Haweswater Aqueduct Resilience Programme - Proposed Marl Hill Section

Volume 6

Proposed Ribble Crossing

Technical Appendix 9A.3: Bats

June 2021

Haweswater Aqueduct Resilience Programme

Project No:	B27070CT
Document Title:	Volume 6 Proposed Ribble Crossing Technical Appendix 9A.3: Bats
Document Ref.:	
Revision:	0
Date:	June 2021
Client Name:	United Utilities Water Ltd

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1. Bat Surveys

1.1 Introduction

1) TEP was appointed by United Utilities to complete an Ecological Impact Assessment (EcIA) for the Haweswater Aqueduct Resilience Programme – Proposed Ribble Crossing. The EcIA is required to inform an Environmental Impact Assessment (EIA) and support production of the Environmental Statement (ES).

2) TEP completed a winter walkover Phase 1 habitat assessment, including a ground based tree assessment along the Proposed Ribble Crossing element of the Haweswater Aqueduct Resilience Programme. This Ecological Technical Report (ETR) is produced to support the EcIA.

1.2 Methods

1.2.1 Ground- Based Tree Assessments & External Assessment of Buildings

3) As part of the extended Phase 1 habitat survey, a ground level assessment of the trees and external assessment of buildings was completed within and immediately adjacent to the Proposed Ribble Crossing. The trees and buildings were assessed for their suitability to support roosting bats and undertaken by an experienced surveyor on the 15th and 16th December 2020. Binoculars were used, where appropriate, to search for any field signs of bats or features with bat roosting potential and trees were categorised with reference to the Bat Conservation Trust (BCT) Guidelines (2016) (Table 1).

4) Any trees deemed as having negligible potential to support roosting bats have not been reported.

Table 1: Evaluation of potential suitability of trees for bats (BCT, 2016).

Rarity	Roosting Habitats
Negligible	Negligible potential roost features are present that are likely to be used by bats.
Low	A tree of sufficient size and age to contain PRFs but with none seen from the ground or features seen with only very limited roosting potential.
Moderate	A tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status (maternity or hibernation).
High	A structure or tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat

1.2.2 Limitations

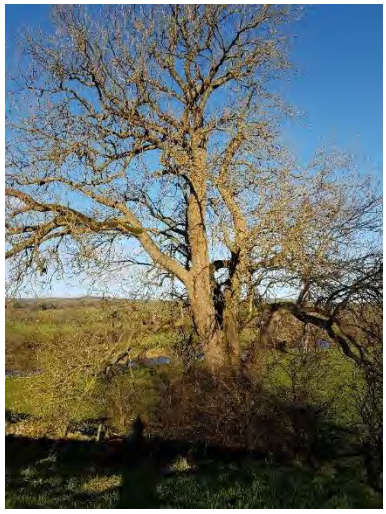
5) The survey was conducted within the optimal period to undertake ground based tree assessments; between December and March when trees are out of leaf.

2. Results – West Bradford Bypass, Route 1b

2.1.1 Ground-based Tree Assessments

6) Figure 9A.7 provides an illustrative map of those trees assessed as having roost suitability for bats, as a result of the ground based tree assessment. Those which fall within the redline boundary are highlighted within the drawing and a description summary detailed in Table 2.

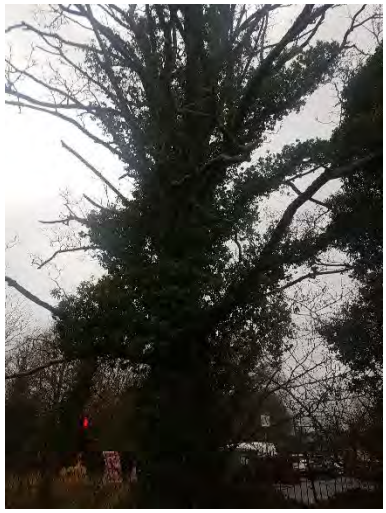
Table 2: Results of ground-based tree assessment for roosting bats along the Proposed Ribble Crossing.

TEP ID	Unique Arb ID	Grid Ref	Description	
BT4	T130	SD 74440 43772	Large ash around 12m high, growing towards the bottom of a steep embankment. Split limb leading to large cavities / decay at top. Aerial survey would be required to determine if possibly too wet to be a suitable potential roost features (PRF). Roost Suitability: High	
BT5	T120	SD 74433 43780	Very large ash tree. Primary limb and secondary branch failures has resulted in a split in the main truck providing high PRF. Number of knot holes also present. Roost Suitability: High	

TEP ID	Unique Arb ID	Grid Ref	Description	
BT21	T89	SD 74378 43829	Dense ivy-clad sycamore, up to around 11m high. Ivy may be obscuring potential roost features and have therefore precautionary categorised as low potential. Roost Suitability: Low	
BT22	T67	SD 74464 43875	Large ash tree within field, south of river. Developing veteran features including large cavities and decay, providing high PRF. There are also transverse splits within the top branches and butt rot creating an internal cavity from then base. Roost Suitability: High	 
BT23	T54	SD 74478 43899	Mature sycamore, along riverside. Severe canopy dieback. Split in south facing branch around 3m from the ground. Limited access to view fully. Roost Suitability: Moderate.	
BT24	T68	SD 74444 43879	Large sycamore; prominent riverside tree. Few small knot holes noted.	No photo available.

TEP ID	Unique Arb ID	Grid Ref	Description	
			Roost Suitability: Low	
BT25	T77	SD 74412 43850	Dense ivy covered sycamore along riverbank. Limited access for inspection. Ivy may be obscuring defects and potential roost features. Categorised as low on a precautionary basis. Roost Suitability: Low.	
BT29	T39	SD 74186 43926	Ivy clad oak tree in dense understorey vegetation / hedge Inspection limited as the trees are fenced off. Ivy may be obscuring defects and potential roost features. Categorised as low on a precautionary basis. Roost Suitability: Low.	No photo available.
BT30	T49	SD 74292 43908	Large ash tree in hedgerow / at field boundary. In severe decline with desiccations resulting in number of branches with holes. Roost Suitability: Moderate.	
BT31	T95	SD 74151 43824	Twin stemmed ash tree around 10m high. Located along a field boundary / fence line that was likely from remnant historic hedgerow. Tree decayed and few knot holes in the western stem about 4m from the ground. Roost Suitability: Moderate.	

TEP ID	Unique Arb ID	Grid Ref	Description	
BT34	T118	SD 74036 43786	North of stream. Reasonably balanced canopy, slight bias east. No significant defects Young alder, on stream edge. Stem cavitation and decay resulting in butt rot and split in trunk from ground to around 2m. Broken branches. Roost Suitability: Moderate/ High.	No photo available
BT35	T134	SD 74060 43751	Mature alder in fence line. Stem cavitation and decay. 2 PRFs; one south face and one north facing; cankers at branch junction Roost Suitability: Moderate	
BT45	T13	SD 73475 44012	Icy clad alder along roadside, north of a stream. Due to icy cover potentially covering PRF, a precautionary approach has been taken with categorisation. Roost Suitability: Low	

TEP ID	Unique Arb ID	Grid Ref	Description	
BT46	T12	SD 73471 44012	Common ash along roadside. Knot hole in western branch and ivy possibly obscuring PRF. Roost Suitability: Low	
BT47	T15	SD 73464 44009	Large roadside sycamore, along stream. Tree is in decline. Along stream, Butt rot, knot hole and split in main trunk Roost Suitability: Low	No photo available.
BT48	G14	SD 73466 44002	Common ash on west side of stream. Subject to ash dieback, resulting in few cavities. Roost Suitability: Moderate	

TEP ID	Unique Arb ID	Grid Ref	Description	
BT49	G13	SD 73465 43999	Alder that has been flailed. Large open wound in trunk resulting in northern cavity. Roost Suitability: High	
BT50	T128	SD 73550 43769	An ash tree of around 14m high on western side of brook, overhanging. Transverse split on first east facing branch and desiccation fissures within south facing branch. Roost Suitability: Moderate	
BT51	T126	SD 73605 43769	Veteran ash tree at base of hilled field. Large tear out in south east trunk with hollowing providing suitable hibernation / maternity roosting opportunities, transverse splits in number of branches, pruning cuts at desiccated removed limbs, and lots of large knot holes. Roost Suitability: High	

TEP ID	Unique Arb ID	Grid Ref	Description	
BT55	T150	SD 73900 43702	Ash tree along field boundary with transverse split in southern branch. Roost Suitability: Moderate	
BT56	T152	SD 73912 43692	A mature decaying / predominantly dead alder on field boundary with a cavity split in first south west trunk. Roost Suitability: High	
BT57	T149	SD 79811 22191	Large ash tree within corner of field boundaries. Tree is in decline with large crevice in main trunk, large limb failure / split and several knot holes. Roost Suitability: High	

TEP ID	Unique Arb ID	Grid Ref	Description	
BT66	T109	SD 74016 43797	Alder on south of stream with split trunk and knot holes. Roost Suitability: Moderate	
BT67	T121	SD 74035 43782	Alder on stream edge. Stem cavitation and decay. Roost Suitability: High	No photo available
BT68, 68A & 68B	T116	SD 74035 43794	Cluster of 3 alder trees with knot holes present. Roost Suitability: Low	No photo available
BT72	T196	SD 73946 43589	Alder on field boundary corner, adjacent to stream. Some branches subject on ash dieback resulting in large cavity in eastern limb, suitable for hibernation / maternity roosts. Roost Suitability: High	 

TEP ID	Unique Arb ID	Grid Ref	Description	
BT74	T183	SD 79815 22190	Ash tree with limb failure leading to large cavity in south facing top limb. Roost Suitability: High	
BT75	T166	SD 73919 43646	Alder tree on field boundary with occasional branches dying back. Butt rot / basal cavity resulting in large cavity in main stem extending up trunk <0.5m. Roost Suitability: High	
BT76	T165	SD 73914 43643	Alder with stem failed up to around 5m but two small diameter branches growing to north. Deadwood / wood decay up length of the trunk providing PRFs. Roost Suitability: High	
BT77	T177	SD 73882 43629	Alder on east side of stream. Canker forming internal crevice. While large, due to position on trunk categorised as Moderate. Roost Suitability: Moderate	

TEP ID	Unique Arb ID	Grid Ref	Description	
BT78	T176	SD 73841 43632	Larger alder within line of trees on field boundary edge. Subject to storm damage with large split all the way up main trunk to main bifurcations. Potentially hollow trunk with cankers, knot holes, branch splits. Roost Suitability: High	
BT79	T174	SD 73841 43632	Alder with branch split near top southern limb. Roost Suitability: Moderate	
BT80	T175	SD 73813 43634	Large, mature alder with number of small crevices in main stem. Roost Suitability: Moderate	
BT81	T179	SD 73786 43624	Mature alder with open wound in north facing branch and small open fissure on main stem. Some deadwood present. Roost Suitability: Moderate	

TEP ID	Unique Arb ID	Grid Ref	Description	
BT82	T182	SD 73767 43617	Ash east of stream with ash dieback. Limb split open resulting in cavities. Cankers and large knot hole towards the top of the tree also present. Roosting Suitability: High	
BT83	T185	SD 73759 43613	Alder, east of stream within hedge with split branch at top of the tree and decay resulting in small cavities at point of stem failure. Roosting Suitability: Low	
BT84	T194	SD 73728 43600	Alder east of stream with canker hole at branch junction and small cavity at from basal wound. Roosting Suitability: Low	
BT85	T192	SD 82165 12654	Large alder on south side of stream with contorted stem. Storm damage resulting in decaying stem and large compression fork crevice; the top of the trunk is rotting and the lifting bark also providing a roosting feature. Roost Suitability: High	

TEP ID	Unique Arb ID	Grid Ref	Description	
BT86	T190	SD 82135 12638	Mature ash with open canker hole at base of branch junction and occasional limbs with longitudinal cracks towards base. Roost Suitability: Moderate.	
BT87	T188	SD 82161 12638	Ash with small branch splits and knot holes. Roost Suitability: Moderate	
BT88	T157	SD 73685 43674	Alder subject to storm damage and decay, resulting in large split / failures in main stem. Roost Suitability: High	
BT95	T170	SD 73622 43636	Alder on eastern side of stream bank with open trunk forming internal crevice. Small branch and stem cavities, in addition to lifting bark; all providing PRFs. Roost Suitability: High	

TEP ID	Unique Arb ID	Grid Ref	Description	
BT96	T167	SD 73617 43646	Alder on eastern side of stream with failed stem; decay within large open wound, cavitation north and number of holes throughout the tree. Roost Suitability: High	
BT97	G76	SD 73575 43692	Alder overhanging west side of stream. Due to storm damage, cavity at point of stem failure at around 4m high, and large transverse break in west limb. Roost Suitability: High	
BT98	G76	SD 73573 43695	Fairly young alder tree overhanging west side of stream with decaying trunk resulting in a number of open holes throughout structure. Roost Suitability: Moderate	
BT99	G76	SD 73568 43701	Fairly young alder tree overhanging west side of stream with small split in main trunk. Roost Suitability: Low	

TEP ID	Unique Arb ID	Grid Ref	Description	
BT 100	G73	SD 73568 43701	Fairly young alder growing on / around manmade rubble pile on western side of stream, with transverse split in branch. Roost Suitability: Moderate.	
BT 101	G69	SD 73565 43705	Alder on west side of stream with few knot holes. Roost Suitability: Low	
BT 102	T141	SD 73545 43737	Ivy clad alder on eastern side of stream. Ivy possibly obscuring potential roost features. Roost Suitability: Low	No photo available
BT 103	T135	SD 73549 43754	Ivy clad alder on eastern side of stream, possibly obscuring potential roost feature. Roost Suitability: Low	

TEP ID	Unique Arb ID	Grid Ref	Description	
BT 104	T115	SD 73506 43795	Mature pedunculate oak within open field. Large wound on trunk leading to large central cavity in main stem, west facing. Split limbs and crevices. Roost Suitability: High	
BT 105	T70	SD 73449 43877	Pedunculate oak on field boundary, in hedge, with large cavity in trunk, primary limb failures and multiple broken branches. Roost Suitability: High	No photo available
BT 106	T71	SD 73221 43884	Elder on eastern side of brook with few knot holes. Roost Suitability: Low	No photo available
BT 107	T52	SD 73218 43907	Elder on eastern side of brook with few knot holes and deadwood. Roost Suitability: Low	No photo available
BT 108	G22	SD 73186 43941	Oak with split limb. Roost Suitability: Moderate	No photo available
BT 109	G24	SD 73185 43945	Oak with split on limb but appears open all the way through. Aerial inspection required to check feature further. Roost Suitability: Low	No photo available
BT 110	T14	SD 73189 44007	Very large sycamore at maturity. Immediately south of road, overhanging entire carriageway north. Snap in branch and ivy cover to 10m, which may be obscuring PRFs. Roost Suitability: Moderate	No photo available

TEP ID	Unique Arb ID	Grid Ref	Description	
BT 112	T23	SD 73475 43980	Large pendunculate oak, west of stream. Primary limb failure with Splitting around wound on southern limb. Rot cavities in stem / deadwood. Roost Suitability: High	No photo available
BT 113	G4	SD 73524 44032	Ash with ivy clad and young holly. No obvious features but dense ivy possibly covering roosting features. Roost Suitability: Low	No photo available
BT 114	T9	SD 73512 44024	Large ash overhanging road with dense ivy covering. No obvious features but dense ivy possibly covering roosting features. Roost Suitability: Low	No photo available
BT 115	T25	SD 73478 43965	Holly. Crack at branch junction. Roost Suitability: Low	No photo available

2.1.2 External Assessment of Buildings

7) One building lies within the red line boundary, a barn located at TN2; a bricked barn / farm building with slate roof. The structure contains design features and features as a result of deterioration that have high suitability for roosting bats.

3. Summary

3.1 Proposed Ribble Crossing

8) Mature trees are peppered across the site with various levels of suitability for roosting bats. A total of 66 trees lie within influencing distance of the Indicative Development Envelope; 27 of High potential; 19 of Moderate potential and 20 with Low potential.

9) The barn present within the red line boundary has high bat roost potential.