



**Haweswater Aqueduct Resilience Programme - Proposed Marl Hill
Section**

Environmental Statement

Volume 2

Chapter 19: Cumulative Effects

June 2021



Haweswater Aqueduct Resilience Programme - Proposed Marl Hill Section

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Client Name: United Utilities Water Ltd

Jacobs U.K. Limited

5 First Street
Manchester M15 4GU
United Kingdom
T +44 (0)161 235 6000
F +44 (0)161 235 6001
www.jacobs.com

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19. Cumulative Effects

19.1 Introduction

- 1) This chapter presents an assessment of the potential for likely significant cumulative effects of the Proposed Marl Hill Section. Part 1 of Schedule 4¹ of the EIA Regulations requires consideration of the cumulative effects of a development. IEMA (2011) notes that impacts can act together in an additive and/or synergistic manner to result in cumulative effects, i.e. impacts may overlap or act in combination with each other, leading to more significant environmental effects than if the impacts were considered in isolation.
- 2) Within this ES two types of cumulative effect have been considered:
 - *Intra-project effects*: when a resource or receptor is affected by more than one type of environmental impact from the same development. For example, a local community may be subject to air quality, noise, severance and visual impacts, as indicated in Illustration 19.1
 - *Inter-project effects*: when an environmental resource or receptor is affected by more than one development. For example, several separate developments within the same area could lead to more a significant surplus of material arisings than if the developments were considered in isolation, as indicated in Illustration 19.2.

Illustration 19.1: Intra-Project Effects

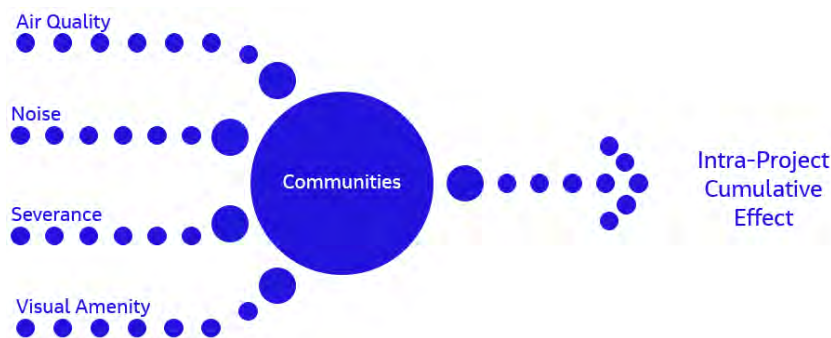
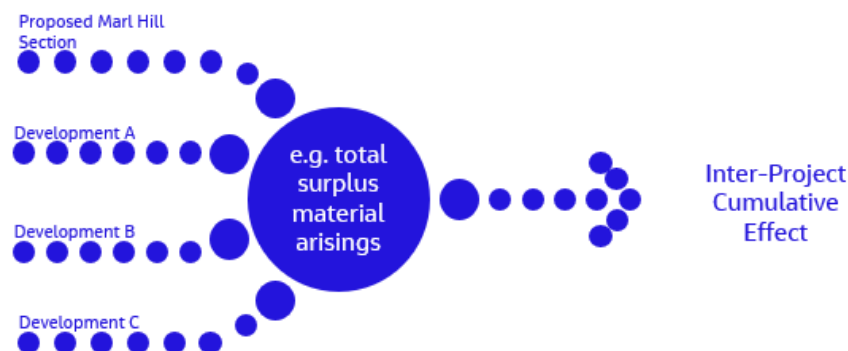


Illustration 19.2: Inter-Project Effects



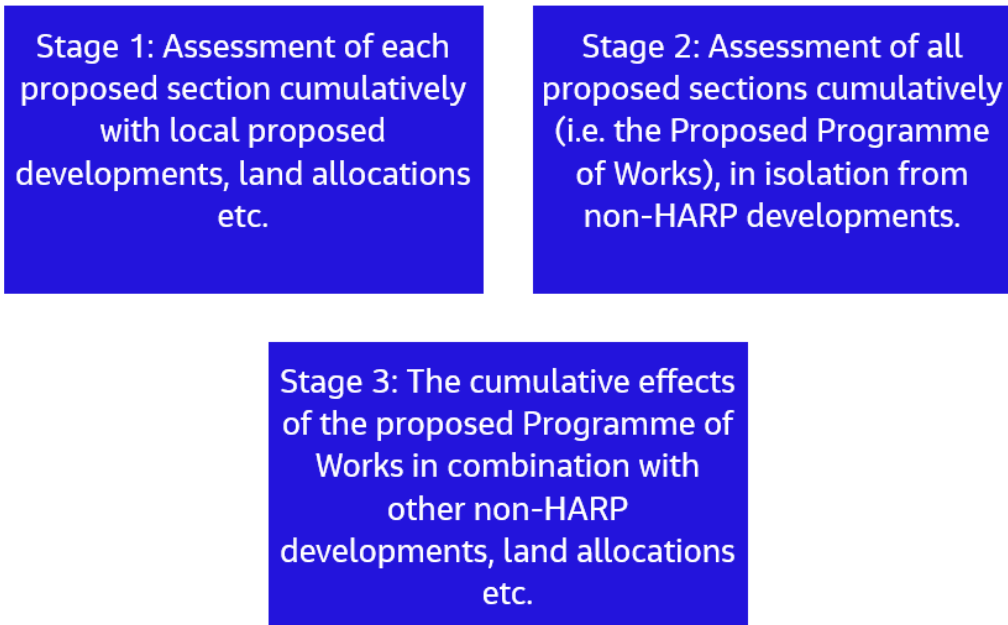
- 3) Intra-project effects (i.e. the cumulation of effects associated with the Proposed Marl Hill Section on individual communities or receptor groups) have been addressed by the scope of Chapter 14: Communities and Health. Chapter 14 considers the disturbance effects due to combinations of any two or more visual, traffic, air quality and noise effects coinciding at a particular location or receptor) which

¹ The Town and Country Planning (Environmental Impact Assessment) Regulations (2017)

have the potential to deter users from, or affect the functioning of, that location or receptor. The assessment of disturbance effects considers community receptors within three community areas: Newton-in-Bowland, Bashall Eaves and Waddington. Intra-project effects with the Off-Site Highways Works (Volume 5) and the Proposed Ribble Crossing (Volume 6) are considered further in Section 19.6.

- 4) Inter-project effects (i.e. the effects associated with the Proposed Marl Hill Section in combination with other proposed developments, including the wider Proposed Programme of Works) have been examined through one of several stages, as summarised in Illustration 19.3.

Illustration 19.3: Stages of Intra-Project Cumulative Assessment



- 5) Stage 1 of inter-project effects assessment as indicated in Illustration 19.3 (i.e. the Proposed Marl Hill Section in combination with other local proposed developments) has been addressed within the topic chapters of this ES (Chapters 6-18), and the findings are therefore not repeated in this chapter. However, this chapter does provide a cross-referencing table to confirm which local proposed developments are considered by Chapters 6-18. This chapter also provides information regarding scoping and consultation approaches (Section 19.2), key guidance which informed the cumulative assessment process (Section 19.3), and methodology including details of which local developments were included in the assessment (Section 19.4).
- 6) Stage 2 and Stage 3 of inter-project effects assessment as indicated in Illustration 19.3 relate to the wider Proposed Programme of Works, and are reported in this chapter.

19.2 Scoping and Consultations

19.2.1 Scoping

- 7) A cumulative effects chapter was included within the EIA Scoping Report, which was submitted to the relevant planning authorities for comment in November 2019, followed by a Scoping Addendum in December 2020 due to design changes and refinements. Scoping Report responses were provided by each of the local authorities and these have been reviewed and incorporated into the assessment. Scoping comments and responses are outlined in Appendix 4.1.
- 8) On the particular topic of cumulative assessment, United Utilities wrote in 2020 to each of the local planning authorities (LPAs) in which HARP is located to explain the proposed approach. This proposed approach corresponds with the stages outlined in Illustration 19.3 above, and was developed to comply with the EIA Regulations.

19.2.2 Consultation

- 9) Consultation in relation to cumulative effects has focused on input from Ribble Valley Borough Council, which advised United Utilities of proposed developments in the area of the Proposed Marl Hill Section that should be considered in the assessment.

19.3 Key Legislation and Guidance

- 10) There is no legislation specific to cumulative effects, and there are no statutory protocols for undertaking cumulative assessment. However, most assessments are based on industry good practice combined with guidance from government and other organisations. Table 19.1 introduces relevant cumulative effects guidance. The table is not intended to be exhaustive but to provide an indication of the variables taken into account when considering cumulative effects.

Table 19.1: Cumulative Effects Guidance

Applicable Legislation/Guidance	Description
European Commission, Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions, 1999	This guidance describes some of the approaches that can be used in scoping and identifying impacts and then in evaluating the effects. Scoping and impact identification techniques identify how and where interactions of effects would occur, while evaluation techniques describe the magnitude and significance of impacts based on their context and intensity.
Ministry of Housing, Communities and Local Government, National Planning Policy Framework, February 2019	The guidance describes approaches to some environmental topics including highways: <i>'in the context of the Framework – and in particular the presumption in favour of sustainable development – arguments that an application is premature are unlikely to justify a refusal of planning permission other than in the limited circumstances where ... the development proposed is so substantial, or its cumulative effect would be so significant, that to grant permission would undermine the plan-making process by predetermining decisions about the scale, location or phasing of new development that are central to an emerging plan...'</i>
Design Manual for Roads and Bridges ("DMRB") Volume 11, Section 2, Part 5 (Ref 16-1)	DMRB identifies two types of cumulative impact: <i>'a) the combined action of different environmental topic-specific impacts upon a single resource/receptor, which are termed "in combination" effects; and b) the combined action of a number of different projects, cumulatively with the project being assessed, on a single resource/receptor, which are termed "cumulative" effects. This can include multiple impacts of the same or similar type from a number of projects upon the same receptor/resource.'</i>

19.4 Assessment Methodology

19.4.1 Stage 1 Inter-Project Effects (Local)

- 11) The Stage 1 inter-project cumulative effects assessment considered relevant proposed developments and development plan land allocations within 5 km of the Proposed Marl Hill Section.
- 12) As noted in Section 19.2, proposed developments and development plan land allocations to be included in the assessment were agreed through scoping and consultation with the LPAs. LPAs provided a list of planning application data in May 2020 which formed a 'long list' of potential developments for further consideration by each of the EIA disciplines. The original search was updated prior to a cut-off date in

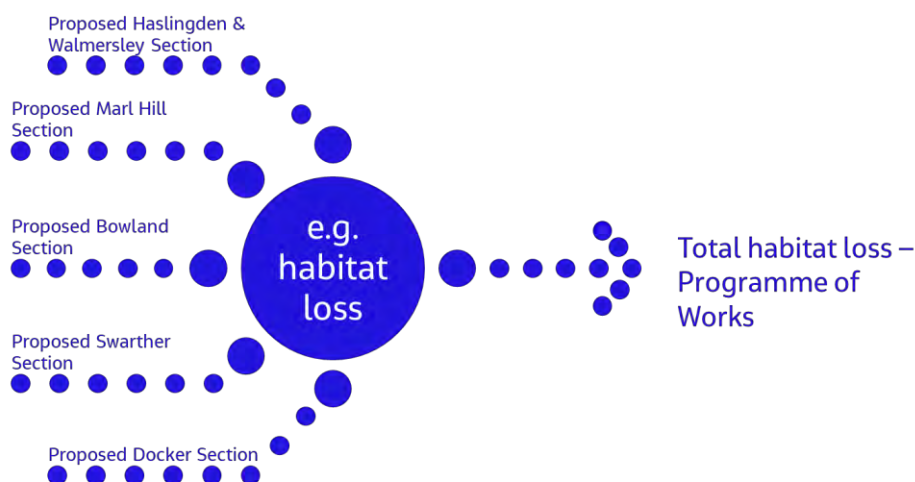
January 2021. Figure 19.1 identifies proposed local developments and land allocations that entered the cumulative assessment process.

- 13) The long list was made available to all technical disciplines who then exercised professional judgement in determining which proposed local developments might reasonably and foreseeably act cumulatively with their respective areas of interest. The proposed third-party developments and LPA land allocations selected from the long list differed from discipline to discipline, but in all cases only likely significant cumulative effects were considered. Non-significant potential cumulative effects were taken no further.
- 14) For each development or land allocation, consideration was given to the anticipated programme. In some cases, professional judgement was applied to establish likely development parameters and environmental effects.

19.4.2 Stage 2 Inter-Project Effects (Proposed Programme of Works)

- 15) As explained in Chapter 1: Introduction, the Proposed Marl Hill Section is one of five separate developments forming the overall Haweswater Aqueduct Resilience Programme, referred to as the Proposed Programme of Works. The Stage 2 inter-project cumulative effects assessment therefore examined the effects of the Proposed Marl Hill Section in combination with each the following HARP developments (sections):
 - Proposed Docker Section
 - Proposed Swarther Section
 - Proposed Bowland Section
 - Proposed Haslingden and Walmersley Section.
- 16) Although the above sections are generally too geographically distinct from each other to result in cumulative inter-project effects with the Proposed Marl Hill Section at a local scale² (covered in Chapters 6-18), this chapter considers a wider regional context to encompass all five sections of the Proposed Programme of Works together.
- 17) Illustration 19.4 presents the principle of how cumulative effects were addressed across all five proposed sections of HARP.

Illustration 19.4: Approach to Cumulative Effects for the Proposed Programme of Works



- 18) To consider the effects of local proposed development construction traffic movements for the Stage 2 inter-project assessment, likely trip generation on the local and strategic road network was quantified

² Refer to Chapter 6: Landscape and Arboriculture for details of cumulative landscape and visual effects between the proposed Newton-in-Bowland compound (Proposed Bowland Section) and the proposed Bonstone compound (Proposed Marl Hill Section).

where possible. Publicly available information was assigned to the anticipated 2024 peak construction period of the Proposed Marl Hill Section. Assessments of baseline traffic network conditions incorporate committed local developments, and other development proposals in the planning system or adopted plans that have the potential to coincide with the relevant assessment periods of the Proposed Programme of Works. As such, any potential cumulative traffic effects are already incorporated within the traffic modelling undertaken as part of the Transport Assessment (Appendix 16.1).

- 19) Trip generation and distribution assumptions were obtained from documents published on the websites of Lancashire County Council, Ribble Valley Borough Council and South Ribble Borough Council. This process is considered to be robust as it quantifies proposed developments on top of the background growth that is derived from growth rates obtained from TEMPro³.

19.4.3 Stage 3 Inter-Project Effects (Proposed Programme of Works and other developments)

- 20) A review was undertaken of all ‘long ‘list’ proposed developments along all proposed sections of the Proposed Programme of Works to consider their scope, extent, and potential to result in adverse effects. The developments were considered in combination with the Proposed Programme of Works at a regional level, to determine whether there was potential for additional cumulative effects, over and above the likely significant environmental effects already described in the ES.

19.5 Assessment of Likely Significant Cumulative Effects

19.5.1 Stage 1 Inter-Project Effects (Local)

- 21) Each topic chapter of the ES (Chapters 6 to 18) has a section prior to the conclusion section which considers the potential for inter-project cumulative effects specific to its topic (e.g. Chapter 10 considers the potential for the Cultural Heritage effects of the Proposed Marl Hill Section to act in combination with the Cultural Heritage effects of the other developments).
- 22) Table 19.2 presents a list of the proposed local developments that were selected from the long list for further consideration in the respective topic chapters of the ES, grouped according to local authority.

Table 19.2: Local Developments Adopted in the Stage 1 Inter-Project Assessment

Proposed Development	Where Stage 1 assessment is undertaken in the ES
Lancashire County Council	
Planning application: Lancashire County Council Ref: LCC/2018/0060 Variation of condition 1 to extend mining operations at Bankfield Quarry, Clitheroe until 2033 with completed restoration by 2034	Chapter 7: Water Environment Chapter 9A: Terrestrial Ecology
Planning application: Lancashire County Council Ref: LCC/2016/0027 Importation and processing of construction and demolition waste including road planings and reclaimed asphalt pavement (RAP) including the regularisation of the rap Hopper at Bankfield Quarry	Chapter 9A: Terrestrial Ecology
Planning application: Lancashire County Council Ref: LCC/2017/0077	Chapter 9A: Terrestrial Ecology

³ Trip End Model Presentation Program (TEMPro) [Online] Available from <https://www.gov.uk/government/publications/tempro-downloads> [Accessed: January 2021]

Proposed Development	Where Stage 1 assessment is undertaken in the ES
The erection of solar photovoltaic panels and associated works including inverter station, switchgear housing, security fencing and integral connection to the Clitheroe WWTW	
Planning application: Lancashire County Council Ref: LCC/2021/0015 Waddington Fell Quarry Revised and Enhanced Quarry Restoration Scheme incorporating tunnel arisings from the Haweswater Aqueduct Resilience Programme (HARP) namely the Bowland and Marl Hill Sections	Chapter 7: Water Environment
Minerals and Waste Allocation SA1 – Safeguarding Rail Sidings (Allocation Ref: MRT4: Ribblesdale Sidings)	Chapter 9A: Terrestrial Ecology
Minerals and Waste Allocation WM2 – Large Scale Built Waste Management Facilities (Allocation Ref: BWF23: Salthill Industrial Estate)	Chapter 9A: Terrestrial Ecology
Planning application: Lancashire County Council Ref: LCC/2019/0008 Demolition of existing caretakers' house to provide 8 car parking spaces with lighting and bin store area. Demolition of Block D building and erection of a single storey building to provide a multi-functional activity studio. Erection of a double storey extension to existing Block G building to provide ten classrooms. Resizing of existing multi use games area with erection of 3 m high ball stop fence. Creation of a new pedestrian entrance and widening of existing vehicular entrance on Turner Street. Erection of 2.4 m high weldmesh fencing along northern boundary and south eastern corner of the school site.	Chapter 16: Transport Planning
Ribble Valley Borough Council	
Planning application: Ribble Valley Borough Council Ref: 3/2018/1065 Advance infrastructure and enabling works, Clitheroe Works, Pimlico Industrial Area, Clitheroe	Chapter 9A: Terrestrial Ecology
Planning application: Ribble Valley Borough Council Ref: 3/2017/0573 Application for 36 single and two-storey dwellings (including 11 affordable units), car parking, landscaping and new access from Union Street	Chapter 9A: Terrestrial Ecology
Planning application: Ribble Valley Borough Council Ref: 3/2019/0877 Erection of 39 dwellings with landscaping, associated works and access from adjacent development site	Chapter 9A: Terrestrial Ecology
Planning application: Ribble Valley Borough Council Ref: 3/2017/0616 Demolition of existing buildings and construction of 60 dwellings and associated infrastructure	Chapter 9A: Terrestrial Ecology
Planning application: Ribble Valley Borough Council Ref: 3/2018/0236	Chapter 9A: Terrestrial Ecology

Proposed Development	Where Stage 1 assessment is undertaken in the ES
Erection of 27 light industrial units, 8 office units and associated access, parking and ancillary works	
Planning application: Ribble Valley Borough Council Ref: 3/2016/0328 Erection of 18 dwellings on land to the rear of Parker Avenue, Clitheroe following the demolition of No 15 Parker Avenue	Chapter 9A: Terrestrial Ecology
Planning application: Ribble Valley Borough Council Ref: 3/2018/0008 Demolition of existing dwelling and erection of 34 bungalows for the over 55s with associated access, parking, landscaping and open space	Chapter 9A: Terrestrial Ecology
Planning application: Ribble Valley Borough Council Ref: 3/2018/0914 Erection of 188 new dwellings including means of access and associated works. To include 57 affordable dwellings (29 affordable rent and 28 shared ownership)	Chapter 16: Transport Planning
Housing Allocation Policy Allocation Ref: HAL4 Land off Hawthorne Place, Clitheroe (40 dwellings)	Chapter 9A: Terrestrial Ecology
Housing Allocation Policy Allocation Ref: HAL3 Land at Chatburn Road, Clitheroe (20 dwellings)	Chapter 9A: Terrestrial Ecology
Housing Allocation Policy Allocation Ref: HAL5 Land at Highmoor Farm, Clitheroe (100 dwellings)	Chapter 9A: Terrestrial Ecology
Development Strategy Allocation Ref: DS1 Strategic development site at Standen, Clitheroe (1040 dwellings)	Chapter 9A: Terrestrial Ecology

19.5.2 Stage 2 Inter-Project Effects (Programme of Works)

- 23) The proposed sections of the Proposed Programme of Works are located in separate, geographically distinct areas. There are notable separation distances between the sections in most cases, and very limited scope for adverse effects to extend beyond the local assessment areas described in the topic chapters (for example, noise disturbance would not act cumulatively across different sections).
- 24) However, to ensure a complete and robust consideration of cumulative effects, this chapter considers a wider regional context to encompass all five sections of the Proposed Programme of Works together. A review of those topics likely to give rise to notable cumulative effects at a regional level highlighted biodiversity loss, surplus materials, construction vehicle movements, and tree loss.
- 25) Table 19.3 summarises the predicted cumulative effects of the overall Proposed Programme of Works.

Table 19.3: Inter-Project Cumulative Effects, United Utilities Developments

Proposed Development	Topic Area	Cumulative Effects Assessment
<p>Proposed Programme of Works:</p> <ul style="list-style-type: none"> ▪ Proposed Docker Section ▪ Proposed Swarther Section ▪ Proposed Bowland Section ▪ Proposed Marl Hill Section ▪ Proposed Haslingden and Walmersley Section 	<p>Biodiversity Loss</p>	<p>The combined potential habitat loss across the Proposed Programme of Works is expected to be over 150 hectares, including:</p> <ul style="list-style-type: none"> ▪ 17.3 ha of semi-improved neutral grassland ▪ 5.5 ha of marsh/marshy grassland ▪ 4.8 ha of young broad-leaved plantation woodland ▪ 2.8 ha of semi-improved acid grassland ▪ 2.3 ha of fen ▪ 1.8 ha of arable ▪ 104.6 ha of grassland (amenity, improved and poor semi-improved). <p>These combined figures include all potential habitat loss in advance of reinstatement works and does not take account of mitigation measures. This combined habitat loss is considered to constitute an additional potentially significant effect.</p>
	<p>Surplus Materials</p>	<p>Combined surplus excavated materials across the Proposed Programme of Works are (bulked tonnes):</p> <ul style="list-style-type: none"> ▪ Inert: 2,898,033 ▪ Hazardous: 30,506 ▪ Non-Hazardous: 122,023 ▪ Total: 3,050,562. <p>Final destinations for surplus material arisings from the tunnel excavations have also been evaluated for each individual section, with a view on regional landfill capacity.</p>
	<p>Construction Vehicle Movements</p>	<p>As a result of the overall Proposed Programme of Works there would be approximately 4087 additional weekly HGVs (two-way movements) on public highways at the peak of the construction. It is acknowledged that the M6 motorway could be used by construction vehicles associated with all sections of the Proposed Programme of Works. Given the capacity of the M6 and its junctions, and the infrequent use of the same highway sections across different proposed sections, this cumulative effect is not considered to be significant.</p>
	<p>Tree Loss</p>	<p>As a result of the overall Proposed Programme of Works there would be approximately 368 individual trees at risk of removal plus 301 tree groups and ten woodlands at risk of varying extents of loss. Given the regional scale of the combined developments and the extent of likely tree loss across this large regional area, this combined effect is not considered to constitute an additional potentially significant effect.</p>

26) As set out in Table 19.3, the combined biodiversity loss associated with the Proposed Programme of Works represents a significant effect. To address this, United Utilities has committed to protecting certain habitats on construction compounds as well as habitat improvements equating to approximately 10 % Biodiversity Net Gain. Given the mitigation in place across the Proposed Programme of Works and the overall net gain, the residual effect of the combined biodiversity loss is not considered to be significant.

19.5.3 Stage 3 Inter-Project Effects (Proposed Programme of Works and other developments)

- 27) A review of all 'long 'list' proposed developments along all sections of the Proposed Programme of Works identified that all proposals were 'local' in scope i.e. their environmental and social influence was confined to local areas and local communities. There were no third-party developments or proposed land allocations that could foreseeably act cumulatively with the Proposed Programme of Works and give rise to additional cumulative effects, over and above the likely significant environmental effects already described in the ES.

19.6 Intra-Project Cumulative Effects

- 28) This sections reports intra-project effects arising from the geographically dispersed elements of the Proposed Marl Hill Section which includes the Off-site Highways Works (Volume 5) and the Proposed Ribble Crossing (Volume 6). The highways works include road widening and junction modifications to enable HARP construction traffic and other local road users to travel safely on the proposed haulage routes. The Proposed Ribble Crossing is a dedicated haul route the north of Clitheroe to alleviate traffic impacts on local communities. Some of the environmental effects associated with the proposed off-site highways works and Proposed Ribble Crossing – such as landscape and visual effects and tree losses – have the potential to act cumulatively with those effects identified at the construction compounds. Table 19.4 summarises the cumulative effects identified between highways works and those effects identified in Volume 2 of the ES.

Table 19.4: Intra-Project Effects

Discipline	Potential For Cumulative Effects?	Compound Construction Effects	Off-Site Highways Effects	Cumulative Effects
Landscape and Arboriculture	Yes – highways works and compound works have the potential to affect landscape and arboricultural resources over a wider area within the AONB. Therefore, the potential for cumulative effects arising between the main compound works, satellite compounds and off-site highways works is recognised.	Yes – refer to Chapter 6	Yes – refer to Volume 5	<p>Yes</p> <p>The highways improvement works and construction activity for the compounds are programmed to occur sequentially, leading to cumulative landscape effects within the AONB over a wider area and longer period of time. Cumulative effects on landscape character and the wider landscape would arise due to disruption to settled rural areas, which would increase the perception of disruption and contrast with the rural character. The cumulative effects from vegetation loss and removal of boundary features such as hedgerows, dry stone walls and fences would also adversely affect the wider landscape.</p> <p>Cumulative visual effects would occur from the visual disturbance of construction activity and the movement of plant and machinery within the compounds, entering and exiting the compounds, and along the nearby road network. Travellers along the local footpaths and roads with proposed highways improvement works would experience frequent sequential views of the construction of laybys and road widening sections, and also may experience occasionally sequential views towards the construction compounds.</p> <p>Taking account of the sensitivity of the landscape (especially its AONB status), the dispersed landscape and visual effects associated with the highways works for the Proposed Marl Hill Section, and the potential for cumulative effects with other elements of the Proposed Marl Hill Section, cumulative landscape and visual effects are judged to be 'significant' in the context of the EIA Regulations.</p> <p>Losses associated with the proposals around the main construction areas of the Bonstone and Braddup compounds in combination</p>

Discipline	Potential For Cumulative Effects?	Compound Construction Effects	Off-Site Highways Effects	Cumulative Effects
				with those linked to the off-site highways and Proposed Ribble Crossing would give rise to cumulative effects when considered overall as elements of the wider Proposed Marl Hill Section. A total of 37 features (trees, tree groups and hedgerows) are at risk of removal, and 28 features (trees, tree groups and hedgerows) are at risk of partial removal. Taking account of the number of trees and tree groups potentially affected by the off-site highways proposals, the number of trees within this total regarded as 'notable', and their general contribution to landscape quality adjacent to and within nationally designated landscapes, cumulative effects on arboricultural resources are judged to be 'significant' in the context of the EIA Regulations.
Water Environment	Yes - highways works and compound works have the potential to affect assets in a similar area on a longer term basis. Therefore, potential effects are likely to be cumulative	Yes – refer to Chapter 7	Yes – refer to Volume 5	<p>No</p> <p>Unnamed Watercourse 2096 is expected to be affected by potential channel instability through the highways works and the main compound works. Following the implementation of recommended mitigation, this effect is not considered to be cumulative.</p> <p>Though temporary significant effects are predicted to occur on Bonstone Brook and Unnamed Watercourse 403 during the highways works and compound works, these effects would be separated by a period of several years and are not expected to be experienced in combination and are therefore not cumulative.</p>
Flood Risk	No – highways works and compound works are spatially separated so potential effects are not predicted to occur on the same watercourses	No	No	No
Ecology	Yes – highways works and compound works have the potential to affect assets on a longer term	Yes – refer to Chapter 9A and Chapter 9B	Yes – refer to Volume 5	<p>No</p> <p>Effects on species and designated sites are not considered cumulative due to the geographical separation of the works and</p>

Discipline	Potential For Cumulative Effects?	Compound Construction Effects	Off-Site Highways Effects	Cumulative Effects
	basis. Therefore, potential effects are likely to be cumulative			the embedded mitigation measures. Cumulative effects on terrestrial habitats are not expected to occur as significant effects are not anticipated on comparable habitats. No cumulative effects were identified for aquatic ecology.
Cultural Heritage	Yes – highways works and compound works have the potential to affect assets on a longer term basis. Therefore, potential effects are likely to be cumulative	Yes – refer to Chapter 10	No	No
Soils, Geology and Land Quality	Yes – highways works and compound works have the potential to affect assets on a longer term basis. Therefore, potential effects are likely to be cumulative	No	No	No
Materials and Waste	Yes – the combination of multiple proposed works has the potential to create cumulative effects	No	No	No
Public Access and Recreation	Yes – the combination of multiple proposed works has the potential to create cumulative effects	Yes – refer to Chapter 13	Yes – refer to Volume 5	No Local residents and users of public rights of way may be impacted by the extended duration of disruption to routes in the wider area. However, following implementation of mitigation, these effects are not expected to be significant.
Communities and Health	Yes – the combination of multiple proposed works has the potential to create cumulative effects	Yes – Refer to Chapter 14	Yes – refer to Volume 5	Yes United Utilities recognises that during the enabling works and construction phase, some villages and local residential areas would experience disturbance. Disturbance would arise mainly from the movement of heavy goods vehicles through settlements such as Chatburn, Grindleton, West Bradford, Waddington, as well as Clitheroe and past individual properties fronting onto the highway. A degree of disturbance is an unavoidable consequence of

Discipline	Potential For Cumulative Effects?	Compound Construction Effects	Off-Site Highways Effects	Cumulative Effects
				<p>constructing a major infrastructure project. Some of the community disturbance may be short-term and reversible, while other disturbance could extend into and throughout the duration of the construction phase.</p> <p>While the disturbance would centre on HGV movements other, less significant, effects may combine to also influence levels of disturbance – this is reported in Chapter 14: Communities and Health.</p>
Major Accidents	No – highways works and compound works are spatially separated from MAHP	No	No	No
Transport Planning	No – highways works and compounds work are not programmed to occur simultaneously	No	No	No
Noise and Vibration	No – highways works and compound works are spatially separated	No	Yes – refer to Volume 5	No
Air Quality	No – highways works and compound works are spatially separated	No	No	No

19.7 Conclusion

- 29) A staged assessment of cumulative effects has been undertaken for the Proposed Marl Hill Section. These stages of assessment have included the consideration of local proposed developments and land allocations, identified with the assistance of local planning authorities, against the likely significant effects of the Proposed Marl Hill Section. Where cumulative effects with local proposed developments and land allocations have been identified, none has been identified as giving rise to the risk of greater effects than those already considered in the individual topic assessments.
- 30) Combined effects across the full Proposed Programme of Works (i.e. all developments being undertaken as part of the Haweswater Aqueduct Resilience Programme) have been assessed. The combined potential habitat loss was assessed to constitute an additional potentially significant effect. Mitigation has been identified in the form of habitat protection and a commitment to generate a 10% Biodiversity Net Gain across the Proposed Programme of Works which would reduce the residual effect to not significant.
- 31) No developments have been identified that would act cumulatively with the Proposed Programme of Works at a regional level.
- 32) Taking account of the sensitivity of the landscape (especially its AONB status), there would be landscape and visual effects associated with the highways works for the Proposed Marl Hill Section, the Proposed Ribble Crossing and the potential for cumulative effects with other elements of the Proposed Marl Hill Section. In addition, the total number of trees and tree groups potentially affected by the off-site highways works along with the Proposed Marl Hill Section, the Proposed Ribble Crossing and their general contribution to landscape quality adjacent to and within nationally designated landscapes, contribute to significant cumulative effects on arboricultural resources.
- 33) Disturbance would also arise mainly from the movement of heavy goods vehicles through settlements such as Chatburn, Grindleton, West Bradford, Waddington, as well as Clitheroe and past individual properties fronting onto the highway. This could be significant when disturbance for the off-site highways works along with the Proposed Marl Hill Section and the Proposed Ribble Crossing act cumulatively, depending on enabling works and construction programmes. A degree of disturbance is an unavoidable consequence of constructing a major infrastructure project. Some of the community disturbance may be short-term and reversible, while other disturbance could extend into and throughout the duration of the construction phase.
- 34) This cumulative assessment therefore concludes that likely significant cumulative effects remain for the Proposed Marl Hill Section.