High Speed Rail: Consultation on the route from the West Midlands to Manchester, Leeds and beyond

Sustainability Statement

Appendix E1 – Landscape, Townscape and Visual

A report by Temple-ERM for HS2 Ltd

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July 2013

CONTENTS

1. INTRODUCTION

1.1.1. This report has been prepared to support the HS2 Phase Two proposed scheme for consultation Sustainability Statement (the Sustainability Statement, Volume 1), a report which describes the extent to which the Government's proposed scheme for HS2 Phase Two supports objectives for sustainable development. This document is a technical appendix which summarises the method for the Landscape, Townscape and Visual Appraisal, informing the Sustainability Statement main report. The Sustainability Statement places emphasis on the key impacts only. This technical report summarises all the conclusions relating to the Landscape, Townscape and Visual Appraisal.

2. METHODOLOGY

2.1. Scope of appraisal

2.1.1. Julie Martin Associates provided expertise on landscape, townscape and visual issues for the Appraisal of Sustainability (AoS) for HS2 Phase Two (West Midlands to Manchester and West Midlands to Leeds), also known as the proposed scheme. Appendix B (AoS Method and Alternatives) provides an explanation of the methodology used for the AoS and the rationale behind it. This report represents the culmination of iterative work that has reviewed the landscape, townscape and visual amenity of the areas through which the HS2 route might pass, assisted with the appraisal of route options, and informed the selection of the initial preferred scheme and the proposed scheme, which were then further appraised. The appraisal covered three main topics, defined below.

2.1.2. **Landscape**. According to the European Landscape Convention, landscape is an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors. It reflects the interplay of the physical, natural and cultural elements of our surroundings and the way that people perceive these interactions. Different combinations of these elements create the distinctive character of landscapes in different places.

2.1.3. **Townscape**. This refers to areas where buildings and related infrastructure are the dominant landscape elements. Townscape means the landscape within the built up area, including the relationships between buildings and different types of urban greenspace. Townscape is often strongly influenced by historic factors, since the evolution of settlements over time is a major contributor to their current form and character.

2.1.4. **Visual amenity**. This is defined as the enjoyment or benefit that people derive from a particular view or area in terms of what is seen. When a landscape (or townscape) is changed in some way, the change will be seen by people – often by several different groups of people i.e. visual receptors – and this may affect their views and their visual amenity overall.

2.1.5. Given the strategic nature of the AoS as a whole, the landscape, townscape and visual appraisal was carried out at a broad strategic level and focused on identifying key issues and potential impacts that should influence the horizontal and vertical alignment of the proposed scheme.

2.2. Approach to appraisal

2.2.1. There is no specific approach or method recommended for use when appraising the landscape, townscape and visual impacts of a high speed rail project at a strategic level. The approach that has been developed is based on the principles set out in published

Guidelines for Landscape and Visual Impact Assessment[1] and on good practice in sustainability appraisal generally.

2.2.2. Review of these sources suggests that the appraisal should make reference to existing surveys of landscape character; and should identify objectives, criteria and indicators that will allow landscape, townscape and visual impacts to be appraised. Judgements should then be made about the extent to which the proposals may have impacts on landscape, townscape and visual amenity.

2.2.3. Core sustainability objectives were therefore established at the outset of the work (see Appendix B for further information on the AoS method and appraisal framework). These were:

- To maintain or where possible enhance existing landscape character; and
- To maintain or where possible enhance existing townscape character.

2.2.4. During the route option appraisal stage these objectives were considered (within the route appraisal tool (RAPT) sheets) using criteria of:

- Direct and indirect impacts to nationally designated landscapes (National Parks and Areas of Outstanding Natural Beauty);
- Direct and indirect impacts on the landscape character and qualities of the wider countryside;
- Incursion into strategic views; and
- Degree of fit with regard to existing townscape character.

2.2.5. An effort was made within the RAPT sheets to measure the specific features affected, to provide explicit indicators of change, but in general this proved difficult because:

- HS2ML involves no direct impacts and almost no indirect impacts on nationally designated landscapes[2];
- Direct and indirect impacts on the landscape character and qualities of the wider countryside are not easily subject to measurement (although they can be identified and described);
- 'Strategic' views as such are seldom explicitly identified in development plans or elsewhere; and
- The degree of fit with existing townscape character is a matter for professional judgement.

2.2.6. Hence a decision was taken that the appraisal approach should focus on qualitative, evidence-based description and analysis of the impacts on landscape, townscape and visual amenity that would be expected to occur as a result of Phase Two. This approach was developed further during the appraisal of the proposed scheme, when more detailed landscape, townscape and visual appraisal work was undertaken[3]. The findings of this more detailed appraisal are presented in Section 3 of this report.

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1 Landscape Institute and Institute of Environmental Assessment and Management (2002) Guidelines for Landscape and Visual Impact Assessment, second edition, Spon (third edition of this text awaited at time of completion of this assessment).

2 Only a single very short route section falls within 2km of an Area of Outstanding Natural Beauty.

3 Hence some of the detailed findings in this technical report and in the Sustainability Statement for the proposed scheme differ from those presented in the Sustainability Summary (January 2013) for the Initial Preferred Scheme.

2.2.7. In appraising the landscape, townscape and visual impacts a simplified evaluation system was applied which provided an overall evaluation for each of the route sections/sub-sections[4] using a five-point scale of major negative (--), moderate negative (-), negligible or neutral (o), moderate positive (+) and major positive (++). This provided consistency across all the professional disciplines and fed into the overall AoS framework.

2.2.8. The appraisal process aimed to show, at a strategic level, how the project would change the character of the landscape, townscape and visual amenity along the route. In practice nearly all landscape, townscape and visual amenity impacts have been assessed as negative, not positive, at this stage in the scheme design process. As proposals are developed further to include mitigation measures (including new planting, and design features such as iconic new built structures) more detailed future assessments of landscape, townscape and visual impact are likely to identify fewer negative impacts and indeed some positive impacts resulting from the proposed scheme. Landscape proposals would form part of a design approach for the proposed scheme that integrates engineering requirements with those of landscape, noise mitigation, ecology, agriculture, cultural heritage and open space.

2.3. Methodology

2.3.1. There were two principal appraisal streams: landscape/townscape and visual amenity. In the case of landscape and townscape, the appraisal methodology was essentially the same for both, but the content of the appraisal was modified depending on whether the context for the route was rural or urban. Townscape issues came into play particularly in relation to the proposed stations along the route. Oxford Archaeological Unit, as the team's advisers on cultural heritage, contributed to and reviewed the evaluation of townscape impacts associated with the proposed stations.

2.3.2. The appraisal methodology comprised the following stages:

- Stage 1: Review the baseline landscape, townscape and visual environment along the route of the proposed scheme;
- Stage 2: Consider the degree of change that would result from the proposed scheme;
- Stage 3: Describe and appraise the proposal's impacts on landscape, townscape and visual amenity; and
- Stage 4: Produce an evaluation for each route section in terms of impacts on landscape and/or townscape and visual amenity.

2.3.3. **Stage 1** examined a wide range of information sources, including:

- Natural England's National Character Area (NCA) descriptions and local authority landscape character assessments (referenced in Section 5 of this Technical Appendix) – these provided an understanding of the key landscape characteristics of different parts of the route and (depending on the scope of the landscape character assessment) in some cases also provided information on landscape sensitivity and/or landscape quality objectives for particular areas which informed the appraisal process;
- GIS mapping showing National Parks and Areas of Outstanding Natural Beauty, the National Forest, Registered Parks and Gardens, Conservation Areas, Scheduled Monuments, ancient woodlands, woodlands as recorded on the National Forest Inventory, Sites of Special Scientific Interest, Country Parks, National Trails and long

4 The broader route sections referred to in this report were defined originally for engineering purposes. Where the route sections are lengthy, pragmatic sub-sections were defined, based on landscape character

distance paths, and access land – the aim being to identify the key sites that contribute to enjoyment of landscape and visual amenity along the route[5]; and

- Google Earth aerial photography and Street View – this was used extensively to view the landscape/townscape at points along the route and potential views towards the route, especially during the route option appraisal work, which was primarily desk-based.

2.3.4. Information from these sources was supplemented where necessary by wider desk research (for example Conservation Area appraisals, nature conservation site descriptions, and interpretive materials for recreational sites and routes).

2.3.5. Site visits were made to selected route sections and all potential station sites during the route option appraisal and refinement process. During appraisal of the initial preferred scheme and the proposed scheme the route and depot sites were viewed further in the field, but no detailed field surveys were undertaken.

2.3.6. Stage 2 explored the nature and scale of the changes that would result from the proposed scheme. Specifically, the proposed horizontal and vertical alignments of the railway were examined in terms of:

- Degree of fit with topography i.e. extent of cut and fill required, as this has a direct impact on landscape and townscape character;
- Direct loss of or damage to existing landscape and townscape features such as woodland and trees or distinctive buildings;
- Indirect impacts on the settings of key landscape/townscape features and visual amenity interests close by; and
- Intrusion of new structures (viaducts, bridges, embankments, station buildings) into key views, especially those from sensitive receptors.

2.3.7. Direct impacts are assumed to occur within 50m either side of the proposed route alignment; while indirect impacts may occur over a wider area of up to 2km on either side of the route, for example where there are views to the route from surrounding areas. In practice, most significant indirect impacts tend to be concentrated within 500m of the alignment.

2.3.8. Where possible specific details were compiled of the scale of change that would occur, such as length and depth of cut, length or area of woodland directly affected, distance from nearby landscape and visual amenity features, and height and mass of new structures that may give rise to visual intrusion. Special care was taken to note locations where:

- The variation from existing ground levels would exceed 20m;
- There would be a direct impact on woodland over a distance of 500m or more;
- The route would probably be visible from a long distance path, recreation or heritage site, or local community, from a distance of less than 500m; and
- Station buildings, or other new structures over 20m high, would be introduced into the view.

[5] Impacts on cultural heritage and biodiversity sites as such were however appraised separately under the relevant topics – i.e. there was no 'double-counting' of these impacts.

2.3.9. **Stage 3** developed and reported the findings of the appraisal in tabular form (see Section 3). For each route section or sub-section (the sub-sections corresponding to changes in NCA and/or landscape character type), summary information was prepared covering:

- The route itself – overview description of the scheme and brief details of the landscapes character type(s) that it would cross;
- Likely impacts on landscape/townscape character and quality – description of the specific changes affecting landscape resources; and
- Likely impacts on visual amenity and views – description of main visual receptors and the ways in which their visual amenity and views would be affected.

2.3.10. Significant (i.e. major or moderate) impacts at specific locations were highlighted in bold in the text of the table. Locations that would experience cumulative impacts together with other route sections or depots were identified in the table and these were also indicated in bold.

2.3.11. Finally, **Stage 4** provided an overall evaluation for each of the route sections and sub-sections in terms of its landscape/townscape and visual impacts, taking account of the sensitivity, importance and value of the baseline landscape, townscape and visual environment and the magnitude and geographical extent of the changes that are expected to occur. The overall evaluations summarise the level of impact over the whole route section or sub-section; individual locations within the section or sub-section may have higher (or lower) levels of impact, as identified in the text of the appraisal table.

2.3.12. Separate evaluations were provided for landscape/townscape impacts (as appropriate, according to setting) and visual impacts. The evaluations used a five-point scale, as shown in the table below. A combined landscape/townscape and visual evaluation was also given for each route section[6].

[6] In the first of the three columns of the appraisal tables in Section 3 of this report.

Figure 2.1 - Landscape/Townscape Evaluation Scale

Landscape/Townscape Impacts		
Major negative	--	Direct or indirect negative impact on very important, sensitive or valued landscape or townscape features i.e. features that are highly distinctive, especially vulnerable to change and/or valued at national or regional level. Change is large scale and/or widespread.
Moderate negative	-	Direct or indirect negative impact on important, sensitive or valued landscape or townscape features i.e. features that are distinctive, vulnerable to change and/or valued at local level. Change is of moderate scale and extent.
Negligible or neutral impact	O	Little or no impact on important, sensitive or valued landscape or townscape features. Change is limited in scale and extent.
Moderate positive	+	Direct or indirect positive impact on important, sensitive or valued landscape or townscape features i.e. features that are distinctive, vulnerable to change and/or valued at local level. Change is of moderate scale and extent.
Major positive	++	Direct or indirect positive impact on very important, sensitive or valued landscape or townscape features i.e. features that are highly distinctive, especially vulnerable to change and/or valued at national or regional level. Change is large scale and/or widespread.
Visual Impacts		
Major negative	--	Negative impact on important, highly valued settings, views or other visual amenity interests currently enjoyed by sensitive visual receptors including people engaged in countryside recreation, visitors to heritage sites, and local communities. Views are close range and visual intrusion and/or obstruction is large scale and widespread.
Moderate negative	-	Negative impact on settings, views or other visual amenity interests experienced mainly by visual receptors with lower amenity expectations eg passing motorists and people at their place of work. Views are not at close range and visual intrusion and/or obstruction is of moderate scale and extent.
Negligible or neutral impact	O	Little or no impact on settings, views or other visual amenity interests. Any visual change is limited in scale and extent.
Moderate positive	+	Positive impact on settings, views or other visual amenity interests experienced mainly by visual receptors with lower amenity expectations eg passing motorists and people at their place of work. Views are not at close range and visual intrusion and/or obstruction is of moderate scale and extent.
Major positive	++	Positive impact on important, highly valued settings, views or other visual amenity interests currently enjoyed by sensitive visual receptors including people engaged in countryside recreation, visitors to heritage sites, and local communities. Views are close range and visual intrusion and/or obstruction is large scale and widespread.

2.4. Assumptions and limitations

2.4.1. Inevitably given the strategic nature of the AoS process, the appraisal is relatively broad brush and should not be confused with a full and detailed environmental impact assessment. The level of detail of the appraisal is commensurate with the data available and the strategic nature of the proposed scheme. Work has relied primarily on desk study supported by a number of site visits.

2.4.2. In terms of baseline information the appraisal has been largely dependent on existing published sources, GIS data and aerial photography, which are sometimes incomplete and imperfect. For example, the landscape character assessment coverage available varies considerably in scale, scope and quality, especially at local authority level.

2.4.3. In appraising direct impacts on landscape resources, an effort has been made to identify and measure the number of woodlands directly impacted and the route length over which they would be affected, using the National Forest Inventory GIS dataset. All measurements should however be regarded as approximate and indicative only of the general scale of change that might occur.

2.4.4. In relation to visibility, it should be noted that no mapping of the zone of theoretical visibility of the route has been prepared at this point. Hence, although every effort has been made to identify the main visual amenity impacts of the scheme, there may be some omissions.

2.4.5. National GIS datasets and Ordnance Survey base mapping have been used to identify sensitive receptors who might experience visual impacts as a result of HS2; inevitably additional potential receptors may exist. While impacts on long distance paths have been taken into account, other recreational routes (such as cycle routes) have not covered at this stage.

2.4.6. In addition the level of detail available about the design of the scheme has sometimes been a constraint. For the line of route and depots the appraisal has been based on 1:10,000 scale maps and cross-sections; while for stations only indicative designs and elevations have been available to inform the appraisal process. The more detailed design of specific sections of route and specific structures is simply not known at this point.

2.4.7. Overall, these limitations mean that the conclusions on landscape, townscape and visual impacts should be reliable at a broad strategic level but are not necessarily complete or comprehensive at a local level.

3. FINDINGS

3.1. Western leg

Route Description/ Landscape Context/ Impact Overall	Landscape/ Townscape Impacts	Visual Impacts
Fradley Park to Swynnerton HSM3		
Fradley Park to Pipe Ridware This sub-section would cross the Trent valley. Starting just north of Fradley Park north-east of Lichfield, it would run mainly on embankment 4-8m high. There would be lengthy viaducts, typically 8-9m high, over the Bourne Brook and Trent floodplains (around 700m and 1900m long respectively). This part of the route would lie in the Trent Valley Washlands NCA. The relevant Staffordshire landscape character types (south to north) are Settled Heathlands, Terrace Alluvial Lowlands, and Riparian Alluvial Lowlands. The landscape policy objectives are 'maintenance' and 'enhancement' and landscape quality is considered 'moderate' or 'high'.	These low-lying landscapes comprise glacial and alluvial drift on former river terraces, with a regular pattern of large hedged fields and woodlands. The valley bottom has smaller fields and a more pastoral character. The wider landscape context is influenced by the cooling towers of Rugeley Power Station to the west. There are electricity transmission lines and wet former gravel workings near the large village of King's Bromley (Conservation Area); other parts of the area are sparsely settled. The new embankments and viaducts would bring a **moderate** change in landscape character to this section of the valley. There would be direct impacts on three woodlands over a total distance of around 500m.	This section of the route passes through sparsely populated farmland, and existing woodland would provide screening in a number of locations. Nonetheless, the alignment would be visible from the marina on the Trent and Mersey Canal at Rileyhill (at a distance of around 800m); from a number of minor roads; and at close range from the A515 and A513 near King's Bromley. Settlements in the wider area (King's Bromley, Handsacre and Mavesyn Ridware) should have few or no views. The route would give rise to significant visual impacts on the small hamlet of Pipe Ridware (within around 200m), and the Staffordshire Way for the Millennium, which it would cross at Pipe Ridware. Impacts would be **moderate** at these locations but elsewhere slight.
-	-	-
Pipe Ridware to Great Haywood Here the HS2 route would cross higher, rolling countryside, with about two-thirds of the alignment being in cutting, typically around 8m deep but locally deeper in the north-west, near Great Haywood (19m). There would be localised sections at grade or on embankment where the route crosses small tributary streams flowing south to the Trent. The highest of these would be at Stockwell Heath and north of Great Haywood (both around12m). This sub-section would fall within the Needwood and South Derbyshire Claylands NCA. The relevant Staffordshire	This landscape is one of undulating lowlands and hills, with a varied pattern of small to medium sized fields, winding lanes with dense hedgerows and hedgerow trees (especially in the north-west), and a scatter of small woodlands, often of ancient origin. Settlement is sparse apart from the villages of Blithbury, Colton (Conservation Area) and Stockwell Heath. Where in cutting the route would have limited impact on landscape character, but the embanked sections, notably north-west of Pipe Ridware, around Stockwell Heath, at Moreton, and north of Great Haywood, would have at least a **moderate** impact on landscape character locally.	Most of the route would pass through isolated countryside in cutting with limited visual amenity impacts other than glimpsed views from minor roads and tracks that cross the route. Where the route is embanked it would be more intrusive, notably south of Stockwell Heath where it would at least partly block views to Cannock Chase, giving rise to **moderate** visual impacts on residents and users of the Staffordshire Way walking route which passes through the village following the minor valley down to Colton. From the A51 north of Great Haywood the embanked route would also intrude on and contain views north-

Route Description/ Landscape Context/ Impact Overall	Landscape/ Townscape Impacts	Visual Impacts
landscape character type is Settled Farmlands. The landscape policy objectives are 'enhancement' in the south-east, where landscape quality is considered 'moderate'; and 'maintenance' in the north-west where landscape quality is considered 'high'.	Although there would limited direct impact on woodlands (three woodlands affected over around 300m in total), there would be a direct impact on ancient hedgerows and hedgerow trees notably in the Stockwell Heath area, where a high embankment would separate the village from Colton. In this specific area the landscape impact would be **major**.	west towards the River Trent. Close to Great Haywood around 2km of the route lies within 2km of the Cannock Chase AONB (around 600m at its closest point). However any visual impact on the AONB is expected to be negligible due to the presence of intervening buildings and tree cover.
-	-	-
Great Haywood to Marston From Great Haywood north-west to Marston (near the A34) the route would be on viaduct and embankment across the Trent valley and then in cutting for most of its length through the countryside north-east of Stafford. The river crossing would be around 11m high (around 600m long) and the cutting up to 20m deep, with a cut and cover tunnel section in a valley bottom location near Hopton. Near Marston the route would be on 8m high embankment. This sub-section would lie towards the northern tip of Cannock Chase NCA. The Staffordshire landscape character types are Sandstone Estatelands in the south-east (where the policy objective is 'maintenance' and quality is 'high') and Settled Farmlands in the north-west (where the policy objective is 'enhancement' and quality is 'moderate'). The whole area is identified as a 'landscape at risk', probably due to development pressures such as a technology park and depots on the fringes of Stafford.	This area has estate parklands overlooking the Trent valley, large woodlands, a rolling character, remnant heathlands, and arable cropping in large regular hedged or open fields. Inevitably, the route would further fragment this landscape, which is already affected by development, although the route avoids the main landscape features of interest, which include Hopton Heath battlefield site. The viaduct and embankment over the Trent, passing between Tixall and Ingreste (both Conservation Areas), would form new elements in the landscape, with a **moderate** impact on character – although much of the embankment would be sited within or adjacent to existing woodland, reducing its prominence. Further north and west, landscape character impacts should be relatively slight except at Marston where the new embankment would cut through the dispersed hamlet, giving rise to a locally **moderate** impact on its landscape character and setting. There would be a direct impact on three small woodlands over a total distance of around 450m, as well as on Ingreste Golf Course, which the route would cross.	Due to the fact that much of the alignment would be in cutting, there would be limited visual impact over much of this route section, the exceptions being in the Great Haywood and Marston areas. The viaduct crossing of the River Trent and Trent and Mersey Canal would be directly adjacent to Great Haywood Marina, where sensitive marina users would experience a **major** visual impact. Users of Ingreste Golf Course, nearby, would be similarly affected. At Marston the embankment, while not of exceptional height, would give rise to **moderate** impacts on many residents, as it would often be viewed from distances of 100-200m. Close to Great Haywood around 3.5km of the route lies within 2km of the Cannock Chase AONB (around 600m at its closest point). However any visual impact on the AONB is expected to be negligible due to the presence of intervening buildings and tree cover.
-	-	-
Marston to Swynnerton This sub-section, south-west of Stone, would broadly parallel then cross the M6. Passing through open, rolling farmland it would comprise a mixture of relatively deep cutting and high embankment, typically up to 15m above or below existing ground levels, with an elevated, diagonal	This landscape of undulating lowlands and hills has a thin scatter of small woodlands, often of ancient origin, and medium-sized hedged fields. The route would cut deeply through the flanks of two prominent low hills south of Stone (Peasley Bank and Pire Hill) in an unspoilt area of countryside, before joining the	There would be few immediate visual impacts from this route section. The embanked and at grade parts of the route would generally be seen from minor roads and isolated dwellings. There would be some impact on northerly and southerly views from the A34 (overlooking sections of cutting); and on southerly views from the A51

Route Description/ Landscape Context/ Impact Overall	Landscape/ Townscape Impacts	Visual Impacts
embankment crossing of the M6, the route then passing below and east of Swynnerton Park broadly at grade and entering a deep cutting (up to 20m deep). This sub-section would form part of the Shropshire, Cheshire and Staffordshire Plain NCA, running through the Staffordshire Settled Farmlands landscape character type in an area where the landscape policy objective is 'restoration' and landscape quality is considered 'moderate'.	M6. It would also be in deep cut north of Swynnerton. This fragmentation and mismatch with topography would give rise to **moderate** landscape character impacts. Further north, the elevated M6 crossing would also affect landscape character locally. There would be a direct impact on three small woodlands over a distance of around 500m in total, including one of the woodlands that edge the historic parkland at Swynnerton, affecting the wider landscape setting of the Conservation Area around 500m to the west of the route. These impacts too are classed as **moderate**.	north-west of Stone, which looks towards the elevated crossing of the M6 and the historic parkland at Swynnerton. Overall, though, visual impacts should be relatively modest.
-	-	O
Swynnerton to Madeley HSM6		
This route section would run from north of Swynnerton to south of Madeley, initially in deep then shallower cutting (around 5m deep on average) and low embankment across undulating farmland. At Shelton under Harley it would cross Meece Brook floodplain on embankment and viaduct around 300m long and 12m high. It would then enter cutting and tunnel beneath Whitmore Heath, emerging north-west of the village in a deep cutting and crossing the Lea valley and two existing railway lines diagonally on a 440m long viaduct and embankment up to around 11m high, finally entering cutting just south of Madeley. This section would run through the Shropshire, Cheshire and Staffordshire Plain NCA and Sandstone Hills and Heaths and Ancient Redlands landscape character types. These are identified as being of 'moderate' or 'high' landscape quality, with policy objectives of 'enhancement' or 'maintenance'. The area around Swynnerton Old Park, in the south, is of 'highest sensitivity' and a 'landscape at risk'.	This landscape comprises dissected undulating plateaux and hills with incised river valleys – Meece Brook in the south and the River Lea in the north, effectively forming one valley in this area. There is significant woodland cover, much of which is ancient in origin, typically clothing the valley sides. The area is fairly sparsely settled and already accommodates the West Coast Main Line (WCML), which the HS2 route would parallel and cross. There would be a **moderate or locally major** impact on landscape character in this section (especially its northern half) due to the mismatch with topography, the introduction of substantial lengths of new viaduct and embankment, the further fragmentation of an attractive and sensitive valley landscape by a second rail route, and the direct impacts on woodland, which would be obvious in the landscape, especially near Whitmore Heath where the route would run diagonally across a wooded scarp. Seven woodlands would be directly impacted over a total distance of around 1.6km.	The southern part of this route section is relatively isolated and mainly in cutting so any visual impacts should be fairly limited. Around Shelton under Harley and Whitmore there would be a **moderate** visual impact from the new embankments and viaduct. These would be viewed at close range from minor roads and scattered dwellings, but would be seen in the context of the existing rail infrastructure. Further north, towards Madeley, there would be localised visual intrusion affecting some residential views as well as the views of travellers on the attractive, winding country lanes, affecting their perceptions and enjoyment of this area of countryside. However, there would be little or no impact on views from the Conservation Area at Madeley.
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Route Description/ Landscape Context/ Impact Overall	Landscape/ Townscape Impacts	Visual Impacts
Madeley to Hough HSM8		
This route section would run parallel to and around 500m west of the WCML through undulating countryside. Initially in deep cutting and tunnel through Bar Hill south-west of Madeley, the route would then run on embankment and a short section of viaduct up to 14m high across the floodplain of Checkley Brook. After a long section in cutting around 10m deep, the route would emerge to run at grade and join the WCML south of Hough. This section would continue to run through the Shropshire, Cheshire and Staffordshire Plain NCA. The Staffordshire landscape character type is Ancient Clay Farmlands, which have a landscape policy objective of 'enhancement' and are of 'moderate' quality. Crossing into Cheshire (just north of Madeley), the landscape character type is Lower Farms and Woods. Retention of historic field patterns and parkland is considered important in this landscape character type.	This is a landscape of rolling lowland farmland, with mainly irregular, hedged fields with ancient hedgerows and oaks, a high density of woodland and some mosses and meres. Locally the landscape is influenced by the existing railway and by electricity transmission lines, but in general the countryside is intact and relatively high quality with many ancient features. The wider setting of Madeley (Conservation Area) should be little affected as the route would mainly be in cutting. North of Madeley, however, the impact on landscape character is expected to be **moderate.** The unspoilt landscapes west of the WCML would be fragmented and altered by the high embankment across the floodplain of Checkley Brook. North again, where the line is in cutting, the impact on landscape character should be much less. There would be a very minor direct impact on one woodland near Madeley.	Visual impacts should generally be fairly limited as there are few settlements nearby. Some minor roads and a few isolated farms and dwellings may experience visual intrusion, especially where the route is embanked.
-	-	O
Hough to Crewe HSM9/HSM10		
This short route section would run along the line of the WCML, initially on embankment on its western edge. It would then rise onto twin viaducts (one1100m and up to 16m high, and the other 1800m long and up to 8m high) to cross over an existing railway and pass under the A500. One track would connect with the WCML while the other would continue northwards in cutting and tunnel beneath Crewe. There would also be a rail link to Crewe Depot to the west of the route (see separate appraisal below). This section would continue to run through the Shropshire, Cheshire and Staffordshire Plain NCA. The surrounding Cheshire landscape character type is Lower Farms and Woods, but the immediate context also includes existing railway lines and sidings.	The landscape is low-lying urban fringe farmland, with small streams and meres, with an extensive area of railway sidings to the north and west. To the north-east is Crewe Hall (Registered Park and Garden, Grade II). In general, landscape quality and sensitivity are not especially high. Nonetheless, as the existing railway is on low embankment or in cutting, the increased height of the new embankment and viaduct structures (as well as possible road realignments) would have a localised **moderate** landscape character impact. There should be little or no impact on the setting of Crewe Hall and (as it is around 1km away) and no direct impact on woodland. There would be **cumulative impacts** with the Crewe depot (see separate appraisal below) but the combined impact	The new viaduct would have some visual impacts on residents in the villages of Basford (300m), Hough (500m) and Weston (700m). In general the impacts are expected to be minor given the distance and the existing visual context, which is already influenced by the WCML and A500 nearby. A small number of dwellings, notably on the eastern edge of Basford, would experience more significant **moderate** visual impacts. There would be **cumulative impacts** with the Crewe Depot (see separate appraisal below) but the combined impact would remain **moderate**.

Route Description/ Landscape Context/ Impact Overall	Landscape/ Townscape Impacts	Visual Impacts
	would remain **moderate**.	
-	-	-
Crewe to Pickmere HSM10		
North of Crewe the route would emerge and run in cutting then at grade alongside the WCML before diverging eastwards to pass between Winsford and Middlewich where it would cross the Shropshire Union Canal on 6m high viaduct. It would then run into cutting to span the River Dane and Trent and Mersey Canal on a relatively low (8m) viaduct 745m long. Continuing north to Pickmere, it would run on 5-8m high embankment across floodplain land, crossing a series of small streams on six viaducts generally under 200m in length but up to 18m high. This section would continue to run through the Shropshire, Cheshire and Staffordshire Plain NCA. The surrounding Cheshire landscape character types are East Lowland Plain, River Valley (Dane valley) and Lower Farms and Woods. Retention of historic field patterns, parkland and semi-natural woodlands is considered important in these landscape character types.	This landscape comprises flat or gently rolling farmland with small to medium sized hedged field enclosures, some of which are medieval in origin, and (especially in the north) distinctive ponds, meres and mosses and many small tree-lined streams. There should be little landscape character impact in the southern part of the route section where the alignment follows the WCML. Further north, however, the at-grade and embanked route would introduce new landscape elements. In the area between Winsford and Middlewich the narrow belt of open countryside would be fragmented. In other areas the route would affect the integrity of historic field patterns. There would be direct impacts on six woodlands over a total distance of around 700m, including two ancient semi-natural valley-side in the Lostock Gralam area. Overall these landscape impacts are considered to be **moderate** adverse.	Most of this route section passes through inaccessible or sparsely settled countryside. This, together with the fact that much of the route is at or close to grade, means that in many areas visual impacts should be slight. However, minor or locally **moderate** visual impacts would affect recreational users of the Shropshire Union Canal, the Trent and Mersey Canal and the North Cheshire Way walking route, which the route would cross; and the small villages of Wimboldsley and Lostock Green, both within around 300m of the route. There might also be some visual impact on the setting of Bostock Hall (which includes a Conservation Area) where there are views towards the viaduct over the River Dane.
-	-	-
Pickmere to Winterbottom HSM11		
This short route section would run from just south of Arley Brook to north of the M6. The route would be close to grade over most of this length but would rise onto 5-8m high embankment some 1.5km west of the A556 near Tabley Park in order to bridge the M6. This section would continue to run through the Shropshire, Cheshire and Staffordshire Plain NCA. The surrounding Cheshire landscape character type is Lower Farms and Woods. Retention of historic field patterns and parkland is	This landscape, like those to the south, comprises gently rolling farmland with small hedged fields, hedgerow trees and small meres and ponds. The southern part of the route would pass under local roads with limited impact on character. Further north the M6 approach embankments would have some impact on the relatively flat and open character of the landscape and a direct impact on Heyrose Golf club, but these impacts would generally be minor. There would be no direct	There would be a localised minor or **moderate** visual impact on scattered dwellings and farms close to the route, users of Heyrose Golf Club, and on motorists on the M6.

Route Description/ Landscape Context/ Impact Overall	Landscape/ Townscape Impacts	Visual Impacts
considered important in this landscape character type.	impacts on woodland.	
O	O	-
Winterbottom to Warburton HSM12		
Winterbottom to Agden Bridge After crossing the M6 near Winterbottom the route would run northwards, parallel to and west of two electricity transmission lines, past the hamlets of Hoo Green and Hulseheath, then under the M56. Initially on 8m high embankment, it would gradually descend to grade and would run into cutting near Hoo Green before emerging onto embankment (around 7m high) again near Agden Bridge. At Hoo Green the A50 might be realigned to pass south of the settlement, crossing over the HS2 route. This sub-section would lie towards the northern edge of the Shropshire, Cheshire and Staffordshire Plain NCA. The surrounding Cheshire landscape character type is Lower Farms and Woods. Retention of historic field patterns and parkland is considered important in this character type.	The landscape here continues to comprise rolling farmland. The pattern of small fields, dense hedgerows, mature hedgerow trees and small, winding lanes of relatively ancient origin is surprisingly intact and unspoilt notwithstanding the presence of existing detractors including the electricity transmission lines and motorway. There would be a **moderate** adverse impact on landscape character, associated especially with the embanked parts of the route at the northern and southern ends of the sub-section. Any realignment of the A50 at Hoo Green might also have some impact. The central part of the sub-section would have more limited impacts, passing under the winding country lanes (Peacock Lane and Agden Lane) in this area. There would be no direct impacts on woodland. There would be **cumulative impacts** in the Hoo Green area where the Manchester approach would diverge from the mainline (see Winterbottom to Rostherne HSM28A below) but the combined impact would remain **moderate**.	There would be localised **moderate** visual impacts on the hamlet of Winterbottom (100-200m) and on scattered dwellings and farms close to the route. Visual impacts on Hoo Green and Hulseheath should be limited as the route would pass these settlements in cutting. There would be **cumulative impacts** in the Hoo Green area where the Manchester approach would diverge from the mainline (see Winterbottom to Rostherne HSM28A below) but the combined impact would remain **moderate**.
-	-	-
Agden Bridge to Warburton This short route section would run northwards on embankment 5-6m high, crossing the Bridgewater Canal and Cheshire Ring Canal Walk on embankment then spanning the River Bollin and the Trans Pennine Trail on a viaduct around 350m long and 4m high before running into a shallow cutting east of Warburton. The route would fall within the Mersey Valley NCA and crosses from Warrington into Trafford. The Warrington landscape character type is Flood Plain, identified as being sensitive to high mounded landform; the Trafford landscape	This landscape is flat or gently rolling, open arable and pasture land with medium to large fields and many watercourses and communications lines, including disused railways and electricity transmission lines. However it retains a rural character, especially in the north. There would be a **moderate** adverse impact on landscape character, as the embankment and viaduct, although low, would intrude on landscape character to some degree in an area that has been identified as being sensitive to topographic changes and as meriting conservation. There would be no direct impacts on woodland.	The route passes through a sparsely settled area, with only minor visual impacts on scattered dwellings close to the route. There would also be minor or locally **moderate** impacts on users of the Bridgewater Canal, Cheshire Ring Canal Walk and Trans Pennine Trail who would have very close range views of the HS2 route on embankment or viaduct.

Route Description/ Landscape Context/ Impact Overall	Landscape/ Townscape Impacts	Visual Impacts
character type is Settled Sandlands for which the landscape strategy is one of conservation.		
-	-	-
Warburton to Lowton HSM21		
This route section would include the high viaduct crossing of the Manchester Ship Canal and A57 as well as lengthy sections of embankment and cutting running north-west across the Mersey valley towards Wigan. Initially in cutting south of the Ship Canal, the route would rise onto embankment and then onto two sections of viaduct up to 28m high and 120m and 1200m in length respectively. North of the Ship Canal the route would run on high embankment, descending gradually from around 17m at Hollins Green to at-grade south of Culcheth, along a line chosen to avoid areas of SSSI, woodland and landfill. From Culcheth it would run in cutting and close to a dismantled railway most of the way to Lowton. The route would fall within the Mersey Valley NCA. The relevant Trafford landscape character type is Settled Sandlands; while the Warrington landscape character types are Undulating Enclosed Farmland and Mossland, the latter in the central part of the section only, between Glazebrook and Culcheth. The landscape character assessments highlight the sensitivity of these landscapes to high structures and/or mounding; and the importance of the wide open views that the area offers.	This landscape comprises flat or gently undulating farmland, with relatively large mainly arable fields and limited hedgerow or hedgerow tree cover, lending an open, exposed character, especially to the mosslands. Wide, expansive views are a key characteristic. Almost inevitably, given the height and scale of the engineered structures that would be introduced to these landscapes, and the fact that landscape sensitivity to high structures is explicitly identified in the Warrington landscape character assessment, the impact of the new viaducts and embankments would be **major**, affecting landscape character over a wide area. However they would not represent wholly new landscape elements, as there are already several high level road and rail crossings over the Manchester Ship Canal between Warrington and Irlam. The new crossing would be reasonably well separated from the closest existing crossing, the historic toll bridge at Warburton, around 800m to the south-west; and it is possible that an iconic new viaduct design could provide a feature of interest, although the impact of the approaches on this open landscape would remain. The long, high embankment from Hollins Green to Culcheth would be out of keeping with the flat mossland landscape, although this has already been affected by railway, motorway and landfill development. The impact on landscape character would be **moderate**. North of Culcheth any landscape character impacts would be much more limited. There would be a direct impact on one small but important area of semi-natural woodland (of ancient origin) on the southern bank of the Ship Canal. Overall, four woodlands	Wide open views have been identified as a key characteristic of these landscapes and would be significantly affected. **Major** visual impacts would be experienced at Hollins Green, directly adjacent to the new viaduct over the Manchester Ship Canal. Recreational users of the Ship Canal and public open spaces and walking routes on the canal banks would also experience **major** impacts. The substantial settlements of Partington (500m) and Cadishead (300m), and travellers on the A57, would also be affected by views of the viaduct, although existing woodland would offer at least partial screening. Further north the high embankment would intrude on and obstruct some views along the Mersey valley, including those from Glazebrook village (300m) and the M62. These impacts are considered to be **moderate**. There would be limited visual impact in the area between Culcheth and Lowton, as this part of the route would be in cutting.

Route Description/ Landscape Context/ Impact Overall	Landscape/ Townscape Impacts	Visual Impacts
	would be directly impacted over a total distance of around 500m. This includes woodland along the dismantled railway near Culcheth.	
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Lowton to Bamfurlong HSM22		
This route section would run north-west from Lowton St Mary's to Bamfurlong, south of Wigan. Initially mainly in cutting 4-6m deep, it would pass under the A580 (still broadly following the dismantled railway) then run at grade or on embankment parallel to and south of the Leeds and Liverpool Canal, rising to around 12m high to cross the existing A573 and connect with the WCML (which would be realigned slightly to the east) via a grade-separated junction at Bamfurlong. There would also be a link to Golborne Depot to the south of the route (see separate appraisal below). This part of the route would fall within the Lancashire Coal Measures NCA. The Wigan landscape character type is Undulating Enclosed Farmland. The landscape character type is noted as being sensitive to further fragmentation by development, especially development of large height or mass. Views from the A580, A573 and the Leeds and Liverpool Canal and towpath to the north are highlighted as being sensitive.	This landscape comprises a substantial pocket of undulating enclosed farmland of variable landscape condition, surrounded by urban, suburban and industrial development. The area to the east (towards Pennington Flash), is identified in the landscape character assessment as being a surviving remnant of an old agricultural landscape with small scale field patterns unique to Wigan. The route would pass through the eastern edge of this old agricultural landscape in cutting. Although fairly closely aligned with the dismantled railway, it would fragment the small scale field patterns to some degree. However it would largely avoid direct impact on an area of access land to the south at Byrom Hall. Further north and west the relatively high embankments would intrude on the attractive, low-lying landscape of the canal corridor to the north and west and isolate the canal corridor from other open countryside north of Golborne. There would be a direct impact on four woodland over a total distance of around 700m. These landscape impacts are considered **moderate**. There would be **cumulative impacts** with the Golborne Depot (see separate appraisal below), raising the combined impact in this area to **major**.	The embanked parts of the route would have a **moderate** impact on views from a small number of farms and dwellings within around 500m. Recreational users of Pennington Flash Country Park (400m), access land at Bryn Gates (directly adjacent) and local footpaths would also be affected, although existing tree cover would provide at least partial screening. Views from the A573 (which would possibly be realigned over the Golborne Depot, see separate appraisal below) would be partially obstructed by the embankment for both north- and south-bound travellers. Views south from the Leeds and Liverpool Canal (300-400m away) would also be affected. These impacts too are considered to be **moderate**. There would be **cumulative impacts** with the Golborne Depot (see separate appraisal below), raising the combined impact in this part of the route section to **major**.
-	-	-
Winterbottom to Rostherne HSM28A		
This route section would begin the approach to Manchester. Initially on 8m high embankment just north of the M6, it would run parallel to electricity transmission lines and	The landscape here comprises rolling farmland. The pattern of small fields, dense hedgerows, mature hedgerow trees and small, winding lanes of relatively ancient origin is	There would be localised **moderate** visual impacts on scattered dwellings and farms close to the route. Visual impacts on Hoo Green and Hulseheath, both within

Route Description/ Landscape Context/ Impact Overall	Landscape/ Townscape Impacts	Visual Impacts
gradually descend to grade near Hoo Green. The A50 might be realigned to pass south of this settlement, potentially crossing the HS2 route on embankment. Just north of Hoo Green and Hulseheath the Manchester approach line would cross over the HS2 mainline, briefly running on low embankment (4m or less) before descending into cutting and crossing Agden Brook on a short viaduct. Turning eastwards at grade it would pass under the A556 and run in cutting between the M56 and Rostherne Mere, 150m north of the mere. **As the southern part of this route section coincides with Winterbottom to Warburton HSM12, only the additional impacts arising are described here.** This section would lie towards the northern edge of the Shropshire, Cheshire and Staffordshire Plain NCA. The surrounding Cheshire landscape character type is Lower Farms and Woods. Retention of historic field patterns and parkland is considered important in this character type.	surprisingly intact and unspoilt despite the presence of existing detractors including the electricity transmission lines and motorway. Rostherne Mere is an especially attractive and highly valued landscape feature. There would be a **moderate** adverse impact on landscape character associated with the embanked parts of the route in the south and close to Hoo Green and Hulseheath. Any realignment of the A50 at Hoo Green might also have some impact. In the northern and eastern part of the route would be in cutting, passing under the distinctive winding country lanes, but would have still have a **moderate** adverse impact on historic field patterns, hedgerows and hedgerow trees. Near Rostherne Mere, such changes would affect the landscape setting of the mere, although this is already influenced by the M6 to the north. One woodland would be directly impacted over around 100m. There would be **cumulative impacts** with the HS2 mainline in the Hoo Green area (see Winterbottom to Agden Bridge HSM12 above) but the combined impact would remain **moderate**.	around 300m of the low embanked crossover of the mainline, would be minor or **moderate**. Elsewhere visual impacts should be limited as the alignment would generally be in cutting. There would be **cumulative impacts** with the HS2 mainline in the Hoo Green area (see Winterbottom to Agden Bridge HSM12 above) but the combined impact would remain **moderate**.
-	-	-
Rostherne to Ardwick HSM28B		
Rostherne to M56 This sub-section would run from close to the southern edge of the M56 north of Tatton Park east and then north-east towards Manchester Airport. Initially in 10m deep cutting, it would then follow the terrain, crossing two small streams on short, low viaducts. Running across a gentle, south-facing slope, it would rise onto embankment around 8m high to cross an existing railway south of the village of Ashley before entering 9m deep cutting south of the hamlet of Thorns Green. East of this point the route would cross the River Bollin on a short (110m) but high (16m) viaduct before	This landscape of this part of the route is characterised by small to medium sized, fairly regular, hedged fields. Settlement comprises scattered farms, villages and hamlets, many with vernacular buildings. To the west near Rostherne Mere and to the east around Halebank, there is a strong sense of enclosure by trees and woodland but around Ashley the landscape is relatively open, with long views to the south. The embanked M6 north of Ashley is also a key landscape influence. The route would isolate a band of land less than 1km wide (including the village of Ashley) between the motorway and the new railway. It would introduce a new viaduct and	The fine, open, southerly views from Ashley (including those from its church) to Tatton Park, would be interrupted by the embanked HS2 route (300m away), giving rise to a **moderate** visual impact. The route might also be visible from parts of the Tatton Park parkland (Registered Park and Garden Grade II*) although most views would probably be screened by the mixed plantings around the edge of the park. The short viaduct crossing of the River Bollin near Halebank would have localised visual impact.

Route Description/ Landscape Context/ Impact Overall	Landscape/ Townscape Impacts	Visual Impacts
re-entering cutting to pass under the M56. This section would lie towards the northern edge of the Shropshire, Cheshire and Staffordshire Plain NCA. The surrounding Cheshire landscape character type is Lower Farms and Woods. Retention of historic field patterns and parkland is considered important in this character type. The small area around Halebank, although in Trafford, is effectively part of the same landscape.	embankment features that would alter the character of the landscape, especially south of Ashley. It would have direct impacts on a number of buildings and farms, notably at Halebank, as well as on field patterns and small woodlands (three woodlands, one of ancient origin, affected over a total distance of around 500m). Overall there would be a **moderate** landscape impact.	
-	-	-
M56 to Davenport Green including Manchester Airport High Speed Station Here the route would pass in cutting 8-13m deep beneath the M56 and A538 east of Warburton Green before running into Manchester Airport High Speed Station. The station would be sited on greenfield land north-west of Manchester Airport, parallel to the western edge of the M56 motorway. The concourse level would be broadly at grade, with the HS2 platforms in cutting below. Viewed from the east, where the motorway is generally at grade, the concourse roof would be around 100m long and 12-15m above existing ground levels. To the west of the station there would be a four-storey, 3000 space car park, with a roof line around 12m above existing ground levels. The northern edge of the car park would abut the southern edge of the concourse and would have a 12m high roof line. There would also be a need for a new road connection from the airport site to the east (possibly crossing over the motorway). The route would fall mainly within the Manchester Conurbation NCA. The surrounding Trafford landscape character type is Wooded Claylands. This is identified as being sensitive to development pressure, especially the continued loss of hedgerows and hedgerow trees.	This landscape, within the Manchester urban fringe, is characterised by gently rolling topography, small incised streams such as Timperley Brook, regular and irregular small to medium sized fields and narrow winding lanes. The station site would benefit from close association with the motorway and existing airport structures and this should tend to reduce its landscape and townscape impacts. However the alignment would affect the character of the northern edge of Hale Barns (where there would be demolitions) and result in loss of part of an island of greenfield land within the built up area. There would also be a direct impact on the distinctive woodland along Timperley Brook, with around 0.7ha of woodland being lost to development. Overall the landscape impact would be **moderate**.	Both north and south of the station the route would be in cutting, so the visual impacts of the station approaches should be minimal. Views from the village of Davenport Green and the wider area north of the concourse and car park would be contained to some degree by existing woodland along Timperley Brook (although some of this would be directly impacted by the station development, see left). From the west, south and east the station would be relatively open to view. It would cause **moderate** visual intrusion to residents on the northern edge of Hale Barns, where properties would lie within 300-500m of the concourse and car park. It would also be very clearly visible (from 100-200m) to motorway users, the 300m combined length of the concourse and car park obstructing the generally open, countryside views westwards that presently characterise this section of the motorway. Again, this is considered to be a **moderate** impact.
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Route Description/ Landscape Context/ Impact Overall	Landscape/ Townscape Impacts	Visual Impacts
Davenport Green to Ardwick This sub-section would run from just north of Manchester Airport north-eastwards towards Manchester Piccadilly. It would be in cutting north of Davenport Green and south of Ardwick, where the route would parallel the existing mainline railway, but otherwise would be in tunnel. The route would fall within the Manchester Conurbation NCA. There is no local authority landscape character assessment.	This sub-section passes almost entirely through built up areas for which there is no landscape character assessment. The tunnel portals, in cutting at the extreme southern and northern ends of the route, would have some direct impacts on farmland, and on school grounds and residential and industrial land respectively. However they would have minimal impact on landscape or townscape character given their proximity to the M56 at Manchester Airport and the existing mainline railway at Ardwick.	There would be little visual impact from this route section, apart from some visual impacts associated with proposed intervention shaft site compounds and head house buildings at four locations, to be confirmed.
O	O	O
Ardwick to Manchester Piccadilly Station HSM26		
The route would approach the proposed Manchester Piccadilly HS2 station on viaduct north of and parallel with the existing mainline railway and at a similar elevation. The Manchester Piccadilly HS2 station would be sited north of the existing Grade II listed Manchester Piccadilly Station, on land that currently comprises a mixture of office blocks and open air and multi-storey car parking. The new station would have elevated platforms 9m above ground level and would lie parallel and directly adjacent to the existing station, with concourse and circulation at a lower level through the brick viaducts of the existing station. Construction would entail the demolition of two existing modern office blocks (6-10 storeys in height) and an existing 4-storey car park, as well as various smaller residential, light industrial and commercial buildings, including some unlisted historic buildings in the throat. A new 6-storey car park would be built north of the route at the western end of the site i.e. towards Manchester city centre; and a new 2-3 storey train crew building would be sited on the south side of the existing station. The roof of the new station would be at approximately the same level as that of the existing station. The new car park, sited on lower ground adjacent, would have a lower roof line.	The townscape impact of the station approach would be limited and no significant landscape or green space resources would be affected. In general the station development would fit well with the existing built form in terms of height and scale. The scheme would offer benefits in terms of reduced severance for pedestrians, due to the creation of the new connections through the site; however some views to the existing station structure would be adversely affected, the northern facade being largely obscured by the new station building and the southern facade (which is the main public facade) being partly obscured by the new train crew building. The inclusion of extra land within the operational site boundary north and south of the station approach might offer additional opportunities for high quality landscape and urban design. Overall the townscape impact of the station is expected to be neutral. With good design the ultimate townscape impact might be beneficial.	The route would bring little visual impact over and above that of the existing railway on its approach to the station. There would be some slight additional visual intrusion due to the separation of new and existing viaduct structures, which would be approximately 50-100m apart, affecting those using north-south routes in the Ardwick area, notably Mancunian Way and Chancellor Lane. The station building is not expected to give rise to visual impact due to its close visual relationship with the existing station and the absence of sensitive visual receptors in the surrounding area.

Route Description/ Landscape Context/ Impact Overall	Landscape/ Townscape Impacts	Visual Impacts
The route would fall within the Manchester Conurbation NCA. There is no local authority landscape or townscape character assessment. The proposed station site is not within a Conservation Area.		
O	O	O
Rostherne to Warburton HSM30		
Rostherne to Agden Bridge This sub-section would connect Manchester to the HS2 mainline, running north-west from near Rostherne Mere then beneath the M56 to near Agden Bridge. Initially the line would be in cutting around 10m deep, rising within the cutting to cross over the Manchester approach lines. After passing under the M56 and over Agden Brook (short, low viaduct), it would emerge onto embankment around 1km south of Agden Bridge, rising to around 6m high. **As the eastern part of this route section coincides with Winterbottom to Rostherne HSM28A, only the additional impacts arising are described here.** This section would lie towards the northern edge of the Shropshire, Cheshire and Staffordshire Plain NCA. The surrounding Cheshire landscape character type is Lower Farms and Woods. Retention of historic field patterns and parkland is considered important in this character type.	The landscape here comprises gently rolling farmland with medium-sized, densely hedged, regular fields and the small, tree-lined stream of Agden Brook. The M56 and electricity transmission lines nearby tend to reduce landscape sensitivity. North of the M56 the new embankment would intrude on landscape character to some degree. Overall the landscape character impact would be minor or **moderate**. There would be no direct impacts on woodland.	This sub-section of the route might bring some additional visual impacts in the area north of Rostherne Mere, where the route rises within the cutting to cross over the Manchester approach lines and might be visible in part. Further north and west there should be limited visual impacts although the embankment south of Agden Bridge would intrude locally on views south from the A56. Impacts are likely to be minor or **moderate**.
-	-	-
Agden Bridge to Warburton Here the route would rejoin the HS2 mainline. After crossing the Bridgewater Canal and Cheshire Ring Canal Walk on embankment 5m high, the route would run into cutting to pass under the HS2 mainline, then rise onto viaduct to span the River Bollin and the Trans Pennine Trail on a viaduct around 350m long and 4m high before running into a shallow cutting east of Warburton. **As the northern part of this route section coincides with Winterbottom to Warburton HSM12, only the additional impacts arising**	This landscape is flat or gently rolling, open arable and pasture land with medium to large fields and many watercourses and communications lines, including disused railways and electricity transmission lines. However it retains a rural character, especially in the north. This part of the route is unlikely to give rise to any landscape impacts other than those already described under HSM12.	This part of the route is unlikely to give rise to any visual impacts other than those already described under HSM12.

Route Description/ Landscape Context/ Impact Overall	Landscape/ Townscape Impacts	Visual Impacts
are described here. The route would fall within the Mersey Valley NCA and crosses from Warrington into Trafford. The Warrington landscape character type is Flood Plain, identified as being sensitive to high mounded landform; the Trafford landscape character type is Settled Sandlands for which the landscape strategy is one of conservation.		
O	O	O
Crewe Depot		
This infrastructure maintenance depot would be located on the southern outskirts of Crewe, on farmland west of the WCML and the existing Basford Hall railway sidings. The site would parallel the western edge of the existing railway and sidings. The approach to the depot would run from just south of Casey Lane, passing beneath the A500; and the site would terminate in the north at the B5071 on the edge of Crewe. The Crewe deport would be situated within the Shropshire, Cheshire and Staffordshire Plain NCA. The site is surrounded by the Lower Farms and Woods landscape character type on the west and south, with extensive areas of railway sidings to the east and urban areas to the north. Retention of historic field patterns and parkland is considered important in this landscape character type.	The site itself comprises farmland with few remaining field boundaries, and some rail-associated uses. To the west is low-lying urban fringe farmland, with small streams and meres. To the east is an extensive area of railway sidings. Landscape impacts would be limited due to the fact that the depot would be at grade and directly adjacent to the existing sidings on an area of land whose landscape character has already been affected by development. There would be no direct impacts on woodland although short lengths of hedgerow and two small meres would be lost. Impacts would be **moderate** at worst. There would be **cumulative** impacts with Hough to Crewe HSM9/HSM10 (see separate appraisal above) but the combined impact would remain **moderate**.	The site is well-separated from the majority of visual receptors. A small number of dwellings on the eastern edge of Basford (Larch Avenue) and along the B5071 in the north would have views of the site from within around 200m. The depot would be seen in the context of the existing railway and sidings as well as the new HS2 route. There would also be some impacts on views from the A500, particularly for motorists on the eastbound carriageway. Visual impacts would be **moderate** at worst. There would be **cumulative** impacts with Hough to Crewe HSM9/HSM10 (see separate appraisal above) but the combined impact would remain **moderate**.
-	-	-
Golborne Depot		
This rolling stock maintenance depot would occupy open farmland on the south side of the Leeds and Liverpool Canal west of Pennington Flash Country Park, with sidings running roughly east-west. The depot would be set slightly below existing ground levels at its western end. It is possible that	This landscape comprises a substantial pocket of undulating enclosed farmland of variable landscape condition, surrounded by urban, suburban and industrial development. The area to the east (towards Pennington Flash), is identified in the landscape character assessment	The depot (and possible road connections) are expected to have significant visual impacts. A road connection to the east potentially would affect users of Pennington Flash Country Park, almost directly adjacent; and might be seen from paths on the northern

Route Description/ Landscape Context/ Impact Overall	Landscape/ Townscape Impacts	Visual Impacts
there would be new road connections to the east, potentially passing close to the edge of the country park. To the west, the A573 would need to be realigned, possibly rising onto embankment and passing over the depot and the HS2 mainline. The depot would fall within the Lancashire Coal Measures NCA. The Wigan landscape character type is Undulating Enclosed Farmland. The landscape character type is noted as being sensitive to further fragmentation by development, especially development of large height or mass. Views from the A580, A573 and the Leeds and Liverpool Canal and towpath to the north are highlighted as being sensitive.	as being a surviving remnant of an old agricultural landscape with small scale field patterns unique to Wigan. This depot (and possible road connections) would bring major fragmentation to an area of largely unspoilt countryside between Golborne and Abram. The depot approach and potential road access to the east would pass through the old agricultural landscape and close to the edge of Pennington Flash, fragmenting this area's small scale field patterns. Further west, the large scale development associated with the depot (and the A573, if realigned above) would intrude on the attractive, low-lying, historic canal corridor (and Abram Flashes SSSI) to the north, isolating this area from other open countryside around Golborne. There would also be a direct impact on several dwellings, a public footpath at Lightshaw Lane, and two areas of woodland. Overall these landscape impacts are considered **major**. There would be **cumulative impacts** with the Lowton to Bamfurlong HSM22 route section (see separate appraisal above), and the combined impacts in the Golborne depot area would be **major**.	shores of the flash. The depot itself would be visible in longer views from the north, affecting canal users and residents of Dover and Crankwood 400-600m away. These impacts are expected to be **moderate**. Further west, realignment of the A573 could potentially have a **major** impact on views from the A573 for motorists travelling both north and south. These views have been highlighted in the landscape character assessment as being important and sensitive as they focus on the 'green corridor' that currently exists between Golborne and Abram. There would be **cumulative impacts** with the Lowton to Bamfurlong HSM22 route section (see separate appraisal above), and the combined impacts in the Golborne depot area would be **major**.
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3.2. Eastern leg

Route Description/ Landscape Context/ Impact Overall	Landscape/ Townscape Impacts	Visual Impacts
Water Orton to Birchmoor HSL1		
Water Orton to Kingsbury This sub-section near Sutton Coldfield would run east of the M42 first at grade or on in shallow cutting (up to 8m deep), then on two long viaducts around 10m high and around1250m long in total, over the River Tame and its floodplain. These would closely parallel the edge of the motorway. The route would run through the Trent Valley Washlands NCA and North Warwickshire landscape character areas 12 Middleton to Curdworth – Tame Valley Farmlands and 11 Tame Valley – Wetlands. A key objective for the latter character area is to strengthen the new wetland character and conserve remnant areas of traditional floodplain landscape.	The landscape in this area comprises gently undulating arable farmland and alluvial river terraces, strongly influenced by busy A roads and the M42. Kingsbury Water Park, towards the northern end of the sub-section, comprises extensive areas of wetland scrub and woodland centred on former gravel workings. Given the fact that most of the route is in cutting or very closely aligned with the M42, there should be limited impact on landscape character. However there would be direct impacts on two woodlands over a total distance of around 1200m, including woodland within the water park, giving rise to a minor or **moderate** landscape impact.	The new viaducts and woodland loss would give rise to some visual impact on recreational receptors, especially in the part of Kingsbury Water Park just to the east. These impacts are expected to be **moderate**.
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Kingsbury to Birchmoor North of Kingsbury Water Park the route would diverge slightly from the embanked motorway, then cross over to run on its western side. It would run close to the edge of the built up area of Tamworth, then return to the eastern side of the motorway by passing beneath it near Birchmoor. The southern part of this section would be on viaduct or embankment up to 20m high; and the northern part in cutting. This sub-section would lie within the Arden NCA and North Warwickshire landscape character area 5 Tamworth – Urban Fringe Farmlands. The landscape character assessment indicates that this fragmented landscape would benefit from reconstruction. It recommends that the settings of the villages of Freasley and Whateley be safeguarded.	This is a fragmented landscape with a complex mix of agricultural, industrial and urban fringe land uses and open arable fields. The exception is around Freasley and Whateley where pockets of pasture in small hedged fields survive and the landscape is more sensitive. The viaducts and embankments north of Kingsbury would be prominent new elements in an area of farmed landscape. However the landscape is already influenced by an existing elevated motorway section, a power line, existing railway infrastructure, and depot and storage sites. The impact on landscape character here is expected to be locally **moderate**. There would be no direct impact on woodlands. On the west side of the M42, the route would again cross farmland and cut through part of the landscape setting of the village of Whateley, giving rise to a **moderate** impact.	The route would pass within 250m of residential properties on the northern edge of Kingsbury. Given the existing visual context (see left) the visual impact is expected to be **moderate**. Further north, any visual impact on the south-eastern outskirts of Tamworth should be limited as the route would be in cutting at these locations.

Route Description/ Landscape Context/ Impact Overall	Landscape/ Townscape Impacts	Visual Impacts
	Freasley would be unaffected as it lies east of the M42.	
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Birchmoor to Tonge HSL6		
Birchmoor to Measham Here the route would follow the M42 corridor initially in cutting up to 20m deep, emerging onto embankment and viaduct (around 650m long and 17m high) north of Polesworth, where it would run through Pooley Country Park and across the Coventry Canal, the WCML and the valley of the River Anker. North of this point it would cross open, empty countryside, staying within around 500m of the motorway and running close to grade or in cutting past the villages of Austrey, Appleby Parva and Appleby Magna to near Measham. This sub-section would lie within the Mease/Sence Lowlands NCA and North Warwickshire landscape character areas 3 Anker Valley and 1 No Man's Heath to Warton – Lowlands and East Midlands landscape character type 5a Village Farmlands. Landscape objectives include restoration and regeneration of former mine workings (in the south) and conservation of rural character (in the north).	This area is characterised by fairly complex, undulating topography and limited woodland cover. In the south the landscape is mainly arable; here the M42 is a prominent feature crossing the Anker valley on embankment and viaduct near Polesworth. Further north is a mixed open agricultural landscape with smaller fields, nucleated hilltop villages, a dense network of winding lanes and a relatively strong historic character. The M42 remains a key landscape feature, the moving traffic often visible in the many long views, especially from higher ground. At Polesworth there would be a landscape character impact where the Country Park, including areas of young planting on reclaimed land, would be directly impacted over a distance of 500-600m. Impacts would be tempered by proximity to existing transport infrastructure and industrial uses, so are appraised as **moderate**. Further north, the route would be on low embankment or in cutting and would almost always be seen together with the motorway. The landscape character impact would generally be fairly minor.	The route would pass between the motorway and the settlement of Polesworth on embankment and structure, generating some additional visual intrusion, potentially affecting both the Country Park and the settlement. Users of the Country Park and the Coventry Canal would experience a localised **major** visual impact as the HS2 route would pass within 50m of the museum and heritage centre, on low embankment and bridge at this point . From the settlement (300m away from the route), views would generally be filtered through trees and are expected to be localised and minor. North of Polesworth, around Potford Bridge, the viaduct would be clearly seen by passing motorists. Further north, there would be localised visual impacts where the route is embankment (6-9m high) near Austrey and Appleby Parva (both around 300m away). Here visual impacts should be minor or **moderate** at worst, as the route would be seen in the context of the embanked motorway just beyond.
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Measham to Ashby-de-la-Zouch Just before Measham the route would emerge from cutting and run briefly on embankment up to 20m high, crossing the River Mease on a short (around 150m) viaduct and passing through an industrial estate. It would then run mainly in cutting through hilly terrain towards Ashby-de-la-Zouch. The route would closely parallel the A42 mainly in cutting up to 20m deep. This sub-section would fall within the Leicestershire and	This landscape of undulating low hills has been affected in parts by mining and mining settlements. More recently there has been extensive new woodland planting within the National Forest. However the landscape also retains pockets of older landscape, with small fields, dense hedgerows and traditional villages such as Packington. Any impact on landscape character should be slight given the proximity of the route to the A42 and its location mainly in cutting. There would be a direct impact on a significant length of woodland (over 2km in total) north-east of	At Measham the embankment and viaduct would be partly screened by landform with limited effect on sensitive visual receptors. North of the village, it would run between a residential area and the A42 in retained cutting, again giving rise to little visual impact. Further north the village of Packington (Conservation Area) lies around 200m away from the route at its closest point. Here the route would emerge briefly from cutting to cross the River Mease on a 7m high 140m long viaduct. There might be glimpsed views to the

Route Description/ Landscape Context/ Impact Overall	Landscape/ Townscape Impacts	Visual Impacts
South Derbyshire Coalfield NCA and East Midlands landscape character type 9a Settled Coalfield Farmlands.	Measham, where the route would run through recent woodland plantings close to the edge of the A42. However this is considered minor given the recent origin of these plantings.	viaduct from a few locations, but most views would be filtered through trees and the route would be seen in the context of the A42 at grade just beyond. Impacts are expected to be slight.
O	O	O
Ashby-de-la-Zouch to Tonge North of Ashby-de-la-Zouch the route would diverge slightly from the A42 and run mainly in 12-19m deep cutting 400-500m east of the road. North of Worthington it would emerge from cutting to cross a small stream and the A42 diagonally on a 360m long viaduct (14m above the valley floor and 9m above the road), then running onto 15m high embankment south-east of Breedon on the Hill and Tonge. Here the route would lie within the Melbourne Parklands NCA and East Midlands landscape character type 9b Wooded Village Farmlands. This landscape character type is highlighted as being relatively unspoilt with a strong sense of landscape history.	This area has varied topography including rolling hills and steep-sided valleys, ancient woodlands on prominent hills, well-maintained hedged fields and traditional farms and villages linked by quiet country lanes. Near Worthington quarrying is an influence locally. Breedon on the Hill (Conservation Area) is a distinctive landmark. The route would bring some landscape fragmentation and disruption, especially north-west of Rough Park. There would be a direct impact on five areas of woodland (again, mainly recent plantings) over a total distance of around 1.2km. Near Worthington the cutting through the hillside above the village might affect character, as this slope is widely visible from the east. Finally, the A42 crossing – although sensitively routed in relation to landform – would also affect landscape character, including the southern setting of the Conservation Area at Tonge. These impacts are expected to be **moderate**.	The southern part of this sub-section has little public access and much of the route is in cutting and/or woodland, so there should be limited visual impact. The central portion of the route would pass within 350m of the village of Worthington. Here there is potential for some minor visual intrusion on part of the village from a short embanked route section 7m high just to the west. Further north, where the route would cross the A42 on high viaduct and embankment, there would be **moderate or locally major** visual impacts. The route would intrude into the foreground of the distinctive views from the A42 and A453 north-west towards Breedon on the Hill (700m away). The high embankment would also affect views south-east from Tonge, residents on the southern edge of the village (200m away) being most affected.
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Tonge to Long Eaton HSL9		
Tonge to Lockington The sub-section would run north-east across open countryside from Tonge with a mixture of cutting (up to 15m deep) and embankment (5m high), before passing under Nottingham East Midlands Airport in tunnel and emerging onto embankment up to 14m high for a short distance near Lockington and the M1. This route section would cross the Melbourne Parklands NCA and East Midlands landscape character type 9b Wooded Village Farmlands, highlighted as being relatively	Again, this area has rolling hills and valleys, with well-maintained hedged fields and traditional farms and villages linked by winding country lanes. Away from the airport and major roads, it has a quiet, unspoilt character, with Conservation Areas at Diseworth and Lockington villages. Diverging across open countryside, away from the existing transport corridor, the route would bring some disruption to existing landscape patterns where it is above ground in the south and is likely to have a minor or **moderate** impact on character. There would be a direct impact on one	Passing through two relatively inaccessible areas of countryside, and partly in tunnel, this sub-section should have limited visual impact in most areas. The exceptions would be on the western edge of Diseworth, where passing motorists might have some views of the alignment close to the tunnel portal; and south of Lockington Hall, where there would be views from the minor road south of the hall but not from the hall itself or the Conservation Area, which are set behind woodland. These impacts are not considered significant.

Route Description/ Landscape Context/ Impact Overall	Landscape/ Townscape Impacts	Visual Impacts
unspoilt with a strong sense of landscape history.	woodland near Langley Priory over a distance of around 100m. Near Lockington the route's emergence onto embankment across open farmland would also affect landscape character to some degree.	
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Lockington to Long Eaton From the M1 to Long Eaton the majority of the route would be on viaduct over a distance of around 5km. Initially crossing the M1 and the floodplain of the River Soar, the viaduct would run parallel to and 200-300m north-west of the A453 around 13-16m above existing ground levels. It would then swing north, passing in front (west) of Ratcliffe on Soar power station and over an existing railway. North of the power station it would run in cut and cover tunnel through a wooded bluff above the Trent Valley, crossing the river, the Trent and Mersey Canal and two existing railway lines, again on viaduct, 15-20m high. Entering Long Eaton it would occupy the existing low level rail corridor. Here the route would pass through the Trent Valley Washlands NCA and East Midlands landscape character type 3a Floodplain Valleys.	This landscape comprises wide, flat floodplains with medium to large, regular fields in mixed farming use. River channels, often along managed courses, are bordered by riparian trees but otherwise there is limited woodland cover except on the steep riverside bluffs and on former gravel extraction sites. The power station, electricity transmission lines, existing railway lines and areas of open water are strong influences locally. Crossing the floodplain of the River Soar the elevated railway would be an intrusive new landscape element, parallel to but separate from the existing (mainly embanked) A road, with a direct impact on one woodland over around 100m. Given the existing landscape context, dominated by Ratcliffe on Soar power station, the impact is considered **moderate**. Meeting the Trent valley, it would have a direct impact for around 400m on recent plantings and the prominent wooded riverside bluffs at Thrumpton, crossing the western edge of the Conservation Area. Here it would add a further high level structure to the valley landscape and would affect the distinctive southern valley skyline. The impact on the character of the valley would be **major** in this area. North of the Trent valley there would be a further direct impact on around 100m of woodland. Passing through Long Eaton at grade along the line of the existing railway there would be some effect on townscape character (Conservation Area), but this is expected to be relatively minor and localised.	The first part of route would affect views north from the A453 as well as recreational users of the Ratcliffe Cut and the River Soar where there are historic canal structures, public footpaths and two marinas within 300m of the route. These impacts are considered **moderate**, as the immediate visual context includes East Midlands Parkway Station and the power station. There would be limited impacts on the nearby villages of Kegworth and Ratcliffe on Soar, as these lie south of the A453. At the crossing of the River Trent, the visual impact on recreational users of the Trent and Mersey Canal and the Trent Valley Way east of Trentlock would be **moderate or major**. Similarly, from part of the northern edge of Thrumpton Conservation Area (grounds of Thrumpton Hall, open to the public by arrangement) there is potential for significant visual impact. However from the popular recreational honeypot of Trentlock itself the impact would be less pronounced (**moderate**) as the HS2 viaduct would be seen in the context of the existing (lower) rail viaduct and the power station beyond. Visual impacts at Long Eaton are expected to be minor as the route would follow the existing low level rail corridor.
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Route Description/ Landscape Context/ Impact Overall	Landscape/ Townscape Impacts	Visual Impacts
East Midlands Hub Station HSL27		
The East Midlands Hub Station would be situated north of Long Eaton near the Nottingham suburb of Toton, within an extensive area of railway sidings, Toton Yard, on the eastern edge of the Erewash valley. There would be some greenfield land take for the new station access, which would be from the north, off the A52. The access road would descend gently towards the valley bottom in the area due west of Toton. The forecourt, underlain by two levels of car parking, would separate the station building from nearby suburban housing to the east. The roof of the station building would be around 18m above existing ground levels in the south reducing to 9m above existing ground levels in the north where the building would be set partly into the hillside. North of the station the route would continue at grade along an existing railway line as far as Sandiacre, where it would rise to cross the river, railway and Erewash Canal on a viaduct around 800m long and up to 14m high, running onto 16m high embankment at its northern end. The station site would lie within the Trent Valley Washlands NCA and East Midlands landscape character type 3a Floodplain Valleys.	The station site lies mainly within an extensive area of railway sidings and scrub woodland regeneration, in the bottom of a wide and relatively well-treed valley floodplain. The floodplain is fringed on its western edge by the River Erewash, the Erewash Canal and the built up area of Long Eaton. Just to the north-east of the station site is open farmland and sewage treatment works; and to the south-east housing at Toton. Further north, between Sandiacre and Stanton Gate, the landscape retains an attractive traditional washlands character, with open flood meadows, riparian woodland and a historic canal bridge, overlooked from Sandiacre Cloud Side (Conservation Area). In the vicinity of the station, impacts on landscape and townscape character should be slight, given that existing railway land is the context for the development, with very limited greenfield land take. There may be some direct impact on the existing scrub woodland however. To the north, the proposed viaduct and embankment near Sandiacre would intrude significantly on the characteristically flat floodplain landscape, giving rise to **major** impacts on landscape character in this specific area.	The station building would cause some localised **moderate** visual impact on nearby residents at Toton. The closest dwellings are around 100m away with some existing intervening tree cover. There might also be occasional, glimpsed views of the station from parts of the attractive and historic Erewash Canal (west of the yard) and from residential areas of Long Eaton (on rising ground to the west), but any wider visual impact should be limited due to the valley bottom location and existing strong tree cover. Near Sandiacre the visual impacts locally would be **major**, as the viaduct would obstruct scenic views east to the historic canal bridge and valley bottom woodland, affecting recreational users of the canal, footpaths and minor roads in this area, as well as some residential views from the village, around 400m away.
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Trowell to Killamarsh HSL13		
Trowell to Strelley At Stanton Gate the route would again pass onto viaduct over the Erewash floodplain, river and canal (two viaducts, totalling around 1100m long and up to 19m high), to parallel the eastern edge of the elevated M1 and then cross the existing railway and Nottingham Canal. It would continue northwards broadly at grade close to the eastern edge of the motorway, then diverge from the motorway and enter deep cutting and cut and cover tunnel (770m long) beneath the	This area comprises undulating low hills and ridges with small to medium-sized hedged fields, mixed farming and winding lanes. Towards the north of the sub-section the ground rises at Catstone Hill and Strelley, where the village and attractive, rolling unregistered parkland around the hall form a Conservation Area. In the southern part of the route, embankments close to the Nottingham Canal east of Trowell would have a localised minor landscape character impact, but otherwise the	A small number of residents of Stanton Gate would have close range views of the HS2 viaduct, around 150m away. Residents on the northern edge of Stapleford would also be affected by very close range views of HS2 embankment or viaduct. Properties here are, however, already directly adjacent to the embanked M1. The impacts in both areas are expected to be **moderate**. To the north much of the route would run across empty countryside next to the motorway, with little visual

Route Description/ Landscape Context/ Impact Overall	Landscape/ Townscape Impacts	Visual Impacts
area just west of the village of Strelley. Here the route would be within the Nottinghamshire, Derbyshire and Yorkshire NCA and East Midlands landscape character type 9a Settled Coalfield Farmlands.	landscape should be little affected due to its close alignment with the elevated M1. Further north, the route would pass west of Catstone Hill, avoiding the need for major earthworks here, and run into cut and cover tunnel just west of Strelley church and hall, with a direct impact on three clumps or belts of parkland trees over a total distance of around 100m, including trees that form part of the immediate setting of the hall (listed Grade II) and likely permanent loss of mature trees. Careful routing and the proposed use of cut and cover tunnel are expected to limit the residual landscape impacts to minor or **moderate**.	impact. In the Strelley area, many public views of the route would be contained by trees, but public footpaths, including a short section of the Monks Way long distance path, would have views of the tunnel portal, a **moderate** impact at worst.
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Strelley to Huthwaite North of Strelley the route would run close to grade along the eastern edge of the M1 to near Hucknall. North-west of Hucknall it would enter two sections of cutting (up to 23m deep) then pass onto 23m high embankment near Annesley Hall. Continuing north to Huthwaite, further sections of deep cutting (frequently through spoil heaps) and high embankment would follow. There would be a number of short viaducts and one long and very high viaduct (450m long and 34m high) over the River Erewash east of the M1 at Pinxton. This sub-section of the route would fall within the Southern Magnesian Limestone NCA and East Midlands landscape character type 6d Limestone Farmlands.	Here the route passes through urban fringe landscapes between Nottingham and Sutton in Ashfield that are heavily fragmented by development but retain some notable areas of intact farmland and woodland. Landscape character impacts would often be modest due to close association with the motorway. However the deep cutting and high embanked sections around Annesley would affect landscape character locally. The viaduct over the River Erewash would form a significant new feature but would not be unduly prominent in the wider landscape which is visually quite enclosed. Just south of Huthwaite, the route would diverge from the motorway and cut through what appears to be unregistered parkland landscape around Brookhill Hall, which would be directly impacted. In these areas **moderate** landscape character impacts are expected. In addition, there would be significant fragmentation and loss of woodland, especially in the area south of Annesley Hall. In total, twelve areas of woodland would be directly impacted over a distance of around 2.4km. Some of this woodland is ancient in origin but the majority appears to be conifer plantation. Woodland loss would give rise to further	Much of this part of the alignment is not publicly accessible or widely visible as there are relatively few roads or paths. There would be localised, mainly minor, visual impacts on a small number of residents on the western outskirts of Hucknall, where the route would run on low embankment 200m away, and on public footpaths close to the route. Elsewhere significant impacts on visual receptors are not expected.

Route Description/ Landscape Context/ Impact Overall	Landscape/ Townscape Impacts	Visual Impacts
	moderate landscape impact.	
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Huthwaite to Staveley North of Huthwaite the alignment would rejoin the M1, running along its eastern edge to north of Tibshelf using a mixture of cutting and embankment. It would then pass beneath the motorway and follow its western edge past Hardwick Hall, almost entirely in cutting. Near Sutton Scarsdale the route would re-cross the M1 on viaduct 12m high, then run mainly on embankment (up to 14m high) past Bolsover and cross back over the M1 at Staveley on around 800m of viaduct up to 18m high. Here the route would return to the Nottinghamshire, Derbyshire and Yorkshire Coalfield NCA and East Midlands landscape character type 9a Settled Coalfield Farmlands. In parts – for example near Hardwick and Bolsover – it would lie very close to the Southern Magnesian Limestone NCA and East Midlands landscape character type 6d Limestone Farmlands, which occupy higher ground just to the east.	The landscape here continues to show significant variation in terms of both topography and land use. South of Hardwick Hall and north of Bolsover industrial and mining influences are evident. Elsewhere the mainly farmed landscape is relatively intact and unspoilt although influenced by proximity to the motorway. Further north, the route would affect the sensitive landscape around Hardwick Hall (National Trust and English Heritage properties and listed structures, Registered Park and Garden Grade I), mitigated by the fact that the route would be in cutting outside the park boundary, immediately west of the M1. Nonetheless, impacts are appraised as **moderate**, reflecting the sensitivity of the landscape in the Hardwick area. There would be a further **moderate** impact on the setting of Stainsby (Conservation Area), as Mill Lane would move around 150m closer to the village due to HS2. Landscape character would also be affected to some degree in the area west of Bolsover, where the route would diverge from the motorway by around 500m, fragmenting the large scale, mainly arable farmland here. South of Staveley the viaduct crossing of the M1 should have limited impact given the existing landscape context, which includes extensive mineral working and several existing railways. This sub-section would have a direct impact on around 1.5km of existing woodland, most of this being young planting associated with the M1 corridor.	In the southern part of the route, including Hardwick Hall, visual impacts are expected to be very limited as most of the route would be in cutting and enclosed by landform and/or existing woodland. Near Stainsby there would be some localised visual impact on residents from HS2 bridge crossings of the River Doe Lea. At Sutton Scarsdale (Conservation Area) the viaduct over the motorway should have little impact on views from the village due to screening by landform. Further north, there would be a **moderate** impact on Bolsover Castle and its Conservation Area, which would have views of the route on embankment 900m to the west – although these should be attenuated by distance and screened by landform and tree cover in parts. The route would be seen together with the existing M1 corridor.
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Staveley to Killamarsh North of the M1 crossing near Staveley, the route would run	In this area south of Sheffield, the route initially would closely parallel the Doe Lea and Rother rivers as well as an electricity transmission line and various existing and	Much of this route section would have little visual impact, the route often being well-contained by trees.

Route Description/ Landscape Context/ Impact Overall	Landscape/ Townscape Impacts	Visual Impacts
in 12m deep cutting and then on two long low viaducts totalling 1650m long and around 7m high over the floodplain of the River Doe Lea. Passing Renishaw, it would again rise onto viaduct over the River Rother (around 500m long and 14m high) before passing into cutting. The route would continue to run through the Nottinghamshire, Derbyshire and Yorkshire Coalfield NCA and East Midlands landscape character type 9a Settled Coalfield Farmlands.	disused railways through a landscape that comprises a mixture of reclaimed mineral workings and farmland. The long low viaduct at of Staveley would have some impact on landscape character but the effect is not expected to be significant as there is considerable existing woodland in this area that would reduce the prominence of the viaduct structure. However, when taken together with the proposed elevated spur connections to the Staveley Depot (see separate appraisal below), there would be a **moderate cumulative** impact. Further north, the route would pass through Eckington and Renishaw Park Conservation Area. Renishaw Hall (Registered Park and Garden Grade II*) lies on rising ground to the west, although separated from the route by woodland and existing railway embankment. The impact on the setting of the park and garden would be negligible, but impacts on the landscape of the eastern edge of the Conservation Area would be **major**, as the viaduct would cut across a very attractive area of flood meadows, cross the treed river corridors and cut through the valley-side bluffs in a number of places. In addition, there would be a direct impact on six woodlands (including woodlands along disused railways) over a total distance of around 1.3km, with at least a **moderate** effect on character.	Nonetheless there might be close range glimpsed views from some dwellings in the area east of Staveley, where there would also be **cumulative** impacts with elevated spur connections to the Staveley Depot (see separate appraisal below), increasing the impacts in this area to **moderate**. Similarly close range glimpsed views are possible from some dwellings at Renishaw, and from the club house at Renishaw Park Golf Club. In addition, the route parallels both the Cuckoo Way (150m to the east of the route north of Mastin Moor) and the Trans Pennine Trail (on disused railway line just to the east in the Renishaw area). The Trans Pennine Trail would be affected intermittently over a distance of several kilometres (and again further north) so this impact is considered **moderate**.
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Killamarsh to Tinsley HSL14		
This route section would run from south of Killamarsh to near Meadowhall. At its southern end the route would be in cutting along the line of a disused railway. Approaching Rother Valley Country Park, it would pass onto an 850m long, 8m high viaduct over the Rother floodplain, then run north broadly at grade along the line of an existing railway which would be realigned westwards. North again it would cross the Rother twice more on bridge or short viaduct, running in cutting past Swallownest. At Treeton the route would diverge from the existing rail corridor on viaduct and	This area is part of a narrow corridor of open space along the Rother valley between Sheffield and Rotherham. Although the landscape has been heavily influenced in the past by opencast coal mining, much land has now been restored, especially at Rother Valley Country Park (man-made lake and associated parkland). The landscape is characterised by flat valley floor, with meandering river, wetlands and lakes and also includes Treeton Dyke and Catcliffe Flash lake. The landscape character impact of the route would be	This section of the route is expected to cause only localised visual impacts on residential receptors. **Moderate** impacts on small numbers of residential receptors would occur where the route is above ground within 100-200m of dwellings, as on the western edges of Killamarsh and Swallownest and the southern edge of Catcliffe. There would be minor or occasionally **moderate** visual impacts on users of parts of Rother Valley Country Park who would have glimpsed views of the route running

Route Description/ Landscape Context/ Impact Overall	Landscape/ Townscape Impacts	Visual Impacts
embankment up to 7m high, parallel with the river east of the large reclamation area at Orgreave. Finally the route would run in deep cutting or embankment through an industrial area (with demolitions) broadly parallel to the M1 between Catcliffe and Tinsley. This route section would continue to run through the Nottinghamshire, Derbyshire and Yorkshire Coalfield NCA. Close to the boundary between the Sheffield and Rotherham council areas, it would lie in Sheffield landscape character type LO3 Lowland Broad River Valley and the Rotherham landscape character type 6 Rother Valley Floor.	minor or locally **moderate**. As much of the route would follow an existing rail corridor the main issues would relate to the wholly new sections of alignment in the Treeton and Catcliffe areas where the new viaduct and embankment would have an influence on the character of the river corridor and separate the land at Orgreave (potential new community) from the river. This route section would also have a direct impact on significant lengths of riparian and lineside tree cover. This would potentially affect the western edge of Rother Valley Country Park and the river corridor south of Treeton where there appears to be a direct impact on adjacent woodlands over a distance of around 800m.	along the park's western edge. Further north, near Treeton Dyke and Catcliffe Flash, some visual impacts on recreational receptors are also expected as the route would pass close by. Throughout this route section there would also be impacts on users of the Trans Pennine Way and Sheffield Country Walk. The Trail lies directly adjacent to the proposed alignment west of Rother Valley Country Park, and often within 500m of other parts of the route. However as it already runs next to existing railway lines, the impact is appraised as **moderate**, not major.
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Sheffield Meadowhall Station HSL15 and HSL28		
The route would approach Sheffield Meadowhall Station from the south on viaduct. The viaduct, around 4km long, would be 8-22m above existing ground levels and 100-300m west of the M1. Meadowhall station would lie 300m west of the elevated motorway, just north of the Meadowhall shopping centre, and east of the existing Meadowhall Interchange Station. The station and platform canopy roof line, around 400m long, would be around 30m above existing ground level and 10-15m above motorway level, to permit HS2 to run above the existing Sheffield to Doncaster railway line. A multi-storey car park would adjoin the station to the north, beneath and to the west of the platforms. A second multi-storey car park would be sited east of the station, parallel to and south of the existing railway line. North of the station, the HS2 route would continue on viaduct northwards past Wincobank and Blackburn, with some industrial demolitions. The station would lie within the Nottinghamshire, Derbyshire and Yorkshire Coalfield NCA and the Sheffield urban area. There is no local authority landscape or townscape character assessment coverage. The proposed station site	The southern part of the site is land that has been cleared for redevelopment; the northern part comprises a belt of woodland along the existing railway and a variety of industrial uses. To the south are the River Don (with the Trans Pennine Trail), the Meadowhall shopping centre and the Sheffield and Tinsley Canal. A number of buildings in these areas would be demolished but none appears to be of any special merit. Demolitions would have a limited impact on townscape character except at Tinsley, where there would be a minor direct impact on townscape character due to demolition of Victorian terrace housing in Greasbro Road. The main townscape impacts would be the introduction of major new buildings and structures. The station itself, although higher than the existing elevated M1, would be well-separated from it and would generally be seen in close association with the existing interchange station and industrial area. Hence, despite its considerable scale it is unlikely to be unduly prominent. The viaduct approach from the south, however, would be more prominent, affecting the setting of the Meadowhall shopping centre	The viaduct and new station structures are likely to give rise to some visual intrusion, principally affecting users of the Meadowhall shopping centre area and motorists on the M1. At the shopping centre, close range views of the elevated alignment would affect both shoppers and recreational users of the Don riverside – although the impacts would be moderated by the existing visual influence of the elevated M1 nearby. From the M1, the station building would have limited visual impact, as it would be seen together with other large scale structures and partly backclothed against Wincobank Hill. However the southern approach viaduct would be more intrusive, partially obstructing views to the Meadowhall Centre. These impacts are classed as **moderate** adverse. Further north, at Wincobank, there would be some close range views of the route on viaduct (14-18m high) from nearby residential areas. Impacts would be tempered by the fact that few properties face the route, which would be seen in the context of existing industry and transport infrastructure and potentially partly screened by existing tree cover. Impacts are expected to be **moderate**

Route Description/ Landscape Context/ Impact Overall	Landscape/ Townscape Impacts	Visual Impacts
is not within, or adjacent to, a Conservation Area.	where it would pass over car parking areas and adjacent to the centre building. There is expected to be a **moderate** adverse impact on townscape character as a result of these changes. Impacts may be capable of some mitigation, given careful attention to design issues. There would be some direct impacts on woodland at the station site as well as river- and canal-side tree cover and informal open space where the approach viaducts cross over these features. The open space along the River Don would become enclosed by elevated transport infrastructure. In addition, there is potential for loss of or damage to two areas of woodland adjoining the line of route to the south, at Old Tinsley Wood, and to the north, at Woolley Wood, over a total distance of around 900m. A **moderate** adverse impact on landscape character is expected.	adverse. There would also be **moderate** adverse visual impacts on users of the Trans Pennine Trail, which lies within100-200m of the HS2 route for much of this section. The experience of walkers on the Trail is already influenced by proximity to the M1 and the industrial context, but nonetheless, would be affected by additional visual intrusion.
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Blackburn to Cold Hiendley HSL16		
Blackburn to Hoyland This route section would start near Blackburn, north-east of Sheffield. At its southern end it would closely parallel the elevated M1 on viaduct or embankment up to 13m high. In the Chapeltown area it would diverge westwards away from the motorway close to grade and then in cutting up to 16m deep, before returning eastwards beneath the motorway and entering tunnel beneath Hoyland. The route would run through the Nottinghamshire, Derbyshire and Yorkshire Coalfield NCA. Its southern part falls within Sheffield landscape character type UP5 Upland Wooded Ridges and Slopes, which is identified as having an upland, natural character, with limited views in or out. Its northern part falls within Barnsley landscape character type E4 Hoyland Settled Wooded Farmland, noted as being sensitive to further built development.	This landscape comprises steeply rising ground north-east of Sheffield. A considerable proportion of the area is semi-natural woodland of ancient origin but there are also extensive areas of former mineral workings east of Chapeltown, and a mixture of permanent pasture and arable farmland. The main potential impact on landscape character would be from the deep cutting, which would dissect several large blocks of woodland and open farmland. Where the cutting is in woodland its influence on the wider landscape is likely to be contained. Nonetheless the direct impact on this important landscape resource (five woodlands affected over around 2.4km) means that the landscape character impact would be **moderate**.	Locally there would also be some minor visual impacts, notably on users of the Trans Pennine Trail, which the route would cross three times. Any other visual impacts would be very limited as the area is quite sparsely settled.

Route Description/ Landscape Context/ Impact Overall	Landscape/ Townscape Impacts	Visual Impacts
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Hoyland to Royston This complex route section would skirt the eastern outskirts of Barnsley. At Hoyland the route would tunnel beneath the town, emerging to run in cutting through woodland , then on embankment and viaduct up to 20m high over the River Dove east of Worsbrough. From here it would continue in 20m deep cutting, then tunnel, before emerging again to cross the River Dearne on a short 16m high viaduct. North of this point the route would run in cutting and on embankment (including embankment up to 17m high near Cudworth and cutting 20m deep at Rabbit Ings Country Park) before finally reaching Royston. The route would fall within the Nottinghamshire, Derbyshire and Yorkshire Coalfield NCA, passing through Barnsley landscape character types E4 Hoyland Settled Wooded Farmland, C4 Dove Lowland Valley Floor, E2 Barnsley Settled Wooded Farmland, C3 Upper Dearne Lowland Valley Floor, and D1 North-East Barnsley. Most of these landscape character types are identified as being in poor or moderate condition. The exception is the Dove valley, which is noted as an area that merits conservation and is highly sensitive to further built development.	This is a varied landscape with steeply undulating landform. It includes dense coalfield settlement, past and present industrial activity, disused quarries, tips and spoil heaps, and existing and disused railway lines. However there are also pockets of undeveloped landscape in good condition, particularly in the Dove valley, which includes part of the Trans Pennine Trail . This route section would cut through and disrupt the steeply undulating landform. South-east of Worsbrough it would run cut across a north-facing wooded slope (largely avoiding ancient woodland to the south) and over the Dove valley on high structure, existing roads also being relocated. Given the sensitivity of the Dove valley, and the extensive woodland loss that would occur (direct impact over around 1km) the impacts here would be **major**. The deep sections of cut north and south of the Dearne valley would also be discordant and would directly impact two small areas of ancient valley-side woodland over a distance of around 100m. From Cudworth northwards the route would follow a minor valley (Cudworth Dike) and cross reclaimed land (now Rabbit Ings Country Park) bringing fragmentation and minor or **moderate** landscape character impact, as well as direct impact on recent woodland plantings.	There would be **moderate** visual impacts on recreational receptors in the Dove valley, including users of the Trans Pennine Trail, and on the fine existing views south from the villages of Worsbrough Dale and Lower Lewden, within 500m, where the woodland loss and new structures would be evident. Recreational receptors would again be affected in the Dearne valley, which includes the Dearne Way walking route. In the area between Lundwood and Cudworth, small areas of housing lie within around 100m of the embanked route, but impacts are expected to be modest as there is an existing railway embankment associated with a dismantled railway in the same location. Towards the northern end of the sub-section there would be a further **moderate** impact on open countryside views south-west from Shafton Two Gates (300m) into the Cudworth Dike valley, with embankments at least partly obstructing current views. Finally the deep, unnatural cutting through the reclaimed land at Rabbit Ings Country Park may be unsightly.
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Royston to Cold Hiendley Between Royston and Ryhill the route would cut through a further ridge of land (probably a reclaimed spoil heap) in 26m deep cutting. At its northern end it would cross the eastern tip of Cold Hiendley Reservoir on a short (140m long) 12m high viaduct, also passing very close to Wintersett Reservoir, less than 100m to the east. This part of the route would remain in the Nottinghamshire,	This relatively open, rolling coalfield landscape includes several former mining railway lines and large areas of open water, often enclosed by trees. Intensive arable farming dominates, with some surviving older hedgerows and trees. Reclaimed spoil heaps and opencast workings are often important areas for recreation. There are a number of large coalfield villages. **Moderate** impacts on landscape character would be associated with the deep, unnatural cutting near Ryhill; and	At Cold Hiendley Reservoir (which is used for recreation in association with Wintersett Reservoir and Anglers Country Park to the north-east) there would be **moderate** visual impacts on recreational users, including potentially the visitor centre around 400m to the east. There would also be views of the railway on low embankment from distances of 100-200m near the hamlet of Cold Hiendley, affecting a small number of

Route Description/ Landscape Context/ Impact Overall	Landscape/ Townscape Impacts	Visual Impacts
Derbyshire and Yorkshire Coalfield NCA. It would cross Wakefield landscape character type South West Coalfield – Crofton, Walton and Wintersett.	the viaduct and embankments at Cold Hiendley and Wintersett reservoirs. Some small areas of woodland would be lost, mainly recent reclamation plantings.	residents.
-	-	-
Cold Hiendley to Church Fenton HSL17		
Cold Hiendley to Methley Lanes North of Wintersett Reservoir the route would initially be mostly on embankment, up to 22m high, with short viaducts to cross existing roads and railways through an area of former mineral working. West of Normanton there would be a long, deep (16m) cutting and then two viaducts up to 19m high, together around 1200m long, over the River Calder and the Aire and Calder Navigation. The route would run onto 16m high embankment just south of the M62 at Methley Lanes. The route would fall within the Nottinghamshire, Derbyshire and Yorkshire Coalfield NCA. It would cross Wakefield landscape character types Northern Coalfield – Normanton, Featherstone, Heath and Sharlston, and Calder Valley. The undulating land east of the River Calder near Normanton is identified in the landscape character assessment as having remnant historic landscape features that are sensitive to change.	This is an undulating landscape, significant parts of which have been opencast and developed for housing and industry. The areas around Heath, Kirkthorpe and Warmfield have remnant historic landscape features including ridge and furrow and older hedgerows. The flat floodplain of the Calder includes flashes, oxbows and wetlands and is of notable recreation value, although locally influenced by railways and motorways. In the former coalfield areas to the south, the high embankments would have minor or **moderate** impacts on the settings of Waterton Park Golf Club and Walton Country Park. Near Crofton there would be a **cumulative** impact with the spur connection to the New Crofton Depot (see separate appraisal below), but as the existing landscape is already influenced by a number of railways, the combined effect would remain **moderate**. At Kirkthorpe there would be a minor direct impact on the landscape just east of the village (Conservation Area) where the route would pass in cutting. West of Normanton, the deep cutting would affect the hillsides above the river and isolate the settlement from historic riverside landscape features near Newland Hall. The high level crossing of the Calder would bisect a relatively undeveloped section of the valley; and part of the village of Methley Lanes, north of the river, would be directly impacted. All these are **moderate** impacts. There would be a direct impact on eight small woodlands over a total distance of around 800m, including lineside scrub and riparian vegetation in some areas.	There would be some visual intrusion from the embanked route on the western edge of Crofton (within around 100m), affecting a small part of the residential area. This area is already affected by several railway embankments, but as these are generally lower, the impacts are appraised as **moderate**. There would also be a **cumulative** impact with the spur connection to the New Crofton Depot (see separate appraisal below) but the combined impact would remain **moderate**. Views from the many public footpaths in the Newland Hall area would be adversely affected. Further north, river and canalside recreational areas around Bottom Boat and Lower Altofts would have views of the new viaduct together with the M62, but the effects would be **moderate** at most, as the viaduct would be 500-1000m away and would not dominate the valley, which is very broad at this point. Locally at Methley Lanes there would be demolitions and a **major** visual impact on remaining residents from the adjoining high embankment.
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Route Description/ Landscape Context/ Impact Overall	Landscape/ Townscape Impacts	Visual Impacts
Methley Lanes to Garforth At Methley Lanes the route would cross the M62 on 13m high viaduct then run into 11m deep cutting through land between the confluence of the Rivers Calder and Aire. Emerging again onto embankment and a series of viaducts totalling around 1300m in length and up to 26m high, it would cross an existing railway, the HS2 Leeds approach and the River Aire near Swillington then run in deep cutting (14m) with a high embankment (17m) over the A63 just south of the M1 at Garforth. This part of the route would lie within the Nottinghamshire, Derbyshire and Yorkshire Coalfield NCA, and the Leeds landscape character types Wooded Farmland, Degraded River Valley, and Arable Fringe Farmland. In the Wooded Farmland type (in the south) the landscape strategy is to conserve woodland and parkland. Other types have strategies of restoration and enhancement.	North of Methley Lanes is a rolling, large scale, wooded farmland landscape. The wooded corridor of the Aire valley includes both extensive areas of restored mineral workings and remnant parkland. North of the Aire is a landscape mainly of small arable fields and pastures, with urban fringe pressures in evidence. In the area just north of the M62 there would be a direct impact on three woodlands over a total distance of around 900m. Although this would have a **moderate** impact on the landscape resource, siting within woodland would also help contain the wider landscape character impacts of the route, which would be relatively minor in this area. Crossing the River Aire and the Aire and Calder Navigation, there would be **moderate** landscape impacts due to the scale of the structures involved and the fact that the river corridor here is attractive and relatively unspoilt , with diverse features including oxbow lakes and riparian woodland. Seven woodlands would be directly impacted over a total distance of around 700m. There would be **cumulative** impacts in this area, where the Leeds approach would diverge from the mainline (see Methley Lanes to Woodlesford HSL21 below) but the combined impact would remain **moderate**. At Swillington, the embanked route would not be widely visible but would affect the character of the small river valley to the west of the village before entering cutting. The embanked section near Garforth, around Barrowby Hall, would fragment an area of attractive farmland and woodland (direct impact over around 200m). These impacts would again be **moderate**.	The viaduct crossing of the River Aire would have localised **moderate** visual impacts on users of the Trans Pennine Trail, the Leeds Country Way and the Aire and Calder Navigation. One of the most sensitive locations on the Navigation, Lemonroyd Marina, would be bypassed, and visibility would often be contained by trees. However, there would be **cumulative** visual impacts with the additional viaducts required in this area for the Leeds approach (see Methley Lanes to Woodlesford HSL21 below). These pass close by, locally raising the combined visual impact level to **major**. Further north residents on the western edge of Swillington would have some views of the route in the valley below. A small number of residents at Swillington Common on the A63 would experience **moderate** visual intrusion from the embanked route, close by.
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Garforth to Barkston Ash Running east from near Garforth, the route section would mainly be in shallow (less than 10m deep) cutting or close to grade, closely paralleling the south side of the M1, then	This relatively flat landscape is characterised by medium to large regular fields of arable farmland, with few hedgerow trees or woodland, long uninterrupted views, and sparse settlement. Just east of the A1(M) the limestone	This route sub-section is expected to have very minor visual impacts as it is mainly in cutting. Any short embanked sections are generally in isolated areas and/or enclosed by woodland. This includes the visually

Route Description/ Landscape Context/ Impact Overall	Landscape/ Townscape Impacts	Visual Impacts
passing under the A1(M) and across open countryside to join an existing railway near Barkston Ash. There would be one short viaduct, 17m high, over Stream Dike near Barkston Ash. The route would fall within the Southern Magnesian Limestone NCA, passing in turn through the Leeds Open Arable Farmland landscape character type, and North Yorkshire landscape character type 6 Magnesian Limestone Ridge. The latter landscape character type is identified as being visually sensitive to large scale development.	escarpment provides more varied landform and a more wooded character associated with country estates. Most of the route would have very limited impact on the landscape character of this area. The principal effects would be some minor woodland loss, affecting two woodlands over a total distance of 500m, and the introduction of embankment to the landscape near Barkston Ash. The latter change would not be significant, as the new embankment would be very close to a former landfill and the existing mainline railway, already embanked.	sensitive Magnesian Limestone Ridge. There would be a minor visual impact, affecting southbound motorists only, from the embankment over Stream Dike.
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Barkston Ash to Church Fenton From Barkston Ash to Church Fenton the route would initially be on embankment up to 9m high parallel to an existing embanked railway. It would then diverge westwards from the existing railway to bypass the village of Church Fenton on a series of viaducts totalling around 1.8km in length and 7-12m high, crossing over the existing mainline railway at the northern end of the alignment. This final sub-section would fall within the Vale of York NCA and North Yorkshire landscape character type 23 Levels Farmland. This is identified as being of high visual sensitivity due to its open character and flat landform, which facilitate long views.	This mainly flat, low-lying landscape has a patchwork of arable fields. It is large scale and open, with rectilinear fields often enclosed by dykes or ditches and a general absence of hedgerows. Transport infrastructure, including both railways and a military airfield, are existing influences. The main landscape change that would occur is the introduction of the lengthy new viaducts. Inevitably these would alter the character of the landscape west and north of Church Fenton. The setting of the village is already affected by several railway lines but none is on viaduct. In this large scale landscape the effect on character is considered **moderate**.	Any visual impacts residents at Barkston Ash should be minor as the village lies around 300m from the route, which would be seen against the backdrop of an existing railway. At Church Fenton, the route would be well away from the village centre, which would be little affected. However there would be visual impacts on residents of some properties on the north-western outskirts of the village, a small number of which would be within 100-200m of the route, seen on viaduct or embankment around 7-10m high with some intervening tree cover. Visual impact overall is assessed as **moderate**.
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Methley Lanes to Woodlesford HSL21		
At Methley Lanes the route would cross the M62 on 13m high viaduct then run into 11m deep cutting through land between the confluence of the Rivers Calder and Aire. Emerging again onto embankment and a series of viaducts, the route would swing westwards to begin the Leeds approach, crossing an existing railway line and running along the southern edge of the River Aire corridor. The up	The river corridor of the Aire includes both extensive areas of restored mineral workings and remnant parkland. Considerable restoration and enhancement has taken place in recent years, and the area is now an important recreational resource. Key features include Lemonroyd Marina, Woodlesford Lock on the Aire and Calder Navigation, and Rothwell Country Park. At Woodlesford	This section of the route would also bring moderate or major visual impacts. In the east visibility would often be contained by trees but nonetheless there would be **major** visual impacts (including **cumulative** impacts with the HS2 mainline, see Methley Lanes to Garforth HSL21 above) on users of the Aire and Calder Navigation, with multiple viaducts crossing diagonally above. Residents

Route Description/ Landscape Context/ Impact Overall	Landscape/ Townscape Impacts	Visual Impacts
and down spurs would be physically separated by around 100m, on parallel viaducts, the up spur passing under the HS2 mainline which continues northwards. The main viaducts, past Woodlesford, would be 2.3km long, gradually descending from 14m in the east to 3m in the west. In the area north of Rothwell Country Park the route would run close to grade or on low viaduct, at this point joining the route of the Normanton to Leeds railway. **As the southern part of this route section coincides with Methley Lanes to Garforth HSL17, only the additional impacts arising are described here.** This part of the route would be in the Nottinghamshire, Derbyshire and Yorkshire Coalfield NCA and the Leeds Degraded River Valley landscape character type.	there are fine views across the attractive floodplain landscape from several residential areas. East of Woodlesford, the approach viaducts would have a **moderate** landscape impact, passing through an area that is relatively well screened by woodland and affected by industrial uses including an oil storage depot. There would be a direct impact on woodland over around 700m. There would be **cumulative** impacts in this area, with the HS2 mainline viaducts (see Methley Lanes to Garforth HSL21 above) but the combined impact would remain **moderate**. Further west, the introduction of extensive, large scale viaduct structures into the sensitive floodplain landscape on the northern edge of Woodlesford would have a **major** impact. The structures would physically separate residential areas from the river corridor and have a direct impact on the Navigation itself, running immediately next to or above it for at least 1km and over Woodlesford Lock, which is a recreational honeypot. West again, around Rothwell, the landscape impact would be less as the route would return to grade and rejoin the existing railway. Nonetheless there would be **moderate** impacts, especially where the route would pass between Rothwell Country Park and Fishpond Lock, affecting the character and setting of the lock and probably resulting in significant tree loss.	in the part of Woodlesford that lies east of the A642 would also experience **major** impacts with viaducts passing within 100-200m of properties. Further west the viaducts would lie less than 100m from the facades of properties on the northern edge of Woodlesford with further **major** impacts. They would probably obstruct most views over the river valley for a distance of at least 400m, affecting not only the housing closest to the river but also higher level housing above. Recreational users of the popular 2-3km long section of waterway between the M1 and A642, which includes the Navigation, the Trans Pennine Trail and Rothwell Country Park, would also experience **major**, widespread impacts affecting recreational enjoyment of the whole section of waterway.
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Woodlesford to Hunslet HSL22		
This route section through Hunslet south-east of Leeds would run initially at grade, then almost entirely in cutting and retained structure through industrial areas parallel to an existing railway. This part of the route would fall within the Nottinghamshire, Derbyshire and Yorkshire Coalfield NCA and the Leeds Degraded River Valley landscape character type or the Leeds urban area. There is no local authority landscape or	This sub-section passes almost entirely through built up areas for which there is no landscape character assessment. Landscape character impacts would generally be very limited apart from the immediate approach to the station, where the route would depart from the existing railway and rise onto embankment next to the M621, potentially causing a minor direct impact on an area of informal public	There would be very minor visual intrusion from the short embanked section of the station approach, affecting workers at the adjacent business park.

Route Description/ Landscape Context/ Impact Overall	Landscape/ Townscape Impacts	Visual Impacts
townscape character assessment coverage.	open space.	
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Hunslet to Neville Street and Leeds New Lane Station HSL31		
The proposed Leeds New Lane Station would involve an elevated approach to Leeds city centre from the south-east, terminating just west of the Asda building and south of the River Aire. The station building and concourse would abut Neville Street south of the river. The station and platform roof level would be 20m above existing ground levels – broadly in keeping with the taller existing buildings in this area. The tracks would be around 10m above street level. Car parking would be located both under the station viaduct to the south and south-west of the station where a four level multi-storey would be built, rising to around 15m above existing street level. There would be a high level passenger link northwards from the new station to the existing Leeds City Station. This would be 7-14m above ground level and 7m wide, and would be set at an angle to the existing Victoria Bridge. The route would fall within the Nottinghamshire, Derbyshire and Yorkshire Coalfield NCA. There is no local authority townscape character assessment.	The approach and platforms would pass to the west of the Crown Point Retail Park but would have a direct impact on a range of other mainly modern buildings, including a highways depot, gas works, offices and industrial works; there would also be some loss of informal open space just west of Kidacre Street (presently motorcycle training). North of the river there would also be demolitions (mainly of modern buildings including the Hilton Hotel) at east Granary Wharf. This option would have potentially **major** impacts on townscape character. The station building and especially the high level passenger link are likely to cause adverse impacts on the setting of the Central Area Canal Wharf Conservation Area (just to the west) and Victoria Bridge (Listed Structure Grade II). The diagonal routing of the link relative to the bridge would be visually discordant and would pass through the Conservation Area, within 50m of a historic canal warehouse and riverside locks (both listed Grade II*) potentially giving rise to significant impact on townscape character. Further south, the elevated platforms and tracks would bring **moderate** disruption to existing street patterns and movement, although there might also be some opportunities for townscape enhancement as part of future redevelopment in the longer term.	The new station building would not of itself give rise to significant visual intrusion, as its height and mass would be broadly in keeping with the larger existing buildings in the area. However the pedestrian link, which would cross the attractive open spaces at Granary Wharf, is likely to cause **major** visual intrusion on recreational users of this attractive waterside area, as it would run along the line of the river, directly above the water's edge. There would also be some visual intrusion at the southern end of the station site due to the elevated platform and tracks.
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Staveley Depot		
This infrastructure maintenance depot would be sited on former industrial land north of the River Rother north-west of Staveley. The depot would have spur connections to the	The depot site lies on the high, northern side of the river valley, set back by 300-400m from the riverside at Staveley, and is surrounded by other brownfield and	Visual impacts might affect parts of Barrow Hill (Conservation Area) around 300m to the north, but any impacts seem unlikely to be significant unless on-site

Route Description/ Landscape Context/ Impact Overall	Landscape/ Townscape Impacts	Visual Impacts
north-south HS2 route (around 1.5km east of the depot site). These would run across the River Rother on twin viaducts (around 10m high; one appears to replace an existing viaduct), then run into cutting, and finally split into northbound and southbound lines on viaduct (6-8m high) over a small stream. Staveley Depot would lie within the Nottinghamshire, Derbyshire and Yorkshire Coalfield NCA and East Midlands landscape character type 9a Settled Coalfield Farmlands.	industrial land. Given this landscape context, the impact on landscape character is expected to be limited. There might be a minor impact on character due to direct impacts on woodland plantings of recent origin on reclaimed land. The viaducts over the River Rother are likely to have a **moderate** impact on the character of the valley, potentially affecting the wider setting of Staveley Conservation Area (300m to the south) and the Canal Marina, currently under construction and almost directly adjacent to the route. The landscape is, however, already influenced by the existing rail viaduct and the Staveley bypass. The spur connections to the HS2 mainline east of Staveley would also have some landscape character impact, fragmenting greenfield land. The **cumulative** impact, taken together with the elevated mainline (see Staveley to Killamarsh HSL13 above), would be **moderate**.	structures are particularly tall or intrusive. There might also be some minor visual impacts on residential areas at Middlecroft (on the valley side around 800m to the south); and on recreational users of the Chesterfield Canal and the Trans Pennine Trail, 300-400m to the south. The viaducts over the Rother are likely to have a **moderate** visual impact on users of the Canal Marina. The new spur connection viaducts would also have at least some visual impacts on dwellings to the east of Staveley, particularly on the edge of Netherthorpe, within around 100m. Here the **cumulative** impact, taken together with the elevated mainline (see Staveley to Killamarsh HSL13 above), would be **moderate**.
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New Crofton Depot		
This rolling stock maintenance depot would be sited around 300m south of New Crofton and north of Anglers Country Park east of Wakefield. The depot would be connected to the mainline to the west by a spur running initially in shallow cutting or at grade, then veering northwards and rising onto embankment and bridge structures (over existing railways) up to 23m high within around 100m of the western end of Crofton. New Crofton Depot would lie within the Nottinghamshire, Derbyshire and Yorkshire Coalfield NCA and Wakefield landscape character type South West Coalfield – Crofton, Walton and Wintersett.	The landscape in this area is relatively open and exposed, but strongly influenced by former mining and mineral railways. The depot site would lie parallel with an existing railway line, on a gentle south-facing, farmed slope, at least partly on former industrial land. The depot itself should have minor or **moderate** impact on landscape character. It would not significantly affect the southern setting of Crofton, 300m away, nor the setting of Nostell Priory (Registered Park and Garden, Grade II*), 600m away with intervening woodland. However there would be some loss of, or damage to, a number of small woodlands, including recent plantings on reclaimed land. The high embankment of the spur connection to the west would have a minor or **moderate** impact on the setting of	The depot is likely to be visible in longer views from the south and west over a fairly wide area. However there would be few close range views by sensitive receptors. Views from New Crofton (200m to north) and Anglers Country Park (300m to south) would mainly be screened by landform and trees. There would be some visual intrusion from the embanked route on the western edge of Crofton (within around 100m), affecting a small part of the residential area. This area is already affected by several railway embankments, but as these are generally lower, the impacts are appraised as **moderate**. There would also be a **cumulative** impact with the HS2 mainline (see Cold Hiendley to Methley Lanes HSL17 above) but the

Route Description/ Landscape Context/ Impact Overall	Landscape/ Townscape Impacts	Visual Impacts
	Walton Country Park. There would also be a **cumulative** impact with the HS2 mainline, running at a lower level (see Cold Hiendley to Methley Lanes HSL17 above) but as the existing landscape is already influenced by a number of railways, the combined effect would remain **moderate**.	combined impact would remain **moderate**.
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4. OVERVIEW AND SUMMARY

4.1. Western leg

4.1.1. The western (Manchester) leg of the proposed route would have no direct impacts on nationally designated landscapes and only a very minor (negligible), indirect impact on one nationally designated landscape (Cannock Chase AONB), passing within 2km of the AONB over a distance of 3.5km, with possible distant, glimpsed views.

4.1.2. Just four sections of the route have been identified as having potentially **major impacts on landscape character** and qualities of the wider countryside (and in some cases these impacts may be capable of mitigation through appropriate design measures). In order of importance these impacts would affect:

- The Mersey valley between Warrington and Irlam, where now a major new viaduct over the Manchester Ship Canal would be constructed near the historic toll bridge at Warburton, in a flat mossland landscape identified as being sensitive to the introduction of high structures;
- The Leeds and Liverpool Canal corridor near Pennington Flash Country Park, where the cumulative impacts of the proposed route alignment, rolling stock depot (and possible new road connections) would fragment and intrude upon a valued area of open countryside between Golborne and Abram;
- The attractive valley landscape south and west of Madeley in Staffordshire, which would be affected by direct impacts on visually prominent ancient woodland at Whitmore Heath and by the introduction of a second rail corridor and associated structures; and
- The Stockwell Heath area in Staffordshire, where a high embankment would cut across an area of intact, high quality landscape with ancient features, separating the adjacent and interlinked villages of Colton (Conservation Area) and Stockwell Heath.

4.1.3. **Moderate impacts on landscape character** and qualities would be experienced in a range of other locations. Potential impacts at the following locations (south to north) are notable:

- The crossing of the Trent valley east of Rugeley where long viaducts over the Bourne Brook and Trent floodplains would affect landscape character;
- Near Swynnerton, where there would be an elevated crossing of the M6 and direct impacts on the landscape close to the edge of Swynnerton Park (Conservation Area);
- South of Crewe, where the proposed rolling stock depot and elevated cross-over would have a cumulative impact on landscape character albeit in an area that is not of special landscape sensitivity;
- Near Hoo Green and Hulseheath, where the Manchester approach spur would diverge from the HS2 mainline, again with cumulative impacts on landscape character;
- Between Hollins Green and Culcheth, where the long, high embankment would be out of keeping with the flat, open character of the Mersey valley;

- North of Rostherne Mere, where the northern setting of this attractive landscape feature, already affected by the M56, would be further eroded; and
- Near Warburton Green, where the proposed Manchester Airport High Speed Station would result in loss of part of an island of greenfield land within the built up area.

4.1.4. There are expected to be **no major townscape impacts** associated with the Manchester route, as the proposed Manchester Piccadilly HS2 station would be on the site of existing development adjacent to the existing Manchester Piccadilly Station, with consistent height and scale, hence offering a good fit with existing townscape character.

4.1.5. In terms of visual impacts, just three sections of the route have been identified as having potentially **major impacts on visual amenity** of sensitive receptors. In order of importance these are:

- Hollins Green, close to the proposed new crossing of the Manchester Ship Canal, where there would be intrusion from the high viaduct and embankments, affecting significant numbers of residents as well as other sensitive receptors;
- Golborne, where high embankment (and potential re-routing of the visually sensitive A573) would affect a range of sensitive visual receptors including users of Pennington Flash Country Park and the Leeds and Liverpool Canal, and local communities; and
- Great Haywood Marina, where marina users would be affected by very close range views of the HS2 viaduct over the Trent valley.

4.1.6. **Moderate impacts on visual amenity** would be experienced in a wider range of locations, impacts at the following locations (south to north) being notable:

- Stockwell Heath, where the embanked route would at least partly block views to Cannock Chase, affecting local residents and users of the Staffordshire Way Walking route;
- Hoo Green and Hulseheath, where the airport approach crossover would cause some visual impact on local residents;
- Ashley, where the fine, open, southerly views from the village would be interrupted by the embanked HS2 route; and
- Hale Barns, where residents on the northern edge of the settlement would have views of the new Manchester Airport High Speed Station.

4.1.7. Considerable parts of the route would have slight landscape or visual impacts, successfully avoiding important landscape and visual amenity resources. Examples include the section between Great Haywood and Marston (largely in cutting past Stafford and Hopton); the sections north and south of Crewe (closely aligned with the WCML); and the sections from Agden Bridge to Warburton and past Culcheth (carefully routed across mossland landscape and generally in cutting).

4.2. Eastern leg

4.2.1. The eastern (Leeds) leg of the proposed route would have no direct or indirect impacts on any nationally designated landscapes.

4.2.2. Five sections of the route have been identified as having potentially **major impacts on landscape character** and qualities of the wider countryside (and in some cases these

impacts may be capable of mitigation through appropriate design measures). In order of importance these impacts would affect:

- The River Aire corridor near Woodlesford, south-east of Leeds, where the viaduct structures would physically separate residential areas from the river corridor and have a direct impact on the Aire and Calder Navigation, running next to or above it for at least 1km and over Woodlesford Lock, a recreational honeypot;
- The Dove valley near Worsbrough, south of Barnsley, where the route would cut across a north-facing wooded slope and run over the river on high structure, bringing considerable and widely visible woodland loss and a more developed character to an important and attractive remnant pre-mining landscape;
- The Trent valley south of Long Eaton where there would be a direct impact on the prominent wooded riverside bluffs at Thrumpton (Conservation Area) affecting the valley's southern skyline, and the HS2 viaduct would add a further high level structure to the valley landscape;
- Sandiacre, near Long Eaton, where the proposed viaduct would intrude significantly into a traditional floodplain washlands landscape that includes open meadows, riparian woodland and a historic canal bridge and forms part of the setting to Sandiacre Cloud Side (Conservation Area); and
- The attractive flood meadow landscape on the eastern edge of Eckington and Renishaw Park (Conservation Area) south of Sheffield, which would be bisected by HS2 embankment in this area.

4.2.3. **Moderate impacts on landscape character** and qualities would be experienced in a range of other locations. Potential impacts at the following locations (south to north) are notable:

- Pooley Country Park near Polesworth, where the route would run through the Country Park on low embankment, with direct impact on young woodland plantings;
- South of Tonge, where the embanked route would affect the landscape setting of the village (Conservation Area) nearby;
- The floodplain of the River Soar, where the railway would be an intrusive new landscape element, parallel to but separate from the existing (embanked) A453;
- Strelley (Conservation Area) where an area of unregistered historic parkland would be directly impacted, with permanent tree and woodland loss, although use of cut and cover tunnel would provide partial mitigation;
- Hardwick Hall (Registered Park and Garden Grade I) where there would be a residual impact on the setting of the historic landscape due to the location of the route in cutting parallel to and west of the M1;
- Meadowhall, Sheffield, where the height and length of the proposed elevated structures would inevitably increase the influence of transport infrastructure on the surrounding landscape and townscape;
- East of Chapeltown, where there would be extensive direct impacts on woodland, much of which is ancient, in turn affecting landscape character;
- Crofton, where the mainline, depot and spur connection, including high embankment, would have a cumulative effect on landscape character; and

- East of Woodlesford, where the Leeds approach would diverge from the mainline and the cumulative impact of three sets of viaducts would change the character of the Aire valley locally.

4.2.4. The proposed Leeds New Lane Station, although better than some other station options, potentially would have **major townscape impacts**, affecting the Central Area Canal Wharf Conservation Area and the Grade II Listed Victoria Bridge. In particular, the diagonal route of the high level passenger link from the station to the existing Leeds City Station would adversely affect townscape character and the settings of various historic townscape features.

4.2.5. In terms of visual impacts, seven sections of the route have been identified as having potentially **major impacts on visual amenity** of sensitive receptors. In order of importance these are:

- Woodlesford, where there would be a marked cumulative impact from the HS2 viaducts, which would intrude upon, or obstruct, a significant number of residential views and also markedly affect enjoyment of the Aire and Calder Navigation, Trans Pennine Trail and Rothwell Country Park over a considerable distance;
- Leeds, where the proposed high level pedestrian link from the station to the existing Leeds City Station would be visually discordant and intrude on recreational users of the attractive Granary Wharf waterside area below;
- Pooley Country Park, where users of the Country Park and the Coventry Canal would experience a localised major visual impact as the route would pass very close to the museum and heritage centre;
- Near Trentlock south of Long Eaton, where recreational users of the Trent and Mersey Canal and the Trent Valley Way east of Trentlock would be affected by views of the new viaduct crossing;
- Sandiacre, where the proposed viaduct would obstruct scenic views east to the historic canal bridge, affecting recreational users and local residents;
- Methley Lanes, south-east of Leeds, where there would be demolitions and a major visual impact on remaining residents from the high level crossing of the M62; and
- Tonge, where the high level crossing of the A42 would intrude into the foreground of distinctive views from local roads to Breedon on the Hill.

4.2.6. Again**, moderate impacts on visual amenity** would be experienced in a wider range of locations, impacts at the following locations (south to north) being notable:

- Marinas and public footpaths on the Ratcliffe Cut and the River Soar near Ratcliffe on Soar, where recreational users would be affected by views to the elevated route;
- Bolsover, where there would be long views from the castle and Conservation Area of the route on embankment to the west (albeit seen in the context of the M1);
- The long section from Staveley to east of Chapeltown, where views from the Trans Pennine Trail – frequently parallel to HS2 – would be repeatedly affected over a considerable distance;
- Staveley, where the users of Canal Marina (under construction) and some residents would have close range views of new viaducts associated with the spur connection to the depot;

- Meadowhall, where the viaduct and new Sheffield Meadowhall Station structures would intrude on views from the Meadowhall shopping centre and partly obstruct views west from the M1;
- The Dove valley, where views from villages and the Trans Pennine Trail would be affected by woodland loss and new structures across the river;
- Cold Hiendley reservoir, where there would be impacts on recreational users, potentially including the Anglers Country Park visitor centre;
- Crofton, where there would be a cumulative visual impact from the elevated line and spur connection on the western edge of the village; and
- Church Fenton, where a small number of residents on the western and northern outskirts of the village would be affected by views to the HS2 viaduct.

4.2.7. Notwithstanding this list of impacts, considerable parts of the route would have slight landscape or visual impacts, successfully avoiding important landscape and visual amenity resources. Examples include many parts of the route between Water Orton and Tonge (closely aligned with the M42/A42 and/or in cutting); much of the alignment from Nuthall to Tibshelf (closely aligned with the M1 and/or in cutting); Rother Valley Country Park (route follows an existing railway line at grade); the Calder valley (river crossing sensitively located in landscape and visual terms); Swillington to Micklefield (route largely in cutting parallel to the M1); Leeds approach west of Woodlesford (follows an existing railway line).

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