



**Haweswater Aqueduct Resilience Programme - Proposed Bowland
Section**

Environmental Statement

Volume 2

Chapter 4: EIA Methodology

June 2021



Haweswater Aqueduct Resilience Programme - Proposed Bowland Section

Project No: B27070CT
Document Title: Proposed Bowland Section Environmental Statement Volume 2
Chapter 4: EIA Methodology
Document Ref.: LCC_RVBC-BO-ES-004
Revision: 0
Date: June 2021
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4. EIA Methodology

4.1 Introduction

- 1) Environmental Impact Assessment (EIA) is a process which enables the potential environmental effects of a proposed development to be identified, evaluated and, in the case of likely significant effects, avoided or mitigated. EIA contributes to the goals of sustainable development by improving environmental performance through project design. EIA also supports both the pre-application design and consultation process, and post-application decision-making for planning authorities.
- 2) The main objectives of EIA are to:
 - Develop a detailed understanding of the receiving environment (i.e. baseline environmental conditions) and its relationship with a proposed development. In the context of the EIA Regulations, the term 'environment' relates to both natural resources and the built and human environment. The built environment can include property assets and infrastructure, while the human environment may cover social and economic factors
 - Promote an iterative design process, where the design of a development evolves in response to environmental constraints and opportunities, taking account of technical and economic constraints
 - Identify potential environmental effects and investigate their likelihood, duration, reversibility and significance to the decision-making process
 - Describe the mitigation measures envisaged to prevent, reduce and where possible offset any significant adverse effects on the environment
 - Determine the significance of any residual environmental effects following mitigation, and examine how these residual effects, both positive and negative, may influence the decision-making process
 - Report the findings of the EIA in an Environmental Statement (ES) which forms part of an EIA development planning application.

4.2 Pre-EIA Stages

4.2.1 EIA Screening

- 3) Under Part 2 (6) of the Town and Country Planning (Environmental Impact Assessment) Regulations (2017)¹ ('the EIA Regulations'), a developer who is minded to carry out development may request the relevant planning authority to adopt a Screening Opinion. The Screening Opinion advises whether an EIA is required to be submitted with a planning application or not.
- 4) In the case of the Proposed Bowland Section, United Utilities elected not to request a Screening Opinion from the planning authorities. Instead, United Utilities decided to progress as EIA development from the outset, acknowledging that the nature, scale and sensitive environmental setting of the Proposed Bowland Section warranted an EIA to assess its likely significant environmental effects.

4.2.2 EIA Scoping

- 5) Under Part 4 (15) of the EIA Regulations a developer proposing to make a planning application for EIA development may ask the relevant planning authority to provide a Scoping Opinion as to the information to be provided in the ES. United Utilities undertook EIA scoping studies in 2019. These culminated in the production and submission of an EIA Scoping Report to Lancaster City Council and Ribble Valley Borough Council in October 2019. Lancaster City Council and Ribble Valley Borough Council published their respective Scoping Opinions between December 2019 and January 2020.
- 6) A Scoping Addendum was submitted to Lancaster City Council and Ribble Valley Borough Council in February 2021. This Addendum was required as a result of design changes, refinements and the need

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

for alternative methodologies which arose since the first Scoping Opinions were published. The Addendum outlined where changes had arisen in relation to the October 2019 Scoping Report, while also confirming where approaches, methodologies and anticipated outcomes remained the same. Updated Scoping Opinions were published by the two local planning authorities in early 2021.

- 7) This ES has been prepared taking into consideration the Scoping Opinions received from the local planning authorities, and other responses to the October 2019 EIA Scoping Report and Scoping Addendum from statutory consultees and non-statutory stakeholders (see Appendix 4.1: Schedule of Consultation). The key feedback received within Scoping Opinions from the October 2019 Scoping Report is outlined within Appendix 4.1 and topic specific chapters, along with the changes that have been made to the EIA to respond to these comments.

4.3 Consultation and Engagement

- 8) Consultation and engagement have enabled iterative and ongoing inputs to the progression of the EIA and design process for the Proposed Bowland Section. The outcome of the consultation process, and how consultation feedback has been addressed in the ES, is set out in Appendix 4.1, with a brief overview in the paragraphs below. The Statement of Community Involvement (SoCI) further describes elements of the consultation process which have been undertaken, and forms part of the planning application documents for the Proposed Bowland Section:
- SoCI Document LCC-BO-APP-006: Lancaster City Council
 - SoCI Document RVBC-BO-APP-006: Ribble Valley Borough Council.
- 9) United Utilities hosted public exhibitions between February and March 2020 in Cumbria and Lancashire to present an update on the proposals and seek comments from the public. Exhibition visitors had the opportunity to fill in a comments sheet, and this feedback was provided to the project team. A deadline was set for this feedback, and responses invited via email or letter. Verbal comments were also captured by United Utilities.
- 10) However, due to COVID-19 restrictions, it was not possible for all exhibitions to be held in person and virtual exhibitions were held online instead. The communities were able to view information about the proposals, along with the opportunity to comment, ask questions and provide feedback. The information provided to the public at this time is available on <https://harpconsultation.co.uk/>.
- 11) A series of working group meetings were organised with planning officers, local authority officers, highways authorities', lead local flood authorities and other statutory organisations such as the Environment Agency and Natural England which have helped to shape design development and the EIA process. The working groups were hosted by United Utilities with support from members of the project team, including the EIA team. Technical working groups were also organised which focussed around environmental topic-specific discussions including methodology, baseline and reporting. Further information on topic-specific engagement can be found in the relevant technical chapters of this ES and their associated appendices (Chapters 6 to 18).
- 12) Discussions with potentially affected landowners were undertaken throughout the design and assessment process and, where practicable, requirements were incorporated into the design. This included consideration of aspects such as location of construction compounds, land-take requirements, and access arrangements to land and properties.

4.4 Scope of the EIA for the Proposed Bowland Section

4.4.1 Regulations and Guidance

- 13) The EIA process has been informed by relevant guidance and good practice, including the *Guidelines for Environmental Impact Assessment*².

² Institute of Environmental Management and Assessment (IEMA) (2017). Guidelines for Environmental Impact Assessment

- 14) Schedule 4 of the EIA Regulations prescribes the technical scope of an ES, which in turn has influenced the assessment methodology for this EIA. Schedule 4 Paragraph 5 of the EIA Regulations requires a description of the likely significant effects of a development on the environment resulting from:
- *'The construction and existence of the development, including, where relevant, demolition works*
 - *The use of natural resources, in particular land, soil, water and biodiversity, considering as far as possible the sustainable availability of these resources*
 - *The emission of pollutants, noise, vibration, light, heat and radiation, the creation of nuisances, and the disposal and recovery of waste*
 - *The risks to human health, cultural heritage or the environment (for example due to accidents or disasters)*
 - *The cumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources*
 - *The impact of the project on climate (for example the nature and magnitude of greenhouse gas emissions) and the vulnerability of the project to climate change*
 - *The technologies and the substances used.'*

4.4.2 General Approach

- 15) An assessment of the effects has been undertaken by technical specialists based on a comprehensive understanding of the construction, operation and maintenance of the development (as described in Chapter 3), and baseline environmental conditions through which the Proposed Bowland Section passes.
- 16) The potential for likely significant environmental effects has been assessed for each phase of the development (i.e. enabling works, construction, commissioning, and operation). Consideration was given to the following:
- The quality and sensitivity of environmental assets, resources and receptors which would be affected by the Proposed Bowland Section, and the magnitude of the effect
 - Spatial extent: whether potential environmental effects would be localised or geographically more extensive
 - Direct or indirect: whether effects would occur directly on receptors, for example noise emissions from construction plant being audible at nearby properties, or indirect, for example, subsoil erosion causing elevated levels of suspended solids in a watercourse which in turn leads to sediment deposition in fish spawning habitat
 - Timescale: duration of the impact on the environmental receptor, which may be temporary, associated with the construction activities, or permanent, as a longer-term effect of the development once operating
 - Reversibility: whether potential effects would be temporary or permanent, reversible or irreversible, and the timescales over which effects might be recorded
 - Beneficial or adverse: whether the predicted effects would be likely to be beneficial (positive and favourable) to the environment, adverse (negative or damaging) or neutral (causing no change to the baseline conditions)
 - Cumulative effects: other proposed developments or land allocations in the area whose own environmental effects may occur in combination with those associated with the Proposed Bowland Section. The scope of other developments considered in the cumulative assessment was agreed in consultation with the local planning authorities and is described in Chapter 19 of the ES.

4.5 Assessment Methods

4.5.1 Assessment Area

- 17) The assessment areas varied by environmental topic and are defined within the respective chapters of the ES. These are generally based on the anticipated geographical extent of the potential impacts and informed by relevant topic-specific criteria and published guidance.

4.5.2 Baseline Conditions

- 18) Establishing the baseline conditions enabled the potential changes to the environment, due to the development, to be identified. Baseline conditions are generally those present at the time of assessment, but where appropriate also take into account the likely 'future baseline' where the conditions could change before commencement of the construction or operation phases of the Proposed Bowland Section.
- 19) Each environmental topic has used relevant data-gathering methods and followed topic-specific guidelines to identify and report baseline conditions. This has involved conducting desk studies, undertaking specialist surveys where appropriate, third party data acquisition, and consultations with statutory and non-statutory stakeholders, to agree those methods of data collection and also to obtain data they hold. The EIA Scoping Opinion has also informed the data gathering and the surveys that have been undertaken.

4.5.3 Significance of Effects

- 20) A distinction has been made in the ES between the terms 'impacts' and 'effects'. An 'impact' is defined as a predicted change to the baseline environment, asset or resource resulting from an action or activity. An 'effect' refers to the consequence of an impact.
- 21) The general approach to assessment is based on the determination of the significance of effects from a combination of the sensitivity (or 'value') of the baseline conditions, and the potential magnitude of change due to the development.
- 22) The sensitivity of a receptor is determined by, among other things, its level of designation or legal protection, its susceptibility to or ability to accommodate change, the availability and efficacy of mitigation measures, and professional judgement.
- 23) Categories for describing the magnitude of change and the degree of significance have been developed and refined on a topic-by-topic level and are explained in the respective chapters of this ES. Some topics apply significance assessment criteria in accordance with recognised guidelines, while others such as air quality and flood risk assessment are confined to a risk-based approach without defining significance of effects.
- 24) When determining the significance of an environmental effect, factors such as the value of a receptor, the scale and scope of the impact, impact duration and the efficacy of available mitigation measures are taken into account. In most cases individual EIA topics have used a bespoke set of evaluation criteria, while in some cases a generic approach was adopted. Table 4.1 provides an example of how the sensitivity of a receptor and the magnitude of an impact contribute towards the significant of environmental effects.

Table 4.1: Forecasting the Significance of Effects

		Magnitude			
		Negligible	Minor	Moderate	Major
Sensitivity	Low	Negligible	Negligible / slight	Slight / moderate	Moderate
	Medium	Negligible / slight	Slight	Moderate	Moderate / major
	High	Slight	Slight / moderate	Moderate / major	Major

4.5.4 Mitigation and Residual Effects

Embedded Mitigation and Good Practice Measures

- 25) The proposals as submitted with the planning applications include three categories of environmental commitments:
- Embedded Mitigation: measures that form part of the engineering design, developed through the iterative design process, and summarised in Chapter 3: Design Evolution and Development Description
 - Good Practice: approaches and actions identified to avoid or reduce potential impacts during construction. These measures are set out in full within the Construction Code of Practice (CCoP) (Appendix 3.2)
 - Essential Mitigation: any additional project-specific measures needed to avoid, reduce or offset potential impacts that could otherwise result in effects considered significant in the context of the EIA Regulations.
- 26) For the purposes of assessment, the first two categories; embedded mitigation and good practice, were taken into account during the identification of effects as presented in the 'Assessment of likely significant effects' section of each topic chapter. The need for the third category; essential mitigation, was dependent on the outcome of this assessment, and where such measures are required, they are set out in the 'Essential Mitigation and Residual Effects' section of each topic chapter.

Essential Mitigation and Residual Effects

- 27) Where a potential adverse effect is identified with greater than negligible or minor significance, mitigation measures have been developed where feasible to avoid, reduce or offset the potential impacts. As explained in Section 4.5.4 above, these are referred to as 'essential mitigation' to differentiate them from the measures already incorporated into design or standard good practice.
- 28) Proposed mitigation is presented in each topic chapter of the ES, and this has then been compiled into a development-wide schedule of mitigation, presented in Appendix 20.1.
- 29) Each topic chapter then considers the residual effects of the Proposed Bowland Section. The residual effects are those that remain after taking all three categories of mitigation (embedded, good practice and essential) into account.

4.5.5 Cumulative Effects

- 30) The EIA Regulations require the consideration of cumulative effects. This term relates to conditions where two or more environmental effects occur in combination at a specific location or upon an environmental resource. The cumulative effects are considered in each technical chapter of the ES and are summarised in Chapter 19: Cumulative Effects. Interaction of effects are addressed in Chapter 14: Communities and Health.
- 31) In addition, it is a requirement of the EIA Regulations to consider the cumulative effects of different, unrelated development proposals. The development proposals may comprise:
- Proposals which are in the planning system, but which do not have planning consent

- Applications for proposed schemes which are work in progress and have yet to be submitted
- Land allocations in development plan documents.
- Cumulative effects may occur when two or more proposed schemes in an area impact on the same resource or receptor. The cumulative assessment is split into three main stages:
 - An assessment of the Proposed Bowland Section cumulatively with local proposed developments, applications and land allocations as identified above
 - An assessment of all the proposed sections cumulatively (i.e. the Proposed Programme of Works), in isolation from non-HARP cumulative schemes
 - As assessment of the cumulative effects of the Programme of Works in combination with other non-HARP proposed developments, applications and land allocations as identified above.

32) In support of the EIA process, United Utilities agreed with the local planning authorities which other schemes in the Lancashire area should be considered in the EIA. The location of each scheme is indicated in Figure 19.1.

4.6 Data Limitations and Technical Assumptions

33) Schedule 4 Clause 6 of the EIA Regulations allows for the applicant to describe 'difficulties (for example technical deficiencies or lack of knowledge) encountered compiling the required information (for the ES) and the main uncertainties involved.' Several factors led to revised approaches or difficulties in undertaking the EIA for the Proposed Bowland Section:

- **COVID-19 Restrictions:** Although the EIA programme commenced in 2019, and some field surveys were undertaken prior to the outbreak of COVID-19 in early 2020, much of the HARP fieldwork undertaken in Cumbria, Lancashire and Greater Manchester throughout 2020 was delivered under COVID-19 restrictions. The restrictions unavoidably impaired the team's ability to deliver an optimised and integrated survey programme, and hampered response times when design iterations required supplementary fieldwork. While a large proportion of the required fieldwork has been successfully completed and is reported in the ES, the COVID-19 restrictions did lead to some difficulties and incomplete work. For example:
 - In response to COVID-19 restrictions, United Utilities developed and then delivered innovative online public consultation solutions later in 2020. However, this consultation exercise post-dated some of the EIA activities which would normally have been linked into consultation outcomes. On some of the proposed sections of HARP, delayed public consultation feedback gave rise to significant design additions and amendments at a late stage in the EIA programme. This prompted a need for supplemental volumes of the ES to be prepared, such as Off-site Highways Works (Volume 5) and the Proposed Ribble Crossing (Volume 6)
 - Some landowners were understandably cautious about allowing surveys teams onto their land, which disrupted the sequencing and programming of surveys
 - Supplemental EIA fieldwork in response to design development was in some cases delayed, with the consequence that elements of reporting and figure production in the ES were superseded by the final design proposals. This has resulted in a disconnect between some parts of the ES and the final design proposals presented in the planning, design and access statements and supporting planning drawings
- **Designing, programming, procuring and delivering a major civil engineering infrastructure project:** As is the case with many infrastructure projects of this type/scale, planning permission is sought as the basis for informing the award of a contract for undertaking detailed design and build activities. A key implication of this is that the design is limited to that sufficient to inform the EIA process and design details will continue to evolve, up to and including the detailed design stage. To enable the level of design to be developed in sufficient detail to inform the EIA a number of assumptions have been made in advance of detailed design by a design and build contractor. As details have emerged from the ongoing ground investigation and discussions with landowners and stakeholders, some

design iterations have been required to accommodate changes to these assumptions. Some of these design iterations post-date the basis of assessment adopted in some of the ES technical chapters and create a discrepancy between current thinking on the design and what has been assessed. In some areas, therefore, it will be necessary to resolve aspects of the design post determination through application of conditions requiring the contractor (who will carry out detailed design and construction activity) to provide details for agreement with the Local Planning Authority. It is intended that such details would be within the parameters assessed in the ES.

- **Uncertainty over definitive development envelopes:** Until the design and build contractor is appointed there remains a degree of uncertainty over precise land areas required to construct the Proposed Programme of Works. For this reason, the planning application boundaries for the construction compounds and ancillary activities such as off-site highways works, satellite compounds and mine grouting areas represent reasonable worst-case envelopes within which the works could be delivered. By adopting reasonable worst-case development envelopes there is by definition a tendency to over-estimate likely significant environmental effects and thereby arrive at conservative predictions
- **Uncertainty over detailed design outcomes and construction techniques:** While individual technical chapters of the ES explain technical assumptions that have been adopted within topic-specific assessments, there are several over-arching assumptions that have been adopted in response to uncertainties over detailed design outcomes or construction techniques. For example, at the current stage of design development, it is not known which construction technique would be used to connect the newly built aqueduct to the existing Haweswater Aqueduct. However, for the purposes of the planning applications and EIA, a multi-line to multi-line connection has been assumed on the basis that it represents a reasonable worst-case envelope with regards to land requirements and depths of excavation.