Haweswater Aqueduct Resilience Programme - Proposed Marl Hill Section

Environmental Statement

Volume 4

Appendix 3.1: Development Description

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Jacobs

Haweswater Aqueduct Resilience Programme - Proposed Marl Hill Section

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1. Additional Information - Compounds

1.1 Introduction

1) This appendix supports Chapter 3: Design Evolution and Development Description of the ES. It provides detailed information regarding the anticipated construction activities required for the Proposed Marl Hill Section in relation to construction compounds and the construction traffic transport routes serving the compounds.

2) This appendix considers the Bonstone Compound and Braddup Compound, the locations of which are shown on Figure 3.1of the ES (Volume 3).

1.2 Selection of Transport Routes

3) Before arriving at the proposed transport route options described in Sections 1.3 and 1.4, United Utilities undertook a thorough assessment of all potential options. The type and volume of traffic requiring access to the Bonstone and Braddup compounds is detailed in the Transport Assessment for the Proposed Marl Hill Section (Appendix 16.1.) and summarised later in this chapter. This information was used to assess the suitability of potential routes, according to physical, environmental and community constraints and guided by the advice of the highway authority (Lancashire County Council).

1.2.1 Bonstone and Braddup Compounds

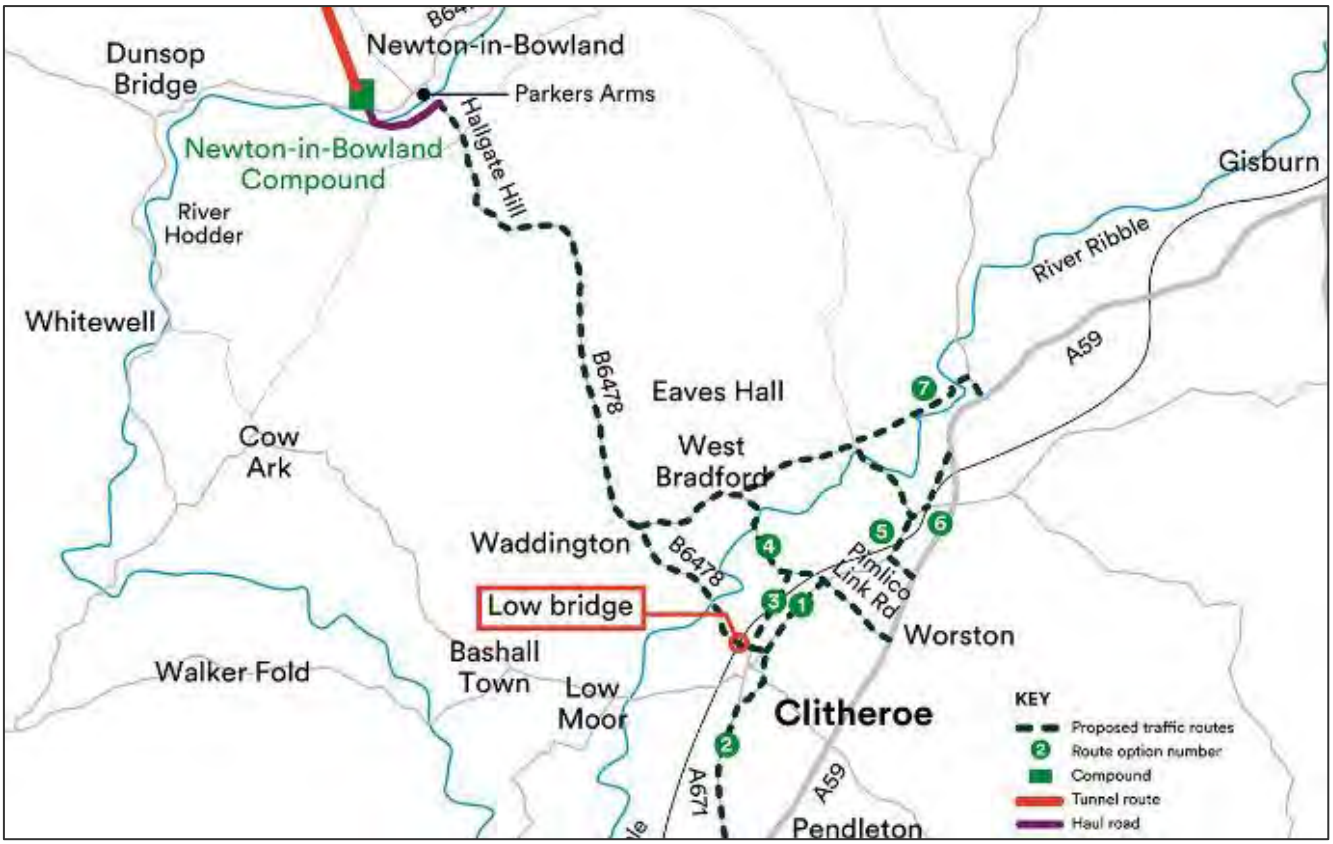
4) An assessment of several options was undertaken prior the selection of the route options outlined below.

5) As a starting point, all options assessed took access from Junction 31 of the M6 and along the A59, as the primary arterial route serving the assessment area. It was not considered viable for construction vehicles to gain access to the Bonstone and Braddup Compounds from the north due to the constrained nature of the local highway network. On this basis, the focus of the options appraisal exercise was to identify the most suitable route(s) for construction vehicles between the A59 and the B6478 (Slaidburn Road) north of Waddington. The options appraisal was informed by a range of criteria, including road safety data, presence of obstacles and 'pinch points' on the network, swept path analysis[1] and impact on sensitive receptors (e.g. residential properties and community facilities).

6) In the first phase of options assessment, a total of seven route options between the A59 and B6478 (Slaidburn Road) were considered, as shown in Illustration 1. These options were identified following a feasibility assessment that discounted other routes on the wider highway network due to significant capacity limitations including via Bashall Town, Dunsop Bridge or Slaidburn.

[1] Swept path analysis is a computer modelling technique used to check whether an existing or proposed road layout can accommodate vehicle movements, often by examining the most onerous vehicle types that are expected to use that part of the local highway network, such as abnormal loads or articulated lorries.

Illustration 1: Construction traffic route options



7) Route option 1 exits the A59 onto Pimlico Link Road then turns left onto the A671 (Chatburn Road) towards Clitheroe Town Centre and along the B6478 (Waddington Road). This route option uses primarily A and B roads; however, it is constrained by the 3.5 m height restriction on the Waddington Road rail bridge which passes over Waddington Road.

8) Route option 2 would use the A671 Whalley Road, through Clitheroe Town Centre along Queensway/Peel Street, Waterloo Road and onto the B6478 through Waddington. Although a large portion of this route uses A-roads, making it theoretically easier for HGVs to manoeuvre, it passes a large number of residential and commercial properties, including those within the Whalley Road Air Quality Management Area (AQMA). In addition, the 3.5 m height restriction on the Waddington Road rail bridge means that not all vehicles would be able to use it to access the proposed compounds. The use of Pendle road (from the A59) was considered as an alternative to Whalley road, but this ultimately has the same issues with vehicles passing through Clitheroe town centre.

9) Route option 3, like option 1, also uses the A671 (Pimlico Link Road), continuing on West Bradford Road before turning onto Pimlico Road and joining the B6478 (Waddington Road) before travelling north through Waddington towards the proposed Braddup and Bonstone compounds. This route option avoids crossing Clitheroe town centre and commercial areas and uses primarily A & B roads; however, as with previous options considered, it is constrained by the 3.5 m height restriction on the Waddington Road rail bridge. In addition, Pimlico Road is a residential area with narrow sections created by parked private cars.

10) Route option 4 (A59 onto Pimlico Link Road before travelling along West Bradford Road, over the existing West Bradford road bridge, through West Bradford and joining Slaidburn Road to the north of Waddington) avoids Clitheroe Town Centre; however, it runs through West Bradford and past the village primary school. In addition, a number of pinch points were identified along this route, including through West Bradford and the existing road bridge over the River Ribble.

11) Route option 5 leaves the A59 onto Pimlico Link Road before turning north-east towards Chatburn along the A671, along Ribble Lane towards Grindleton and turning onto West Bradford Road towards West Bradford and Waddington before joining the B6478 (Slaidburn Road) in Waddington. This route would involve construction traffic travelling through Chatburn, Grindleton, West Bradford and the north of Waddington. It is constrained by several pinch points such as Ribble Lane and East View Bridge, south of Grindleton. The main advantage of this route option is that it avoids the 3.5 m height restriction on the Waddington Road rail bridge.

12) Route option 6 is an alternative to option 5, however it leaves the A59 via Sawley Road before travelling south west towards Chatburn whereupon it follows the same route. This option also avoids the 3.5 m height restriction on Waddington road would, but it would require extensive junction modifications between Bridge Road (in the centre to Chatburn) and Ribble Lane.

13) Route option 7 is a further alternative to option 5 which leaves the A59 onto Sawley road and passes through Sawley and Grindleton whereupon it follows the same route. This option also avoids the 3.5 m height restriction on Waddington road, but it is severely constrained by the narrow road between Sawley and Grindleton.

14) On balance, it was considered that Route Option 1 represented the most convenient and least disruptive route to the Bonstone and Braddup compounds. However, not all construction traffic would be able to use the route due to the 3.5 m height restriction on the Waddington Road rail bridge. For this reason, a secondary route was also considered necessary for vehicles over 3.5 m in height and abnormal loads. Whilst there are no straightforward routes for this type of traffic to access the proposed compound, route option 5 was considered to be viable subject to necessary modifications at pinch points along the highway network.

15) In public consultation carried out between August and September 2020, route option 1 was presented as the preferred option for general construction traffic, with route option 5 proposed as a secondary route for vehicles over 3.5 m high, and abnormal loads. As detailed in the Statement of Community Involvement (RVBC-MH-APP-006) a number of concerns were raised by members of the local community regarding the preferred route options. For this reason, in late 2020, a further feasibility study was carried out in an attempt to identify potential alternative routes.

16) The feasibility study focused on possible options to avoid the need to use large sections of public highway altogether in the general Clitheroe area and instead construct a new temporary crossing of the River Ribble. This temporary new crossing, referred to as the Proposed Ribble Crossing, would run between West Bradford Road in the south (opposite Ribblesdale Cement Works) and West Bradford Road to the north-west (to the west of Waddington and West Bradford C of E Primary School). The study concluded that a new temporary Ribble Crossing was viable and would offer benefits in terms of allowing construction traffic to bypass Clitheroe, Chatburn, Grindleton, West Bradford and parts of Waddington. A preferred alignment and crossing point was determined and is included in the planning application for the Proposed Marl Hill Section as one of the haulage route options for access to the Braddup and Bonstone compounds. Further information regarding the Proposed Ribble Crossing, and an assessment of likely significant effects potentially arising during its construction and operation, is reported in Volume 6 of this Environmental Statement.

17) Route option 1 and route option 5 now collectively form 'haulage route option 1' and are referred to as 'Route 1' and 'Route 2' respectively in the ES and planning application documents. The Proposed Ribble Crossing 'route 3' now comprises for the purposes of the planning application 'haulage route option 2'.

1.3 Bonstone Compound

18) The Bonstone Compound would be a reception site receiving the TBM from the Braddup Compound to the south. The compound is located to the south of Newton in Bowland.

1.3.1 Haulage Route Option 1

19) Vehicles up to 3.5 m in height, would use route 1, accessing the compound from the A59 via Pimlico Link Road, Chatburn Road and through Waddington. Vehicles over 3.5 m in height would access the site

along route 2 via Pimlico Link Road, Chatburn Road, and through Chatburn, Grindleton and West Bradford.

1.3.2 Haulage Route Option 2

20) Haulage Route Option 2 incorporates a proposed temporary haul road crossing the River Ribble from adjacent to the existing West Bradford Bridge to access the B6478 at the north of Waddington from the A59 south of Clitheroe (route 3). The temporary haul road for the Ribble crossing would require the creation of temporary new junctions with West Bradford Road (Clitheroe, south of the River Ribble) and West Bradford Road (Waddington, north of the River Ribble).

1.3.3 Offsite Highways Works

21) Traffic management plans and potential highway improvements (e.g. temporary access roads, passing places, etc.) have been developed in consultation with Lancashire County Council highways department and local communities to minimise potential conflicts with other road users and enable the safe and timely movement of HGVs and other construction vehicles along local roads, prior to joining the strategic road network.

22) Further details on the offsite highways working including the Clitheroe Park and Ride and the Clitheroe HGV Holding Area are provided in Volume 5.

1.3.4 Construction Accesses

23) Access tracks would be constructed from the public highway to laydown areas and construction compounds. Access tracks would be in the order of 7.7 m wide for two way traffic, and would be constructed along a soil-stripped and vegetation-cleared easement comprising a layer of crushed stone or tarmac where required. Temporary drainage may need to be installed alongside or across the access tracks to maintain existing drainage lines, and the tracks would be aligned to minimise flood risk within the development envelopes or local watercourses.

24) Proposed points of access to and from the public highway are subject to further design development and would need to be agreed with the relevant highways authority.

1.3.5 Tree/Hedgerow Removal, Pruning and Protection

25) Works would include, where unavoidable, the clearance of vegetation including felling of trees and hedge removal. These works would be scheduled to take account of the breeding bird season and other seasonally-constrained times of the year where reasonably practicable and under the supervision of a suitably qualified Environmental Clerk of Works.

1.3.6 Public Rights of Way

26) Public rights of way (PRoW) may need to be temporarily diverted to enable users to continue safely accessing footpaths, bridleways etc. Alternatively, and only when safe to do so, a banksman would be present to assist PRoW users in crossing the construction easement.

27) Two PRoWs (footpath 3-29-FP 43, 3-29-FP 42) would be temporarily diverted around the Marl Hill Compound. Footpath 3-29-FP 43 would be intersected by the proposed access track and would require controlled crossing points being introduced for the duration of the works.

1.3.7 Earthworks

28) Earthworks would be required to create a level platform in preparation of compound set up works. Topsoil would be stripped and stored within the compound prior to subsequent reuse in reinstatement.

1.3.8 Compound Establishment Works (including material laydown areas if relevant)

29) In order to facilitate the construction of the new aqueduct the provision of the following would be required with the compound area:

- Fencing would include hoarding installed around the compounds to a height of 2.4 m. Where appropriate, heras-type fencing would be used around any areas which fall outside the primary construction area surrounding the shaft e.g. lagoons
- Lighting would be required for safety reasons and where 24-hour working is required. Lighting designs and locations would minimise light spill towards adjacent properties and other sensitive locations
- Hard-standing and drainage provision for offices/welfare/parking/shaft and tunnelling areas would be installed
- Installation of compound surface run off drainage and attenuation tanks (or lagoons) would be required
- Excess water from the tunnelling activities would be pumped to temporary treatment facilities prior to being discharged
- Storage areas for shaft and tunnel segments, pipes, fittings and tunnel ancillaries would be established
- Crane platforms, spoil bays, tunnel ventilation, compressors, grout batching, tunnel stores and workshops would need to be created
- Temporary site cabins would be brought to site for offices, workshops and stores. The remainder of the compound would be used for construction related activities such as car parking, plant and commercial vehicle storage, material storage areas and traffic circulation routes connecting and servicing these areas.

1.3.9 Shaft Construction

30) The reception shaft at Bonstone would be approximately 15 m in diameter and approximately 10 m to 15 m deep. This shaft would be constructed in advance of the arrival of the TBM and made safe until the TBM arrives. At this point large cranes would be used to lift the TBM from the shaft in segments and load them onto lorries for removal from site.

1.4 Braddup Compound

31) The Braddup Compound would be the launch site for the TBM. The compound is located to the north of Clitheroe.

1.4.1 Haulage Route 1

32) Routes 1 and 2 collectively form Haulage Route Option 1. Vehicles up to 3.5 m in height, would use Route 1, accessing the compound from the A59 via Pimlico Link Road, Chatburn Road and through Waddington. Vehicles over 3.5 m in height would access the site along Route 2 via Pimlico Link Road, Chatburn Road, and through Chatburn, Grindleton and West Bradford.

1.4.2 HaulageRoute 2

33) Haulage route option 2 incorporates a proposed temporary haul road crossing the River Ribble from adjacent to the existing West Bradford Bridge to access the B6478 at the north of Waddington from the A59 south of Clitheroe (Route 3). The temporary haul road for the Ribble crossing would require the creation of temporary new junctions with West Bradford Road (Clitheroe, in the vicinity of Ribblesdale Cement Works south of the River Ribble) and West Bradford Road (east of Waddington, north of the River Ribble).

1.4.3 Offsite Highways Works

34) Traffic management plans and potential highway improvements (e.g. temporary access roads, passing places, etc.) have been developed in consultation with Lancashire County Council highways department and local communities to minimise potential conflicts with other road users and enable the safe and

timely movement of HGVs and other construction vehicles along local roads, prior to joining the strategic road network.

35) Further details on the offsite highways working including the Clitheroe Park and Ride and the Clitheroe HGV Holding Area are provided in Volume 5.

1.4.4 Construction Accesses

36) Access tracks would be constructed from the public highway to laydown areas and construction compounds. Access tracks would be in the order of 7.3 m wide, and would be constructed along a soil-stripped and vegetation-cleared easement comprising a layer of crushed stone or tarmac where required. Temporary drainage may need to be installed alongside or across the access tracks to maintain existing drainage lines, and the tracks would be aligned to minimise flood risk within the development envelopes or local watercourses.

37) Proposed points of access to and from the public highway are subject to further design development and would need to be agreed with the relevant highways authority.

1.4.5 Tree/Hedgerow Removal, Pruning and Protection

38) Works would include, where unavoidable, the clearance of vegetation including felling of trees and hedge removal. These works would be scheduled to take account of the breeding bird season and other seasonally-constrained times of the year where reasonably practicable and under the supervision of a suitably qualified Environmental Clerk of Works where unavoidable for site preparation and off-site highways works.

1.4.6 Public Rights of Way

39) Footpath 3-43-FP 8 would be intersected by the proposed access track and would require a crossing point for the duration of activity travelling to and from the compound.

40) Bridleway 3-5-BW 1 would be intersected by the proposed access track and would require a crossing point for the duration of activity travelling to and from the compound.

1.4.7 Earthworks

41) Earthworks would be required to provide a level platform in preparation for full construction of the compound areas and the construction haul road. This may include retaining wall structures such as gabion baskets, depending on the final design working levels.

1.4.8 Compound Establishment Works (including material laydown areas if relevant)

42) In order to facilitate the construction of the new aqueduct the provision of the following would be required with the compound area:

- Fencing would include hoarding installed around the compounds to a height of 2.4 m. Where appropriate, heras-type fencing would be used around any areas which fall outside of the primary construction area surrounding the shaft e.g. lagoons
- Lighting would be required for safety reasons and where 24-hour working is required. Lighting designs and locations would minimise light spill towards adjacent properties and other sensitive locations
- Hard-standing and drainage provision for offices/welfare/parking/shaft and tunnelling areas would be installed
- Installation of compound surface run off drainage and attenuation tanks (or lagoons) would be required
- Excess water from the tunnelling activities would be pumped to temporary treatment facilities prior to being discharged

- Storage areas for shaft and tunnel segments, pipes, fittings and tunnel ancillaries would be established
- Crane platforms, spoil bays, tunnel ventilation, compressors, grout batching, tunnel stores and workshops would need to be created
- Temporary site cabins would be brought to site for offices, workshops and stores. The remainder of the compound would be used for construction related activities such as car parking, plant and commercial vehicle storage, material storage areas and traffic circulation routes connecting and servicing these areas.

1.4.9 Shaft Construction

43) The Braddup Compound would be the location serving the main tunnelling activities for the Marl Hill Section. At this location the tunnel would be driven via the launch shaft, the shaft would be approximately 15 m in diameter and approximately 10-15 m deep.

1.4.10 Tunnel Arisings

44) Material arising from tunnel construction would be brought to the surface at the Braddup compound. This surplus material would be taken off site for disposal via heavy goods vehicles. Vehicle movements would be restricted to agreed hours to minimise effects on local communities.

45) The tunnel arisings would be brought to the surface on a 24 hours per day basis so there would be a need to temporarily store materials prior to transfer to Waddington Fell Quarry. Depending upon ground conditions there may be a requirement to process the material (examples include dewatering or grading) in order to optimise the number of vehicle movements. Both temporary storage and any processing activities would be completed within the indicative development envelope.