



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

Volume 6

Proposed Ribble Crossing

Chapter 11 - Appendix 11.2: Soils, Geology & Land Quality Baseline

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1. Soils, Geology and Land Quality Baseline

1.1 Introduction

- 1) This appendix presents the technical baseline information in support of Chapter 11: Soils, Geology and Land Quality of the Proposed Ribble Crossing. Specifically, the baseline information for the following sub-topics is presented:
 - Soil quality
 - Mineral resources
 - Geologically designated sites.

Appendix 11.2 -A- Soil Quality

Soil Associations

- 2) The following soil associations have been identified within the study area:
- The majority of the study area is underlain by soils of the Brickfield 3 association. This soil association comprises slowly permeable seasonally waterlogged fine loamy over clayey soils. Cropping and land uses may include stock rearing and some dairying on permanent grassland; grassland and winter cereals in drier lowlands. Habitats could include seasonally wet pastures and woodlands
 - An area in the northeast extent of the study area is underlain by soils of the Alun association. This soil association comprises freely draining, fine loamy soils variable affected by groundwater, over gravel in places. Cropping and land uses may include dairying and stock rearing on permanent and short term grassland, some arable crops where flood risk low. Habitats could include grassland and wet carr woodlands in old river meanders
 - An area in the southeast extent of the study area is underlain by soils of the Crwbin association. This soil association comprises very shallow and shallow well drained loamy soils over limestone, often on steep slopes. Cropping and land uses could include stock rearing on herb-rich grassland habitats of good grazing value; recreation; some arable in lowlands. Habitats may include base-rich pastures and deciduous woodlands.

Soilscaapes

- 3) **Soilscape 17:** slowly permeable seasonally wet acid loamy and clayey soils with impeded drainage. Habitats include seasonally wet pastures and woodlands. Landcover includes grassland with some arable and forestry. This soilscape is the dominant soil across the majority of the study area.
- 4) **Soilscape 12:** freely draining floodplain soils. Habitats include grassland; wet carr woodlands in old river meanders. Landcover includes grassland and some arable grassland. This soilscape is present in the northeast extent of the study area.
- 5) **Soilscape 7:** freely draining slightly acid but base rich soils. Habitats include base-rich pastures and deciduous woodlands. Landcover includes arable and grassland. This soilscape is present in the southeast of the study area.

Provisional Agricultural Land Classification (ALC)

- 6) The study area is located on Grade 3 land. Subgrades 3a and 3b are not differentiated in the Provisional ALC data, so to make a conservative assessment it was assumed that this is Subgrade 3a land.

Appendix 11.2 -B- Mineral Resources

Mineral Safeguarding Areas

- 7) Consultation with the minerals planning officer from Lancashire County Council was undertaken, alongside a review of Lancashire County Council's online planning portal containing information about the local planning policies for minerals and waste. Lancashire County Council's Maps and Related Information Online (MARIO) was also consulted to identify the following Mineral Safeguarding Areas (MSA).
- 8) The alluvial and river terrace deposits underlying central, northern and southern extents of the study area are mineral safeguarding areas for sand and gravel.

Active and historical minerals workings

- 9) There are no active quarries within the study area, the nearest being two active quarries located approximately 600 m east/southeast of the Proposed Ribble Crossing, namely Bankfield Quarry and Lanehead Quarry, which quarry limestone. It is understood from consultation with Lancashire County Council that whilst the limestone bedrock units extend beneath the site of the Proposed Ribble Crossing, there are no current proposals to work the limestone in this area.
- 10) A historical quarry, namely Waddington Brickworks is located within the study area, approximately 60 m north of the Proposed Ribble Crossing. This is labelled as Unspecified Ground Workings and also a Brick and Tile Works. A point within the Waddington Brickworks site is also mapped as a surface mineral working, which has ceased to extract minerals and may be considered closed by the operator. Waddington Brickworks is also mapped as a historical landfill.
- 11) An additional historical quarry, namely Cross Hill Quarry has been identified in proximity to the study area, approximately 250 m south of the eastern extent of the Proposed Ribble Crossing. This area has been designated as an Unspecified Heap and Unspecified Ground Workings. Cross Hill Quarry is also mapped as a historical landfill and is now used as a nature reserve and Local Geological Site.
- 12) A historical mineral planning area is located within the study area, approximately 230 m east of the Proposed Ribble Crossing, namely Lane Head, relating to a surface mineral working for limestone and shale. It is not known whether this historical mineral planning area is related to the current Lanehead Quarry.

Appendix 11.2 -C- Geologically Designated Sites

Local Geodiversity Sites (LGS)

- 13) The majority of the study area is located within an LGS, namely Bashall Brook, located to the north of the River Ribble. Bashall Brook shows an excellent exposure in glacial/fluvioglacial deposits. The spatial extent of this LGS spans approximately 390 Ha and covers an area that extends to the southwest of the study area also.
- 14) An additional LGS has been identified in the southeast of the study area, approximately 250 m south of the eastern extent of the Proposed Ribble Crossing, namely Cross Hill Quarry. Cross Hill Quarry shows an exposure of Chatburn Limestone.

Sites of Special Scientific Interest (Geological)

- 15) No Sites of Special Scientific Interest (Geological) were identified within 250 m of the Proposed Ribble Crossing.