Environmental Statement

Volume 2i: Scheme-wide Assessment

Chapter 22: Cumulative effects

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22. CUMULATIVE EFFECTS

Summary of principal findings

This chapter presents the cumulative impact assessment associated with the construction and operation of the Huddersfield to Westtown (Dewsbury) section ("the Scheme") of the Transpennine Route Upgrade (TRU) Programme. This chapter covers the assessment of the entirety of the Scheme.

Cumulative impacts can arise as the result of:

- the combined impact of a number of different environmental factors i.e. specific impacts from a single project on a single receptor or resource, referred to in this assessment as I**ntra-Scheme effects** or in-combination synergistic effects; and/or
- the combined impact of a number of different projects (Reasonably Foreseeable Future Projects (RFFPs)) within the vicinity (in combination with the Scheme) on a single receptor or resource referred to in this assessment as **Inter-Scheme effects**.

Significant Intra-Scheme cumulative effects

For the purposes of the assessment Intra-Scheme effects of moderate and above (adverse or beneficial) are considered significant.

One heritage asset receptor has been identified as experiencing individual topic significant Intra-Scheme effects during construction;

- Huddersfield Station;

One traffic and transport receptor has also been identified as experiencing individual topic Intra-Scheme effects:

- Public Rights of Way (PRoW) Network - the temporary stopping up of PRoW will have a cumulative effect on users of the network given the works required, this affects Route Section 6 specifically;
  - Route Section 6 –a very large adverse cumulative effect is expected due to the lack of suitable alternatives. Access to the PRoW network will be severely limited during the construction period.

Nine receptors have been identified as potentially experiencing significant in-combination CIA during construction representing significant adverse Intra-Scheme cumulative effects:

- Residents at Whitacre Street;
- Residents at Topaz Close;
- Residents at Whitacre Close;
- Alder Street;
- Deighton Road;
- Lower Hopton Road;
- Newgate;
- Brooks Yard; and
- Birkby Bradley Greenway.

Inter-Scheme cumulative effects

22.1.1 Significant cumulative effects (permanent) are anticipated for historic environment, noise and vibration and landscape (effects are likely to be experienced by residents of Ravensthorpe Road due to the proximity to the Scheme and the RFFPs) with both the Kirklees Local Plan Allocation HS61 (Dewsbury Riverside) and outline application for residential development on land at Ravensthorpe Road (Planning Reference 2016/94118). The RFFP sites are both located on the same lot and therefore it is assumed that only one development can be brought forward; similar effects are anticipated if either RFFP was to be brought forward.

22.1.2 Significant temporary adverse effects are anticipated should the construction of the Scheme and the Outline application for erection of industrial development of up to 3684 sqm B1c/B2/B8, with means of access (to, but not within, the site) from Colnebridge Road (Planning Reference 2017/91208) come forward at the same time. Combined effects are likely to result from noise and vibration and visual impact and will be experienced by users of the canal network due to the proximity to the Scheme and RFFP.

22.1.3 No other significant Inter-Scheme cumulative effects are predicted.

22.2 Introduction

22.2.1 This chapter presents the assessment of the Cumulative Impact Assessment (CIA) effects associated with the construction and operation of the Huddersfield to Westtown (Dewsbury) section of the Transpennine Route Upgrade (TRU) Programme. This chapter covers the assessment of the entirety of the Huddersfield to Westtown (Dewsbury) Route (herein referred to as the 'Scheme'). The CIA is further broken down into six Route Section Assessments in Chapter 22 of Volume 2ii of this Environmental Statement (ES).

22.2.2 This chapter is set out as follows:

- Legislation and Guidance – the relevant legislation and guidance which have been used to define the assessment approach are outlined;
- Assessment methodology – the methodology the assessment follows is defined (including the justification for the study area) and set out the scope of what has been considered within the cumulative impact assessment; for intra- Scheme cumulative effects and then for inter- Scheme cumulative effects;
- Potential effects – the potential impacts and effects (both beneficial and adverse) during construction and operation are characterised following the implementation of mitigation measures are assessed; and
- Mitigation measures – where additional mitigation measures are identified as required, these are set out in the assessment.

22.2.3 A detailed description of the Scheme is provided in Chapter 2 (Scheme description) of this ES and all appendices and figures referred to in this chapter are provided in Volumes 3 and 4 of this ES respectively.

22.2.4 This chapter builds on the introduction to the cumulative impact assessment provided in Chapter 4 (EIA methodology) in the Scheme-wide Assessment (Volume 2i of this ES).

22.3 Legislation and guidance

22.3.1 The 2006 Application Rules state in Schedule 2 paragraph 4 that the ES should consider;

> "A description of the likely significant effects of the proposed project on the environment, which should cover the direct effects and any indirect, secondary, cumulative, short-term, medium-term and long-term, permanent and temporary, positive and negative effects of the project, resulting from —
> (a) the existence of the project;
> (b) the use of natural resources; and
> (c) the emission of pollutants, the creation of nuisances and the elimination of waste, and the description by the applicant of the forecasting methods used to assess the effects on the environment."

<u>Guidance documents</u>

22.3.2 The following sources of guidance have informed the assessment:

- Design Manual for Roads and Bridges (DMRB) LA 104: Environmental assessment methodology; and
- EC (1999) Guidelines for the assessment of indirect and cumulative impacts as well as impact interactions.[1]

[1] https://ec.europa.eu/environment/archives/eia/eia-studies-and-reports/pdf/guidel.pdf - access 20 December 2020

22.4 Assessment methodology

Definition of cumulative impacts

22.4.1 As set out in DMRB LA104[2] cumulative impacts can be defined as "Impacts that result from incremental changes caused by other present or reasonably foreseeable actions together with the project."

Definition of cumulative impacts

22.4.2 As set out in Chapter 4 (Scope of the EIA and overall methodology) of Volume 2i of this ES and based on DMRB LA104 cumulative impacts can arise as the result of:

- The combined impact of a number of different environmental factors i.e. specific impacts from a single project on a single receptor or resource, referred to in this assessment as I**ntra-Scheme effects** or in-combination synergistic effects; and/or
- The combined impact of a number of different projects (RFFPs within the vicinity (in combination with the Scheme) on a single receptor or resource referred to in this assessment as **Inter-Scheme effects**.

Reporting

22.4.3 Cumulative effects are reported in the ES at both the Route Section and Scheme-wide level. The following section outlines the different elements of cumulative impact assessment and how they have been reported to allow the reader to navigate to the relevant parts of the ES.

Intra-Scheme effects

- Significant cumulative effects from the Scheme in isolation are identified on a topic by topic basis. These effects are reported in the cumulative effects chapter of the Scheme-wide assessments (Sections 6.8 to 21.8 in Chapters 6 to 21 of this ES).
- The CIA then seeks to draw out any cross-topic synergistic effects on a geographical location basis i.e. those that derive from at least two different types of impacts and are predicted to interact to result in significant cumulative effects. These effects are reported in this cumulative effects Chapter and within each of the Route Section Assessments in Volume 2ii (Chapter 22 Cumulative impacts assessment).

Inter-Scheme effects

- Significant cumulative effects from the Scheme and one or more RFFPs are identified by topic in the Scheme wide technical chapters (Sections 6.8 to 21.8 in Chapters 6 to 21 of this ES);
- The Route Section Assessments seek to draw out significant effects relevant to the geographical location and this is detailed within each of the Route Section Assessments in Volume 2ii (Chapter 22 Cumulative impacts assessment);
- A summary of the Scheme-wide inter-Scheme effects is detailed within this Chapter.

22.4.4 Further detail on the assessment methodology used for Intra-Scheme and Inter-Scheme effects is provided at the start of each section (22.5 and 22.6) to aid the reader in understanding what is presented in that section of potential and residual effects.

[2] https://www.standardsforhighways.co.uk/dmrb/search/0f6e0b6a-d08e-4673-8691-cab564d4a60a - accessed 20 December 2020

Assumptions and limitations

22.4.5 It is recognised that there is inherent uncertainty in the range of potential cumulative effects/impacts that may arise (this assessment seeks to identify the main impacts in a qualitative manner in order to provide a robust assessment.

22.4.6 The Inter- Scheme assessment has been based on the author's knowledge of RFFPs and the information available on these developments at the time of the drafting of the report. It should be noted that the prediction and assessment of cumulative impacts is subject to change as developments may be delayed or postponed.

22.4.7 Information on the RFFPs has been gained through publicly available information.

22.4.8 Where information regarding the expected construction programme is not available, the assessment has assumed that the construction of the development will be simultaneous with the Scheme to ensure a worst-case scenario has been considered.

22.4.9 Assumptions have been made that developers of the RFFPs will adhere to legal compliance and best practice to mitigate potential environmental impacts.

Determining significance of effects

22.4.10 The technical topics have identified potential synergistic effects using professional judgement and a qualitative assessment approach. The significance of the synergistic effects will be determined by considering the following factors:

- Which receptors are affected?
- How will the proposals affect the receptor?
- What is the likelihood of such effects occurring?

22.4.11 Consideration of the significance of effects will use the relevant methodology reported in the environmental topic chapters.

22.4.12 Any cumulative effects identified consider permanent, temporary, direct, indirect and secondary effects, beneficial or adverse for both construction and operation.

22.4.13 The classification of significance of effects is based on the criteria defined in DMRB LA 104 and is presented in Table 22-1. Where two significance categories are indicated within the matrix, professional judgement has been utilised to determine the appropriate level of significance.

Table 22-1 Significance matrix

		Environmental value sensitivity				
		Very High	High	Medium	Low	Negligible
Magnitude of impact	Major	Very Large	Large or Very Large	Moderate or Large	Slight or Moderate	Slight
	Moderate	Large or Very Large	Moderate or Large	Moderate	Slight	Neutral or Slight
	Minor	Moderate or Large	Slight or Moderate	Slight	Neutral or Slight	Neutral or Slight
	Negligible	Slight	Slight	Neutral or slight	Neutral or Slight	Neutral
	No Change	Neutral	Neutral	Neutral	Neutral	Neutral

22.4.14 The CIA considers that mitigation measures have been applied (both embedded and additional) to the Scheme therefore the assessment only considers the residual effects identified in the individual topic chapters.

Study area for assessment

22.4.15 The study area for synergistic effects is defined by the study areas for each of the individual environmental topics, described in the Scheme-wide Assessments.

Temporal scale

22.4.16 The assessment of synergistic effects considers impacts during the:

- Construction phase – in general these are considered temporary effects; and
- Operational phase – these are considered permanent effects.

22.5 Intra-Scheme effects

Methodology for assessment

22.5.1 The role of this section is to clarify which of the identified significant effects from the topic assessments (Chapters 6 to 21 of this ES) are also within the category of significant Intra-Scheme cumulative effects. The assessment considers the following:

- Significant effects from the Scheme identified on a topic by topic basis, presented in Table 22-2;
- Synergistic (in-combination) effects within a topic area, this information is presented in paragraphs 22.5.14 and 22.5.17 of this Chapter;
- Any receptors where two or more different impacts (cross-topic) are identified and may combine to generate a cumulative (synergistic) effect on a receptor, presented in Table 22-3 and paragraphs 22.5.24 and 22.5.34 of this Chapter; and
- Mitigation measures where cumulative impact effects are identified.

22.5.2 The receptors considered in the ES topic chapters (Chapters 6 to 21) have been sub-divided into the following groups for the purposes of this CIA;

- Human receptors – including human health, residential receptors, community assets and sensitive receptors such as schools;
- All travellers – including vehicle travellers, cyclists, pedestrians and equestrians;
- Physical environment – including water bodies (surface water and groundwater) as well as ecological receptors including protected species; and
- Heritage assets.

22.5.3 Within these broad groups, individual receptors or groups of receptors that are adversely affected by the proposals have been considered.

22.5.4 There is no commonly accepted guidance on how to determine whether different effect combine to generate significant Intra-Scheme cumulative effects. Consequently, professional judgement has been used as a supplement to recognise topic methodologies to define the receptor group and consider its sensitivity to the type of impacts being predicted together with their likely magnitude and duration. This results in a judgement being formed and justified as to whether cumulative effects predicted to be experienced by the receptor and or/ physical feature.

22.5.5 The topic chapters each define a specialist assessment methodology which results in differing approaches to considering the significant Intra-Scheme effects. In some instances, e.g. the historic environment assessment, the methodology incorporates the consideration of synergistic cumulative effects as an inherent part of considering the type, magnitude and potential significance of effects within the main assessment. The chapter signposts which of the significant effects are due to in-combination effects rather than repeating or undertaking additional assessment work.

22.5.6 The Intra-Scheme (synergistic) effects identified within the environmental topic chapters have been assessed using professional judgement and a qualitative assessment approach.

22.5.7 There are certain technical disciplines that reference specific legislation or best practice measures as means to mitigate adverse effects e.g. air quality, water. In the absence of such controls there would potentially be significant Intra-Scheme effects identified but this assessment assumes that the topic-specific mitigations have been applied.

22.5.8 Where only neutral or negligible residual adverse effects are identified from the technical assessments, it is considered that there is no potential for synergistic effects and so the following topics are not considered further in the Intra-Scheme assessment.

- Air quality;
- Water environment;
- Electromagnetic Interference;
- Effects on climate;
- Climate vulnerability;
- Waste and materials; and
- Socio-economic.

22.5.9 Table 22-2 presents a summary of the significant cumulative effects arising within a topic area and draws directly from the topic chapters using the assessment scales described within each topic chapter. The significant effects are set against the topic chapters and receptors given in paragraph 22.5.2.

Table 22-2 Summary of significant effects on identified receptor groups

	Human (residential)	All travellers	Physical environment	Heritage assets
Landscape, townscape and visual	**Construction:** During construction, close and mid-range views would be affected by increased levels of traffic moving to and from the railway line; the following viewpoints /receptors would experience temporary significant adverse effects; • Viewpoint 5 – Residents at Fitzwilliam Street • Viewpoint 20 – Residents at Leeds Road • Viewpoint 41 – Residents at Helm Lane • Residents at Hammond Street and Topaz Close (• Residents at Mark Street and Cross Church Street • Residents at Hammond Street * • Residents at Topaz Close • Residents at Whitacre Close • Residents at Whitacre Street • Residents at Glenfield Avenue • Residents at Leeds Road (No 682 to 684) • Residents at Waterside Walk and Wood Lane • Residents at Helm Lane • Residents at Lower Hopton and Calder View • Properties west of River Calder (including Calder Road, Chadwick Lane, Calder View and Woodend Road) • Back Station Road (north facing properties) • South Brook Gardens (west facing properties) • Mavis Street	**Construction:** During construction, close and mid-range views would be affected by increased levels of traffic moving to and from the railway line; the following viewpoints /receptors would experience temporary significant adverse effects; • Viewpoint 5 – Pedestrians at Fitzwilliam Street • Viewpoint 9 – Users of PRoW at Fieldhouse Lane • Viewpoint 10 – Users of PRoW at Castle Hill • Viewpoint 13 – Users of PRoW at Birkby Bradley Greenway (Peel's Pit) • Viewpoint 15 – Users of PRoW at Wheatley's • Viewpoint 20 – Pedestrians at Leeds Road • Viewpoint 21 – Motorists & Pedestrians at Calder Road • Viewpoint 23 – Users of PRoW at Hunger Hill • Viewpoint 25 – Users of PRoW & Cyclists at Ravensthorpe Viaduct • Viewpoint 33 – Users of PRoW overlooking Colne Bridge Viaduct • Viewpoint 39 – Users of PRoW near Ouzelwell Hall Farm • Viewpoint 40 – Pedestrians at Westgate • Viewpoint 41 – Users of PRoW at Heaton Lodge • Viewpoint 42 – Users of PRoW at Spen Valley Greenway (Ravensthorpe Viaduct)	**Construction:** No significant effects	**Construction:** During construction, the views from PRoW HUD/169/30 on Castle Hill, located adjacent to a Scheduled Monument, would be subject to temporary significant adverse effects.
	Operation: The following residential receptors would experience significant adverse effects during Year 1 and Year 15[3] (unless indicated otherwise). • Viewpoint 5 – Residents at Fitzwilliam Street • Viewpoint 20 – Residents at Leeds Road • Residents at Mark Street and Cross Church Street* • Residents at Hammond Street (this effect would reduce to not significant by Year 15)* • Residents at Topaz Close • Residents at Whitacre Close (this effect would reduce to not significant by Year 15)* • Residents at Whitacre Street • Residents at Glenfield Avenue (this effect would reduce to not significant by Year 15)* • Residents at Leeds Road (No 682 to 684) (this effect would reduce to not significant by Year 15)* • Residents at Waterside Walk and Wood Lane	**Operation:** The following viewpoints /receptors would experience permanent significant adverse effects during Year 1 and Year 15 (unless indicated otherwise); • Viewpoint 5 – Pedestrians at Fitzwilliam Street • Viewpoint 10 – Users of PRoW at Castle Hill • Viewpoint 40 – Pedestrians at Westgate • Viewpoint 9 – Users of PRoW at Fieldhouse Lane (this effect would reduce to not significant by Year 15)* • Viewpoint 10 – Users of PRoW at Castle Hill • Viewpoint 13 – Users of PRoW at Birkby Bradley Greenway (Peel's Pit) • Viewpoint 15 – Users of PRoW at Wheatley's (this effect would reduce to not significant by Year 15)*	**Operation:** No significant effects	**Operation:** • The views from PRoW HUD/169/30 on Castle Hill, located adjacent to a Scheduled Monument, would be subject to permanent significant adverse effects due to the new infrastructure.

[3] The landscape and visual impact assessment assumes that mitigation planting will become established by Year 15*

	Human (residential)	All travellers	Physical environment	Heritage assets
	• Residents at Helm Lane (this effect would reduce to not significant by Year 15)* • Residents at Lower Hopton and Calder View (this effect would reduce to not significant by Year 15)* • Properties west of River Calder (including Calder Road, Chadwick Lane, Calder View and Woodend Road) • Back Station Road (north facing properties) • South Brook Gardens (west facing properties) • Mavis Street	• Viewpoint 33 – Users of PRoW overlooking Colne Bridge Viaduct (this effect would reduce to not significant by Year 15)* • Viewpoint 21 – Motorists and Pedestrians at Calder Road • Viewpoint 23 – Users of PRoW at Hunger Hill • Viewpoint 41 – Users of PRoW at Heaton Lodge (this effect would reduce to not significant by Year 15)* • Viewpoint 42 – Users of PRoW at Spen Valley Greenway (Ravensthorpe Viaduct)		
Biodiversity	**Construction and operation:** Not in scope of assessment	**Construction and operation:** Not in scope of assessment	**Construction:** • Temporary significant residual effects to semi-natural broad-leaved woodland are anticipated at the local level in the medium to long term (30-100 years) (until replacement planting is established. After this point, no significant residual effects are predicted; • Temporary significant residual effects to semi-natural mixed woodland, plantation broad-leaved woodland and plantation mixed woodland are anticipated at the local level in the medium term (<30 years) until replacement planting is established. After this point, no significant residual effects are predicted; • Temporary significant residual effects to scrub are anticipated at the local level in the short term (5-10 years) until replacement planting or natural regeneration becomes established. After this point, no significant residual effects are predicted; • Temporary residual effects to semi-improved neutral grassland are anticipated at the local level in the short term (<5 years) until replacement planting or natural regeneration becomes established. After this point, no significant residual effects are predicted; and • Temporary residual adverse effect is anticipated on the Thornhill Quarry Site ponds (GCN_023 and GCN_024) that is significant at a County level. The effect will be temporary and short term (3-5 years) until the replacement ponds establish to comparable condition; no permanent residual effects are anticipated. • Temporary residual effect on the River Calder is anticipated that is significant at the Local level. The effect will be temporary and short term (2-5 years) until the compensatory riparian planting is established; no permanent residual effects are anticipated. **Operation:** No further effects other than those identified in the construction phase are anticipated	**Construction and operation:** Not in scope of assessment
Historic environment	**Construction and operation:** Not in scope of assessment	**Construction and operation:** Not in scope of assessment	**Construction and operation:** Not in scope of assessment	**Construction**: Moderate adverse effects on setting due to construction activities will be seen at: • Huddersfield Station

	Human (residential)	All travellers	Physical environment	Heritage assets
				• The Empire Cinema NHLE 1288963) • The Sportsman and Marhaba NHLE 1464388. • Calder and Hebble Navigation Number 2 Lock / Sir John Ramsden's Canal Number 2 Lock NHLE 1313801 (Number 2 Lock) • Mirfield Viaduct Underbridge (MVN2/192) • Ledgard Bridge (NHLE 1183989) • Calder & Hebble Canal Underbridge (MDL1/6) and River Calder Underbridge (MDL1/8) Large adverse effects due to loss of fabric and alterations during construction to following assets • Huddersfield Station • Huddersfield Station tearoom • Wheatley's Overbridge (MVL3/103) • B6118 Bridge Road Overbridge (MVL3/107) Moderate adverse effects due to loss of fabric and alterations during construction to following assets • Huddersfield Viaduct (Span 1) Underbridge (MVL3/92(1)) • Huddersfield Viaduct (Span 4) Underbridge (MVL3/92(3)) • Huddersfield Viaduct (Span 29) Underbridge (MVL3/92(9)) • Heaton Lodge Footbridge (MVL4/4) • Wheatley's Underbridge (MVN2/196) • Ravensthorpe station Footbridge (MVN2/201A) • Occupation Underbridge (MDL1/10) • Toad Holes, Dewsbury Underbridge (MDL1/12) • Ming Hill Underbridge (MDL1/14)
				Operation: Moderate adverse effects on setting will be seen at: • Calder & Hebble Canal Underbridge (MDL1/6) and River Calder Underbridge (MDL1/8) • Calder and Hebble Navigation Number 2 Lock / Sir John Ramsden's Canal Number 2 Lock NHLE 1313801 (Number 2 Lock)

	Human (residential)	All travellers	Physical environment	Heritage assets
				Moderate adverse effects due to changes to fabric and alterations for the following assets; • Huddersfield Station Huddersfield Viaduct (Span 1) Underbridge (MVL3/92(1)) • Occupation Underbridge (MDL1/10)
Air quality	**Construction and operation:** No significant residual adverse effects are expected.	**Construction and operation:** No significant residual adverse effects are expected.	**Construction and operation:** No significant residual adverse effects are expected.	**Construction:** Potential for adverse effects on listed assets due to dust deposition during construction works
				Operation: No significant effects expected on any listed buildings.
Noise and vibration	**Construction:** Temporary significant residual effects from construction road traffic noise due to temporary diversions are identified at the following locations; • Alder Street • Alder Street (South of Hillhouse compound) • Alder Street (North of Hillhouse compound) • Woodhouse Hill • Sheepridge Road/Deighton Road up to Keldregate • Keldregate • Deighton Road between Keldregate and Whitacre Street • Whitacre Street • Deighton Road between Whitacre Street and Leeds Road • Dalton bank Road • Station Road • Hopton New Road • Back Station Road • Granny Lane • Hopton Lane/Hopton Hall Lane • Calder Road • Newgate • Forge Lane • Warren Street With mitigation there will be no permanent significant residual adverse effects from construction activities.	**Construction and operation:** No significant residual adverse effects are expected.	**Construction:** Construction would increase noise and vibration in the study area. Significant adverse effects are not expected on any designated sites within the area from noise and vibration. With mitigation, no significant adverse effects are expected on protected species from noise and vibration.	**Construction:** Potential for temporary adverse effects on listed assets due to increased noise levels in their setting during construction works. Moderate adverse effects expected at: • Calder and Hebble Navigation Number 2 Lock / Sir John Ramsden's Canal Number 2 Lock NHLE 1313801 (Number 2 Lock) • Ledgard Bridge (NHLE 1183989) • Calder & Hebble Canal Underbridge (MDL1/6) and River Calder Underbridge (MDL1/8) • Large adverse effects at: • Huddersfield Station
	Operation: Significant adverse effects on external amenity arising from are expected from airborne rail noise where barriers are not effective or feasible at 14 NSR; • No. 43, 45, 47, 49, 51 & 54 Whitacre Close; • No. 11 & 13 Whitacre Street; • No. 11 & 12 Lilac Court; • No. 682 & 684 Leeds Road and • No. 24 & 26 Brooks Yard.		**Operation:** Operational noise would increase in certain areas of the study area due to intensification in use of the route. No significant adverse effects are expected on any designated sites within the area (LWS) With mitigation, no significant adverse effects are expected on protected species	**Operation:** No significant effects expected on any listed buildings.

	Human (residential)	All travellers	Physical environment	Heritage assets
Geology, soils and land contamination	**Construction and operation:** No significant residual adverse effects are expected.	**Construction and operation:** No significant residual adverse effects are expected.	**Construction:** No significant residual adverse effects are expected. **Operation:** Significant beneficial effects relating to geohazards. For example, if necessary, the treatment of mineshafts within the Hillhouse construction compound would result in an improvement of ground stability from baseline, thereby reducing the risk of damage to nearby or new structures.	**Construction and operation:** Not in scope of assessment
Traffic and transport (including effects on all travellers)	**Construction and operation** Not in scope of assessment	**Construction:** • Users of following diverted or stopped up PRoWs would experience significant adverse effects; ○HUD/327/10 & HUD/327/20 & HUD/328/10 & HUD/328/20 & HUD/328/30 & HUD/329/10 at Springwood Junction ○HUD/57/10, HUD/42/10, HUD/44/30, HUD/44/20, HUD/44/40 and PRoW byways HUD/58/10, HUD43/40, HUD/43/50 in the Deighton Corridor ○HUD/58/10 PRoW at Red Doles Road ○HUD/51/10 at the A62 Leeds Road ○KIR/240/10 –footbridge and underpass at Heaton Lodge ○HUD/41/20, HUD41/10 & HUD/41/30 PRoW at Fieldhouse Lane ○DEW/3/10 & DEW/1/10 – Bridleway between Hunger Hill and Ravensthorpe Road ○MIR/76/10 & MIR/76/20 & DEW/1a/10 – Bridleway between Sands Lane and Hunger Hill ○DEW/155/10 & DEW/117/10 & DEW/117/20 & DEW/117/30 & DEW/117/40 & NCN69 Spen Valley Greenway at Ravensthorpe ○DEW/116/30 & HUD/116/20 at Ravensthorpe ○DEW/8/50 & DEW/5/20 & DEW/6/10 & DEW/6/20 & DEW/6/30 & DEW/6/50 & DEW/15/10 & DEW/16/10 & DEW/12/20 and DEW/12/30 & DEW/12/40 & DEW/94/10 & DEW/6/60 at Ravensthorpe • Vehicle travellers would experience significant adverse effects due to; ○Temporary traffic and transport effects: driver delay, pedestrian and cyclist delay, and accidents and safety; pedestrian and cyclist amenity; fear and intimidation, and severance • Railway severance would result in a temporary moderate adverse impact on train passengers. **Operation:** • No significant residual effects are expected	**Construction and operation:** Not in scope of assessment	**Construction and operation:** Not in scope of assessment

	Human (residential)	All travellers	Physical environment	Heritage assets

Private and community assets	**Construction:**
	Permanent affects will be experienced during the construction phase and are therefore reported in this section as permanent effects, this information is not duplicated in the operational phase;
	• Temporary land take and/or disruption effects at Topaz Close, Fartown; eight residential properties at Lilac Court, four properties at Whitacre Street, rear gardens at Glenfield Avenue (Numbers 2 to 28 and 76 to 86) and land to the rear of 682-684 Leeds Road, Deighton; Chadwick Fold, Mirfield; 41 Thornhill Road, Dewsbury, and; four properties at Brooks Yard would result in significant temporary, direct, short-term and reversible effects on the physical and human receptors (owners/occupants).
	• For education, temporary disruptions to access and severance effects at Childs Play Day Care Nursery, 21 Thornhill Road, Dewsbury would result in significant temporary, direct, short-term and reversible effects for workers, parents and children that attend the nursery.
	• Temporary significant disruptions effects would be experienced for the tea rooms at Huddersfield Station and the car wash facility and car park on Longroyd Lane, as well as Montgomery's Engraving, Fartown, local businesses off the A62 Leeds Road, particularly Sicame Electrical Developments and Huddersfield Audi, Newlay Concrete Ltd., Kirklees Waste Services, Armley Chairworks and Shackletons, Thornhill Power Station, Spenborough Engineering, Veolia and GNT Developments
	• Permanent loss of Numbers 1, 2 and 3 Heaton Lodge Cottages, Colne Bridge and permanent loss of garden space at No. 12 Lilac Court, Deighton; No. 4 Glenfield Avenue, No. Huddersfield and Numbers 82 to 86 Glenfield Avenue, Huddersfield which would result in significant permanent, direct and irreversible effects on the physical receptor (houses) and human receptors (owners/occupants).
	• For work and training, permanent effects would result from the demolition of the commercial property at No. 67 Thornhill Road. This effect would be permanent, direct and irreversible for the physical and human receptors.
	• Temporary significant adverse effects will be adverse effects will be experienced by the public open spaces users at the Birkby Bradley Greenway OS7, and on land between Glenfield Avenue and the A62 (OS8), land at Hunger Hill (OS9) and land to the south of the new Ravensthorpe Station (OS10).
		Construction and operation
		The temporary closure of the railway and stations would result in significant adverse effects related to disruption from changes to travel patterns, longer journey distances and times, changes in journey quality and reliability, inconvenience and increased costs for the local population
			Construction:
			• Temporary significant effects will be experienced at public open space at the following location:
			  ○ Birkby Bradley Greenway between Fieldhouse and Deighton; and
			  ○ Ravensthorpe construction compound area between Hunger Hill overbridge and Calder Road Overbridge (MVN2/202).
			
			• Temporary moderate adverse effects will be experienced due to the loss of 21.77ha of utilised agricultural land of which 1.25ha is Best and Most Versatile (BMV) soils.
				Construction and operation
				Not in scope of assessment

	Human (residential)	All travellers	Physical environment	Heritage assets
	Operation: • Significant beneficial effects arising from the operation of the Scheme resulting from the improved journey times, reliability, and capacity at the Local Authority area and in turn the Sub-regional and Regional level. These improvements are likely to bring direct significant benefits to local businesses and the labour market through improved access and in providing opportunities around Huddersfield Station through spend and business activity uplifts. • Indirectly, the Scheme will also support and result in significant beneficial effects in terms of wider economic benefits such as productivity and agglomeration in the sub-regional and regional levels.		**Operation:** • Temporary significant adverse efforts will be experienced due to the loss of 10.2ha of utilised agricultural land of which 1.43ha is BMV.	

Assessment of potential effects

22.5.10 The summary information from Table 22-2 has been used to inform the potential effects sections detailed below.

22.5.11 Firstly, the data has been used to identify any receptors which may experience synergistic cumulative effects within the same topic area (individual topic effects)

22.5.12 Secondly the data has been used to identify any receptors which may experience synergist cumulative effects arising from two or more different impacts from different topics, this information is presented in Table 22-3 (cross-topic effects).

22.5.13 For the purposes of the assessment Intra-Scheme effects of Moderate and above (adverse or beneficial) are considered significant.

Significant Intra-Scheme cumulative effects from a single topic

22.5.14 Data from Table 22-1 shows that in total four receptors are expected to achieve single topic synergistic effects which are set out below.

22.5.15 One heritage asset receptor has been identified as experiencing individual topic significant Intra-Scheme effects during construction. This receptor is;

- Huddersfield Station – the permanent changes at Huddersfield Station will result in the loss of historic fabric and these permanent alterations of elements of the station which contribute to its overall significance. Construction of the Scheme will also result in temporary impacts on Huddersfield Station, due to construction activity infiltrating on the setting of the structures. An in-combination Large adverse effect given the sensitivity of the receptor and the magnitude of the works. The in-combination effect will only be temporary in nature during the construction works at Huddersfield Station.

22.5.16 One traffic and transport receptor has also been identified as experiencing individual topic Intra-Scheme effects:

- PRoW network – the Scheme will require temporary stopping up of a number of PRoW across the Scheme area during the construction phase. Where possible temporary diversion routes are proposed, however there are certain areas where formal diversions are not feasible due a lack of suitable alternative, mainly due to the distance involved. The temporary stopping up of PRoWs will have a cumulative effect on users of the network given the works required. Figure 2-3 demonstrates the planned temporary closures and proposed diversion routes. This affects the following Route Sections specifically:
  - Route Section 6 – temporary closures of the PRoW network are required to facilitate construction works of the new Ravensthorpe Station and the realignment of Calder Road Overbridge (MNV2/202) as well as works to construct the new Baker Viaduct (RBA/2). When considered with the closures required on the area of land to the south of the railway at the new Ravensthorpe Station to facilitate the overhead power line works a very large adverse cumulative effect is expected due to the lack of suitable alternatives. Access to the PRoW network will be severely limited during the construction period.

22.5.17 No significant individual topic Intra-Scheme effects are expected during operation.

Mitigation measures

22.5.18 Mitigation measures as set out within Section 6.10 in Chapter 6 (Historic environment of the

Scheme-wide Assessment in Volume 2i of the ES.

22.5.19 The Construction Traffic Management Plan (CTMP) (to be submitted pursuant to a condition attached to the deemed planning permission[4]) will include measures to be undertaken during the construction stage. Each stage of construction will be the subject of a separate CTMP. These documents will address the requirements for traffic management measures such as:

- Traffic route signage;
- Signing and guarding of compound access and egress;
- Co-ordination of road closures; and
- The need for diversions as well as any route timing or volume restrictions.

Residual effects

22.5.20 Even with the implementation of mitigation measures, significant residual effects are still anticipated for the following receptors:

- Huddersfield Station;
- Number 2 lock;
- Hebble & Calder Navigation; and
- PRoW network (Route Section 2 and Route Section 6.

Significant Intra-Scheme cumulative effects from cross-topic assessments

Potential effects

22.5.21 Data from Table 22-2 has been considered and Table 22-3 sets out any receptors which are likely to experience significant effects from more than one environmental topic. This data is derived from the information contained within Table 22-2.

22.5.22 Where a receptor is expected to experience on a single significant effect this is not detailed within Table 22-3.

22.5.23 For the purposes of the assessment, Intra-Scheme effects of Moderate and above (adverse or beneficial) are considered significant.

Table 22-3 Summary of Intra-Scheme cross-topic construction effects

	Receptor	LTVIA	Biodiversity	Historic Environment	Air quality	Noise and vibration	Geology, soils and land contamination	Water Environment	Traffic and transport	Private and community assets
Human – Residential	Whitacre Street	✓				✓			✓	✓
Human – Residential	Topaz Close	✓								✓

[4] On making an order under the Transport and Works Act 1992, the Secretary of State may direct that planning permission shall be deemed to be granted, subject to such conditions (if any) as may be specified in the direction.

	Receptor	LTVIA	Biodiversity	Historic Environment	Air quality	Noise and vibration	Geology, soils and land contamination	Water Environment	Traffic and transport	Private and community assets
Human - Residential	Whitacre Close	✓				✓				
All travellers & residential	Alder Street					✓			✓	
All travellers/& residential	Deighton Road					✓			✓	
All travellers/& residential	Hopton New Road					✓			✓	
All travellers/& residential	Newgate					✓			✓	
All travellers/& residential	Brooks Yard	✓				✓				✓
All travellers & Physical Environment	Birkby Bradley Greenway between Fieldhouse and Deighton	✓							✓	✓
All travellers /Historic Environment	Wheatley's Overbridge (MVL3/103)			✓						✓
All travellers /Historic Environment	Heaton Lodge Footbridge (MVL4/4)			✓						✓
Heritage	Huddersfield Station			✓						✓
Heritage and human residential	Occupation Underbridge (MDL1/10)			✓						✓

22.5.24 Thirteen receptors have been identified as potentially experiencing significant in-combination CIA during construction representing significant adverse Intra-Scheme cumulative effects.

22.5.25 Residents at properties on Whitacre Street (within proximity to the existing station) will experience in-combination effects relating to visual impact, noise and vibration (in external amenity areas) as well as impacts on property (temporary land acquisition) and traffic and transportation effects due to temporary road closures during the construction phase. Large

adverse cumulative effects are anticipated due to the sensitivity of the receptors and scale of the construction works involved including the use of large plant and machinery and the installation of slope stabilisation systems e.g. soil nails. This impact will be temporary in nature. Mitigation measures will be employed to minimise the potential effects from in-combination effects.

22.5.26 Residents at properties on Topaz Close will experience in-combination effects relating to visual impact, as well as impacts on property (temporary land acquisition). Moderate adverse cumulative effects are anticipated due to the sensitivity of the receptors and scale and duration of the construction works involved. This impact will be temporary in nature. Mitigation measures will be employed to minimise the potential effects from in-combination effects

22.5.27 During construction residents at properties on Whitacre Close will experience in-combination effects relating to visual impact, as well as impacts from noise and vibration. Moderate adverse cumulative effects are anticipated due to the sensitivity of the receptors and scale and duration of the construction works involved. This impact will be temporary in nature. Mitigation measures will be employed to minimise the potential effects from in-combination effects.

22.5.28 Four receptors will experience temporary significant adverse effects during construction relating to construction traffic noise and traffic and transport effects: driver delay, pedestrian and cyclist delay, and accidents and safety; pedestrian and cyclist amenity; fear and intimidation, and severance. These receptors are Alder Street. and Deighton Road, Hopton New Road and Newgate. Moderate adverse effects are anticipated for both traffic and transport and noise and vibration effects. Given the sensitivity of the receptors and the temporary nature of the impacts an in-combination effect of moderate adverse effect is expected.

22.5.29 Residents at properties on Brooks Yard will experience in-combination effects relating to visual impact, as well as impacts from noise and vibration and temporary land acquisition. Large adverse cumulative effects are anticipated due to the sensitivity of the receptors and scale and duration of the construction works involved. This impact will be temporary in nature. Moderate effects are anticipated within each of the topic chapters and it is anticipated that the in-combination effects will also result in moderate adverse effects given the sensitivity of the receptor and also the temporary nature of the effects.

22.5.30 Wheatley's Overbridge (MVL3/103) – as well as the historic environment impacts resulting from the loss of historic fabric the Scheme will also have a significant adverse effect on PRoW which crosses the overbridge. These two impacts whilst affecting the Grade II listed asset will affect this as a separate receptor i.e. PRoW and historic asset. Therefore, these are considered to be separate receptors for the purpose of CIA and no significant in-combination effects are therefore expected.

22.5.31 Heaton Lodge Footbridge (MVL4/4) – as well as the historic environment impacts resulting from the loss of historic fabric the Scheme will also have a significant adverse effect on PRoW which crosses the overbridge. These two impacts whilst affecting the Grade II listed asset will affect this as a separate receptor i.e. PRoW and historic asset. Therefore, these are considered to be separate receptors for the purpose of CIA and no significant in-combination effects are therefore expected.

22.5.32 Huddersfield Station – as well as the historic environment impacts resulting from the loss of historic fabric as well as impacts on its setting, construction of the Scheme will also have a significant adverse effect on the tearoom businesses within the station which will be deconstructed and rebuilt during the works. Large adverse effects are in respect of the historic environment effects on Huddersfield station whereas the impacts on the tea room will be

moderate adverse. These two impacts whilst affecting Huddersfield Station will impact on very different aspects; the physical works to a Grade I listed asset affecting the historic value of the structure whereas the work to the tearoom will affect the economics of the business due to the temporary closure. Therefore, these are considered to be separate receptors for the purpose of CIA and no significant in-combination effects are therefore expected.

22.5.33 Occupation Underbridge (MDL1/10) – the construction works will result in the infilling of the structure which will have a permanent impact on the Grade II listed Structure. Infilling works will also sever access to a private property. These two impacts whilst affecting Occupation Underbridge (MDL1/10) will impact on very different aspects; the physical works to a Grade II listed asset affecting the historic value of the structure whereas the access severance will affect the resident of the property. Therefore, these are considered to be separate receptors for the purpose of CIA and no significant in-combination effects are therefore expected.

22.5.34 No significant individual topic Intra-Scheme effects are expected during operation.

Intra-Scheme effects mitigation

22.5.35 Part A of the CoCP, which is provided in Appendix 2-1, sets out measures that will be employed to minimise potential effects during the construction phase of the Scheme, including general measures for controlling noise and vibration.

22.5.36 Part B of the CoCP will include details of the management of construction effects for specific disciplines, including a Noise and Vibration Management Plan (NVMP). Part B of the CoCP will be submitted to and approved pursuant to a condition to be attached to the deemed planning permission. Part B of the CoCP will also incorporate an External Communications Programme.

22.5.37 The NVMP will define the framework by which construction noise and vibration will be managed. It will include:

- How works are to be conducted in accordance with Section 61 consents in consultation with the local authority;
- Detail on the scheduling of staged Section 61 applications;
- Details of construction noise and vibration thresholds in terms of significance and the criteria for noise insulation or temporary rehousing;
- Details of how NSR, such as households, will be kept informed of construction works and how they can contact Network Rail.

22.5.38 The CTMP (to be submitted pursuant to a condition attached to the deemed planning permission) will include measures to be undertaken during the construction stage. Each stage of construction will be the subject of a separate CTMP. These documents will address the requirements for traffic management measures such as:

- Traffic route signage;
- Signing and guarding of compound access and egress;
- Co-ordination of road closures; and
- The need for diversions as well as any route timing or volume restrictions.

Residual effects

22.5.39 Even with the implementation of mitigation measures, significant residual effects are still anticipated for the following receptors during construction;

- Whitacre Street residents;

- Topaz Close residents;
- Whitacre Close residents;
- Alder Street;
- Deighton Road;
- Hopton New Road;
- Newgate;
- Brooks Yard; and
- Birkby Bradley Greenway.

22.6 Inter-Scheme cumulative effects

22.6.1 An assessment of the Inter-Scheme cumulative effects has also been undertaken.

22.6.2 This considers the effects when the impacts of the Scheme are considered in combination with impacts from Reasonably Foreseeable Future Projects. The following process has been undertaken to identify the RFFPs to be included in the assessment:

- establish the zone of influence of the project together with other projects;
- establish a list of projects which have the potential to result in cumulative impacts; and
- obtain further information and detail on the list of identified projects to support further assessment.

22.6.3 Further details on each of the stages is provided below.

Zone of Influence

22.6.4 Following discussions with Kirklees Council, regarding the RFFPs that should be considered as part of the CIA for the Scheme, a list of committed developments was provided by the Council in September 2019 and was refreshed in January 2021.

Develop list of projects

22.6.5 A long list of potential RFFPs was derived from the information provided by Kirklees and this is included in Appendix 22-1 for information.

22.6.6 To enable a reasonable and proportionate assessment, the following criteria was used to develop the short list of Reasonably Foreseeable Future Projects:

- Major planning applications within 250m of the Scheme. This encompasses planning applications for more than 10 dwellings, applications for commercial/industrial units over 1,000square metres.
- Strategic schemes within 500m of the Scheme i.e. those identified within Local Plan (namely highways and housing)
- Projects under construction;
- Permitted application(s), but not yet implemented;
- Submitted application(s), not yet determined;

22.6.7 Minor developments i.e. less than 10 dwellings or less than 1000m^2 for industrial/commercial premises were not included in the assessment unless within the Scheme boundary or directly adjacent to the Scheme boundary as they are considered too small to have any significant interaction with the Scheme.

22.6.8 Rejected planning applications that are not subject to appeal are also not considered, as their implementation is not considered to be reasonably foreseeable.

22.6.9 The Transport Assessment model factors in future committed development, general population growth and job growth. Cumulative effects in relation to traffic growth, and associated air quality and noise impacts, are therefore inherent within the traffic assessment and also in the air quality and noise and vibration models and assessed as part of the main impact assessment in the relevant chapters.

22.6.10 The developments that are included in the cumulative assessments in this Environmental Statement are set out in Table 22-3.

Obtain further information

Publically Available Data

22.6.11 In order to consider the potential impacts, a review of available data was undertaken. In general this review considered information submitted as part of the planning application and included any submitted plans and supporting documents.

22.6.12 For the strategic proposals, this was generally informed by review of information on the Kirklees Council and West Yorkshire Combined Authority's respective websites. The information relating to these schemes does not include specific details and this is reflected in the assessment of the Inter- Scheme effects which to a large degree has considered the scale of the proposals as the determining factor for the potential for cumulative effects.

Consultation

22.6.13 As well as publically available data, information has also been made available through the stakeholder engagement undertaken as part of the TWAO process. This has included utilising discussions with landowners and tenants to better understand proposals for sites directly affected by the Scheme (i.e. within the Scheme boundary) and this has been considered within the assessment where information is available e.g. likely timescales for any development being brought forward.

22.7 Methodology assessment

22.7.1 There is no commonly accepted guidance on how to determine whether different effect combine to generate significant Inter-Scheme cumulative effects. Consequently, professional judgement has been used as a supplement to recognise topic methodologies to define the receptor group and consider its sensitivity to the type of impacts being predicted together with their likely magnitude and duration. This results in a judgement being formed and justified as to whether cumulative effects predicted to be experienced by the receptor and or/ physical feature.

22.7.2 This section provides a summary of the significant CIA Intra-Scheme effects that have been identified in the topic chapters. Consideration has been given to the cumulative effects of the Scheme in conjunction with the RFFPs identified in Table 22-3 across the environmental topics based on factors including duration of effect, extent of effect, type of effect, frequency of effect and likely success for mitigation.

22.7.3 It should be noted that cumulative effects can be either temporary or permanent.

22.7.4 A qualitative evaluation has been undertaken which includes an element of professional judgement. The results of the Inter-Scheme assessment are set out in Table 22-4.

22.7.5 The Transport Assessment modelling includes for future committed development, general population growth and job growth. Cumulative effects in relation to traffic growth, and associated air quality and noise impacts, are therefore inherent within the traffic model and assessed as part of the main impact assessment in the relevant chapters and are not considered further in the Inter-Scheme CIA.

22. 7. 6 It should be noted that this strategic housing scheme area at Dewsbury overlaps with the outline planning permission references 2016/94117 and 2016/94118 and so whilst these developments could not come forward together they have been assessed in their own right to ensure that the cumulative effects for all options have been considered.

Table 22-4 List of RFFPs

Route Section	Planning application ref.	Development description	Location	Planning status	Available environmental information	Further comments/additional information
1 – Huddersfield	2020/90014	Demolition of existing building and erection of car sales and speculative B1/B2 unit with associated parking and access	11, The Triangle, Market Street, Paddock, Huddersfield, HD1 4RN	Conditional Full Permission – March 2020	No supporting Environmental information	Unsure of programme for works so worst-case assessment has assumed that construction works may overlap with construction works for the Scheme.
3 – Deighton and Bradley	2017/91111	Outline application for erection of industrial development for B1 (business), B2 (general industry), and B8 (storage and distribution) uses	Station Road, Bradley, HD2 1UT	Conditional Outline Permission August 2017	No EIA but application is supported by environmental assessments in relation to contaminated land, transport, arboriculture, ecology as well as a FRA	Unsure of programme for works so worst-case assessment has assumed that construction works may overlap with construction works for the Scheme.
4 – Colne Bridge and Battyeford	2016/93896	Erection of 4 dwellings and associated works	Site off, Station Road, Bradley, Huddersfield, HD2 1US	Conditional full permission – February 2017	No EIA – application is supported by a Design and Access Statement	Unsure of programme for works so worst-case assessment has assumed that properties are constructed prior to the Scheme being brought forward.
4 – Colne Bridge and Battyeford	2017/91208	Outline application for erection of industrial development of up to 3684 sqm B1c/B2/B8, with means of access (to, but not within, the site) from Colnebridge Road	Land adjacent to Colnebridge WWTW, Colnebridge Road, Bradley	Conditional outline planning – Nov 2017	No EIA but application is supported by environmental assessments in relation to noise, transport, arboriculture, ecology as well as a FRA.	Unsure of programme for works so worst-case assessment has assumed that construction works may overlap with construction works for the Scheme.
6 – Ravensthorpe and Westtown	2017/94119	Demolition of existing building, erection of new building for educational classroom, cafe and toilets, upgraded access road, car parking, cycle parking, picnic and play areas.	Land off Sands Lane, Mirfield, WF14	Conditional Full Permission – May 2018	No EIA but application is supported by a bat survey and FRA sequential test.	Works for demolition have occurred. Unsure of programme for works so worst-case assessment has assumed that construction works may overlap with construction works for the Scheme.
6 – Ravensthorpe and Westtown	2017/90443	Erection of 3 units for B1 (light industrial) and B8 use, erection of two storey office building and alterations to existing building	Ratcliffe Mills, Forge Lane, Thornhill Lees, Dewsbury, WF12 9BU	Conditional Full Permission – Nov 2017	No EIA but application is supported by environmental assessments in relation to agriculture, transport as well as a FRA	Unsure of programme for works and are likely to come forward prior to construction of the Scheme commencing. However, a worst-case assessment has been undertaken which assumes that construction works may overlap with construction works for the Scheme.
6 – Ravensthorpe and Westtown	2016/94241	Non-Material Amendment to previous permission 2007/91742 for erection of 7 terraced industrial units	Calder Bank Road, Thornhill Lees, Dewsbury, WF12 9QB	NMA Approved – May 2017	No supporting Environmental information	Unsure of programme for works so worst-case assessment has assumed that construction works may overlap with construction works for the Scheme.
6 – Ravensthorpe and Westtown	2016/94118	Outline application for residential development	Land off Ravensthorpe Road, Dewsbury	Conditional Outline Permission– April 17	No EIA but application is supported by environmental assessments in relation to contaminated land, ecology, arboriculture and transport. A conservation/heritage assessment and FRA have also been submitted	Unsure of programme for works so worst-case assessment has assumed that construction works may overlap with construction works for the Scheme.
6 – Ravensthorpe and Westtown	2016/94117	Outline application for 120 residential units at Lees Hall Road	Land off Lees Hall Road, Dewsbury	Conditional Outline Permission	No EIA but application is supported by environmental assessments in relation to contaminated land, ecology and transport. A conservative/heritage assessment and FRA have also been submitted.	Unsure of programme for works so worst-case assessment has assumed that construction works may overlap with construction works for the Scheme.
6 – Ravensthorpe and Westtown	2017/94080	Erection of precast concrete production unit, demolition of existing casting shed and ancillary buildings, associated site works to	C R Longley And Co Ltd, Ravensthorpe Road, Thornhill Lees,	Conditional full permission -July 2018 (approval of condition Nov 2019)	No EIA but application is supported by environmental assessments in relation to noise, air quality, biodiversity and transport.	Unsure of programme for works so worst-case assessment has assumed that construction works may overlap with construction works for the Scheme.

Route Section	Planning application ref.	Development description	Location	Planning status	Available environmental information	Further comments/additional information
		modify external storage areas and installation of gantry cranes – condition to vary plans and specs (2019/92570)	WF12 9EF		A conservative/heritage assessment and FRA have also been submitted	
1 – Huddersfield and 2 – Hillhouse and Fartown	Strategic highway scheme	A62 Smart Corridor (Leeds Road - Phase 1)	Kirklees Council	Strategic Scheme	No information available.	Unsure of programme for works so worst-case assessment has assumed that construction works may overlap with construction works for the Scheme.
1 – Huddersfield	Strategic highway scheme	Highways improvements to the junction of Huddersfield Ring Road/Southgate/Northumberland Street.	Kirklees Council	Strategic Scheme	No information available.	Unsure of programme for works so worst-case assessment has assumed that construction works may overlap with construction works for the Scheme.
1 – Huddersfield	Strategic highway scheme	Highways improvements to the junction of Leeds Road/Lower Fitzwilliam Street/Gasworks Street.	Kirklees Council	Strategic Scheme	No information available.	Unsure of programme for works so worst-case assessment has assumed that construction works may overlap with construction works for the Scheme. Based on available information, works comprise junction improvements and cycleway/access improvements – these may result in the need for Temporary Traffic Regulation Orders (TROs) i.e. lane closures but no major construction works.
1 – Huddersfield and 2 – Hillhouse and Fartown	Strategic highway scheme	Highways improvements to the junction of Leeds Road/Thistle Street/Hillhouse Lane.	Kirklees Council	Strategic Scheme	No information available.	Unsure of programme for works so worst-case assessment has assumed that construction works may overlap with construction works for the Scheme. Based on available information, works comprise junction improvements and cycleway/access improvements – these may result in Temporary TROs i.e. lane closures but no major construction works.
2 – Hillhouse and Fartown	Strategic highway scheme	Highways improvements to the junction of Leeds Road/Old Fieldhouse Road.	Kirklees Council	Strategic Scheme	No information available.	Based on available information, works comprise junction improvements and cycleway/access improvements – these may result in Temporary TROs i.e. lane closures but no major construction works.
4 – Colne Bridge and Battyeford	Strategic highway scheme	A62/A644 Wakefield Road (Cooper Bridge) -	Kirklees Council	Strategic Scheme	No information available.	Proposed Scheme but not yet funded. Unsure of programme for works so worst-case assessment has assumed that construction works may overlap with construction works for the Scheme.
4 – Colne Bridge and Battyeford	Strategic housing scheme	Kirklees Local Plan Allocation HS11 – housing allocation for 1,460 dwellings with potential for a further 498 dwellings beyond the plan period	Land north of Bradley Road, Bradley		No information available.	Unsure of programme for works so worst-case assessment has assumed that construction works may overlap with construction works for the Scheme.
6 – Ravensthorpe and Westtown	Strategic housing scheme	Kirklees Local Plan Allocation HS61 (Dewsbury Riverside) – housing allocation for 4000 units (1869 units during plan period, with potential for a further 2131 beyond the plan period).	Land off Ravensthorpe Road, Dewsbury		Dewsbury Riverside Masterplan document is available	Unsure of programme for works so worst-case assessment has assumed that construction works may overlap with construction works for the Scheme.

Table 22-5 Assessment of Inter-Scheme cumulative effects

Route Section	Planning application ref.	Development description	Inter-scheme cumulative effects during construction	Inter-scheme cumulative effects during operation
1 – Huddersfield	2020/90014	Demolition of existing building and erection of car sales and speculative B1/B2 unit with associated parking and access	The Scheme at this location comprises realignment of track including works within the tunnels, gantries and a temporary compound in this area and the main works are located circa 350m from the RFFP, (although the construction compound locations is only circa 100m from the RFFP. Therefore, any potential impacts would be localised and temporary. Given the limited civil engineering construction works for the Scheme in this area and the distance between the track works and the RFFP, no significant cumulative effects are expected.	The Scheme will introduce changes to the track alignment and the introduction of OLE and signalling infrastructure on the track however these are in keeping with the existing baseline, together with the distance from the Scheme (permanent works) to the RFFP, around 350m no significant cumulative effects are expected.
3 – Deighton and Bradley	2017/91111	Outline application for erection of industrial development for B1 (business), B2 (general industry), and B8 (storage and distribution) uses	The Scheme includes construction of a replacement footbridge (Wheatley's Overbridge (MVL3/103)), minor alterations to Bradley's No.2 (BBW/1) Overbridge (MVL3/105) and provision of temporary construction compounds. The RFFP is located adjacent to the Scheme boundary. Potential Inter-Scheme effects would arise in relation to noise and vibration and air quality during the construction phase as well as the potential for impacts on land contamination. Temporary impacts on the local landscape character and visual amenity would arise as a result of the construction works of the RFFP. However, based on the understanding of the proposed development, the anticipated effects would be localised and temporary and with the implementation of good practice measures by the RFFP and the mitigation identified in relation to the Scheme no significant cumulative impacts are identified.	The RFFP would appear to be in keeping with the existing baseline context given the surrounding land uses and the Scheme will not introduce any changes to the rail environment that are not in keeping with the existing baseline environment. It is considered that vegetation along the northern boundary of the proposed development is retained. Therefore, no significant cumulative effects are anticipated.
4 – Colne Bridge and Battyeford	2016/93896	Erection of 4 dwellings and associated works	Given the scale of the RFFP, no significant cumulative impacts are expected due to the minor works proposed for the RFFP.	No significant cumulative impacts identified as no significant changes to the existing baseline environment of the Scheme at this location.
4 – Colne Bridge and Battyeford	2017/91208	Outline application for erection of industrial development of up to 3684 sqm B1c/B2/B8, with means of access (to, but not within, the site) from Colnebridge Road	The Scheme includes demolition and reconstruction works to B6118 Bridge Road Overbridge (MVL3/107) as well as works to Huddersfield Broad Canal Underbridge (MVL3/108S), the construction of the Bradley Power Supply Point. The RFFP is located adjacent to the Scheme boundary. Potential Inter-Scheme effects would arise in relation to air quality during the construction phase as well as the potential for impacts on land contamination however these are not considered to be significant given the works proposed. The RFFP site is regarded as being effectively within Flood Zone 1 and it is not considered that there will be any significant flooding caused either within the site or in the surrounding area by the future surface water run-off. Temporary impacts on the local landscape character and visual amenity would arise as a result of the construction works of the RFFP, this may be visible in viewpoint 33 but this is not considered to be significant. Users of the canal network and associated towpath are likely to experience moderate adverse effects due to the combined impacts from noise and vibration and visual impact should the construction works of the Scheme and RFFP overlap. Any effects will be minimised through the implementation of good practice measures and will be temporary in nature and so no significant cumulative impacts from the above are identified.	The proposed RFFP development would be in keeping with the existing baseline context of the area which houses a number of industrial units. The works to the Scheme would be similar to baseline conditions in terms of railway provision, however a new PSP building is proposed in this area however again this would be in keeping with the industrial backdrop. Therefore, no significant cumulative impacts are identified.
6 – Ravensthorpe and Westtown	2017/94119	Demolition of existing building, erection of new building for educational classroom, cafe and toilets, upgraded access road, car parking, cycle parking, picnic and play areas.	The Scheme is limited to four-tracking and OLE in this area. Given the limited civil engineering works for the Scheme and the small-scale development of the RFFP (located primarily on existing hardstanding and waste ground), impacts are anticipated to be very localised and temporary. Therefore, no significant cumulative effects are anticipated.	No significant cumulative impacts identified as no significant changes to the baseline environment from either the Scheme or the RFFP at this location (the new building would be of a similar size and scale to the existing built form). Significant cumulative effects are not anticipated.

Route Section	Planning application ref.	Development description	Inter-scheme cumulative effects during construction	Inter-scheme cumulative effects during operation
			The planning application for the RFFP did acknowledge that works were planned to upgrade the railway in this location and did not identify any potential cumulative effects for either construction or operation.	
6 – Ravensthorpe and Westtown	2017/90443	Erection of 3 units for B1 (light industrial) and B8 use, erection of two storey office building and alterations to existing building.	This RFFP is located on land to the east of the Scheme and directly to the east of Forge Lane Quarry.	Due to the distance between the RFFP and the Scheme there are no significant cumulative effects.
6 – Ravensthorpe and Westtown	2016/94241	Non-Material Amendment to previous permission 2007/91742 for erection of 7 terraced industrial units	Construction is currently in progress and is therefore anticipated to be complete prior to the Scheme construction works commencing. No significant cumulative impacts identified	No significant changes to the baseline environment of the Scheme at this location. The development would introduce new built form into the study area however this is similar to surrounding land uses. The woodland buffer to the railway line would be retained. Therefore, no significant cumulative effects are anticipated.
6 – Ravensthorpe and Westtown	2016/94118	Outline application for residential development	The Scheme works include the construction of a new 3 arm roundabout and provision of an access into the new Ravensthorpe Station. The RFFP and Scheme would result in the total removal of the cropmark HER 642, resulting in a major adverse cumulative impact and **Moderate adverse** (permanent) cumulative effect on the asset, which is a significant effect. The Scheme alone would only result in part removal of this asset. Residents of Ravensthorpe Road in proximity to the Scheme compounds and the RFFP are likely to experience adverse effects due to the combined effects of noise and vibration and visual impact however these will be localised and temporary in nature. These will be minimised through the implementation of good practice measures.	The Scheme works include the construction of a new 3 arm roundabout and provision of an access into the new Ravensthorpe Station. The development would introduce new built form into the area and so would have visual impact implications, however this would be dominated by the new housing development and so no significant cumulative effects are anticipated.
6 – Ravensthorpe and Westtown	2016/94117	Outline application for 120 residential units at Lees Hall Road	Given the distance from the Scheme and the temporary nature of the RFFP, no significant cumulative impacts identified	The Scheme works include the construction of a new 3 arm roundabout and provision of an access into the new Ravensthorpe Station. The development would introduce new built form into the area and so would have visual impact implications, however given the distance and the fact that any visual impacts would be dominated by the new housing development no significant cumulative effects are anticipated.
6 – Ravensthorpe and Westtown	2017/94080	Erection of precast concrete production unit, demolition of existing casting shed and ancillary buildings, associated site works to modify external storage areas and installation of gantry cranes – condition to vary plans and specs (2019/92570)	The RFFP is located adjacent to the Scheme boundary, works to the Scheme are mainly related to track and associated embankment works on the Wakefield line however the main Ravensthorpe compound is located in close proximity to the RFFP. Potential Inter-Scheme effects could arise in relation to noise and vibration, air quality, contaminated land and water. However, with the implementation of good practice measures by the RFFP and the mitigation identified in relation to the Scheme, any effects would be localised. No significant cumulative impacts identified.	No significant cumulative impacts identified as no significant changes to the baseline environment of the Scheme or the RFFP at this location. The RFFP application considers that noise levels will be reduced due to building reconfiguration.
1 – Huddersfield and 2 – Hillhouse and Fartown	Strategic highway scheme	A62 Smart Corridor (Leeds Road - Phase 1)	The RFFP is located over 250m from the Scheme. Works at the RFFP are junction improvement and cycle way improvements only which may result in the need for TTROs. The effects would be localised and temporary and no significant cumulative effects are predicted.	No significant cumulative impacts identified as no significant changes to the baseline environment of the RFFP and due to the distance from the Scheme.
1 – Huddersfield	Strategic highway scheme	Highways improvements to the junction of Huddersfield Ring Road/Southgate/Northumberland Street.	The RFFP is located over 250m from the Scheme. Works at the RFFP are junction improvement and cycle way improvements only which may result in the need for TTROs. The effects would be localised and temporary and no significant cumulative effects are predicted.	No significant cumulative impacts identified as no significant changes to the baseline environment of the RFFP and due to the distance from the Scheme.

Route Section	Planning application ref.	Development description	Inter-scheme cumulative effects during construction	Inter-scheme cumulative effects during operation
1 – Huddersfield	Strategic highway scheme	Highways improvements to the junction of Leeds Road/Lower Fitzwilliam Street/Gasworks Street.	The RFFP is located over 250m from the Scheme. Works at the RFFP are junction improvement and cycle way improvements only which may result in the need for TTROs. The effects would be localised and temporary and no significant cumulative effects are predicted.	No significant cumulative impacts identified as no significant changes to the baseline environment of the RFFP and due to the distance from the Scheme.
1 – Huddersfield and 2 – Hillhouse and Fartown	Strategic highway scheme	Highways improvements to the junction of Leeds Road/Thistle Street/Hillhouse Lane.	The RFFP is located over 250m from the Scheme. Works at the RFFP are junction improvement and cycle way improvements only which may result in the need for TTROs. The effects would be localised and temporary and no significant cumulative effects are predicted.	No significant cumulative impacts identified as no significant changes to the baseline environment of the RFFP and due to the distance from the Scheme.
2 – Hillhouse and Fartown	Strategic highway scheme	Highways improvements to the junction of Leeds Road/Old Fieldhouse Road.	The RFFP is located over 250m from the Scheme. Works at the RFFP are junction improvement and cycle way improvements only which may result in the need for TTROs. The effects would be localised and temporary and no significant cumulative effects are predicted.	No significant cumulative impacts identified as no significant changes to the baseline environment of the RFFP and due to the distance from the Scheme.
4 – Colne Bridge and Battyeford	Strategic highway scheme	A62/A644 Wakefield Road (Cooper Bridge)	The RFFP is located over 250m from the Scheme. No significant cumulative effects are predicted.	No significant cumulative impacts identified as no significant changes to the existing environment of the Scheme or the RFFP at this location.
4 – Colne Bridge and Battyeford	Strategic housing scheme	Kirklees Local Plan Allocation HS11 – housing allocation for 1.460 dwellings with potential for a further 498 dwellings beyond the plan period	Given the distance between the Scheme and the RFFP no significant cumulative effects are predicted	No significant cumulative impacts identified as no significant changes to the existing environment of the Scheme at this location
6 – Ravensthorpe and Westtown	Strategic housing scheme	Kirklees Local Plan Allocation HS61 (Dewsbury Riverside) – housing allocation for 4000 units (1869 units during plan period, with potential for a further 2131 beyond the plan period).	The Scheme works include the construction of a new 3 arm roundabout and provision of an access into the new Ravensthorpe Station. The RFFP and Scheme would result in the total removal of the cropmark HER 642, resulting in a major adverse cumulative impact and **Moderate adverse** (permanent) cumulative effect on the asset, which is a significant effect. The Scheme alone would only result in part removal of this asset. Residents of Ravensthorpe Road in proximity to the Scheme compounds and the RFFP are likely to experience adverse effects due to the combined effects of noise and vibration and visual impact however these will be localised and temporary in nature. These will be minimised through the implementation of good practice measures. The RFFP is not located within any statutory or non-statutory designated nature conservation sites but is located directly adjacent to Jordan Wood and Oliver Wood LWS. The Kirklees Wildlife Habitat Network is also located within the allocation site. Impacts on ecological features are not known at this stage, but any impacts will need to be adequately mitigated in accordance with local and national planning policy and to comply with protected species licensing requirements, where necessary. In view of this, no significant cumulative effects are anticipated on IEF. An area of around 160ha of agricultural land will be affected which will result in very large cumulative adverse effects. The Scheme alone would only result in part removal of this asset.	The Scheme works include the construction of a new 3 arm roundabout and provision of an access into the new Ravensthorpe Station. The development would introduce new built form into the area and so would have visual impact implications, however given the distance and the fact that any visual impacts would be dominated by the new housing development no significant cumulative effects are anticipated.

22.8 Potential effects

Assessment of the Inter-Scheme cumulative effects

22.8.1 Significant cumulative effects (permanent) are anticipated due to the total removal of the cropmark HER 642 when the Scheme is considered in combination with both the Kirklees Local Plan Allocation HS61 (Dewsbury Riverside) and outline application for residential development on land at Ravensthorpe Road (Planning Reference 2016/94118). The RFFP sites are both located on the same lot and therefore it is assumed that only one development can be brought forward; similar effects are anticipated if either RFFP was to be brought forward.

22.8.2 Significant temporary adverse effects are anticipated should the construction of the Scheme and the Dewsbury Riverside site come forward concurrently. Effects are likely to be experienced by residents of Ravensthorpe Road due to the proximity to the Scheme and RFFP. Combined effects are likely to result in relation to noise and vibration and visual impact.

22.8.3 Significant temporary adverse effects are anticipated should the construction of the Scheme and the outline application for residential development on land at Ravensthorpe Road (Planning Reference 2016/94118). Effects are likely to be experienced by residents of Ravensthorpe Road due to the proximity to the Scheme and RFFP. Combined effects are likely to result in relation to noise and vibration and visual impact. The RFFP sites highlighted above (Dewsbury Riverside and Outline application 2016/94118) are both located on the same lot and therefore it is assumed that only one development can be brought forward; similar effects are anticipated if either RFFP was to be brought forward.

22.8.4 Significant temporary adverse effects are anticipated should the construction of the Scheme and the Outline application for erection of industrial development of up to 3684 sqm B1c/B2/B8, with means of access (to, but not within, the site) from Colnebridge Road (Planning Reference 2017/91208). Effects are likely to be experienced by users of the canal network due to the proximity to the Scheme and RFFP. No other significant cumulative effects are predicted.

Inter-Scheme effects mitigation

22.8.5 Part A of the CoCP which is provided in Appendix 2-1 in Volume 3 of this ES sets out measures that will be employed to minimise potential effects during the construction phase of the Scheme, including general measures for controlling noise and vibration.

22.8.6 Part B of the CoCP will include details of the management of construction effects for specific disciplines, including a Noise and Vibration Management Plan (NVMP). Part B of the CoCP will be submitted to and approved pursuant to a condition to be attached to the deemed planning permission[5]. Part B of the CoCP will also incorporate an External Communications Programme.

22.8.7 The NVMP will define the framework by which construction noise and vibration will be managed. It will include:

- How works are to be conducted in accordance with Section 61 consents in consultation with the local authority;
- Detail on the scheduling of staged Section 61 applications;

[5] On making an order under the Transport and Works Act 1992, the Secretary of State may direct that planning permission shall be deemed to be granted, subject to such conditions (if any) as may be specified in the direction.

- details of construction noise and vibration thresholds in terms of significance and the criteria for noise insulation or temporary rehousing;
- details of how NSR, such as households, will be kept informed of construction works and how they can contact Network Rail.

22.8.8 The CTMP (to be submitted pursuant to a condition attached to the deemed planning permission) will include measures to be undertaken during the construction stage. Each stage of construction will be the subject of a separate CTMP. These documents will address the requirements for traffic management measures such as:

- Traffic route signage;
- Signing and guarding of compound access and egress;
- Co-ordination of road closures; and
- The need for diversions as well as any route timing or volume restrictions.

Residual effects

22.8.9 Even with the implementation of mitigation measures, significant adverse effects are anticipated as outlined in paragraphs 22.8.1 to 22.8.4.

- Significant cumulative effects (permanent) are anticipated due to the total removal of the cropmark HER 642 when the Scheme is considered in combination with both the Kirklees Local Plan Allocation HS61 (Dewsbury Riverside) and outline application for residential development on land at Ravensthorpe Road (Planning Reference 2016/94118);
- Significant temporary adverse effects are anticipated should the construction of the Scheme and the Dewsbury Riverside site come forward concurrently. Effects are likely to be experienced by residents of Ravensthorpe Road due to the proximity to the Scheme and RFFP. Combined effects are likely to result in relation to noise and vibration and visual impact;
- Significant temporary adverse effects are anticipated should the construction of the Scheme and the outline application for residential development on land at Ravensthorpe Road (Planning Reference 2016/94118). Effects are likely to be experienced by residents of Ravensthorpe Road due to the proximity to the Scheme and RFFP. Combined effects are likely to result in relation to noise and vibration and visual impact; and
- Significant temporary adverse effects are anticipated should the construction of the Scheme and the Outline application for erection of industrial development of up to 3684 sqm B1c/B2/B8, with means of access (to, but not within, the site) from Colnebridge Road (Planning Reference 2017/91208). Effects are likely to be experienced by users of the canal network due to the proximity to the Scheme and RFFP.