Network (SRN), including MSAs.

3.7 The document states that MSAs and other roadside facilities perform an important road safety function by providing opportunities for the travelling public to stop and take a break in the course of their journey (paragraph 6) and that the Government’s objective is to encourage greater choice in the provision of service facilities for all road users, thereby encouraging drivers to take breaks more frequently.

3.8 Paragraphs 13 to 18 of the Circular state that MSAs should not become destinations in their own right and that they should only provide facilities needed to serve people using the SRN in the course of a journey. Government policy is to discourage service areas and other roadside facilities from becoming destinations in their own right as this would increase the level of traffic on the road and may increase capacity at
MSAs, which could discourage drivers from stopping there to take a break during a long journey.

3.9 The Circular then states that in determining the need for additional roadside facilities on the SRN the Highway's Agency must be satisfied that there is a need for an additional MSA. In assessing any application for a new roadside facility, the Highways Agency will consider the impact of development on the SRN alongside the needs of road users. The Highways Agency will need to be satisfied that the access and egress to the roadside facility can be provided safely and that it will not have a materially adverse effect on the capacity or performance of the SRN (paragraph 30).

3.10 Paragraphs 37 to 39 consider the need for additional accesses to an MSA and state that under normal circumstances, rear access roads connecting a roadside facility to the local road network will not be acceptable. Where an access is required the Highways Agency will expect its use to be restricted to staff, deliveries, emergency services and agents and staff of the Highways Agency acting on behalf of the Secretary of State for Transport. If a connection to the local road network is needed to facilitate deliveries and staff access, the associated service yard and parking area normally should be physically segregated from the main MSA parking areas and circulatory roads by the provision of a permanent vehicular barrier (paragraph 37). Access to other developments through roadside facilities is not permitted and all sites should be provided with a secure boundary fence to prevent unauthorised access by pedestrians and / or vehicles from adjacent roads and / or land (paragraph 39).

3.11 Paragraphs 40 to 46 then set out the design requirements of new MSAs as traffic flow and safety considerations are of great importance. Any access provided direct to the SRN would need to conform fully to the Design Manual for Roads and Bridges. In design terms, roadside facilities schemes should amongst other things:

- Respond sensitively to both the site and its setting, including the existing landscape and other physical features; create character and identity within the site by the careful design of spaces and buildings and the relationship between them; and minimise the visual impact of the development on its surroundings;

- Incorporate vehicle accesses and means of circulation that are safe, clear to
motorists and minimise vehicle congestion;

- Be able to show that the proposal will cause no detriment to the safety or convenience of road users or those wishing to use the facility;

- Achieve building designs that take account of the needs of all users,

- Incorporate buildings that are safe, environmentally friendly and energy efficient so as to maximise sustainability and minimise environmental damage and waste;

- Ensure the sensitive design and siting of lighting schemes with the aim of minimising light pollution and light-spill onto adjacent roads, whilst ensuring that public areas are well lit; and

- In preparing the design for their lorry parking facilities, operators should give due consideration to the need for security, ensuring that there is adequate lighting and taking account of lines of sight from occupied buildings.

3.12 Paragraphs 52 to 61 of the Circular provide guidance on the spacing of MSAs and confirm that there is a need to limit development alongside motorways and motorway junctions to mitigate the impact of strategic roads on the environment.

3.13 Paragraph 55 states that historically MSAs have evolved around a long-standing spacing criterion of 30 miles. This was based on the premise that drivers should be given the opportunity to stop at intervals of approximately half an hour. However, at peak hours, on congested parts of the network, travel between MSAs can take longer than 30 minutes. Further, 90 km/h (56 mph) speed limiters for HGVs limit the distance they can travel in 30 minutes to a maximum of 28 miles (45 km). As such the guidance states that any new application for a core MSA should be considered on the basis of a 28 mile (45 km) distance, or 30 minutes’ travelling time, from the previous core MSA, whichever is the lesser.

3.14 The absolute minimum acceptable distance between facilities on the same route is 12 miles (paragraph 56) and where the spacing between two existing MSAs is 40 miles
or greater, any infill site that might be permitted will also be designated as a Core site and must provide the required range of facilities (paragraph 57).

3.15 The Circular then sets out the requirements for a MSA and states that they must provide the following 24 hours a day:

- Free parking for up to two hours for all types of vehicle;
- Free toilets and hand-washing facilities for all road users, with no obligation to make a purchase;
- Parent / carer and child facilities containing baby-changing amenities;
- Access to a signed, free, private breastfeeding area;
- A free picnic area;
- Access to a cash-operated telephone;
- Fuel;
- Snacks and hot drinks; and
- Free play area for children.

3.16 The Circular then moves on to look at parking provision for MSAs (paragraphs 77 to 90) and states that they must provide free short-term parking for all classes of vehicle. Annex B sets out the method for calculating how many parking spaces must be provided for certain classes of vehicle and users at MSAs and is based on the volume of traffic on the SRN.

3.17 Parking bays for disabled users of all types of vehicle should be located in close proximity to the main entrance of the amenity building. Facilities for motorcyclists should also be located close to the amenity block.
3.18 Parking for caravans / motorhomes and other light vehicles towing trailers should not be located within the HGV parking area. A safe walking route from the parking area to the amenity building should be provided. A minimum of two parking bays suitable for caravans / motorhomes and other light vehicles towing trailers should be situated close to the amenity building for the convenience of disabled users of such vehicles. Coach parking should be segregated from the HGV parking area and a safe walking route to the amenity building should be provided.

3.19 In terms of abnormal-load vehicles provision should be made for the purpose of statutory rest breaks or escort handover. The minimum requirement is for the provision of a single bay capable of accommodating abnormal loads that are covered by the Road Vehicles (Authorisation of Special types) (General) Order 2003. This covers loads up to 30 m rigid length, 6.1m wide and 150,000 kg total weight (maximum 16,500 kg axle weight).

3.20 In addition to the minimum parking spaces for HGVs, operators are required to provide shower and toilet facilities within the HGV parking area.

3.21 Paragraphs 97 and 98 of the Circular provide guidance on on-line and junction sites and state that whilst the preference is for on-line sites, junction sites will be considered in circumstances where it can clearly be demonstrated that the construction of an on-line MSA would have an adverse impact or could not be delivered due to planning, operational or environmental constraints.

3.22 Finally the Circular addresses the proposed floorspace permitted within an MSA and states at paragraph 104 that in order to ensure MSAs do not become destinations in their own right, a modest degree of retail development is permitted, so that MSAs and rest areas may serve the needs of road users, but not so that they attract customers from the local area.

3.23 The maximum retail sales floorspace permitted at an MSA 500m². Additional areas may be used for retail storage, but there shall be no public access and sales shall not be permitted from these areas.

3.24 The floorspace restriction is set at a level to allow MSAs to provide an adequate range of facilities to serve the travelling public. It has no direct correlation with traffic
flows. Therefore, an MSA situated at a junction and which serves traffic using both carriageways is permitted only 500m² of retail floorspace. The petrol filling station is permitted a retail facility that is limited in scale and genuinely ancillary to the sale of fuel.

Circular 02/2007 - Planning for the Strategic Road Network

3.25 Circular 02/2007 was published in March 2007 and explains how the Highways Agency will participate in all stages of the planning process with Government Offices, regional and local planning authorities, local highway/transport authorities, public transport providers and developers to ensure national and regional aims and objectives can be aligned and met.

3.26 Paragraphs 24 to 26 of the Circular relate to the Highways Agency's involvement in determining planning applications and state that on behalf of the Secretary of State, the Highways Agency can work with developers to secure delivery of their proposals in such a way that they minimise any additional burden on other users of the strategic road network.

Department for Transport Road Safe Research Report Number 57 - Effectiveness of Motorway Service Areas in Reducing Fatigue Related and Other Accidents

3.27 The Department for Transport published a report in April 2006 which assessed the effectiveness of MSAs in reducing road-traffic crashes. This found that there was a 22% reduction in accidents on the 10 miles of motorway following a MSA compared to the 10 miles prior.

3.28 This demonstrates that MSAs do reduce accidents on the motorway and that in light of this the proposal will help reduce accidents, especially as the current distance between MSAs on this part of the A1 is approximately 40 miles.

Regional Planning Policy

3.29 There are no relevant policies contained in the RSS.
Local Planning Policy

3.30 HDLP Policy T7 (motorway service areas) states that within Harrogate District planning permission will be granted for not more than one motorway service area serving the A1(M). The provision of a MSA is to be dependent on there being a need for such a facility, taking into account existing and planned services on the A1 and linked motorways elsewhere in Harrogate and Yorkshire. Sites and proposals will be assessed against the following criteria:

- The need to meet minimum standards for parking and the other basic services necessary to serve the needs of motorway users;

- The desirability of excluding extraneous services and facilities;

- The need to provide safe and convenient access without interfering with the free and safe flow of traffic on the motorway or the local highway network;

- Minimising the loss of the best and most versatile agricultural land;

- Minimising the impact on listed buildings, registered parks and gardens and their settings;

- Safeguarding and/or enhancing the existing landscape character of the surrounding area;

- Safeguarding sites and features of archaeological or nature conservation interest; and

- Minimising the impact on residential amenity.

Assessment

3.31 Starting first with national guidance on MSAs, it is considered that the proposed scheme has been developed fully in accordance with the advice set out within the
government guidance.

3.32 As demonstrated within chapter 4 of this ES it has been established that there is a need for an additional MSA on the improved A1(M). The development is therefore in accordance with paragraph 55 of Circular 01/2008.

3.33 The development will provide a filling station, free parking for all vehicles, a picnic area, a budget hotel and an amenity block which will contain toilets, cash operated telephones and a range of food and drinks outlets together with small retail areas which are common in most MSAs, but the goods sold within this area will be aimed at users of the highway rather than selling the everyday goods expected at traditional retail outlets.

3.34 The development will therefore provide all of the facilities expected at an MSA as set out in paragraph 73 of Circular 01/2008 and these will be of an appropriate nature to ensure that the MSA does not become a destination in its own right.

3.35 Paragraphs 40 to 46 of Circular 01/2008 set out guidance on the design of proposed MSAs. The Design and Access Statement demonstrates that the site of the proposed MSA has been carefully chosen and the buildings within have been well designed, positively embracing sustainability considerations and are sensitively located to ensure that any impact on sensitive receptors and the existing landscape features is minimal or can be mitigated. Furthermore it is apparent from the ES that when the proposed landscaping has matured it will result in a well integrated scheme which will have no significant impact on the surrounding landscape. It is considered that the proposed development is in accordance with paragraphs 40 to 46 of Circular 01/2008.

3.36 As set out in the Design and Access Statement, the vehicle access and circulation roads have also been designed in such a way to minimise congestion and risk of accidents to pedestrians and vehicle users. Parking facilities will also be providing in accordance with the recommended standards. One access will also be provided in accordance Circular 01/2008 and this will provide access for customers, staff, servicing vehicles and emergency vehicles.

3.37 In accordance with Circular 02/2007 the design team has been in detailed pre-
application discussions with the Highways Agency.

3.38 It is therefore considered that the development proposal is in accordance with this aspect of national planning.

3.39 In terms of Local Planning Policy relating to MSAs, it is important to note that although Policy T7 has been saved by the Secretary of State. This policy is split into two distinct parts, with the first part of the policy sets out the requirement for only one MSA within the District and the second part of the policy listing a number of criteria that proposals for MSAs will be assessed against.

3.40 Turning to the first part of the policy we consider that there a number of points here. These are as follows:-

- The date when policy T7 was saved;

- Needs for a facility or facilities; and

- The date of the Kirk Deighton appeal decision.

3.41 We will consider each of the above points in turn below.

**The date when policy T7 was saved**

3.42 The covering letter from the Yorkshire and Humber Government Office states that "the extension of saved policies listed in this Direction does not indicate that the Secretary of State would endorse these policies if presented to her as new policy. It is intended to ensure continuity in the plan-led system and a stable planning framework locally, and in particular, a continual supply of land for development".

3.43 The covering letter continues by stating that "following 27 September 2007 the extended policies should be read in context. Where policies were adopted some time ago, it is likely that material considerations, in particular the emergence of new national and regional policy and also new evidence, will be afforded considerable weight in decisions". The policy was saved prior to the release of Circular 01/2008
and it is considered that if the Circular was available in 2007 then the policy would not have been saved. It is considered that little or no weight should therefore be attributed to this policy on this basis alone.

**Needs for a facility or facilities**

3.44 The justification for the first part of Policy T7 (paragraphs 12.29 to 12.31) states that only one MSA will be permitted serving the A1(M) and this should be contingent upon a need being established which takes into account related facilities and proposals further afield which affect the strategic spacing of facilities.

3.45 The text continues by stating that in determining applications for new MSAs the local authority is expected to take into account the needs of motorway users which may or may not outweigh other material considerations. Each application must however be considered on its merits and MSAs are subject to the same restraint policies as other major developments. Where a proposed MSA is likely to have significant environmental effects, an Environmental Assessment will be required.

3.46 In light of the publication of Circular 01/2008 which sets out the spacing between MSAs's and the statements of the Highways Agency relating to need which are referred in chapter 4 of the ES it is apparent that there is a need for an additional MSA north of Wetherby. As only a small part of the length of the strategic highway network being upgraded lies outside Harrogate District it is clear that, based on need, there is likely to be a requirement for more than one MSA in the district. Consequently the first part of Policy T7, which indicates that only one MSA should be permitted within Harrogate District, is at best out of date and at worst irrelevant. Given the above it is considered that no weight should be given to this part of the policy.

**The date of the Kirk Deighton appeal decision**

3.47 It is important to note that the HDLP was adopted prior to permission being granted for the MSA at Wetherby (the HDLP was adopted in February 2001 with outline permission granted for the Wetherby MSA in September 2005). At the time of the adoption of the Local Plan there would have been a planning permission for the Barton MSA (the fixed north point - approved at appeal in February 1997) but HBC
would not have had a definitive indication of where the southern MSA was to be located. Therefore the policy was established on a spacing situation that included a number of assumptions. One of these assumptions was probably that there was a proposed MSA on the A1/M1 link road east of Leeds and given the distance between Barton and this proposed service area there would only be a need for one further MSA and, taking a mid point, this would have been within Harrogate District. As it transpires the Wetherby Services were approved and this happened to be just within Harrogate District rather than Leeds. It is apparent that when the policy was adopted the LPA did not envisage that an MSA would be constructed at Wetherby particularly as this would leave a need for an additional service area between the approved MSA at Barton and Wetherby. If they had foreseen the above circumstances then the LPA could not have ruled out a second MSA. Permission for the Wetherby MSA is therefore a material consideration which strongly indicates that the first part of Policy T7 should be put aside.

3.48 For all of the above reasons we consider that the first part of Policy T7 should be put aside.

3.49 The second part of Policy T7 sets out a range of site specific criteria. We will consider each of these criteria in turn below.

3.50 First criteria A of Policy T7 states that MSAs will need to meet minimum standards for parking and the other basic services necessary to serve the needs of motorway users. As set out in chapter 2 of the ES the proposal will meet the minimum parking standards as set out in Circular 01/2008 and will also provide the full range of services expected at a core MSA.

3.51 As set out previously all the facilities provided at the MSA will be those expected at such a facility. There will be no traditional retail facilities or other facilities designed to attract non motor related trade. Criteria B of Policy T7 is therefore met as this states that extraneous services and facilities should be excluded from proposed developments.

3.52 Criteria C states that developments will need to provide safe and convenient access without interfering with the free and safe flow of traffic on the motorway or local highway network. Chapter 5 of the ES confirms that the MSA has designed to ensure
that access to the site is safe and convenient. The site will be accessed by a new roundabout facility which will ensure that any disruption to the existing highway network is minimal. Further details in respect of access to the site and the impact on the strategic road network can be found in chapter 5 of the ES.

3.53 Criteria D states that the loss of the best and most versatile agricultural land should be minimised. Although some agricultural land will be lost, this will be kept to a minimum to ensure that the effect is negligible. Indeed this is one of the important aspects of this scheme as it proposes a junction facility thereby limiting the loss of agricultural land. Chapter 8 provides more details in respect of this issue and concludes that the loss of agricultural land would not be viewed as significant in national terms. The proposed development therefore meets this criterion.

3.54 There are no listed buildings within the immediate vicinity of the site therefore Criteria E is of no relevance to the proposed development.

3.55 Criteria F states that the existing landscape character of the surrounding area should be safeguarded and enhanced. As highlighted in chapter 9 the proposed development will have no harmful impact on the existing landscape and other visual resources. Furthermore the development proposal is accompanied robust landscaping measures and when mature these will result in a well integrated scheme which will not only have no significant impacts on the surrounding landscape and visual resources but in the longer term it will provide benefits in respect of overall tree cover and boundary screening. It is therefore considered that the proposal is in accordance with this criterion.

3.56 Full details of the effect that the development will have on the landscape and the landscaping measures proposed are set out in chapter 9 of the ES.

3.57 Chapter 10 of the ES establishes that there are no significant features of archaeological and cultural heritage on the site and as such the proposal is in accordance with criteria G of Policy T7 which seeks to safeguard sites of sites and features of archaeological or nature conservation interest.

3.58 Finally, criteria H of Policy T7 states that developments must not have an impact on residential amenity. There are a number of chapters of the ES which deal with this
matter, including chapter 6 on noise, chapter 7 on air quality and chapter 9 on visual and landscape impact. The scheme has been designed to ensure that there is no material impact on the nearest residential properties and the technical chapters to the ES confirm this. This criterion has therefore also been achieved.

3.59 Insofar as the policy remains relevant and up to date it is considered that the proposed development complies with Policy T7 of the HDLP.

**Protection of the Countryside**

**National Planning Policy**

**PPS1**

3.60 PPS1 was published in February 2005 and sets out the Government’s commitment to a planning system which creates sustainable communities and delivers sustainable developments. The Government’s main objectives include social progress which recognises the needs of everyone, effective protection of the environment and the maintenance of high and stable levels of economic growth and employment.

3.61 PPS1 recognises that planning should facilitate and promote sustainable and inclusive patterns of urban and rural development by making suitable land available for development in line with economic, social and environmental objectives to improve people’s quality of life as well as contributing to sustainable economic development and ensuring high quality development through good and inclusive design, and the efficient use of resources (paragraph 5).

3.62 Paragraph 19 of PPS1 states that planning authorities should seek to enhance the environment as part of development proposals and that significant adverse impacts on the environment should be avoided. Where this is not possible, planning authorities and developers should consider possible mitigation measures.

**PPG13**

3.63 PPG13 was published in 2001 and aims to integrate planning and transport at the
national, regional, strategic and local level and to promote more sustainable transport choices both for carrying people and for moving freight. The guidance also aims to promote accessibility to jobs and services.

**Regional Planning Policy**

3.64 Policy YH1 of the RSS (overall approach and key spatial priorities) states that growth and change will be managed across places and communities in Yorkshire and Humber in order to achieve sustainable development.

**Local Planning Policy**

3.65 Policy C2 (landscape character) of the HDLP states that development should protect existing landscape character. In locations where restoration of the landscape is necessary or desirable, opportunities should be taken for the design and landscaping of development proposals to repair or reintroduce landscape features, to the extent that this is justified by the effects of the proposal.

3.66 Policy SG3 (settlement growth: conservation of the countryside) of the HCS states that outside the development limits of settlements, land will be classed as countryside and there will be strict control over new development in accordance with national and regional planning policy protecting the countryside and Green Belt.

**Assessment**

3.67 MSAs provide an important function in keeping the country running by ensuring that freight is transported from source to destination and that business people as well as tourists can get to where they need to go. MSAs are therefore part of the jigsaw of provision need to keep the economy of the country going.

3.68 By their very nature, an MSA must be located near to the relevant motorway and to fulfil the identified need on this part of the roadway which is to be upgraded. The most appropriate location is normally therefore in open countryside.

3.69 It has been demonstrated in the previous subsection and within chapter 4 of the ES...
that there is a need for a MSA. This need amounts to very special circumstances which potentially can outweigh other policies such as the protection of open countryside for its own sake.

3.70 It has been demonstrated that the most appropriate geographical location for a new MSA servicing the length of the A1 to be upgraded is a point approximately midway between the approved Barton MSA and the existing Wetherby MSA, in an area which is open countryside. It is considered that the proposed site best meets this identified need.

3.71 Given the above significant attention has been paid to ensuring that the proposed MSA is well sited, of the highest quality design and located within ample landscaping therefore ensuring that the environmental impacts are, as far as reasonably possible, mitigated.

3.72 It is therefore considered that this policy objective has been fulfilled insofar as it is practical and reasonable to do so given that there is an established need for an additional MSA and this can realistically only be sited in the open countryside.

**Renewable Energy**

**National Planning Policy**

**Planning Policy and Climate Change supplement to PPS1**

3.73 In December 2007 the Government published the Planning Policy and Climate Change supplement to PPS1. This supplement builds on the guidance in PPS1 setting out how planning should contribute to reducing emissions and stabilising climate change.

3.74 In paragraph 30, the supplement states that planning authorities, developers and other partners in the provision of new development should engage constructively and imaginatively to encourage the delivery of sustainable buildings. Accordingly, planning policies should support innovation and investment in sustainable buildings and should not, unless there are exceptional reasons, deter novel or cutting-edge
developments. Planning authorities should help to achieve the national emissions from domestic and non-domestic buildings.

3.75 Paragraph 42 of the supplement states that planning authorities should expect new development to take account of landform, layout, building orientation, massing and landscaping to minimise energy consumption, including maximising cooling and avoiding solar gain in the summer; and, overall, be planned so as to minimise carbon dioxide emissions through giving careful consideration to how all aspects of development form, together with the proposed density and mix of development, support opportunities for decentralised and renewable or low-carbon energy supply.

PPS22

3.76 The objectives of PPS 22 are to integrate planning and renewable energy at the national, regional, strategic and local level to:

- Maintain reliable and competitive energy supplies;
- Improve the energy efficiency;
- Stimulate the development of new technologies to provide the basis for continuing growth of renewables in the longer term.

3.77 PPS22 states that regional planning bodies and local planning authorities should adhere to the following key principles (among others) in their approach to planning for renewable energy:

- Renewable energy developments should be capable of being accommodated throughout England in locations where the technology is viable and environmental, economic, and social impacts can be addressed satisfactorily.
- Regional spatial strategies and local development documents should contain policies designed to promote and encourage, rather than restrict, the development of renewable energy resources. Regional planning bodies and local planning authorities should recognise the full range of renewable energy
sources, their differing characteristics, locational requirements and the potential for exploiting them subject to appropriate environmental safeguards.

**Regional Planning Policy**

3.78 Policy YH2 (climate change and resource use) states that plans, strategies, investment decisions and programmes should help to meet the target of reducing greenhouse gas emissions in the region by encouraging better energy, resource, and water efficient buildings.

3.79 Policy ENV5 (energy) outlines the need to maximise improvements to energy efficiency and increases in renewable energy capacity. Developments should improve energy efficiency and maximise the efficient use of power sources by maximising the use of combined heat and power and promoting and securing greater use of decentralised and renewable or low-carbon energy. New developments of more than 1,000m² of non-residential floorspace should secure at least 10% of their energy from decentralised and renewable or low-carbon sources.

**Local Planning Policy**

3.80 Policy EQ1 (reducing risks to the environment) of the HCS seeks to reduce the risk to the environment and states that the design of all new development should seek to minimise the energy and waste consumption; the use of natural non-renewable resources; flood risk and waste. As such, all new development should attain BREEAM 'very good' standards.

**Assessment**

3.81 The accompanying Sustainability Statement provides further details on renewable energy, but in summary although the application is seeking outline planning permission, a BREEAM Assessment has been undertaken and the predicted energy requirement of the development calculated and in this light consideration has been given to various methods of generating 10% of the energy demand of the development from decentralised and low carbon sources.
3.82 Turning to the energy requirement the Sustainability Statement indicates that there is a number of decentralised and low carbon energy sources that could potentially be used to generate 10% of the developments energy requirements. These measures could include building integrated photovoltaic cells, building integrated solar thermal hot water, a wind turbine, building integrated air source heat pumps and a gas combined heat and power unit. These various measures need further investigation but it is apparent that the policy requirement can be achieved.

3.83 Turning to the BREEAM very good standard it is noted that the proposed scheme incorporates a number of measures to increase the sustainability of the development. These measures could potentially include such matters as managing the constructions of the project in a sustainable manner, designing the buildings to allow greater natural day lighting and minimise the water consumption across the development. A green roof will also be provided. The Sustainability Statement demonstrates that the BREEAM very good standard can be achieved.

3.84 It is considered that the proposed MSA is fully in accordance with national, regional and local guidance in relation to sustainability measures and renewable energy. Further comment on the sustainability of the development can be found in the accompanying Sustainability Statement.

Design Guidance

National Planning Policy

PPS1

3.85 Paragraphs 33 to 39 of PPS1 relate to the design of new buildings and state that high quality and inclusive design should be the aim of all those involved in the development process. This requires carefully planning high quality buildings and spaces that support the efficient use of resources. Although visual appearance and the architecture of individual buildings are clearly factors in achieving these objectives, securing high quality and inclusive design goes far beyond aesthetic considerations. Good design should:
• Address the connections between people and places by considering the needs of people to access jobs and key services;

• Be integrated into the existing urban form and the natural and built environments; and

• Consider the direct and indirect impacts on the natural environment.

3.86 LPAs should ensure that developments:

• Are sustainable, durable and adaptable and make efficient and prudent use of resources;

• Optimise the potential of the site to accommodate development, create and sustain an appropriate mix of uses (including incorporation of green and other public space as part of developments) and support local facilities and transport networks;

• Respond to their local context and create or reinforce local distinctiveness; and

• Are visually attractive as a result of good architecture and appropriate landscaping.

PPG13

3.87 Although the guidance does not specifically mention MSAs, it is of some relevance in relation to parking. Paragraphs 49 to 51 provide guidance on parking and state that developers should not be required to provide more spaces than they themselves wish, other than in exceptional circumstances. Developers should however provide designated parking spaces for disabled people in accordance with current good practice. Finally consideration must be given for the provision of motorcycle parking.
Circular 01/2008 - Policy on Service Areas and Other Roadside Facilities on Motorways and all Purpose Trunk Roads in England

3.88 As set out above at paragraph 3.11, Circular 01/2008 seeks to ensure that MSAs are designed to ensure safe traffic flow and pedestrian safety. In overall design terms, MSAs should:

- Respond sensitively to both the site and its setting, including the existing landscape and other physical features; create character and identity within the site by the careful design of spaces and buildings and the relationship between them; and minimise the visual impact of the development on its surroundings;

- Incorporate vehicle accesses and means of circulation that are safe, clear to motorists and minimise vehicle congestion;

- Be able to show that the proposal will cause no detriment to the safety or convenience of road users or those wishing to use the facility;

- Achieve building designs that take account of the needs of all users;

- Incorporate buildings that are safe, environmentally friendly and energy efficient so as to maximise sustainability and minimise environmental damage and waste;

- Ensure the sensitive design and siting of lighting schemes with the aim of minimising light pollution and light-spill onto adjacent roads, whilst ensuring that public areas are well lit; and

- In preparing the design for their lorry parking facilities, operators should give due consideration to the need for security, ensuring that there is adequate lighting and taking account of lines of sight from occupied buildings.
Regional Planning Policy

3.89 Policy YH6 of the RSS (local service centres and rural and coastal areas) states that rural areas will be protected and enhanced and that plans, strategies, investment decisions and programmes should achieve a high standard of design that protects and enhances settlement and landscape diversity and character.

Local Planning Policy

3.90 Policy HD20 (design of new development and redevelopment) of the HDLP states that proposals for new development should take into account, the following design principles:

- New buildings should make a positive contribution to the spatial quality of the area and their siting and density should respect the area’s character and layout;

- New buildings should respect the local distinctiveness of existing settlements and their landscape setting;

- New building design should respect, but not necessarily mimic, the character of their surroundings and, in important locations, should make a particular strong contribution to the visual quality of the area;

- The use and application of building materials should respect materials of neighbouring buildings and the local area;

- New development should be designed with suitable landscaping as an integral part of the scheme;

- Special consideration will be given to the needs of disabled and other inconvenienced persons, particularly in proposed developments to which there will be public access;

- New development should maximise the opportunities for conservation of
energy and resources through design, layout, orientation and construction; and

- New development should, through design, layout and lighting, pay particular attention to the provision of a safe environment.

3.91 The policy provides principles to help ensure that new development is not only well designed in itself, but also blends in well with its surroundings. The justification for the policy (paragraphs 6.80 to 6.85) states that the maintenance of high standards of design in new development is essential if the attractive character of Harrogate District is to be preserved and enhanced.

3.92 Policy SG4 (settlement growth: design and impact) of the HCS states that all development proposals in the district should comply with the following criteria:

- The scale, density, layout and design should make the most efficient use of land and be appropriate to the form and character of the settlement and/or landscape character;

- Visual, residential and general amenity should be protected and where possible enhanced; and

- There should be no loss of greenfield land unless justified by national planning policy, the Regional Spatial Strategy, this Core Strategy or a policy or proposal within the Local Development Framework.

3.93 Policy EQ1 (reducing risks to the environment) of the HCS seeks to reduce risks to the environment and states that the design of all new development should seek to minimise the energy and waste consumption; the use of natural non-renewable resources; flood risk and waste.

3.94 Policy EQ2 (the natural and built environment and green belt) of the HCS relates to the impact of developments on the natural and building environment and Green Belt and states that priority measures to protect and enhance the District’s natural and built environment include ensuring that new development incorporates high quality
locally distinctive design.

**Assessment**

3.95 The accompanying Design and Access Statement reviews the design of the proposed MSA in more detail but in summary, the development has been carefully sited and designed in order to ensure that the impact on the surrounding landscape is neutral.

3.96 The design of the building will ensure that the building materials used will respect the local area.

3.97 Vehicle access has also been carefully considered to ensure that means of circular are safe and that the risk of congestion is minimal. The design of the proposal will also ensure that there is no detrimental effect to the safety of road users or those wishing to use the facility.

3.98 The buildings have been designed to ensure that they are accessible for all users and measures will be taken to improve the sustainability of the built structures.

3.99 The proposed development will be integrated into the landscape through the planting of indigenous landscaping. Design solutions such as the introduction of a green roof will also help biodiversity and the ecology of the locality.

3.100 It is therefore considered that the development is fully in accordance with national, regional and local design guidance.

**Economic Guidance**

**National Planning Guidance**

3.101 In 2009 the Government published PPS4 which replaces PPG4, PPS6, PPG5 as well as elements of PPS7 and PPG13. Economic development is defined in the document as a development that achieves one of the following: provides employment opportunities; generates wealth or produces or generates an economic output or product
(paragraph 4).

3.102 PPS4 contains a number of policies, two of which are relevant on this occasion. Firstly Policy EC10 (determining planning applications for economic development) states that local planning authorities should adopt a positive and constructive approach towards planning applications for economic development and that planning applications that secure sustainable economic growth should be treated favourably (paragraph EC10.1). The policy continues by stating that all planning applications for economic development should be assessed against the following impact considerations:

- Whether the proposal has been planned over the lifetime of the development to limit carbon dioxide emissions, and minimise vulnerability and provide resilience to, climate change;

- The accessibility of the proposal by a choice of means of transport including walking, cycling, public transport and the car, the effect on local traffic levels and congestion (especially to the trunk road network) after public transport and traffic management measures have been secured;

- Whether the proposal secures a high quality and inclusive design which takes the opportunities available for improving the character and quality of the area and the way it functions;

- The impact on economic and physical regeneration in the area including the impact on deprived areas and social inclusion objectives; and

- The impact on local employment.

3.103 Secondly, Policy EC11 is concerned with determining planning applications for economic development (other than main town centre uses) that are not in accordance with an up to date development plan.

3.104 The policy states that in determining planning applications for economic development other than for main town centre uses which are not in accordance with the
development plan, local planning authorities should:

- Weigh market and other economic information alongside environmental and social information;

- Take full account of any longer term benefits, as well as the costs, of development, such as job creation or improved productivity including an wider benefits to national, regional or local economies; and

- Consider whether those proposals help to meet the wider objectives of the development plan.

**Regional Planning Policy**

3.105 Policy YH3 (working together) of the RSS states that plans, strategies, investment decisions and programmes should be based on an effective collaboration between areas within the region, particularly to support the renewal and regeneration of urban and rural areas.

3.106 Policy E1 (creating a successful and competitive regional economy) of the RSS states that in order to create a more successful and competitive offer, plans and strategies should help to deliver economic growth, restructuring and diversification. Plans should also help deliver investment in locations where it will have maximum benefit as well as providing a wide range of initiatives to help ensure a more diverse, competitive and successful economy in rural areas.

3.107 Policy E7 (rural economy) states that plans should strengthen the rural economy by facilitating the development of rural businesses in a way that supports rural diversification schemes which bring economic benefit.

**Local Planning Policy**

3.108 Policy JB1 (supporting the Harrogate District economy) of the HCS seeks to support the Harrogate district economy and states that the Borough Council will work with its partners and communities to maintain and enhance the economic role of the District
and will seek to support innovation and enterprise.

Assessment

3.109 It is considered that the proposal is fully in accordance with PPS4.

3.110 First in terms of EC10 it is considered that the proposal will meet all of the requirements of the policy for the following reasons:

- The first criteria of Policy EC10 states that proposals must be planned to respond to climate change. In this respect the development has been designed to include a number of environmental initiatives to minimise the impact of the proposed buildings upon the environment, which will ensure that the development is operated as sustainably as practically possible. In this regard it should be noted that the development has been designed to achieve BREEAM 'Very Good' standard. Further details in this respect can be found in the accompanying Design and Access Statement and the Sustainability Statement.

- Secondly, developments should be accessible by a choice of means of transport. By the very nature of an MSA it cannot be sited in a wholly sustainable location. However direct access to the site is available by car and every effort has been made to ensure that the development is accessible as possible by other modes of transport. These measures are set out in the Travel Plan which accompanies this ES.

- Thirdly, the proposal secures a high quality and inclusive design. Further details are contained in the accompanying Design and Access Statement, but it is considered that the development will be of the highest quality and will provide for the needs of all users of the facility.

- Finally, in terms of the impact on regeneration and local employment, it is considered that the proposed development will increase local employment. It is envisaged that the development will provide 200 permanent jobs once open which will be aimed at local people. These will help replace the jobs lost when the previous services closed on the A1 and will create significantly more
on top of this. In addition to this a number of jobs will be created during the
construction phase of the development and these temporary workers will
undoubtedly contribute to the local economy.

3.111 It is therefore considered that the proposal is in accordance with Policy EC10 of PPS4.

3.112 The RSS and the HCS provides broad brush guidance on strengthening the rural
economy and in this regard it can be seen that the development proposal will help
deliver investment which will ensure a more diverse, competitive and successful
economy in a rural area. In this regard the development proposal is consistent with
these elements of the development plan.

3.113 Policy EC11 of PPS4 indicates that developments should be in accordance with an up
to date development plan. The site specific element of the development plan does
not identify a site for a MSA although there is a policy which recognises a need for
such a facility. However the site specific element of the development plan is dated
and in relation to the provision of a MSA development, it predates the decision to
approve the Wetherby MSA. It can therefore only be given limited or no weight.
Nevertheless the development proposal will provide a number of long term benefits,
such as job creation and strengthening the regional and local economies.

Noise and Vibration Guidance

National Planning Policy

3.114 PPG24 was published in 1994 and although dated it remains a key consideration for
this development. The aim of this guidance is to provide advice on how the planning
system can be used to minimise the adverse impact of noise without placing
unreasonable restrictions on development. The planning system is required to locate
developments in the most appropriate locations. Where it is not possible to achieve a
separation of noise sensitive development from major sources of noise, local planning
authorities should consider whether it is practicable to control or reduce noise levels
through the use of conditions or planning obligations (paragraph 2).

3.115 Paragraph 10 states that much of the development which is necessary for the
creation of jobs and the improvement of essential infrastructure will generate noise. The planning system should not place unjustifiable obstacles in the way of such development.

3.116 Paragraphs 13 and 14 assess possible mitigation measures for noise and state that a number of measures can be introduced to control noise. Such measures should be proportionate and reasonable and may include the following: engineering, layout and administrative.

**Regional Planning Guidance**

3.117 There are no relevant policies contained in the RSS.

**Local Planning Guidance**

3.118 There are no relevant policies contained in the HDLP or HCS.

**Assessment**

3.119 The location of the site was chosen, in part, because it is well contained by physical features which will act as noise barriers and it is also separated from most noise sensitive receptors. Nevertheless noise survey and noise assessments have been carried out as part of the EIA process.

3.120 Further details in respect of the noise assessment can be found in chapter 6 but the technical noise assessment concludes that overall, with appropriate mitigation measures in place, the operational phase of the MSA will not have an adverse impact on the Noise Sensitive Receptors ("NSR").

3.121 The final details of plant to be installed at the MSA are not available, therefore noise limits have been recommended based on the existing background noise levels and Harrogate Borough Council criteria. Provided design and appropriate mitigation measures are incorporated then it is considered that the MSA plant will result in neutral impacts at NSR.
3.122 Typical construction and demolition working practices are unlikely to generate levels of vibration at local receptors above which cosmetic damage to structures would be expected. It is predicted that once the development is fully operational vibration impacts will be negligible.

3.123 Chapter 6 also reviews the impact of changes in traffic flows in the vicinity of the proposed MSA and the impact of the car parking activities. The results of the noise model concluded that there would be no change in the predicted noise levels at the nearest NSR when the MSA is operational compared to the predicted noise levels without the MSA.

3.124 Given the above, it is considered that the proposed development is fully compliant with the aims of objectives of PPG24 and will not have a significant impact on NSR, in particular the urban settlements at Baldersby Saint James and Melmerby and the houses and cottages to the west of the site.

**Air Quality Guidance**

**National Planning Policy**

3.125 PPS23 provides guidance on pollution and states that any impact on the quality of air and potential impacts arising from a development is capable of being a material planning consideration.

3.126 The document continues by stating that the existing and future air quality in an area is a key consideration. This includes any Air Quality Management Areas or other areas where air quality is likely to be poor. The findings of air quality reviews and assessments will be important in the consideration of local air pollution problems and the siting of certain types of development.

**Regional Planning Guidance**

3.127 There are no relevant policies contained in the RSS.
Local Planning Guidance

3.128 Policy SG4 (settlement growth: design and impact) states that visual, residential and general amenity should be protected and where possible enhanced.

Assessment

3.129 The potential for any impact on the air quality in the vicinity of the development has been considered for both the construction and operational phases and a full review of this can be found in chapter 7 of this ES.

3.130 In summary, chapter 7 concludes that there may be an impact on air quality during the construction phase of the development, as construction vehicles will be travelling to and from the site; however the number of construction vehicles, when compared with existing traffic flows, will be negligible. Therefore the development will not have any significant impacts.

3.131 Once MSA is operational it is considered that the development will not create any increase in traffic on the A1 / A61 and as such the only impact will be on the main junction, the slip roads, and on the A61 between the service area and the junction. There are no existing air quality sensitive receptors within 250m of any of these road links or within 250m of the site boundary; therefore the development will not have an adverse air quality impact.

3.132 Due to the location of the proposed development and given the distance of the development from the nearest potential receptors, it is concluded that the proposal will have a negligible or neutral air quality impact. Therefore the development is fully in accordance with the objectives of PPS23.

Agricultural Guidance

National Planning Policy

3.133 PPS7 states that 'where possible development should not take place on land in Grades 1-3a' (namely the best and most versatile). This statement also requires
assessment to take into account the impact of the proposed development on farm size, structure, building and fixed equipment.

**Regional Planning Policy**

3.134 Policy ENV7 (agricultural land) states that if development of agricultural land is required it should take place on poorer quality land wherever possible and appropriate.

**Local Planning Guidance**

3.135 There are no relevant policies contained in the HDLP or HCS.

**Assessment**

3.136 Chapter 8 of the ES assesses the likely impact on agriculture of the proposed MSA. The impact on agricultural considerations has been assessed both on an individual farm basis and in the wider context.

3.137 It is considered that the land required would be of the best and most versatile quality.

3.138 There would also be no access and severance issues attributable to the proposal and codes of good practice will be followed to minimise risk and protect the environment.

3.139 In national terms the loss of 5.17ha would not be significant. However, minimising total land take would help reduce the impact locally. In any case land that is regraded for environmental or construction purposes is not lost to agriculture. Reinstatement as carried out in line with the codes of good practice retains the land for future agricultural use. In general terms the land would be downgraded by one category if good practice is carried out for reinstatement.

3.140 The effect of the proposal on a national and local level would not be significant and it is therefore considered that the proposals are in accordance with PPS7 and the RSS.
Landscape and Visual Impact Guidance

National Planning Policy

3.141 Although the vast majority of PPS7 has now been superseded by PPS4, part of the document remains pertinent to this application. Paragraph 15 states that planning policies should provide a positive framework for facilitating sustainable development that supports traditional land-based activities and makes the most of new leisure and recreational opportunities that require a countryside location.

3.142 The paragraph continues by stating that planning authorities should continue to ensure that the quality and character of the wider countryside is protected and, where possible, enhanced.

Regional Planning Guidance

3.143 Policy ENV10 (landscape) states that the region should safeguard and enhance landscapes that contribute to the distinctive character of Yorkshire and the Humber. Plans, strategies, investment decisions and programmes should safeguard and enhance landscapes and related assets of regional, sub-regional and local importance.

Local Planning Guidance

3.144 HDLP Policy C2 (landscape character) states that development should protect existing landscape character. In locations where restoration of the landscape is necessary or desirable, opportunities should be taken for the design and landscaping of development proposals to repair or reintroduce landscape features, to the extent that this is justified by the effects of the proposal.

3.145 The justification behind the policy (paragraphs 3.18 and 3.19) states that in parts of the District not within an Area of Natural Beauty or District Park, there is still a need for a landscape restoration strategy, as within this area the landscape character is still reasonably strong and generally worthy of conservation, but the overall structure and individual features are in decline.
3.146 Policy SG3 of the HCS (conservation of the countryside, including Green Belt) states that outside the development and infill limits of the settlements listed in Policy SG2 of the Core Strategy, land will be classified as countryside and there will be strict control over new development in accordance with national and regional planning policy protecting the countryside and Green Belt.

3.147 Policy EQ2 of the HCS (the natural and building environment and Green Belt) states that subject to the District’s need to plan for new greenfield development, the landscape character of the whole District will be protected and where appropriate enhanced.

3.148 The HLCA was approved as Supplementary Planning Guidance in February 2004 and partitions the District into over 100 separate areas. The application site falls within Area 81 - Dishforth and Surrounding Farmland. This states that the A1 is a prominent feature that cuts through the character area and is highlighted as a result of linear planting which is associated with it.

**Assessment**

3.149 A landscape and visual impact assessment (LVIA) has been undertaken and is considered at chapter 9 of this ES. The assessment considers the effects of the development on landscape features, landscape character and visual amenity.

3.150 The scheme does not physically or visually impact on any landscape designation and the site is not allocated within the green belt.

3.151 The LVIA states that the proposed development has been shown to have no harmful impact on the landscape and visual resource of the study area.

3.152 The landscape assessment confirms that there is little requirement to provide screening around the site as the visual impact on residential receptors is limited. However there is a requirement for mitigation to integrate the proposal into the landscape and to retain the character of the site and surrounding area.

3.153 The landscape proposals for the site are in accordance with the local landscape
planning framework in terms of mitigation of the scheme and enhancement of the existing situation.

3.154 The introduction of indigenous planting as part of the mitigation and enhancement proposals will, once mature, have the potential to enhance the landscape quality of an area that is currently poorly vegetated.

3.155 In visual terms, the site has been shown to be well screened and visually unobtrusive, with a low number of visual receptors experiencing visual impacts as a result of the scheme. The proposed development is well located in the south-western quadrant of Baldersby Junction, between the A1 and A61 roads, with the Junction and roads providing substantial screening from adjacent receptors. Once the proposed site and A1 landscape planting schemes have matured, the site will be effectively screened from the surrounding areas and will visually integrate the buildings and associated infrastructure into its surroundings.

3.156 It is therefore considered that the proposal is fully in accordance with HDLP Policy C2 and HCS Policies SG3 and EQ2.

**Archaeology and Heritage Guidance**

**National Planning Policy**

3.157 PPS5 sets out planning policies on the conservation of the historic environment and states that those parts of the historic environment that have significance because of their historic, archaeological, architectural or artistic interest should be protected.

3.158 Policy HE9 (policy principles guiding the determination of applications for consent relating to all heritage assets) states that, "local planning authorities should seek to identify and assess the particular significance of any element of the historic environment that may be affected by the relevant proposal."

**Regional Planning Guidance**

3.159 Policy ENV9 (historic environment) of the RSS states that the region will safeguard
and enhance the historic environment, and ensure that historical context informs decisions about development and regeneration.

**Local Planning Guidance**

3.160 **HDLP Policy HD3** (control of development in conservation areas) states that development which has an adverse effect on the character or appearance of a conservation area will not be permitted. The Policy continues by stating that applications for development in or visually affecting conservation areas will be expected to contain sufficient information to allow a proper assessment of their impact on the character and appearance of the conservation area to be made.

3.161 **HDLP Policy HD6** (historic battlefield sites) states that development affecting historic battlefield sites will only be permitted where the proposal does not adversely affect the historic, archaeological and landscape interest of the site.

3.162 Policy HD7A states that development will not be permitted where it would adversely affect the character or setting of parks and gardens included in the English Heritage register of parks and gardens of special historic interest.

**Assessment**

3.163 The archaeological and cultural heritage assessment contained in chapter 10 examines the known archaeology and built heritage on the site and the within the wider area. The assessment considers the possible effects that the development will have upon archaeology and cultural heritage assets.

3.164 The archaeology and cultural heritage assessment concludes that there will be no change to the historic landscape as the majority of the surrounding area forms an enclosed landscape and the removal of a small section will not materially change this.

3.165 Whilst there are two World War II air crash sites close to the application site, there will be no impact on these. Similarly, the Conservation Area of Baldersby St James, would not be visually affected by the proposed development.
It is therefore considered that the proposal is in accordance with all relevant national, regional and local policies.

Ecology and Nature Conservation Guidance

National Planning Policy

PPS9 sets out planning policies on protection of biodiversity and geological conservation through the planning system. The guidance states that its broad aim is to ensure that planning, construction, development and regeneration should have minimal impacts on biodiversity and enhance it wherever possible.

In order to achieve this, the Government’s objectives for planning include promoting sustainable development by ensuring that biological and geological diversity are conserved and enhanced as an integral part of social, environmental and economic development.

One of the key principles of PPS9 is to ensure that the aim of planning decisions should be to prevent harm to biodiversity and geological conservation interests. Where granting planning permission would result in significant harm to those interests, local planning authorities will need to be satisfied that the development cannot reasonably be located on any alternative sites that would result in less or no harm. In the absence of any such alternatives, local planning authorities should ensure that, before planning permission is granted, adequate mitigation measures are put in place.

Regional Planning Guidance

Policy ENV8 (biodiversity) of the RSS states that the region will safeguard and enhance biodiversity and that developments will be required to retain and incorporate biodiversity.

Local Planning Policy

HDLP Policy NC4 (semi-natural habitats) states that outside designated sites,
development will not be permitted which would result in the loss of or damage to semi-natural habitats as they are considered to be important for nature conservation.

Assessment

3.172 Chapter 11 describes and evaluates the current nature conservation interest at the application site and assesses the potential impacts of the proposed development on ecological receptors.

3.173 Following comprehensive desktop and field surveys on the site, the impact of the development is thought to be slightly adverse at the highest but with mitigation most of the impacts can be reduced to neutral. The site is not identified as having any nature conservation or biodiversity designation. No rare or protected habitats will be affected.

3.174 The proposed development provides opportunities to enhance habitats for wildlife in a local context. Ecologically guided landscaping will also ensure that the development fits within the local landscape and additionally creates attractive surroundings for staff and visitors.

3.175 It is therefore considered that the proposal is in accordance with national and local planning guidance.

Drainage and Flood Risk Guidance

National Planning Policy

3.176 PPS25 was written in 2006 and provides guidance on development and flood risk. The aims of planning policy on development and flood risk are to ensure that flood risk is taken into account at all stages in the planning process to avoid inappropriate development in areas at risk of flooding, and to direct development away from areas at highest risk. Where new development is exceptionally necessary in such areas, policy aims to make it safe without increasing flood risk elsewhere and where possible aims to reduce flood risk overall.
3.177 PPS25 requires a flood risk assessment to consider all types of flooding, including fluvial (river), tidal (sea), groundwater, sewers, pluvial (surface water and overland flow), land drainage, and artificial sources (i.e. reservoirs, canals, water mains etc.). In assessing flood risk, PPS25 requires the impact of climate change to be taken into account, the vulnerability of the development to flooding to be considered, and whether the Sequential and Exception Test are required for development.

3.178 A sequential risk-based approach to determining the suitability of land for development in flood risk areas is central to the policy statement and should be applied at all levels of the planning process.

3.179 PPS25 also promotes the use of Sustainable Drainage Systems where practical.

**Regional Planning Policy**

3.180 Policy ENV1 (development and flood risk) states that areas for development must follow a sequential approach and should be in the lowest risk sites appropriate for the development.

**Local Planning Policy**

3.181 Policy EQ1 (reducing risks to the environment) of the HCS states that the design and subsequent operation of all new development should seek to minimise flood risk.

3.182 The North West Yorkshire Strategic Flood Risk Assessment (Harrogate Borough Council, 2006) directs development, where possible, to Flood Zone 1. The Strategic Flood Risk Assessment details that there are generally no flood risk development constraints in Flood Zone 1. However, drainage arrangements for proposed developments should be considered carefully, to ensure there is no increase in flood risk elsewhere as a result of development in Flood Zone 1.

**Assessment**

3.183 All issues associated with drainage and flood risk have been thoroughly considered as part of the EIA process. Chapter 12 of the ES deals with this matter and concludes
that developing the site will increase the rate of surface water runoff from the site and change pluvial flow routing. Once operational the development will also generate sewerage and consequently an appropriate drainage system will be installed to cater for the operational phase of the proposed development. The proposed drainage system will take into account Environment Agency guidelines on surface water runoff, and restrict surface water runoff to the accepted greenfield rate. The drainage system will also implement Sustainable Drainage Systems, as promoted by PPS25. It is therefore considered that the proposal is in accordance with PPS25 and Policy EQ1 of the HCS.

**Geology and Hydrogeology**

**National Planning Policy**

3.184 PPS23 was published in 2004 and states that the risks presented by any given level of contamination will vary according to the use of the land and a wide range of other factors, such as the underlying geology of the site.

**Regional Planning Guidance**

3.185 There are no relevant policies contained in the RSS.

**Local Planning Guidance**

3.186 There are no relevant policies contained in the HDLP or HCS.

**Assessment**

3.187 Baseline conditions of the geology and hydrogeology in and around the development site have been established. The risk to geology and minerals is considered to be very low as no features of geological importance (SSSIs or RIGSs) or potentially workable sand and gravel deposits are located close to the site.
Conclusions

3.188 Overall it is considered that the proposal is compliant with national, regional and local planning policy insofar as these relate to the development proposal and where it is practically possible to comply with policy considerations and this will be demonstrated in the remaining chapters of this ES.
4.0 The Need for an Additional MSA

Introduction

4.1 This chapter reaffirms the identified need for an additional MSA to serve this stretch of the A1.

Guidance on Need

4.2 Before reviewing the need for an additional MSA, it is necessary to consider the guidance that applies to all the potential sites on this length of the A1 which is being upgraded to motorway standard, as well as the proposed development. This consists of the key planning documents reviewed in chapter 3 of the ES but most notably the advice contained in the Department of Transports (“DfT”) Circular 01/2008. This Circular provides detailed guidance for service areas and other roadside facilities and as such is the most pertinent document for this application.

4.3 Paragraph 52 of Circular 01/2008 states that policy on the spacing of roadside facilities on motorways needs to balance the road safety benefit of allowing drivers regular access to services with the potential detriment to safety, traffic flow and the environment of development alongside motorways and at motorway junctions.

4.4 Drivers are encouraged to stop and take a break of at least 20 minutes every two hours. Drivers of HGVs are required by drivers’ hours’ legislation to take a break at specified intervals.

4.5 Circular 01/2008 indicates that the existing network of MSAs has evolved around a long-standing spacing criterion of 30 miles (paragraph 55). This was based on the premise that drivers should be given the opportunity to stop at intervals of approximately half an hour. However, at peak hours, on congested parts of the network, travel between MSAs can take longer than 30 minutes. Further, 56mph speed limiters for Heavy Goods Vehicles limit the distance they can travel in 30 minutes to a maximum of 28 miles. The guidance therefore concludes that any new application for a core MSA should be considered on the basis of a 28 mile distance, or
30 minutes' travelling time, from the previous core MSA, whichever is the lesser. The absolute minimum acceptable distance between facilities on the same route is 12 miles (paragraph 56).

4.6 To summarise, proposed MSAs should be considered on the basis of achieving a distance of 28 miles from the previous MSA, with the minimum distance between facilities being 12 miles.

4.7 Circular 01/2008 states that where there is a clear and compelling need and safety case can be demonstrated, applications for an infills service area may be considered subject to certain criteria (paragraph 58). Planning authorities therefore will be expected to have considered at least:

- The distance to adjoining roadside facilities;

- Evidence that nearby existing roadside facilities are unable to cope with the need for services;

- Evidence of a genuine safety-related need for the proposed facilities; and

- Whether the roadside facility is justified by the type and nature of the traffic using the road.

4.8 Circular 01/2008 goes on to indicate that where infill sites are proposed, the Government’s preference will be that they should be located roughly halfway between MSAs, unless it can be shown that an off-centre location is more suitable in either operational, safety or spatial planning terms or in its ability to meet a particular and significant need. Where the spacing between two existing MSAs is 40 miles or greater, any infill site that might be permitted will also be designated as a Core site and must provide the required range of facilities.

4.9 Where the spacing between existing Core sites is less than 40 miles Circular 01/2008 states that any infill site may take the form of a Rest Area (paragraph 60) which will provide some though not necessarily all of the range of facilities of a Core MSA (paragraph 61). There is however the opportunity for a Rest Area to provide all of the
services expected at a Core MSA.

4.10 We have assessed the development proposal against the criteria set out in paragraph 58 below.

**The Distance to Adjoining Roadside Facilities**

4.11 The need for an additional MSA has previously been considered in some detail in the various public inquiries held in relation to the provision of such facilities on the A1.

4.12 The need for an additional MSA was initially discussed at a Public Inquiry determined in August 2005 (Planning Inspectorate References APP/N4720/V/02/1084989, APP/N4720/V/03/1118337, APPN2739/V/02/1084991, APP/E2734/A/95/254959, APP/E2734/V/02/1099827, APP/E2734/V/02/1099828, APP/E2734/V/02/1084990 and APP/E2734/A/97/28555) which granted permission for the MSA at Kirk Deighton (now Wetherby Services).

4.13 In reviewing need for a MSA at Kirk Deighton, the Inspector states (paragraphs 3.3.54 to 3.3.59) that permitting a MSA at Kirk Deighton would result in it being 41 miles from Barton and in the opinion of Moto's own witness this would be too far and that the choice of Kirk Deighton would result in the need for a further MSA being required to the south of Barton (paragraph 3.3.59). The relevant extract of the Inspector's Report can be found at **Appendix 4.1**.

4.14 As permission was subsequently granted for a MSA at Kirk Deighton and the distance between the two MSAs is approximately 40 miles it is clear that there is a need for an additional MSA as indicated by the Inspector in 2005.

4.15 The Highways Agency have more recently advised Hambleton District Council and Harrogate Borough Council (February 2009) in relation to proposals for a new MSA at Kirby Hill and Leeming Bar (a copy of this letter of advice can be found at **Appendix 4.2**) they again confirmed that the distance between the existing MSA at Kirk Deighton and the approved Barton MSA to be approximately 40 miles and that in taking account of Circular 01/2008 they state:
"The fact that the existing Leeming Bar services will be bypassed by Phase 1 of the A1 upgrade scheme, the Highways Agency would advise the Local Planning Authorities that there will be a requirement for a new core MSA between the existing facilities at Wetherby and Barton when Phase 1 of the upgrade is open to traffic."

4.16 The advice continues by stating that:

"In conclusion, given the policy limits that MSAs should not be less than 12 miles apart the Highways Agency hereby inform both Harrogate Borough Council and Hambleton Borough Council that on completion of Phase 1 of the A1 Dishforth to Barton upgrade (currently expected to be in 2012) there will be a requirement for a new core MSA between Boroughbridge and Leeming. The mid point, and hence the preferred location in policy terms, is in the vicinity of Sinderby, on the Hambleton / Harrogate District boundary."

4.17 The Statement of Case (Appendix 4.3) submitted by the Highways Agency for the Public Inquiry into the two proposed MSAs at Kirby Hill and Leeming Bar again supports the need for an additional core MSA between Kirk Deighton and Barton.

4.18 Based on the distances to adjoining facilities it is therefore clear that there is a need for an additional MSA on this part of the A1 and furthermore it is appropriate that the new MSA should be located as centrally as possible.

4.19 It is considered that the application site is well placed to meet the need and will fill the gap in provision identified by the Highways Agency.

**Evidence that Nearby Existing Roadside Facilities are Unable to Cope with the Need for Services**

4.20 A number of visits have been made to the Wetherby MSA on different days of the week and at different times of day and from these it appears that the MSA is overtrading. It has been noted that the main amenity building has been busy with good footfall and periods of queuing. Vehicles also have to circulate the car parking area in order to find a parking space. The HGV parking area has also appeared congested and overcrowded at the time of our site visits with vehicles having to
stand and wait before they can enter the parking area which results in further congestion along the access roads. The trading and operational performance of the Wetherby MSA would suggest that there is a need for an additional MSA to serve the needs of the users of the motorway.

4.21 The A1 is also designated as an abnormal load route and Circular 01/2008 (paragraph 87) states that the minimum requirement at MSAs is for the provision of a single parking bay capable of accommodating abnormal loads. Wetherby MSA does not provide parking for an abnormal load and indeed there are no formal facilities for the parking of abnormal loads on any part of the A1 or A1(M) in North Yorkshire. The need to provide for abnormal loads further suggests that there is a requirement for a suitably designed MSA serving this part of the A1(M).

Evidence of a Genuine Safety-Related Need for the Proposed Facilities

4.22 The existing A1 route has a poor accident record with continuing safety, congestion and journey time reliability problems. The objectives of the proposed A1(M) upgrade improvement are to reduce current high levels of accidents, congestion and enhance journey time reliability by upgrading the existing A1 to dual 3-lane motorway standard. As the A1 is being upgraded there is little point in examining the safety record of the present A1 in detail. However the contribution that driver fatigue can make to accident incidents remains highly material.

4.23 The need to address driver fatigue in general and in particular on the part of the A1 to be upgraded is dealt with in two documents the first is the DfT report entitled ‘Road Safe Research Report Number 57 - Effectiveness of Motorway Service Areas in Reducing Fatigue Related and Other Accidents’ and the second is the Highways Agency’s note summarising the historic accident record on the A1 to the north and south of Dishforth Interchange.

4.24 The DfT published a report in April 2006 entitled ‘Road Safe Research Report Number 57 - Effectiveness of Motorway Service Areas in Reducing Fatigue Related and Other Accidents’ which assessed the effectiveness of MSAs in reducing road-traffic crashes. This found that there was a 22% reduction in accidents on the 10 miles of motorway following a MSA compared to the 10 miles prior.
4.25 This demonstrates that MSAs do reduce accidents on the motorway and that in light of this the proposal will help reduce accidents, especially as the current distance between MSAs on this part of the A1 is approximately 40 miles.

4.26 As part of the forthcoming Public Inquiry into applications for MSA’s at sites at Kirby Hill and Leeming Bar, the Highways Agency has prepared a note summarising the historic accident record on the A1 to the north and south of Dishforth Interchange (found at Appendix 4.4).

4.27 The report states at paragraph 1.18 that overall, there were 460 accidents on the A1 and A1(M) in North Yorkshire between 2005 and 2008 where contributory factors were recorded. “Of these 371 were slight, 78 were serious and 11 were fatal. In 30 cases, fatigue was recorded as very likely to have caused the accident, and in an additional 19 cases fatigue was a possible cause of the accident”.

4.28 Paragraphs 1.19 to 1.21 continue by stating that:

"Nationally, fatigue was recorded as being a factor in the cause of 6% of accidents on motorways in 2008 (Road Casualties Great Britain: 2008, Article 4 “Contributory Factors”). This is three times the percentage caused by fatigue on ‘A’ roads and six times the percentage caused by fatigue on ‘B’ roads and other roads.

Fatigue was a greater problem on the section of the A1 between Wetherby and Barton, particularly when the likelihood of it being a possible or very likely cause of the accident is taken in to account.

On the Wetherby to Dishforth section of the route, overall fatigue was recorded as a factor in 13% of accidents; it was stated as a very likely cause in 9% of accidents. On the Dishforth to Barton section of the route, overall fatigue was recorded as a factor in 9% of accidents; it was stated as a very likely cause in 5% of accidents.”

4.29 It is therefore clear that there is a safety related need for an additional MSA on this part of the A1.
Whether the Roadside Facility is Justified by the Type and Nature of the Traffic Using the Road

4.30 With regard to the traffic characteristics, the existing A1 is an all-purpose two lane dual carriageway carrying in the region of 45-54,000 vehicles per day with approximately one-quarter being heavy goods vehicles, with large volumes of long-distance movements. It is therefore clear that there is a need to serve these road users in accordance with the guidance set out in Circular 01/2008.

Summary and Conclusions

4.31 In summary it is evident that there is a clear and compelling need and safety case for the provision of a new MSA to serve the stretch of carriageway to be upgraded between the approved Barton facility and the existing MSA at Kirk Deighton, Wetherby.
5.0 Traffic and Transport

Introduction

5.1 This section of the ES has been prepared by Steer Davies Gleave and assesses the potential impact of traffic on the strategic and local highway network as a result of the construction of the proposed Ripon Services.

5.2 The Impact Assessment report prepared as part of the planning application for the site, is contained at Appendix 5.1, and should be read in conjunction with this section of the ES.

Scope of Assessment

5.3 The scope of the network assessed within the Impact Assessment extends to:

- The proposed site access roundabout junction on the A61;
- The upgraded A1(M) eastern and western dumbbell roundabouts at the A61 Baldersby Gate junction; and
- The merging and diverging arrangements on the upgraded A1(M) at the Baldersby Gate junction.

5.4 The assessment of the impact of development traffic has been undertaken for the weekday morning and evening peak hour periods of 0800-0900 and 1700-1800 using traffic flow data supplied by the Highways Agency for the 2012 and 2022 traffic scenarios following completion of the A1(M) upgrade.

Environmental Effects

5.5 The Institute of Environmental Management and Assessment ("IEMA") Guidelines for ES recommend a number of environmental effects which should be considered as
potentially significant wherever a new development is likely to give rise to changes in traffic flows. The relevant effects in relation to this development are considered to be:

- **Severance** – potential effects on local community’s associated with severance caused by an increase in traffic levels during construction and operation of the development;

- **Driver Delay** – delays to non-development traffic on the strategic and local highway network;

- **Accidents and Safety** – potential effects on road safety associated with personal injury accidents caused by increases in road traffic as a consequence of development;

- **Hazardous Loads** – impact of movement of such loads as a consequence of this development; and

- **Dust and Dirt** – the effects of dust and dirt during the construction processes on site.

5.6 This assessment has been prepared to reflect the above potential effects taking into account the likely affected sensitive receptors and groups, in the vicinity of the site, which may be sensitive to changes in traffic volume and traffic composition as a result of the proposed development proposal.

**Legislation and Policy**

5.7 The following key policies and guidance notes relating to development, and specifically in some cases to MSA’s, have been referred to in the preparation of this assessment and the associated Impact Assessment:

- Department for Transport: Circular 01/2008 "Policy on Service Areas and Other Roadside Facilities on Motorways and All Purpose Trunk Roads in England";
Department for Transport: Circular 02/2007 “Planning and the Strategic Road Network”;  

Department for Transport: Guidance on Transport Assessment (March 2007);  

Design Manual for Roads and Bridges: TD 9/93 “Highway Link Design”;  

Design Manual for Roads and Bridges: TD 22/06 “Layout of Grade Separated Junctions”; and  

Design Manual for Roads and Bridges: TD 16/07 “Geometric Design of Roundabouts”.

5.8 Full summaries of the relevant parts of the policies are contained within Section 2 of the Impact Assessment report.

5.9 In particular the DfT’s ‘Guidance on Transport Assessment’ document recommends that the environmental impacts of ‘any significant development’ should be addressed by an ES. Indicating that the impacts should be assessed in accordance with:

- Circular 02/99: Environmental Impact Assessment (1999); and

Consultation

5.10 As part of the community consultation exercise, local residents in the area of the proposed Ripon Services were contacted through distribution of a leaflet detailing the proposed development, inviting residents to ‘Have their Say’ through return of an appended feedback form or via the public exhibition held to present the proposal.

5.11 The public exhibition was held at the Mission Rooms, Baldersby, North Yorkshire on Tuesday 16th March 2010 between 1600-1900 hours. The exhibition presented detailed plans of the development proposal and provided an open forum for local
residents to have their say.

5.12 A full summary of the outcome of the consultation exercise is contained within the Statement of Community Involvement report submitted in support of the planning application for the proposed Ripon Services.

**Methodology**

5.13 The proposed Ripon Services is a junction based MSA facility serving the upgraded A1(M), north and southbound carriageways, via the A61 and the Baldersby Gate junction which itself will be significantly upgraded as part of the A1(M) upgrade, including the provision of dumbbell roundabouts either side of the Motorway.

5.14 It is proposed that there will be one access to the site via a four arm roundabout with the A61, sited approximately 150 metres to the south west of the proposed western A1(M) dumbbell roundabout. The fourth arm at the junction will provide a maintenance access road to the balancing pond being constructed as part of the A1(M) upgrade scheme.

5.15 The methodology used in this assessment focuses on the potential effects on the local and strategic road network and the users of those roads.

5.16 The IEMA guidelines recommends that highway links should be assessed when traffic flows are predicted to increase by more than 30% as a result of development, or when ‘sensitive areas’ are affected by increases of at least 10%.

5.17 It should be noted that increases below 10% are generally considered to be insignificant given the daily variations in background traffic which occur, which may result in traffic flows fluctuating by more than this amount. Changes in traffic flows below this level are therefore assumed to result in no discernible or significant environmental effects.

**Data Gathering**

5.18 The Highways Agency were able to provide weekday morning and evening traffic
flows, along with 12 hour average daily traffic flows, for the upgraded A1(M) including the Baldersby Gate junction for the 2012 year of opening and 2022 design year. In addition, the Highways Agency provided full layout drawings for the A1(M) upgrade proposals including details of the proposed junction arrangements for the A61 Baldersby Gate dumbbell roundabouts, and associated merges and diverges. They also provided details of the Compulsory Purchase and Side Road Orders for the A1(M) upgrade. Full details of all the data provided by the Highways Agency for use in undertaking the assessment of traffic impact are contained within the Impact Assessment report.

**Scoping Report**

5.19 A Scoping Report for this ES Chapter was submitted to the Highways Agency and North Yorkshire County Council on 17th February 2010, the Scoping Report is included within the Impact Assessment report.

5.20 Comments were received from JMP on behalf of the Highways Agency on 7th March 2010, and from North Yorkshire County Council on the 22nd March 2010 and these too are included within the Impact Assessment report.

**Assessment Methodology**

5.21 Having established and agreed the highway junctions and merges/diverges which needed to be included within the impact assessment, and identified the effects that were to be considered as part of the analysis and the magnitude of the effect (i.e. the level of change), it was then necessary to determine whether any given effect is significant.

5.22 There are a number of ways of interpreting whether or not an effect is significant and the IEMA states that:

"For many effects there are no simple rules or formulae which define the thresholds of significance and there is, therefore, a need for interpretation and judgement on the part of the assessor, backed up by data and quantified information wherever possible."
5.23 In evaluating the significance of the traffic and transport effects of the proposed Ripon Services four criteria have been used, namely:

- The type of effect i.e. whether it is Positive, Negative or Neutral;
- The probability of the effect occurring based on the scale of Certain, Likely or Unlikely;
- The number of receptors e.g. population exposed to each effect on a scale of High (regional level of higher), Medium (district level) or Low (local population); and
- The magnitude of the effect in relation to the frequency of the disturbance using the scale of High, Medium or Low.

5.24 Professional judgement is used to assess the findings in relation to each of these criteria to give an assessment of significance for each effect. The overall significance of each effect is considered to be ‘Significant’ or ‘Not Significant’.

**Baseline Conditions**

5.25 Full details of the baseline traffic conditions are contained within the Impact Assessment report, and these include:

- A description of the highway network in the vicinity of the site (post completion of the A1(M) Dishforth to Barton Upgrade Scheme Phase 1 (Dishforth to Leeming Bar));
- Traffic flows (applicable to the year of opening of the A1(M) improvement scheme in 2012); and
- Future year traffic flows (2022 applicable to ten years from year of opening of the A1(M) improvement scheme).
5.26 The vast majority of traffic associated with any services originates on that part of the strategic road network which it is designed to serve, in this case primarily the upgraded A1(M) with an acceptance that traffic on the A61 and the Local Access Road ("LAR") will also use the facility.

5.27 In effect MSA traffic is simply traffic that is already passing the site and simply breaks its journey to make use of the facilities provided. Given that this is an MSA aimed primarily at the A1(M) the majority of the ‘generated’ traffic will be passing by the site on the Motorway, but it is clear that given it is a junction MSA it will also accommodate some local road traffic on the A61 and LAR, although once again this traffic will already be passing by or close to the site.

5.28 In effect nearly all the development related traffic already exists on the network in the vicinity of the site and is simply diverted into the site either from the strategic road network (A1(M)) or the local road network (A61 and LAR).

**Accident Records**

5.29 Constructed in the 1950’s and early 60’s, the existing A1 fails to meet present day standards for layout and alignment. There are a high number of sub-standard accesses, central reserve crossings and local road junctions. Slow moving agricultural vehicles use the route to enter and exit farms and fields adjoining the A1. The route has a poor accident record with continuing safety, congestion and journey time reliability problems. The objectives of the proposed A1(M) upgrade improvement are to reduce current high levels of accidents, congestion and enhance journey time reliability by upgrading the existing A1 to dual 3-lane motorway standard.

5.30 Given this at the outset it was considered inappropriate to consider the historic accident record on the A1 prior to the commencement of the Phase 1 upgrade as it will have little bearing on this part of the network once the motorway is open. In addition, the existing provision at the Baldersby Gate junction with the A61 consisted of staggered crossroads priority junctions on both sides of the A1, facilitating access to and from the A1 north and southbound, and as part of the A1(M) upgrade these junctions will be upgraded to roundabout junctions on either side of the A1(M) served by a single over bridge, in effect a dumbbell roundabout junction. Clearly then any historic accident record at the Baldersby Gate junction will have little bearing on the
future operation of the junction.

5.31 Given the significant changes in the strategic and local road network associated with the upgrade of the A1(M) there is little merit in undertaking a detailed analysis of the historic accident record in the vicinity of the site and this exercise has therefore not been undertaken.

5.32 As part of the forthcoming Public Inquiry into applications for MSA’s at sites at Kirby Hill and Leeming Bar, the Highways Agency has prepared a note summarising the historic accident record on the A1 to the north and south of Dishforth Interchange, and consideration of this document has been provided in the Impact Assessment.

Sensitive Receptors

5.33 In terms of defining ‘sensitive receptors’, in accordance with the IEMA guidelines, whilst no junction accident blackspots have been identified in the vicinity of the proposed development site, another measure of ‘sensitivity’ can be junction capacity.

5.34 In order to assess the impact of Ripon Services on the capacity of junctions in the immediate vicinity of the site, an assessment has been undertaken of the peak hour ‘turn in’ rates for the proposed MSA, based on the peak hour flows for the A1(M), A61 and LAR following completion of the A1(M) upgrade in 2012 and a period 10 years hence.

5.35 Full details of the operational testing undertaken are contained within the Ripon Services Impact Assessment report, whilst a summary is provided in the Operational Phase section of the Identification of Impacts part of this ES.

Identification of Impacts

5.36 The main objective of this chapter of the ES is to assess the impact of the proposed Ripon Services, during both the construction and general operation stages of the development, on the junctions and merges/diverges of the strategic and local road network in the vicinity of the site.
**Construction Phase**

5.37 It is anticipated that the construction phase of the MSA will take approximately 12 to 18 months to complete. The site is sufficiently large and the majority of the construction materials will be stored on site, reducing the amount of construction related delivery traffic to and from the site, from off site storage areas. The impact of construction traffic on the surrounding network will be minimised by careful on and off site management and by reducing the need to import or export materials/spoil.

5.38 It is envisaged that one of the first tasks will be to construct the proposed site access four arm roundabout junction and associated realignment of the A61 mainline carriageway which will be provided to facilitate access to the site for construction traffic. This construction phase would require a traffic management plan to be implemented along this short section of the A61 which would be agreed with North Yorkshire County Council prior to works commencing, although given that the site access roundabout can be built ‘off line’, then the impact on the A61 traffic during construction would be minimal.

5.39 Following the construction of the site access roundabout, to form a suitable construction access to the site the MSA itself can be developed. It is envisaged that the internal road layout will be laid out in the first instance followed by the construction of the buildings and finally laying out of the formal car parks.

5.40 Vehicles speeds on site will be controlled by means of a site wide speed limit and wheel washing will be undertaken on all HGV’s departing the site.

5.41 It is anticipated that the methodology for the management of construction traffic on the public highway will be agreed with North Yorkshire County Council and the Highways Agency. However, given the location of the site adjacent to the Strategic Road Network i.e. the A1(M), it is not envisaged that formalising designated haul routes to the site for construction traffic would be necessary, and there should be no need to limit the delivery times of plant and materials to site compounds and areas of ongoing work.

5.42 Given the proximity of the site to the Strategic Road Network, no specific capacity assessment of the impact of construction traffic has been undertaken. However, the
construction agreement referred to above could readily make reference to a management strategy to ensure that the arrival/departure of construction vehicles at the site does not lead to issues such as queuing on the adjacent highway network.

5.43 The location of the site and the proximity to the A1(M) will ensure that impacts and affects of construction traffic on local residential areas will be minimal.

**Operation Phase**

5.44 The impact of peak hour traffic flows related to vehicles forecast to call in at Ripon Services during the morning and evening peak hour periods from the local and strategic highway network, has been assessed on the operation of the key junctions and merges and diverges in the vicinity of the site. In addition, daily traffic flows for scenarios both with and without development traffic have been calculated to enable noise and air quality assessments to be undertaken.

5.45 Peak hour and Annual Average Daily Traffic (AADT) 12 hour flows have been obtained from JMP Consultants Ltd related to the assessment of the scheme for the A1(M) Dishforth to Leeming Improvement Scheme, including those traffic flows through the A61 Baldersby Gate junction. JMP Consultants Ltd, on behalf of the Highways Agency, provided the forecast data for the Baldersby Gate junction for the year of opening of 2012 and for a scenario 10 years after opening in 2022. This data has been used as the basis for the operational assessments.

5.46 The flows in Table 5.1 show the two-way 12 hour AADT and two-way 24 hour AADT for the A1(M) and A61 (to the west of the western dumbbell) following the A1(M) upgrade for a base opening year of 2012 and a base design year of 2022.
| Table 5-1: Two way 12 and 24 hour AADT - A1 and A61 |
|-------------------|---------------|---------------|
|                   | 2012          | 2022          |
| A1(M) at Baldersby Gate junction |               |               |
| AADT12            | 58,019        | 63,838        |
| AADT24            | 66,772        | 73,414        |
| A61 (west of Baldersby Gate junction) |               |               |
| AADT12            | 12,343        | 13,395        |
| AADT24            | 14,195        | 15,404        |

5.47 Table 5.2 presents the typical daily composition of HGVs on the A1(M), northbound and southbound, and on the A61 (west of the Baldersby Gate junction), eastbound and westbound, following the A1(M) upgrade for a base opening year of 2012 and a base design year of 2022.

| Table 5-2: Daily composition of HGVs - A1 and A61 |
|-------------------|---------------|---------------|
|                   | 2012          | 2022          |
| A1(M) at Baldersby Gate junction |               |               |
| Northbound        | 23%           | 20%           |
| Southbound        | 23%           | 20%           |
| A61 (west of Baldersby Gate junction) |               |               |
| Eastbound         | 12%           | 10%           |
| Westbound         | 7%            | 5%            |

5.48 Tables 5.3 and 5.4 present the directional peak hour flows through the Baldersby Gate junction on the A1(M) and A61 (to the west of Baldersby Gate junction) respectively following the A1(M) upgrade for a base opening year of 2012 and a base design year of 2022.
### Table 5-3: A1(M) Peak hour flows 2012 and 2022

<table>
<thead>
<tr>
<th></th>
<th>AM Peak</th>
<th>PM Peak</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Northbound</td>
<td>Southbound</td>
</tr>
<tr>
<td><strong>Opening Year – 2012</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Light Vehicles</td>
<td>1,593</td>
<td>1,604</td>
</tr>
<tr>
<td>Heavy Vehicles</td>
<td>537 (25%)</td>
<td>383 (19%)</td>
</tr>
<tr>
<td><strong>Design Year – 2022</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Light Vehicles</td>
<td>1,839</td>
<td>1,845</td>
</tr>
<tr>
<td>Heavy Vehicles</td>
<td>518 (22%)</td>
<td>368 (17%)</td>
</tr>
</tbody>
</table>

### Table 5-4: A61 (west of Baldersby Gate Junction) peak hour flows - 2012 and 2022

<table>
<thead>
<tr>
<th></th>
<th>AM Peak</th>
<th>PM Peak</th>
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<tbody>
<tr>
<td></td>
<td>Eastbound</td>
<td>Westbound</td>
</tr>
<tr>
<td><strong>Opening Year – 2012</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Light Vehicles</td>
<td>530</td>
<td>268</td>
</tr>
<tr>
<td>Heavy Vehicles</td>
<td>73 (12%)</td>
<td>26 (9%)</td>
</tr>
<tr>
<td><strong>Design Year – 2022</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Light Vehicles</td>
<td>604</td>
<td>299</td>
</tr>
<tr>
<td>Heavy Vehicles</td>
<td>69 (10%)</td>
<td>19 (6%)</td>
</tr>
</tbody>
</table>

### Turn in Rate Assessment

5.49 The following turn in rates have been applied to the peak hour flows on the A1(M), A61 and LAR mainline flows to calculate the likely traffic generation of the site. The turn in rates are detailed in the Impact Assessment report, and are consistent with the rates required by the Highways Agency at MSA’s previously considered along this stretch of the M1 and A1(M). In addition, in order to ensure a robust assessment of the potential impact of the MSA, further analysis was undertaken using higher turn in rates, as indicated in Table 5.5, these rates are in accordance with a briefing note prepared by JMP Consultants Ltd on behalf of the Highways Agency considered at the
2002/03 Public Inquiry into MSA proposals in West and North Yorkshire.

Table 5-5: Turn in rates

<table>
<thead>
<tr>
<th></th>
<th>Turn In Rate</th>
<th>Sensitivity Test Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1(M) – Same Side northbound</td>
<td>8%</td>
<td>15%</td>
</tr>
<tr>
<td>A1(M) – Far Side southbound</td>
<td>8%</td>
<td>10%</td>
</tr>
<tr>
<td>Local Road Network (A61 and LAR)</td>
<td>4%</td>
<td>4%</td>
</tr>
</tbody>
</table>

5.50 The full details of the operational assessments on the dumbbell roundabouts and the site access roundabout junction are included within the Impact Assessment for the site. However, in summary, the analysis demonstrates that traffic diverting to the MSA from the A1(M), A61 and LAR can comfortably be accommodated by the site access junction and the Baldersby Gate dumbbells following the A1(M) upgrade. The junctions were tested for the year of opening of 2012 and a future year of 2022 ten years from opening. The analysis clearly demonstrates that no highway improvement measures are required to mitigate the reassignment of traffic flows related to the provision of the Ripon Services in the future design year at any of the junctions assessed.

5.51 As part of the A1(M) upgrade the merge/diverge arrangements at the A61 Baldersby Gate junction are being upgraded and will comprise standard simple taper merges and diverges on each of the entries/exits from the Motorway. Clearly the provision of the Ripon Services will increase the diverge and merge movements taking place, and the impact of this needs to be assessed. The full details of the merge/diverge assessments undertaken at the Baldersby Gate junction are included within the Impact Assessment report, however, the analysis clearly shows that the proposed A1(M) merge and diverge arrangements to/from the A61 Baldersby Gate dumbbell junction will continue to operate satisfactorily and will be adequate to accommodate the level of traffic predicted following the development of the MSA in both the 2012 year of opening for the scheme and the 2022 design year.

**Site Sustainability**

5.52 It is well established that carbon emissions caused by personal transport are second
only to those generated directly by the use of energy to heat and power buildings. However, through the provision of alternative transport modes and minimised reliance on the private car for commuters, the overall environmental impact of transport related to development can be significantly reduced.

5.53 By its very nature Ripon Services will cater for visitors arriving by private car, coach, and HGV and clearly there is little merit in trying to target these genuine users of the site. However, measures can be implemented for employees of the site that promote the use of sustainable means of transport to/from the site via schemes which include, for instance, enhanced public transport provision and car sharing schemes.

5.54 The site has been designed giving consideration to the following over-arching sustainable transport aims:

- To maximise public transport access to/from the development for all staff based journeys;

- To minimise single occupancy private car use amongst staff by promoting realistic alternatives such as a car sharing scheme;

- To provide a safe and friendly pedestrian environment within the development that facilitates walking to the main buildings from the car parks;

- To provide cycle facilities such as cycle parking, lockers, showers etc for staff to allow committed, commuter cyclists to cycle to the development; and

- To provide employees with up-to-date information on the facilities/services available to them to allow them to make informed travel choices to/from Ripon Services.

5.55 A dedicated pedestrian concourse area will be provided to allow visitors safe and easy access to the front of the food court building once they have parked. In addition, there will also be direct pedestrian routes through the main car park at the front of the building leading to the concourse area, along with routes from the HGV Park, at the rear of the main buildings, from the Coach Park, and from the abnormal load
parking bay all of which lead to the concourse area fronting the food court building and hotel.

5.56 The development will provide facilities for the committed staff cyclists, with the aim of encouraging cycling for travel to/from the site by providing secure cycle racks along with showers, changing facilities and lockers in line with BREEAM requirements.

5.57 Parking facilities generally on the site are designed to accommodate customer demand and are generally segregated by vehicle category. At the same time all car parks provide direct, easy and uninterrupted pedestrian access to the food court building and hotel. The Coach Parking area is separate to the main private car and Caravan Parking area, with coach passengers being able to walk to the food court building without crossing any roads.

5.58 An employee Travel Plan has been prepared in support of the site that provides a framework of measures to promote sustainable travel initiatives that will reduce the reliance on private car vehicle trips to and from Ripon Services by staff.

Parking Assessment

5.59 A parking assessment has been undertaken to determine the level of free short term parking for all classes of vehicle to be provided at the Ripon Services, in accordance with Annex B of Circular 01/08. Full details of the assessment are contained within Section 5 of the Impact Assessment report. In summary, Table 6 provides a breakdown of the minimum provision required. The parking requirements have been established for vehicles attracted to the MSA from the A1(M) mainline flows for the design year flows of 2012.

5.60 Whilst the identified provision in Table 5.6 accords with the 2012 year of opening requirements for car parking provision associated with the service facilities and the additional provision of the lodge, an area for the potential future provision of approximately 40 spaces to allow for background traffic growth to 2022, should this be required, has been identified within the Section 5 of the Impact Assessment report (Figure 5.1).
Table 5-6: Parking requirements

<table>
<thead>
<tr>
<th>Vehicle Type</th>
<th>Parking Spaces Proposed - 2022</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cars (disabled)</td>
<td>293 (15)</td>
</tr>
<tr>
<td>Heavy Goods Vehicles</td>
<td>74</td>
</tr>
<tr>
<td>Coaches</td>
<td>15</td>
</tr>
<tr>
<td>Caravans (disabled)</td>
<td>9 (0)</td>
</tr>
<tr>
<td>Motorcycles</td>
<td>10</td>
</tr>
<tr>
<td>Abnormal Loads</td>
<td>1</td>
</tr>
</tbody>
</table>

**Abnormal Loads**

5.61 In accordance with Circular 01/08, parking facilities suitable to accommodate abnormal load vehicles should be provided for the purpose of statutory rest breaks or escort handover. The minimum requirement for the provision of a single bay capable of accommodating abnormal loads up to 30 metres rigid length, 6.1 metres wide and 150,000kg total weight. A suitable loading bay for a vehicle of this size has been provided within the site layout.

5.62 In relation to the impact of abnormal load vehicles on the adjacent highway network a number of long and wide vehicles exist in AutoTrack. Swept path analysis has been undertaken to assess the ability of an abnormal load to enter and exit the proposed MSA via the proposed Baldersby Gate dumbbell roundabouts, the site access roundabout and through the internal road layout. The following vehicle sizes have been assessed:

- A long and thin wind turbine blade/bridge beam transporter;
- A short and wide wind turbine nacelle transporter; and
- A hypothetical 30 metre long by 4.0 metre wide articulated vehicle.

5.63 It has been demonstrated that vehicles 01 and 02 work satisfactorily with neither the wheels or the loads oversailing the kerblines, whilst vehicle 03 works with the load
(not the wheels) oversailing the kerblines at various pinch points through the Baldersby Gate dumbbell junctions, the site access junction and internal roads of the site. Full details of the swept path analysis undertaken is contained in Section 4 of the Impact Assessment report.

**Mitigation**

5.64 Mitigation measures have been identified in relation to potential traffic effects during the construction and operation phase of the proposed MSA and are presented in the Table 5.7.

<table>
<thead>
<tr>
<th>Effect</th>
<th>Mitigation Measure</th>
<th>Extent to which effects mitigated*</th>
<th>Monitoring requirements</th>
<th>Mechanism by which mitigation may be secured</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Construction Phase</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Construction vehicles could carry mud and debris onto the strategic and local highway network</td>
<td>Wheel washing facilities to be installed on the site access road</td>
<td>Fully</td>
<td>None</td>
<td>Planning condition</td>
</tr>
<tr>
<td>Effect of abnormal delivery loads on traffic flow</td>
<td>Abnormal load escorts and deliveries during night/quiet periods</td>
<td>Substantially</td>
<td>None</td>
<td>Agreement with Highways Agency, North Yorkshire County Council and local Police</td>
</tr>
<tr>
<td>Effect of abnormal loads on the highway infrastructure i.e. overrun</td>
<td>Reinstatement works will be carried out to verges affected</td>
<td>Fully</td>
<td>None</td>
<td>Agreement with North Yorkshire County Council</td>
</tr>
<tr>
<td>Impact on local road traffic flows on local roads</td>
<td>Traffic management, specific routes will be defined for movement of construction vehicles</td>
<td>Partially</td>
<td>None</td>
<td>Traffic Management Plan agreement with North Yorkshire County Council</td>
</tr>
<tr>
<td>Possible effect on road safety due to increased size and</td>
<td>Specific routes will be defined for movement of construction vehicles</td>
<td>Substantially</td>
<td>None</td>
<td>Traffic Management Plan agreement with North Yorkshire County Council</td>
</tr>
</tbody>
</table>

Reference: PG/ML/1076309/R004pg
<table>
<thead>
<tr>
<th>Volume of vehicles on the highway network</th>
<th></th>
<th></th>
<th></th>
<th>Yorkshire Council</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Operation Phase</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Need to obtain a satisfactory permanent access to the site</td>
<td>Provision of a four arm roundabout on the A61 to the south west of the Baldersby Gate westbound dumbbell</td>
<td>Substantially</td>
<td>None</td>
<td>Planning Condition and Section 278 Agreement with North Yorkshire County Council and the Highways Agency</td>
</tr>
</tbody>
</table>

NB – Key to predicted success of mitigation:

- Fully: impact fully mitigated and no adverse effects predicted
- Substantially: mitigation would be largely successful at reducing adverse effects. Some effects possible
- Partially: mitigation would be successful at reducing adverse effects but some effects likely

## Residual Impacts

### Severance

5.65 Severance is the perceived division that can occur within a community when it becomes separated by a traffic artery. The effect of the development on severance of local roads is considered to be ‘not significant’ in relation to the proposed Ripon Services development.

### Driver Delay

5.66 Delays to non-development traffic can occur on the strategic and local highway network due to the additional traffic generated by the development. The guidelines note that these additional delays are only likely to be significant when the traffic on the network in the study area is already at, or close to, the capacity of the system.
5.67 Despite the fact that some localised delays may occur during construction and the delivery of any abnormal loads to the site, the operational assessment has demonstrated that the local highway network has sufficient capacity and will not be adversely affected during traditional peak hour times.

5.68 Traffic movements associated with the development during construction, such as the delivery and removal of materials and construction of the site access roundabout could be managed to avoid conflicting with the peak periods on the network.

5.69 The effect of driver delay is considered to be ‘not significant’ in relation to the MSA development proposal.

**Pedestrian Delay and Amenity**

5.70 Pedestrian delay is defined as changes in the volume, composition or speed of traffic that may affect the ability of people to cross roads. Pedestrian amenity is broadly defined as the relative pleasantness of a journey, and is considered to be affected by traffic flow, traffic composition and pavement width/separation from traffic.

5.71 Due to the location of the proposed MSA in relation to local towns and villages, the effect of pedestrian delay and amenity is considered to be ‘not significant’.

**Fear and Intimidation**

5.72 The scale of fear and intimidation experienced by pedestrians is dependant on the volume of traffic, its HGV composition, its proximity to people or the lack of protection caused by such factors as narrow pavement widths.

5.73 Given that the site will not generate additional traffic in it’s own right and the location of the proposed MSA in relation to local towns and villages, the effect of traffic in relation to fear and intimidation is considered to be ‘not significant’.

**Accidents and Safety**

5.74 The objectives of the proposed A1(M) upgrade improvement are in part aimed at
reducing current high levels of accidents, in addition the existing junction provision at the Baldersby Gate junction with the A61 will be upgraded to roundabout junctions on either side of the A1(M) served by a single over bridge, in effect a dumbbell roundabout junction.

5.75 Given this at the outset it was considered inappropriate to consider the historic accident record on the A1 prior to the commencement of the Phase 1 upgrade as it will have little bearing on this part of the network once the motorway is open, although clearly it is envisaged that upgrading the A1 to Motorway Standard will result in a significant improvement on this part of the network.

5.76 Clearly the provision of Ripon Services has the potential to reduce fatigue related accidents on the Motorway and again it is envisaged this would be a significant benefit for this part of the road network. Although this has to be off set by the fact that drivers will have to leave the Motorway, negotiate the new improved A61 junction and the site access roundabout and later rejoin the Motorway. All of these manoeuvres increase the risks of accidents occurring, although the junctions have been designed in accordance with the Design Manual for Roads and Bridges and the site access roundabout has been subject to a Stage 1 Road Safety Audit to identify any inherent road safety issues and sure they are designed out.

5.77 Whilst the provision of the Services will help to reduce the likely incidence of driver fatigue accidents, and could therefore be considered a significant benefit, the potential for accidents at the A61 Baldersby Gate junction and the site access junction, means that on balance, the effect on traffic in relation to Accidents and Safety is considered to be ‘not significant’.

**Hazardous Loads**

5.78 It is not anticipated that the construction process will require the carriage of material listed in ‘The Carriage of Dangerous Goods in the UK’. If these materials are identified as being required during the construction phase, the legal requirements associated with their transit will be enforced.

5.79 Hazardous load vehicles accessing the MSA when it is fully operational will already accord with the relevant legal requirements prior to transit on the strategic or local
road network. Therefore, the effect of hazardous loads is considered to be ‘not significant’.

**Dust and Dirt**

5.80 The effects of dust and dirt will be dependant on the management of the construction processes on site. HGVs could potentially cause dust and dirt from the site to be carried onto the local road network which would be addressed by the measures identified in the mitigation table above.

5.81 The effect of dust and dirt is considered to be ‘not significant’ in relation to the MSA during the construction or operation phase.

**Cumulative Impacts**

5.82 Cumulative impacts are those that result from incremental changes caused by other past, present or reasonably foreseeable actions together with the development proposal for the MSA.

5.83 Clearly the upgrade of the A1 will have an impact on traffic flows on the A61 in the vicinity of Ripon Services. In assessing the impact of traffic associated with the MSA we have considered traffic flow scenarios following completion of the A1(M) upgrade in the year of opening of 2012 and a future year design year of 2022. Given this and the fact that there are no other actions likely to impact significantly on traffic flows in the vicinity of the site it is considered that the cumulative impacts relating to traffic resulting from the proposed MSA have been satisfactorily addressed.

**Summary and Conclusions**

5.84 The provision of Ripon Services as a core junction MSA to the south west of the A61 Baldersby Gate junction is deliverable without constraint and could be available for operational use within one year of planning consent, and in line with the completion of the current A1(M) upgrading works in the vicinity of this junction. The proposal provides an immediate replacement for other roadside facilities that are closing as part of the A1 upgrading.
5.85 The assessment has shown that the provision of a junction MSA at this location can be adequately accommodated within the upgraded junction infrastructure of the Baldersby Gate junction. It has also been demonstrated that suitable access can be provided into the MSA from the A61 via a new four arm roundabout sited approximately 150 metres south west of the western dumbbell roundabout of the Baldersby Gate junction.

5.86 This assessment concludes that the construction of the MSA would result in some increase in traffic levels on the upgraded A1(M) merges and diverges on the approach to the A61 Baldersby Gate junction and through the A61 dumbbell roundabouts. However, detailed operational assessment has confirmed that these changes can be satisfactorily accommodated and will not lead to any traffic capacity issues either in the 2012 year of opening or the 2022 design year including the reassignment of development related traffic.

5.87 Traffic generated during the operation of the MSA would not result in any significant effects on sensitive local receptors or groups.

5.88 No significant environmental impacts have been identified resulting from traffic and transport movements associated with the construction and operation of the proposed MSA at Baldersby Gate.

References

- Department for Transport: Circular 01/2008 “Policy on Service Areas and Other Roadside Facilities on Motorways and All Purpose Trunk Roads in England”

- Department for Transport: Circular 02/2007 “Planning and the Strategic Road Network”

- Department for Transport: Guidance on Transport Assessment (March 2007)

- Design Manual for Roads and Bridges: TD 9/93 “Highway Link Design”
• Design Manual for Roads and Bridges: TD 22/06 “Layout of Grade Separated Junctions”

• Design Manual for Roads and Bridges: TD 16/07 “Geometric Design of Roundabouts”

• Institute of Environmental Assessment: Guidelines for the Environmental Assessment of Road Traffic (1993)
6.0 Noise and Vibration

Introduction

6.1 This chapter will assess the potential noise and vibration impacts of the proposed Ripon Services. This chapter identifies the potential noise and vibration impacts associated with the proposed development and sets out the scope and methodology for assessing the potential impacts.

6.2 The proposed scheme is to redevelop the site to provide motorway services on the northbound carriageway of the A1 which is currently undergoing improvements to upgrade the road from dual carriageway to motorway. Chapter 2 provides details of the proposed scheme. The application site boundary and location is shown in Figure 1.1. The outline masterplan is shown in Figure 2.1.

Scope of Assessment

6.3 This assessment establishes representative existing baseline noise levels and assesses the potential noise and vibration impacts of the proposed Ripon Services upon existing noise sensitive receptors and those proposed at the hotel to be constructed as a part of the motorway services. Where necessary, mitigation measures are recommended to appropriately manage any potential adverse impacts.

6.4 Baseline noise measurements were undertaken within the proposed development site and at locations representative of the nearest noise sensitive receptors.

6.5 The potential impact of construction noise was assessed using the relevant guidance methodologies, including BS 5228: 2009 ‘Code of Practice for construction and open sites.’

6.6 The impacts due to changes in traffic flow, as a consequence of the proposed scheme have been assessed in accordance with the Design Manual for Roads and Bridges, Volume 11, Section 3, Part 7 HA 213/08; where the road traffic noise levels have been determined in accordance with the Department of Transport’s document.
“Calculation of Road Traffic Noise”.

6.7 The operation of the Ripon Services has been assessed using guidance contained with BS 4142 ‘Method for rating industrial noise affecting mixed residential and industrial areas’, BS 8233:1999 ‘Sound Insulation and noise reduction for buildings’, and the World Health Organisation ‘Guidelines for Community Noise’. Where necessary mitigation measures are recommended to manage the potential noise and vibration impact of the scheme, as appropriate.

6.8 At this stage of the development, the details of any fixed plant are yet to be determined; therefore this will be addressed at a later stage. However as a part of this assessment, noise limits have been determined based on existing background noise levels. These noise limits will be taken into consideration when choosing and specifying individual items of plant to ensure that they will be unlikely to cause unacceptable adverse impact on the nearest sensitive receptors.

6.9 The detailed acoustic design of any of the building facades is outside the scope of this assessment.

6.10 The following sections of this chapter contain descriptions of the measurement work undertaken, the results and a discussion of the relevant guidance.

6.11 First the planning context is presented, whilst the next section provides details of the assessment methodologies and significance criteria. The existing noise climate within the site is then described, followed by an assessment of the potential impacts of construction and operation of the Ripon Services. The next section suggests mitigation measures to minimise the potential adverse noise impacts associated with the development. The residual impacts of the scheme once the mitigation measures have been taken into account are then identified. Finally a summary and conclusions are set out. Appendix 6.1 provides a glossary acoustic terminology used in this chapter.
Legislation and Policy

National Policy

6.12 The following documents have been referred to as part of this assessment. Further details about the guidance documents can be found below.

- PPG24 – 'Planning and Noise'; (1994)
- BS 4142:1997 - 'Method of Rating Industrial Noise Affecting Mixed Residential and Industrial Areas';
- BS 5228:2009 – 'Code of Practice for Noise and Vibration Control on Construction and Open Sites';
- BS 6472:2008 'Guide to Evaluation of Human Exposure to Vibration in Buildings';
- World Health Organization ("WHO") 'Guidelines for Community Noise' (1999);
- Draft Institute of Acoustics ("IoA")/Institute of Environmental Assessment ("IEMA") 'Guidelines for Noise Impact Assessment', and subsequent amendments;(2002)
- Design Manual for Roads and Bridges ("DMRB") Volume 11 Section 3 Part 7 Highways Agency ("HA") 213/08 'Noise and Vibration'; (2008)
- Transport Analysis Guidance ("TAG") Unit 3.3.2 – The Noise Sub-Objective – Department of Transport ("DoT") November 2006;
- Calculation of Road Traffic Noise – DoT 1988;

• BS 7445 2003 ‘Description and measurement of environmental noise’.

**Regional and Local Planning Policy**

6.13 The following Regional and Local Plans were reviewed as part of the scoping assessment:

• Yorkshire and Humber Regional Spatial Strategy;

• Harrogate Local Plan; and

• Harrogate Core Strategy.

6.14 Whilst there are no specific regional or local planning policies relevant to noise from the type of proposed development. The above national policies provide generic advice and guidance on noise appropriate to the proposed scheme.

**Consultation**

6.15 As part of the scoping assessment the Environmental Health Department at HBC were consulted. They provided AECOM with a copy of their Noise Design Advice Document. For New Industrial or Commercial Use near to Residential Use the following advice states:

“Developers should carry out an assessment in accordance with BS 4142 to determine the rating level of the new development. It is recommended that during normal daytime hours (07:00 to 23:00 hours), the BS 4142 rating level, measured over 1 hour, should be 5 dB below the background (LA90). During the night-time period (2300 to 0700), the BS 4142 rating level, measured over 5 minutes should be 5 dB below the background (LA90)”
6.16 The document also states the noise levels specified below should not be exceeded.

<table>
<thead>
<tr>
<th>Room/Area</th>
<th>$L_{Aeq}$ (16 hr)</th>
<th>$L_{Aeq}$ (8 hr) 23.00-07.00</th>
<th>$L_{A1}$ (15 min) 23.00-07.00</th>
<th>$L_{Amax}$ 23.00-07.00</th>
</tr>
</thead>
<tbody>
<tr>
<td>Living Rooms/Studies</td>
<td>35 dB</td>
<td>xxxxx</td>
<td>xxxxx</td>
<td>xxxxx</td>
</tr>
<tr>
<td>Gardens</td>
<td>55 dB</td>
<td>xxxxx</td>
<td>xxxx</td>
<td>xxxx</td>
</tr>
<tr>
<td>Bedrooms</td>
<td>xxxxx</td>
<td>30 dB</td>
<td>45 dB</td>
<td>55 dB</td>
</tr>
</tbody>
</table>

Note - Taken from Appendix 1 Noise Design Advice, HBC

6.17 In email correspondence with Mark Lee, Area EHO at HBC has also confirmed the proposed noise monitoring locations ‘appear reasonable ....but ensure you take account any residential planning permissions in the area which may as yet not have been carried out and the effect of the A1 and topography’.

6.18 Noise sensitive locations further away from the proposed site and the A1 and thus having lower background levels may be affected more than similar properties nearer to the proposal but with higher background noise levels.

6.19 The HBC EHO also confirmed acceptance of the use of BS 4142 methodology as part of the noise assessment, although strictly this scheme falls outside the intended scope of the standard and its use will have to be justified in the final assessment; which will also incorporate other criteria such as World Health Organisation guidelines. Mr Lee also advised that, if applicable, any likely peaks need to be assessed and not averaged away particularly during the night time when sleep disturbance is the primary consideration.

6.20 The planning permissions granted prior to the date of this report in the vicinity of the proposed site have been reviewed. No residential planning permissions have been granted in close proximity to the site.

**Methodology**

6.21 Between the quietest audible sound and the loudest tolerable sound, there is a ten million to one ratio in sound pressure (measured in Pascal’s, Pa). Because of this wide range, a noise level scale based on logarithms is used in noise measurement
called the decibel (dB) scale. Audibility of sound covers a range of approximately 0 to 140 dB.

6.22 The human ear system does not respond uniformly to sound across the detectable frequency range and consequently instrumentation used to measure noise is weighted to represent the performance of the ear. This is known as the ‘A weighting’ and annotated as dB LA.

6.23 The effects of noise on man can be divided into two categories, physiological damage and annoyance. The physiological aspects of noise include hearing damage, sleep disturbance, and stress effects; whilst annoyance includes speech and activity interference and interference with well-being.

6.24 Potential impacts during the key phases of development may include an increase in noise levels as a result of construction activity and increased traffic generation. Increased traffic noise from the access road is potentially the most significant impact. Table 6.2 shows typical sound levels experienced in common environments.

<table>
<thead>
<tr>
<th>Typical noise level, dB LA</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Threshold of hearing</td>
</tr>
<tr>
<td>30</td>
<td>Rural area at night, still air</td>
</tr>
<tr>
<td>40</td>
<td>Public library Refrigerator humming at 2 m</td>
</tr>
<tr>
<td>50</td>
<td>Quiet office, no machinery Boiling kettle at 0.5 m</td>
</tr>
<tr>
<td>60</td>
<td>Normal conversation</td>
</tr>
<tr>
<td>70</td>
<td>Telephone ringing at 2 m Vacuum cleaner at 3 m</td>
</tr>
<tr>
<td>80</td>
<td>General factory noise level</td>
</tr>
<tr>
<td>90</td>
<td>Heavy goods vehicle from pavement Powered lawn mower, operator’s ear</td>
</tr>
<tr>
<td>100</td>
<td>Pneumatic drill at 5 m</td>
</tr>
<tr>
<td>120</td>
<td>Discotheque – 1 m in front of loudspeaker</td>
</tr>
<tr>
<td>140</td>
<td>Threshold of pain</td>
</tr>
</tbody>
</table>
The noise level at a measurement point is rarely steady, even in rural areas, and varies over a range dependent upon the effects of local noise sources. Close to a busy motorway, the noise level may vary over a range of 5 dB, whereas in a suburban area this may increase up to 40 dB or more due to the multitude of noise sources in such areas (cars, dogs, aircraft etc.) and their variable operation. Furthermore, the range of night-time noise levels will often be smaller and the levels significantly reduced compared to daytime levels. When considering environmental noise, it is necessary to consider how to quantify the existing noise (the ambient noise) to account for these second to second variations.

An indicator that is widely accepted as reflecting the underlying background noise level is the $L_{A90}$ index. This is the noise level exceeded for 90% of the measurement period and generally reflects the noise level in the lulls between individual noise events. Over a 1-hour period, the $L_{A90}$ will be the noise level exceeded for 54 minutes.

The equivalent continuous A-weighted sound pressure level, $L_{Aeq}$, is the single number that represents the average sound energy measured over a period. $L_{Aeq}$ is the sound level of a notationally steady sound having the same energy as a fluctuating sound over a specified measurement period. It is commonly used to describe environmental noise from individual sources that vary in level over their operational cycle.

The $L_{Amax}$ measurement indicator is the maximum instantaneous sound pressure level attained during the measurement period, measured with ‘Fast’ response setting of the sound level meter. It is most commonly used to assess potential night-time sleep disturbance.

Human subjects, under laboratory conditions, are generally only capable of noticing changes in steady levels of greater than 3 dB. It is generally accepted that a change of 10 dB in an overall, steady noise level is perceived to the human ear as a doubling (or halving) of the noise level. (These findings do not necessarily apply to transient, non-steady or intermittent noise sources).
Construction Noise Assessment Methodology

6.30 Noise levels generated by demolition and construction activities are regulated by a code of practice and subject to Local Authority control. Advice is contained within British Standard BS 5228: 2009 ‘Code of practice for noise and vibration on construction and open sites’ which came into force on 1st January 2009. However at the moment the existing 1997 version is still officially approved under section 71 of the Control of Pollution Act 1974 via The Control of Noise (Code of Practice for Construction and Open Sites) (England) Order 2002.

6.31 BS 5228-1: 2009 ‘Code of practice for noise and vibration on construction and open sites’ contains an updated database on the noise emission from individual items of equipment and activities and routines to predict noise from demolition and construction methods to identified receptors. The prediction method gives guidance on the effects of different types of ground, barrier attenuation and how to assess the impact of fixed and mobile plant.

6.32 Construction noise levels have been estimated using this standard. Although short-term peak events may occur during construction, calculated noise has been presented as the continuous equivalent noise level over 10 hours during the working day (denoted as $L_{Aeq,10hr}$), to allow comparison against the pre development ambient levels.

6.33 Construction work of any type that involves heavy plant activities generates a significant amount of noise and can lead to high levels of complaints if sensitive scheduling and control is not exercised. The effects on the nearby Noise Sensitive Receptors ("NSRs") of the construction of the proposed development will depend on the specific construction activity and the proximity of local residents. Disturbance due to construction noise from a scheme of this sort, although it may be significant, is usually short-term since the period of construction is relatively limited and normally reversed once the noisy parts of the construction phase are complete.

6.34 BS 5228: 2009 also provides guidance on possible significant of effects thresholds at dwellings (Page 117). Based on this guidance the daytime construction impacts definitions of Table 6.3 will be used to determine the significance of construction noise.
Table 6-3: Construction impact definitions (daytime)

<table>
<thead>
<tr>
<th>Impact</th>
<th>Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Negligible:</td>
<td>Generation of daytime facade noise levels that are below 55 dB $L_{A_{eq}, 10hr}$</td>
</tr>
<tr>
<td>Slight:</td>
<td>Generation of daytime facade noise levels that are in the range of 55 to 65 dB $L_{A_{eq}, 10hr}$</td>
</tr>
<tr>
<td>Moderate:</td>
<td>Generation of daytime facade noise levels that are in the range of 65 to 75 dB $L_{A_{eq}, 10hr}$</td>
</tr>
<tr>
<td>Major</td>
<td>Generation of daytime facade noise levels in excess of 75 dB $L_{A_{eq}, 10hr}$</td>
</tr>
</tbody>
</table>

**Operational Noise Assessments**

**WHO Guidance**

6.35 The WHO ‘Guidelines for Community Noise’ report for external daytime environmental noise levels (in a garden, for example) that;

"During the daytime, few people are seriously annoyed by activities with $L_{A_{eq}}$ levels below 55 dB; or moderately annoyed with $L_{A_{eq}}$ levels below 50 dB....."

6.36 For night-time noise sources the WHO guidelines provide a precautionary night-time (23.00-07.00) noise level of 45 dB $L_{A_{eq}, 8h}$ ‘outside bedroom windows’ (for a reasonably steady noise source) and on a sleep disturbance basis (for intermittent or impulse noise) the guidelines state in Section 3.3 that:

"For a good sleep, it is believed that indoor sound pressure levels should not exceed approximately 45 dB $L_{A_{max}}$ more than 10-15 times per night......"

6.37 This bedroom internal maximum noise limit is repeated in BS 8233:1999 and the WHO guidelines go on to this bedroom internal maximum noise level limit is also reproduced in BS 8233:1999. However, the WHO guidelines also convert the internal maximum noise level limit to an equivalent external façade noise level limit of 60 dB $L_{A_{max}}$, free field, ‘Outside bedrooms, sleep disturbance, window open, outdoor values’. This assumes that an open window of a typical dwelling will provide approximately 15 dB reduction between internal and external noise levels. Consequently a noise level
of 60 dB $L_{A_{\text{max}}}$ external to an open bedroom window would lead to a resulting internal level of around 45 dB $L_{A_{\text{max}}}$).

6.38 It should be noted that this advice is merely a guideline for assessing likelihood of environmental annoyance; the most recent National Noise Incidence survey found that 55% of the population of the UK currently live in dwellings exposed to daytime noise levels that exceed 55 dB $L_{A_{\text{eq}}}$ and 68% to night-time noise levels exceeding 45 dB $L_{A_{\text{eq}}}$.

**BS 8233:1999 – ‘Sound insulation and noise reduction for buildings- code of practice’**

6.39 BS 8233:1999 gives recommendations for the control of noise in and around buildings, and suggests appropriate criteria and limits for indoor ambient noise levels for different situations. Table 5 from BS 8233 is reproduced in Table 6.4 below.

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Typical situations</th>
<th>Design range $L_{A_{\text{eq}}, T}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reasonable industrial working conditions</td>
<td>Heavy engineering</td>
<td>Good: 70</td>
</tr>
<tr>
<td></td>
<td>Light engineering</td>
<td>Good: 65</td>
</tr>
<tr>
<td></td>
<td>Garages, warehouses</td>
<td>Good: 65</td>
</tr>
<tr>
<td>Reasonable speech or telephone communications</td>
<td>Department store</td>
<td>Good: 50</td>
</tr>
<tr>
<td></td>
<td>Cafeteria, canteen, kitchen</td>
<td>Good: 50</td>
</tr>
<tr>
<td></td>
<td>Wash-room, toilet</td>
<td>Good: 45</td>
</tr>
<tr>
<td></td>
<td>Corridor</td>
<td>Good: 45</td>
</tr>
<tr>
<td>Reasonable conditions for study and work</td>
<td>Library, cellular office, museum</td>
<td>Good: 40</td>
</tr>
<tr>
<td>requiring concentration</td>
<td>Staff Room</td>
<td>Good: 35</td>
</tr>
<tr>
<td></td>
<td>Meeting room, executive office</td>
<td>Good: 35</td>
</tr>
<tr>
<td>Reasonable listening conditions</td>
<td>Classroom</td>
<td>Good: 35</td>
</tr>
<tr>
<td></td>
<td>Church, lecture theatre, cinema</td>
<td>Good: 30</td>
</tr>
<tr>
<td></td>
<td>Concert hall, theatre</td>
<td>Good: 25</td>
</tr>
<tr>
<td></td>
<td>Recording studio</td>
<td>Good: 20</td>
</tr>
<tr>
<td>Reasonable resting/sleeping conditions</td>
<td>Living rooms</td>
<td>Good: 30</td>
</tr>
<tr>
<td></td>
<td>Bedrooms</td>
<td>Good: 30</td>
</tr>
</tbody>
</table>

*a For a reasonable standard in bedrooms at night, individual noise events (measured with F time-weighting) should not normally exceed 45 dB $L_{A_{\text{max}}}$.
6.40 BS 4142:1997 – ‘Method for rating industrial noise affecting mixed residential and industrial areas’ provides guidance on the assessment of the likelihood of complaints relating to noise from plant and equipment.

6.41 The principal terms used in BS 4142 are broadly defined as follows:

- Specific noise – the noise source under consideration;
- Rating level – Specific noise corrected to allow for certain distinctive acoustic features;
- Residual noise – the ambient noise remaining when the specific noise is sufficiently suppressed so as not to contribute to the ambient noise level; and,
- Background noise – the measured L90 level of the residual noise.

6.42 The standard presents a method of rating noise levels by comparing the noise level of the new source (the Rating Level) with the existing background noise level in the area in the absence of the plant and equipment noise (the Background Noise Level).

6.43 The standard states that the appropriate reference time interval for daytime and night-time periods is 1 hour and 5 minutes respectively.

6.44 The rating method according to BS 4142:1997 accounts for unusual acoustic features such as a whine, hiss, impulsive or irregular noise by the addition of a single 5 dB correction to the actual specific noise level of the source. The corrected Specific Noise Level is the Rating Level.

6.45 The BS 4142:1997 rating is determined by arithmetically subtracting the Background Noise Level from the Rating Level. A difference of around +10 dB or more indicates that complaints about noise are likely. A difference of +5 dB is said to be of marginal
significance. If the Rating Level is more than 10 dB below the Background Noise Level it is a positive indication that complaints are unlikely. Table 6.5 shows the BS 4142 Assessment Criteria.

Table 6-5: BS 4142 assessment criteria

<table>
<thead>
<tr>
<th>Difference between rating and background noise level</th>
<th>BS 4142 Assessment method</th>
</tr>
</thead>
<tbody>
<tr>
<td>-10</td>
<td>If the rating level is more than 10 dB below the measured background noise level, then this is a positive indication that complaints are unlikely.</td>
</tr>
<tr>
<td>+5</td>
<td>A difference of around +5 dB is of marginal significance.</td>
</tr>
<tr>
<td>+10</td>
<td>A difference of around +10 dB or more indicates complaints are likely.</td>
</tr>
</tbody>
</table>

6.46 It should be noted however that the standard is not suitable for use where both the Background Noise Level and the Rating Level are very low. For the purpose of the standard, Background Noise Levels below about 30 dB and Rating Levels below about 35 dB are considered to be very low. In these instances a different assessment methodology is typically deemed to be more appropriate.

6.47 The background noise varies throughout the day and night. For new plant that may operate on a 24-hour basis, it is appropriate to measure the representative lowest Background Noise Level (which would normally occur in the early hours of the morning) at the nearest residential property and to use this value for comparison against the predicted Rating Level from the new plant. If it can be shown that the Rating Level from the proposed new fixed plant will not exceed the existing Background Noise Level for the quietest period of the night, then it follows the impact will be lower at all other times throughout a 24-hour period.

**Road Traffic Noise**

6.48 Noise from a stream of traffic is not constant; therefore, to assess the noise impact a single figure estimate of the overall noise level is necessary. The index adopted by the Government, in 'The Calculation of Road Traffic Noise' ("CRTN") to assess traffic noise is $L_{A10,18h}$ which is the arithmetic mean of the noise levels exceeded for 10% of the time in each of the eighteen 1 hour periods between 06:00 and 24:00. A
reasonably good correlation has been shown to exist between this index and residents perception of traffic noise over a wide range of exposures.

6.49 CRTN provides a standard methodology for measuring and predicting the $L_{A10,18h}$ road traffic noise level. Noise levels are predicted at 1 m external facade of the worst affected external window or door of a habitable room. The CRTN methodology calculates the level of noise generated by a road the ‘Basic Noise Level’ ("BNL") based on traffic flow, percentage HGV, and traffic speed. This is used to calculate noise at the receptor depending on characteristics of the road such as surface type and its gradient and characteristics of the receptor based on distance from the road and the presence or absence of any intervening objects e.g. noise barriers. The proposed development does not include the modification of any of these factors which influence the noise level that will be experienced at the sensitive receptor, with the exception of traffic flow and HGV percentage. Therefore the changes in traffic noise levels for the proposed development can be ascertained by comparing the BNL for the ‘with’ (Do Something) and ‘without ’(Do-Minimum) development scenarios.

6.50 To assess the likely impacts associated with changes in traffic flows the guidance contained in The Design Manual for Roads and Bridges ("DMRB") Volume 11 Section 3 Part 7 HA 312/08 'Noise and Vibration’ 2008 will be used.

6.51 All of the road traffic noise levels will be determined using the guidance contained in the CRTN. DMRB provides an example of the magnitude of noise impacts (Table 3.1 of DMRB) as shown in Table 6.6, below:

<table>
<thead>
<tr>
<th>Noise change $L_{A10,18h}$</th>
<th>Magnitude of impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No change</td>
</tr>
<tr>
<td>0.1 - 0.9</td>
<td>Negligible</td>
</tr>
<tr>
<td>1.0 - 2.9</td>
<td>Minor</td>
</tr>
<tr>
<td>3.0 -4.9</td>
<td>Moderate</td>
</tr>
<tr>
<td>5.0+</td>
<td>Major</td>
</tr>
</tbody>
</table>

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Significance of Noise Impacts

6.52 The significance of noise impacts can be determined by considering both the change in noise level (the magnitude of noise impact) and the sensitivity of the receptor exposed to that magnitude of noise impact.

Sensitivity of Noise Sensitive Receptors

6.53 The sensitivity of receptors to noise and vibration has been determined based on the criteria provided in Table 6.7.

Table 6.7: Criteria used to define noise sensitive receptors

<table>
<thead>
<tr>
<th>Sensitivity</th>
<th>Description</th>
<th>Examples of receptor usage</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>Receptors where people or operations are particularly susceptible to noise</td>
<td>Residential. Quiet outdoor areas used for recreation. Conference facilities. Auditoria/studios. Schools in daytime. Hospitals/residential care homes.</td>
</tr>
<tr>
<td>Medium</td>
<td>Receptors moderately sensitive to noise, where it may cause some distraction or disturbance</td>
<td>Offices. Restaurants. Sports grounds when spectator noise is not a normal part of the event and where quiet conditions are necessary (e.g. tennis, golf).</td>
</tr>
<tr>
<td>Low</td>
<td>Receptors where distraction or disturbance from noise is minimal</td>
<td>Residences and other buildings not occupied during working hours. Factories and working environments with existing high noise levels. Sports grounds when spectator noise is a normal part of the event.</td>
</tr>
</tbody>
</table>

Significance of Impact

6.54 The significance of noise impacts was determined according to the relationship between magnitude and sensitivity. This is shown in Table 6.8 below.
Vibration

6.55 There is no nationally accepted method for predicting the degree of vibration transmitted into a building from a ground borne source, such as for a new residential development proposed close to an existing railway line, or where demolition work is proposed close to existing properties. Knowing or predicting the degree of vibration in the ground, the vibration level realised in practice in the building will depend on a range of factors including the design of the foundations, the floor slab, the height of the building and existing ground conditions.

6.56 It is known that building design and structure will give rise to different ground to building, and ground floor to first floor, transmission factors. It is generally found that massive buildings with piled foundations experience high vibration transmission loses from the neighbouring earth, but that light weight buildings with concrete slab foundations (or timber raft) suffer higher transmission and consequently will experience higher ground borne vibration levels for the same source than would more massive buildings constructed on piled foundations.

6.57 BS 5228:2009 Part 2 states:

"For construction it is considered more appropriate to provide guidance in terms of the PPV, since this parameter is likely to be more routinely measured based upon the more usual concern over potential building damage"

6.58 Table 6.9 is taken from BS 5288:2009 Part 2, and provides guidance of effects of vibration.
Table 6-9: Guidance on effects of vibration levels

<table>
<thead>
<tr>
<th>Vibration Level</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.14 mm/s</td>
<td>Vibration might be just perceptible in the most sensitive situations for most vibration frequencies associated with construction. At lower frequencies, people are less sensitive to vibration.</td>
</tr>
<tr>
<td>0.3 mm/s</td>
<td>Vibration might be just perceptible in residential environments.</td>
</tr>
<tr>
<td>1.0 mm/s</td>
<td>It is likely that vibration of this level in residential environments will cause complaint, but can be tolerated if prior warning and explanation is given to residents.</td>
</tr>
<tr>
<td>10 mm/s</td>
<td>Vibration is unlikely to be tolerable for any more than a very brief exposure to this level.</td>
</tr>
</tbody>
</table>

6.59 BS 7385-2:1993 ‘Evaluation and Measurement for Vibration in Buildings Part 2- Guide to damage from ground borne vibration’ gives limits at which structural damage is likely to occur in residential properties. These limits are 15 mm/s at 4Hz and 50 mm/s at 40 Hz. Therefore it is proposed, on structural damage grounds, that ground-borne peak particle velocity (ppv.) (for continual vibration) at the base of existing local residential properties should not exceed the limit of 5 mm/s ppv.

Baseline Conditions

Existing Environment

6.60 The proposed site is situated west of the A1 (M) and east of the A61, and is roughly triangular in shape. The site is located, approximately 5.5 km north-east of Ripon. There are agricultural fields to the south of the site. Melmerby Village is located approximately 1.5 km to the north west of the sit, with Melmerby Industrial Estate located 1.5 km to the west.

6.61 The area is predominantly rural, with the main noise emanating from traffic on the A1 (M) and A61. When measurements were taken around the proposed site, there was some construction work as part of the A1 Leeming to Barton road improvements being undertaken.
Characterisation of the Existing Noise Climate

6.62 The environmental noise survey was undertaken to characterise and quantify the existing baseline ambient and background noise levels surrounding the proposed site. The noise surveys occurred between the 22nd February 2010 and the 23rd February 2010.

6.63 The noise monitoring survey was undertaken in accordance with the principles of BS 7445, ‘Description and measurement of environmental noise’ using the following equipment:

- B&K 2238 Type 1 Sound Level Meter s/n 2106193
- B&K 4231 Sound Calibrator s/n 2326978
- Norsonic 116 Type 1 Sound Level Meter s/n 19697
- Norsonic 1251 Sound Calibrator s/n 27485
- GRAS 41AL Outdoor Microphone Kit s/n 55090

6.64 Various A-weighted noise indicators were measured including the equivalent continuous noise level (LAeq) and statistical indices such as Background Noise Level (LAF90) in 5-minute blocks.

6.65 The equipment was all subject to appropriate long term calibration certificates and the field calibration of the equipment was checked before and after each set of measurements and found to be within specified limits. All staff involved with noise measurements were competent, either being Members of the Institute of Acoustics or holding a Certificate of Competence in Environmental Noise Measurement. Calibration certificates can be seen in Appendix 6.2.

6.66 At each location the microphone was mounted on a tripod 1.5 metres above the ground in free-field conditions.
6.67 Weather conditions during the monitoring had no significant impact on the results obtained and were conducive to representative environmental noise measurements. During the evening, night-time and morning monitoring periods, temperatures ranged from 0 °C to -1.5 °C with wind speeds ranging from 0.5 m/s to 1.2 m/s. During the daytime monitoring periods, temperatures ranged from 3 °C to 3.5 °C and wind speeds varied from 2.5 m/s to 4.2 m/s. Wind direction was quite consistent, blowing in a north to north-westerly direction. During all of the measurements there were scattered clouds.

6.68 Attended noise monitoring was conducted at 5 locations and 1 unattended location, which were selected on the proposed site itself as well as at locations representative of existing NSRs in the vicinity of the proposed area of development. Monitoring locations are described below and visually identified in Figure 6.1.

- Location 1 - Sound Level Meter located at the existing area of proposed development.
- Location 2 - Sound Level Meter located at Hutton Grange on the A61.
- Location 3 - Sound Level Meter located outside Green End House, Underlands Lane, Melmerby.
- Location 4 - Sound level meter located outside Howefield Cottage, off Wide Howe Lane.
- Location 5 - Sound Level Meter located outside 24 Sleights Lane, Rainton.
- Location 6 - Logger set up on the existing area of proposed development.

6.69 At location 1 the main sources of noise was that of road traffic along the A1 (M) and A61. There was also noise contribution from construction work that is a part of the A1 Leeming to Barton road improvement scheme. During the day there was noise from birdsong.

6.70 At location 2 the main sources of noise was that of passing traffic on the A61 and
background noise from traffic on the A1. During the day birdsong could also be heard.

6.71 At location 3 the main sources of noise was occasional passing traffic on Underlands Lane and background noise from the A1 and surrounding roads. During the day there was birdsong and livestock could also be heard.

6.72 At location 4 the main source of noise was traffic on the A1 and Wide Howe Lane. Construction noise could also be heard from the nearby Leeming to Barton road improvement scheme. Birdsong could be heard during the day.

6.73 At location 5 the main source of noise was background noise from road traffic on the A1 and surrounding roads. There was also noise from passing traffic on Sleights Lane as well as birdsong during the day.

6.74 At location 6 the main source of noise was that of road traffic noise from the A1 and A61, as well as construction work from the Leeming to Barton Road Improvement Scheme.

6.75 The survey results are summarised in Tables 6.10 - 6.12 below:

<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
<th>Time</th>
<th>5-minute sound pressure level</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>$L_{A_{eq}}$</td>
<td>$L_{A_{90}}$</td>
</tr>
<tr>
<td>1</td>
<td>22/02/2010</td>
<td>19:58</td>
<td>62</td>
<td>55</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20:03</td>
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<td></td>
<td>20:08</td>
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</tr>
<tr>
<td></td>
<td>23/02/2010</td>
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<td></td>
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<td></td>
<td>08:21</td>
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<td></td>
<td></td>
<td>13:36</td>
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</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>65</td>
<td>55</td>
</tr>
</tbody>
</table>

Main noise was from traffic on the A1 and A61 as well as construction noise from the Leeming to Barton Road Improvement Scheme and birdsong during the daytime.

Reference: PG/ML/1076309/R004pg
<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Level 1</th>
<th>Level 2</th>
<th>Level 3</th>
<th>Level 4</th>
<th>Level 5</th>
</tr>
</thead>
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<td></td>
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<td></td>
<td><strong>Main noise was that of passing traffic on the A61 and background noise from traffic on the A1. During the day birdsong could also be heard.</strong></td>
</tr>
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<td>22/02/2010</td>
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<td></td>
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<td>51</td>
<td>75</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>Main noise was occasional passing traffic on Underlands Lane and background noise from the A1 and surrounding roads. During the day there was birdsong and livestock could also be heard.</strong></td>
</tr>
<tr>
<td>22/02/2010</td>
<td>21:07</td>
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<td>21:12</td>
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<td>21:17</td>
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<tr>
<td></td>
<td>08:36</td>
<td>50</td>
<td>49</td>
<td>51</td>
<td>58</td>
<td></td>
</tr>
<tr>
<td></td>
<td>08:41</td>
<td>51</td>
<td>49</td>
<td>54</td>
<td>63</td>
<td></td>
</tr>
<tr>
<td></td>
<td>08:46</td>
<td>57</td>
<td>48</td>
<td>54</td>
<td>74</td>
<td></td>
</tr>
<tr>
<td></td>
<td>13:56</td>
<td>47</td>
<td>42</td>
<td>46</td>
<td>69</td>
<td></td>
</tr>
<tr>
<td></td>
<td>14:01</td>
<td>46</td>
<td>42</td>
<td>48</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td></td>
<td>14:06</td>
<td>47</td>
<td>43</td>
<td>49</td>
<td>58</td>
<td></td>
</tr>
<tr>
<td></td>
<td>15:40</td>
<td>48</td>
<td>42</td>
<td>49</td>
<td>61</td>
<td></td>
</tr>
<tr>
<td></td>
<td>15:45</td>
<td>47</td>
<td>42</td>
<td>48</td>
<td>58</td>
<td></td>
</tr>
<tr>
<td></td>
<td>15:50</td>
<td>49</td>
<td>43</td>
<td>49</td>
<td>65</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>Main noise was traffic on the A1 and Wide Howe Lane. Construction noise could also be heard from the nearby Leeming to Barton road improvement scheme. Birdsong could be heard during the day.</strong></td>
</tr>
<tr>
<td>23/02/2010</td>
<td>21:33</td>
<td>57</td>
<td>41</td>
<td>47</td>
<td>80</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>Main noise was</strong></td>
</tr>
</tbody>
</table>
background noise from road traffic on the A1 and surrounding roads. There was also noise from passing traffic on Sleights Lane as well as birdsong during the day.

![Table 6-11: Daytime Unattended logger measurements](image)

<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
<th>Time</th>
<th>5-minute sound pressure level</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>23/02/2010</td>
<td>08:40-15:30</td>
<td>$L_{A_{eq}}$ $L_{A_{90}}$ $L_{A_{10}}$ $L_{A_{Fmax}}$</td>
<td>Main noise from traffic on the A1 and construction noise from the Leeming to Barton Road Improvement Scheme</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>63 56 62 93</td>
<td></td>
</tr>
</tbody>
</table>

All values are in dB re 20µPa, Free-field, fast time-weighting

![Table 6-12: Night time attended measurements](image)

<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
<th>Time</th>
<th>5-minute sound pressure level</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>23/02/2010</td>
<td>01:33</td>
<td>56 47 54 76</td>
<td>Main noise from traffic on the A1, occasional passing traffic on the A61 and construction work.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>01:38</td>
<td>56 47 56 76</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>01:43</td>
<td>55 45 57 74</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Representative Level</strong></td>
<td>56 45 57 76</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>02:59</td>
<td>52 40 50 76</td>
<td>Main noise in form of background traffic noise from the A1 and passing traffic on</td>
</tr>
<tr>
<td></td>
<td></td>
<td>03:04</td>
<td>57 39 49 81</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>03:09</td>
<td>55 41 51 79</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Representative Level</strong></td>
<td>55 39 51 81</td>
<td></td>
</tr>
</tbody>
</table>

All values are in dB re 20µPa, Free-field, fast time-weighting

Reference: PG/ML/1076309/R004pg
### Table 6.13

<table>
<thead>
<tr>
<th>Time</th>
<th>Level 1</th>
<th>Level 2</th>
<th>Level 3</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>02:45</td>
<td>44</td>
<td>41</td>
<td>45</td>
<td>Main noise from the A1 and nearby surrounding roads</td>
</tr>
<tr>
<td>02:50</td>
<td>44</td>
<td>41</td>
<td>46</td>
<td>Main noise from the A1 and nearby surrounding roads</td>
</tr>
<tr>
<td>01:53</td>
<td>46</td>
<td>39</td>
<td>46</td>
<td>Main noise from traffic on the A1 and ongoing construction work</td>
</tr>
<tr>
<td>01:58</td>
<td>43</td>
<td>38</td>
<td>46</td>
<td>Main noise from traffic on the A1 and ongoing construction work</td>
</tr>
<tr>
<td>02:03</td>
<td>43</td>
<td>39</td>
<td>45</td>
<td>Main noise from traffic on the A1 and ongoing construction work</td>
</tr>
<tr>
<td>02:17</td>
<td>42</td>
<td>39</td>
<td>45</td>
<td>Main noise emanating from traffic on the A1 and surrounding roads</td>
</tr>
<tr>
<td>02:22</td>
<td>44</td>
<td>40</td>
<td>46</td>
<td>Main noise emanating from traffic on the A1 and surrounding roads</td>
</tr>
<tr>
<td>02:27</td>
<td>46</td>
<td>40</td>
<td>47</td>
<td>Main noise emanating from traffic on the A1 and surrounding roads</td>
</tr>
</tbody>
</table>

All values are in dB re 20μPa, Free-field, fast time-weighting

6.76 In order to get an indication of the typical noise levels at an operational service station, AECOM Acoustic personnel visited Wetherby South Service Station on 23rd February 2010.

6.77 The main source of noise was cars entering and exiting the service station, car doors slamming, people talking and construction work taking place on the A1. No service plant could be heard from the monitoring location due to the dominant traffic noise from the A1. Fixed plant which was located to the rear of the service station could also not be heard from a distance of 20 metres. There were a number of construction vehicles in close proximity at this time.

6.78 The Sound Level Meter was located next to the entrance of the service station car park, approximately 40 metres to the west of the A1(M).

6.79 The measurements below were taken during a 15-minute sample period at Wetherby South Service Station on a typical week day, the results are summarised in Table 6.13 below.
Table 6-13: daytime attended measurements at Wetherby South Service Station

<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
<th>Time</th>
<th>5-minute sound pressure level</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>$L_{Aeq}$</td>
<td>$L_{A90}$</td>
</tr>
<tr>
<td>Wetherby South Service Station</td>
<td>23/02/2010</td>
<td>11:47</td>
<td>61</td>
<td>58</td>
</tr>
<tr>
<td></td>
<td></td>
<td>11:52</td>
<td>60</td>
<td>56</td>
</tr>
<tr>
<td></td>
<td></td>
<td>11:57</td>
<td>60</td>
<td>56</td>
</tr>
</tbody>
</table>

**Noise Assessments**

6.80 It is considered that these measurements represent the likely ambient noise levels at the proposed development site and at the nearest Noise Sensitive Receptors.

**Ambient Vibration Monitoring**

6.81 There are currently no significant sources of vibration in the area. Consequently ambient vibration monitoring has not been undertaken. It should be noted that annoyance due to vibration is not related to comparison of pre and post development vibration levels, and pre-development vibration levels are not usually necessary to assess the likelihood of vibration damage or annoyance from any new vibration sources to be introduced to an area.

**Identification of Impacts**

**Potentially Sensitive Receptors**

6.82 The properties listed below are potential noise sensitive receptors:

- Hutton Grange Cottage on the A61, approximately 250 m from site;
- Hutton Grange, approximately 450 m from the site;
- Farm properties on Widehow Lane; approximately 720 m from the site;

- Properties in the village of Rainton; approximately 1.2 km from the site;

- Baldersby St James C of E Primary School, approximately 1.2 km; and

- Properties in the village of Melmerby, approximately 1.5 km from the site.

**Construction Impacts**

6.83 It is anticipated that the construction of Ripon Services will take approximately 9 months.

6.84 Likely construction noise levels at the redevelopment site have been estimated using the data and prediction methodologies to be found in BS 5228: 2009, and AECOM’s experience gained from assessing noise impacts for similar projects have been used.

6.85 It should be appreciated that the construction noise assessment presented in this chapter is to provide an indication of the ‘worst case’ potential construction noise impacts. Until the actual items of plant and precise working methods and duration of operation are confirmed, it is only possible to provide an indication of the potential construction impacts and, as such, the actual construction noise levels experienced on site during the construction phase of the project may be different from those presented in this chapter.

6.86 Construction work of any type that involves heavy plant may generate a significant amount of noise and can lead to high levels of complaints if sensitive scheduling and control is not exercised.

6.87 The extent of any construction noise impacts potentially affecting NSR will depend on the construction activity, the proximity of the NSR to that activity, its duration and the time of day at which it occurs. Although local disturbances due to construction noise may at times be significant, they are likely to be short-term as each phases of the construction process occurs for a relatively limited period of time.
6.88 In order to evaluate the potential construction impacts it is necessary to define the various activities that will be undertaken. It should be noted that construction contractors may use different working methods and plant to achieve the same ends, so an accurate detailed construction noise and vibration impact assessment is not normally possible until the actual items of plant and working methods are confirmed. Consequently, at this stage of a project it is only possible to undertake a generic construction noise and vibration impact assessment. This is based on expected methods of working gained from experience determining the construction impacts of developments that are similar in nature to that which is being assessed here.

6.89 For the purpose of predicting construction noise levels a series of typical activities have been assessed, based on likely closest approach to NSR and typical plant working.

6.90 Typical construction plant items that are likely to be used on site include the following:

- Excavators;
- Wagons;
- Concrete wagons;
- Cranes;
- Compressors;
- Loaders;
- Generators;
- Hand held tools such as grinders, drills and nail guns;
- Concrete mixer and pump; and
• Rollers.

6.91 A summary of the BS 5228:2009 calculations, including noise source data can be found in Appendix 6.3. The sound power levels of the various plant items were taken from Annex C of BS 5228-1:2009.

6.92 When considering the construction noise impacts at a specific distance from particular construction activity that occurs across an area, the point on the circumference of that area closest to the calculation point has been assumed for all ‘fixed’ (generators, compressors etc.) and mobile (loaders, excavators etc.) plant. Hence construction noise impacts are deemed to be worst case for the scenarios assessed.

6.93 It has been assumed that all of the construction works will take place during a normal working day extending from 08:00 through to 18:00 Monday to Friday and from 08:00 to 12:00 on Saturdays.

6.94 To provide an indication of the likely construction noise levels for various construction/demolition/regeneration activities noise level predictions have been made a various distances from these activities. Table 6.14 provides a summary of the predicted LAeq,10hr noise at noise sensitive receptors. Note that each of the activities will be a composite of various events and each of these events will occur for different durations of times. See Appendix 6.3 for these details.
Table 6.14: Summary of worst-case predicted construction noise levels unmitigated

<table>
<thead>
<tr>
<th>NSR Location and distances from the works</th>
<th>Predicted worst case noise levels, closest approach $d_{L_{eq,10h}}$</th>
<th>Site Preparation</th>
<th>Site Building Construction and Surfacing</th>
<th>Piling (if required)</th>
<th>Site Road Construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Howefield Cottage (720-900)</td>
<td>55</td>
<td>53</td>
<td>44</td>
<td>54</td>
<td></td>
</tr>
<tr>
<td>Hutton Grange (450-600)</td>
<td>59</td>
<td>57</td>
<td>48</td>
<td>58</td>
<td></td>
</tr>
<tr>
<td>Hutton Grange Cottage (250-460)</td>
<td>64</td>
<td>59</td>
<td>50</td>
<td>61</td>
<td></td>
</tr>
</tbody>
</table>

6.95 Construction impact definitions are identified in Table 6.3. From Table 6.14 slight impacts have been predicted at Hutton Grange and Hutton Grange Cottage during the site preparation, piling (if required) and site road construction stages. At Howefield Cottage, slight impacts have been predicted during the site preparation stage. During all other stages of the construction phase, negligible impacts have been predicted at the above identified properties.

6.96 Table 6.8 identifies the significance of the noise impacts. Residential properties are classed as having a high sensitivity to noise and from Table 6.14 it can be seen that that temporary slight to moderate adverse impacts may be expected during some of the construction phase at Hutton Grange, Hutton Grange Cottage and Howefield Cottage.

6.97 The construction impacts have been assessed at the closest NSRs, greater noise attenuation due to the increased distance to the other properties in close proximity and the proposed construction works, results in negligible impacts being predicted. Additionally the noise from traffic on the A1 and A61 will tend to mask much of the construction noise.

6.98 It must be noted that the above predicted levels have been calculated without any
form of mitigation, with all plant working at closest approach.

6.99 In practice, the worst-case nature of the assessment (with all plant working at the same time at closest approach to an NSR) means that in reality the actual levels are likely to be lower and, furthermore, these levels would not exist throughout the duration of a working day due to mobility of working, breaks and fluctuations in the work cycle. Additionally the impacts are non-permanent and the mitigation measures will help to minimise any potential impacts.

6.100 The nature of construction work means that the worst-case situation with plant working at closest approach may exist for only a matter of days or even hours; and there would be regular periods, even during the course of a single day, when the assumed noisy plant would not be in operation during the breaks or changes of working routine. If required a detailed construction assessment can be undertaken once the actual (rather than the assumed) methods of working is specified, to confirm the potential impact and determine the necessary level of mitigation required.

Construction Traffic

6.101 At the time of this assessment, construction traffic data was not available. The movement of material, equipment and supply vehicles will generate construction traffic; the construction site personnel will also generate traffic. Given the high traffic volumes on the existing roads, the additional traffic movements due to the construction phase of the scheme means that it is unlikely that construction traffic will have a significant impact in terms of noise.

Construction Vibration

6.102 Surface plant such as cranes, compressors and generators are not recognised as sources of high levels of environmental vibration. Reference to Figure C2 of ‘Control of Vibration and Noise During Piling’ confirms that peak particle velocities (p.p.v.) significantly less than 5 mm/s are generated by such machinery, even at a closest distance of 10 m. For example, the indication is that a bulldozer would generate a p.p.v. of approximately 0.6 mm/s and a ‘heavy lorry on poor road surface’ a p.p.v. of less than 0.1 mm/s at 10 m. These values are well below limits at which even
cosmetic building damage becomes likely (5 mm/s).

6.103 It is generally accepted that, without a highly detailed understanding of the media, waveform, and frequency distribution, ground-borne vibration prediction methods are “beset with complexities and uncertainties”. However, typical construction and demolition working routines are unlikely to generate levels of vibration at local receptors above which cosmetic damage to structures would be expected. These levels of vibration exposure should prove acceptable, given the nature of local receptors.

**Operational Impacts**

6.104 The operation of the proposed Ripon Services has the potential to impact on existing NSRs in the vicinity.

6.105 The potential impacts include:

- Noise from the operation of the service station

- Road traffic noise associated with changes in traffic flows as a result of the service station and car parking activities on the site.

**Noise impacts associated with the Operation of the Service Station**

6.106 **Figure 2.1** shows the indicative layout of the site. It is proposed that the Ripon Services will operate 24 hours a day, 365 days a year.

6.107 As part of the scoping assessment the Environmental Health Department at HBC were consulted. Their Noise Design Advice Document states that the BS 4142 rating level of the new development should be 5 dB below the background noise levels.

6.108 Currently details of fixed plant which will be installed are not available at this early stage of the project. However, it can be assumed that the fixed plant associated with the proposed development is likely to principally include ventilation and heating plant. Most of this plant will be capable of operating on a 24-hour basis or at least during
periods considered to be night and day.

6.109 The final detailed design of the building services across the development has not yet been undertaken, and is not usually undertaken until the finalisation of the buildings detailed specification. Therefore it has not been possible to assess the impacts of specific item of building services plant.

6.110 With careful consideration on the selection of plant and, if necessary, additional mitigation, it should be possible to achieve the noise limits requirements of HBC. Therefore it is highly unlikely that fixed building plant would result in an adverse impact on the NSRs.

6.111 The potential noise from people at Ripon Services is likely to be minimal and the noise will be masked by the existing traffic noise from the A1 and A61. During a visit to an operational service station, the dominant noise source on the site and in the local area, was from road traffic noise along the A1. Plant noise could not be heard at the time of site visit.

**Impact on Road Traffic Noise and Car parking on site**

6.112 It is understood that during the operation phase there will not be an impact on the number of vehicles using the A1 or A61. Therefore the only impacts will be at the A1/A61 junction itself, the slip road and on the A61 between Ripon Services and the junction. The impact of changes in road traffic noise as a result of the proposed development has been assessed by comparing the noise levels generated on surrounding roads for the with and without development scenarios.

6.113 To assess the potential noise levels from the changes of the traffic flow in the vicinity of Ripon Services and the impact of car parking activities on site a noise model has been built based on the indicative layout. The Cadna A package utilises the CRTN methodology. The model uses 18 hour Annual Average Weekday Traffic ("AAWT") data, along with the percentage of heavy goods vehicles and average speeds to produce the basic noise level, which is then used to predict the noise level at the NSRs using propagation factors including receiver distance, topography and screening from barriers or buildings. The CRTN methodology produces LA10 18hr noise levels, which is the standard index for assessing road traffic noise in the UK.
Steer Davies Gleave have provided 18 hour AAWT flows for the Do-Minimum’ (DM) scenario and ‘Do-Something’ (DS) scenario for the baseline year (2012) and future year (2022). The percentage of HGVs has also been provided. The predicted traffic flow data and associated road sections used within the assessment can be seen in Appendix 6.4. Vehicle speeds entered into the model were based upon speed limits of each road.

The road traffic flow predictions and car park utilisation predictions for the operation of Ripon Services Do-Something scenarios were based upon worst case peak hour predictions which were scaled up to AAWT flows. As such the noise level predictions in this report can be considered as worst case.

The following model settings and assumptions were used with the noise model:

- One order of reflection has been included within the modelling process to account for significant reflections;

- All building facades set as being acoustically reflective

- All road surfaces have been set up as being of standard hot rolled asphalt type

- No allowance as been allowed for ground absorption within the modelling process, which is considered worst case.

- Noise levels were calculated at a height of 1.5 m, to represent ground floor window height and the noise experienced by people outside.

The potential impact of the car park at Ripon Services was based on the maximum number of parking spaces, therefore this assessment is a worst case scenario.

The noise model has predicted the noise levels for the Do Minimum and Do Something Scenarios at the closest NSRs (Hutton Grange Cottage and Hutton Grange) in the year of opening (2012) and the future year (2022). Table 6.15 below summarises the results. The noise model contours can be viewed in Appendix 6.5.
Table 6-15: Noise predictions at nearby noise sensitive receptors

<table>
<thead>
<tr>
<th>Property</th>
<th>$L_{A10,18h}$ (dB)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2012</td>
</tr>
<tr>
<td></td>
<td>DM</td>
</tr>
<tr>
<td>Hutton Grange</td>
<td>66</td>
</tr>
<tr>
<td>Hutton Grange Cottage</td>
<td>77</td>
</tr>
</tbody>
</table>

6.119 From Table 6.15 it can be seen that there will be no increase in noise levels predicted at the nearest NSRs with the Ripon Services operational. As the traffic flows along the A1 and A61 are not predicted to change in the Do-Something scenario there is not predicted to be any changes in noise levels at properties in Melmerby, Baldersby St James or Rainton.

6.120 Provided that the fixed plant meet the noise limits set by HBC, the operation of the Ripon Services is unlikely to have an adverse impact on the NSRs in the vicinity.

**Mitigation**

6.121 This section suggests mitigation measures for both construction and operational impacts.

**Construction Noise Mitigation**

6.122 With regard to demolition and construction of the Ripon Services, agreement on working methods should be sought from Officers of HBC to limit the impacts of construction noise.

6.123 The responsibility for seeking final approval for noise control will lie with the contractor, with final approval resting with the Environmental Health Officer; which should be established prior to the commencement of construction works.

6.124 British Standard 5228 gives detailed advice on methods of minimising nuisance from construction noise. This can take the form of reduction of source, control of noise spread and in areas of very high noise levels, insulation at receptors. It is likely to be
a requirement of any construction contract that the constructors comply with the recommendations in this standard, in order to achieve specific noise criteria.

6.125 Mitigation measure could include the following provisions:

- Adherence to the codes of practice for construction working and piling in British Standard 5228:2009 and the guidance given therein minimising noise emissions from the site;

- Proper use of plant with respect to minimising noise emissions and regular maintenance. All vehicles and mechanical plant used for the purpose of the works would be fitted with effective exhaust silencers and would be maintained in good efficient working order;

- Use of electrical items of plant instead of diesel plant; especially in sensitive locations;

- Selection of inherently quiet plant where appropriate. All major compressors would be ‘sound-reduced’ models fitted with properly lined and sealed acoustic covers which would be kept closed whenever the machines are in use and all ancillary pneumatic percussive tools would be fitted with mufflers or silencers of the type recommended by the manufacturers;

- Machines in intermittent use would be shut down in the intervening periods between work or throttled down to a minimum;

- All ancillary plant such as generators, compressors and pumps would be positioned so as to cause minimum noise disturbance. If necessary, acoustic barriers or enclosures would be provided. A well constructed 3m high barrier of 10mm softwood can reduce noise levels by 5 – 10 dB;

- When possible piling should not take place before 8am or after 6pm Monday to Friday and on Saturdays should not take place before 9am and after 1pm. Piling should not take place on Sundays or Bank holidays or during the night-time periods;
• Loading/unloading sites to be located away from residential properties and shielded from those properties where practicable;

• Ensure that modern plant is used, complying with the latest EC noise emission requirements;

• Arrange the site operations and vehicle routes to minimise the need for reversing movements;

• No employees, subcontractors and persons employed on the site must cause unnecessary noise from their activities e.g. excessive ‘revving’ of vehicle engines, music from radios, shouting and general behaviour etc; and

• Night-time work should be kept to an absolute minimum and the normal working day to be used whenever possible.

6.126 In general, good public relations and extensive consultations with local authorities will be essential to help minimise the impact of construction work. Local residents in particular will need to be advised that any higher levels of noise will only occur for a short period of time and so it will be necessary to publicise and adhere to a stated works schedule.

6.127 Even though the construction traffic is not expected to cause major adverse impacts, careful consideration should be given to planning construction traffic routes around the site to minimise reversing movements and to minimise the number of construction vehicles during peak traffic flows on local roads. It is recommended that all construction vehicles are well maintained and kept in good working order.

**Operational Mitigation**

6.128 It is recommended that the BS 4142 Rating level measured over 1 hour during the day time and measured over 5 minutes during the night-time period should be 5 dB below the background level at the nearest noise sensitive receptor.

6.129 As the final specifications of the plant associated with the proposed development are
not known at this stage of the development, it is more appropriate to specify suitable noise limits the plant operations should conform to. These limits should include any corrections for acoustic characteristics. The recommended noise limits should be satisfied by all elements of the plant systems operating at their maximum load.

6.130 Based on the results of the environmental noise survey, the representative daytime and night-time LA90 noise levels at the closest receptor, Hutton Grange Cottage (monitoring location 2), approximately 250 m from the closest boundary of the development have been used to determine background noise level. A representative daytime background noise level of 47 dB LA90 has been adopted. The representative night time background noise level is 30 dB LA90.

6.131 It is therefore proposed that the noise form plant associated with the development should be limited to a rating level of 42 dB LAeq, 1hr during the daytime period and a rating level of 34 dB LAeq, 5 mins during the night time.

6.132 The aforementioned limits apply to the total noise emission from all plant. Individual items of plant must be designed to result in lower noise levels at NSRs that those stated above. This will ensure the cumulative noise level is still compliant with the council criteria.

6.133 It will be possible to achieve the recommended noise limits. It has been predicted that the sound power level for fixed plant at the proposed site should not exceed 90 dB during the night-time period. The noise from fixed plant is best addressed at the design stage when it is relatively easy to accommodate appropriate noise attenuation measures, where necessary. For example, breakout noise from refrigeration plant contained within plant rooms can be reduced using acoustic ventilation louvres, noise from fans housed within ducted intakes and exhausts can be reduced using in-duct attenuators and noise from boiler flue fans can be reduced by atmospheric-side boiler flue attenuators. Hence, the appropriate design, location and installation of any fixed plant, and associated mitigation where necessary, such that the HBC fixed plant noise criteria are met, should ensure that adverse impacts should not arise.

6.134 The assessment of the noise impacts associated with changes in existing road traffic noise levels and the car parking activities at Ripon Services has indicated that there will be no change in noise levels when compared to the predicted Do-minimum noise
levels. Therefore specific mitigation measures are not required. However it is recommended that all site access roads and car parking areas should be kept in good condition, e.g. any pot holes should be repaired to help minimise the body rattle of HGVs.

**Residual Impacts**

**Construction Phase**

6.135 The forgoing construction assessment has concluded that there will be temporary slight to moderate adverse impacts at the closest NSRs. However, the construction noise will be mitigated through best practicable means and careful management and therefore it is anticipated that there will be a temporary slight adverse impact.

**Operational Phase**

6.136 The residual impacts for building services noise are not likely to give rise to adverse impacts if the proposed limits set out are met.

6.137 A Cadna A noise model has been run to predict the worst case noise levels based on the predicted traffic flows and car parking activities at the proposed Ripon Services. The models showed that there will be no changes in the predicted noise levels at the nearest NSRs when compared to the Do-Minimum scenario. There is no requirement to provide mitigations measures as there will be no significant impacts.

6.138 The summary of the residual impacts can be seen in Table 6.16 below.
## Table 6-16: Residual impacts table

<table>
<thead>
<tr>
<th>Development Phase</th>
<th>Description of potential Impact</th>
<th>Classification of Potential Impact</th>
<th>Assessment of Significance Without Mitigation</th>
<th>Proposed and Recommended Mitigation Measures</th>
<th>Residual Impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction</td>
<td>Noise from construction activities on site</td>
<td>Temporary Short-term</td>
<td>Slight to Moderate Adverse</td>
<td>Follow advice in BS 5228, location of equipment, strict site management, restriction of operational hours, and liaison with local residents. minimise reversing movements</td>
<td>Slight Adverse</td>
</tr>
<tr>
<td></td>
<td>Vibration from construction activities on site</td>
<td>Temporary Short</td>
<td>Slight to Moderate adverse</td>
<td></td>
<td>Slight Adverse</td>
</tr>
<tr>
<td></td>
<td>Noise from heavy construction vehicles</td>
<td>Temporary Short</td>
<td>Slight Adverse</td>
<td></td>
<td>Slight Adverse</td>
</tr>
<tr>
<td></td>
<td>Vibration from heavy construction vehicles</td>
<td>Temporary Short</td>
<td>Slight Adverse</td>
<td></td>
<td>Slight Adverse</td>
</tr>
<tr>
<td>Operational</td>
<td>Noise from vehicles on local roads</td>
<td>Permanent</td>
<td>Neutral</td>
<td>None</td>
<td>Neutral</td>
</tr>
<tr>
<td></td>
<td>Noise from vehicles on proposed access roads</td>
<td>Permanent</td>
<td>Neutral</td>
<td>Speed restrictions, maintenance of roads</td>
<td>Neutral</td>
</tr>
<tr>
<td></td>
<td>Noise from fixed plant</td>
<td>Permanent</td>
<td>Major/Moderate</td>
<td>Set noise limits for fixed plant. Selection of appropriate plant, attenuation and isolation where required.</td>
<td>Neutral</td>
</tr>
</tbody>
</table>

### Conclusions

6.139 This chapter has presented the assessment of the noise and vibration impacts of the proposed Ripon Services during the construction and operational phases. Where necessary, possible means of mitigating the potential adverse noise impacts on existing NSRs have been provided.
6.140 A baseline environmental noise survey has been undertaken to establish the existing noise climate at various location representative of the nearest NSRs

6.141 At this stage a worst case assessment has been undertaken based on typical construction noise activities. Potentially significant impacts can be mitigated by adopting best practicable means.

6.142 Typical construction and demolition working practices are unlikely to generate levels of vibration at local receptors above which cosmetic damage to structures would be expected.

6.143 A Cadna A noise model has been run to predict the worst case noise levels based on the predicted traffic flows and car parking activities at the proposed Ripon Services. The models showed that there will be no changes in the predicted noise levels at the nearest NSRs when compared to the Do-Minimum scenario.

6.144 At this stage of the development, the specifications of the fixed plant is unknown, therefore noise limits have been recommended based on the existing background noise levels and the requirements of HBC. To conclude, when the MSA is operational the plant area is not likely to give rise to adverse impacts at the nearest NSRs, if the recommended noise limits are met.

6.145 It is predicted that once the development is fully operational vibration impacts will be negligible.

References


- BS 4142: 1997 'Method for rating industrial noise affecting mixed residential and industrial areas'

- BS 8233:1999 'Sound Insulation and noise reduction for buildings'

- Control of Pollution Act 1974 via The Control of Noise (Code of Practice for Construction and Open Sites) (England) Order 2002


- BS 7445: 2003 'Description and measurement of environmental noise' Part 1: Guide to quantities and procedures'.

- 'British Steel, 1988. 'Control of Vibration and Noise During Piling'

- Thornley-Taylor, R.M., 'Ground Vibration Prediction and Assessment
7.0 Air Quality

Introduction

7.1 This chapter identifies the potential air quality impacts that may result from the construction and operation of the proposed Ripon Services.

Scope of Assessment

7.2 The potential for impacts has been considered for both the construction and operational phases. The scoping report concluded that significant impacts would be very unlikely to result; this chapter of the ES re-examines the main issues with regard to the final proposal.

Legislation and Policy

7.3 The assessment has been undertaken in accordance with appropriate legislation and guidance, including:

- Design Manual for Roads and Bridges (DMRB);
- Defra Local Air Quality Management Guidance (LAQM.TG(09);
- Environmental Protection UK Planning Guidance (2006); and,
- PPS23.

Consultation

7.4 The assessment methodology was agreed with Mark Lee, the Environmental Health Officer at HBC responsible for the area within which the site is located.
Methodology

Construction Phase

7.5 During construction, there is potential for short term impact due to dust generation and dispersion. A qualitative construction phase assessment has been undertaken, based on experience gained from projects of similar scale.

7.6 Receptors with the potential to be affected have been identified, the potential for adverse impact discussed, and measures to minimise adverse impacts have been recommended.

Operational Phase

7.7 Following the scoping study it was concluded that detrimental impacts would be very unlikely, and an operational phase assessment would not be necessary. This chapter of the ES therefore considers potential issues in a qualitative manner.

Baseline Conditions

Local Air Quality Management

7.8 There are currently no Air Quality Assessment Areas (AQMA) declared by HBC for either Particular Matter (PM10) or Nitrogen Dioxide (NO2). However, a recent report (HBC, 2009) did identify areas of potential concern in Harrogate, Ripon and Knaresborough, and recommended the declaration of AQMAs for NO2 within parts of the three towns.

Pollutant Monitoring

7.9 HBC has undertaken both automatic and passive monitoring of NO2 at locations throughout the Borough. However, they only now undertake passive monitoring, and at no locations near to the proposed development site.
Background Pollutant Concentrations

7.10 Modelled estimations of background air quality concentrations are provided on the UK Air Quality Archive website (airquality.co.uk) for each 1km square in the UK. The estimated background concentrations for the Ordnance Survey grid square containing the development site (centred at 435500, 476500) are provided in Table 7.1. These data were downloaded in January 2010. The concentrations can be considered to be low.

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOx</td>
<td>18.0</td>
</tr>
<tr>
<td>NO₂</td>
<td>12.7</td>
</tr>
<tr>
<td>PM₁₀</td>
<td>17.9</td>
</tr>
</tbody>
</table>

Identification of Impacts

Construction Phase

7.11 During the construction phase there may be an impact due to nuisance dust and PM10 resultant from the works. Emissions may also occur directly from construction vehicles and plant. However, with the exception of farmland, there are no sensitive receptors within 200m of the site. Farmland is considered to be a low sensitivity receptor (ODPM, 2005), therefore significant impacts are considered to be unlikely.

7.12 Construction vehicles travelling to and from the site may have an impact on air quality; however the number of construction vehicles, when compared with existing traffic flows, will be negligible. Therefore significant impacts are considered to be unlikely.
Operational Phase

7.13 Following discussions with the project transport consultants (Steer Davies Gleave), it is understood that during the operational phase there will not be an impact on the number of vehicles using the A1 or A61. Therefore the only impacts will be at the A1/A61 junction itself, the slip roads, and on the A61 between the service area and the junction. There are no existing air quality sensitive receptors within 200m of any of these road links, or within 200m of the site boundary; therefore it is very unlikely that the development will have an air quality impact.

7.14 Nevertheless, it is proposed for there to be a hotel as part of the MSA. A hotel can be considered to be an air quality sensitive receptor, but assuming there are no long-term residents, only in terms of the following short-term air quality objectives:

- PM10 24 hour mean objective; and
- NO2 1 hour mean objective.

7.15 The annual mean NO2 or PM10 objectives would only be of relevance if the hotel were to be occupied by long-term residents. Given the low background concentrations, and based on monitoring elsewhere, (particularly near to busier Highways Agency roads in Yorkshire, where there are no instances of either of these objectives being exceeded), it is considered highly unlikely that the short-term objectives will be breached at the hotel, particularly as the hotel is proposed to be well set back from the A1.

7.16 The MSA will require wastewater handling facilities, which may give rise to odour emissions. The facilities may include a local treatment plant, or pumping station to the nearest sewer. However, detail regarding the provision of such facilities is to be finalised and hence it is not possible to comment further at this stage. If necessary, an odour assessment will be completed once the designs have been finalised.
Mitigation

Construction Phase

7.17 Although there are no potential receptors within 200m, measures should still be applied to mitigate dust generation. Good site planning is essential to prevent unnecessary dust production and should be conducted prior to commencing work. In addition, best practice measures should also be adopted as discussed in the Control of Dust from Construction and Demolition Activities (BRE, 2003), Controlling Particulates, Vapours and Noise Pollution from Construction Sites (BRE, 2003b) and The control of dust and emissions from construction and demolition: Best Practice Guidance provided by the London Councils (GLA, 2006).

7.18 Appropriate mitigation may include:

- Use of wheel washing to prevent mud and debris being carried out of the site;
- Using water sprays; and
- Reducing drop heights.

Operational Phase

7.19 Mitigation with regards to local air quality during the operational phase will not be necessary.

7.20 With regard to the potential for odour impacts due to wastewater processing, subject to the final design of any such facilities, suitable mitigation and best-practice procedures will be recommended to minimise odour generation.

Residual Impacts

7.21 Residual construction phase impacts are considered to be of negligible significance.
The proposal can be considered likely to have a neutral impact with regards local air quality once operational.

7.22 If there is the potential for an odour impact from any wastewater facilities, it is likely that suitable mitigation and best-practice procedures will minimise odour generation to acceptable limits.

**Cumulative Impacts**

7.23 No cumulative impacts have been identified.

**Summary and Conclusions**

7.24 After consideration of the location of the proposed development site, the locations and sensitivity of the nearest potential receptors, and existing background concentrations, it can be concluded that the proposal will have a negligible or neutral air quality impact.

7.25 Facilities to deal with wastewater are yet to be finalised. Once finalised, an odour assessment may be necessary to determine the likelihood of an odour impact. However it is likely that suitable mitigation and best-practice procedures will be capable of minimising any odours to acceptable limits.

**References**

- Harrogate Borough Council (2009) Detailed Assessment of Air Quality
- Harrogate Borough Council (2006), Air Quality Updating and Screening Assessment
- BRE (2003a), Guidance on the Control of Dust from Construction and Demolition Activities
- BRE (2003b), Controlling Particulates, Vapours and Noise Pollution from Construction Sites

- Defra (2009), Local Air Quality Management, Technical Guidance LAQM.TG (09)

- London Councils (2006), The control of dust and emissions from construction and demolition: Best Practice Guidance

8.0 *Agricultural Land Impact*

**Introduction**

8.1 This section examines the impact on land use of the construction of Ripon Services. As part of the EIA the route has been assessed for potential agricultural land loss and economic impact. The land is cropped as part of an arable and grassland rotation. The rotation includes Winter Wheat, Winter Barley, Winter Oil Seed Rape and Herbage Seed. The Herbage Seed is grazed by sheep over winter and after harvest.

**Planning Policy**

8.2 Planning policy regarding agricultural land in England has recently been updated from PPG7 (*The Countryside Environmental Quality and Economic and Social Development*) to the newly adopted PPS7 concerning Sustainable Development in Rural Areas. This states that ‘where possible development should not take place on land in Grades 1-3a’ (namely the best and most versatile) in accordance with MAFF’s 1988 Revised Guidelines for Agricultural Land Classification of England and Wales. These points are reiterated in the Yorkshire and Humber policy ENV7 and Harrogate Borough Council planning policy. This paper also requires assessment to take into account the impact of the proposed development on farm size, structure, building and fixed equipment. There is no definitive figure as to what is a significant loss of higher quality land. The Town and Country Planning (General Development Procedure) order 1995 In this it states that losses of 20ha or more grade 1,2, 3a would be regarded as large and require consultation with Defra.

8.3 PPS1 is concerned with the protection of soil through development plan policies, however further strategy for the protection of soil is set out in The First Soil Action Plan for England 2004-2008. In response to European Legislation Defra is continuing with further soil strategy undertakings. The Defra Soil Strategy (Consultation Draft March 2008) highlights the importance of soil and the need to protect this resource. Environment Agency (EA) strategy Soil a Precious Resource: Our strategy for protecting, managing and restoring soil (EA, 2007) has complimentary aims.
Methodology

8.4 The field was walked and soil cores dug on the 3rd of March 2010. Mr Webster the land owner was also interviewed the same day. Drawings were supplied by Jaytee (Rainton LLP) and utilised in conjunction with the published Agricultural Land Classification Maps.

8.5 This report has been compiled using Design Manual for Roads and Bridges (“DMRB”) guidelines to assess the impact of the proposal on agriculture at a national and local level. Impacts on individual farms relate to; land loss, destruction of buildings and damage to farm infrastructure (such as access arrangements and drainage). Impacts on agricultural resources relate principally to the quality of land lost to construction according to MAFF’s 1988 Revised Guidelines for Agricultural Land Classification (“ALC”) for England and Wales. In addition, national (PPS7) and local planning (HBC) state the importance of agricultural issues in sustainable development.

8.6 From the current available information an Impact Assessment was carried out and categorised as follows:

- High: - Severe impact, likely to compromise farm viability
- Medium: - Significant impact but not likely to endanger viability.
- Low: - Small impact but will not endanger viability.
- Negligible: - Any difference is likely to be negligible.
- Neutral: - Insignificant difference.

8.7 These categories will be referred to throughout this section of the report.

Baseline

8.8 The soils and the land quality remain unchanged since survey work carried out in
1994 and 2007. The agricultural land use is both arable and livestock.

**Assessment of Impacts**

**Land Take**

8.9 Permanent Land Take requirements for the scheme include balancing ponds, environmental landscaping and the site of the road development. Temporary Land Take is required for soil storage and construction, these areas being returned to agriculture after the development has been built.

8.10 Recent Government Agricultural Strategy has focussed attention on the need for National Food Security and maintaining and optimising land for food production is one area that has been highlighted. The loss of agricultural land to development means that the area available for production is reduced. Any development has a Cost Benefit Analysis and part of that includes land loss. The increasing importance of productive agricultural land means that land take should be minimised. Additional environmental screening and off site plantings need to be justified.

8.11 The proposed area belongs to L T and J R Webster and the total field size is approximately 20ha. Currently 2.4ha have been acquired for the A1(M) road improvement scheme leaving 18.6ha. The proposed MSA will require a permanent land take of 5.17ha the remaining area will be utilised for planting and amounts to 15% of the farm.

**Land Quality**

8.12 The ALC system classifies land into five grades, with Grade 3 subdivided into Sub-grades 3a and 3b, see Table 8.2. The ‘best and most versatile land’ is defined as Grades 1, 2 and 3a by policy guidance (see PPG7). This is the land which is most flexible, productive and efficient in response to inputs and which can best deliver future crops for food and non food uses such as biomass, fibres and pharmaceuticals. Current estimates are that Grades 1 and 2 together form about 21% of all farmland in England; Sub-grade 3a contains a similar amount. The ALC system is used by Defra and others to give advice to local planning authorities, developers and the
public if development is proposed on agricultural land or other ‘Greenfield’ sites that could grow crops. The General Development (Procedure) Order refers to the best and most versatile land policy in requiring statutory consultations with Defra.

8.13 The ALC grading system is also used by commercial consultants to advise clients on land use and planning issues.

Criteria and Guidelines

8.14 The Classification is based on the long term physical limitations of land for agricultural use. Factors affecting the grade are climate, site and soil characteristics.

- Climate: Temperature and rainfall; aspects, exposure and frost risk.
- Site: Gradient, micro relief and flood risk.
- Soil: Texture, structure, depth and stoniness; chemical properties which cannot be corrected.

8.15 The combination of climate and soil factors determines soil wetness and droughtiness. Wetness and droughtiness influence the choice of crops grown and the level and consistency of yields, as well as use of land for grazing livestock. The Classification is also concerned with the inherent potential of land under a range of farming systems. The current agricultural use, or intensity of use, does not affect the ALC grade.

Versatility and Yield

8.16 The physical limitations of land have four main effects on the way land is farmed. These are:

- The range of crops which can be grown
- The level of yield
The consistency of yield

The cost of obtaining the crop

8.17 The ALC gives a high grade to land which allows more flexibility in the range of crops that can be grown (its ‘versatility’) and which require lower inputs. This grade also takes into account the ability to produce consistently high yields of a narrower range of crops.

Table 8-1: Definitions of land classification grades

<table>
<thead>
<tr>
<th>Grade</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade 1 – Excellent Quality Agricultural Land</td>
<td>Land with no or very minor limitations to agricultural use. A very wide range of agricultural and horticultural crops can be grown and commonly includes top fruit, soft fruit, salad crops and winter harvested vegetables. Yields are high and less variable than on land of lower quality.</td>
</tr>
<tr>
<td>Grade 2 – Very Good Quality Agricultural Land</td>
<td>Land with minor limitations which affect crop yield, cultivations or harvesting. A wide range of agricultural and horticultural crops can usually be grown but on some land in the grade there may be reduced flexibility due to difficulties with the production of the more demanding crops such as winter harvested vegetables and arable root crops. The level of yield is generally high but may be lower or more variable than Grade 1.</td>
</tr>
<tr>
<td>Grade 3 – Good to Moderate Quality Agricultural Land</td>
<td>Land with moderate limitations which affect the choice of crops, timing and type of cultivation, harvesting or the level of yield. Where more demanding</td>
</tr>
<tr>
<td>Grade</td>
<td>Description</td>
</tr>
<tr>
<td>--------------</td>
<td>-------------</td>
</tr>
<tr>
<td></td>
<td>crops are grown yields are generally lower or more variable than on land in Grades 1 and 2.</td>
</tr>
<tr>
<td>Sub-grade 3a – Good Quality Agricultural Land</td>
<td>Land capable of consistently producing moderate to high yields from a narrow range of arable crops, especially cereals, or moderate yields from a wide range of crops including cereals, grass, oilseed rape, potatoes, sugar beet and the less demanding horticultural crops.</td>
</tr>
<tr>
<td>Sub-grade 3b – Moderate Quality Agricultural Land</td>
<td>Land capable of producing moderate yields of a narrow range of crops, principally cereals and grass or lower yields from a wider range of crops or high yields of grass which can be grazed or harvested over most of the year.</td>
</tr>
<tr>
<td>Grade 4 – Poor Quality Agricultural Land</td>
<td>Land with severe limitations which significantly restrict the range of crops and/or level of yields. It is mainly suited to grass with occasional arable crops, the yields of which are variable. The grade includes very droughty arable land.</td>
</tr>
<tr>
<td>Grade 5 – Very Poor Quality Agricultural Land</td>
<td>Land with very severe limitations, which restrict use to permanent pasture or rough grazing, except for occasional pioneer forage crops.</td>
</tr>
</tbody>
</table>

Reference: PG/ML/1076309/R004pg
8.18 The proposed area was surveyed in 1994 and 2007 as part of the proposed A1 upgrade. This information has been utilised and confirmed by additional soil cores dug on the 3rd of March 2010 (Appendix 1). The whole area is of the highest ALC grade (either 1, 2, or 3a) so where possible land take should be minimised. Previous guidelines on planning consultations did not require consultation with MAFF if 20 ha or less of the best and most versatile land was required. The proposal does not require an area in excess of 20ha and so is not significant in National terms.

**Land Use**

8.19 The land is cropped as part of an arable and grassland rotation and is owned by one farmer. The land is farmed in a 5 to 6 year rotation which includes Winter Wheat, Winter Barley, Winter Oil Seed Rape and Herbage Seed. The Herbage Seed is grazed by sheep over winter and after harvest.

**Severance and Access Issues**

8.20 Severance, which adversely affects farm structure, occurs when any part of a farm is physical separated from the remainder. When an alternative access route to the severed land is available the effect of the severance may be relatively slight, but where no alternative access is possible, land is lost from the farm. This proposal does not create any new severance or access issues.

**Economic Impact**

8.21 The Management and Investment Income ("MII") is a financial measure that can be used to assess the performance of a farm. This information can then be used to assess the effect of land loss. The MII is calculated by subtracting total inputs (including an allowance for the farmer’s own labour) from the total farm output. The MII of a farm however, is not necessarily reduced in proportion to the area of land which may be severed from it.

8.22 The calculation of the reduced output is relatively simple, as production from the land lost will cease and the variable costs associated with that production e.g., seeds, fertilisers, etc. will be saved.
8.23 The fixed costs of the farm will initially be the same for the smaller unit as they were for the original one, and so the proportionate loss of MII, will usually be greater than the proportional loss of land. In time, opportunities may arise for a reduction of the fixed costs and so the initial reduction in MII due to land loss is likely to be the maximum experienced.

8.24 A farm is considered viable when a positive MII results from the farming system being carried out. If the estimated reduction in MII is greater than 100% the farming business cannot provide a return on the capital invested in it nor can it fully remunerate the farmer for his labour. Such a situation would mean that the capital base of the business would need to be depleted to pay recurrent costs and therefore the business would be unviable.

8.25 In this instance, a 9% loss of land would not threaten the farms viability but would lead to 44% fall in MII. This has to be offset against any financial gain that the owner occupier would gain from the sale which would be beneficial. The loss of income to Agriculture from this proposal would be an annual fall of £9,560. This is not significant on a national scale and would have no long term local impact.

Soil Issues

8.26 Agricultural land drains are an important aspect of modern farming with many acres being drained and converted to arable production after the war. Damage to land drains can lead to considerable problems in crop production and financial loss. Drains should be identified and intercepted, if possible, prior to construction and re-instated upon completion of the work. The affected area in this proposal has no known drainage schemes.

8.27 Soil has been identified as a fundamental and finite resource with European and United Kingdom legislation in place to protect it. Some of the most significant impacts on soil properties occur as a result of activities associated with construction activity.

8.28 A code of practice has been developed to assist the construction sector to better protect the soil resources with which they work. Following the guidance in the code will help protect and enhance soil resources on site.
8.29 Land that is re-graded for environmental or construction purposes is not lost to Agriculture. Reinstatement as carried out in line with the codes of good practice retains the Land for future agricultural use. In general terms the land would be downgraded by one category if good practice is carried out for re-instatement.

8.30 The key messages in the code of practice are set out below and must be adhered to during the construction programme

Pre-Construction Planning

- Have a soil resources survey carried out on site by a suitably qualified and experienced soil scientist or practitioner. This should be done at the earliest convenience and prior to any earth work operations.

- Incorporate the results of the soil resources survey into the site working strategy, ensuring liaison between the soil resources survey and other ground investigations.

- Ensure that you are informed and follow waste regulations as necessary.

- Consider the use of sustainable drainage systems on site as these can provide more long term protection of soils beyond the construction phase.

Soil Management during construction

- Prepare a soil management plan showing the areas and type of soil to be stripped, haul routes, and the location and type of each soil stockpile.

- When stripping, stockpiling, or placing soil, do so in the driest condition possible and use tracked equipment where possible to reduce compaction.

- Confine traffic movement to designated routes.

- Keep soil storage periods as short as possible.
- Clearly define stock piles of different soil materials.

**Plant Health and Animal Disease Issues**

8.31 The potential economic and social impact of transmittable diseases in both animals and plants is significant. It is vital that every precaution is taken to minimise risks. The Food and Environment Research Agency (FERA) and Animal Health divisional offices have not notified the land owner of any recorded incidences affecting this land.

8.32 Movement of soils between fields increases the risk of contamination. It is therefore prudent to ensure that, where possible, soils that are removed or stored during construction are used on the same field. This will not be an issue on the proposed land site as it is all owned by Mr Webster.

**Residual Impacts**

8.33 The proposal would have a adverse affect on agriculture in the long term with the permanent loss of 5.17 ha of the best and most versatile land. Part of the impact will countered by landscaping which will help improve biodiversity in the area.

**Conclusions**

8.34 The Report provides an assessment of the likely impact on agriculture of the proposed Motorway Service Area. The economic impact has been assessed both on an individual farm basis and the overall effect. The effect of the proposal on a National and Local level would not be significant.

8.35 There would be no access and severance issues attributable to the proposal.

8.36 The development will require 18.6 ha of land of which 5.17 ha will be irreversibly lost. The remaining 13.4 ha will be landscaped and planted with trees.

8.37 All the land required would be of the best and most versatile quality (1, 2 and 3a). In
National terms the loss of 5.17ha would not be significant. However, minimising total land take would help reduce the impact locally.

8.38 One land owner will be affected who will ultimately be a beneficiary.

8.39 There will be some biodiversity benefits where landscaping is implemented.
9.0 Landscape and Visual Impact

Introduction

Background

9.1 The aim of this chapter is to provide an assessment of the proposal by Jaytee (Rainton) LLP for a MSA development at the junction of the A1 and A61 in Harrogate, North Yorkshire, on the landscape, townscape and visual amenity.

9.2 Enzygo Limited (“Enzygo”) have been commissioned by AECOM to prepare a ‘Landscape and Visual Impact Assessment’ (“LVIA”) for the MSA proposal.

The Site

9.3 The development site, (Grid Ref: SE 355 756, Full Grid Ref: 435592, 475667) which is approximately 18.80 hectares in area, is located on the western side of the A1(T) and on the south eastern side of the A61 in the borough of Harrogate, North Yorkshire. The site, which is roughly triangular in shape, is located approximately 1.5km south west of Baldersby St James and 1.8km north-west of Rainton (see Figure 9.1 – Location Plan).

9.4 The site is currently open agricultural land, as is much of the surrounding area which makes up the study area. The eastern boundary of the site, adjacent to the A1, has a low fence running along its entire length. The southern and western boundaries are not clearly defined by vegetation or fencing.

9.5 The most dominant feature in the area immediately surrounding the site is the current roadwork’s associated with the upgrading of the A1(T) trunk road to motorway standard, being undertaken by the HA. Within close proximity to the development site, this project, entitled A1 Dishforth to Leeming Improvements (“A1D2L”), involves:

- The introduction of a LAR, which runs parallel with the new motorway and
The A1D2L scheme has involved the removal of numerous trees and hedgerows surrounding Baldersby Junction, however the HA are committed to replacing and enhancing the landscape surrounding the junction, part of which will be along the northern boundary of the site.

9.7 As the A1 improvement scheme is currently underway and will be completed before the MSA is likely to be approved, the proposals associated with the improvements have been included within the baseline assessment.

The Proposed Development

9.8 The proposed development is for a junction MSA, which will serve users of both the A1(M) and the A61. The MSA will serve traffic on the A1(M) upgrade travelling north and south. The key elements of the proposal that are relevant to this chapter are as follows:

- A new entrance roundabout and access road from the A61 which will be located 150m south of the Baldersby Junction;
- A filling station located in the northern part of the development site;
- A food court building which is approximately 8m in height in the southern part of the development site;
- A 80 room hotel which is approximately 7.5m in height in the southern part of the development;

- An outdoor picnic area located beside the food court building; and

- Car parks in the southern part of the site, either side of the food court building.

The site area is 18.80ha in size, of which the area for the MSA development is approximately 5.17 hectares, which is 27.5% of the total area, and the landscaped area is 13.63ha, which is 82.5% of the total area.

9.10 Refer to the Design and Access Statement (Ref. 1076309/R003pg) for full details of the proposed development.

**Aims and Objectives**

9.11 The aim of this study is to undertake a LVIA of the proposed development. The objectives are to identify the existing landscape character and visual amenity resource, identify the likely effects of the proposal on this baseline situation (which is predominantly agricultural land use), and to determine the residual impact of the proposal on landscape character and visual amenity of the proposed MSA.

**Structure of the Chapter**

9.12 Section 2 of the chapter describes the methodology and approach taken to the assessment, the detailed assessment criteria is contained in Appendix 9.1.

9.13 Section 3 considers landscape and visual planning policy relevant to the site.

9.14 Section 4 describes the existing landscape features, landscape/townscape character, visual amenity and views of the study area which comprise the baseline situation.

9.15 Section 5 provides a description of the proposal and Section 6 describes the potential
effects of the proposal, highlighting features or methods of working which have been incorporated to mitigate such effects and enhance the proposal. This is supported by detailed landscape and visual impact assessment tables contained in Appendix 9.2.

9.16 Section 7 describes mitigation proposals for the site and Section 8 considers the residual effects following establishment of mitigation proposals.

9.17 The landscape and visual impacts of the proposal are summarised in Section 9.

9.18 Section 10 provides a list of the references cited in the chapter.

**Methodology**

**Introduction**

9.19 The LVIA will consider the potential effects of the development upon:

- Individual landscape/townscape features and elements;
- Landscape/Townscape character and quality (condition); and
- Visual amenity and the people who view the landscape.

9.20 Refer to Appendix 9.1 for the full landscape and visual assessment methodology.

**Distinction between Landscape and Visual Impacts**

9.21 Landscape and visual effects are two distinct but related areas, which will be assessed separately in accordance with the approach outlined below. Landscape and visual impacts do not necessarily coincide and can be beneficial or adverse. A clear distinction will be drawn between landscape and visual impacts as follows:

- Landscape impacts relate to the effects of the proposal on the physical and
other characteristics of the landscape and its resulting character and quality.

- Visual impacts relate to the effects on views experienced by visual receptors (e.g. residents, footpath users, tourist’s etc) and on the visual amenity experienced by those people.

**Guidance**

**9.22** The LVIA of the proposed scheme will be undertaken by a Landscape Architect with experience of similar types of development. The assessment will be undertaken in accordance with best practice outlined in published guidance:


- Landscape Character Assessment Guidance for England and Scotland (2002) The Countryside Agency and Scottish Natural Heritage; and


**LVIA Methodology**

**9.23** The Landscape and Visual Impact Assessment will be undertaken in the following stages:

- Baseline data collection via desk-top, consultation and fieldwork;

- Description of the baseline landscape character and visual amenity of the site and surrounding area which identify the relevant landscape and visual receptors (including key viewpoints) and determine their sensitivity to change;
• Description of the magnitude of change in the landscape and visual amenity as a consequence of the proposal;

• Description of the potential landscape and visual impacts arising from the proposal; and

• Development of strategic mitigation proposals to assist in reducing adverse landscape and visual effects or provide compensation where unavoidable, and where possible enhance and safeguard beneficial effects.

9.24 Baseline information regarding landscape features and sensitive visual receptors, and the likely change in the landscape character and visual amenity of the site and its surroundings, will be used to identify potential impacts and inform the final scheme as appropriate.

9.25 Strategic mitigation measures will be developed in tandem with the proposal to minimise adverse impacts as part of an iterative design process. Options for screening various components of the scheme will be investigated and adopted as mitigation measures where appropriate.

9.26 Criteria thresholds for assessing the degree of change as a result of the scheme will be established and the final layout of the scheme will be reviewed to ascertain the magnitude of change in the landscape and in views. Visual impact on historic features of interest may also need to be assessed.

Sensitivity of Receptors, Magnitude of Change and Significance of Effects

9.27 The significance of effects of the proposal on both the landscape and visual receptors within the study area are ascertained by cross-referencing the sensitivity of the baseline landscape or visual receptor and the magnitude of change as a result of the development.

9.28 The sensitivity of landscape and visual receptors is judged as high, medium or low. The magnitude of change is also judged to be high, medium, low or negligible. Significance of effects is expressed as either slight, moderate or substantial, which
may be either beneficial or adverse, or neutral.

**Study Area**

9.29 For the purposes of this LVIA, a 5km study area from the centre of the site has been used as a boundary to assess the effects of the proposal. 5km has been considered in acknowledgement of the scale of the proposal and the generally flat topography of the area. This is not to say that there will not be views of the site from outside this study area, however, it is considered that more distant views are likely to be limited and in any event the site would only be a small part of a wider panorama and seen in the context of visually dominant surrounding features such as the A1 motorway.

**Visual Envelope**

9.30 The visual envelope of a scheme defines the broad area from within which it may be possible to see the whole or part of the proposed development, and helps to establish the potential for sensitive visual receptors. The site is not considered to be visible outside this area or will be very difficult to perceive, except from occasional tall buildings or higher elevations, such as the North Yorkshire Moors and Yorkshire Dales. However, there will still be pockets within the visual envelope from which there are no views of the study area, due to the local screening effects of vegetation and topography or other features such as buildings. Landscape features, which form visual barriers and restrict views towards parts of the study area, such as landform, settlements and woodland, can then be evaluated and significant barriers identified to refine the baseline visibility of the proposal.

**Key Viewpoints**

9.31 Within the extent of the visual envelope, it would not be practical to illustrate the visual impact on every individual visual receptor affected by a scheme. Therefore, representative viewpoints will be used to assess the impacts on the different range of views towards the site. Viewpoints will be illustrated photographically using a 56mm lens digital SLR camera and the site boundary and significant features will be identified together with landmarks and features in the surrounding area. All photography carried out as part of this assessment is in accordance with LI Advice Note 01/04 as Amended (August 2008), which is included in this chapter as
Appendix 9.3.

9.32 The location of viewpoints was discussed during a site meeting on March 5th 2010, with Harrogate Borough Council’s Landscape Architect, Wendy Wright, and opinion sought on the selection of representative viewpoints. The LPA made no objection to the selection of viewpoints or the methodology used and has not requested that any additional views be considered. The viewpoints are as follows:

<table>
<thead>
<tr>
<th>No.</th>
<th>Location</th>
<th>Type</th>
<th>AOD, Position &amp; Elevation</th>
<th>Distance &amp; Direction</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Melmerby</td>
<td>Village</td>
<td>SE34062,76635, 37m</td>
<td>1.5km, NW</td>
</tr>
<tr>
<td>2</td>
<td>Wide Howe Farms and Residential Properties</td>
<td></td>
<td>SE36048,76502, 41m</td>
<td>0.75km, NE</td>
</tr>
<tr>
<td>3</td>
<td>Baldersby St James Village and Conservation Area</td>
<td></td>
<td>SE36613,76861, 26m</td>
<td>1.25km, NE</td>
</tr>
<tr>
<td>4</td>
<td>Rainton Village</td>
<td></td>
<td>SE36959,75417, 37m</td>
<td>1.5km, NW</td>
</tr>
<tr>
<td>5</td>
<td>Rainton Overbridge Road Bridge with Pedestrian Access above the A1</td>
<td></td>
<td>SE36057,74440, 50m</td>
<td>1.5km, S</td>
</tr>
<tr>
<td>6</td>
<td>The Sleights Residential Property</td>
<td></td>
<td>SE36206,74568, 51m</td>
<td>1.5km, SSE</td>
</tr>
<tr>
<td>7</td>
<td>Hutton Grange Cottage Residential Properties</td>
<td></td>
<td>SE35182,75273, 44m</td>
<td>0.8km, SSW</td>
</tr>
<tr>
<td>8</td>
<td>A61 Road passing site</td>
<td></td>
<td>SE35230,75446, 51m</td>
<td>0.05km, SW</td>
</tr>
</tbody>
</table>

Temporal Scope

9.33 2010 has been taken as the baseline year for defining the existing landscape. However, major developments that have been granted planning permission (either outline or full) at the time of the scheme Design Freeze, such as the A1D2L Improvements have been consideration where sufficient information is available.

9.34 The relevant impacts of the development will be assessed at the following times:
During construction;

One year (year 1 – opening year) after opening to assess the impacts once the major construction is complete; and

Fifteen years (year 15 – design year) after opening to allow for any mitigation planting and other landscape schemes to mature to give the intended effect.

Approach to the Assessment

Study Area

9.35 The study area for the landscape assessment comprises the regional context of the area surrounding the site (but ultimately limited by a 5.0km radius from the centre of the site as appropriate reference to consider the context in sufficient detail). The study area for the visual assessment is defined by the visual envelope of the proposal – the broad area over which any part of the scheme components would be seen – and is arrived at following an analysis of landscape features such as topography, significant vegetation and built form. The study area was verified by a site visits undertaken in February and March 2010.

Consultation

9.36 The Environmental Impact Assessment Scoping Report (Ref. ML/KON/1076309) included a Landscape and Visual Impact Assessment section (Chapter 10). This section set out the principles that this chapter will follow, including the methodology, and set out the proposed content.

9.37 In addition to this a site meeting was held with the Landscape Officer of Harrogate Council on Friday 5th March to discuss the landscape and visual assessment.

9.38 In line with PPS1 pre-application community involvement has been undertaken as part of the planning application, the full details of which can be found in the ‘Statement of Community Involvement’ (Ref. 1076309/KoN/SCI1). In summary the methods utilised included:
• Contacting the local parish councils by phone and email in the week commencing 16th February 2010;

• Local residents mail shot (on 8th March 2010);

• Press releases (on 3rd and 10th March 2010);

• A public exhibition held at The Mission Rooms, Baldersby, on Tuesday 16th March, between 4pm and 7pm;

• A meeting with local residents on 25th March 2010; and

• A meeting with North Yorkshire Police on 7th April 2010.

9.39 In this section we summarise the comments received during the consultation process where they pertain to landscape and visual issues. Positive comments on the scheme from the public included a preference that an MSA be located on the western side of the junction as appose to the eastern side, which is closer to residential settlements. Whilst negative comments included:

• The MSA will result in the loss of open countryside and agricultural land;

• Increase in light pollution;

• Loss of the rural setting; and

• Concern was expressed about the loss of productive agricultural land.

9.40 Suggested changes made by members of the public were:

• Provision of a additional bund of landscaping on the western boundary of the site;

• The landscaping and pond should be accessible by MSA users; and
• Extra landscaping should be provided.

9.41 These comments will be considered in this assessment and where considered appropriate, they will be addressed through alteration to the design of the proposal including landscape and visual mitigation.

**Desk Studies**

9.42 The baseline landscape and visual assessment comprised a desktop study of the following data sources:

- Ordnance Survey Explorer Map 299: Ripon and Boroughbridge at 1:25,000 scale;

- The Google Earth website at earth.google.com;

- The Multi-Agency Geographical Information for the Countryside website at magic.gov.uk;

- PPS1, ODPM (2005);

- PPS7, ODPM, (2004);

- The Yorkshire and Humber Plan - Regional Spatial Strategy (RSS) to 2026 (2008);

- Harrogate Borough Local Plan, Harrogate Borough Council (2001);

- Harrogate Borough Council Local Development Framework (LDF) Core Strategy, Harrogate Borough Council (2009);

- Hambleton Local Development Framework (LDF) District Development Policies Document, Hambleton District Council (2008);
• Countryside Character Volume 3: Yorkshire and the Humber;

• A1 Dishforth to Barton Landscape Character Assessment, Highways Agenc (2003); and

• Harrogate Borough Landscape Character Assessment (2004).

Field Studies

• The site was visited on 1st and 18th March 2010 to obtain the following data:

• Photographs from proposed Key Viewpoints:

• A corroboration of the findings of the desktop review; and

• To obtain additional information on landscape features, views and localised screening barriers.

9.43 The site surveys were all undertaken during periods of clement weather from public highways, public rights of way ("PRoW") and publically accessible areas, including areas of public open space.

Landscape Policy Review

Introduction

9.44 The planning policy for the study area is covered in Chapter 4, however this section identifies policy and designations of direct relevance to the landscape. The landscape planning constraints are shown on Figure 9.2.

European Landscape Convention, Council of Europe, 2000

9.45 The context of landscape policy in the UK can be placed within the broad framework
provided by the European Landscape Convention ("ELC"). The ELC was signed by the Government in February 2006 and signals a commitment to support the aims of the Convention which include promoting landscape protection, management and planning. It suggests that ‘Landscape means an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors’ and covers rural and urban situations.

**National Policy Framework**

9.46 The most relevant sources of national landscape policy guidance are the following:

- PPS1 and

- PPS7.

**PPS1**

9.47 PPS1 states that a key government objective is ‘protecting and enhancing the natural and historic environment, the quality and character of the countryside and existing communities’ (page 2, para.5).

**PPS7**

9.48 PPS7 states that planning authorities should continue to ensure that the quality and character of the wider countryside is protected and, where possible, enhanced. It also states that particular regard should be had to any areas that have been statutorily designated for their landscape, wildlife or historic qualities where greater priority should be given to the restraint of potentially damaging development.

9.49 Within PPS7 the Government recognises and accepts that there are areas of landscape outside nationally designated areas that are particularly highly valued locally. PPS7 states that: ‘The Government believes that carefully drafted, criteria-based policies in LDDs [Local Development Documents], utilising tools such as landscape character assessment, should provide sufficient protection for these areas, without the need for rigid local designations that may unduly restrict acceptable
sustainable development and the economic activity that underpins the vitality of rural areas’ (page 14, para.24).

**Regional Landscape Policy**

9.50 The main source of regional landscape policy is the following document:

- The Yorkshire and Humber Plan - Regional Spatial Strategy (RSS) to 2026 (2008);

9.51 Regarding the landscape, policy ENV10: Landscape states that ‘The region will safeguard and enhance landscapes that contribute to the distinctive character of Yorkshire and the Humber’ (Page 118). Although the development site does not fall within an area specifically referred to by this policy, it is considered that the site is located within a wider area of distinct rural character and therefore the proposal will need to fit within the landscape, safeguarding the character of the landscape.

**Local Landscape Policy**

9.52 Refer to **Figure 9.2** which illustrates the location of any policies or designations that are specific to part of the study area.

9.53 The site falls within the boundary of HBC, but is also within 2km of the south-western boundary of Hambleton District Council ("HDC") and therefore both will be considered. The most relevant sources of local landscape policy guidance are the following:

- Harrogate Borough Local Plan, Harrogate Borough Council (2001);

- Harrogate Borough Council Local Development Framework (LDF): Core Strategy, Harrogate Borough Council (2009); and

9.54 The 2004 Planning and Compulsory Purchase Act brought major changes to the way development plans are prepared. The old system of Structure Plans, Local Plans and Supplementary Planning Guidance has now been replaced by the Local Development Framework (LDF) which is made up of Development Plan Documents and Supplementary Planning Documents. The main document within the LDF is the Core Strategy which sets out the spatial vision and objectives.

9.55 At present Harrogate District Council are preparing a LDF which will replace the existing Local Plan. The LDF, along with the RSS, will provide the statutory basis for the future development and conservation of the District.

9.56 Currently the 'saved' policies from the HDLP continue to be used and are read alongside the Core Strategy which was adopted on 11 Feb 2009 and contains key policies.

9.57 Within the Local Plan, Landscape Character is considered by Policy C2 which states that: ‘development should protect existing landscape character’ (page 16). This policy also refers to the landscape character assessment, ‘Harrogate Borough Landscape Character Assessment’ (Harrogate Borough Council, 2004), which will be considered as part of the Landscape Character Assessment of this chapter.

9.58 There is a single Conservation Area within the study area, located 1.0km to the north-east of the development site at Baldersby St James. Policy HD3 states that applications for developments that have the potential to visually affect conservation areas should contain sufficient information to be able to consider their impact on the character and appearance of the said conservation area. This principle is repeated in Policy HD7A which considers Historic Parks and Gardens and states that development will not be permitted if it would have an impact upon the setting of a Historic Park or Garden. The closest Historic Park or Garden to the site is outside the study area at Norton Conyers (Grade II) which is located 3.0km to the west.

9.59 Policy EQ2: The Natural and Built Environment and Green Belt of the Core Strategy states that Harrogate Borough’s ‘exceptionally high quality natural and built environment will be given a level of protection appropriate to its international,
national and local importance’ (page 47). As development control polices within the LDF are developed they will afford protection, and where appropriate enhancement measures such as management plans and partnerships with landowners and interested parties. A priority of this policy is that new developments incorporate high quality, locally distinctive designs.

9.60 Policy EQ2 recognises the importance of certain environmental designations that are found within the borough such as:

- Historic Parks and Gardens;
- Scheduled Ancient Monuments (”SAMs”); and
- Conservation Areas.

9.61 Policy EQ2 also recognises the importance of the landscape character of the borough and states that the council uses the Harrogate District Landscape Character Assessment SPG (2004) for development control purposes, i.e. proposed development should not compromise the character of the borough, as is described in the Character Assessment document.

Hambleton District Council Policies

9.62 A small section of the study area falls within Hambleton District and therefore policies that relate to visual effects, as appose to physical changes, will be considered.

9.63 The main development control document within Hambleton District is the LDF Development Policies. The relevant policies within the document are:

9.64 Policy DP30 considers the character and appearance of the countryside and states, ‘Throughout the District, the design and location of new development should take account of landscape character and its surroundings, and not have a detrimental effect on the immediate environment and on any important long distance views.’ Although the site does not fall within Hambleton, due to its proximity this policy will be considered.
**Landscape Policy Summary**

9.65 It is clear from the policy review that the landscape within the study area is afforded protection through both specific designations and policies. Although the site itself does not lie within a landscape designation, there are designated areas which have the potential to be impacted upon within the wider study area, such as Conservation Areas and SAMs. To comply with policy the effects on their setting due to the proposal will be considered and any impacts upon them will be clearly stated.

9.66 The Harrogate District Landscape Character Assessment has been considered as part of a review of all published landscape character assessments within the study area. The effects of the development proposal have been considered against this assessment in accordance with the methodology (Appendix 9.1) and in line with Policy EQ2 of the Harrogate Core Strategy.

**Baseline Description**

**Landscape Character**

**Published Landscape Character Assessments**

9.67 The following published landscape character assessment documents are considered to be relevant to this assessment:

- Countryside Character Volume 3: Yorkshire and the Humber, Natural England;

- A1 Dishforth to Barton Landscape Character Assessment, Highways Agenc (2003); and

Countryside Character Volume 3: Yorkshire and the Humber

9.68 At a national scale the Countryside Commission and Countryside Agency (now Natural England) classified England into broadly homogenous landscape character areas. The character areas are described in eight volumes, which cover separate regional areas. The site falls within Volume 3 and Character Area 24: Vale of Mowbray, the key characteristics of which are:

- 'Low-lying agricultural landscape contained by the escarpment of the North Yorkshire Moors and Cleveland Hills to the east and the undulating slopes and valleys of the Yorkshire Dales to the west.

- Divided from the Tees Lowlands to the north by glacial deposits forming a minor watershed.

- Underlying Triassic sandstones and mudstones, blanketeted by thick layers of glacial boulder clay (till) with subdued moraines and ridges of sand and gravel.

- More varied topography than the Vale of York with areas of rolling, undulating hills as well as flatter land. Fertile agricultural land used for arable crops and permanent grassland.

- Fields of a medium scale enclosed by low hedgerows with scattered, small areas of woodland and some parkland.

- Low-lying river valleys meandering through flood plains which become broader to the south where they traverse flat, glacial, lake deposits.

- Villages situated on higher ground, often with a linear form along a wide main street, and churches providing local landmarks.

- Buildings generally of brick of varying colour with pantiles for roofs.

- Influence of military installations and major transport routes especially the
A1, the A19 and the York to Edinburgh main railway line.’

**A1 Dishforth to Barton Landscape Character Assessment, Highways Agency (2003)**

9.69  This document is a Landscape Character Assessment that was produced by the Highways Agency as part of the A1 Dishforth to Barton improvement project. The document is a thorough assessment of the landscape within the A1 road corridor between Dishforth and Barton and the site falls within the southern extent of this assessment. The study area is divided into a series of detailed landscape character types and the site falls within the character type, ‘Gently Rolling Intensive Farmland,’ the key features of which are:

- ‘The landscape is distinguished by two key characteristics: a gently rolling topography and the scarcity of hedgerows, tree belts and hedgerow trees;

- This landscape type represents some of the most productive arable land in the study area. However the glacial sands and gravel were deposited in such a way as to create a gently rolling landscape rather than a flat one;

- This intensification has resulted in the removal or reduction in maintenance of traditional hedgerows and the loss of mature hedgerow trees. The result of this is that field sizes in this character type are typically medium to large scale. In many locations, hedgerows have been replaced with fences;

- The farms within this landscape character type are also typically larger than those elsewhere and in particular, modern tin hay barns are common; and

- Due to the lack of vegetation, there is a strong sense of exposure within the character type.’

**Harrogate Borough Landscape Character Assessment (2004)**

9.70  This document assesses the landscape character of the entire Harrogate Borough, dividing it into distinct character areas. The site falls within the Character Area 81: Dishforth and Surrounding Farmland, the key characteristics of which are as follows:
• ‘Sherwood sandstone solid geology overlain with sandy till and till drift geology. Deep, well-drained, often reddish, coarse, loamy brown soils;

• Flat to slightly undulating landform below 50m AOD;

• Land use is predominantly arable with grass fields on the fringe of settlements, grade 2 agricultural land;

• Large arable fields and small to medium grassland fields bound by hedges;

• Very little woodland cover or individual tree cover;

• The main settlements are Dishforth, Kirby Hill, Langthorpe, Middleton Quernhow, and, Rainton. Baldersby St. James has a village Conservation Area;

• Several scattered farmsteads;

• The A1(M) and A168 dissect the area;

• Roman road (Dere Street), which follows the line of the A1;

• Dishforth Airfield; and

• Several tumuli and three henges of historic interest.’

Summary of Landscape Character

9.71 Following the review of published landscape character assessment documents and site based studies, it is considered that the key features of the site and study area are as follows:

• A relatively open and rural landscape that gently undulates, providing some containment of views within the landscape;
Land use is predominantly arable agriculture, with modern intensification of agriculture in this area which has resulted in medium to large scale fields with a moderate level of boundary hedgerow planting;

A very low level of vegetation cover, with occasional small native deciduous woodland areas and hedgerow cover on field boundaries is often fragmented with occasional hedgerow trees;

The A1 road, currently being upgraded, is a prominent feature of the landscape, cutting northwards through the landscape and providing visual movement in a relatively sedate agricultural landscape;

A low level of built development, predominantly consisting of large farm buildings adjacent to older red-brick farmhouses. Occasional exceptions include former estate houses such as Hutton Grange; and

Long range views towards the North Yorkshire Moors in the east and the Yorkshire Dales in the west.

**Landscape Baseline**

**Landform and Drainage**

9.72 Refer to **Figure 9.4** for the Topography and Drainage within the study area.

9.73 The study area is a relatively flat plain located between two visually imposing landscapes namely, the Yorkshire Dales, the boundary of which is located 20km to the west of the site, and the North Yorkshire Moors, the boundary of which is located 18km to the east of the site.

9.74 The site falls approximately 5.0m in height from its southern boundary, at approximately 50m AOD, to the northern boundary, at 44.6m AOD. The whole study area has a gradual slope from its southern extent, which is approximately 60m AOD, down to the north-eastern extent which is approximately 20m AOD. The lowest point of the study area, at the River Swale, which passes through the north-eastern extent.
of the study area, the nearest point being 1.8km to the north-east of the site.

9.75 There are few other prominent drainage features, other than the River Swale, in the study area, however there are a few occasional small streams and drainage channels, none of which are in close proximity to the site.

Landcover, Vegetation and Land-Use

9.76 Refer to Figure 9.5 for the Landscape Features within the study area.

9.77 The predominant land-use within the study area is agriculture, and more specifically large scale arable farmland interspersed with pastoral fields. Fields are predominantly large scale and are bounded by hedgerows with few hedgerow trees. There are few trees within the study area as a whole, with only occasional small copses and plantations, the nearest to the site being the deciduous trees located adjacent to the A1 road junction, close to the northern site boundary. There are also three small deciduous copses located approximately 1km to the south of the site beside Hutton Grange.

9.78 The site is currently arable farmland. There is little boundary vegetation, with only a species poor defunct hedgerow located along the western boundary and a small area of semi-mature mixed woodland in the northern part of the site. Most of the vegetation on the boundaries of the site has been felled, or is due to be felled in the very near future, as part of the ongoing A1 upgrade scheme adjacent to the site.

Settlement Pattern, Townscape and Cultural Associations

9.79 Refer to Figure 9.1 for the location of settlements within the study area.

9.80 The study area is a predominantly rural area which has a low level of urban development, consisting of small towns, villages and isolated farms and properties. The nearest properties to the site are Hutton Grange and Hutton Grange Cottage, which are located 300m and 200m respectively to the south, south-west of the site. The nearest settlement to the site is the small village of Baldersby St James, which is located 1.5km to the north-east of the site and contains a Conservation Area. Other
residential properties close to the site are: Hutton Moor House, which is 1.2km south, south-west of the site; Wide Howe, which is 0.7km north-east of the site; and The Sleights, which is located 1.1km south-south, east of the site.

9.81 The largest settlements within the study area are: Rainton, which is located approximately 1.7km to the south-east of the site; Melmerby, which is located approximately 2km to the north-west of the site; and Baldersby, which is located approximately 2.6km to the north of the site.

9.82 The A1 road passes directly through the study area, from north to south, passing directly adjacent to the eastern boundary of the site. The A1 broadly follows the line of an original Roman road and is therefore an established feature of the landscape, whilst having being gradually widened and modernised. As this is a relatively open landscape, the A1 is a prominent feature in the landscape, providing the main access route in and out of the study area, leading directly to London, 350km to the south, and Edinburgh, 280km to the north.

9.83 The towns and villages of the study area are generally centred around an historic core which expanded during the 20th Century. The villages are frequently of a linear form, running along roads with buildings facing each other and set back across a wide main street. Village greens and churches with towers or spires are common and these small settlements generally have significant amounts of mature vegetation. The vernacular building style is brick buildings with pantile roofs and many of the buildings are of historic interest.

Landscape Receptors

9.84 To assess the potential impacts on the landscape resulting from the proposed development the main landscape features within and adjacent to the site have been identified and are summarised below:

- Landform; and

- Site Landcover.
In order to determine the potential impacts on landscape character resulting from the proposed development, the landscape character of the site and its vicinity, described above will be used as the baseline against which the effects will be assessed.

**Visual Baseline**

**Visual Envelope**

The visual envelope of the site is illustrated on Figure 9.6.

The visual envelope of the site is limited and is primarily defined by the landform, vegetation located on field boundaries within the study area, the A1 road, which is directly adjacent to the eastern boundary of the site, and the Baldersby road bridge, close to the northern boundary of the site. Views of the site from the north are limited, as Baldersby road bridge screens much, if not all, of the views from that direction. However, the site is potentially visible from receptors to the south, all be it partially filtered by mature vegetation located along adjacent field boundaries and slight undulations in topography.

The most sensitive group of receptors with views of the site are the residential properties, although there are public rights of way within the visual envelope from which car users and pedestrians also have a view of the site. The closest residential properties to the site are Hutton Grange and Hutton Grange Cottage, which are located within 300m to the south of the site. Due to the location of mature vegetation around both properties and due to a slight rise in the landform directly between the site and these properties, the view is screened from all but upper storey views, the rise reaching 51m AOD whilst the properties are between 45m to 50m AOD, similar to the levels of the site.

The Sleights is a residential property to the south, south-east of the site, approximately 1.1km away. From this property views of the site are partially screened by the intervening landform and filtered by the filed boundary vegetation but are visible against the backdrop of the A1 / A61 road infrastructure, notably Baldersby road bridge.

From the north-west of the site views are screened by slight undulations in
topography and by Baldersby road bridge, effectively screening from views from receptors in Melmerby and Wath. Baldersby road bridge also screens views of the site from receptors to the north-east, such as Wide Howe (see Figure 9.7.1), Baldersby and Baldersby St James villages and conservation area (see Figure 9.7.2).

9.91 The most open views of the site can be sought by travellers moving along the A61, however these views are by their very nature transient and the site will form only a small part of the wider panorama. This group of receptors will be predominantly vehicular as pedestrian and equestrian access to both the A1 and A61 verges, whilst permitted, is problematic due to their quality and the level of traffic, making them an unpleasant place to be.

Visual Receptors

9.92 The main groups of visual receptors identified within the study area are summarised as follows:

- Residential receptors, including isolated farmhouses;

- Towns and villages; and

- Public rights of way, which are footpaths, local roads and major roads.

9.93 It should be noted that route of the A61 adjacent to the site, as it approaches the Baldersby Junction with the A1, is currently being altered as part of the A1 improvements. These alterations will result in a 200m length of the A61, as it approaches the Baldersby Junction, moving westwards by 50m (approx.) with the existing route being broken up. The new A61 layout will retain safe pedestrian and equestrian access along grass verges and provide a safe crossing location adjacent to the new roundabout, approximately 200m to the north of the site. Therefore pedestrian and equestrian receptors using this route would experience a similar view to that which currently exists although the route will be better defined and safer. The current verges on the A61 are uneven underfoot and do not appear to be well used.
**Key Viewpoints**

9.94 Eight key viewpoints have been selected, and approved by the LPA, as representative of the views from visual receptors within the study area, and these are listed in the Table 9.2 below.

<table>
<thead>
<tr>
<th>No</th>
<th>Location</th>
<th>Type</th>
<th>AOD, position &amp; elevation</th>
<th>Distance &amp; direction</th>
<th>Baseline view description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Melmerby</td>
<td>Village</td>
<td>SE34062, 76635 37m</td>
<td>1.5km, NW</td>
<td>Open view from the eastern edge of the village across surrounding large scale arable farmland which is bordered by hedgerow. The site is screened from view by a rise in landform between the village and the site.</td>
</tr>
<tr>
<td>2</td>
<td>Wide Howe</td>
<td>Farms and Residential Properties</td>
<td>SE36048, 76502 41m</td>
<td>0.75km, NE</td>
<td>Direct views from lower and upper storeys across adjacent arable farmland towards the site. The site is screened behind the A1 and Baldersby road junction which are prominent in the view. The A1 is currently being upgraded to motorway status and therefore vegetation has been temporarily cleared around the junction.</td>
</tr>
<tr>
<td>3</td>
<td>Baldersby St James</td>
<td>Village and Conservation Area</td>
<td>SE36613, 76861 26m</td>
<td>1.25km, NE</td>
<td>Open view from the southern edge of the village across surrounding large scale arable farmland which is bordered by hedgerow. The site is screened from view by a rise in landform between the village and the site.</td>
</tr>
<tr>
<td>4</td>
<td>Rainton</td>
<td>Village</td>
<td>SE36959, 75417 37m</td>
<td>1.5km, NW</td>
<td>Open view from the western edge of the village towards the site. Immediate views are of large scale fields which rise</td>
</tr>
</tbody>
</table>

Reference: PG/ML/1076309/R004pg
<table>
<thead>
<tr>
<th>No</th>
<th>Location</th>
<th>Type</th>
<th>AOD, position &amp; elevation</th>
<th>Distance &amp; direction</th>
<th>Baseline view description</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Rainton Overbridge</td>
<td>Road Bridge with Pedestrian Access above the A1</td>
<td>SE36057, 74440 50m</td>
<td>1.5km, S</td>
<td>Open view in a northerly direction is dominated by the A1, a busy road which is currently being upgraded to motorway status and as part of that its footprint is widening. The majority of the view is of agricultural land, primarily of arable farmland. The site is partially visible immediately before Baldersby road bridge, although slight undulations in the intervening landform and vegetation on field boundaries filter views of the site.</td>
</tr>
<tr>
<td>6</td>
<td>The Sleights</td>
<td>Residential Property</td>
<td>SE36206, 74568 51m</td>
<td>1.5km, SSE</td>
<td>Open view in a northerly direction is immediately across arable farmland which is bordered by a hedgerow. The A1, which is currently being upgraded to motorway status and its footprint is widening, is visible within 50m of this viewpoint. The majority of the view is of agricultural land, primarily of arable farmland. The site is partially visible immediately before Baldersby road bridge, although slight undulations in the intervening landform and vegetation on field boundaries filter views of the site.</td>
</tr>
<tr>
<td>7</td>
<td>Hutton Grange</td>
<td>Residential Properties</td>
<td>SE35182, 75273</td>
<td>0.8km, SSW</td>
<td>Views are primarily of surrounding agricultural land.</td>
</tr>
<tr>
<td>No</td>
<td>Location</td>
<td>Type</td>
<td>AOD, position &amp; elevation</td>
<td>Distance &amp; direction</td>
<td>Baseline view description</td>
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</tr>
<tr>
<td></td>
<td>Cottage</td>
<td>Cottage</td>
<td>44m</td>
<td></td>
<td>From ground level, the site is screened from view by a rise in the landform between the site and this location and by intervening vegetation on field boundaries. Potential oblique views limited to upper storey of properties.</td>
</tr>
<tr>
<td>8</td>
<td>A61</td>
<td>Road passing site</td>
<td>SE35230, 75446 51m</td>
<td>0.05 km, SW</td>
<td>A direct view from cars and pedestrians travelling northwards along the A61. A low, fragmented hedge along the eastern side of the road at this point filters views of the site. The predominant view is of surrounding arable farmland although the A1 is clearly visible.</td>
</tr>
</tbody>
</table>

**Description of Proposal**

**General Description**

9.95 The proposed development is for an junction MSA, which will serve users of both the A1(M) and the A61. The MSA will serve traffic on the A1(M) upgrade travelling north and south. The key elements of the proposal that are relevant to this chapter are as follows:

- A new entrance roundabout and access road from the A61 which will be located 200m south of the Baldersby Junction;

- A filling station located in the northern part of the development site;

- A food court building which is approximately 8m in height in the southern
part of the development site;

- A 80 room hotel which is approximately 7.5m in height in the southern part of the development;

- An outdoor picnic area located beside the food court building; and

- Car parks in the southern part of the site, either side of the food court building.

9.96 Refer to the Design and Access Statement (Ref. 1076309/R003pg) for full details of the proposed development.

**Architectural and Engineering Design**

9.97 The details of the proposed development and the outline of how it responds to the identified constraints and opportunities are dealt with in detail in the ‘Design, Access and Sustainability Statement’ (Ref. 1076309/R003pg).

9.98 The key motivating principles of the architectural and engineering design include:

- The provision of a high quality development that meets the needs of road users;

- Improvements to the quality of movement routes along this stretch of the A1;

- The provision of adequate screening in order to reduce any impact on surrounding properties; and

- A significant contribution to job creation objectives and potential maximisation of new jobs retained locally.

9.99 The proposed MSA scheme has been designed in accordance with the requirements for a core MSA as set out in Circular 01/2008 and includes the following elements:
Food court building;

A filling station;

A 80 bed hotel;

Free parking;

A picnic area; and

A play area for children.

9.100 The food court building will be open 24 hours a day, 365 days a year and will provide an indoor seating area, free toilets and hand-washing facilities, parent / carer and child facilities containing baby-changing amenities and public telephones. All facilities will also be accessible for disabled users.

9.101 A separate HGV shower and WC building will be provided as part of the development along with segregated parking areas for cars / caravans, motorcycles, coaches, HGVs and abnormal loads.

9.102 The MSA has been designed to minimise the risk of conflict between vehicles and pedestrians. As such the main amenity building and filling station have been segregated to reduce potential conflicts and a route is provided for vehicles who just wish to access the filling station.

9.103 The filling station (open 24 hours a day, 365 days a year) has been positioned for easy ingress and egress for all vehicle types and separate forecourts are provided for cars and HGVs either side of the filling station. The filling station will be accessible from the main access route and via the car park which will enable all users to access the facility.
Scale

9.104 The scale of the built structures within the proposed MSA has been driven by the objectives of PPS1 to address local concerns and expectations. In design terms, the relationship of the development within its setting was an important consideration. The proposal provides a development containing buildings of scale and massing which will have a limited impact upon the surrounding area. The use of high quality materials and extensive hard and soft landscaping will integrate the development with the surrounding area.

9.105 In terms of the overall scale and massing of the development, the main food court building will have a gross internal area of 2,250m². The facilities building will be a maximum of 8.0m in height (approximately 5.0m at its lowest point). In terms of other built structures on the site, the hotel will have a total gross internal area of 2,693m² and is approximately 7.5m in height, whilst the filling station is 257m² (gross internal) in size and approximately 5.0m in height, with a 6.0-7.0m high canopy.

Appearance

9.106 The overall external design of the development will take on a modern appearance whilst respecting the surround landscaping and urban settlements.

9.107 The application is for outline permission and therefore the appearance of the development will be a reserved matter, however consideration has been given to the materials to be used within the development. It is envisaged that the main building material will be stone clad, supplemented where appropriate with timber boarding/cladding and glazing, with a green roof. These materials will give the buildings a natural but contemporary appearance which will weather and blend into the environment. Where possible these will be locally procured materials that have been sustainably sourced.

9.108 A green roof will be investigated at the detailed design stage of the application as it is acknowledged that this will have a number of potential benefits including:

- Amenity resource;
• Biodiversity enhancement;

• Drainage attenuation;

• Air and water quality;

• Improved building energy efficiency;

• Noise insulation; and

• Reduced visual impact.

9.109 It is anticipated that a green roof would be a wild-flower roof, which will significantly improve the biodiversity on the site.

**Designing Out Crime**

9.110 The principals of ‘Secured by Design’ will be utilised to ensure that the external environment will be designed in a manner to avoid inadvertent creation of opportunities for crime, for example, by providing hiding places. The positioning and choice of planting will be such that the potential for such problems is minimised as far as is possible.

9.111 Care will be taken to ensure that landscape features do not become targets for vandalism or provide cover for potential criminal activity. Regular maintenance will ensure that landscaping which was designed to prevent crime and improve the environment does not deteriorate and present opportunities for crime and fears for personal security.

9.112 The following examples of good practice will be used in the detailed design of the landscape mitigation:

• Use slow-growing and low level shrubs where natural surveillance is required to ensure that sight lines are not obscured;
9.113 The MSA design has been subjected to scrutiny by the North Yorkshire Police Architectural Liaison Officer (at a meeting held on 7 March 2010) in respect to how the chance of crime could be reduced. The comments received that are listed below have subsequently been incorporated into the scheme:

- Fencing around the HGV parking area to minimise the risk of criminal activities; and
- Relocation the proposed play area to the south of the amenity area to provide better natural surveillance.

9.114 In respect to the proposed fencing around the HGV parking area, and in line with the principals of secured by design, it is anticipated that this fencing would be temporary in nature and will be supplemented by the use of prickly shrubs, which would in time effectively replace the need for this fencing.

**Balancing Pond**

9.115 The pond feature located on the eastern boundary of the development site, abutting the A1 road, will be designed to provide a variety of functions. In addition to its use as a surface water drainage balancing pond, it will also provide landscape and biodiversity benefits.

9.116 Whilst the pond will be subject to detailed design at a later stage, it is evident that the proliferation of MOD facilities may require the area to be designed to deter larger water bird species (such as ducks, geese etc), to reduce the possibility of military aeroplane bird strikes. This can be achieved by reducing the available water surface for bird landings, by introducing reed beds and islands.
Identification of Key Effects

Landscape Effects

9.117 The identification of key effects will be considered at Year 1 – Opening Year, prior to the establishment of the landscape mitigation proposed.

Landscape Features and Landcover

9.118 The landcover of the site is currently arable, which would be lost as a result of the proposed development. There would be minor alterations to the landform for the creation of access roads and building platforms, however these minor changes will be tied in with the ongoing junction and alignment improvements on the A61 adjacent to the western boundary of the site, which is moving westwards as part of the A1 upgrading scheme.

9.119 There are no notable landscape features, with limited boundary vegetation surrounding the development site, and the proposals would not require the removal of any of this vegetation. However, the current alterations and improvements to the A1 include for the removal of much of the vegetation along A61 as well as some vegetation beside Baldersby Junction.

9.120 The site area is 18.80ha in size, of which 5.17ha will be developed with the remaining 13.63ha being landscaped. The proportion of the site that is to be developed is relatively low, and the area available for landscaping presents opportunities for the enhancement of the site landscape and introduction of new site features.

9.121 Although there will be an overall loss of agricultural land the limited landform changes, the retention of the existing boundary features and the potential enhancement opportunities result in a significance of effect of slight adverse, when considered in the context of the changes to the A1 and A61. The vegetation loss is limited to the arable grassland and the proposed landscape mitigation scheme presents opportunities to not only mitigate the effects of the MSA development but to enhance the landscape features on site.
Landscape Character

9.122 The character of the site and study area, as described in sub-section 4.1 above, is predominantly a gently undulating rural and open landscape. The predominant land use on the site and in the study area is arable farming, with a low level of residential development. The key character area in the study area, and directly adjacent to the eastern boundary of the site, is the A1 road and its associated junction infrastructure, which is currently being widened. Baldersby Overbridge, just to the north of the site, which connects to the A61 and runs along the northern and eastern boundaries of the site, is the most dominant feature within the study area.

9.123 Although the MSA development would involve the loss of arable farmland, the site is located in a corner of land that is defined by its proximity to and partial enclosure by the A1 and A61 roads. The MSA development would therefore appear to be an integral part of the road infrastructure, effectively seen as a minor extension to an already dominant landscape feature. Therefore it is considered that there would be a slight / moderate adverse significance of effect on the landscape character of the site and immediate study area. Whilst the introduction of buildings and car parking to the site would be incongruous within the landscape of the study area it is considered that the site has the capacity to accept the type of development proposed due to its proximity to the A1, A61 and Baldersby Overbridge.

Visual Effects

9.124 Please refer to Figure 9.9 which illustrates the visual effects on viewpoints and receptors at Year 1.

9.125 The visual effects of the proposal are limited by three key factors:

- The undulating landform and boundary vegetation in the study area which limits views across the landscape;

- The screening effect of Baldersby Bridge close to the northern boundary of the site; and
• The limited number of visual receptors within the study area.

9.126 The receptor that is located closest to the site, the A61 which runs along the western boundary of the site, would experience the greatest visual effects. The route of the A61, as it approaches Baldersby Junction to the north of the site, is being moved westwards by approximately 50m and the existing route of the A61 will be broken up with safe pedestrian access provided on the new route. It is considered that the visual effects on this receptor would be slight / moderate adverse due to the proximity to the site and the open views of the proposal, although the views would be transient and would be viewed against the backdrop of the adjacent A1.

9.127 The only other significant public right of way that would experience views of the proposal is Shambles Lane as it passes over Rainton Overbridge, 1.5km south, south-east of the site. The overbridge, which has equestrian access, would have mid-range views of the site, although the site would be visible adjacent to the busy A1 and the Baldersby Junction and visual effects on this receptor would be slight adverse.

9.128 There are few residential receptors within the study area and there are only four properties which would experience visual effects, albeit limited, due to the proposal, which are: The Sleights, which is located 1.5km south, south-east of the site; Wide Howe, which is located 0.7km north-east of the site; Hutton Grange, which is located 0.3km south, south-west of the site; and Hutton Grange Cottage, which is located 0.2km, south, south-west of the site. The Sleights would have mid-range views of the site, although it would be visible against the backdrop of the busy A1 and Baldersby Junction. From Wide Howe there would be potential glimpsed views of the tops of buildings on site above Baldersby Junction and the A1 and there would be slight adverse visual effects on this receptor. From Hutton Grange and Hutton Grange Cottage, the proposal is expected to be screened from view however there are potential glimpsed oblique views from the upper storey of both properties.

9.129 The villages identified within the study area, including Baldersby, Rainton, Melmerby and Baldersby St James and its associated conservation area, would not be visually affected by the proposed development.

9.130 Due to the limited visual effects on surrounding visual receptors it is considered that overall there would be a neutral / slight adverse significance of visual effects.
Construction Effects

Landscape Effects During Construction

9.131 During construction, the significance of effects upon the landscape would be similar to those in Year 1 (opening year). Any changes to the landscape of the site made during the construction phase would be permanent, and would also be evident in Year 1, following opening of the development.

9.132 Wider awareness of construction activity is likely to be limited to visibility (over distance) of construction equipment, such as cranes, and the movement of construction vehicles. The construction works are temporary and, in the context of the adjacent work to the upgrade of the A1, landscape effects during construction are considered to be slight / moderate adverse.

Visual Effects during Construction

9.133 The significance of visual effects during construction would also be limited by the factors outlined above. The predominant construction effect is likely to be associated with the visibility of construction equipment, and the appearance of the partially constructed buildings, from those few locations from which the main assessment has identified that the proposed MSA is likely to be visible and prominent.

9.134 Surrounding landform undulations and the intervening vegetation would visually contain the majority of ground level activity and low level, temporary materials storage. The main publicly accessible area in the immediate vicinity of the site that provides views of construction activities at close quarters would be the A61, whilst the closest residential properties, Hutton Grange, Hutton Grange Cottage and Wide Howe, would be adequately screened from ground and low-level activity by the intervening topography and vegetation. The most prominent construction activity from these receptors would be the construction equipment and traffic movements, however these need to be considered against the currently high level of traffic activity on the A61 and A1 road network.

9.135 Although the magnitude of the visual effects of construction may be high at times, its temporary nature would mean that the significance of effects would be no more than
slight adverse. There are few receptors of sufficient visual sensitivity and proximity that could not accommodate these short term and temporary impacts.

**Residual Effects during Construction**

9.136 The short term nature of this phase of the works means that it would not be practical to provide specific landscape mitigation proposals during the construction works. Planting would not establish sufficiently to provide any screening benefits and the limited extent of the visual envelope make the provision of boundary screen bunds unnecessary. There is therefore no requirement to assess residual landscape and visual effects during construction.

**Night Time Impacts**

9.137 Light and people’s perception of it, are a complex interaction and vary from person to person. There are therefore recognised standards that are based on current good practice. Light Pollution criteria are to be found in the following publications:

- Guidance Notes for the Reduction of Obtrusive Light - ILE, 2005; and
- Lighting in the countryside: Towards good practise - DoE/CoCo, 1997

9.138 Full details of the night time assessment can be found in the Preliminary Night Time Assessment (Ref. SHF.406.002/RE/005).

9.139 The existing site is currently undeveloped it is adjacent to the A61, the A1 trunk road, which is currently being upgraded to a three lane motorway, and the new junction at Baldersby Gate. Whilst the road network is currently unlit the junction and its associated roundabouts are lit and there are a number of other light sources the majority of which are associated with the roads - the A61 and its junction with the A1 being the most notable. The sources are listed below:

- Road lighting and signage at the junction of the A61 with the A1;
- Road lighting on the roads around Baldersby, Baldersby St James, Rainton
and Melmerby;

- Residential lighting around the villages of by, Baldersby St James, Rainton and Melmerby;

- Industrial/Commercial Lighting south of Melmerby;

- Traffic on the A61 and A1;

- Traffic on the local road network; and

- General Sky glow.

**Lighting Mitigation**

9.140 The landscape design has been formulated to makes the best use of the existing topography and vegetation screening together with the additional landscape buffer zones. In lighting terms mitigation of lighting effects will be achieved through the use of well designed equipment limiting waste light out of and upwards from the site and by ensuring that the site is not over lit within the current published safety standards.

9.141 Four types of potential impact have been identified as being of environmental concern with regard to lighting installations:

- Sky Glow

- Light trespass (into windows)

- Glare/source intensity; and

- Brightness of surfaces
Sky Glow

9.142 All exterior lighting luminaires be of the horizontal cut-off design to ensure that the Upward Light Ratio ("ULR") of the proposed installation is zero, well below the 2.5% limit, and at least equal to that of the surrounding road installations. The proposed development will increase the amount of installed light in the area of which some will be reflected upwards. It is therefore believed that due to this reflected light component, the impact could rise from negligible, from those viewpoints within surrounding lit areas, to minor adverse, from other, darker locations.

Light Trespass

9.143 All lighting will be contained within the site, and with the landscape mitigation proposed and the distance to adjacent properties, it is anticipated that none will receive values close to the 1 Lux limit specified in the Guidance Notes and the overall impact on this parameter will therefore be nil.

Source Intensities

9.144 For those looking across to the development from outside its limits, the use of horizontal cut-off luminaires for all the lighting, will ensure that the minimum number of “spots of light” shall be seen. The lighting columns illuminating the parking and access areas have been purposely limited in height so that they will not be seen rising above the surrounding highway infrastructure, and will therefore be screened from the majority of viewpoints outside of the site. The majority of other lighting sources, will be lower, and will therefore be well screened by the proposed landscape mitigation planting. The luminaire design will be designed to ensure that, if any lights are viewed, none will be of the intensity to cause glare or approach the ILE limit of 500 candelas. Impact: negligible - minor adverse

Building Luminance

9.145 Due to the proposed site use, it is unlikely that any of the proposed buildings will be purposely floodlit. Drivers, and other users, will need clear indications as to where their particular destination is, which at night will need to be clearly visible. However “signage” will only be necessary to vehicles within the site and care will be taken to
limit as far as is possible any such lighting being visible from outside of the proposed development. Impact: negligible - minor adverse.

Night Time Impacts/Mitigation during Construction

9.146 During construction, some temporary lighting will be required to enable the safe continuation of works in the early morning and late afternoons of the winter months. All luminaires, including those required for night-time security will be designed to minimise any obtrusive light.

9.147 The Contractor will be required to sign up to the “Considerate Builder Scheme” and thereby act quickly and responsibly to rectify any lighting misaligned and/or found to be causing a nuisance.

Conclusions

9.148 The use of a well thought out lighting strategy together with careful site planning and landscape mitigation the environmental lighting impact from this proposed development will be minimal. All limiting environmental criteria will be met and as all residential viewpoints will experience night-time visual impacts of only negligible or slight significance.

Mitigation

Landscape Mitigation

9.149 Refer to Figure 9.8 for the Landscape Mitigation Plan.

9.150 In considering mitigation techniques for the site, the assessment of effects has shown that there is little requirement to provide wholesale screening around the site, as the visual impacts on residential receptors are limited. There is however a requirement for any mitigation to integrate the proposal into the landscape and retain the character of the site and study area as much as possible, and there are opportunities to enhance the overall landscape environment within the site.
Baseline studies show that the character of the study area is predominantly an open landscape that is dominated by large scale arable fields and by the A1 road. Both the fields and the A1 are predominantly bordered by native hedgerows with occasional trees, providing definition to these features in the landscape. The large scale fields and the lack of woodland create a sense of openness in the landscape, but also create opportunities to introduce new areas of native species woodland and hedgerow to the site. Whilst retaining the character of the study area, there are opportunities to provide definition to the boundaries of the site through planting without introducing overly dense vegetation barriers that are incongruous with the landscape and which would potentially provide a visual marker of the proposal from within the surrounding area.

The key elements of the landscape mitigation proposals for the site are as follows:

- Boundary planting will be introduced to provide definition to the site, integrating it into and enhancing the landscape by dividing what is at present a large and open arable field. The planting proposed would be indigenous hedgerows with occasional hedgerow trees, species would include Hawthorn (Crataegus monogyna), Blackthorn (Prunus spinosa), Alder (Alnus glutinosa), Field Maple (Acer campestre), Hazel (Corylus avellana), etc;

- Set just within the edge of the hedge boundary, areas of native species woodland will be planted to enhance the site and filter views of the proposals from surrounding receptors. Species would include Field Maple (Acer campestre), Oak (Quercus robur), Silver Birch (Betula pendula), Ash (Fraxinus excelsior) and Rowan (Sorbus aucuparia). Trees would be underplanted with appropriate species such as Dog Rose (Rosa canina); Hawthorn (Crataegus monogyna); Hazel (Corylus avellana) and Blackthorn (Prunus spinosa), etc;

- Areas of grassland would be introduced to the site and would be divided into two different types, species rich grassland and amenity grassland. Large areas of species rich grassland would be planted adjacent to woodland planting and is intended to enhance biodiversity and provide variety in the appearance of the landscape proposals. Amenity grassland areas are intended to create open, usable spaces adjacent to the main buildings and car parks within the site and ensure a tidier, accessible appearance to the
landscape that is adjacent to the hard landscaping of car parks, roads and paths at the centre of the site. Grass mixes would be confirmed in agreement with the local planning authority as a condition of planning; and

- Internal planting within the site which will consist of areas of shrub planting and belts of trees. This planting is intended to soften the hard edges of the buildings, tarmac and paved surfaces within the site. Although this planting is primarily intended to enhance the proposals for visitors to the site an external views of the site would benefit from the internal planting. Indigenous species would be preferable, although areas of ornamental planting adjacent to the buildings may also be appropriate. In any event the detailed landscape proposals would be subject to agreement with the local planning authority as a condition of planning. Exact locations of shrub planting areas are not shown on Figure 9.8 as this would be confirmed as part of detailed landscape proposals which would be subject to agreement with the local planning authority as a condition of planning.

Residual and Cumulative Impacts

Residual Impacts

9.153 Identification of residual effects will be considered at Year 15 Summer, otherwise referred to as the Design Year, which is the point at which proposed landscape mitigation is considered to have reached a level of maturity that effectively mitigates as intended in the original design.

9.154 It should be noted that the vegetation will not have reached its maximum potential by year 15, and there is every expectation that vegetation will continue to mature beyond this date.

Residual Landscape Effects

9.155 The landscape mitigation proposals are primarily intended to screen and integrate the proposed development into the landscape, taking detailed consideration of the landscape character of the study area and the opportunities that exist to enhance the
Following establishment of the landscape mitigation proposals, particularly the boundary hedgerow and hedgerow tree planting, the proposal will be effectively integrated into the landscape, providing enhancement to what is currently an open and relatively treeless piece of arable farmland. The landscape mitigation would involve indigenous species planting and would be managed and maintained to ensure long-term effectiveness.

Following the establishment of landscape mitigation proposals, it is considered that the residual visual effects of the proposals would reduce to slight beneficial as the landscape would be enhanced by the introduction of improved boundary treatment and internal planting which effectively divides up what is at present a large scale arable field.

**Residual Visual Effects**

Please refer to Figure 9.10 which illustrates the visual effects on viewpoints and receptors at Year 15.

Due to the limited visual effects of the proposals, the landscape mitigation proposals are intended to simply screen the few adverse impacts and integrate the development into the existing view. The screening effects of planting, particularly the woodland planting, would be experienced mainly by receptors adjacent to the site and to the south. Receptors passing the western boundary of the site on the A61 would experience slight beneficial effects as the established woodland planting would reduce visibility of the proposals and enhance the view, which is currently of open arable land and of the busy A1. From The Sleights to the south, south-east of the site, effects at Year 15 would be reduced to slight beneficial, which is due to the establishment of mitigation planting on site screening views of the proposal and enhancing the view. From Hutton Grange and Hutton Grange Cottage the limited views that would be experienced from upper storey windows at Year 1, would be reduced to neutral at Year 15 through the screening effects of mitigation planting on the southern boundary of the site.

The incorporation of green roof into the design of the buildings on site will soften any
remaining views of the buildings from surrounding receptors, reducing the harsh contrast between the built form and surrounding planting.

9.161 Considering the low number of visual receptors and the establishment of mitigation planting at Year 15, it is considered that the visual effects would be reduced to neutral.

**Cumulative Impacts**

9.162 We are unaware of any developments currently within the planning system, which require consideration as part of a cumulative impact assessment, other than the existing A1 improvement scheme, which is included within the baseline of this assessment.

**Summary and Conclusions**

**Residual Landscape Impacts**

9.163 The landscape assessment of the proposed development has shown that there would be no long term impact on the character of the area around the site. The proposal does not conflict with the character in either local or regional terms and have been shown to have little impact on the wider landscape.

9.164 The landscape assessment also indicates that the scheme presents an opportunity to enhance the landcover within the site boundary with the planting of native woodland and hedgerow. The landscape proposals present opportunities to enhance the existing landcover resulting in benefits to the tree cover in the surrounding area.

**Residual Visual Impacts**

9.165 The visual assessment of the proposal has shown that there would no long term visual impacts due mainly to: the limited number of visual receptors within the study area; the screening effects of Baldersby Junction to the north, the A1 to the east and the A61 to the west; and the screening effects of mitigation planting around the site, with the buildings within the development located at the centre of the site,
surrounded by woodland planting.

9.166 The mitigation planting would enhance visual amenity of visual receptors once established at Year 15, enhancing the view of the site which is currently open arable and is poorly vegetated.

Construction Impacts

9.167 The principal construction effect are likely to be associated with the visibility of construction equipment, and the appearance of the partially constructed buildings, from the limited receptors identified.

Summary

9.168 In summary, the proposed development has been shown to have no harmful impact on the landscape and visual resource of the study area.

9.169 The landscape proposals for the site are in accordance with the local landscape planning framework in terms of mitigation of the scheme and enhancement of the existing situation. The scheme does not physically or visually impact on any landscape designation.

9.170 The introduction of planting as part of the mitigation and enhancement proposals will, once mature, have the potential to substantially enhance an area that is currently poorly vegetated.

9.171 In visual terms, the site has been shown to be well screened and visually unobtrusive, with a low number of visual receptors experiencing visual impacts as a result of the scheme. The proposed development is well located in the south-western quadrant of Baldersby Junction, between the A1 and A61 roads, with the Junction and roads providing substantial screening from adjacent receptors. Once the proposed site and A1 landscape planting schemes have matured, the site will be effectively screened from the surrounding areas and will visually integrate the buildings and associated infrastructure into its surroundings.
By year 15, the siting and design of the proposal will result in a well integrated scheme which will have no significant impacts on the surrounding landscape, and visual resource, and will in the long term provide benefits in respect to overall tree cover and boundary screening.

References

- Ordnance Survey Explorer Map 299: Ripon and Boroughbridge at 1:25,000 scale;

- PPS1, ODPM (2005);

- PPS7, ODPM, (2004);

- The Yorkshire and Humber Plan - Regional Spatial Strategy (RSS) to 2026 (2008);

- Harrogate District Local Plan, Harrogate District Council (2001);

- Harrogate Borough Council Local Development Framework (LDF) Core Strategy, Harrogate Borough Council (2009);

- Hambleton Local Development Framework (LDF) District Development Policies Document, Hambleton Borough Council (2008);

- Countryside Character Volume 3: Yorkshire and the Humber;

- A1 Dishforth to Barton Landscape Character Assessment, Highways Agenc (2003); and

10.0 Archaeology and Cultural Heritage

Introduction

10.1 This archaeological and cultural heritage assessment examines the known archaeology and built heritage of a proposed new motorway service area on Baldersby Junction, North Yorkshire. Assessment is made of the likely significant effects of the development upon archaeology and cultural heritage. The site location can be seen on Figure 1.1. Details of the proposed development are discussed in Chapter 2 of this report.

10.2 A study area of approximately 1km from a central grid reference of SE 3550 7570 was assessed to gain an understanding of the nature of the surrounding archaeological landscape and to place sites within their wider context.

10.3 This chapter involved gathering information from the North Yorkshire Historic Environment Record ("HER"), the National Monuments Record ("NMR") and from documentary sources. The documentary sources included historic maps and reports undertaken for the upgrade of the A1 to motorway status within this area. A walkover survey was also undertaken.


Scope of Assessment

10.5 The scope of assessment was to:

- Identify the cultural heritage sites within the proposed development site and surrounding area;
• Identify the potential cultural heritage issues that may arise as a result of the proposed development;

• Assess the likely potential of finding previously unrecorded archaeological remains during the construction programme;

• Identify impacts upon archaeological features; and

• Suggest mitigation measures based upon the results of the above research.

10.6 Cultural heritage in the context of this assessment refers to the above and below ground archaeological resource, the built heritage, historic landscape and any other elements that may contribute to the historical and cultural heritage of the area

Legislation and Policy

10.7 National legislation and guidance which is relevant to cultural heritage includes:

• Ancient Monuments and Archaeological Areas Act 1979;

• Planning (Listed Buildings and Conservation Areas) Act 1990; and

• PPS5

10.8 Regional and local planning policies which are relevant to the consideration of cultural heritage include:

• Yorkshire & Humber Plan – Regional Spatial Strategy (May 2008) Policy Env9; and

• Harrogate Local Plan – Policies HD3, HD6, HD7 and HD7A
Consultation

10.9 Initial consultation has taken place with the Heritage Unit at North Yorkshire County Council. This, along with the scoping response, has led to a requirement for additional evaluation work. This comprised geophysical survey, the results of which are discussed below.

Methodology

Data Sources

10.10 This assessment has been undertaken following guidelines for the Institute of Archaeologists (2008).

10.11 The sources of information consulted were:

- North Yorkshire HER;
- NMR;
- North Yorkshire Records Office; and
- Reports completed for the A1 Dishforth to Barton upgrade.

10.12 A walkover survey was undertaken on 23rd February 2010. While aerial photographs were not examined a report detailing the results of aerial photographic analysis of the area produced for the upgrade of the A1 to motorway status was reviewed.

Impact Assessment Methodology

10.13 No standard method of evaluation and assessment is provided for the assessment of impact significance upon cultural heritage. Therefore, a set of evaluation and assessment criteria have been developed using a combination of the Secretary of
State’s Criteria for Scheduling Monuments, the DMRB guidance on Cultural Heritage and TAG.

10.14 The Secretary of State’s Criteria for Scheduling Monuments has a number of criteria which can be used to assess the cultural heritage value of an archaeological site. These criteria include period, rarity, documentation, group value, survival/condition, fragility/vulnerability, diversity and potential. This information, in conjunction with professional judgement, has been used to assess the value of archaeological sites and monuments, historic buildings, and other types of historical site such as battlefields and parks and gardens. The approach to assessing value is presented in Table 10.1.

<table>
<thead>
<tr>
<th>Value</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Very High</strong></td>
<td>World Heritage Sites</td>
</tr>
<tr>
<td></td>
<td>Assets of acknowledged international importance</td>
</tr>
<tr>
<td></td>
<td>Other buildings of recognised international importance</td>
</tr>
<tr>
<td></td>
<td>Historic landscapes of international sensitivity, whether designated or not</td>
</tr>
<tr>
<td><strong>High</strong></td>
<td>Scheduled Monuments</td>
</tr>
<tr>
<td></td>
<td>Undesignated sites/features of schedulable quality and importance</td>
</tr>
<tr>
<td></td>
<td>Listed Buildings</td>
</tr>
<tr>
<td></td>
<td>Undesignated structures of clear national importance</td>
</tr>
<tr>
<td></td>
<td>Designated &amp; undesignated historic landscapes of outstanding interest</td>
</tr>
<tr>
<td><strong>Medium</strong></td>
<td>Sites/features that contribute to regional research objectives</td>
</tr>
<tr>
<td></td>
<td>Unlisted buildings that can be shown to have exceptional qualities in their fabric or historical association</td>
</tr>
<tr>
<td></td>
<td>Historic townscape or built-up areas with historic integrity in their buildings, or built settings</td>
</tr>
<tr>
<td></td>
<td>Designated special historic landscapes and undesignated historic landscapes of regional sensitivity</td>
</tr>
<tr>
<td><strong>Low</strong></td>
<td>Undesignated sites/features of local importance</td>
</tr>
<tr>
<td></td>
<td>‘Locally Listed’ buildings and unlisted buildings of modest quality in their fabric or historical association</td>
</tr>
<tr>
<td></td>
<td>Historic landscapes whose sensitivity is limited by poor preservation and/or poor survival of contextual associations or with specific and substantial importance to local interest groups</td>
</tr>
<tr>
<td><strong>Negligible</strong></td>
<td>Assets with very little or no surviving archaeological interest</td>
</tr>
<tr>
<td></td>
<td>Buildings of no architectural or historical note; buildings of an intrusive character</td>
</tr>
<tr>
<td></td>
<td>Landscapes with little or no significant historical interest</td>
</tr>
<tr>
<td><strong>Unknown</strong></td>
<td>Archaeological sites/features where the importance of the resource cannot be ascertained</td>
</tr>
<tr>
<td></td>
<td>Buildings with some hidden (i.e. inaccessible) potential for historic significance</td>
</tr>
</tbody>
</table>
10.15 The magnitude of the potential impact is assessed for each site or feature independently of its archaeological or historical value. The impact magnitude categories are adapted from the TAG and Highways DMRB guidance and are presented in Table 10.2.

Table 10-2: Determining magnitude of impact

<table>
<thead>
<tr>
<th>Magnitude</th>
<th>Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major</td>
<td>Change to most or all key archaeological/historic building/historic landscape elements, such that the resource is totally altered.</td>
</tr>
<tr>
<td>Intermediate</td>
<td>Changes to many key archaeological/historic building/historic landscape elements, such that the resource is clearly modified.</td>
</tr>
<tr>
<td>Minor</td>
<td>Changes to key archaeological/historic building/historic landscape elements, such that the asset is slightly altered.</td>
</tr>
<tr>
<td>Negligible</td>
<td>Very minor changes to elements.</td>
</tr>
<tr>
<td>No Change</td>
<td>No change</td>
</tr>
</tbody>
</table>

10.16 An assessment of the predicted magnitude of impact is made both prior to the implementation of mitigation and after the implementation of mitigation to identify residual impacts. This demonstrates the effectiveness of mitigation and provides the framework for the assessment of significance which takes mitigation measures into consideration. Impacts may be positive or negative.

10.17 By combining the value of the cultural heritage resource with the predicted magnitude of impact, the significance of the impact can be determined. This is undertaken following Table 10.3. The significance of impacts can be beneficial or adverse.

Table 10-3: Significance of impact

<table>
<thead>
<tr>
<th>Cultural Heritage Value</th>
<th>Significance of impact</th>
<th>Magnitude of potential impact</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Major</td>
<td>Intermediate</td>
</tr>
<tr>
<td>Very high</td>
<td>Very Large</td>
<td>Large/Very Large</td>
</tr>
<tr>
<td>High</td>
<td>Large/Very Large</td>
<td>Moderate/ Large</td>
</tr>
<tr>
<td>Medium</td>
<td>Moderate/ Large</td>
<td>Moderate</td>
</tr>
<tr>
<td>Low</td>
<td>Slight/Moderate</td>
<td>Slight</td>
</tr>
<tr>
<td>---------------------</td>
<td>-----------------</td>
<td>--------</td>
</tr>
<tr>
<td>Negligible</td>
<td>Slight</td>
<td>Neutral/Slight</td>
</tr>
</tbody>
</table>

10.18 Where a choice of two impact significance descriptors is available only one has been chosen. This allows for professional judgement and discrimination in assessing impacts on cultural heritage assets. To aid in the assignment of significance of impact, significance criteria have been developed to enable effective and transparent discrimination between categories. These are listed in Appendix 10.1.

**Baseline Conditions**

10.19 There are 23 sites recorded on the Historic Environment Record, one further site recorded from the National Monuments Record, two sites recorded from analysis of aerial photographs and three sites recorded from documentary sources. The remaining six sites were located during fieldwork as part of the upgrade of the A1 to motorway status. The numbers in brackets after site descriptions relate to those given on Figure 10.1 and in Appendix 10.2.

10.20 There are no World Heritage Sites, Scheduled Monuments, Registered Parks and Gardens, Conservation Areas or listed buildings within the study area. There are two World War II air crash sites which are Military Protected Remains (12 & 13).

**Prehistoric (to AD43)**

10.21 There are 16 sites containing evidence of prehistoric date. The earliest of these dates to the Neolithic (c.3500 to 2000BC). These comprise flint artefacts recovered during field walking (22 & 23), the find spot of a Neolithic stone axe (exact location unknown) and Neolithic pottery found within pits discovered during monitoring of geotechnical investigations (27). Archaeological features uncovered during topsoil removal to the north of the site boundary also contained artefacts of Neolithic date (32). Finally a pit alignment visible on aerial photographs may also date to the Neolithic period (1). This evidence suggests that Neolithic activity took place within the area.
10.22 There are three recorded sites of Bronze Age date (2000BC to 700BC). These include the site of two Bronze Age barrows (2 & 3). These form part of a complex of prehistoric monuments on Hutton Moor to the south and west. The third site of Bronze Age date is the find spot of a flanged axe head (exact location unknown). Some of the Neolithic flint found during field walking may date to the Bronze Age (22 & 23).

10.23 Only one site of Iron Age date (700BC to AD43) is recorded within the study area (20). This is a site discovered as a series of geophysical anomalies during evaluation work and then located during construction work for the upgrade to the A1. The features formed the edge of a settlement of Iron Age and Romano-British date. A number of enclosures containing limited settlement evidence. A possible trackway was identified as well as a number of pits and post-holes. The core of the settlement was not located and it may lie to either the east or west of this excavated features. It has been postulated that the settlement may lie to the west and that the excavated features form the rear of settlement plots (NAA 2009).

10.24 A further six sites of prehistoric date have been identified, five of them from field walking as part of the evaluation works for the upgrade to the A1. The artefacts recovered from the field walking comprised flint artefacts, including tools and flint flakes (14-18). One assemblage included a rare flake of volcanic glass (17). The final site of prehistoric date is the find spot of a flint blade and flake (4). It has not been possible to date these artefacts more precisely from the available information. It is likely that some of the sites of unknown date (discussed below) are also of prehistoric date.

10.25 The available evidence suggests that the area has been settled from at least the Neolithic period. Although there is no evidence of Mesolithic date it is likely that the wider area was utilised in the Mesolithic and there are sites of Mesolithic date recorded along the A1 to the north of Leeming. Neolithic activity may form a periphery to that to the north west at Thornborough, where there are three henge monuments. The presence of Bronze Age barrows demonstrates that the area was inhabited. The henges appear to have been succeeded eastwards by these Bronze Age barrows on the interfluve ridge in this area (Vyner 2009).

10.26 A programme of palaeoecological coring was undertaken at several locations along the route of the A1 as part of the route upgrade evaluation. Four boreholes were
sampled at Rainton Common but no archaeological or palaeoecological evidence was recovered.

Roman (AD43 – 450)

10.27 There are seven recorded sites containing evidence of Roman date within the study area. The main site of Roman date is the alignment of Dere Street (21) which roughly follows the line of the A1 in this area. The presence of the route through this area suggests that activity is likely to have occurred in the vicinity and this is borne out by the archaeological evidence.

10.28 A number of sherds of Roman pottery were recovered during the field walking discussed in the prehistoric section above (14, 15 & 18). Similarly evidence of Roman date was uncovered during the excavation of the settlement area (20), suggesting that the site continued in use in broadly the same tradition as the Iron Age.

10.29 The final sites of Roman date are areas of cobbles found during widening of the A1 (26 & 33). The first of these (26) was found during the construction of the junction and may form part of the Roman road surface. The second (33) was found to the east of the junction and probably formed a yard or floor surface rather than a road.

Early Medieval (450 to 1066)

10.30 There are no recorded sites of early medieval date recorded within the study area. It is likely that when the Roman administration ended the area continued to be inhabited but at a less archaeologically visible level. Evidence of early medieval date is recorded in Catterick further north along the A1 and burials of this date have also been found.

Medieval (1066 to 1500)

10.31 Evidence of medieval date recorded in the study area is limited. Some medieval pottery was discovered during field walking (14). Other evidence of medieval pottery is likely to represent manuring, whereby house-hold rubbish was spread across the land as fertiliser. The other recorded site of possible medieval date was a deposit of
subsoil found during monitoring of the geotechnical investigations (28). This was interpreted as possible evidence for ridge and furrow as subsoils were not recorded elsewhere in the area (NAA 2006).

10.32 This evidence suggests that medieval activity was taking place within the area but again settlement is likely to be located away from the road which probably continued in use in this area, particularly as the A1 forms a parish boundary through here.

10.33 Place-name evidence suggests a medieval or slightly earlier origin of many of the surrounding villages. Baldersby and Melmersby were first mentioned in the Domesday book and these and other place names indicate the land was under arable use.

**Post-Medieval (1500 to 1900)**

10.34 There are two recorded sites of post-medieval date within the study area. These were both at Baldersby Junction before it was constructed. They comprise the site of a lime kiln (24) and the site of two buildings of probable 18th or 19th century date (25). Both sites are recorded from historic mapping.

10.35 The A1 was used as a turnpike road in the 18th century and as a coaching road after that, until the advent of the railways in the area. Associated with the 19th century road were a number of mile posts. These are marked on Ordnance Survey maps but are no longer to be found along the road.

10.36 Historic mapping of the site and its surrounds is available from the early part of the nineteenth century. These maps and the historic Ordnance Survey editions demonstrate that very few changes have been made to the site. Field boundaries have remained broadly the same, although some that run across the site east-west are no longer extant.

**Modern (1900 to present)**

10.37 The only recorded sites of modern date are the two crash sites of World War II aeroplanes. One crashed in 1941 (12) and the other in 1944 (13). These are recorded in the HER entries as Protected Military Remains although the later of the
crash sites falls on the current A1. The crash sites in this area are not to be unexpected as the airfields in Dishforth, Leeming and Catterick were all used during the war.

Unknown

10.38 There are 11 sites of unknown date recorded within the study area. It is likely that at least some, if not all, date to the later prehistoric or Roman periods. Seven sites recorded on the HER have very little further information. These include three possible ring ditches (5, 8 &11), a circular enclosure (6), two enclosures (7 & 9) and a field boundary (10). It is not certain where these features have been recorded from and the aerial photographic analysis for the A1 (Deegan 2004) has not recorded these features.

10.39 Three of the sites of unknown date are recorded from the aerial photographic survey (Deegan 2004). These comprise an arching linear feature (29), a pair of short parallel ditches (30) and a ditch feature (31). It is likely that all of these features are of prehistoric date.

10.40 The final site of unknown date was found during geophysical survey in 1996. This uncovered some pits and possible boundary ditches (19). Again, these are likely to date to the prehistoric date.

Historic Landscape

10.41 The North Yorkshire historic landscape characterisation has identified two historic landscape types within the study area. These include Communications and Enclosed Land. The former comprises the route of the A1 and the latter type is made up of modern improved fields, planned parliamentary enclosure and unknown planned enclosure. The site itself probably forms planned parliamentary enclosure.

Geophysical Survey

10.42 A geophysical survey was undertaken by GSB Prospection Ltd. This was a detailed magnetic (fluxgate) gradiometry survey across the site. The only feature of possible
interest is a former field boundary, which appears to follow the alignment of boundaries shown on historic mapping.

10.43 Some amorphous pit type responses were also recorded. While these have not been discounted as archaeological in origin in the geophysical results, they have been interpreted as more likely to be natural or recent in origin. This is due to a lack of discernable pattern. Certainly similar features recorded in the area in the mid 1990s had a natural origin upon excavation. However, the presence of pits of Neolithic date in the wider area suggests that additional, similar features could be found.

10.44 The full report can be seen in Appendix 10.3.

Archaeological Potential

10.45 Table 10.4 summarises the current visibility of archaeological sites within the study area and the predicted likelihood of further discovery. Further details of the reasoning for these predictions can be found below.

<table>
<thead>
<tr>
<th>Period</th>
<th>Visibility</th>
<th>Presence / Absence</th>
<th>Likelihood of further discovery</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mesolithic</td>
<td>Poor/Limited – Only revealed by archaeological fieldwork</td>
<td>Absent</td>
<td>Low</td>
</tr>
<tr>
<td>Neolithic</td>
<td>Limited – Certain site types visible. Others revealed by archaeological fieldwork</td>
<td>Frequent</td>
<td>High</td>
</tr>
<tr>
<td>Bronze Age</td>
<td>Limited – Certain site types visible as earthworks. Others revealed by archaeological fieldwork</td>
<td>Present</td>
<td>Low-Medium</td>
</tr>
</tbody>
</table>
### Table

<table>
<thead>
<tr>
<th>Period</th>
<th>Visibility</th>
<th>Presence / Absence</th>
<th>Likelihood of further discovery</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron Age/Romano-British</td>
<td>Limited – Revealed by field investigation and aerial photography</td>
<td>Present</td>
<td>Low-Medium</td>
</tr>
<tr>
<td>Early Medieval</td>
<td>Poor/Limited – Generally only revealed by archaeological field work</td>
<td>Absent</td>
<td>Low</td>
</tr>
<tr>
<td>Medieval</td>
<td>Poor/Limited – Generally only revealed by archaeological field work</td>
<td>Present</td>
<td>Low</td>
</tr>
<tr>
<td>Post-Medieval</td>
<td>Good – Good historic map coverage</td>
<td>Present</td>
<td>Low</td>
</tr>
</tbody>
</table>

10.46 There are no sites of Mesolithic date recorded in the area. Field walking has been undertaken within the vicinity of the site and no artefacts of Mesolithic date have been discovered. Although it is likely that the wider area was utilised during the Mesolithic the lack of evidence from the field walking suggests that the archaeological potential is low.

10.47 There are a number of archaeological sites of Neolithic date recorded in the study area. This suggests that there is localised activity taking place within the vicinity. Within the wider area Neolithic activity was focused around the Thornborough Henges to the north west of the site. Activity would have taken place in the area surrounding the henges during construction and use of these monuments. Given the location of the Neolithic remains in relation to the site the potential for discovery of previously unrecorded sites of this date is considered to be high.

10.48 The site is located on the edge of a complex of Bronze Age activity. There is some evidence to suggest use of the study area during the Bronze Age. It is unlikely, given their nature, that there are any barrows remaining undiscovered but artefacts or isolated features may survive. Therefore the archaeological potential is considered to be low to medium.
10.49 There is evidence of Iron Age and Roman settlement activity within the study area. This activity is located to the north of the site and appears to continue east or west but not to the south. The features discovered during the excavations were, for the most part, evident on the geophysical survey. There is no evidence of such features in the area of the site that has been subject to geophysical survey and other evidence of Iron Age and Roman date in the area is limited to artefacts. Any remains of this date within the boundary are likely to comprise evidence for field boundaries associated with the settlement to the north. Therefore the archaeological potential is considered to be low to medium.

10.50 There are no recorded sites of early medieval date within the study area. Evidence within the wider area is sporadic and may be limited to evidence around Catterick. It is likely that the site has remained in agricultural use from this period, if not earlier, and therefore the archaeological potential is considered to be low.

10.51 Evidence of medieval occupation is sparse. The evidence discovered again indicates that the site was in agricultural use. Place-name evidence in the area indicates that the villages probably originated within this period, if not earlier. Given the likely rural nature of the site in this period the archaeological potential is considered to be low.

10.52 Within the post-medieval period the site continued in agricultural use. Historic mapping from the early nineteenth century indicates that little has changed within the site boundary. Given this, the archaeological potential is considered to be low.

**Identification of Impacts**

**Value of archaeological sites**

10.53 There are six recorded sites located within or immediately adjacent to the land available for development. These can be seen in Table 11.5. Other sites within the study area will not be affected and therefore their value has not been assessed. Although the geophysical survey located a former field boundary this is likely to be relatively recent in origin and therefore impacts upon it are considered to be minimal.
Table 10-5: Value of cultural heritage sites

<table>
<thead>
<tr>
<th>Site Name</th>
<th>Value</th>
<th>No. on Fig 11.1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Possible ring ditch.</td>
<td>Low</td>
<td>8</td>
</tr>
<tr>
<td>Enclosure.</td>
<td>Low</td>
<td>9</td>
</tr>
<tr>
<td>Artefacts and pits found during evaluation.</td>
<td>Low</td>
<td>17</td>
</tr>
<tr>
<td>Possible evidence of ridge and furrow.</td>
<td>Low</td>
<td>28</td>
</tr>
<tr>
<td>Neolithic features found during construction work.</td>
<td>Medium</td>
<td>32</td>
</tr>
<tr>
<td>Historic landscape</td>
<td>Low</td>
<td>-</td>
</tr>
</tbody>
</table>

**Potential Impacts**

10.54 The following types of impacts could be had upon archaeological sites and the historic landscape. There are no impacts upon the built heritage:

- Physical impacts upon archaeological features during construction.
- Visual impacts on the historic landscape during construction.
- Physical impacts upon archaeological features during operation.
- Visual impacts upon the setting of archaeological features during operation.
- Visual impacts on the historic landscape during operation

10.55 The magnitude of impacts upon archaeological sites and the historic landscape can be seen in Table 10.6. These are based on current knowledge and the current site plan. If the proposed layout changes the impacts will need to be reassessed.
### Table 10-6: Impacts on cultural heritage within the site boundary

<table>
<thead>
<tr>
<th>Site Name</th>
<th>Type of Impact</th>
<th>Value</th>
<th>Magnitude of Impact</th>
<th>No. on Figure 10.1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Possible ring ditch.</td>
<td>Physical/Permanent</td>
<td>Low</td>
<td>Minor negative</td>
<td>8</td>
</tr>
<tr>
<td>Enclosure.</td>
<td>Physical/Permanent</td>
<td>Low</td>
<td>Major negative</td>
<td>9</td>
</tr>
<tr>
<td>Artefacts and pits found during evaluation.</td>
<td>Physical/Permanent</td>
<td>Low</td>
<td>Major negative</td>
<td>17</td>
</tr>
<tr>
<td>Possible evidence of ridge and furrow.</td>
<td>Physical/Permanent</td>
<td>Low</td>
<td>Major negative</td>
<td>28</td>
</tr>
<tr>
<td>Neolithic features found during construction work.</td>
<td>Physical/Permanent</td>
<td>Medium</td>
<td>No change</td>
<td>32</td>
</tr>
<tr>
<td>Historic Landscape</td>
<td>Visual/Permanent</td>
<td>Low</td>
<td>No change</td>
<td>-</td>
</tr>
</tbody>
</table>

10.56 There is no change to the Neolithic features found during construction as they have already been excavated and destroyed. There will be no change to the historic landscape as the majority of the surrounding area forms an enclosed landscape and the removal of a small section will not materially change this.

10.57 There are no other sites which will have their setting adversely impacted.

10.58 There is the potential for previously unrecorded archaeological sites to be discovered during construction. As the exact nature of any such sites is currently unknown the magnitude of impact cannot be determined at this stage. However, if any such sites are discovered the magnitude of impact is likely to be major negative as they would be destroyed during construction.

### Mitigation

10.59 The geophysical survey did not reveal any significant archaeological features. The geophysical survey for the A1 has broadly reflected the archaeological features discovered after topsoil strip. The highest potential for previously unrecorded features is for pits of Neolithic date. Evaluation excavation may miss any such features. Therefore a detailed strip, map and record process is recommended during the earliest phase of the construction process. This should take the form of the
removal of topsoil and subsoil under the direction of an appropriately qualified archaeologist. All machinery must utilise toothless buckets and a ratio of one archaeologist to each machine must be maintained. Provision must be made to allow a suitable period of time to ensure that all archaeological features can be planned and excavated appropriately.

**Residual Impacts**

10.60 Residual impacts on archaeology and cultural heritage can be seen in Table 10.7.

<table>
<thead>
<tr>
<th>Site Name</th>
<th>Value</th>
<th>Magnitude of Impact</th>
<th>Significance of Impact</th>
<th>No. on Fig 6.1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Possible ring ditch.</td>
<td>Low</td>
<td>Minor negative</td>
<td>Slight adverse</td>
<td>8</td>
</tr>
<tr>
<td>Enclosure.</td>
<td>Low</td>
<td>Major negative</td>
<td>Slight adverse</td>
<td>9</td>
</tr>
<tr>
<td>Artefacts and pits found during evaluation.</td>
<td>Low</td>
<td>Major negative</td>
<td>Slight adverse</td>
<td>17</td>
</tr>
<tr>
<td>Possible evidence of ridge and furrow.</td>
<td>Low</td>
<td>Major negative</td>
<td>Slight adverse</td>
<td>28</td>
</tr>
<tr>
<td>Neolithic features found during construction work.</td>
<td>Medium</td>
<td>No change</td>
<td>Neutral</td>
<td>32</td>
</tr>
<tr>
<td>Historic Landscape</td>
<td>Low</td>
<td>No change</td>
<td>Neutral</td>
<td>-</td>
</tr>
</tbody>
</table>

10.61 The overall significance of impact is considered to be slight adverse.

**Cumulative Impacts**

10.62 The main development within the vicinity of the proposed Junction MSA is the upgrade of the A1 to motorway status. There will be a cumulative impact on archaeology as excavations as part of the A1 upgrade have revealed evidence of Iron Age and Roman date. The creation of a balancing pond to the north of the proposed Junction MSA revealed pits of Neolithic date and there could be cumulative impacts upon any such features which survive within the site boundary.
Summary and Conclusions

10.63 Data were collected from the North Yorkshire Historic Environment Record, review of reports undertaken as part of the upgrade of the A1 to motorway status, analysis of historic mapping and a site walkover survey. A geophysical survey has also been undertaken.

10.64 Although some archaeological features have been recorded within the site boundary these are of limited interest. The site also has potential for the discovery of previously unrecorded archaeological sites, particularly features of Neolithic date. Archaeological works undertaken prior to the improvement of the A1 to motorway identified several pits of Neolithic date. Amorphous pit type responses identified during the geophysical survey of the proposed development area may also date to this period. It is been recommended that a detailed strip, map and record process is undertaken during the earliest phase of the construction process.

10.65 The overall significance of impact on archaeology and cultural heritage is considered to be slight adverse.

References


• Institute for Archaeologists (2008) Standard and Guidance for Archaeological Desk-Based Assessments


**Historic Mapping**

• Humphries, J. (1811) Hutton Conyers, A Plan of Hutton Moor with the situations of Rainton and Dishforth 9 Chains to 1 inch DC/RIC XVI 2/4/1 MIC 2236/511-513

• Hutton Conyers, Rainton with Newby and Melmerby Enclosure (1815) MIC 1539/322

• Baldersby Tithe Map (1839) MIC 1772/54-58

• Rainton with Newby Tithe Map (1839) MIC 1799/132-137

• (No Date) Hutton Conyers, Ripon, and Rainton, A plan of Hutton Moor with the towns of Ripon and Rainton 18 Chains to 1 inch TD90 MIC2707/220-222

• (No Date) Hutton Conyers, A Plan of Hutton Moor 6 Chains to 1 inch DC/RIC XVI 2/4/2 MIC 2236/514-518

• (No Date) (w.m. 1808) Hutton Conyers, No title, Draft enclosure plan of Hutton Moor 3 Chains to 1 inch ZMI 55 MIC1496/364-375
11.0 Ecology and Nature Conservation

Introduction

11.1 This section describes and evaluates the current nature conservation interest at the proposed Ripon Services site and assesses the potential impacts of the proposed MSA development on ecological receptors. Where potentially significant impacts upon species or habitats have been identified, the chapter also details appropriate mitigation measures which can be incorporated into the scheme design, or will be undertaken prior to and during construction and operational phases. The proposed development scheme, which is fully detailed in chapter 2, essentially comprises of the development of the site to construct motorway services at the junction of the A1/A61, which is currently undergoing improvements to upgrade the road from dual carriageway to motorway standard. The application site boundary and location is shown in Figure 1.1, and is hereafter termed as the development site. The proposals for the development site are shown in the Masterplan provided as Figure 2.2.

11.2 This ecological assessment is informed by the results of an Ecological Walkover Survey undertaken at the development site by AECOM in February 2010. The results of the survey are discussed in the Ecological Walkover Survey report which can be found as Appendix 11.1. The Environmental Statement for the A1(M) Dishforth to Barton Improvement Scheme (Faber Maunsell, 2006a) also informs the ecological assessment of the development site. The development site falls within the 500m buffer survey area for this road scheme.

Scope of Assessment

Potential Receptors

11.3 For the purposes of this assessment, potential receptors have been divided into three main categories. The first of these comprises statutory and non-statutory designated sites of nature conservation interest located within a 2km radius of the development site, or any other designated site, which could potentially be affected by the development. Given the nature of the proposed development site, direct or indirect
ecological effects on designated sites located beyond 2km from the site are not anticipated.

11.4 The second category includes non-designated habitats that could be affected by the development, particularly those which are considered to be of botanical interest.

11.5 The third category of receptors comprises protected or otherwise notable species which the development site or survey area has been identified as supporting, or as having the potential to support. Protected species are those covered by the legislation outlined as Appendix A in Appendix 11.1 of this ES. These include great crested newt (Triturus cristatus), bats (all species), and badger (Meles meles).

Potential Significant Impacts

11.6 Impacts on biodiversity may be direct (e.g. the loss of species or habitats), or indirect (e.g. impacts due to noise, dust or disturbance, on interest located within or outside the application area). The loss of biodiversity interest identified within the development site is potentially significant. The level of significance of an impact depends upon the value of the receptor and the nature and magnitude of any potential impact upon it; this is discussed further within the ‘Identification of Impacts’ subsection.

Legislation and Policy Framework

11.7 Nature conservation policy in England is implemented through a series of areas, habitats and species designated under legislation from an international to local level. The ecology surveys and assessment undertaken here take account of the Town and Country Planning (Environmental Impact assessment) Regulations 1999, and have particular regard to the requirements of, and advice given in:

- PPS9; which sets out the Government’s policy for protection of biodiversity and geological conservation. PPS9 describes the framework for the protection of designated and undesignated area under domestic and international law, and advises local authorities on how to deal with biodiversity in planning decisions;

• The Wildlife and Countryside Act 1981 (as amended); this remains the primary UK mechanism for statutory site designation, such as Sites of Special Scientific Interest (SSSI) and the protection of individual species listed under Schedules 1, 2, 5 and 8 of the Act are each subject to varying levels of protection.

• The Countryside and Rights of Way Act 2000 (as amended); this strengthens the provision of the 1981 Wildlife and Countryside Act, both in respect of statutory sites such as SSSIs and protected species. It also places a statutor obligation on Local Authorities and other public bodies to further conservation of biodiversity in the exercise of their functions, thus providing a statutor basis for the Biodiversity Action Plan (BAP) process which begun in 1994. Section 74 of the Act provides the habitat types and species of principal importance in England.

• The UK Biodiversity Action Plan ("UK BAP"); was launched in 1994 with the main aim 'To conserve and enhance biological diversity within the UK, and to contribute to the conservation of global biodiversity through all appropriate mechanisms'. The UK BAP comprises a series of Action Plans for 'priority' habitats and species, determined by the fact that they are either global threatened or are rapidly declining in the UK. The action plans outline measures required to conserve these priority habitats and species.

• The Harrogate Local Biodiversity Action Plan ("Harrogate LBAP") (2008) – Currently under development. At a county level, the LBAP identifies local priorities which may contribute to the delivery of the national species and habitat action plans targets. LBAPs also identify species and habitats of more local interest that are not rare or declining but which are included because
they are typical of the area or are valued by the public. LBAP habitat or species which are present or likely to be present at the development site are discussed within this assessment.

11.8 The biology of and key legislation for individual species considered within this ecological assessment is summarised in Appendix A in Appendix 11.1 of this ES.

Consultation

11.9 Consultation is an essential element of the scoping and EIA process. It is designed to allow those with an interest in the proposed development to become engaged in the evolution of the development proposals and to ensure that their concerns and ideas are identified and can then be considered. Consultations were undertaken with a number of statutory and non-statutory consultees as part of the EIA process to identify any concerns with regards to the development and the methodologies involved in assessing any associated impacts.

11.10 In accordance with Regulation 10 of the EIA Regulations, a formal request for a scoping opinion was prepared by AECOM and submitted to HBC in February 2010 (DPP LPP report reference ML/KON/1076309) detailing the proposed scope of the environmental assessment, including an outline of the proposed ecological assessment.

11.11 A response from Natural England (Dawson, 2010) was received on 23rd March 2010. Natural England stated that because the data used to inform this ES is over two years old, the EIA will need to “clearly demonstrate that protected species will not be affected by the development and that appropriate mitigation will be implemented to ensure the integrity of the populations and a habitat usage”.

11.12 Natural England also state that a Habitat Suitability Index (HSI) survey for great crested newt should be conducted at the pond located approximately 495m south of the development site boundary. It is, however, considered that a full HSI survey of this pond was considered unnecessary given the distance of the pond from the proposed Junction MSA and the habitat present.
11.13 Natural England also state that the development, where possible, should make enhancements for biodiversity gain, rather than strive to make a minimum impact.

**Methodology**

11.14 This Ecological Assessment has been produced to make an appraisal of any potential ecological issues at the location of the proposed development at Baldersby Gate. The assessment is based on information obtained from an ecological data search and ecological walkover survey, the methodologies for which are discussed within this section.

**Ecological Desk Study**

11.15 An on-line data search was undertaken to collate baseline information regarding the nature conservation interest of the site and its surroundings. The search looked for information on statutory sites e.g. SSSIs and non-statutory designated sites which, in North Yorkshire, are referred to as Sites of Importance for Nature Conservation ("SINCs"). Records of species afforded legal protection or otherwise of nature conservation importance were also requested.

11.16 The aim of the on-line data search was to obtain information on the nature conservation interest of the site and surrounding area and to inform the scope of the surveys required as part of the assessment. The search also aimed to supplement the field survey results by collating and reviewing ecological information relevant to the survey area and the local area.

11.17 A full data search request for records within a 2km radius of the proposed development to local consultees (conservation organisations, local naturalist groups and individuals) was considered to be unwarranted, considering the recent ecological study undertaken in the area in connection with the A1(M) Dishforth to Barton Improvement scheme. The Environmental Statement for the improvement scheme provides up to date baseline ecological information for the proposed development site and this document was consulted to help inform the EIA. This previous survey effort was further consolidated by the Ecological Walkover Survey of the site conducted in February 2010.
11.18 Additional information on the baseline ecological conditions of the site and the surrounding area was also obtained from a variety of other sources detailed here:

- Natural England website (naturalengland.org.uk) was consulted to identify statutory designated sites of nature conservation interest by using the tool ‘Nature on the Map’.

- The ‘Multi-Agency Geographic Information for the Countryside’ (“MAGIC”) website (magic.gov.uk) was consulted to confirm the location of designated sites of nature conservation interest.

- Biodiversity Action Plans - The UK Biodiversity Action Plan (UKBAP, 2008 ukbap.org.uk) and the Harrogate Local Biodiversity Action Plan (2004), was consulted in respect of notable species within the locality, including identification of Species and Habitat Action Plans.

- Google Earth online satellite images (earth.google.com) was used to search aerial images of the site and surroundings, to give an indication of the habitats in the local area.

- NBN Gateway (NBN, 2008) was consulted to confirm the presence of protected species within the 10km grid square in which the development site is located (SE37).

**Habitats – Ecological Walkover Survey**

11.19 An Ecological Walkover Survey, encompassing a Phase 1 Habitat Survey, was carried out in accordance with the standard methodology described by the Joint Nature Conservation Committee (2007a) and within Guidelines for Baseline Ecological Assessment (Institute of Environmental Assessment (1995). The survey is undertaken to establish the type and distribution of semi natural vegetation present at a given site. This nationally recognised and widely used survey method allows for the broad classification of habitat types and rapid assessment of the ecological potential of an area. The standard Phase 1 Habitat Survey was ‘extended’ to include recording of the most abundant plant species in each habitat type and searches for evidence indicating the presence of protected species, or potentially suitable habitat for them.
11.20 The Ecological Walkover Survey of the development site was undertaken in February 2010 (see Figure 2 in Appendix 11.1 for development site boundary). Essentially, the methodology comprises of mapping the habitats and built environments present within the development site (and adjacent to the site boundary) in accordance with the habitat categories provided within JNCC (2007a).

11.21 The Ecological Walkover Survey map is given as Figure 2 in Appendix 11.1, with Target Notes relating to the map discussed within Baseline Conditions and in Appendix 11.1.

11.22 A botanical species list recorded during the survey is given as Appendix B in Appendix 11.1.

11.23 Taking all the elements of the scoping process including the on-line data search, review of existing reports and Ecological Walkover Survey, the identified potential ecological constraints were:

- The presence of non statutory designated sites within a 2km radius of the site boundary;

- Aquatic habitat with potential to support great crested newt (Triturus cristatus) (located outside the survey boundary);

- Suitable hibernacula/refugia habitat for amphibians, including great crested newt;

- Trees and other vegetation supporting nesting birds;

- Presence of badger field signs.
Ecological Impact Assessment ("EcIA") Methodology: Evaluation of ecological receptors

11.24 In order to assess the effects of any development on flora and fauna, it is necessary to define the habitat areas and species that need to be considered as part of the assessment. In identifying these receptors, it is important to recognise that a development can affect flora and fauna not only within the land-take required for the development but also off-site (e.g. noise generation on the site of the development could affect bird populations that occur off-site).

11.25 The method of evaluation and assessment utilised has been developed using guidance from the Institute of Ecology and Environmental Management (IEEM, 2006). This gives guidance on the assessment of value, magnitude and impact significance. These guidelines form the basis of the assessment methodologies within this report. The methodology below summarises the criteria as set out in these guidelines.

11.26 It is impractical and inappropriate for an assessment of the ecological effects of a development to consider every species and habitat that may be affected. Instead, the assessment focuses on species populations and habitats that meet at least one of three criteria:

- Species populations, habitats or designated nature conservation sites that are of sufficiently high value in terms of 'biodiversity conservation' (which relates to the need to conserve representative areas of different habitats and genetic diversity of species populations) that an effect upon them could be significant;

- Species populations, habitats or sites that provide social benefits (e.g. relating to the enjoyment of flora and fauna by the public) or economic benefits (e.g. relating to angling) that are of sufficiently high value that the effect of an ecological change could significantly affect the social or economic benefits; and

- Legally protected species, habitats or sites.
11.27 A structured process has been used to determine which species/habitats need to be subject to valuation. Professional judgement is then used to decide which level of value is assigned to each species population or habitat. This process is informed by data derived from various sources.

Table 11-1: Examples of the criteria used to define the value of nature conservation receptors

<table>
<thead>
<tr>
<th>Level of Value</th>
<th>Examples of Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Very High (International)</strong></td>
<td><em>High importance and rarity, international scale and limited potential for substitution:</em></td>
</tr>
<tr>
<td></td>
<td>▪ An internationally designated site or candidate site (Special Protection Area (SPA), Special Area of Conservation (SAC), Ramsar Site, Biogenetic reserve).</td>
</tr>
<tr>
<td></td>
<td>▪ Internationally significant and viable areas of a habitat type listed in Annexe 1 of the Habitats Directive.</td>
</tr>
<tr>
<td></td>
<td>▪ Regularly occurring globally threatened species.</td>
</tr>
<tr>
<td></td>
<td>▪ Any regularly occurring populations of internationally important species that are rare or threatened in the UK or of uncertain conservation status.</td>
</tr>
<tr>
<td></td>
<td>▪ A regularly occurring significant population/number of any internationally important species.</td>
</tr>
<tr>
<td><strong>High (National)</strong></td>
<td><em>High importance and rarity, national scale and limited potential for substitution:</em></td>
</tr>
<tr>
<td></td>
<td>▪ A nationally designated site (Site of Special Scientific Interest (SSSI), National Nature Reserve (NNR) or a discrete area which meets the published selection criteria for national designation irrespective of whether it has yet to be notified.</td>
</tr>
<tr>
<td></td>
<td>▪ A viable area of a UK BAP priority habitat or of smaller areas of such habitat that is essential to maintain the viability of a larger whole.</td>
</tr>
<tr>
<td></td>
<td>▪ A regularly occurring significant population/number of a nationally important species i.e. listed on the 1981 Wildlife and Countryside Act (as amended).</td>
</tr>
<tr>
<td></td>
<td>▪ Any regularly occurring population of a nationally important species that is threatened or rare in the county or region.</td>
</tr>
<tr>
<td></td>
<td>▪ A feature identified as of critical importance in the UK BAP.</td>
</tr>
<tr>
<td><strong>Medium (Regional/District)</strong></td>
<td><em>High or medium importance and rarity, regional scale, limited potential for substitution:</em></td>
</tr>
<tr>
<td></td>
<td>▪ Viable areas of key habitat identified in the Regional/County BAP or smaller areas of such a habitat which are essential to maintain the viability of the larger whole.</td>
</tr>
<tr>
<td></td>
<td>▪ Regional/County significant and viable areas of key habitat identified as being of regional value in the appropriate Natural England Natural Area.</td>
</tr>
<tr>
<td></td>
<td>▪ Any regularly occurring significant population of a species listed as being nationally scarce, or in the Local BAP or relevant Natural Area on account of its regional rarity or localisation.</td>
</tr>
<tr>
<td></td>
<td>▪ Significant populations of a regionally/county important species.</td>
</tr>
<tr>
<td></td>
<td>▪ Sites such as County Wildlife Sites (CWS) or Sites of Importance for</td>
</tr>
</tbody>
</table>

Reference: PG/ML/1076309/R004pg
### Level of Value

#### Examples of Criteria

<table>
<thead>
<tr>
<th>Level of Value</th>
<th>Nature Conservation (SINC’s), selected on Regional/County criteria.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>▪ Any regularly occurring significant population that is listed in a</td>
</tr>
<tr>
<td></td>
<td>▪ Local BAP on account of its rarity or localisation.</td>
</tr>
<tr>
<td>Low (Local)</td>
<td><strong>Low or medium importance and rarity, local scale:</strong></td>
</tr>
<tr>
<td></td>
<td>▪ Areas identified in a Local BAP or in the relevant natural area</td>
</tr>
<tr>
<td></td>
<td>▪ profile.</td>
</tr>
<tr>
<td></td>
<td>▪ Sites/features that are scarce within the locality or which</td>
</tr>
<tr>
<td></td>
<td>▪ appreciably enrich the local area’s habitat resource.</td>
</tr>
<tr>
<td></td>
<td>▪ A diverse and/or ecologically important valuable hedgerow</td>
</tr>
<tr>
<td></td>
<td>▪ network.</td>
</tr>
<tr>
<td></td>
<td>▪ A significant population of a local important species i.e. listed in the</td>
</tr>
<tr>
<td></td>
<td>▪ Local BAP.</td>
</tr>
<tr>
<td></td>
<td>▪ Species populations of local importance.</td>
</tr>
<tr>
<td>Negligible</td>
<td><strong>Very low importance and rarity, local scale:</strong></td>
</tr>
<tr>
<td></td>
<td>▪ Areas of habitat considered to appreciably enrich the habitat</td>
</tr>
<tr>
<td></td>
<td>▪ resource within the context of the Parish or Neighbourhood.</td>
</tr>
</tbody>
</table>

### Legal Protection of Species

11.28 Notwithstanding what has been said above, there is also a need to identify all legally protected species that could be affected by the proposed development in order that measures can be taken to ensure that contravention of the relevant legislation is avoided. This may include the adoption of mitigation which is acceptable to Natural England. Impacts on such species have to avoid contravention of the law; otherwise the development cannot be taken forward.

### Nature and Magnitude of Impact

11.29 Impacts can be permanent or temporary; direct or indirect; adverse or beneficial, and can be cumulative. These factors are brought together to assess the magnitude of the impact on the conservation status of the particular valued ecological receptor, and on the integrity of the habitats that support them.

11.30 Adopting the IEEM guidelines professional judgement is used to assign the impacts on the receptors to one of five classes of magnitude; Major, Intermediate, Minor, Negligible and No Change. The magnitude of the potential impacts for sites/features/species without mitigation is given below under Identification of
Impacts.

Table 11-2: Definition of magnitude of impacts

<table>
<thead>
<tr>
<th>Magnitude of Impact</th>
<th>Typical criteria descriptors</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Major</strong></td>
<td></td>
</tr>
<tr>
<td>Negative</td>
<td>Loss of resource and/or quality and integrity; severe damage to key characteristic features or elements.</td>
</tr>
<tr>
<td>Positive</td>
<td>Large scale or major improvement of resource quality; extensive restoration or enhancement; major improvement of attribute quality.</td>
</tr>
<tr>
<td><strong>Intermediate</strong></td>
<td></td>
</tr>
<tr>
<td>Negative</td>
<td>Significant impact on the resource, but not adversely affecting the integrity; partial loss of/damage to key characteristics, features or elements.</td>
</tr>
<tr>
<td>Positive</td>
<td>Benefit to, or addition of, key characteristics, features or elements; improvement of attribute quality.</td>
</tr>
<tr>
<td><strong>Minor</strong></td>
<td></td>
</tr>
<tr>
<td>Negative</td>
<td>Some measurable change in attributes quality or vulnerability; minor loss of or alteration to, one (or maybe more) key characteristics, features or elements.</td>
</tr>
<tr>
<td>Positive</td>
<td>Minor benefit to, or addition of, one (maybe more) key characteristics, features or elements; some beneficial impact on attribute or a reduced risk of negative impact occurring.</td>
</tr>
<tr>
<td><strong>Negligible</strong></td>
<td></td>
</tr>
<tr>
<td>Negative</td>
<td>Very minor loss or detrimental alteration to one or more characteristics, features or elements.</td>
</tr>
<tr>
<td>Positive</td>
<td>Very minor benefit to or positive addition of one or more characteristics, features or elements.</td>
</tr>
<tr>
<td><strong>No change</strong></td>
<td>No loss or alteration of characteristics, features or elements; no observable impact in either direction</td>
</tr>
</tbody>
</table>

**Significance of Impacts**

11.31 The significance of an impact is largely a product of the value of the ecological receptor and the magnitude of the impact upon it, moderated by professional judgement. Table 11.3 illustrates a matrix, which is used for guidance in the assessment of significance, with impacts being considered to be of Major, Intermediate, Minor, Negligible or No Change.
Table 11.3: Ecological impact significance matrix

<table>
<thead>
<tr>
<th>Value of Receptor (or value of site to receptor)</th>
<th>Major</th>
<th>Intermediate</th>
<th>Minor</th>
<th>Negligible</th>
<th>No change</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Very high</strong></td>
<td>Very Large</td>
<td>Large or Very Large</td>
<td>Moderate or Large</td>
<td>Slight</td>
<td>Neutral</td>
</tr>
<tr>
<td><strong>High</strong></td>
<td>Large or Very Large</td>
<td>Moderate or Large</td>
<td>Slight or Moderate</td>
<td>Slight</td>
<td>Neutral</td>
</tr>
<tr>
<td><strong>Medium</strong></td>
<td>Moderate or Large</td>
<td>Moderate</td>
<td>Slight</td>
<td>Neutral or Slight</td>
<td>Neutral</td>
</tr>
<tr>
<td><strong>Low</strong></td>
<td>Slight</td>
<td>Neutral or Slight</td>
<td>Neutral or Slight</td>
<td>Neutral</td>
<td>Neutral</td>
</tr>
<tr>
<td><strong>Negligible</strong></td>
<td>Slight</td>
<td>Neutral or Slight</td>
<td>Neutral or Slight</td>
<td>Neutral</td>
<td>Neutral</td>
</tr>
</tbody>
</table>

11.32 The greater the environmental value or magnitude of impact the more significant the effect. In some cases the significance is shown as being one of two alternatives. This allows for the application of professional judgement in appraising significance between individual receptors which may not have equal significance within their context. Judgement was based on the significance categories outlined in Table 11.4.

Table 11.4: Ecological significance

<table>
<thead>
<tr>
<th>Significance Category</th>
<th>Typical descriptors</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Very Large</strong></td>
<td>Only adverse effects are normally assigned to this level of significance. They represent key factors in the decision-making process. These effects are generally, but not exclusively, associated with sites or features of international, national or regional importance that are likely to suffer a most damaging impact and loss of resource integrity. However a serious change in a site or feature of district importance may also enter this category.</td>
</tr>
<tr>
<td><strong>Large</strong></td>
<td>These beneficial or adverse effects are considered to be very important considerations and are likely to be material in the decision-making process.</td>
</tr>
<tr>
<td><strong>Moderate</strong></td>
<td>These beneficial or adverse effects may be important, but are not likely to be key-decision making factors. The cumulative effects of such issues may become a decision making issue of leading to an increase in the overall adverse effect on a particular resource or receptor.</td>
</tr>
<tr>
<td><strong>Slight</strong></td>
<td>These beneficial or adverse effects may be raised as local issues. They are</td>
</tr>
<tr>
<td>Significance Category</td>
<td>Typical descriptors</td>
</tr>
<tr>
<td>-----------------------</td>
<td>---------------------</td>
</tr>
<tr>
<td></td>
<td>unlikely to be critical in the decision making process, but are important in enhancing the subsequent design of the project.</td>
</tr>
<tr>
<td>Neutral</td>
<td>No effects or those that are beneath levels of perception, within normal bounds of variation or within the margin of forecasting error.</td>
</tr>
</tbody>
</table>

11.33 Overall ecological impact significance was assessed taking into account the effectiveness of mitigation measures (see Residual Impacts).

**Baseline Conditions**

11.34 This section describes the current situation with regard to the habitats and species of importance (the receptors) at the development site. It is based both on the findings of the scoping desk studies and consultations and the site survey carried out by AECOM in February 2010. The nature conservation importance of each of these receptors is also evaluated.

**Ecological Desk Study**

11.35 The on-line data responses and all other relevant information collated as part of the desk study is provided within Appendix 11.1. The site boundary is defined as Figure 2 in Appendix 11.1.

**Statutory Designated Sites**

11.36 The MAGIC website was consulted to obtain information pertaining to the presence of statutorily designated sites within the site and a 2km radius of the development site. No statutory designated sites are located within the survey area or site boundary.

11.37 The closest statutory designated site to the development site is Ripon Parks SSSI located approximately 3.2km south west of the site boundary.
Ancient and Semi-Natural Woodland

11.38 A site in England that has continually been wooded since AD1600 is classed as ancient woodland and is listed on the ancient woodland Inventory for England. The MAGIC website confirms that there is no ancient (semi-natural or replanted) woodland located entirely or partially within 2km of the site boundary.

Non-statutory designated sites

11.39 In North Yorkshire, non-statutory designated sites are termed as SINCs, and are also known as Local Wildlife Sites. The system for identifying SINCs in North Yorkshire is based on a partnership involving North Yorkshire County Council, Yorkshire Wildlife Trust, Natural England, Environment Agency and district councils on account of the special interest of their flora and/or fauna. These sites of regional importance are not protected by legislation, but are protected by Local Authorities through policies in their Local Plans.

11.40 No SINCs are located within the development site or directly adjacent to it, but there is a potential SINC ("pSINC") located within 2km of the development site boundary. Details of these sites and their proximity to the site boundary are summarised in Table 11.5.

<table>
<thead>
<tr>
<th>Site Name</th>
<th>OS Grid Reference</th>
<th>Main Nature Conservation Features</th>
<th>Approximate distance to the Baldersby Gate site (km)</th>
</tr>
</thead>
<tbody>
<tr>
<td>pSINC Dismantled Railway Melmerby</td>
<td>SE 345778</td>
<td>The site supports a mosaic of habitats including coniferous and broad-leaved plantation woodland, dense willow scrub and a pond. Species recorded include badger, bats, roe deer (Capreolus capreolus) and brown hare (Lepus europaeus). The pond supports a medium population (10 – 99 individuals) of great crested newt (Faber Maunsell, 2006a).</td>
<td>1.6km</td>
</tr>
</tbody>
</table>
Summary of scope for assessment of impacts upon designated sites

11.41 Based upon their distances from the proposed development site and the lack of ecological connectivity, no direct or indirect impacts upon designated sites are predicted as result of the proposed development at the Baldersby Gate site. Designated sites have therefore been scoped out from further assessment.

Protected Species Records

11.42 Table 11.6 summarises the protected species records relevant to the development site that were recorded during the suite of ecological surveys conducted during 2004 and 2005 to inform the A1 Dishforth to Barton Improvement Environmental Statement: March 2006 Faber Maunsell Ltd (now AECOM Ltd) (Faber Maunsell, 2006a/b).

<table>
<thead>
<tr>
<th>Protected Species</th>
<th>Location</th>
<th>Distance from Site</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bats</td>
<td>East of A1/A61 junction at Baldersby Gate. High level of soprano pipistrelle and common pipistrelle activity.</td>
<td>0.14km east</td>
</tr>
<tr>
<td></td>
<td>Bat crossing point over A1. Common pipistrelle, soprano pipistrelle and <em>Myotis</em> sp. recorded.</td>
<td>1.6km north west</td>
</tr>
<tr>
<td></td>
<td>Dismantled Railway Melmerby potential Site of Importance for Nature Conservation (pSINC). Bat foraging habitat. Common pipistrelle, soprano pipistrelle and <em>Myotis</em> sp. recorded.</td>
<td>1.6km north west</td>
</tr>
<tr>
<td></td>
<td>Dismantled Railway Melmerby potential Site of Importance for Nature Conservation (pSINC). Bridge structure considered to provide high potential to support roosting bats (summer and hibernacula roosts). Scattered bat droppings recorded near structure (Faber Maunsell, 2005a)</td>
<td>1.6km north west</td>
</tr>
<tr>
<td>Badger</td>
<td>Badger sets, badger remains and field signs (snuffle holes, prints, paths, dung pits) recorded within 2km of development site.</td>
<td>Between 0.01km and 2km</td>
</tr>
<tr>
<td>Brown hare</td>
<td>Sighting at Rainton Common</td>
<td>0.5km south</td>
</tr>
<tr>
<td>Great crested</td>
<td>Dismantled Railway Melmerby pSINC.</td>
<td>1.6km north west</td>
</tr>
</tbody>
</table>

Reference: PG/ML/1076309/R004pg
<table>
<thead>
<tr>
<th>Protected Species</th>
<th>Location</th>
<th>Distance from Site</th>
</tr>
</thead>
<tbody>
<tr>
<td>newt</td>
<td>Two great crested newt ponds with Medium population (maximum 15 individuals recorded)</td>
<td></td>
</tr>
<tr>
<td><strong>Otter (Lutra lutra)</strong></td>
<td>Dismantled Railway Melmerby pSINC. Otter signs recorded</td>
<td>1.6km north west</td>
</tr>
<tr>
<td><strong>Birds (all species)</strong></td>
<td>Within development site boundary: Blackbird (Turdus merula) Blackcap (Sylvia atricapilla) Carrion crow (Corvus corone) Chaffinch (Fringilla coelebs) Dunnock (Prunella modularis) Skylark (Alauda arvensis) (RSPB BOCC Red List Species) Yellowhammer (Emberiza citrinella) (RSPB BOCC Red List Species) Yellow wagtail (Motacilla flava) (RSPB BOCC Red List Species)</td>
<td>Within development site boundary</td>
</tr>
</tbody>
</table>

11.43 A search on NBN Gateway (NBN, 2008) for the 10km square in which the development site is located returned the presence of a number of protected species, as summarised in Table 11.7.

**Table 11-7: NBN Gateway records in 10km square SE37**

<table>
<thead>
<tr>
<th>Protected Species</th>
<th>Records</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Badger</strong></td>
<td>3 records (1903, 1964, 1972)</td>
</tr>
<tr>
<td><strong>Great crested newt</strong></td>
<td>27 recorded between 1967 - 1985</td>
</tr>
<tr>
<td>Protected Species</td>
<td>Records</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>-----------------------------------</td>
</tr>
<tr>
<td>Reptiles</td>
<td>No records within the last 50 years.</td>
</tr>
<tr>
<td>Water vole (Arvicola terrestris)</td>
<td>11 records between 1950 – 2002</td>
</tr>
<tr>
<td>White clawed crayfish (Austropotamobius pallipes)</td>
<td>5 records between 1971 - 1994</td>
</tr>
</tbody>
</table>

**Habitats**

11.44 The development site lies west of the A1 and east of the A61 near Rainton, North Yorkshire (central National Grid Reference [NGR] SE 354757) and is dominated by an improved grassland field with species poor defunct hedgerow bordering the western boundary. Mixed plantation woodland is located to the north of the development site at the junction of the A1 and A61. Other habitats present include semi-improved rough grassland verge and bare earth.

11.45 Full descriptions of all habitats present within the site, including reference to target notes, are provided in the Ecological Walkover Survey report (AECOM, 2010) provided as Appendix 11.1. The Phase 1 Habitat survey plan for the site is provided as Figure 2 in Appendix 11.1.

11.46 The following Phase 1 habitat types were identified within the site boundary:

- Improved grassland
- Species poor defunct hedgerow
- Mixed plantation woodland
- Semi-improved rough grassland verge

11.47 These habitats are described in detail in the Ecological Walkover report report and
their location and extent is shown on the Phase 1 Habitat Survey plan provided as Figure 2 in **Appendix 11.1**.

**Protected Species**

11.48 Following the Ecological Walkover Survey conducted in February 2010, no further protected species surveys were considered necessary.

**Protected Species: Badger**

11.49 Badger prints and snuffle holes were recorded on the western boundary of the development site. No badger setts were recorded within the development site boundary during the Extended Phase 1 Habitat Survey. The site was considered to provide a minimal amount of suitable natural habitat within the site boundary to support badger setts.

11.50 Considering the previous badger surveys conducted at the development site, absence of badger setts, and small amount of suitable habitat, further badger surveys were not considered necessary at this stage.

**Protected Species: Amphibians (including great crested newt)**

11.51 The ecological walkover survey concluded that there are no ponds or other waterbodies present within the site boundary which would provide suitable breeding habitat for great created newts (and other amphibians).

11.52 A pond is located approximately 495m south west of the southern boundary of the development site at Hutton Grange (SE 351749). Pond habitat has the potential to support great crested newt. To assess the potential of a pond to support great crested newt, an initial HSI survey is undertaken. The results of the HSI survey determine whether further great crested newt presence/absence and population size surveys are required.

11.53 In this instance, surveys at the pond location are considered unnecessary due to the distance of the pond from the southern Survey Area boundary, coupled with the type
of habitat present surrounding the pond and within the development site.

11.54 Terrestrial habitat adjacent to the pond at Hutton Grange comprises of broadleaved woodland, hedgerow and grassland. These habitats are considered optimal terrestrial habitat for great crested newt as they provide ideal foraging conditions due to associated invertebrate prey abundance as well as good refuge and hibernation habitat. At most sites, great crested newts stay within 250m of their breeding pond habitat. (Langton et al, 2001) but this distance can increase to around 500m if the immediate foraging and refuge habitat is sub-optimal.

11.55 Terrestrial habitat within the Survey Area is considered sub-optimal for great crested newt comprising largely of improved grassland. However, the hedgerow and rough grassland verge to the west of the Survey Area provides more optimal habitat in the form of good foraging and hibernation habitat.

11.56 Considering the optimal habitat adjacent to the pond and the distance of the pond from the proposed development it is highly unlikely that any great crested newts associated with the pond would migrate towards the largely sub-optimal terrestrial habitat within the Survey Area. The proposed development will not affect terrestrial habitat associated with the pond.

Protected Species: Bats

11.57 No suitable bat roosting habitat was noted during the Extended Phase 1 Habitat survey. Common bat species have been recorded foraging and commuting in the area (Faber Maunsell, 2006a). The main commuting and foraging feature present at the development site is the hedgerow bordering the western edge of the site. This hedgerow also runs parallel with the A61 and it is considered that its location reduces the functioning of this feature for foraging and commuting bats. The need for specific bat surveys was not considered necessary.

Breeding birds

11.58 Given the nature of the site and the lack of significant areas of natural habitats, the requirement for a detailed breeding bird survey was not considered necessary. Common bird species were recorded during the Ecological Walkover Survey. Old bird
nests were also recorded in the mixed plantation woodland to the north of the development site and within the hedgerow bordering the west, indicating that breeding birds have recently utilised the site.

Brown hare

11.59 No sightings or signs of brown hare were recorded during the survey. Rabbit signs (droppings and prints) and burrows were recorded along the western hedgerow.

Identification of Impacts

11.60 This section outlines the potential impacts of the proposals without mitigation, using the proposed Site Layout Plan (Figure 1 of the Ecological Walkover Survey report, Appendix 11.1) and the Evaluation and Assessment Methodology. These potential impacts have been assessed accordingly with magnitude of impact scores and overall impact significance scores assigned. Residual impact scores (impact with mitigation implemented) are presented below.

11.61 The following provides a general list of potential impacts which could occur as a result of construction (temporary and permanent) and operation of the MSA:

Temporary construction effects

- Damage to habitats and disturbance to faunal species during construction

Permanent construction effects

- Direct losses of habitat from land take;
- Fragmentation of habitat

Operational effects

- Disturbance effects from noise and air pollution;
Impacts from artificial lighting, for example causing changes in faunal behaviour;

Potential increase in wildlife road casualties.

**Designated Sites**

11.62 The proposed development will not have an impact on any statutory or non-statutory designated sites. The only designated site (pSINC) is located 1.6km north west of the proposed development. The magnitude of the potential impact on designated sites is therefore no change, resulting in an overall impact significance of neutral.

11.63 Given that there are no nature conservation designations within 1.6km of the development site, the site would be described as of low importance and rarity, local scale, with areas of habitat considered to appreciably enrich the habitat resource within the context of the Parish or Neighbourhood. This gives the site a negligible nature conservation value in terms of designations.

**Habitats**

**Improved grassland**

11.64 The proposed development would result in the loss of the improved grassland on the site. This habitat is thought to have negligible nature conservation value (very low importance and rarity, local scale) and the magnitude of the potential impact will be major negative (loss of resource and/or quality and integrity; severe damage to key characteristic features or elements). The overall impact significance will therefore be slight adverse.

**Semi-improved rough grassland verge**

11.65 This habitat is found at the southern boundary of the development site. According to Figure 1, Appendix 11.1 – Proposed Site Layout, this habitat is to be retained, and therefore the magnitude of the potential impact is thought to be no change. The overall impact significance is calculated to be neutral.
Species poor defunct hedgerow

11.66 The proposed development would result in the loss of a maximum of 200m of species poor hedgerow on the western boundary of the development site. This habitat is thought to have negligible nature conservation value (very low importance and rarity, local scale) and the magnitude of the potential impact will be intermediate negative (significant impact on the resource, but not adversely affecting the integrity; partial loss of/damage to key characteristics, features or elements). The overall impact significance will therefore be slight adverse.

Mixed plantation woodland

11.67 This habitat is found immediately north of the development site boundary. According to Figure 1, Appendix 11.1 – Proposed Site Layout, this habitat is to be retained. This habitat is thought to have negligible nature conservation value (very low importance and rarity, local scale) and the magnitude of the potential impact will be no change. The overall impact significance will therefore be neutral.

Protected Species

Badger

Loss of Habitat

11.68 There will be no direct impact on any known badger sett within the development site as a result of the proposed development. Construction of the proposed development will require the removal of badger foraging habitat including lengths hedgerow, and land take of arable and improved grassland pasture. Hedgerows are optimal habitat for badgers to dig setts. There will be permanent removal of habitat considered suitable for badger sett building and foraging.

11.69 The nature conservation value of the site for badger is considered to be low (low or medium importance and rarity, local scale) and the magnitude of the potential impacts will be intermediate negative (significant impact on the resource, but not adversely affecting the integrity; partial loss of/damage to key characteristics,
features or elements). The overall impact significance will therefore be slight adverse.

**Disturbance during Construction and Operational Phase**

11.70 The increased presence of humans and vehicles during both the construction and operational phases of the development may deter badger from using areas suitable for foraging. With an increase in traffic, comes an increased risk of badger road casualties. High wattage security lights or working lights may be erected if night working is undertaken and as badger are largely nocturnal, this may affect movements of this species. Additionally, permanent lighting associated with the operation of the Junction MSA may also affect movements of this species.

11.71 The nature conservation value of the site for badger is considered to be low (low or medium importance and rarity, local scale) and the magnitude of the potential impacts will be major negative. The overall impact significance will therefore be slight to moderate adverse. Considering that no badger setts have been recorded within the development site, the low level of badger activity recorded and proximity of alternative foraging areas, the overall impact significance is considered to be slight adverse.

11.72 The overall impact significance for badger is slight adverse.

**Bats**

**Loss of Habitat**

11.73 There will be no direct impact on any bat roost or potential bat roost feature as a result of the proposed development. The removal of hedgerows along the western boundary may reduce the functioning of linear foraging habitats.

11.74 The nature conservation value of the site for bat is considered to be low (low or medium importance and rarity, local scale) and the magnitude of the potential impacts will be minor negative (some measurable change in attributes quality or vulnerability; minor loss of or alteration to, one (or maybe more) key characteristics, features or elements). The overall impact significance will therefore be slight adverse
11.75 Potential operational interference impacts associated with bat foraging and commuting habitat are through the increase in traffic noise and introduction and/or increase of artificial lighting.

11.76 Artificial lighting can affect the feeding behaviour of bats. There are two aspects to this; one is the attraction that light from certain types of lamps has to a range of insects; the other is the presence of lit conditions. Some species of bat are attracted to white mercury street lights, feeding on insects attracted to the light. Other species, including Myotis species, generally avoid street lights and will therefore not feed in areas with artificial lighting. This is compounded by the fact that insects are attracted to lit areas from further afield than usual, resulting in adjacent habitat supporting reduced numbers of insects. Lighting can be particularly harmful if placed along features that bats use as flightlines, such as woodland edges, water corridors and hedgerows. (BCT/ILE 2009).

11.77 The nature conservation value of the site for local bat species is considered to be low (low or medium importance and rarity, local scale) and the magnitude of the potential impact on foraging and commuting bats will be intermediate negative. The overall impact significance will therefore be slight adverse.

11.78 The overall impact significance for bats is slight adverse.

Amphibians (including great crested newt)

Loss of Habitat

11.79 There will be no direct impact on great crested newt breeding habitat. The nearest known great crested newt pond is located 1.6km north west of the development site. A potential great crested newt pond is located almost 500m south east of the southern Survey Area boundary. There will be loss of sub-optimal foraging habitat such as hedgerow and grassland and hibernacula and refugia habitat (rubble pile).
There is, however, more suitable terrestrial habitat located within the vicinity of the two aforementioned ponds and it is unlikely that great crested newt would move away from these areas to the sub optimal habitat available within the Survey Area. The nature conservation of the site for great crested newt is considered to be negligible (very low importance and rarity, local scale) and the magnitude of the potential impact will be negligible negative. The overall impact significance will therefore be neutral.

**Breeding birds**

**Loss of habitat**

11.80 Lengths of hedgerows are to be removed to facilitate the construction of the proposed development, resulting in the loss of habitat for breeding and foraging birds. A small number of RSPB BOCC Red list species have been recorded within the Survey Area (Faber Maunsell, 2006a). The nature conservation of the site for breeding birds is considered to be low (low or medium importance and rarity, local scale) and the magnitude of the potential impact will be major negative. The overall impact significance will therefore be slight adverse.

**Disturbance during construction and operational phase**

11.81 If site clearance and construction activities should begin within the breeding season (typically March-August for most species) this could result in the destruction and/or damage to nests. The magnitude of the potential impact is assessed as intermediate negative. The overall impact significance will therefore be slight adverse.

11.82 The overall impact significance for breeding birds is slight adverse.

**Brown hare**

**Loss of habitat**

11.83 No brown hare sightings or field signs were recorded during the Ecological Walkover Survey. There are records of brown hare within 0.5km of the proposed development.
site (Faber Maunsell, 2006a). Habitat loss will lead to a small decrease in food availability where grassland is removed. The nature conservation of the site for brown hare is considered to be low (low or medium importance and rarity, local scale) and the magnitude of the potential impact will be intermediate negative, resulting in an impact significance of slight adverse.

**Disturbance during construction and operational phase**

11.84 Disturbance to foraging areas may occur through an increase in human activity, however the effect of this is considered to be minimal. High wattage security lights or working lights may be erected if night working is undertaken and as brown hare are largely nocturnal, this may affect movements of this species. Additionally, permanent lighting associated with the operation of the Junction MSA may also affect movements of this species. The magnitude of the potential impact is assessed as intermediate negative. The overall impact significance will therefore be slight adverse.

11.85 The overall impact significance for brown hare is slight adverse.

11.86 Table 11.8 provides a summary of the overall impacts of the proposed development without mitigation.

**Table 11.8: Summary of ecological evaluation**

<table>
<thead>
<tr>
<th>Habitat/Species</th>
<th>Nature Conservation Value of receptor (or value of site to receptor)</th>
<th>Overall Impact significance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Habitat</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Improved grassland</td>
<td>Negligible</td>
<td>Slight adverse</td>
</tr>
<tr>
<td>Semi-improved rough</td>
<td>Negligible</td>
<td>No change</td>
</tr>
<tr>
<td>grassland verge</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Species poor intact</td>
<td>Negligible</td>
<td>Slight adverse</td>
</tr>
</tbody>
</table>

Reference: PG/ML/1076309/R004pg
<table>
<thead>
<tr>
<th>Habitat/Species</th>
<th>Nature Conservation Value of receptor (or value of site to receptor)</th>
<th>Overall Impact significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mixed plantation woodland</td>
<td>Negligible</td>
<td>No change</td>
</tr>
</tbody>
</table>

Species

<table>
<thead>
<tr>
<th>Habitat/Species</th>
<th>Nature Conservation Value of receptor (or value of site to receptor)</th>
<th>Impact significance – Loss of Habitat</th>
<th>Impact significance – Disturbance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Badger</td>
<td>Low</td>
<td>Slight adverse</td>
<td>Slight adverse</td>
</tr>
<tr>
<td>Bats</td>
<td>Low</td>
<td>Slight adverse - neutral</td>
<td>Slight adverse</td>
</tr>
<tr>
<td>Amphibians</td>
<td>Negligible</td>
<td>Neutral</td>
<td>n/a</td>
</tr>
<tr>
<td>(including great crested newt)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Breeding bird</td>
<td>Low</td>
<td>Slight adverse</td>
<td>Slight adverse</td>
</tr>
<tr>
<td>Brown hare</td>
<td>Low</td>
<td>Slight adverse</td>
<td>Slight adverse</td>
</tr>
</tbody>
</table>

Mitigation and Enhancement

General Mitigation

11.87 Four common forms of mitigation are recognised as follows:

Avoidance

11.88 Avoidance and prevention of adverse impacts through the design of the scheme and sensitive programming of works, for example master plan design to retain key ecological features, e.g. avoid removal of tree/scrub habitats.
Reduction

11.89 Mitigation to reduce the scale and severity of impacts, for example restricting construction access in areas of ecological interest, e.g. fence off ecologically sensitive areas.

Compensation

11.90 Compensation to offset adverse ecological impacts through habitat creation, for example creation of species diverse landscaping to replace habitat lost or disturbed by the scheme, e.g. replace species lost with similar ones.

Enhancement

11.91 Enhancement and improvement of existing conditions, for example plant species chosen to enhance diversity and ecological interest of the area, e.g. plant native, locally sourced species.

General: Best Practice Mitigation

11.92 Mitigation of potential adverse impacts on habitats during construction of the motorway services will be undertaken. In general, where an impact is unavoidable, localised mitigation measures will be implemented and the greater the predicted impact, the greater the level of mitigation that would be required.

11.93 During construction, a number of best practice mitigation principles will be applied to reduce the impact of the development works on wildlife; a summary of these measures is provided in Table 11.9.
<table>
<thead>
<tr>
<th>Mitigation Measure</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Tool box talk for site staff</strong></td>
<td>All site staff will be briefed on any ecological issues affecting the site, the mitigation implemented and methods of working adopted as part of best practice.</td>
</tr>
<tr>
<td><strong>Ecological supervision</strong></td>
<td>This is particularly important during the initial phases of vegetation clearance, e.g. hedgerow removal for access.</td>
</tr>
<tr>
<td><strong>Identification of sensitive ecological areas</strong></td>
<td>This must be done in advance of on-site works and movement of staff and machinery will be restricted in these areas (e.g. near trees). Exclusion zones will be established where required so that these features are not inadvertently damaged during the construction phase.</td>
</tr>
<tr>
<td><strong>Restriction of plant and personnel to the working area</strong></td>
<td>This is particularly significant adjacent any woodland areas. Fencing will be used where required to reduce the land take required for vehicular movements and construction activities.</td>
</tr>
<tr>
<td><strong>Avoidance of damage to sensitive habitats</strong></td>
<td>Movement of heavy plant during construction must avoid areas where trees/hedgerow are to be retained in order to prevent root compaction and accidental damage.</td>
</tr>
<tr>
<td><strong>Adoption of best practices to avoid pollution and dust</strong></td>
<td>Measures will be employed to ensure that dust is minimised during the construction works. Measures must be in place in order to deal with pollution incidents efficiently.</td>
</tr>
<tr>
<td><strong>Adoption of best practices to avoid excessive noise</strong></td>
<td>Noise levels will be minimised and reasonable steps must be taken to reduce any adverse effects of noise generated by the construction works. Working at night will be avoided for any works generating excessive noise.</td>
</tr>
<tr>
<td><strong>Minimise working areas, site compounds and access tracks</strong></td>
<td>These must be of the minimum size required for safe working. Fencing will be utilised to prevent encroachment of machinery and materials onto adjacent vegetation.</td>
</tr>
<tr>
<td><strong>Minimise stockpiling of materials</strong></td>
<td>Materials will be kept to a bare minimum and restricted to specific sites.</td>
</tr>
<tr>
<td><strong>Removal of waste materials</strong></td>
<td>Waste materials will be removed from the site and disposed of at the earliest opportunity and will not</td>
</tr>
</tbody>
</table>

Reference: PG/ML/1076309/R004pg
<table>
<thead>
<tr>
<th>Mitigation Measure</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Correct storage of pollutants</td>
<td>Fuel, oil and other potential pollutants will be stored in bunded tanks in a designated site compound area. Store oil absorbent material on site and clear up spillages immediately.</td>
</tr>
<tr>
<td>Refuelling and servicing of vehicles/machinery</td>
<td>This will be done within a designated site compound area with an impermeable base. Use trigger delivery nozzle to refuel. All machinery must be maintained in good working order and checked regularly.</td>
</tr>
</tbody>
</table>

11.94  Best practice will be carried out at all times when working on site, via implementation of appropriate Method Statements.

Habitats

11.95  General mitigation as detailed above will be followed at all times, in addition to the following specific mitigation for habitats. The developed area (buildings and parking) comprises 28% of the total land take for the Junction MSA, with the remaining 72% of the development site set aside for landscaping. This provides opportunities to enhance the local biodiversity with ecologically guided landscape planting. The Landscape Mitigation Plan, given as Figure 9.8, maps the planting scheme for the Junction MSA.

Woodland and hedgerows

11.96  The scheme has been planned to avoid the need for removal of woodland. The young mixed plantation woodland located north of the site boundary is to be retained. In addition, the creation of woodland habitat will be implemented with the planting of 2.88Ha of native woodland comprising of species such as English oak (Quercus robur), ash (Fraxinus excelsior), rowan (Sorbus aucuparia) and silver birch (Betula pendula). 1.2Ha of woodland edge species will also be planted, totalling over 4Ha of woodland habitat.
11.97 Where the canopy of any trees to be retained overhang the working area, a precautionary zone should be established around the trees, which should be as wide as the crown of the trees or half the height of the tree, whichever is greater. This zone must be avoided, in order to minimise damage to tree roots.

11.98 The loss of approximately 200m of species poor hedgerow is unavoidable as it falls within the footprint of the proposed access road and roundabout. A programme of hedgerow tree and shrub species planting will be undertaken within to compensate for this loss and create additional hedgerow habitat. Where hedgerow removal is necessary, it will be kept to the minimum required to facilitate the constructing works. Replacement planting will also be undertaken where gaps in existing hedgerow exist. This will improve migration routes for mammals, flight lines for bats and foraging/nesting opportunities for birds. Additional species rich hedgerow habitat will be planted throughout the proposed development, on the western, southern and eastern boundaries, equating to a total of 1,625m in length. This length includes the existing hedgerow at the western boundary of the development site which will be improved by planting in gaps and improving species diversity. Hedgerow planting will include native hedgerow species such as blackthorn (Prunus spinosa), hawthorn, holly (Ilex aquifolium), dog-rose (Rosa canina), elder, and will include occasional fast growing standards such as wild cherry (Prunus avium) or field maple (Acer campestre).

11.99 Retaining and enhancing native ecology is an objective of the Masterplan and therefore, the design will include a diverse mixture of tree and hedgerow species of local provenance. The planting will be planned to provide the greatest possible ecological diversity and naturalness. Non-native plants should not be introduced.

**Improved grassland**

11.100 Opportunities exist to increase the floral biodiversity of the area with ecologically guided landscape planting. An area of 2Ha of species rich, wildflower grassland will be included as part of landscaping, in addition to 4.6Ha of usable amenity grassland. Wildflower grass swards require less management (e.g. cutting) than traditional amenity grassland and have a higher ecological value. A recommended species list is given as **Appendix 11.2.**
Species

General

11.101 In addition to species specific legal obligations, PPS9 relating to Biodiversity and Geological Conservation makes it a legal obligation of developers to sustain, and where possible improve, the quality and extent of natural habitat and geological and geomorphological sites; the natural physical processes on which they depend; and the populations of naturally occurring species which they support. Protected species therefore have to be considered as part of this proposed development.

Badger

Loss of Habitat

11.102 A pre-construction walkover survey will be conducted approximately 6-8 weeks prior to works commencing by a suitability qualified ecologist to ascertain the current usage of badger at the site, i.e. to check whether a sett has been excavated within the development area. The provisions of the Protection of Badgers Act 1992 require developers to take care when carrying out any work near setts as offences could result from intentionally or recklessly interfering with a sett. Therefore, if any works are necessary close to a known sett, it may be necessary to apply to Natural England for a development licence, dependant on the level of disturbance likely. Disturbance is only likely if heavy machinery is working within 20m of an active sett, as tunnels can extend 20m from sett entrances (Natural England, 2009) and therefore a buffer zone of a minimum of 20m should be maintained around any setts which may be identified during the pre-construction survey.

11.103 Contractors and site maintenance workers will be made aware of the legal protection afforded to badger and given clear instructions about working with caution to prevent damage to setts or disturbance to badgers.

11.104 Hedgerows removed to accommodate the working width will be replaced with new hedgerows also created as part of landscaping works. The species poor defunct hedgerow on the western boundary of the site will be improved for badger (and also birds and other mammals). New woodland and hedgerow planting will ensure high
density and planting of native species, including those that provide fruit and nuts as a food resource. Hawthorn, for example, will provide both protection and a food source.

**Disturbance during construction and operational phase**

11.105 Night time working with its associated need for additional lighting will be avoided as far as possible to reduce disturbance to badger, and any trenches left open overnight will have a means of escape for any animals that might fall in.

11.106 A speed limit imposed within the operational motorway services site will also reduce the risk of badger road mortality.

**Bats**

**Loss of Habitat**

11.107 Roosting opportunities can be provided within new buildings at very little cost by installing bat bricks. The optimum location for the installation bat bricks would be on the south east facing wall of the hotel building. This side of the building backs directly on to landscape planting, rather than an area with a higher level of artificial lighting, such as a car park. It is recommended that this side of the building is not lit, thereby not discouraging bats from utilising this area for roosting. Further information on bat bricks is given as **Appendix 11.4** (Ibstock, n.d).

11.108 Where trees are to be retained, their bat roost potential should be increased by installing bat boxes to their trunks. Boxes should be located about 5m from ground level and installed facing a variety of orientations. South west to south east facing boxes will heat up in the sun and be attractive to summer roosting bats. North facing boxes will be more attractive to hibernating bats as these will remain cool during the winter hibernating season. The installation of bat boxes on trees to be planted should be considered once trees reach an appropriate level of maturity to support a bat box. Further information on bat boxes is given as **Appendix 11.5** (BCT, 2003).

11.109 After the necessary removal of trees or hedgerows, replacement hedgerows/treelines
will be planted and connected with other flightlines on the site with potential flightlines adjoining the site.

11.110 Replacement planting will reflect the species currently present. It should include native species such as blackthorn, hawthorn and spindle (Euonymus europaeus) and should include occasional fast growing standards such as wild cherry or field maple. Landscape planting should include strongly-scented flowering plants, such as honeysuckle (Lonicera periclymenum) and sweet briar (Rosa rubiginosa) which will attract insects which would benefit foraging bats.

Disturbance during construction and operational phase

11.111 Bats are nocturnal and active at night. It is recommended that works are undertaken during daylight hours where possible to minimise disturbance during construction.

11.112 Lighting can have a detrimental effect on bats see (see 12.7.16). There is no legislation requiring an area or road to be lit. The Building Regulations specify that 150w is the maximum for exterior lighting and buildings (BCT/ILE, 2009). The light should be as low as guidelines permit and if lighting is not required, it should not be used.

11.113 The impact of any necessary lighting on bats can be minimised by the use of low pressure sodium lamps or high pressure sodium instead of mercury or metal halide lamps where glass glazing is preferred due to its UV filtration characteristics. It is recommended that where night-lights or security lights are needed these should be directed to where it is needed and light spillage avoided. This can be achieved by the design of the luminaire and by using accessories such as hoods, cowls, louvers and shields to direct the light to the intended area only. Lighting should be avoided near bat habitat such as hedgerows and woodland, and especially where roosting opportunities have been created (e.g. bat bricks and bat boxes) (BCT/ILE, 2009).

11.114 Contractors and site maintenance workers will be made aware of the legal protection afforded to bats. In the unlikely event that bats are discovered during development works, all work must stop immediately and the local Natural England office be contacted who will advise on how to proceed.
Amphibians (including great crested newt)

11.115 The rubble pile located on the western hedgerow has the potential to support hibernating and sheltering amphibians, although this is unlikely due to the distance from potential breeding ponds and optimal amphibian terrestrial habitat. The rubble pile should still, however, be dismantled under the presence of a suitably qualified ecologist. If great crested newts are discovered, the ecologist will contact the local Natural England office who will advise on how to proceed.

11.116 A wildlife pond is to be constructed to enhance the habitat available for amphibian species, resulting in the gain of an aquatic habitat at the site. The optimal location for this pond is the south western corner of the proposed Junction MSA site, within the species rich grassland and adjacent to woodland and woodland edge planting. This location would keep the pond remote from the main infrastructure of the Junction MSA and help create a pond network, due to its proximity to the pond present to the south of the site. The wildlife pond will benefit a number of species groups including invertebrates, amphibians and waterfowl, as well as creating foraging areas for birds and bats. Information on wildlife pond design can be found at the Pond Conservation Trust website (Pond Conservation, 2010).

Breeding birds

Loss of Habitat

11.117 New landscape planting, including 2.88Ha of woodland, 1.2Ha of woodland edge species and 0.5ha of shrub planting, will ensure high density and planting of native species, including those that provide fruit and nuts as a food resource. Hawthorn, for example, will provide both protection and a food source for birds.

11.118 The installation of green roofs on the hotel and food court buildings will enhance the habitat present for birds by creating better habitat diversity and increased connectivity.

11.119 Bird boxes should be installed on any trees to be retained to enhance the nesting potential. The installation of bird boxes on trees to be planted should be considered once trees reach an appropriate level of maturity to support a bird box. Bird nesting
opportunities can be created with new buildings by installing ‘swift bricks’. More information can be found at the Swift Conservation website (Swift Conservation, n.d).

Disturbance during construction and operational phase

11.120 The timing of vegetation clearance is a critical consideration with respect to breeding birds. Clearance of vegetation immediately before or during the breeding season runs a very high risk of damage or destruction of occupied nests, eggs or young birds. Such impacts would therefore be minimised by carrying out this activity during the post-breeding period (i.e. between August and February). However, the implementation of this strategy would not completely eliminate the chances of direct impacts on breeding birds, as species such as pigeons and doves breed late into the year. It is therefore advisable to employ a suitably qualified ecologist to supervise vegetation clearance or provide advice before works commence. Any occupied nests could then be detected and marked and an exclusion zone set up around them. Close monitoring of any nests would then be carried out in order to determine when any breeding activity had ceased and the nest had been abandoned.

11.121 An additional consideration when undertaking vegetation clearance is the potential loss of food resources including fruit, seeds and invertebrates. Careful timing of vegetation clearance to coincide with the natural depletion of existing food stocks would provide adequate mitigation by minimising losses of summer and autumn food resources on which wintering birds depend.

11.122 Taking into account the considerations discussed above, the optimal period for vegetation clearance is between November and February. Clearance should be carefully planned so that as much of the original vegetation as possible is left in situ.

11.123 Any development that coincides with subsequent breeding seasons should be monitored by a qualified ecologist so damage to newly established nests, eggs or young is avoided during construction.

Brown hare

11.124 No mitigation specifically for brown hare is proposed, however the mitigation described above for badger may also benefit this species.
Further Enhancement

Green roofs

11.125 In addition to enhancements of woodland, hedgerow, pond and grassland habitat, a green roof comprising of either sedum or wildflower matting is planned for installation on the proposed hotel and food court buildings covering an area of 3,758m². Green roofs have multiple benefits, not only ecological, including:

11.126 Helping to maintain pre-development or greenfield run-off volumes and rates from development sites.

- Improving biodiversity on all new development sites.

- Ensuring that developments are designed to adapt to climate change.

- Improving the quality of water/run-off.

11.127 More information on green roofs in given as Appendix 11.3.

Residual Impacts

11.128 This section describes the residual effects of the proposed development on the ecology and nature conservation interest of the Survey Area taking into account mitigation. The significance of the impact on habitats and faunal species/groups after mitigation has been determined using the matrix in Table 11.4.

11.129 Tables 11.10 and 11.11 give the impact assessment summary with mitigation.

11.130 Implementation of the mitigation outlined will avoid or minimise the potential impact to habitats at the site resulting in the residual impact assessment being assessed as slight beneficial.

11.131 The residual impact of the proposed development on faunal species is likely to be
slight beneficial, given the habitat enhancements to be incorporated in the landscaping design.

11.132 The residual impact regarding disturbance to faunal species during construction and operation remains at slight adverse. The increased human and vehicular activity may discourage badger from the area. Additional lighting during the operational phase of the Junction MSA would also have permanent adverse affects on both bat and badger.
<table>
<thead>
<tr>
<th>Habitat Type</th>
<th>Ecological Impact Significance Without Mitigation</th>
<th>Summary of mitigation</th>
<th>Ecological Impact Significance With Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improved grassland</td>
<td>Slight Adverse</td>
<td>Implement the best practice mitigation measures in Table 11.9.</td>
<td>Slight Beneficial</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Creation of 2Ha of species-rich grassland.</td>
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<tr>
<td></td>
<td></td>
<td>Installation of green roof on new buildings.</td>
<td></td>
</tr>
<tr>
<td>Species poor intact hedgerow</td>
<td>Slight Adverse</td>
<td>Implement the best practice mitigation measures in Table 11.9</td>
<td>Slight Beneficial</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Retention of hedgerow where possible. Avoid disturbance to existing hedgerows and only remove the minimum required to facilitate development.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Gapping up existing hedgerows to create continuous hedgerows using native species that compliment those currently on site.</td>
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<tr>
<td></td>
<td></td>
<td>Planting of 1,625m of species rich hedgerow (including the improvement of existing hedgerow).</td>
<td></td>
</tr>
<tr>
<td>Habitat Type</td>
<td>Ecological Impact Significance Without Mitigation</td>
<td>Summary of mitigation</td>
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<td></td>
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<tr>
<td>Mixed plantation woodland</td>
<td>Neutral</td>
<td>Implement the best practice mitigation measures in Table 11.9.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Retention of woodland immediately north of the site.</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Retention of trees where possible.</td>
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<tr>
<td></td>
<td></td>
<td>Planting of 2.88Ha of woodland and 1.2Ha of woodland edge habitat.</td>
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</table>

Ecological Impact Significance With Mitigation: Slight Beneficial
<table>
<thead>
<tr>
<th>Species</th>
<th>Ecological Impact</th>
<th>Summary of mitigation</th>
<th>Ecological Impact</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Significance</td>
<td></td>
<td>Significance</td>
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<tr>
<td></td>
<td>Without Mitigation</td>
<td></td>
<td>With Mitigation</td>
</tr>
<tr>
<td>Badger</td>
<td>Loss of habitat</td>
<td>Slight Adverse Planting of 2.88Ha of woodland and 1.2Ha of woodland edge habitat</td>
<td>Slight Beneficial</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Planting of 1,625m of species rich hedgerow (including the improvement of existing hedgerow).</td>
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<tr>
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<td></td>
<td>Creation of 2Ha of species-rich grassland.</td>
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<td></td>
<td>Creation of wildlife pond.</td>
<td></td>
</tr>
<tr>
<td>Disturbance during construction and operational phase</td>
<td>Slight Adverse</td>
<td>A pre-construction walkover survey should be conducted by a suitability qualified ecologist to ascertain the current usage of badger at the site 6-8 weeks before works commence.</td>
<td>Slight Adverse</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Night time working with its associated need for additional lighting will be avoided to reduce disturbance.</td>
<td>(increased disturbance through traffic, lighting and noise cannot be eliminated).</td>
</tr>
<tr>
<td>Species</td>
<td>Ecological Impact Significance Without Mitigation</td>
<td>Summary of mitigation</td>
<td>Ecological Impact Significance With Mitigation</td>
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<td>--------------------------------------------</td>
</tr>
<tr>
<td>Bats</td>
<td>Loss of habitat</td>
<td>Gap up existing hedgerows. Avoid disturbance to existing hedgerows.</td>
<td>Slight Beneficial</td>
</tr>
<tr>
<td></td>
<td>Slight Adverse - Neutral</td>
<td>Planting of 2.88Ha of woodland and 1.2Ha of woodland edge habitat.</td>
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<tr>
<td></td>
<td></td>
<td>Planting of 1,625m of species rich hedgerow (including the improvement of existing hedgerow).</td>
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<td></td>
<td></td>
<td>Creation of 2Ha of species-rich grassland.</td>
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<td></td>
<td></td>
<td>Creation of wildlife pond.</td>
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<tr>
<td></td>
<td></td>
<td>Installation of bat boxes/bat bricks on trees/within new buildings to enhance roosting potential.</td>
<td></td>
</tr>
<tr>
<td>Species</td>
<td>Ecological Impact Significance Without Mitigation</td>
<td>Summary of mitigation</td>
<td>Ecological Impact Significance With Mitigation</td>
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</tr>
<tr>
<td>Disturbance during construction and operational phase</td>
<td>Slight Adverse</td>
<td>Night time working with its associated need for additional lighting will be avoided to reduce disturbance. Avoid working adjacent field boundaries. Necessary lights pointed towards the ground and away from bat habitat (particularly woodland and buildings).</td>
<td>Slight Adverse (increased disturbance through traffic, lighting and noise cannot be eliminated).</td>
</tr>
<tr>
<td>Amphibians (including great crested newt)</td>
<td>Loss of habitat Neutral</td>
<td>Dismantling of rubble pile under supervision of a suitably qualified ecologist. Creation of a wildlife pond within species rich grassland and adjacent to woodland edge planting at south-western side of the proposed development.</td>
<td>Slight Beneficial</td>
</tr>
<tr>
<td>Species</td>
<td>Ecological Impact Significance Without Mitigation</td>
<td>Summary of mitigation</td>
<td>Ecological Impact Significance With Mitigation</td>
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</tr>
<tr>
<td>Breeding birds</td>
<td>Loss of habitat</td>
<td>Vegetation clearance to be undertaken between November and February to avoid the breeding bird season and to coincide with the natural depletion of existing food stocks.清除工作应在11月和2月期间进行，以避开繁殖鸟类季节，并与现有食物储备的自然耗竭相吻合。Clearance should be carefully planned so that as much of the original vegetation as possible is left in situ.清除工作应谨慎规划，以尽可能保存原有植被。Planting of 2.88Ha of woodland and 1.2Ha of woodland edge habitat. 植树2.88公顷的林地和1.2公顷的林地边缘栖息地。Planting of 1,625m of species rich hedgerow (including the improvement of existing hedgerow. 植树1,625米长的物种丰富的树篱（包括改善现有树篱）。Creation of 2Ha of species-rich grassland. 创建2公顷的物种丰富的草场。Creation of wildlife pond. 创建野生动物池塘。Bird nesting opportunities will be created with new buildings by installing 'swift bricks'. 通过新建建筑物安装‘快速梁’来创建鸟类筑巢机会。</td>
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<td></td>
<td>Slight Adverse</td>
<td>Slight Beneficial</td>
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<td>Species</td>
<td>Ecological Impact Significance Without Mitigation</td>
<td>Summary of mitigation</td>
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</tr>
<tr>
<td>Disturbance during construction and operational phase</td>
<td>Slight adverse</td>
<td>Vegetation clearance to be undertaken between November and February to avoid the breeding bird season and to coincide with the natural depletion of existing food stocks. Clearance should be carefully planned so that as much of the original vegetation as possible is left in situ. Any development that coincides with subsequent breeding seasons should be monitored by a suitably qualified ecologist.</td>
<td>Neutral</td>
</tr>
<tr>
<td>Brown hare</td>
<td>Loss of habitat</td>
<td>Planting of 1,625m of species rich hedgerow (including the improvement of existing hedgerow. Creation of 2Ha of species-rich grassland.</td>
<td>Slight Beneficial</td>
</tr>
<tr>
<td>Species</td>
<td>Ecological Impact Significance Without Mitigation</td>
<td>Summary of mitigation</td>
<td>Ecological Impact Significance With Mitigation</td>
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</tr>
<tr>
<td></td>
<td>Disturbance during construction and operational phase.</td>
<td>Night time working with its associated need for additional lighting will be avoided to reduce disturbance. Any trenches left open overnight will have a means of escape for any animals that might fall in. Impose speed limit for all traffic using site (during and after construction).</td>
<td>Slight Adverse (increased disturbance through traffic, lighting and noise cannot be eliminated)</td>
</tr>
</tbody>
</table>
Cumulative Impacts

11.134 There is one development close to the proposed Ripon Services at Baldersby Gate which requires consideration, which is the A1(M) Dishforth to Barton Improvement works.

11.135 The A1(M) Dishforth to Barton Improvement works involve the upgrading of a stretch of dual carriageway to three lane motorway. The stretch between Dishforth to Leeming, is currently undergoing construction. Construction commenced in Spring 2009. This road improvement scheme has impacted on a number of different habitats including arable, improved grassland, semi-improved grassland, tall ruderal, pond, buildings, woodland and hedgerow. Species that have been impacted include bats, badger, breeding birds, otter and great crested newt. Appropriate mitigation has been implemented prior to construction to negate any adverse impacts on habitats and protected species.

11.136 With the implementation of mitigation measures as set out in this ES, it is predicted that there will be no adverse cumulative impacts. The proposed development will have positive impacts on the local ecology with the implementation of ecologically guided features (including the green roofs, enhanced woodland, grassland and hedgerows, wildlife pond and bat/bird roosting/nesting opportunities).

Summary and Conclusions

11.137 The site for the proposed Ripon Services is situated on land located 1.5km west of the village of Rainton and is bordered by the A1 to the east and the A61 to the west. It is located in a rural area comprising mixed arable and pasture agriculture, interspersed with woodland copses.

11.138 Following comprehensive desktop and field surveys on the site, the impact of the development is thought to be slight adverse at the highest. With mitigation, adverse impacts on habitats are thought to improve to slight beneficial. No rare or protected habitats will be affected and no designated sites will be affected. There will be a slight adverse impact on faunal species with regard to disturbance during the construction and operational phases of the Junction MSA through increased traffic,
lighting and noise. Appropriate habitat creation will see beneficial impacts on faunal species.

11.139 The proposed development provides opportunities to enhance habitats for wildlife in a local context. Commitment to the mitigation measures, as set out in this ES, will see a measureable improvement to the habitats currently present on the site, in addition to the introduction of new habitats. This will have benefits to many faunal species, not restricted to those protected species considered in this assessment. Ecologically guided landscaping will also ensure that the development fits within the local landscape and additionally and create attractive surroundings for staff and visitors of the proposed Ripon Services.

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February 2010].


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- Natural England (2010b) Natural Areas and Their Role. [Internet]. Available from; <english-nature.org.uk/Science/natural/role.htm> [Accessed March 2010].


12.0 Drainage and Flood Risk

Introduction

12.1 This chapter of the ES assesses the potential impacts of Ripon Services on flood risk, both on and off site. A standalone Flood Risk Assessment (FRA) report is provided in Appendix 12.1.

12.2 The chapter describes the assessment methodology; the baseline conditions at the site and surrounding area; the potential flood risk impacts; the mitigation measures required to prevent, reduce or offset any adverse impacts; and the likely residual impacts after these measures have been implemented.

Scope of Assessment

12.3 This chapter considers the potential impacts of the Ripon Services on flood risk, both on and off site. In considering potential off site impacts, the area immediately surrounding the site has been considered.

Legislation and Policy

12.4 The assessment of potential flood risk flood impacts takes the following legislation and planning policy into account.

PPS25

12.5 PPS25 is the current guide on development and flood risk in England, and is supplemented by 'Development and Flood Risk: A Practice Guide (Communities and Local Government, 2009). Together, these documents guide planners on how to evaluate sites in respect of flood risk. PPS25 requires a flood risk assessment to consider all types of flooding, including fluvial (river), tidal (sea), groundwater, sewers, pluvial (surface water and overland flow), land drainage, and artificial sources (i.e. reservoirs, canals, water mains etc.). In assessing flood risk, PPS25
requires the impact of climate change to be taken into account, the vulnerability of the development to flooding to be considered, and whether the Sequential and Exception Test are required for development. PPS25 also promotes the use of Sustainable Drainage Systems (“SuDS”) where practical.

12.6 Further information on PPS25, and its supplementary practice guide, is provided in Appendix 12.1.

North West Yorkshire Strategic Flood Risk Assessment (Harrogate Borough Council, 2005)

12.7 The North West Yorkshire Strategic Flood Risk Assessment (Harrogate Borough Council, 2005) directs development, where possible, to Flood Zone 1. The Strategic Flood Risk Assessment details that there are generally no flood risk development constraints in Flood Zone 1. However, drainage arrangements for proposed developments should be considered carefully, to ensure there is no increase in flood risk elsewhere as a result of development in Flood Zone 1.

Consultation

12.8 The Environment Agency, Harrogate Borough Council (“HBC”), Yorkshire Water and the Lower Swale Internal Drainage Board (“IDB”) were consulted as part of the assessment. The information each of these parties provided is summarised below.

Environment Agency

12.9 The Environment Agency provides standard advisory guidance for development sites greater than a hectare located in Flood Zone 1. This guidance is summarised below and is also provided in the FRA.

12.10 AECOM also contacted the Environment Agency to enquire whether they held any site specific flood risk information. The response received from the Environment Agency is also provided in the FRA and summarised below.

12.11 The Standard Advisory Guidance states that FRAs for development sites greater than
a hectare located in Flood Zone 1 should focus on the management of surface water runoff. Drainage from new development must not increase flood risk either on or off site, and the Environment Agency encourages the use of SuDS to achieve this.

12.12 The Standard Advisory Guidance explains that guidance on how to address specific local surface water flood risk issues may be available through the Strategic Flood Risk Assessment or Surface Water Management Plan produced by the Local Planning Authority.

12.13 In providing a site specific response, the Environment Agency confirmed that the site is located in Flood Zone 1. The Environment Agency also confirmed that they have no records of any watercourses running through the site.

12.14 The Environment Agency explained that the nearest watercourse to the site (classified as a non main river) lies within the Lower Swale IDB district. The Environment Agency recommended contacting the Lower Swale IDB to confirm their requirements.

12.15 As a minimum, the Environment Agency would want to see surface water discharge restricted to the existing rate. Further consideration should be given to restricting runoff to the greenfield rate (1.4l/s/ha for 1 in 1 year storm), with sufficient attenuation to accommodate a 1 in 30 year storm. The design should also ensure that storm water resulting from a 1 in 100 year event, plus 30% to account for climate change, and surcharging the drainage system can be stored on the site without risk to people or property and without overflowing into the watercourse.

12.16 The Environment Agency is keen to promote the use of SuDS and expect developers to submit detailed investigations to show that the use of SuDs has been explored.

**Lower Swale Internal Drainage Board**

12.17 In line with the Environment Agency recommendations, AECOM contacted the Lower Swale IDB. The response received from the Lower Swale IDB is provided in the FRA and summarised below.
12.18 The Lower Swale Internal Drainage Board provided a map showing the extent of Internal Drainage Board district. The site is not located within the Internal Drainage Board district. However, the closest watercourse to the site (Broom Moor Drain) is located within the Internal Drainage Board’s district.

12.19 The Internal Drainage Board requires surface water discharges into watercourses from any new development to be attenuated to 1.4l/s/ha, where it drains into the Internal Drainage Board district.

**Harrogate Borough Council**

12.20 HBC has development control standards for flood risk, and the Council confirmed that these standards should apply to this site. However, as the Council explained, each site has different criteria. Without knowledge of the dynamics on site, including development proposals and outfall location etc, it is difficult to be specific in terms of drainage requirements. AECOM therefore recommends that further discussions with HBC are undertaken at a later stage, once drainage arrangements for the site are considered in detail.

12.21 The development control standards are provided in the FRA and summarised below.

12.22 HBC requires Flood Risk Assessments to be completed for all sites. A Flood Risk Assessment should consider all sources of flooding, and consider the impact of proposed developments off site.

12.23 The Council requires finished floor levels to be located at a certain freeboard above the 1 in 100 year (plus climate change) fluvial flood level. The amount of freeboard required depends of the type of development.

12.24 The Council does not hold any information on flood risk or historical flooding.

12.25 The Council requires the developer to demonstrate compliance with the Building Regulations, including assessing the feasibility of discharging surface water via infiltration and giving preference to soakaways. However, soakaways should not be installed where there is a history of groundwater flooding or where flows could re-
emerge and cause flooding.

12.26 Surface water should be stored within the drainage system, either below ground or in formal above ground systems, for the 1 in 30 year storm event. In excess of this, up to the 1 in 100 year plus climate change event, ponding is tolerated above ground on the site. However, this ponding would need to be controlled in areas and should not cause flooding of property.

12.27 For a greenfield site, the Council would require surface water runoff to be limited to the greenfield rate. In calculating the greenfield runoff rate, the following values are typical for Harrogate; M5 60 = 19.0mm, Ratio R = 0.348, Cv (Summer) = 0.750, Cv (Winter) = 0.840. However, in this case the site is not located in Harrogate, requiring location specific constants.

12.28 HBC published the North West Yorkshire Strategic Flood Risk Assessment ("SFRA") in 2006. This SFRA details that all types of development are appropriate in Flood Zone 1, but that Flood Risk Assessments are required for all development sites over 1 hectare in area.

12.29 Flood Risk Assessments should consider the vulnerability of the proposed development to all forms of flooding and the potential for the development to increase flood risk elsewhere.

**Yorkshire Water**

12.30 AECOM consulted Yorkshire Water to obtain asset plans for the site and immediate surrounding area.

12.31 The Yorkshire Water asset plans are provided in the FRA, and what these plans show is summarised under baseline conditions.

**Methodology**

12.32 The assessment of the potential impacts on flood risk has been on PPS25 and the Highways Agency’s Design Manual for Roads and Bridges (“DMRB”).
12.33 As explained above, PPS25 is the current guide on development and flood risk in England. The DMRB methodology was developed for highway projects. However, this method can be effectively applied to other development types and provides a robust and accepted method for assessing the significance of impacts for EIAs. The DMRB methodology is therefore considered appropriate for this assessment.

12.34 The assessment of flood risk significance impact follows the guidance set out in Volume 11, Section 3, Part 10 (HD 45/096 – Road Drainage and the Water Environment) of the DMRB. Potential impacts are assessed first without mitigation into account, and are then reassessed with mitigation measures taken into account. The second assessment identifies residual impacts (i.e. the impact remaining once mitigation measures are implemented). Appropriate mitigation measures has been developed based on current good practice and established techniques.

12.35 In following PSS25 and DMRB guidance, the following sources of information have been utilised to complete the assessment:

- North West Yorkshire Strategic Flood Risk Assessment
- Ordnance Survey Maps
- British Geological Survey Maps
- Yorkshire Water Asset Plans
- Proposed Development Plans
- Topographic Surveys

12.36 The parties listed in the previous section were also consulted as part of the assessment, and a site visit was undertaken on the 3rd March 2010.
Baseline Conditions

Tidal Flooding (Sea)

12.37 The site is located in Flood Zone 1, remote from the sea, at a height of approximately 46m AOD. Broom Moor Drain, which is located approximately 650m to the east of the site, is not tidally influenced.

12.38 The risk to the site from tidal flooding is therefore considered to be negligible.

Fluvial Flooding (Rivers)

12.39 The Environment Agency’s Flood Map shows the site is located within Flood Zone 1. The probability of fluvial flooding occurring on site is less than 0.1% per year, and is considered low.

12.40 The only watercourse located within 1km of the site is Broom Moor Drain. Broom Moor Drain is located approximately 650m to the east of the site, to the east of the A1 south bound carriageway. Broom Moor Drain flows in an easterly direction away from the site.

12.41 The risk to the site from fluvial flooding is therefore considered to be negligible.

Groundwater Flooding

12.42 The site is underlain by glacial and alluvial deposits, which are laid over soft Triassic sandstones. There are no known springs or artesian groundwater in the vicinity of the site, and no reported instances of groundwater flooding on site. The results of the intrusive infiltration tests contained in the FRA did not strike groundwater.

12.43 A detailed ground investigation report will be undertaken proving groundwater levels and if these are found to be high or under artesian pressure, the flood risk from groundwater should be re-assessed.
12.44 Based on the information available, the risk of flooding on site from groundwater flooding is therefore considered to be low at this stage.

**Pluvial Flooding (Overland Flow)**

12.45 Based on the topographic survey and the site visit, any pluvial flow would be directed northwards and as the gradient of the site is shallow (1/110) if it occurs it would likely be slow and progressive if visible at all.

12.46 The risk to the site from pluvial flooding is therefore considered to be low.

**Flooding from Sewers and Water Mains**

12.47 There are no public sewers located within close vicinity of the site. A foul sewer runs along Wide Howe Lane, at Baldersby St James Primary School for approximately 125m. (Baldersby St James is located approximately 1km to the north west of the site.) A public water main also runs along Wide Howe Lane. This water main and a second water main run across fields to Rainton. To the east of the site, a water main runs from Melmerby north eastwards towards the A1.

12.48 Due to the distance the nearest sewers and water mains are located from the site, and the fact Yorkshire Water are responsible for maintaining their assets, the risk to site from sewer and water main flooding is considered to be negligible.

**Flooding from Other Artificial Sources (excluding sewers and water mains)**

12.49 At the A1 A61 junction, there is a Highways Agency balancing pond which is used in the ongoing A1(M) Improvement Scheme. The balancing pond is located outside the site boundary, however, there is no information available.

12.50 Based on site observations and works on the A1(M) Improvement Scheme by the Highways Agency, it is expected that the balancing pond is maintained by Highways Agency as part of the ongoing A1(M) Improvement Scheme. Assuming this balancing pond continues to be maintained by routine inspection the risk of flooding from the balancing pond is considered to be low.
12.51 There are no other artificial sources of water (i.e. canals, lakes or ponds and excluding sewers and water mains) that pose a flood risk to the site. The only surface water feature located within 1km of the site is Broom Moor Drain (excluding balancing ponds associated with the A1(M) Improvement Scheme). The flood risk associated with Broom Moor Drain was considered under fluvial flooding.

Site Drainage

12.52 The site is currently predominantly agricultural grazing land, with small land drainage ditches (almost negligible) running along parts of the southern and eastern boundaries of the site. Due to small size of these ditches and the position and contributing area the risk of flooding from these ditches is considered to be low.

Identification of Impacts

12.53 Potential impacts of the construction, demolition and operation phase of the proposed Junction MSA - Ripon Services at Baldersby Gate are detailed below. Potential impacts have only been detailed where it has been assessed that there could potentially be a significant impact. Based on the information outlined in baseline conditions, there are no foreseen significant impacts on tidal, fluvial, artificial sources or sewer and water main flooding during construction, demolition or operation. While there is potentially a risk to the site from the balancing pond located at the A1 / A61 junction, the construction, demolition or operation phases should not have an impact on this balancing pond because it is located outside the site boundary.

Construction and Demolition

Groundwater Flooding

12.54 Based on the initial assessment that groundwater flood risk is low, further investigations may prove otherwise. Excavations and other such activities that could encounter groundwater during construction works and demolition works may have to be considered further.
The impact of groundwater flooding would be a temporary minor adverse impact.

**Pluvial Flooding (Overland Flow)**

Construction could change pluvial flow routing through the site, which could potentially increase the risk of pluvial flooding occurring on and off site. The effect on pluvial flooding would be a temporary minor adverse.

**Site Drainage**

Foul water services will need to be provided during construction. These services should be maintained by a professional contractor and foul water removed regularly from the site for appropriate disposal. If these services are not maintained appropriately there could be a risk of foul water flooding, which in turn would cause water pollution. The effect would be temporary minor adverse.

The construction process could also potentially increase the rate of surface water runoff from the site, if impermeable areas are created. This could potentially increase the risk of surface water flooding on and off site if there are no mitigation measures in place. The effect would be temporary minor adverse.

**Operation**

**Groundwater Flooding**

Based on the initial assessment that groundwater flood risk is low, further investigations may prove otherwise. During the operation of the site, any installations or activities that could encounter groundwater may have to be considered further.

The impact of groundwater flooding could be a permanent moderate adverse impact without mitigation.
**Pluvial Flooding (Overland Flow)**

12.61 The proposed development may change pluvial flow routing through the site, and could potentially increase the risk of pluvial flooding occurring on and off site without mitigation. The effect on pluvial flooding would be permanent moderate adverse without mitigation.

**Site Drainage**

12.62 The proposed Ripon Services will create foul flows from the site, and increase the rate of surface water runoff from the site. If an appropriate drainage strategy is not implemented, there could be a risk of foul and surface water flooding. The effect would be permanent moderate adverse.

**Mitigation**

**Construction**

**Groundwater Flooding**

12.63 The construction process should take the groundwater level into account. If there are high groundwater levels on site, then appropriate construction techniques should be utilised to mitigate the risk. Dewatering and ground freezing techniques are examples of appropriate construction techniques could be utilised during construction.

**Pluvial Flooding (Overland Flow)**

12.64 It is recommended that impact of construction and demolition on pluvial flow is considered as these phases are carried out. If construction and demolition change pluvial flow routing through the site, appropriate drainage and flood routing should be installed to mitigate any adverse effect. This could possibly be provided by a simple drainage ditch discharging to the proposed balancing pond. Appropriate drainage and flood routing would ensure the effect of construction on pluvial flooding is low, on and off site.
Site Drainage

12.65 Foul water from services provided during construction should be maintained by a professional contractor, and foul flows removed regularly from the site for appropriate disposal. This should ensure that there is no foul water flooding, either directly or indirectly, and that there is no effect on the water environment.

12.66 It is recommended that the effect of surface water runoff during construction is assessed further during these phases. If surface water runoff is assessed to be having a significantly adverse affect, either on or off site, then installing a temporary drainage system may be appropriate. A temporary drainage system would mitigate any adverse effect, and could possibly be provided in the form of a simple drainage ditch system.

Operation

Groundwater Flooding

12.67 The design of Ripon Services should take the groundwater level into account. If there are high groundwater levels on site, then the Services should be designed appropriately to mitigate the risk. Installing appropriate drainage and raising finished floor levels above the surrounding ground levels are examples of appropriate mitigation measures that could be utilised.

Pluvial Flooding (Overland Flow)

12.68 In order to mitigate any potential increase in the risk of pluvial flooding on and off site, the landscaping and drainage of the site should be designed to route flows away from the proposed buildings towards the less vulnerable open areas. Finished floor levels should also be set at least 150mm above external ground levels. Based on implementing these measures, the effect on pluvial flooding is considered negligible.

Site Drainage

12.69 A drainage assessment was undertaken as part of the FRA. This drainage assessment
demonstrated that it is possible to discharge foul and surface water from the proposed Ripon Services safely, and without increasing flood risk.

12.70 It is proposed that surface water discharge into the ground via infiltration based on the infiltration rates obtained by site investigations and the available spaces to enable infiltration to occur (beneath proposed car parks and the infiltration/attenuation basin.

12.71 It is the preference to discharge foul water flows to ground via infiltration after it is treated via a bespoke designed sewage treatment plant although the exact methods of foul water disposal will be confirmed during the detailed design stage after detailed discussions with the Statutory Authorities.

12.72 Although infiltration of surface water into the ground is possible, it will be necessary to balance excess flows in an attenuation basin which can be created to allow surface water flows to infiltrate into the ground.

12.73 Surface water will be stored within the drainage system (below ground or in a formal above ground system) for a 1 in 30 year rainfall plus climate change event. In excess of this, up to the 1 in 100 year plus climate change event, ponding would be tolerated above ground, subject to any ponding being in controlled areas such as formal landscaping or car parking areas.

12.74 Assuming that an appropriate foul and surface water drainage system is installed, and maintained by routine inspection and clearance the risk of flooding from the proposed drainage arrangements is considered to be low.

**Residual Impacts**

12.75 The table below presents a summary of the residual impacts.
Table 12-1: Residual effects

<table>
<thead>
<tr>
<th>Description of Potential Impact</th>
<th>Classificatio of Potential Impact</th>
<th>Feature</th>
<th>Assessment of Significance without Mitigation</th>
<th>Proposed and Recommended Mitigation Measures</th>
<th>Residual Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constructions</td>
<td></td>
<td>Groundwater flooding</td>
<td>Unknown Direct Temporary Short Term</td>
<td>Groundwater</td>
<td>Minor Adverse</td>
</tr>
<tr>
<td>Pluvial Flooding</td>
<td>Unlikely Direct Temporary Short Term</td>
<td>Surface Water</td>
<td>Minor Adverse</td>
<td>If construction is assessed to have a significantly adverse affect on pluvial flooding then a temporary drainage system should be installed.</td>
<td>Neutral</td>
</tr>
<tr>
<td>Drainage</td>
<td>Unlikely Direct Temporary Short Term</td>
<td>Foul and Surface Water</td>
<td>Minor Adverse</td>
<td>Foul water from services provided during construction should be maintained by a professional contractor and removed regularly from the site for appropriate disposal. If surface water runoff during construction is assessed to have a significantly adverse affect then a temporary drainage system should be installed.</td>
<td>Neutral</td>
</tr>
<tr>
<td>Operation</td>
<td></td>
<td>Groundwater flooding</td>
<td>Unknown Direct Temporary Short Term</td>
<td>Groundwater</td>
<td>Moderate Adverse</td>
</tr>
<tr>
<td></td>
<td>Likely Direct</td>
<td>Surface Water</td>
<td>Moderate Adverse</td>
<td>Install an appropriate Sustainable Drainage Systems (SuDS) and set the road level at least 150mm above external ground levels.</td>
<td>Neutral</td>
</tr>
<tr>
<td>----------------</td>
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<td>---------------</td>
<td>------------------</td>
<td>-------------------------------------------------------------------------------------------------</td>
<td>---------</td>
</tr>
<tr>
<td>Pluvial Flooding</td>
<td>Direct Permanent Long Term</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drainage</td>
<td>Unlikely Direct Temporary Long Term</td>
<td>Foul and Surface Water</td>
<td>Moderate Adverse</td>
<td>Install an appropriate Sustainable Drainage Systems (SuDS) to collect, convey, store and discharge surface water runoff where necessary. Dispose of foul water in agreement with the Statutory Authorities but preference for on site treatment and disposal. Both foul and surface water disposal systems should be maintained efficiently.</td>
<td>Neutral</td>
</tr>
</tbody>
</table>

12.76 Assuming appropriate mitigation measures are implemented, and good site practice guidelines are followed, there should be no significant residual effects during construction, demolition or operation.

12.77 During the operation phase of the proposed junction MSA, there is a residual risk of flooding from the proposed drainage arrangements (foul and surface water) if they are poorly maintained. Assuming regular inspection and maintenance is undertaken to ensure the infrastructure remains in a suitable condition, the residual risk of flooding from the proposed drainage arrangements is considered to be negligible.
Cumulative Effects

12.78 The site is located adjacent to the A1(M) Improvement Scheme, and there is additional development proposed in the local area.

12.79 It is assumed that stringent mitigation measures will be implemented to insure the construction, demolition and operation phases of the other proposed developments (including road schemes) in the local area do not have an adverse impact on flood risk. Taking into account how developments should be designed and the mitigation measures that should be implemented; the cumulative impact of all proposed developments on flood risk should be minimal.

Summary and Conclusions

12.80 The potential impacts of the proposed Junction MSA - Ripon Services at Baldersby Gate on flood risk have all been identified and assessed. Mitigation measures to offset any significant adverse effects to an acceptable level have been detailed.

12.81 The key issue during construction, operation and demolition will be the surface water drainage from the site. The existing site is predominately agricultural grazing land (greenfield). Developing the site will increase the rate of surface water runoff from the site and change pluvial flow routing. An appropriate drainage system should be installed during the operation phase of the proposed development, and also during construction and demolition if necessary. This drainage system should take into account Environment Agency guidelines on surface water runoff, and either discharge into the ground via infiltration or connect to the local watercourses at an agreed rate. The drainage system should also consider implementing Sustainable Drainage Systems (SuDS), which are promoted by both PPS25 and Building Regulation Part H.

References

- AECOM (2010) Junction MSA - Ripon Services at Baldersby Gate, Flood Risk Assessment


- Harrogate Borough Council (2005) North West Yorkshire Strategic Flood Risk Assessment

13.0 Geology and Hydrogeology

Introduction

13.1 This chapter describes the methodology and findings of the assessment in the identification of the potential impacts of the proposed Ripon Services on the ground conditions and hydrogeology of the site. More specifically this chapter considers:

- Geology
- Hydrogeology
- Soils
- Minerals
- Ground Contamination

13.2 This chapter identifies the prevailing conditions on site. It sets out the effects that the construction and operation of the MSA and its associated infrastructure may have on the geology and hydrogeology of the area and identifies certain mitigation measures to avoid, reduce and offset any adverse effects.

Scope of Assessment

13.3 The study area considers the site and its immediate surroundings, though where necessary a wider area up to 1km from the site boundary has been studied.

13.4 The assessment has been undertaken based on consultations with various statutory and non-statutory agencies and the collection and interpretation of a wide range of data and published material including maps and memoirs.
Legislation and Policy

13.5 A qualitative assessment has been undertaken using a combination of professional judgment, legislation and other statutory policy and guidance. Key acts of legislation, policy and guidance which have been considered in the preparation of this assessment are presented in Table 13.1.

<table>
<thead>
<tr>
<th>Scale</th>
<th>Legislation</th>
</tr>
</thead>
<tbody>
<tr>
<td>EU</td>
<td>EC Water Framework Directive (2000/60/EC)</td>
</tr>
<tr>
<td></td>
<td>The Dangerous Substances Directive (78/464/EEC)*</td>
</tr>
<tr>
<td></td>
<td>Water Resources (Abstraction and Impounding) Regulations 2006 (as amended 2008)</td>
</tr>
<tr>
<td></td>
<td>The Water Act 2003</td>
</tr>
<tr>
<td></td>
<td>Control of Pollution (Oil Storage) (England) Regulations 2001</td>
</tr>
<tr>
<td></td>
<td>Water Supply (Water Quality) Regulations 2000 (Amendment) Regulations 2001</td>
</tr>
<tr>
<td></td>
<td>Contaminated Land (England) Regulations 2000</td>
</tr>
<tr>
<td></td>
<td>Anti-Pollution Works Regulations 1999</td>
</tr>
<tr>
<td></td>
<td>Pollution Prevention and Control Act 1999</td>
</tr>
<tr>
<td></td>
<td>The Surface Waters [Dangerous Substances (Classification)] Regulations 1998</td>
</tr>
<tr>
<td></td>
<td>Groundwater Regulations 1998</td>
</tr>
<tr>
<td></td>
<td>The Environment Act 1995 (as amended)</td>
</tr>
<tr>
<td></td>
<td>Private Water Supplies Regulations 1991 (revised Regulations are currently being consulted upon)</td>
</tr>
<tr>
<td></td>
<td>The Water Resources Act 1991 (as amended)</td>
</tr>
<tr>
<td></td>
<td>The Land Drainage Act 1991 (as amended)</td>
</tr>
<tr>
<td></td>
<td>Water Industry Act 1991</td>
</tr>
<tr>
<td></td>
<td>Environmental Protection Act 1990</td>
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<tr>
<td></td>
<td>Control of Pollution Act 1974</td>
</tr>
</tbody>
</table>

13.6 Best practice procedures and mitigation for the protection of hydrogeology and the environment during general construction works and the design, installation and operation of a petrol filling station is provided by the following guidance documents...
listed in Table 13.2.

Table 13-2: Guidance documents

<table>
<thead>
<tr>
<th>Guidance Documents</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIRIA C650 (2005) Environmental Good Practice on Site</td>
</tr>
<tr>
<td>CIRIA (R125) A Guide to the Control of Substances Hazardous to Health in Design &amp; Construction</td>
</tr>
<tr>
<td>DEFRA  Groundwater Protection Code: Petrol stations and other fuel dispensing facilities involving underground storage tanks (November 2002)</td>
</tr>
<tr>
<td>Environment Agency Pollution Prevention Guidelines (“PPG”), the most relevant being:</td>
</tr>
<tr>
<td>PPG 1 – General guide to the prevention of pollution;</td>
</tr>
<tr>
<td>PPG 2 – Above ground oil storage tanks (February 2004);</td>
</tr>
<tr>
<td>PPG 3 – Use and design of oil separators in surface water drainage systems (April 2006);</td>
</tr>
<tr>
<td>PPG 5 – Works or maintenance in, or near watercourses (October 2007);</td>
</tr>
<tr>
<td>PPG 6 – Working at construction and demolition sites;</td>
</tr>
<tr>
<td>PPG 7 – Refuelling facilities (August 2004);</td>
</tr>
<tr>
<td>PPG 8 – Safe storage and disposal of used oils (February 2004);</td>
</tr>
<tr>
<td>PPG 10 – Highway Depots</td>
</tr>
<tr>
<td>PPG 13 – Vehicle washing and cleaning (July 2007);</td>
</tr>
<tr>
<td>PPG 18 – Managing fire water and major spillages</td>
</tr>
<tr>
<td>PPG 21 – Pollution incidence response planning (February 2004); and</td>
</tr>
<tr>
<td>PPG 27 – Installation, decommissioning and removal of underground storage tanks</td>
</tr>
</tbody>
</table>

13.7 National policies relevant to this study are listed in Table 13.3.

Table 13-3: National Planning Policies

<table>
<thead>
<tr>
<th>National Planning Policy</th>
</tr>
</thead>
<tbody>
<tr>
<td>PPS23</td>
</tr>
</tbody>
</table>
Consultation

13.8 A scoping opinion request was issued in February 2010 in order to ascertain interested parties’ opinion of the proposed development and identify any constraints that may be related to the site. Scoping and consultation responses with respect to groundwater and land contamination are summarised below.

Table 13-4: Summary of consultation responses

<table>
<thead>
<tr>
<th>Consultee</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environment Agency</td>
<td>Advised that the site is located on the Sherwood Sandstone which is classified as a Principal (formally known as Major) aquifer. Advised that the Sherwood Sandstone is also in a recharge zone.</td>
</tr>
<tr>
<td></td>
<td>There are several groundwater abstractions in the vicinity which must not be impacted in any way and must be considered if an application is made for a groundwater abstraction licence.</td>
</tr>
<tr>
<td></td>
<td>Details of the historical uses of the site should be provided in the ES to show the site is or is not potentially contaminative and that sufficient information is submitted to demonstrate that the risk of pollution to controlled waters is understood and is acceptable.</td>
</tr>
<tr>
<td></td>
<td>Under PPS23 the application should not be determined until information is provided to the satisfaction of the Local Planning Authority that the risk to controlled waters has been fully understood and can be addressed through appropriate measures.</td>
</tr>
<tr>
<td></td>
<td>If the site will include a petrol filing station adequate measures should be in place to protect controlled waters.</td>
</tr>
</tbody>
</table>

Methodology

13.9 To identify potential constraints to development, baseline conditions were established by undertaking a desk-based study. Information relating to the site has been reviewed in order to establish current environmental or baseline conditions for the study area prior to construction of the proposed development. An assessment of the impacts of existing baseline conditions on the development and, conversely, the impacts of the development on prevailing conditions are then assessed. Details of mitigation measures that may be required to reduce, prevent or offset the impacts together with the residual and cumulative impacts following mitigation are then
provided. Where such information has been available, the desk study included the following:

- Review of solid and drift geology maps and memoirs;
- Review of soil maps;
- Identification of hydrogeological conditions and groundwater resources;
- Collation of data on abstractions and discharges within and close to the site;
- Review of an Envirocheck Report and historical maps for the site and surrounds; and
- Identification of the locations and characteristics of boreholes within the site boundary and in close proximity to the proposed development;

13.10 In order to make an assessment of the construction, environmental and human health risk a conceptual model needs to be developed for the site. This requires an examination of the ‘Source-Pathway-Receptor’ linkages to define construction, environmental and human health risk associated with existing and future conditions. The first step of the model development is to identify both the contaminants of concern from possible sources and potential receptors on and around the site.

13.11 The risk assessment is preliminary only and is based on guidance provided in CIRIA C552 - Contamination Land Risk Assessment, A Guide to Good Practice. The risk assessment is based on information obtained during this desk study and should be updated as further information becomes available.

13.12 The risk assessment is performed in accordance with the precautionary principle, in which a pathway is assumed to exist unless there is reasonable contrary evidence. The risk associated with each source-receptor linkage is a product of the probability that a significant pathway exists and the severity of the potential impact. For preliminary risk assessment the method for risk evaluation is a qualitative method and involves classification of:
13.13 A comparison of consequence against probability is undertaken to indicate the risk presented by each pollutant linkage. This is calculated in accordance with Table 6.5 – CIRIA 552, reproduced below in Table 13.5:

<table>
<thead>
<tr>
<th>PROBABILITY</th>
<th>CONSEQUENCE</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Severe</td>
<td>Medium</td>
<td>Mild</td>
<td>Minor</td>
</tr>
<tr>
<td>High Likelihood</td>
<td>Very high risk</td>
<td>High risk</td>
<td>Moderate risk</td>
<td>Moderate / low risk</td>
</tr>
<tr>
<td>Likely</td>
<td>High risk</td>
<td>Moderate risk</td>
<td>Moderate / low risk</td>
<td>Low risk</td>
</tr>
<tr>
<td>Low Likelihood</td>
<td>Moderate risk</td>
<td>Moderate / low risk</td>
<td>Low risk</td>
<td>Very low risk</td>
</tr>
<tr>
<td>Unlikely</td>
<td>Moderate / low risk</td>
<td>Low risk</td>
<td>Very low risk</td>
<td>Very low risk</td>
</tr>
</tbody>
</table>

13.14 The results of this assessment are presented as risks; i.e. the remaining risk once mitigation measures that would be adopted through construction and operation of the proposed MSA have been taken into account. Mitigation has been developed based on current best practice and established standards and construction techniques. Table 6.6 – CIRIA 552 indicates that any risks classified as moderate or higher are generally considered to be significant and will require further investigation or mitigation measures.
Baseline Conditions

Geology

13.15 The British Geological Survey ("BGS") 1:50,000 Sheet 52 shows the site to be underlain by glacial sandy till with bedrock of the Triassic Sherwood Sandstone Group at shallow depth. Sherwood Sandstone is shown to outcrop just within the north of the site, on the north western edge of the A61. Another outcrop of Sherwood sandstone is shown adjacent to the south west corner of the site.

13.16 The BGS memoir on the geology of the area around Thirsk describes the Sherwood Sandstone as poorly to moderately cemented, unfossiliferous, fine to medium-grained sandstones, mainly brick red but also grey, yellow and mottled.

13.17 The drift geology is shown in more detail on BGS 1:10,560 map sheet SE37NE. The surface deposits at the site are described as red sandy soil. Three exploratory holes shown to the north of the site are detailed on the map. The exploratory holes are located close to Baldersby junction and are believed to have been sunk to determine ground conditions for proposed highway improvements. Made ground to 1.0m below surface followed by sandy clay to 1.92m and clayey sand to 2.66m was encountered in a borehole (BGS reference: 20d2) located adjacent to the northern edge of the site. Sandstone was proved from 2.66m (42.34m OD) to the base of the hole at 7.5m. Another exploratory hole (BGS reference: 20a) is shown adjacent to the south west of the site and the geology is described as yellow brown sand and gravel to 0.59m below ground level, red clayey sand and clay with gravel to 1.75m followed by red sand and sandstone to the bottom at 3.0m.

13.18 It is anticipated that made ground will be encountered in the northern extent of the site following the realignment of the A61 and the construction of a revised motorway junction as part of the A1 Dishforth to Barton Improvement scheme

13.19 The distribution of the solid and drift geology is presented on Figure 13.1 Geological Survey Map. The geology of the study area based on historical BGS exploratory boreholes is summarised below in Table 13.6.
### Table 13-6: Generalised succession of deposits within the site

<table>
<thead>
<tr>
<th>Age</th>
<th>Stratum</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recent</td>
<td>Made Ground</td>
<td>Associated with Baldersby Junction (north of the site)</td>
</tr>
<tr>
<td>Mostly Devensian (Glacial)</td>
<td>Glacial Sandy Till</td>
<td>Clayey sand/sandy clay with gravel</td>
</tr>
<tr>
<td>Triassic</td>
<td>Sherwood Sandstone Group</td>
<td>Residual sand (weathered sandstone) followed by competent Sandstone</td>
</tr>
</tbody>
</table>

13.20 No features of geological significance (SSSIs or RIGSs) are located within or close to the site.

**Hydrogeology**

13.21 The Groundwater Vulnerability Map for central North Yorkshire (Sheet 8) identifies the site, as being underlain by a Major (now Principal) Aquifer. The Principal Aquifer, Sherwood Sandstone, is an important water resource and protection of its quality and quantity is vital. The relationship of the site to the different classes of groundwater vulnerability is presented on **Figure 13.2** Groundwater Vulnerability Map.

13.22 Principal aquifers such as the Sherwood Sandstone comprise highly permeable formations with a known or probable presence of significant fracturing. They can be highly productive and able to support large abstractions for public and private water supply as well as other uses. The superficial drift deposits overlying the Sherwood Sandstone aquifer are likely to vary in thickness and composition both laterally and vertically over short distances.

13.23 The soils overlying the Sherwood Sandstone aquifer are identified on the Groundwater Vulnerability Map as having intermediate leaching potential. Soils with an intermediate leaching potential have a moderate ability to attenuate diffuse source pollutants although non-adsorbed diffuse source pollutants or liquid discharge could penetrate the soil layer. The soils are defined as subclass I1, which are described as soils which can possibly transmit a wide range of pollutants.
13.24 From borehole records and maps of the area, the superficial soils have been shown to be relatively thin, only a few metres thick above the Sherwood Sandstone. These often sandy soils will not provide much protection to the aquifer beneath.

13.25 The groundwater flow in the Sherwood Sandstone in Yorkshire and Teesside is described in the BGS/EA publication “The Physical Properties of Major Aquifers in England and Wales” as being generally eastward from the feather edge of the aquifer in the west towards the confined aquifer in the east.

13.26 The EA defines the area surrounding groundwater sources such as wells, boreholes and springs used for public drinking water supply into groundwater Source Protection Zones (“SPZs”) which are then divided into three zones:

- Zone 1 (Inner protection zone);
- Zone 2 (Outer protection zone);
- Zone 3 (Total catchment)

13.27 The Environment Agency website shows there are no groundwater source protection zones under or within the close vicinity of the site. A total catchment area (zone 3) is shown 1.5km to the south of the site.

**Abstractions and Discharges**

13.28 The Envirocheck report contains no record of any water abstractions within 500m of the site boundary.

13.29 The BGS, through their online GeoIndex; a map-based index of information that they hold, identify a historical well located in the centre of Baldersby Junction. The historical well is described as “Shell Filling Station”, reference SE37/49, with water levels monitored between 1969 and 1979. These monitoring records could not be obtained.

13.30 Under the Private Water Supplies Regulations 1991, councils have a duty to compile a
database of and monitor the quality of private water supplies. Harrogate Borough Council was contacted regarding the presence of any private water supplies either within or close to the site. The nearest supply is situated 1km south-southeast of the southern site extents at Sleights Farm and also provides water for 3 adjacent properties, named Sleights Cottage, Sleights Barn and Oak Barn.

13.31 No discharge consents were identified from an Envirocheck Report as lying within 500m of the site.

**Soils**

13.32 Soil type, characteristics and land use exert a considerable influence on the hydrological regime of any catchment. As illustrated on the Soils Survey of England and Wales Sheet 1 (and shown in Figure 13.3), the site is entirely underlain by soils of the Escrick 2 Association.

13.33 The soils of the Escrick 2 Association occur mainly in North Yorkshire, between York and Leeming, but also small areas in Durham and South Yorkshire. The association consists in the main of coarse loamy typical argillic brown earths developed in glaciofluvial drift. The series is described as brown slightly stoney sandy loam becoming reddish and more stoney with depth. The Escrick series is described as well drained (Wetness Class I) and readily absorb winter rainwater.

13.34 Land use on the site is associated entirely with the agricultural industry. The site appears to be used for arable farming. Soils within the site are classified as grade 2 on the Agricultural Land Classification Scheme of England.

**Minerals**

13.35 The BGS Mineral Assessment Report of the area shows the site to be outside any area of potentially workable sand and gravel deposits.

13.36 The historical OS maps show no evidence of any mineral extraction taking place in the vicinity of the site.
13.37 North Yorkshire County Council Minerals department were contacted regarding the site and replied that there are no current mineral permissions in the area.

Ground Contamination – Preliminary Assessment

13.38 The Envirocheck Report and OS historical maps have not identified any features on the site that may be potentially contaminated, i.e. landfills or waste treatment and disposal sites.

13.39 Historical maps show that the site appears to have been used for agricultural purposes from 1856 to the present day. The only changes in the vicinity being the construction of a roundabout at the junction of the A1 and A61 sometime in the early 1950's and the construction of the current grade separated junction layout in the late 1980's.

13.40 The northern extent of the site is currently being altered as part of the A1 Dishforth to Barton Improvement Scheme. The A61 is being realigned to construct a new grade separated junction. As part of the scheme a lined balancing pond has been built within the northern area of the site to attenuate highway drainage.

13.41 The historical maps have identified two features immediately outside the northern boundary of the site which may pose a significant contamination risk. Two petrol filling stations have been identified, and appear to be associated with the former roundabout layout of Baldersby Junction. A filling station is shown on the western side of the former roundabout, 25m north of the site boundary. The filling station is shown on map editions from 1956 to 1983. The 1990 edition map shows the present grade separated junction layout, with the site of the former filling station located beneath the A61 approach embankment. A petrol filling station is shown on the eastern side of the roundabout, 140m east of the site. The filing station was present on map editions 1975 – 1983. The 1990 edition map shows the present grade separated junction layout, with the site of the former filling station located beneath the current southbound on-slip embankment.
Identification of Impacts

13.42 The following section identifies the potential impacts on the hydrogeology and the ground conditions that may occur as a consequence of the proposed development.

13.43 The potential impacts are first assessed without mitigation. Mitigation measures are then presented with residual impacts (impacts after taking into consideration mitigation measures) presented in table 13.7. The significance of potential unmitigated impacts has been evaluated using the criteria set out in the above methodology.

13.44 Based on the development proposals for the site, the construction, and operation phases could all potentially have adverse impacts on the hydrogeology of the area if good practice is not adhered to and appropriate mitigation measures are not implemented.

13.45 During construction and operation, there is the potential for the proposed development to adversely impact the Principal Aquifer (Sherwood Sandstone) which underlies the site.

Construction

13.46 During the construction period, a compound housing construction materials, mobile plant, equipment and office accommodation for contractors will be required. Construction materials and chemicals that are likely to be used and stored on site including: diesel, synthetic lubricating oil, mineral lubricating oil, cement, paint, silica or other similar material, disinfectant, and herbicides. To allow such substances to enter a water resource would be in breach of the Water Resources Act 1991. While such materials are being handled there is also the potential for accidental spillages to occur.

13.47 Static plant or vehicles could leak fuel or oils and either contaminate nearby watercourses or field drains or infiltrate the Principal Aquifer beneath the site and contaminate groundwater resources. Leaks and spillages may occur in any area of the site in which the plant is operating but is most likely to occur during refuelling.
13.48 Construction of building foundations can impact on underlying geology and also alter groundwater flow. Dewatering activities may be required during excavations for foundations or buried structures. Water pumped from excavations is likely to contain a moderate level of suspended solids. If left to drain untreated, this runoff could discharge suspended sediment potentially causing pollution in nearby watercourses and field drains.

13.49 Dewatering may mobilise or divert existing hydrocarbon spills through lowering of the water table, causing floating product to enter more permeable strata and increases of the local hydraulic gradient leading to the migration of plumes.

13.50 While excavations are left open, the potential exists for concrete, cement or chemical/fuel spillages entering the ground and polluting groundwater resources.

13.51 Cut and fill proposals for the overall site are unknown, however due to the low relief of the site this is not considered to be significant. It is envisaged at this stage that any material excavated will be suitable for re-use on site following geotechnical classification and environmental testing. Where possible, excavated soils should be used on site in order to avoid unnecessary disposal.

**Mitigation**

13.52 In order to mitigate potential impacts during the construction phase, management controls and procedures will need to be put in place to ensure the protection of groundwater. As well as construction activities adhering to all relevant acts of legislation; guidance and best practice including CIRIA Documents C650 “Environmental Good Practice on Site” and C532 “Control of Water Pollution from Construction Sites: Guidance for Consultants and Contractors” the guidance contained within the PPGs below will also be followed:

- PPG01 - General Guide to the Prevention of Pollution
- PPG02 - Above Ground Oil Storage Tanks
- PPG03 - Use and Design of Oil Separators in Surface Water Drainage Systems

Reference: PG/ML/1076309/R004pg
• PPG05 - Works and Maintenance in or Near Water
• PPG06 - Working at Construction and Demolition Sites
• PPG07 - Refuelling Facilities
• PPG08 - Safe Storage and Disposal of Used Oils
• PPG10 – Highway Depots
• PPG13 – Vehicle washing and cleaning
• PPG18 – Managing fire water and major spillages
• PPG21 - Pollution Incident Response Planning
• PPG27 - Installation, decommissioning and removal of underground storage tanks

13.53 Comprehensive guidance on the design, construction, modification and maintenance of petrol stations is given in a document titled "Design, construction, modification and maintenance of filling stations, 2nd edition” published by The Association for Petroleum and Explosives Administration ("APEA”) and ENERGY INSTITUTE, London. This document is more commonly known as the "Blue Book”.

13.54 A Construction Management Plan ("CMP") will need to be followed by the Contractor to ensure effective mitigation is implemented. A site induction will need to be undertaken in order to brief site workers of the requirements of the CMP, the measures to be followed when working near watercourses and highlight the legal requirement under Section 161 of the Water Resources Act 1991 to not "cause or knowingly permit" pollution of the controlled waters (which includes surface waters and groundwater).

13.55 As part of the site induction, training will need to be given in what action to take in
the event of a spillage of potential contaminants. Emergency procedures to be implemented in the event of a spillage or leakage of any polluting material, such as fuel, oil or silt-laden drainage, will need to be in place on-site and incorporated into the CMP. Provision for containment, clean-up and disposal of the material will need to be made. The procedure will follow the recommendations contained within PPG21.

13.56 All earthworks will need to be undertaken in accordance with BS6031:1981 ‘Code of Practice for Earthworks’. Land disturbance will be kept to a minimum and disturbed areas re-vegetated as soon as possible after construction. Where possible, soil excavation will need to be undertaken during drier periods to reduce the potential for mobilisation of exposed soil and/or sediment. Excavated soils will be stored in bunded areas away from surface waters in order to ensure sediments are not mobilised during rainfall events and washed into watercourses or drains.

13.57 In order to prevent materials leaking from static plant, such as pumps and generators, contaminating the ground and polluting the Principal Aquifer below, static plant will need to be placed on drip trays wherever practicable. Refuelling of plant will need to be undertaken in accordance with the guidance contained within PPG07 and will need to occur on hardstanding areas to prevent the possible infiltration of contaminants into the soil. If on-site concrete batching facilities are required they will need to be operated under the conditions of the appropriate authorisation.

13.58 Chemicals, fuels and oils will need to be stored in secure and designated storage areas and in accordance with the appropriate regulatory requirements, including the Control of Pollution (Oil Storage) (England) Regulations 2001 and COSHH Regulations 1994. Storage areas will all need to be located on hardstanding areas so as to prevent the possible infiltration of contaminants into the soil.

13.59 If dewatering activities are undertaken, the possibility of contamination from the historical petrol filling stations being present beneath the existing A61 Baldersby Junction will need to be explored by ground investigation and groundwater monitoring. Pumped water will need to be tested and if necessary treated before its discharged or tankered offsite.

13.60 Measures should be taken to prevent excavations acting as temporary or permanent conduits for surface runoff and possible contamination of the aquifer by backfilling
with suitable low permeability material, proof rolling, sealing with impervious hard standing or other appropriate means.

**Operation**

13.61 Underground storage tanks and pipe work associated with the proposed filling station may leak without detection and cause pollution of the underlying Principal Aquifer.

13.62 Spillages may occur during operation of the fuel pumps or during refilling of the filling stations fuel storage tanks and cause pollution of the underlying major aquifer.

13.63 It is not known at this stage if groundwater abstraction is to be used to obtain potable water. To ascertain the feasibility of utilising groundwater abstraction for the development, a study including ground investigation into the level and quality of the water and a pump test to evaluate the hydraulic behaviour of the well and aquifer will need to be undertaken. If a groundwater abstraction well is found to be feasible, appropriate licences and consents will have to be obtained from the relevant authorities. If a groundwater abstraction well is constructed, it is possible existing contamination from the historical petrol filling stations beneath the A61 Baldersby Junction could be mobilised into more permeable strata below the site and into the abstraction water supply.

13.64 The nearest private water supply is situated 1km to the south-southeast of the site. Due to the distance of the existing private water supply from the site, if a groundwater abstraction well is constructed, the risk to the existing private water supply is deemed to be negligible.

13.65 A balancing pond is proposed to service the development. Pollutants may be accidently released into the pond and infiltrate the underlying Principal Aquifer.

**Mitigation**

13.66 Comprehensive guidance on the design, construction, modification and maintenance of petrol stations is given in a document titled “Design, construction, modification and maintenance of filling stations, 2nd edition” published by The Association for
Petroleum and Explosives Administration ("APEA") and ENERGY INSTITUTE, LONDON. This document is more commonly known as the “Blue Book”.

13.67 The APEA recommend that the storage tanks should be of double skinned construction and be provided with interstitial leak detection equipment with audible alarms.

13.68 The Groundwater Protection Code has been published by DEFRA relating to petrol stations and other fuel dispensing facilities involving underground storage tanks. The code provides a source of advice on how to protect groundwater when storing liquid hydrocarbons in underground storage tanks (USTs), or when carrying out associated activities. The code outlines operational and management practices relevant to USTs and related facilities which are necessary for groundwater protection.

13.69 Guidelines should be followed as outlined in PPG 7 – Refuelling Facilities to help protect the environment through correct delivery, storage and dispensing of fuels.

13.70 If a groundwater abstraction well is constructed, the possibility of contamination from the historical petrol filling station being present beneath the existing A61 Baldersby Junction and entering the water supply will need to be explored by ground investigation, pump testing and groundwater monitoring.

13.71 The nearest private water abstraction is located 1km to the south southeast.

13.72 It is assumed the proposed balancing pond will be lined and outfall to existing drainage. Soakaways are not proposed. If the design of the development changes then contamination risks will need to be considered and addressed.

Residual Impacts

13.73 The residual impacts i.e. the remaining impact taking into account the implementation of the above mitigation are described below in Table 13.7.
<table>
<thead>
<tr>
<th>Effect</th>
<th>Duration</th>
<th>Probability</th>
<th>Consequence</th>
<th>Risk Pre-Mitigation</th>
<th>Mitigation / Enhancement Measures</th>
<th>Significance of Residual Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONSTRUCTION</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Construction activities will need to be undertaken in accordance with the pollution control measures in the CMP.</td>
<td>Low Risk</td>
</tr>
<tr>
<td>Accidental spillages or leakages e.g.</td>
<td>Temporary</td>
<td>Low Likelihood</td>
<td>Medium</td>
<td>Moderate/low risk</td>
<td>Refuelling will need to be undertaken in line with PPG07 and will occur on hardstanding areas only. Static plant will need to be placed on drip trays wherever practicable. Emergency procedures and spill kits will need to be in place on site for use in the event of a spillage.</td>
<td>Low Risk</td>
</tr>
<tr>
<td>resulting from refuelling of plant or</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>leaks from static plant e.g. generators,</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>pumps etc.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accidental spillage of release of</td>
<td>Temporary</td>
<td>Low Likelihood</td>
<td>Medium</td>
<td>Moderate/low risk</td>
<td>Storage facilities will need to be located away from watercourses on hardstanding and securely bunded areas. Storage will need to be undertaken in accordance with the guidance contained within the Control of Pollution (Oil Storage) (England) Regulations 2001 and COSHH Regulations 1994. Emergency procedures and spill kits will need to be in place on site for use in the event of a spillage.</td>
<td>Low Risk</td>
</tr>
<tr>
<td>chemicals or fuels from storage</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>facilities.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Effect</td>
<td>Duration</td>
<td>Probability</td>
<td>Consequence</td>
<td>Risk Pre-Mitigation</td>
<td>Mitigation / Enhancement Measures</td>
<td>Significance of Residual Effect</td>
</tr>
<tr>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------</td>
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<td>-------------</td>
<td>-------------</td>
<td>----------------------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>-------------------------------</td>
</tr>
<tr>
<td>Mobilisation of possible existing contaminants in the vicinity of the site as a result of construction e.g. dewatering activities.</td>
<td>Temporary</td>
<td>Likely</td>
<td>Medium</td>
<td>Moderate risk</td>
<td>The possibility of contamination from the historical petrol filling station being present beneath the existing A61 Baldersby Junction will need to be explored by ground investigation and groundwater monitoring. Pumped water will need to be tested and if necessary treated before its discharged or tankered off site.</td>
<td>Low risk</td>
</tr>
<tr>
<td>Silt laden water resulting from dewatering of excavations.</td>
<td>Temporary</td>
<td>Likely</td>
<td>Medium</td>
<td>Moderate risk</td>
<td>Water from the excavations will need to be directed through the drainage system which will include silt traps or settlement ponds to capture and treat suspended solids.</td>
<td>Low Risk</td>
</tr>
<tr>
<td>Creation of surface flow paths, i.e. excavations acting as conduits.</td>
<td>Temporary</td>
<td>Likely</td>
<td>Medium</td>
<td>Moderate risk</td>
<td>Where possible soil excavation will need to be undertaken during drier periods. Excavations will need to be appropriately backfilled as quickly as possible.</td>
<td>Low Risk</td>
</tr>
<tr>
<td>Loss of topsoil</td>
<td>Permanent</td>
<td>High likelihood</td>
<td>Minor</td>
<td>Moderate / low risk</td>
<td>The development will cause a reduction in topsoil in the area</td>
<td>Moderate / low risk</td>
</tr>
<tr>
<td><strong>OPERATION</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accidental release of pollutants resulting from maintenance of site equipment.</td>
<td>Temporary</td>
<td>Low Likelihood</td>
<td>Medium</td>
<td>Moderate / low risk</td>
<td>The CMP and relevant PPGs will need to be followed during any maintenance activities.</td>
<td>Low Risk</td>
</tr>
<tr>
<td>Accidental leakages from underground fuel storage tanks and pipework</td>
<td>Temporary/ Permanent</td>
<td>Low Likelihood</td>
<td>Severe</td>
<td>Moderate</td>
<td>Tanks should be of double skinned construction and be provided with interstitial leak detection equipment. Guidance is provided in the &quot;Blue Book&quot;.</td>
<td>Moderate/Low Risk</td>
</tr>
</tbody>
</table>

Reference: PG/ML/1076309/R004pg
<table>
<thead>
<tr>
<th>Effect</th>
<th>Duration</th>
<th>Probability</th>
<th>Consequence</th>
<th>Risk Pre-Mitigation</th>
<th>Mitigation / Enhancement Measures</th>
<th>Significance of Residual Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobilisation of possible existing contaminants in the vicinity of the site assuming a groundwater abstraction well is constructed.</td>
<td>Temporary</td>
<td>Likely</td>
<td>Severe / Medium</td>
<td>High / Moderate risk</td>
<td>The possibility of contamination from the historical petrol filling stations being present beneath the existing A61 Baldersby Junction will need to be investigated and disproved by ground investigation, pump testing and groundwater monitoring. Pre-mitigation risk is considered to be high if water is to be used for drinking</td>
<td>Moderate / Low risk</td>
</tr>
<tr>
<td>Groundwater abstraction well affecting private water supplies nearby</td>
<td>Permanent</td>
<td>Negligible</td>
<td>Medium</td>
<td>Negligible</td>
<td>None required</td>
<td>Negligible</td>
</tr>
<tr>
<td>Accidental release of pollutants into the balancing pond which then infiltrate the underlying Principal Aquifer</td>
<td>Temporary</td>
<td>Likely</td>
<td>Medium</td>
<td>Moderate</td>
<td>It is understood the balancing pond will be lined to prevent pollution of the underlying major aquifer.</td>
<td>Low Risk</td>
</tr>
<tr>
<td><strong>Contaminative Use</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Human health risks to ground workers and site users</td>
<td>Temporary</td>
<td>Low Likelihood</td>
<td>Severe</td>
<td>Moderate</td>
<td>Ground investigation is required to quantify risks and allow detailed environmental and human health risk assessment.</td>
<td>Moderate/Low Risk</td>
</tr>
</tbody>
</table>

Reference: PG/ML/1076309/R004pg
<table>
<thead>
<tr>
<th>Effect</th>
<th>Duration</th>
<th>Probability</th>
<th>Consequence</th>
<th>Risk Pre-Mitigation</th>
<th>Mitigation / Enhancement Measures</th>
<th>Significance of Residual Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waste treatment / waste disposal</td>
<td>Temporary</td>
<td>Low Likelihood</td>
<td>Medium</td>
<td>Moderate / low risk</td>
<td>Ground investigation to aid in classifying soils, which may be regarded as waste, in accordance with criteria set out in the Hazardous Waste Directive. This will allow emphasis to be placed on defining material re-use and requirements for waste treatment/s in order to reduce requirement for land filling of surplus / waste soils. Ground investigation will aid assessment of subsequent environmental impacts of reused and placed soils.</td>
<td>Low Risk</td>
</tr>
<tr>
<td>Contamination of groundwater bodies</td>
<td>Temporary</td>
<td>Low Likelihood</td>
<td>Medium</td>
<td>Moderate / low risk</td>
<td>Ground investigation is recommended to quantify risks and allow detailed environmental and human health risk assessment and may also be a requirement of the regulatory authority.</td>
<td>Low Risk</td>
</tr>
<tr>
<td>(leaching of contaminants from unknown made ground)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Cumulative Impacts**

13.74 There is one development close to the proposed Ripon Services which requires consideration and this is the A1(M) Dishforth to Barton Improvement Scheme.

13.75 The A1(M) Dishforth to Barton Improvement involves the upgrading of the current dual carriageway adjacent to the site to three lane motorway. The stretch between Dishforth to Leeming is currently undergoing construction. Construction commenced in Spring 2009. Part of this scheme involves the construction of balancing ponds along the route. It is shown in the Environmental Statement for the scheme that the balancing ponds are to be lined and have no impact on the Principal Aquifer.

13.76 Should mitigation measures be followed as set out in this ES, it is predicted that there will be no adverse cumulative impacts.

**Summary and Conclusions**

13.77 Baseline conditions of the geology and hydrogeology in and around the development site have been established. The risk to geology and minerals is considered to be very low as no features of geological importance (SSSIs or RIGSs) or potentially workable sand and gravel deposits are located close to the site.

13.78 The proposed development is situated above a Principal Aquifer, as such the risk to hydrogeology is considered as moderate. No groundwater abstraction licences have been identified within the vicinity of the site. Providing appropriate best practice measures are implemented and guidance is followed on site prior to and during construction, and during the design and implementation of the filling station and storage tanks, the residual risks are moderate/low and low.

13.79 Contamination risks have been considered to the environment and the human health of construction workers and end users. If mitigation measures are followed, then the risk is considered as moderate to moderate/low.
References

- British Geological Survey (1986); 1:10,560 Sheet Number NZ37NE.


- National Rivers Authority (1995), Groundwater Vulnerability Map, Sheet 8, Central North Yorkshire. Scale 1:100,000.

- British Geological Survey/Environment Agenc (1997); The physical properties of major aquifers in England and Wales,

- Landmark (2010); Envirocheck Report. Order No. 30568891_1_1, dated 18th March 2010.
- CIRIA C650 - Environmental Good Practice on Site (2005)

- CIRIA C552 - Contaminated land risk assessment - a guide to good practice (2001)

- CIRIA C532 - Control of water pollution from construction sites: guidance for consultants and contractors (2001)

- Association for Petroleum and Explosives Administration (APEA) and ENERGY INSTITUTE, London (2005); Design, construction, modification and maintenance of filling stations, 2nd edition.

- DEFRA (2002); Groundwater Protection Code: Petrol stations and other fuel dispensing facilities involving underground storage tanks

- Environment Agency; PPG01 General guide to the prevention of pollution

- Environment Agency; PPG02 Above ground oil storage tanks

- Environment Agency; PPG03 Use and design of oil separators in surface water drainage systems

- Environment Agency; PPG05 Works in, near or liable to affect watercourses

- Environment Agency; PPG06 Working at construction and demolition sites

- Environment Agency; PPG07 Refuelling facilities

- Environment Agency; PPG08 Safe Storage and disposal of used oils. 2004.

- Environment Agency; PPG10 Highway Depots

- Environment Agency; PPG13 Vehicle washing and cleaning
- Environment Agency; PPG18 Managing fire water and major spillages

- Environment Agency; PPG21 Pollution incident response planning.

- Environment Agency; PPG27 Installation, decommissioning and removal of underground storage tanks.
14.0 Conclusions

14.1 This application seeks outline planning permission with all matters reserved except access for the erection of a MSA at the junction of the A1 and A61, comprising of an amenity building, hotel, filling station, sewage treatment plant, new access from the A61, parking, landscaping and associated works. The proposed development will be known as Ripon Services.

14.2 Ripon Services will be a junction MSA, which will serve users on both sides of the A1 and the A61 and has been designed in accordance with Circular 01/2008.

14.3 The proposed development will take up a total land take of 18.80ha with the actual developed area of the site being 5.17ha (27.5% of the total land). This includes the built structures and the areas dedicated to car parking. The remaining land (13.63ha or 82.5% of the total land take) will be landscaped.

14.4 Chapter 3 of the ES demonstrates that overall it is considered that the proposal is compliant with national, regional and local planning policy insofar as these relate to the development proposal and where it is practically possible to comply with policy considerations.

14.5 Chapter 4 has demonstrated that there is a clear and compelling need and safety case for the provision of a new MSA to serve the stretch of carriageway to be upgraded between the approved Barton facility and the existing MSA at Kirk Deighton, Wetherby.

14.6 In terms of transport issues, chapter 5 has shown that the provision of a junction MSA at this location can be adequately accommodated within the upgraded junction infrastructure of the Baldersby Gate junction. It has also been demonstrated that suitable access can be provided into the MSA from the A61 via a new four arm roundabout sited approximately 150 metres south west of the western dumbbell roundabout of the Baldersby Gate junction.

14.7 The assessment concludes that the construction of the MSA would result in some increase in traffic levels on the upgraded A1(M) merges and diverges on the
approach to the A61 Baldersby Gate junction and through the A61 dumbbell roundabouts. However, detailed operational assessment has confirmed that these changes can be satisfactorily accommodated and will not lead to any traffic capacity issues either in the 2012 year of opening or the 2022 design year including the reassignment of development related traffic. Traffic generated during the operation of the MSA would therefore not result in any significant effects on sensitive local receptors or groups and overall no significant environmental impacts have been identified resulting from traffic and transport movements associated with the construction and operation of the proposed MSA at Baldersby Gate.

14.8 Chapter 5 concludes that the provision of Ripon Services as a core junction MSA is deliverable, without constraint, and could be available for operational use within one year of planning consent, and in line with the completion of the current A1(M) upgrading works in the vicinity of this junction.

14.9 Chapter 6 of the ES has assessed the noise and vibration impacts of the proposed Ripon Services during the construction and operational phases. A baseline environmental noise survey has been undertaken to establish the existing noise climate at various location representative of the nearest NSRs. Whilst at this stage of the development, the specifications of the fixed plant is unknown, it is considered that once the MSA is operational, the plant area is unlikely to give rise to adverse impacts at the nearest NSRs. It is also predicted that once the development is fully operational vibration impacts will be negligible.

14.10 Chapter 7 has reviewed air quality and after consideration of the location of the proposed development site, the locations and sensitivity of the nearest potential receptors, and existing background concentrations, it can be concluded that the proposal will have a negligible or neutral air quality impact.

14.11 Chapter 8 of the ES provides an assessment of the likely impact on agriculture of the proposed MSA. The effect of the proposal on a National and Local level would not be significant. The development will require 18.8ha of land of which 5.17ha will be lost. The remaining 13.63ha will be landscaped and planted with trees. In national terms the loss of 5.17ha would not be significant. However, minimising total land take would help reduce the impact locally. Chapter 8 also indicates that the loss of the land will also not adversely impact on the viability of the farm.
14.12 In terms of the impact on the surrounding landscape, chapter 9 confirms that the landscape proposals for the site have been prepared in accordance with the local landscape planning framework and that the scheme does not physically or visually impact on any landscape designation. The chapter concludes that the introduction of planting as part of the mitigation and enhancement proposals will, once mature, have the potential to substantially enhance the landscape character of an area that is currently poorly vegetated.

14.13 In visual terms, the site has been shown to be well screened and visually unobtrusive, with a low number of visual receptors experiencing visual impacts as a result of the scheme. The proposal is well located in the south-western quadrant of Baldersby Junction, between the A1 and A61 roads, with the Junction and roads providing substantial screening from adjacent receptors. Once the proposed site and A1 landscape planting schemes have matured, the site will be effectively screened from the surrounding areas and will visually integrate the buildings and associated infrastructure into its surroundings. By year 15, the siting and design of the proposal will result in a well integrated scheme which will have no significant impacts on the surrounding landscape, and visual resource, and will in the long term provide benefits in respect to overall tree cover and boundary screening.

14.14 Chapter 10 relates to archaeology and cultural heritage and concludes that some archaeological features have been recorded within the site boundary but these are of limited interest. Consequently the overall significance of impact on archaeology and cultural heritage is considered to be slight adverse. It is however recommended that a detailed strip, map and record process is undertaken during the earliest phase of the construction process.

14.15 In terms of ecology, chapter 11 confirms that following comprehensive desktop and field surveys on the site, the impact of the development is thought to be slight adverse at the highest. With mitigation, adverse impacts on habitats are thought to improve to slight beneficial. No rare or protected habitats will be affected and no designated sites will be affected. There will be a slight adverse impact on faunal species with regard to disturbance during the construction and operational phases of the Junction MSA through increased traffic, lighting and noise. Appropriate habitat creation will see beneficial impacts on faunal species.

14.16 The proposed development provides opportunities to enhance habitats for wildlife in
a local context. Commitment to the mitigation measures, as set out in this ES, will see a measureable improvement to the habitats currently present on the site, in addition to the introduction of new habitats. This will have benefits to many faunal species, not restricted to those protected species considered in this assessment. Ecologically guided landscaping will also ensure that the development fits within the local landscape and additionally and create attractive surroundings for staff and visitors of the proposed Ripon Services.

14.17 The potential impacts of Ripon Services on flood risk have all been identified and assessed at chapter 12. The key issue during construction, operation and demolition will be the surface water drainage from the site. Developing the site will increase the rate of surface water runoff from the site and change pluvial flow routing. An appropriate drainage system should be installed during the operation phase of the proposed development, and also during construction and demolition if necessary. This drainage system should take into account Environment Agency guidelines on surface water runoff, and either discharge into the ground via infiltration or connect to the local watercourses at an agreed rate. The drainage system should also consider implementing Sustainable Drainage Systems (SuDS), which are promoted by both PPS25 and Building Regulation Part H.

14.18 Finally, chapter 13 has assessed the geology and hydrogeology in and around the development site. The risk to geology and minerals is considered to be very low as no features of geological importance or potentially workable sand and gravel deposits are located close to the site. In terms of hydrogeology, the chapter concludes that the proposed development is situated above a Principal Aquifer, as such the risk to hydrogeology is considered as moderate but no groundwater abstraction licences have been identified within the vicinity of the site. Providing appropriate best practice measures are implemented and guidance is followed on site prior to and during construction, and during the design and implementation of the development then the residual risks are considered to be moderate/low and low.

Overall it is considered that the ES has thoroughly assessed all of the environmental impacts associated with the proposed MSA development and it has been shown that the development will have either a neutral or slight impact. However where necessary, through mitigation, potential concerns can be overcome and in certain circumstances result in beneficial impacts thereby ensuring that the environmental quality of the locality is maintained.