



# Haweswater Aqueduct Resilience Programme - Proposed Bowland Section

## Environmental Statement

### Volume 4

#### Appendix 6.6: Arboricultural Assessment

June 2021



Water for the North West



## Haweswater Aqueduct Resilience Programme - Proposed Bowland Section

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## Executive summary

The following points summarise the recommendations and conclusions contained within this report in relation to the anticipated tree impacts:

1. Potential tree loss is indicated in Figure 6.6: Preliminary Trees at Risk Plan (PTRP) and reported using traffic light colour symbology of Red Amber Green (RAG). Refer to Paragraph 11 of Section 1.6 for a summary of the RAG assessment methodology. The RAG assessment is a precautionary approach to reporting impacts for 'Red' or 'Amber' features at planning submission stage.
2. A total of 25 tree features, equating to around 29 % of potential tree loss at both compounds, comprises 'Red' category trees i.e. features within the indicative core working areas for the two construction compounds. Of the 25 total trees falling into this category, only one is Grade A (this being at the Newton-in-Bowland compound), ten are Grade B (only one of which is at the Lower Houses compound), 14 are Grade C (all at the Newton-in-Bowland compound) and none is Category U.
3. A total of 60 tree features, equating to approximately 71 % of total potential tree loss at both compounds, comprises 'Amber' category trees i.e. features located outside the indicative proposed core working areas but within the planning application boundaries. Of the 60 total tree features falling into this category, only five are Grade A (all at Newton-in-Bowland compound), 26 are Grade B (five of which are found at the Lower Houses compound), 25 are Grade C (only three of which are located at Lower Houses compound) and four are Grade U (only one of which is at the Lower Houses compound).
4. It is anticipated that further consideration will be given to at risk and notable features as the design process progresses and engineering constraints are further defined e.g. provision of a full topographical survey for existing vegetation. Specific opportunities for further retention are summarised in Section 6.3.
5. Overall, the Proposed Bowland Section (excluding off-site highways losses reported in Volume 5) could give rise to the loss of 85 tree features falling into all British Standard grades A – U. This is regarded as being a significant effect under the EIA Regulations. Of this total, approximately one half of all trees have been identified as being of high or moderate quality (i.e. British Standard grades A and B). This includes the potential loss of six A grade features (all at Newton-in-Bowland Compound) and 26 B grade features (of which 20 are located at Newton-in-Bowland Compound).
6. Approximately 26 % of all surveyed features within the Proposed Bowland Section, including one potential veteran tree and eight additional A grade features, are considered encroached but retainable subject to pre-construction tree protection measures. Notable tree encroachment summarised for each local planning authority (LPA) in Sections 6.1.1 – 6.1.2.
7. Retention of encroached features would be subject to incorporation of pre-construction protection measures as specified in a Site Specific Arboricultural Method Statement (SS-AMS) and shown on a Tree Protection Plan (TPP). Further mitigation measures designed to protect retained features can be provided by documents listed in Table 1.8 of Section 6.7.
8. Additional survey coverage is required around the proposed River Hodder crossing at Newton-in-Bowland Compound and a proposed access track leading onto Parkhouse Lane at Lower Houses Compound. Further arboricultural survey work should help more fully determine the quantity and quality of tree constraints or impacts across the Proposed Bowland Section. Outstanding areas of coverage are identified in Figure 6.5: Tree Constraints and Assessment Plan (TCAP).

## 1. Introduction

### 1.1 Programme Background

- 1) United Utilities is submitting detailed planning applications for the Haweswater Aqueduct Resilience Programme (HARP). As further described in Environmental Statement (ES) Chapter 3: Design Evolution and Development Description, the overall 'Proposed Programme of Works' requires a detailed planning application and accompanying ES for five separate developments as listed below:
- Proposed Docker Section
  - Proposed Swarther Section
  - Proposed Bowland Section
  - Proposed Marl Hill Section
  - Proposed Haslingden and Walmersley Section.

### 1.2 Section Description

- 2) This Arboricultural Impact Assessment (AIA) has been developed for the Proposed Bowland Section of the overall Proposed Programme of Works.
- 3) The Proposed Bowland Section consists of two compounds, approximately 16 km apart, with Lower Houses Compound located in the northern extent of the development and Newton-in-Bowland Compound located in the southern extent. These compounds centre on proposed working platform areas for the launch/reception of subterranean tunnel boring operations associated with the Proposed Programme of Works. Newton-in-Bowland Compound also includes a proposed new access road and a temporary bridge crossing over the River Hodder to be access from Hallgate Hill.
- 4) Hereafter the main working area associated with surface works for the Proposed Bowland Section is referred to as the proposed core working area within this AIA. The combined design elements of the proposed core working area are specified within Appendix A and figuratively shown in the figures below within Volume 3 of the ES:
- Figure 6.5: Tree Constraints and Assessment Plan (TCAP)
  - Figure 6.6: Preliminary Trees at Risk Plan (PTRP).
- 5) The Proposed Bowland Section is spread across two local planning authorities (LPAs). Table 1.1 below highlights the design components located within each LPA area.

**Table 1.1: Breakdown table of design component by relevant LPA**

Design Component	Relevant LPA
Lower Houses Compound	Lancaster City Council
Newton-in-Bowland Compound	Ribble Valley Borough Council

### 1.3 Design Stage

- 6) Preliminary design information used to inform this assessment is considered fixed at the time of report writing. There is potential for further design detail and iterations to occur at future design stages relating to construction and demolition activities once a contractor is appointed. Further design development may require this AIA to be reviewed and updated accordingly by an appropriately qualified arboriculturist.

## 1.4 Deliverable Scope

- 7) Jacobs UK Ltd (Jacobs) was instructed by United Utilities to undertake a tree survey and provide an AIA for each section of the Proposed Programme of Works. Reference to trees in this AIA should be taken to include individual trees, woodland, tree groups and hedgerows where appropriate. The AIA has been produced with reference to 'BS 5837:2012- Trees in relation to design, demolition and construction – Recommendations'<sup>1</sup>. Scope requirements were to:
- Survey and record information about trees that are potentially impacted by the Proposed Bowland Section
  - Assess the potential impact on trees including tree removals, and to recommend where tree protection measures may be required for retained trees
  - Provide an AIA report with all relevant information recorded and indicated on corresponding figures.

## 1.5 Survey Scope and Methodology

- 8) Baseline survey visits to multiple locations were undertaken by arboricultural surveyors between January and April 2020. The tree survey methodology was conducted in accordance with BS 5837:2012<sup>2</sup>. Full details of survey scope and methodology are detailed in Sections B.1 and B.2 of Appendix B. Two additional features, G112 and G118, were surveyed to the same scope and methodology during a site walkover with the client on 11 November 2020.
- 9) The spatial scope of surveys considers trees located within and up to 15 m from the planning application boundary referenced in Appendix A. Hereafter the spatial scope of surveys will be referred to as the 'assessment area'. The assessment area excludes:
- All trees with a stem diameter of below 75 mm (measured at 1.5 m above ground level)
  - Vegetation located above the tunnelled sections of the Proposed Bowland Section as outlined within Section 1.10 of this AIA.

## 1.6 Impact Assessment Methodology

- 10) An interim assessment of potential impacts is based on Figure 6.5: TCAP. The TCAP presents the existing tree Root Protection Area (RPA) or canopy constraints in relation to the indicative proposed core working area and planning application boundary referenced in Appendix A. Potential impacts on trees were also informed by communications with the United Utilities design team. Full details of the impact assessment methodology are provided in Section B.4 of Appendix B.
- 11) Potential tree impacts are reported using traffic light colour symbology of RAG based on parameters summarised below:
- Red features are trees subject to varying extents of removal based on their location within the proposed core working area
  - Amber features are trees considered to be a 'Removal Risk Aiming to Retain' (RRAtR) and based on the proposed core working area or planning application boundary encroaching on existing tree constraints. For the purposes of the AIA, it is assumed that RRAtR trees reported would be removed on a reasonable worst-case scenario basis. This is a precautionary approach because location-specific protection measures are not available for RRAtR trees at this planning submission stage. It is anticipated that further consideration will be given to RRAtR trees as the design process progresses and engineering constraints become further defined

<sup>1</sup> British Standards Institute (2012). *British Standard 5837: 2012 Trees in relation to design, demolition and construction – Recommendations*. London: BSI Ltd.

<sup>2</sup> British Standards Institute (2012). *op. cit.*

- Green features are considered to be 'Retained with Protection Measures' (RwPM) due to either location-specific protection measures being available at planning submission stage or tree constraints being located on the margins of the planning application boundary. Encroached RwPM features, considered likely to require protection measures, are identified by an 'E' within the 'AIA' column of the Tree Survey Schedule (Appendix F). Non-encroached RwPM features, less likely to require protection measures, are identified by a 'N' within the 'AIA' column of the Tree Survey Schedule.

- 12) The extent of potential tree loss, trees at risk and tree retention within the planning application boundary are indicatively shown on Figure 6.6: PTRP. The spatial extent of tree removal, trees at risk and tree retention are based on the RAG status of a feature and proximity to the planning application boundary.

## 1.7 Embedded Mitigation and Good Practice

- 13) Embedded mitigation is inherent to the design, good practice measures are standard industry methods and approaches used to manage commonly occurring environmental effects. The assessments presented in Section 4 to 6 of this report are made taking into account embedded mitigation and the implementation of good practice measures (where these can be identified).

### 1.7.1 Embedded Mitigation

- 14) ES Chapter 3: Design Evolution and Development Description explains the evolution of the design with input from the environmental team, including mitigation workshops and the use of GIS based constraints data.

### 1.7.2 Good Practice Measures

- 15) Good practice measures are contained in ES Appendix 3.2: Construction Code of Practice (CCoP). The CCoP presents a suite of mitigation measures that would be adopted during construction. The key measures of relevance to the AIA are listed below:
- Trees to be retained should be adequately protected via a combination of tree protection measures as specified in a SS-AMS. Examples of potential mitigation measures within each LPA are discussed in Sections 5.2.2 and 5.3.2 of this AIA
  - In conjunction with the SS-AMS, a TPP should also be produced to provide schematic details of where protective measures (i.e. fencing or ground protection) will be installed
  - The specification of stout 'fit for purpose' tree protection fencing would be agreed with the LPA and should preferably be prescribed as per section 6.2 of BS 5837:2012 (BSI, 2012). This would provide an adequate RPA/Construction Exclusion Zone (CEZ) that would allow its successful retention during and after the proposed works
  - Any soft ground within RPA areas should be suitably protected as described in Section 6.4.2.3 of BS 5837:2012 (BSI, 2012). Areas of retained hard surfacing could act as sufficient protection for RPAs beneath and require no additional level of exclusion
  - In the event any tree canopy pruning is required to facilitate the works these are to be undertaken by qualified and competent staff working to BS3998:2010. The LPA would be notified of any tree pruning required to enable the works to proceed prior to the pruning occurring
  - Consideration should be given to a competent project arboriculturist or ACoW to oversee works relating to the protection of trees. Further details on this role are provided in Section 6.8 of this AIA.

## 1.8 Survey Limitations

- 16) Limitations to the tree survey are identified as follows:



- Plotting the location of trees was based on surveyor use of a GPS-enabled survey tablet and open-source aerial imagery with no topographical information relating to tree positions available at the time of surveys. GPS locations are considered accurate to within 5 m therefore all tree positions must be assumed to be indicative for planning purposes only. Later stage verification of all tree feature locations will be required once a full topographical survey becomes available
- The assessment area is defined by the extent of the planning application boundary referenced in Appendix A. Any outstanding areas of survey coverage, due to post-survey development of the planning application boundary, are indicated on Figure 6.5: TCAP. Outstanding areas of survey coverage are also further described within Sections 3.2 and 3.3.
- Due to restricted safe access, the stem diameter of some trees has been estimated where appropriate. This is identified by a '#' suffix within the stem diameter at breast height (DBH) column of the Tree Survey Schedule
- Indicative RPAs have been calculated for tree groups, hedgerows and woodland based on the maximum stem diameter taken for each collective feature. Limited individual tree data for trees within collective features was recorded e.g. stem count
- Additional arboricultural site visits for more detailed tree data recording may be required at a later stage to inform detailed design including:
  - The determination of accurate tree clearance limits where tree impacts are expected (including impacts to trees on the external margins of the planning application boundary)
  - The formation of a tree protection strategy (i.e. a SS-AMS)
- A BS5837:2012 tree survey does not include a specific veteran/ancient tree assessment methodology (see Section B.5 of Appendix B for details). Prospective veteran or ancient trees are reported as potential veteran or ancient trees within the Tree Survey Schedule and identified by a 'V' within the Age Class column. For the purposes of this assessment, all potential veteran and ancient trees are considered to be verified.

## 1.9 Assessment Limitations

17) Limitations to the assessment are identified as follows:

- Indicative tree impacts are informed by the overlay of tree constraints information relative to the proposed core working area and planning application boundary. Tree impacts are informed by reference sources defined in Appendix A and assessment methodology detailed in Section B.4 of Appendix B. In summary these sources include:
  - Tree survey information, the proposed core working area and the planning application boundary as presented as geo-spatial layers
  - Schematic design plans
  - Communications with the United Utilities design team on 18 June 2020 with regards to potential location-specific mitigation to accommodate tree retention
- The Tree Survey Schedule does not report canopy or branch height dimensions of tree survey features however this data can be provided on request. This information is considered more appropriate to a later design stage at a greater level of detail i.e. to determine specific associated pruning requirements. The PTRP should be provided as a reference document for any associated pruning works specification in line with BS3998:2010 'Tree Work – Recommendations'<sup>3</sup>
- The indicative rooting constraints of potential veteran/ancient trees are currently calculated in accordance with BS5837:2012 (which caps RPAs at a maximum radius of 15 m). Further protection measures should be considered in line with Governmental Standing Advice for ancient and veteran

<sup>3</sup> British Standards Institute (2010). *British Standard 3998:2010 : 2012 Tree work – Recommendations*. London: BSI Ltd.

trees in England<sup>4</sup> hereafter referred to as Standing Advice. Standing Advice recommends a minimum 15 m protective buffer zone from Ancient Woodland and potentially greater protective buffer zones for individual ancient and veteran trees (see Section B.5 of Appendix B for further details)

## 1.10 Assumptions

18) Assumptions for this assessment are identified as follows:

- Tree surveys focus upon trees with a stem diameter of over 75 mm. It is understood that the assessment of trees lost below this size threshold and other low-level vegetation are captured by existing Phase 1 ecology survey data and addressed within the Environmental Masterplan of Chapter 20: Environmental Mitigation
- The existing Haweswater Aqueduct (HA) will remain in-situ and therefore associated decommissioning impacts are excluded from this assessment
- The tunnelled sections of the Proposed Bowland Section are excluded from surveys. It is understood that tunnel boring operations would occur at a minimum depth of 7 m below ground level. This exclusion is based on principles of tree rooting systems<sup>5</sup> being typically shallow i.e. 90 % of roots are concentrated in the top 60 cm of soils and with average root depths typically being in the range of 1-2 m
- This assessment is based on a fixed design however there is potential for additional construction details to become available at detailed design stage. Examples of additional elements/construction detail are:
  - Working widths for task-specific construction/demolition activities located within the planning application boundary but outwith the proposed core working area e.g. earthworks
  - Facilitation access requirements relating to visibility splays or turning circles
  - The diversion/removal/reinstatement of underground or overground utility services including outfalls
  - Highways improvements to the Strategic Road Network (SRN) including localised road widening, passing places or culverts
  - The alignment and construction detail of existing access tracks/roads to be improved
  - The alignment and construction detail of new access tracks/roads/bridges or diverted public footpaths
  - The demolition of existing structures and hard surfacing located within the Proposed Bowland Section
  - Notification of project commitments e.g. confirmed working width reductions
- It is assumed that the above listed design detail would be positioned outside areas of retained tree features shown on the PTRP with no further assessment required.

<sup>4</sup> Natural England and Forestry Commission (2018). *Guidance - Ancient woodland, ancient trees and veteran trees: protecting them from development*. [online] Available here: <https://www.gov.uk/guidance/ancient-woodland-and-veteran-trees-protection-surveys-licences> [Accessed on 14/07/20]

<sup>5</sup> Dobson, M. (1995). Tree Root Systems Arboricultural Research Information Note 130/ARB/95. Arboricultural Advisory and Information Service: UK.

## 2. Regulatory and Planning Framework for Trees

### 2.1 Overview

- 19) BS5837:2012 provides a framework which sets out how trees should be considered in the context of development. LPAs in the UK have a statutory duty to consider the protection of trees as material considerations when considering planning applications. Design components for each LPA are identified in Table 1.1 of Section 1.2 and LPA administrative boundaries are shown on Figure 6.5: TCAP.
- 20) The methodology and scope of this AIA (as described in Appendix B) has been developed in accordance with national and local policy objectives specified below as well as legislation referenced in Section 7 of this AIA.

### 2.2 Protected Trees

- 21) Trees which provide significant biodiversity value may be afforded protection based on their location within a designated site. The Proposed Bowland Section is fully contained within the designated landscape of Forest of Bowland Area of Outstanding Natural Beauty (AONB) identified for its *"outstanding landscapes; unique and irreplaceable national assets"*<sup>6</sup>. No additional statutory designated sites of nature conservation are situated within or immediately adjacent to the assessment area of this AIA. Additional information on nearby ecological resources, designations and receptors can be found within ES Chapter 9: Ecology. At the time of writing, tree loss associated to any national or local designated site have not been specified within this AIA.
- 22) The Hedgerows Regulations 1997 protect most countryside hedgerows from being removed (including being uprooted or otherwise destroyed). The Regulations are administered by the LPA who decide if a hedgerow is important. The identification of important hedgerows is based on a number of ecological and cultural criteria as assessed within ES Chapter 9: Ecology and Chapter 10: Cultural Heritage. Reinstatement associated with any important hedgerow loss is indicated within the Environmental Masterplan supporting ES Chapter 20: Environmental Mitigation.
- 23) Trees which provide a significant amenity value to a local area may be afforded protection under the Town and Country Planning (Tree Preservation) (England) Regulations 2012 or Town and Country Planning Act 1990. Table 1.2 highlights the design component relevant to each LPA and status of any Conservation Area (CA) or Tree Preservation Order (TPO) located within or immediately adjacent to the assessment area.

**Table 1.2: Summary table of TPO/CA trees per LPA and Scheme Component**

Design Component	Relevant LPA	TPO check status	CA check status
Lower Houses Compound	Lancaster City Council	Lancaster City Council correspondence (made 15 July 2020) confirms absence of TPOs in assessment area.	Lancaster City Council correspondence (made 15 July 2020) confirms absence of CAs in assessment area.
Newton-in-Bowland Compound	Ribble Valley Borough Council	Ribble Valley Borough Council correspondence (made 8 August 2020) confirms absence of TPOs in assessment area.	8 October 2020 checks made on the Ribble Valley Borough Council website <sup>7</sup> confirm that Newton CA, shown in Appendix G, is partly contained within the assessment area

<sup>6</sup> Forest of Bowland (2019). Forest of Bowland AONB Management Plan 2019 – 2024.[online] Available at: <https://www.forestofbowland.com/management-plan> [Accessed: 08 October 2020]

<sup>7</sup> RVBC (2019). Newton Conservation Area.[online] Available at: [https://www.ribblevalley.gov.uk/downloads/file/3590/newton\\_conservation\\_area\\_map](https://www.ribblevalley.gov.uk/downloads/file/3590/newton_conservation_area_map) [Accessed: 08 October 2020]

## 2.3 Planning Policy Objectives

- 24) Section 15 paragraph 175c<sup>8</sup> of the National Planning Policy Framework (NPPF, 2019) states that *'development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons and a suitable compensation strategy exists'*. The NPPF refers to veteran and ancient trees as irreplaceable habitat due to their "age, size and condition, is of exceptional biodiversity, cultural or heritage value". This objective aligns consistently with the combined policy objectives as outlined below.
- 25) Policy DME1<sup>9</sup> of Ribble Valley Borough Council's Core Strategy (RVBC, 2014) sets targets for zero loss of statutorily protected trees, ancient woodland and veteran and ancient trees as a result of development. Meanwhile the Forest of Bowland AONB Management Plan 2019 – 2024 recognises that existing trees, particularly broadleaf or clough woodland, substantially contribute to a landscape containing woodland cover well below the national average.
- 26) Policy DME2<sup>10</sup> of Ribble Valley Borough Council's Core Strategy (RVBC, 2014) states that *'development proposals will be refused which significantly harm landscape or landscape features including... hedgerows and individual trees (other than in exceptional circumstances where satisfactory works of mitigation or enhancement would be achieved, including rebuilding, replanting and landscape management)'*
- 27) Policy DME1<sup>11</sup> of Ribble Valley Borough Council's Core Strategy (RVBC, 2014) seeks to protect its existing tree cover where potential developments are likely to have *'a substantial effect on tree cover'*. Where applications are likely to have a substantial cover, applicants are required to:
- Provide detailed arboricultural survey information on trees (in accordance with BS5837:2012) that could be influenced by the proposed development
  - Provide a tree constraint plan and assessment of development impacts to any affected trees
  - A detailed tree protection plan is submitted with appropriate levels of detail.
- 28) Policy DM29<sup>12</sup> of Lancaster City Council's Development Management Development Plan (LCC, 2014) similarly supports the protection of existing trees and hedgerows *"which positively contribute... to the visual amenity and/or environmental value of the location"*. Policy DM29 and Lancaster City Council's Tree Policy<sup>13</sup> further state that an AIA is required to provide justification of tree loss of trees in relation to development and require the AIA to be undertaken by an individual qualified and experienced in arboriculture and development.

<sup>8</sup> Ministry of Housing, Communities and Local Government (2019). National Planning Policy Framework

<sup>9</sup> Ribble Valley Borough Council (2014). Core Strategy 2008-2028. A Local Plan for Ribble Valley. Adopted Version. [online] Available here: [https://www.ribblevalley.gov.uk/download/downloads/id/10010/adopted\\_core\\_strategy.pdf](https://www.ribblevalley.gov.uk/download/downloads/id/10010/adopted_core_strategy.pdf) [Accessed: 08 October 2020]

<sup>10</sup> Ribble Valley Borough Council (2014). Core Strategy 2008-2028. A Local Plan for Ribble Valley. Adopted Version. [online] Available here: [https://www.ribblevalley.gov.uk/download/downloads/id/10010/adopted\\_core\\_strategy.pdf](https://www.ribblevalley.gov.uk/download/downloads/id/10010/adopted_core_strategy.pdf) [Accessed: 08 October 2020]

<sup>11</sup> Ribble Valley Borough Council (2014). *op. cit.*

<sup>12</sup> Lancaster City Council (2014). Lancaster Development Management Plan DPD. . [online] Available here: <https://www.lancaster.gov.uk/planning/planning-policy/development-management-dpd> [Accessed: 08 October 2020]

<sup>13</sup> Lancaster City Council (2010). Tree Policy. Development Management Regeneration and Policy Service. [online] Available here: <https://www.lancaster.gov.uk/planning/trees/tree-policy> [Accessed: 08 October 2020]

### **3. Site Observations and the Tree Survey**

#### **3.1 Ancient Tree Inventory**

- 29) A desktop search, made on 23 June 2020, of the Woodland Trust's Ancient Tree Inventory (ATI) database indicates the absence of existing verified veteran or ancient trees within the assessment area. Nevertheless, it should be noted that the ATI is not a definitive database for veteran/ancient trees.

#### **3.2 Lancaster City Council trees in the assessment area**

- 30) The proposed location of the Lower Houses Compound is situated in flat open agricultural grassland containing limited tree cover of mixed age class and comprises predominantly of B and C grade trees.
- 31) The assessment area is intermittently covered with scattered individual trees and intermittent boundary vegetation concentrated at field margins or watercourses. Approximately 20 % of the Proposed Bowland Section's surveyed trees are located at this compound. The compound's assessment area contains one A grade feature (Illustration 1).

**Illustration 1: Part of A grade group feature historically managed as a low pollard**



- 32) Due to post-survey updates to the planning application boundary, there are two outstanding areas of survey coverage on the north eastern margins of the Lancaster City Council assessment area. These areas are indicated on Figure 6.5: TCAP.

#### **3.3 Ribble Valley Borough Council trees in the assessment area**

- 33) The proposed location of the Newton-in-Bowland Compound is located in sloping open agricultural grassland situated to the southern and western margins of Newton-in-Bowland village. The southern and eastern extents of the assessment area are bordered by a meandering section of the River Hodder. The assessment area of approximately 25 hectares is divided roughly in half by Dunsop Road running east to west between Newton-in-Bowland and Dunsop Bridge.



- 34) The treescape to the north of Dunsop Road contains a mixture of B and C grade trees scattered within fields or located at roadside and field margins. The treescape to the south of Dunsop Road predominantly contains B grade broadleaf trees concentrated at roadside, field margins and the River Hodder.
- 35) Approximately 80 % of the Proposed Bowland Section's surveyed trees are located at this compound with around 60 % of all surveyed tree stock being of at least of mature age class.
- 36) All 16 A grade features are concentrated between the River Hodder and Dunsop Road including one potential veteran tree (Illustration 2).

**Illustration 2: Potential veteran silver birch tree**



- 37) The treescape to the south of Dunsop Road includes prominent linear tree groups of mature trees (Illustration 3) or scattered A grade individual trees (Illustration 4).

**Illustration 3: The red boxed area contains linear groups of mature ash, sycamore or alder of moderate and high quality. As viewed south from Dunsop road towards the River Hodder**



**Illustration 4: Typical example of A grade ash tree contained within field margin of assessment area**



- 38) The assessment area contains a tree avenue flanking an existing access track situated immediately west of the existing road bridge crossing the River Hodder. The access track appears in shared vehicular use to residential property, adjacent agricultural land and the operational Wastewater Treatment Works. Surveyed trees within the avenue are assessed to be of mixed quality and appear to be contained within 'Newton Conservation Area' as shown in Appendix G. Illustration 5 highlights a specific riverside tree group identified as 'Important Trees' within the CA.

**Illustration 5: Part of existing tree avenue within the assessment area highlighted as 'Important Trees' within CA plan**



- 39) Due to post-survey updates to the planning application boundary there is an outstanding roadside area of survey coverage around the proposed River Hodder crossing of the assessment area. This area is indicated on Figure 6.5: TCAP.

### 3.4 Quantitative Results of the Tree Survey

- 40) Table 1.3 summarises the number of trees surveyed and their relative grading categories within the assessment area.

**Table 1.3: Totals table of tree survey features and grading categories**

BS5837:2012 grades	Trees	Tree Groups	Woodlands	Hedges	Subtotals
A	13	4	0	0	17
B	30	43	0	1	74
C	37	33	0	4	74
U	3	4	0	0	7
<b>Subtotals</b>	<b>83</b>	<b>84</b>	<b>0</b>	<b>5</b>	<b>172</b>

- 41) Based on the grading methodology of BS5837:2012, 'A' grade trees are of high quality and value and should be prioritised for retention. 'B' grade trees are of moderate quality and value and should be considered for retention where possible, although care should be taken to avoid misplaced retention. Any development should take into account the retention and protection of trees, but also the tree's future growth. The 'C' grade trees are of low quality and value and should not place a constraint on development. U grade trees are those that are dead or are showing signs of significant, immediate, and irreversible overall decline.
- 42) Full tree survey results are described in the Tree Survey Schedule (Appendix F) and are indicated on Figure 6.5: TCAP. Explanation of terms used in the schedule can be found in Appendices C, D and E.



## 4. Arboricultural Impact Assessment (AIA)

### 4.1 Overview

- 43) The construction of the Proposed Bowland Section would result in the loss of trees through both permanent and temporary land-take. About 49 % of all surveyed vegetation of the Proposed Bowland Section is considered at risk of removal. The locations of impacted features are indicatively shown on Figure 6.6: PTRP.

### 4.2 RAG Assessment – tree removals

- 44) All features RAG assessed as 'Red' or 'Amber' are reported to be removed for the purposes of this assessment. At risk trees within the assessment area are summarised in Table 1.4 which breaks down trees into feature type, RAG status and category grading.

**Table 1.4: Summary RAG status table of tree removals (Red and Amber)**

Feature type	RAG status (Red and Amber)			BS5837:2012 grades			
	Removal	Partial removal	RRAtR	A	B	C	U
Tree (T)	11	0	35	6	18	21	1
Tree Group (G)	5	5	25	0	18	14	3
Hedgerow (H)	1	3	0	0	0	4	0
Woodland (W)	0	0	0	0	0	0	0
<b>Subtotals</b>	<b>17</b>	<b>8</b>	<b>60</b>	<b>6</b>	<b>36</b>	<b>39</b>	<b>4</b>

- 45) It should be noted that the RAG assessment is a precautionary approach to reporting impacts with location-specific protection measures not available for 'Red' or 'Amber' features at planning submission stage. It is anticipated that further consideration will be given to at risk features as the design process progresses and engineering constraints are further defined.

### 4.3 RAG Assessment – tree retention

- 46) Retained trees within the assessment area are tabulated in Table 1.5 which breaks down trees into feature type, RAG status and category grading.

**Table 1.5: Summary RAG status table of tree retention (Green)**

Feature type	RAG status (Green)		BS5837:2012 grades			
	RwPM - encroached	RwPM - not encroached	A	B	C	U
Tree (T)	16	21	7	12	16	2
Tree Group (G)	28	21	4	25	19	1
Hedgerow (H)	0	1	0	1	0	0
Woodland (W)	0	0	0	0	0	0
<b>Subtotals</b>	<b>44</b>	<b>43</b>	<b>11</b>	<b>38</b>	<b>35</b>	<b>3</b>

- 47) Retention of encroached features will be subject to incorporation of pre-construction protection measures as specified in a SS-AMS. Further mitigation measures designed to protect retained features can be provided by documents listed in Table 1.8 of Section 6.7.
- 48) Non-encroached features are reported as RwPM due to a general requirement to site verify all surveyed tree feature locations against topographical information at detailed design stage - see Section 6.5 for general recommendations.

## 5. Discussion

### 5.1 Significant arboricultural impacts

- 49) Schedule 4(4) of the Town and Country Planning (Environmental Impact Assessment) Regulations 2017 highlights the need to describe 'significantly affected...fauna...and landscape', however there is no recognised arboricultural methodology for assessing the significance of effects associated with tree loss. ES Chapter 6: Landscape and Arboriculture considers tree loss in the wider context of impacts to landscape character and visual amenity.
- 50) The Woodland Trust defines 'notable trees' to be 'usually a mature tree which may stand out in the local environment because they are large in comparison with other trees around them...in parts of the UK, where trees are less common, a tree may be relatively small...but notable because it is significant in its local environment'<sup>14</sup>. In the context of national and local planning policy, significant tree loss is assessed where the following notable features are considered at risk of removal:
- Statutorily protected trees
  - Veteran or ancient trees
  - Ancient woodland
  - High quality trees i.e. A grade features.

### 5.2 Impacts upon Lancaster City Council trees

- 51) Table 1.6 below summarises potential tree impacts by RAG status and category grading at the proposed Lower Houses Compound location.

**Table 1.6: Summary RAG status table of trees within Lancaster City Council**

BS5837:2012 grades	RAG status			
	Removal/Partial Removal	RRAtR	RwPM	Subtotals
A	0	0	1	1
B	1	5	12	18
C	0	3	11	14
U	0	1	0	1
Subtotals	1	9	24	34

#### 5.2.1 Notable trees at risk within Lancaster City Council

- 52) 29 % of trees surveyed at the proposed Lower Houses Compound location are subject to varying extents of removal or assessed to be at risk of removal. Potential tree loss includes two moderate quality trees RAG assessed as Amber. Individual tree (Illustration 6) is in close proximity to the existing well house whilst Illustration 7 is in close proximity to the proposed 4 m wide access road.

<sup>14</sup> Woodland Trust (2020) *Notable trees*. [online] Available at: <https://ati.woodlandtrust.org.uk/what-we-record-and-why/what-we-record/notable-trees/> [Accessed: 06 October 2020]

**Illustration 6: Mature B grade oak tree at risk**



**Illustration 7: Mature B grade tree group at risk**



#### **5.2.2 Notable encroachment within Lancaster City Council**

- 53) Approximately 38 % of trees surveyed at the proposed Lower Houses Compound location are considered encroached but RwPM including one tree assessed as notable. Encroached features are reported as retainable (Green in the RAG assessment) subject to pre-construction tree protection measures as detailed within a SS-AMS.
- 54) It is assumed that potential RPA impacts to encroached trees at the proposed Lower Houses Compound location, including one A grade feature would be mitigated by a combination of:

- Investigating opportunities to reduce works areas of the planning application boundary outwith the proposed core working area, where possible
- Precautionary working methods to be adopted in line with National Joint Utility Group (NJUG) Volume 4<sup>15</sup>
- Establishment of CEZs around retained tree RPAs to include the use of ground protection, tree protection fencing and no soil stripping within the RPAs of retained trees
- Micro-siting of scheme components outside of constraints of retained trees under site supervision of an ACoW including potential facilitation pruning in line with BS3998:2010<sup>16</sup>.

55) Two outstanding areas of survey coverage are identified on Figure 6.5: TCAP at Lower Houses Compound in proximity to Parkhouse Lane. These areas are located within a 15 m arboricultural survey buffer external to the planning application boundary as explained in Paragraph 9 of Section 1.5 of this AIA. In the first instance it is assumed that a 15 m CEZ is possible to retain these un-surveyed trees in addition to general pre-construction tree protection measures listed in Paragraph 54. This CEZ distance could become more refined through further arboricultural surveys for un-surveyed trees at the proposed Lower Houses Compound location.

### 5.3 Impacts upon Ribble Valley Borough Council trees

56) Table 1.7 below summarises potential tree impacts by RAG status and category grading at the proposed Newton-in-Bowland Compound location.

**Table 1.7: Summary RAG status table of trees within Ribble Valley Borough Council**

BS5837:2012 grades	RAG status			
	Removal/Partial Removal	RRAtR	RwPM	Subtotals
A	1	5	10	16
B	9	21	26	56
C	14	22	24	60
U	0	3	3	6
<b>Subtotals</b>	<b>24</b>	<b>51</b>	<b>63</b>	<b>138</b>

#### 5.3.1 Notable trees at risk within Ribble Valley Borough Council

- 57) Around 54 % of trees surveyed at the proposed Newton-in-Bowland Compound location are subject to varying extents of removal or assessed to be at risk of removal including trees assessed as notable. The potential loss includes six A grade features which are further explained in Paragraphs 58 to 59 below.
- 58) The great majority of trees (including those shown on Illustrations 8 and 9) are at risk due to two specific design proposals:
- The construction of a new 7.7 m wide tarmac access road approximately 2.5 km long
  - Pipe connection works around an existing well house adjacent to the River Hodder

<sup>15</sup> NJUG (2007). NJUG Guidelines on Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees. NJUG:UK.

<sup>16</sup> British Standards Institute (2010). *British Standard 3998:2010: 2012 Tree work – Recommendations*. London: BSI Ltd.



**Illustration 8: A grade ash tree at risk due to proposed road alignment**



**Illustration 9: A grade alder tree at risk due to encroachment to works around an existing well house adjacent to the River Hodder.**



- 59) One A grade feature is located adjacent to the proposed new road junction alignment onto existing Hallgate Hill (Illustration 10).

**Illustration 10: Roadside A grade ash tree to be removed due to proposed road junction alignment**



### 5.3.2 Notable encroachment within Ribble Valley Borough Council

- 60) Approximately 22 % of trees surveyed at the proposed Newton-in-Bowland Compound location are considered encroached but RwPM including trees assessed as notable. Encroached features are reported as retainable (Green in the RAG assessment) subject to pre-construction tree protection measures as detailed within a SS-AMS.
- 61) It is assumed that potential RPA impacts to Conservation Area trees flanking an existing access track would be mitigated by maintaining existing access track surfaces in-situ and the establishment of a CEZ from unmade trackside verges. It is assumed that track will remain in use by light vehicles with no facilitation access pruning requirement anticipated.
- 62) It is assumed that potential RPA impacts to encroached trees at the proposed Newton-in-Bowland Compound location, including one potential veteran tree (Paragraph 36 Illustration 2) and seven A grade features (such as Illustration 11), would be mitigated by a combination of:
- Investigating opportunities to reduce works areas of the planning application boundary outwith the proposed core working area, where possible
  - Precautionary working methods to be adopted in line with National Joint Utility Group (NJUG) Volume 4<sup>17</sup>
  - Establishment of CEZs around retained tree RPAs to include the use of ground protection, tree protection fencing and no soil stripping within the RPAs of retained trees.
  - Micro-siting of scheme components e.g. access routes outside of constraints of retained trees under site supervision of an ACoW including potential facilitation pruning in line with BS3998:2010<sup>18</sup>.

<sup>17</sup> NJUG (2007). NJUG Guidelines on Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees. NJUG:UK.

<sup>18</sup> British Standards Institute (2010). *British Standard 3998:2010: 2012 Tree work – Recommendations*. London: BSI Ltd.

**Illustration 11: A grade ash group located on field boundary to be retained**





## **6. Conclusion and Recommendations**

### **6.1 Overview**

- 63) Overall the Proposed Bowland Section would result in the potential loss of 85 tree features, approximately 49 % of surveyed trees as indicated on Figure 6.6: PTRP. Approximately one half of overall tree loss is attributed to trees identified as being of high or moderate quality. Tree loss impacts are summarised for each LPA in Sections 6.1.1 – 6.1.2 with further opportunities for retention discussed in Section 6.3.
- 64) Overall the Proposed Bowland Section includes approximately 26 % of surveyed vegetation considered encroached but RwPM. It is understood that encroached vegetation considered RwPM would be subject to pre-construction tree protection measures specified in a SS-AMS and shown on a TPP. General protection measures that may reduce soil compaction and excavation damage within RPAs of encroached trees are highlighted in Paragraphs 54 and 62 of Section 5. Notable tree encroachment is summarised for each LPA in Sections 6.1.1 – 6.1.2.
- 65) Additional survey coverage is required around the proposed River Hodder crossing at the proposed Newton-in-Bowland Compound location and a proposed access track leading onto Parkhouse Lane at the proposed Lower Houses Compound. Further arboricultural survey work should help more fully determine the quantity and quality of tree constraints or impacts across the Proposed Bowland Section. Outstanding areas of coverage are identified on Figure 6.5: TCAP.

#### **6.1.1 Summary of Impacts – Lancaster City Council**

- 66) Ten tree features, approximately 29 % of trees surveyed at the proposed Lower Houses Compound location are subject to varying extents of removal or assessed to be at risk of removal.
- 67) Approximately 38 % of surveyed vegetation within Lancaster City Council is considered encroached but RwPM including one A grade feature.

#### **6.1.2 Summary of Impacts – Ribble Valley Borough Council**

- 68) A total of 75 tree features, approximately 54 % of trees surveyed at the proposed Newton-in-Bowland Compound location are subject to varying extents of removal or assessed to be at risk of removal including trees assessed as notable. This includes the potential loss of six A grade features.
- 69) Approximately 22 % of surveyed vegetation at the proposed Newton-in-Bowland Compound location are considered encroached but RwPM including trees assessed as notable. This includes one potential veteran tree and seven A grade features.

### **6.2 Preliminary Removals**

- 70) A total of 25 tree features, equating to around 29 % of potential tree loss at both compounds, comprises 'Red' category trees i.e. features within the indicative core working areas for the two construction compounds. The Proposed Bowland Section design is considered fixed however further consideration should be given to retain tree cover as design proposals develop. As outlined in Paragraph 58, the great majority of potential tree loss is the result of the proposed construction of a new tarmac access road and pipe connection works around an existing well house adjacent to the River Hodder. Potential design considerations that may reduce site impacts could include:
- The construction of the new road design based upon a 3D cellular confinement system installed with 'no-dig' methods
  - Reduction in design widths/depths/alignment of the proposed 7.7 m wide road including the incorporation of passing places

- Reduction in the design width of the proposed works corridor

### 6.3 Further Opportunities for Retention

- 71) A total of 60 tree features, equating to approximately 71 % of total potential tree loss at both compounds, comprises 'Amber' category trees i.e. features located outside the indicative proposed core working areas but within the planning application boundaries. This figure includes five A grade features at risk due to design proposals described in Paragraph 58 of Section 5.3.1. Further consideration should be given to 'Amber' trees as the design process progresses and engineering constraints are further defined. RRAtR trees are identified by an amber colour within the 'RAG status' column of the Tree Survey Schedule and the PTRP.

### 6.4 Tree Protection Measures

- 72) At this stage in the design process, details relating to specific tree protection measures and construction techniques recommended to retain encroached vegetation is not required. General tree protection principles are outlined in Section 1.7 with potential mitigation measures highlighted as part of the Construction Code of Practice (CCoP).

### 6.5 General Recommendations

- 73) It is recommended that site verification of all assessed survey features should reference a full topographical survey of existing stem locations at a later design stage.
- 74) Prior to the removal of the trees or groups listed in this report, or any tree surgery works being undertaken, it is essential that the trees are subsequently checked again for legal protected status. These include TPOs and CAs, locally or nationally designated sites or ancient woodland.
- 75) Established trees, especially those of mature and above age class, should be prioritised for retention wherever possible. Ideally all works should be sited outside the more sensitive RPAs of these trees.
- 76) Alternative working practices should be considered where construction/demolition activities are in close proximity to retained tree RPAs and cannot be avoided. Further mitigation measures designed to protect retained features can be provided by documents listed in Table 1.8 of Section 6.7.

### 6.6 Ancient/Veteran Tree Assessment

- 77) All potential veteran/ancient trees would require a bespoke tree assessment to verify these designations (see Section B.5 of Appendix B for further details). This should be an industry accepted assessment methodology or trees could be verified via the Woodland Trust's ATI program.

### 6.7 Arboricultural Action Required

- 78) Table 1.8 lists the standard elements, as referenced in BS5837, to satisfy arboricultural concerns for this development if planning permission is granted. These standard elements are recommended to ensure appropriate tree protection is considered and applied throughout the duration of the works.

**Table 1.8: Follow up arboricultural input relating to the proposed development**

Recommended Arboricultural Input	Purpose	Timing
Continued arboricultural support for the project	Technical advice provided during the detailed design phase to avoid tree impacts.	Following any major design changes or advance works design development.

Recommended Arboricultural Input	Purpose	Timing
Site Specific Arboricultural Method Statement (SS-AMS)	The SS-AMS provides contractors with works information to implement aspects of development that are either within the RPA or has the potential to result in loss of or damage to a tree to be retained e.g. ground protection, 'no-dig' construction methods, hand-digging areas or site supervision.	Following final design agreement and all construction detail being made available.
Tree Protection Plan (TPP)	Provide schematic details of where protective measures (i.e. fencing or ground protection) will be installed.	Following final design agreement in conjunction with the SS-AMS.
Site monitoring and supervision by the project arboriculturist or Arboricultural Clerk of Works (ACoW)	Ensure protection measures and the method statement are being implemented correctly i.e. for encroached retained features	At agreed intervals before and during the construction phase of the project.

- 79) It is recommended to maintain contact with the project arboriculturist throughout the planning and design stage for the relevant additional input to be addressed at the appropriate point.
- 80) Impacts to the trees, as outlined within this AIA report, could alter with any changes to the current design proposals. Tree impacts should therefore be reviewed as the design process progresses with all relevant parties informed of the changes, where appropriate.

## 6.8 Site Supervision

- 81) Consideration should be given to a competent project arboriculturist or ACoW visiting the site and monitoring the works at a time agreed at the pre-commencement site meeting. The role of the project arboriculturist / ACoW role is to monitor compliance with arboricultural protection recommendations and providing on site advice on any tree problems that arise or modifications that become necessary.
- 82) The key stages requiring supervision should be agreed at the pre-commencement site meeting, but would usually include:
- Tree pruning
  - On-site tree marking for felling operations to help identify the extents of what can be safely retained
  - Installation of tree protection barriers or ground protection
  - Significant excavation/ground level change works within retained tree RPA
  - Mitigation measures for retained or at risk trees i.e. veteran and ancient trees
  - Regular monitoring of compliance.

## 6.9 Highways Works

### 6.9.1 Lancaster City Council

- 83) The indicative reporting of tree loss for the proposed highways works contained at ES Volume 5 shows would result in the removal of 14 trees, one tree group and 6 hedgerows identified for removal plus 20 tree groups, three woodlands and 13 hedgerows for partial removal. This is due to their location within the proposed highways works' planning application boundary.

- 84) An additional one tree and ten tree groups, located outside the proposed highways works' planning application boundary, are identified as at risk of removal due the extent of their encroachment from proposals. In order to reduce arboricultural impacts, an arboricultural method statement would re-assess design impacts upon all arboricultural features and detail tree protection measures.

#### **6.9.2 Ribble Valley Borough Council**

- 85) The indicative reporting of tree loss for the proposed highways works contained at ES Volume 5 shows would result in the removal of 12 trees and one hedgerow for removal plus 12 tree groups and ten hedgerows for partial removal. This is due to their location within proposed highways works' planning application boundary.
- 86) An additional two trees, 11 tree groups and four hedgerows, located outside the proposed highways works' planning application boundary, are identified as at risk of removal due the extent of their encroachment from proposals. In order to reduce arboricultural impacts, an arboricultural method statement would re-assess design impacts upon all arboricultural features and detail tree protection measures

#### **6.10 Proposed Ribble Crossing**

- 87) An additional Arboricultural Impact Assessment is contained at ES Volume 6 for the Proposed Ribble Crossing. The indicative reporting of tree removals for the Proposed Ribble Crossing contained at ES Volume 6 reports a total of nine arboricultural features identified for removal, three features for partial removal and three features identified as at risk.

## 7. References

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Town and Country Planning (Tree Preservation) (England) Regulations 2012. London: HMSO.

## Appendix A. Reference Material

Reference name within AIA	Description	Date produced	Date of assessment
Tree survey information	<p>Tree survey information used in the assessment of tree impacts was taken from the following GIS spatial layers entitled:</p> <ul style="list-style-type: none"> <li>▪ 'Individual Trees within 20m'</li> <li>▪ 'Individual Trees within 20m RPAs'</li> <li>▪ 'Tree Group Canopies within 20m'</li> <li>▪ 'Tree Group Canopies within 20m RPAs'</li> </ul>	08/07/20	25/11/20
Planning Application Boundary	The planning application boundary is understood to be 'TR3 Red Line Boundary' (updated 21/07/20).	21/07/20	22/07/20
Proposed Core Working Area	<p>At the time of writing the proposed core working area is assumed to comprise of the following geo-spatial layers:</p> <ul style="list-style-type: none"> <li>▪ 'TR3 (28/04/2020)'</li> <li>▪ 'TR3 Compound Boundaries' (updated on 21/07/2020)</li> </ul>	28/04/20- 21/07/20	22/07/20

## Appendix B. Scope and Methodologies

### B.1 Spatial Scope

The assessment area was identified during desktop assessments based on high-resolution aerial imagery and design envelope information provided by the United Utilities. The spatial scope of surveys considers trees located within and up to 15 m from the planning application boundary as provided in late February 2020. The assessment area has been refined by the exclusion of vegetation located above the deep tunnel bored sections of the Proposed Bowland Section.

### B.2 Survey Methodology

Table 1.9 lists the tools and techniques used to conduct the tree survey and the parameters measured.

**Table 1.9: Survey tools and techniques used**

Parameters Recorded	Tools Used or Estimated
Tree height and cardinal points	Metres measured from ground level using a clinometer and laser distance measure. Cardinal points for tree groups/hedgerows and woodland features are typically reported on the greatest single lateral crown spread found within the feature.
Stem diameter at breast height (DBH) taken from 1.5m at ground level for trees over 75mm DBH. (Unless specified otherwise in tree schedule).	Diameter measuring tape and recorded in millimetres (mm)
Structural and physiological condition	External visual tree assessment (from the ground) – The Body Language of Trees, Research for Amenity Trees No 4 (Mattheck, 1994).
Root Protection Area (RPA)	Calculation method in BS 5837:2012 (BSI, 2012)
Tree quality assessment	Cascade chart and grading methodology in BS 5837:2012 (BSI, 2012) – see Appendix D.
Tree location data capture	ArcGIS collector app software on GPS-enabled survey tablet for plotting of features using open source high resolution aerial imagery.

Individual trees are recorded individually if they represent standout features in terms of their age class, DBH or BS5837 category grading outlined in Appendix D.

At planning submission stage it is considered appropriate to collectively group tree stems when features are the same BS5837 category grading/feature type, similar size/age class/DBH range and are located close together. For tree group, hedgerows or woodland features, the largest visible stem near the outer margins of each feature was measured. The DBH of this measured tree will then provide the basis of the collective RPA of this group.

The health and condition of trees can change rapidly and all trees, even healthy ones, are at risk from unpredictable climatic and man-made events. The assessment is based on the observed health and structural condition of the trees at the time of survey by suitably qualified inspectors. The health, condition and safety of trees should be checked on a basis commensurate with the level of risk and preferably on an annual basis, as recommended in Common sense risk management of trees (National Tree Safety Group, 2011). The tree survey conducted for this report is not a tree health and safety survey and should not be used as such.

### B.3 Tree Constraints and Assessment Plan Methodology

The TCAP visually represents baseline data clipped to 20 m from the planning application boundary and depicts the existing above ground and below ground constraints posed by surveyed trees. Corresponding tree survey data is tabulated within the Tree Survey Schedule of Appendix F.

- Each surveyed feature has been provided with unique reference number, based on its relative location to the Proposed Programme of Works, running from north to south using an automated GIS script. Each survey feature number will be prefixed with a 'T', 'G', 'H' or 'W' to identify their feature type as an individual tree, tree group, hedgerow or woodland respectively.

The TCAP provides indicative Root Protection Area (RPA) dimensions as calculated using formulae in BS5837:2012. RPAs are applied radially as a circular area measured from an individual tree or as an off-set from indicative canopy extents of a collective feature i.e. tree groups, hedgerows or woodlands.

At the time of writing no survey features has been repositioned to Ordnance Survey (OS) base mapping or topographical survey. No RPA modification has been undertaken when producing the TCAP. Deviation in the RPA (section 4.6.3 of BS 5837) from the original would have to consider the following factors whilst still providing adequate protection for the root system:

- Morphology and disposition of the roots, when influenced by past or existing site conditions e.g. the presence of roads, hard surfacing, ditches, footings
- Topography and drainage
- The soil type and structure
- The likely tolerance of the tree to root disturbance or damage, based on factors such as species, age, condition and past management.

### B.4 RAG Assessment Methodology

An interim assessment of potential impacts was made by overlaying the existing tree RPA or canopy constraints with the indicative proposed core working area as referenced in Appendix A. Potential impacts on trees were also informed following communications with the United Utilities design team with regards to:

- The flexibility of the indicative proposed core working area to accommodate notable tree features including boundary vegetation
- Potential location-specific mitigation measures for encroached features located outside of the proposed core working area e.g. CEZ or reduced soil stripping.

The locations of features to be removed are indicatively shown on Figure 6.6: PTRP with preliminary impacts based on RAG principles detailed in Table 1.10 below.

**Table 1.10: Summary table of RAG status**

RAG status	Parameter/s	Reporting
Red	Survey features to be fully or partially removed (for tree groups, hedgerows or woodlands) due to their location within the proposed core working area.	Red features will be reported to be removed as indicated on the PTRP. Trees to be removed or requiring partial removal are identified within the Tree Survey Schedule's 'AIA' column with an 'R' or 'P' respectively plus a red coloured cell within the 'RAG status' column.



RAG status	Parameter/s	Reporting
Amber	<p>Survey features considered at risk due to:</p> <ul style="list-style-type: none"> <li>▪ Their encroached location to proposed core working area margin</li> <li>▪ Their encroached location within the residual planning application boundary outwith the proposed core working area</li> <li>▪ No location specific protection measures have been agreed by the United Utilities design team at this planning submission stage.</li> </ul>	<p>Amber features are reported as a 'Removal Risk Aiming to Retain' (RRAtR). This is a precautionary approach however it is anticipated that further consideration be given to RRAtR trees as the design process progresses and engineering constraints become further defined.</p> <p>RRAtR features will be reported to be removed for the purpose of this AIA as indicated on the PTRRP plus an amber coloured cell within the 'RAG status' column of the Tree Survey Schedule.</p> <p>All encroached features are identified within Tree Survey Schedule's 'AIA' column by an 'E'.</p>
Green	<p><b>Scenario 1:</b> Survey features considered retainable due to feature location-specific protection measures being agreed by the United Utilities design team despite:</p> <ul style="list-style-type: none"> <li>▪ Their encroached location relative to the proposed core working area margin</li> <li>▪ Their encroached location within the residual planning application boundary outwith the proposed core working area;</li> </ul> <p><b>Scenario 2:</b> Survey features considered retained due to:</p> <ul style="list-style-type: none"> <li>▪ Their location within the assessment area</li> <li>▪ Non-encroachment by the Proposed Bowland Section</li> </ul>	<p>Green features are reported to be 'Retained with Protection Measures' (RwPM).</p> <p>RwPM features will be reported as retained for the purposes of this AIA and are indicated by a green coloured cell within the 'RAG status' column of the Tree Survey Schedule and the PTRRP.</p> <p>All encroached RwPM features are identified within Tree Survey Schedule's 'AIA' column by an 'E'.</p> <p>Non-encroached RwPM trees are identified by a 'N' within the 'AIA' column</p>

## B.5 Ancient/Veteran Tree Assessment Methodology

Arboricultural surveys at this stage of the project have been undertaken based on BS5837: 2012 surveying guidance. The initial assessment of potential ancient and veteran trees is determined by surveyor experience, site surveyors' observations/comments and site photographs. Arboricultural surveyors determine this potential status of trees using visual tree assessment methods and the observation of features that include but are not limited to the list below:

- Tree species
- Life stage and tree size
- Extensive decay/hollowing
- Crown retrenchment/senescence
- Large quantity of crown deadwood
- Major limb fractures/storm damage
- Habitat spaces such as decay holes/hazard splits/crevices
- Presence of fungi, sap runs/slime flux
- Presence of epiphytic plants/lichens
- Bark loss/lightning strikes
- Water pools/aerial rooting.

Within publications and guidance offered by various organisations and government bodies such as the Woodland Trust and Natural England there is no agreed definition on what constitutes an ancient or veteran tree. Based on Annex 2 of the NPPF, as adopted by the Arboricultural discipline, the definition is of an ancient or veteran tree:

*"A tree which, because of its age, size and condition, is of exceptional biodiversity, cultural or heritage value. All ancient trees are veteran trees. Not all veteran trees are old enough to be ancient but are old relative to other trees of the same species. Very few trees of any species reach the ancient life-stage"*

The emphasis within the above statement is on the word "exceptional", which by its own definition creates a level of subjectivity amongst arboriculturists and other disciplines such as ecology.

Following on from the Veteran Tree Initiative (English Nature 1996-2000), there have been various publications detailing tree characteristics associated with aging trees. In addition, some systems have been published and used to formalise surveying of ancient, veteran and notable trees such as Special Survey Method (SSM) developed by Treework Environmental Consultancy and Recognition of Ancient Veteran and Notable Trees (RAVEN) developed by Forbes Laird Arboricultural Consultancy. At the time of writing no recognised method to survey ancient/veteran trees (i.e. RAVEN) has been agreed or used to substantiate the quantity/quality of individual features associated with any given tree identified as a potential ancient/veteran by the projects arboricultural surveyors.

Indicative RPAs are reported based upon the guidance provided within BS5837:2012 and shown figuratively in the TCAP and PTRP. Indicative protection buffers based on Governmental Standing Advice for ancient and veteran trees in England should also be considered at a later stage to inform detailed design. These greater protection zones are also shown figuratively in the TCAP and PTRP as a separate legend item entitled 'Standing Advice Buffer Zone'. Governmental Standing Advice recommends a minimum 15 m buffer zone from Ancient Woodland and potentially larger distances for ancient and veteran trees which is:

- calculated as a minimum of 15 times larger than the diameter of the tree
- 5 m from the edge of the tree's canopy if greater than the above value.

## Appendix C. Technical Glossary of Terms

**AIA:** Arboricultural Impact Assessment.

**AMS:** Arboricultural Method Statement.

**Ancient tree:** An ancient tree is exceptionally valuable attributed with great age/size/cultural heritage/biodiversity value as a result of significant wood decay and the habitat created from the ageing process. All ancient trees are veteran trees with very few trees of any species reaching the ancient life-stage.

**Bark:** A term usually applied to all the tissues of a woody plant lying outside the vascular cambium.

**Basal flare:** The region at the base of a tree where the major lateral roots join the stem, with buttress-like formations on the upper side of their junction.

**Condition:** An indication of the physiological vitality of the tree. Where the term 'condition' is used in a report, it should not be taken as an indication of the stability of the tree.

**Conservation Area:** A designated area that requires notice (currently six weeks) to be given to the local planning authority prior to the commencement of any tree works.

**Construction exclusion zone:** Area based on the Root Protection Area (in square metres) to be protected during development, by the use of barriers and/or ground protection.

**Coppice:** A traditional woodland management technique of periodically cutting trees to ground level in order to stimulate new growth from the base. Native broadleaf species are often coppiced for as a conservation practice or for sustainable timber production.

**Crown/Canopy:** The main foliage bearing section of the tree.

**Crown lifting:** The removal of lower branches typically undertaken to achieve a stated vertical clearance from ground level.

**Crown retrenchment:** Die-back of the outer crown, giving rise to deadwood and stag-heads. A tree's crown retrenches after it reaches late maturity, or owing to some prejudicial episode (root damage, summer drought, insect infestation etc.) from which the tree may or may not recover.

**Defect:** In relation to tree hazards, any feature of a tree which detracts from the uniform distribution of mechanical stress, or which makes the tree mechanically unsuited to its environment.

**Dieback:** The death of parts of a woody plant, starting at shoot-tips or root-tips.

**Disease:** A malfunction in or destruction of tissues within a living organism, usually excluding mechanical damage; in trees, usually caused by pathogenic micro-organisms.

**DBH (Diameter at Breast Height):** Stem diameter measured at a height of 1.5 metres (UK) or the nearest measurable point. Where measurement at a height of 1.5 m is not possible, another height may be specified.

**Deadwood:** Branch or stem wood bearing no live tissues. Retention of deadwood provides valuable habitat for a wide range of species and seldom represents a threat to the health of the tree. Removal of deadwood can result in the ingress of decay to otherwise sound tissues and climbing operations to access deadwood can cause significant damage to a tree. Removal of deadwood is generally recommended only where it represents an unacceptable level of hazard. Minor deadwood is considered to be a diameter less than 25 mm and or unlikely to cause significant harm or damage on impact with a target beneath the tree.

**Epicormic:** Adventitious shoot growth from a tree stem or branch characteristic of some native broadleaf tree species. Shoots typically arise from suppressed buds in bark and are often stimulated to grow as a result of stress

**Epiphyte:** an organism that grows on the surface of a host plant but does not derive resources directly from the host. Presence on trees is often indicative of the tree's wider ecosystem/habitat value.

**Fungi:** Plural form of any known species within the kingdom Fungi. Presence on trees is associated with maturing features and tree condition.

**Harp tree:** A tree with multiple upright regenerative stems

**Hazard beam/split:** An upwardly curved part of a tree in which strong internal stresses may occur without being reduced by adaptive growth; prone to longitudinal splitting.

**Habitat pole/monolith:** A standing tree stem typically retained to provide valuable deadwood habitat for wildlife including invertebrates or birds

**Notable tree:** Usually a mature tree which may stand out in the local environment because they are large in comparison with other trees around them. In parts of the UK, where trees are less common, a tree may be relatively small but notable because it is significant in its local environment.

**Phoenix tree:** A tree which is regenerating growth despite having fallen or bent down to the ground. New layered growth forms from the tree which remains partially rooted.

**Pollarding:** is the removal of the tree canopy, back to the stem or primary branches. Pollarding may involve the removal of the entire canopy in one operation or may be phased over several years. The period of safe retention of trees having been pollarded varies with species and individuals. It is usually necessary to re-pollard on a regular basis, annually in the case of some species.

**Primary branch:** A major branch, generally having a basal diameter greater than 0.25 x stem diameter.

**Pruning:** The removal or cutting back of twigs or branches, sometimes applied to twigs or small branches only, but often used to describe most activities involving the cutting of trees or shrubs.

**Root Protection Area (RPA):** A layout design tool indicating the minimum area around a tree deemed to contain sufficient roots and rooting volume to maintain the tree's viability, and where the protection of the roots and soil structure is treated as a priority.

**Slime Flux:** Liquid, bacterial-based exudation from a tree.

**Stem/s:** The main supporting structure/s, from ground level up to the first major division into branches.

**Stress:** In plant physiology, a condition under which one or more physiological functions are not operating within their optimum range, for example due to lack of water, inadequate nutrition or extremes of temperature.

**Tree Preservation Order (TPO):** Is an order made by the local authority and placed on individual trees, groups of trees or areas of trees. The local authority must usually grant permission prior to any works undertaken to affected trees.

**Understory:** A layer of vegetation beneath the main canopy of woodland or forest or plants forming this.

**Veteran tree:** A loosely defined term for an old specimen that is of interest biologically, culturally or aesthetically because of its age, size or condition and which has usually lived longer than the typical upper age range for the species concerned.

## Appendix D. Cascade Chart of Tree Quality Assessment (taken from BS5837:2012)

Category and definition	Criteria (including subcategories where appropriate)		
Trees unsuitable for retention (see note)			
Category U			
Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years	Trees that have a serious, irremediable, structural defect, such that their early loss is expected due to collapse, including those that will become unviable after removal of other category U trees (e.g. where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning)		
	Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline		
	Trees infected with pathogens of significance to health and/or safety of other trees nearby, or very low quality trees suppressing adjacent trees of better quality NOTE Category U trees can have existing or potential conservation value which it might be desirable to preserve.		
Trees to be considered for retention			
	1 Mainly arboricultural qualities	2 Mainly landscape qualities	3 Mainly cultural values including conservation
Category A			
Trees of high quality with an remaining estimated life expectancy of at least 40 years	Trees that are particularly good examples of their species, especially if rare or unusual; or those that are essential components of formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue)	Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features	Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran or semi-formal arboricultural trees or wood-pasture)
Category B			
Trees of moderate quality with an remaining estimated life expectancy of at least 20 years	Trees that might be included in Category A, but are downgraded because of impaired condition (e.g. presence of significant though remediable defects, including unsympathetic past management and storm damage), such as they are unlikely to be suitable for retention for beyond 40 years; or trees lacking the special quality necessary to merit the category A designation	Trees present in numbers, usually growing as groups or woodlands, such that they attract a higher collective rating than they might as individuals; or trees occurring as collectives but situated so as to make little visual contribution to the wider locality	Trees with material conservation or other cultural value
Category C			
Trees of low quality with an remaining estimated life expectancy of at least 10 years, or younger trees with a stem diameter below 150mm	Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories	Trees present in groups or woodlands, but without this conferring on them significantly greater collective landscape value; and/or trees offering low or only temporary/transient landscape benefits	Trees with no material conservation or other cultural value

## Appendix E. Tree Survey Schedule Key

Column Header	Explanation
Tree ID and Est.	T – Tree G – Group W – Woodland H – Hedgerow # – DBH measurements estimated due to access restrictions or safety concerns. Observations limited to those made from a distance or full access to tree impeded (e.g. prolific ivy, uneven ground, brambles etc.).
Diameter at breast height (DBH)	Tree stem diameter measured at 1.5 m from the ground. This reported figure relates to either single stemmed trees or the calculated DBH for multi-stemmed trees. In some instances, DBH will be taken from a different height as specified in 'Observations'
Canopy spread – N E S W	Canopy extents from main stem of individual tree will be shown using cardinal points in metres i.e. N (north) 7, E (east) 6, S (south) 5, W (west) 7. Single largest canopy extent reported for groups/woodland/hedgerows.
Age Class	Young (Y) – A tree in the first quarter of its life span. Semi Mature (SM) – A tree in the latter stages of its first quarter, well established. Early Mature (EM) – A tree half-way through its life span, significant further growth potential. Mature (M) – A tree at or near its potential maximum size which is still growing vigorously in its third quarter of life span. Over Mature (OM) – A tree in decline in its final quarter of life span. Potential Veteran (V) – A tree which, because of its age, size and condition, is of exceptional biodiversity, cultural or heritage value. Refer to Section B.5 of Appendix B for more context.
Structural Condition (S)	Good (G) - No signs of decay or structural weakness. Fair (F) - Minor defects not causing structural weakness. Poor (P) - Severe decay in the main stem or branches/structurally weak.
Physiological Condition (P)	Good (G) - Showing no adverse risk of failure/defects. Fair (F) - Showing minor signs of deterioration. Poor (P) - Unlikely to recover to a good condition.
Estimated Remaining Contribution (ERC)	<10 - Less than 10 years of normal life expectancy remaining. 10+ - Between 10 and 20 years of normal life expectancy remaining. 20+ - Between 20 and 40 years of normal life expectancy remaining. 40+ - Tree would normally expect to live for more than 40 more years.
Root Protection Area (RPA) radius	Root Protection Area dimensions as calculated using formulae in BS5837:2012. Applied as either radially from an individual tree stem (individually surveyed trees) or as an off-set from the canopy extents of a collective feature (tree group, hedgerow or woodland).
AIA	R - Remove P – Partial removal E - Encroached RPA/canopy N - No encroachment
RAG status	Refer to symbology explained in Appendix B Section B.4 Table 1.10



## Appendix F. Tree Survey Schedule including AIA Results

Tree Ref. No.	Species	Height (m)	DBH (mm)	Canopy spread (m)				Age class	Struc cond.	Physiol cond.	General Observations and Comments	ERC	Category grading	RPA radius (m)	AIA	RAG status
				N	E	S	W									
G50	Hawthorn & blackthorn	6	300	4	4	4	4	SM	F	F	Understory group of hawthorn and blackthorn. Max DBH reported.	20+	C3	3.6	E	GREEN
G51	Hawthorn, sycamore	16	740	7	7	7	7	M	F	F	Max DBH 740 mm sycamore.	20+	B3	8.9	E	GREEN
G52	Hawthorn	5	117	4	4	4	4	SM	F	F	Linear down of hawthorn following fence line. Some undersize hawthorn in central.	20+	C3	1.4	N	GREEN
G53	Hawthorn	8	170	3	3	3	3	EM	F	F	Max DBH reported and height.	20+	C3	2.0	E	GREEN
G54#	Holly hawthorn	7	335	3	3	3	3	SM	F	F		20+	C2	4.0	E	AMBER
G55	Hawthorn, silver birch.	4	300	3	3	3	3	EM	F	F	Some damage to silver birch.	20+	B2	3.6	N	GREEN

Tree Ref. No.	Species	Height (m)	DBH (mm)	Canopy spread (m)				Age class	Struc cond.	Physiol cond.	General Observations and Comments	ERC	Category grading	RPA radius (m)	AIA	RAG status
				N	E	S	W									
G56	Silver birch and hawthorn.	5	420	6	6	6	6	M	F	F	Max DBH reported. Silver birch on banking is showing harp tree formation and aerial rooting following streamline	10+	B2	5.0	N	GREEN
G57	Hawthorn	5	331	3	3	3	3	M	F	F	Linear row of hawthorn.	20+	C3	4.0	E	AMBER
G58	Hawthorn	4	300	2	2	2	2	M	P	P		<10	U	3.6	E	AMBER
T59#	Hawthorn	6	128	4	4	4	3	EM	F	F	Hawthorn growing in culvert wall.	20+	C3	1.5	N	GREEN
G59	Hawthorn	7	430	4	4	4	4	SM	F	F	Linear row of hawthorn	20+	C3	5.2	N	GREEN
T60	Ash	11	394	6	6	6	6	EM	F	F	Twin stem ash tree on stream banking.	20+	B1	4.7	N	GREEN



Tree Ref. No.	Species	Height (m)	DBH (mm)	Canopy spread (m)				Age class	Struc cond.	Physiol cond.	General Observations and Comments	ERC	Category grading	RPA radius (m)	AIA	RAG status
				N	E	S	W									
G60	Hawthorn	7	300	4	4	4	4	M	F	F	Two hawthorns following fence line.	20+	C3	3.6	E	GREEN
T61	Sycamore	13	640	8	8	8	8	M	F	F		40+	B2	7.7	N	GREEN
G61	Hawthorn	5	230	3	3	3	3	M	F	F	Max DBH reported	20+	C3	2.8	N	GREEN
T62	Hawthorn	5	80	4	4	4	4	EM	F	F	Single hawthorn.	20+	B2	1.0	N	GREEN
G62	Hawthorn	6	310	4	4	4	4	SM	F	F	Max DBH reported. 6 stems of size between 80 mm-140 mm.	20+	B2	3.7	E	GREEN
T63#	Goat willow	6	450	6	6	6	6	M	F	F	Phoenix tree collapsed	20+	B2	5.4	E	GREEN

Tree Ref. No.	Species	Height (m)	DBH (mm)	Canopy spread (m)				Age class	Struc cond.	Physiol cond.	General Observations and Comments	ERC	Category grading	RPA radius (m)	AIA	RAG status
				N	E	S	W									
G63	Hawthorn	7	311	3	3	3	3	SM	F	F	230 mm and 210 mm	20+	B3	3.7	E	AMBER
T64	Sycamore	15	720	7	7	7	7	M	F	F		40+	B2	8.6	E	GREEN
G64	Hawthorn	5	200	3	3	3	3	SM	F	F	Max DBH. 3 stems.	20+	C3	2.4	N	GREEN
T65	Horse chestnut	15	910	7	7	7	7	M	F	F	On south aspect some die back in canopy.	40+	B2	10.9	E	GREEN
G65	Ash	18	830	8	12	8	10	M	F	F	Moderate deadwood. Snap outs and canopy lifting, basal flare. Largest ash-830 mm second smaller ash-740 mm	40+	B2	10.0	E	AMBER
T66	Hawthorn	6	277	4	4	4	4	EM	F	F	Present on watercourse banking.	20+	B2	3.3	R	RED

Tree Ref. No.	Species	Height (m)	DBH (mm)	Canopy spread (m)				Age class	Struc cond.	Physiol cond.	General Observations and Comments	ERC	Category grading	RPA radius (m)	AIA	RAG status
				N	E	S	W									
G66	Alder, ash	18	885	9	9	9	9	M	F	F	Multi stem coppice Alder 220 mm average DBH. 3.5 m basal flare. Historic lapsed pollard 1 m high. Ash similar base measurement. Average range 150 mm-400 mm. 10 stems average 280 mm. Bird tree. Couple of hawthorn understory group included.	40+	A2	10.6	E	GREEN
T67	Hawthorn	5	170	0	4	4	4	SM	F	F		20+	B2	2.0	E	AMBER
G67	Hawthorn	6	300	3	3	3	3	SM	F	F	Max DBH reported.	40+	B2	3.6	E	GREEN
T68#	Oak	17	900	7	7	6	7	M	F	F	Single Oak long fence line.	40+	B2	10.8	E	AMBER
G68	Hazel, hawthorn	5	190	4	4	4	4	SM	F	F	190 mm. Linear hawthorn group. Max DBH reported. Some collapsing stems to the south of the group.	20+	C3	2.3	E	GREEN

Tree Ref. No.	Species	Height (m)	DBH (mm)	Canopy spread (m)				Age class	Struc cond.	Physiol cond.	General Observations and Comments	ERC	Category grading	RPA radius (m)	AIA	RAG status
				N	E	S	W									
T69	Oak	13	610	7	7	7	7	M	F	F	Some area of epicormic, with some tear outs lifted bark. Crown lifting. Some decline in canopy.	40+	C2	7.3	E	AMBER
G69	Ash, sycamore	22	1160	9	10	8	10	M	F	F	Large stem cavity on Ash with full crowns. Stem fractures. Small cavities. Major deadwood in mid canopy with King Alfred cakes.	40+	B3	13.9	N	GREEN
T70	Hawthorn	7	166	2	2	2	2	SM	F	F	Individual hawthorn away from bigger group.	10+	C1	2.0	N	GREEN
G70	Ash, hawthorn, oak	19	1160	10	10	10	10	M	F	F	Deadwood in canopy and ground. 2 Collapsed Hawthorn. Co- dominant ash with one stem failure with crack down centre. Linear feature associated with dry ditch. King Alfreds cakes on deadwood.	40+	B3	13.9	N	GREEN
T71	Hawthorn	7	330	4	4	4	4	EM	F	F		20+	B2	4.0	E	AMBER
G71	Sycamore, ash, hawthorn	22	970	10	10	10	10	M	F	F	King Alfred cakes. Hanging branch. Unidentifiable bracket. Small cavity. Deadwood in canopy.	40+	B3	11.6	N	GREEN

Tree Ref. No.	Species	Height (m)	DBH (mm)	Canopy spread (m)				Age class	Struc cond.	Physiol cond.	General Observations and Comments	ERC	Category grading	RPA radius (m)	AIA	RAG status
				N	E	S	W									
T72	Hawthorn	2.5	90	2	2	2	2	SM	P	F	Collapsed stems	20+	C3	1.1	E	GREEN
G72	Oak, sycamore, ash, hawthorn	21	1010	10	10	10	10	M	F	F	Linear group of trees along ditch. Storm damage. Deadwood. Fallen limbs. Small cavities.	40+	B3	12.1	N	GREEN
T73	Goat willow	12	675	10	10	10	10	M	F	F	Multi-stem Goat willow. Leaning stem taken at 1 metre ground level.	20+	B2	8.1	E	GREEN
G73	Hawthorn	7	360	4	2	2	7	M	F	F	Wounds on trunk with decay. Small cavities.	20+	C3	4.3	E	AMBER
T74	Hawthorn	5	326	5	4	0	2	M	F	F	Stem cavities to 1 metre. Partially collapsed. Historic root plate movement. Associated with dry ditch.	20+	C3	3.9	E	AMBER
G74	Hawthorn	6	450	7	5	2	2	M	F	F	Associated with dry ditch. Leaning south. Minor cavities.	20+	C3	5.4	E	GREEN

Tree Ref. No.	Species	Height (m)	DBH (mm)	Canopy spread (m)				Age class	Struc cond.	Physiol cond.	General Observations and Comments	ERC	Category grading	RPA radius (m)	AIA	RAG status
				N	E	S	W									
T75	Hawthorn	4	230	4	5	0	2	M	F	F	Bark damage to 1 metre. Associated with dry ditch. Leaning.	20+	C2	2.8	E	AMBER
G75#	Goat willow, blackthorn, hazel, hawthorn, silver birch	6	399	3	5	7	5	EM	F	F	Willow partially collapsed limbs	10+	C2	4.8	E	AMBER
T76	Hawthorn	6	380	4	4	3	2	M	F	F	Pruned on eastern side.	20+	C2	4.6	N	GREEN
H76#	Hawthorn, ash	8	391	4	4	4	4	EM	F	F	Hedgerow line with few ash. Prolific ivy	10+	C2	4.7	P	RED
T77	Hawthorn	5	472	4	6	1	2	M	F	F	Both stem with cavities extending to 1.5 metre. Windswept canopy formation.	20+	C3	5.7	E	GREEN
G77	Hawthorn, holly.	6	532	4	4	4	4	M	F	F	Linear feature near open ditch. Leaning stems to east. Crown cavities. Aerial roots. Minor deadwood. Recent failed stems.	20+	C3	6.4	P	RED



Tree Ref. No.	Species	Height (m)	DBH (mm)	Canopy spread (m)				Age class	Struc cond.	Physiol cond.	General Observations and Comments	ERC	Category grading	RPA radius (m)	AIA	RAG status
				N	E	S	W									
T78	Ash	13	880	7	7	6	6	M	F	F	Deadwood with King Alfred cakes. Hollow main stem with reactive growth. Large root buttresses. Large partial hanging branch	20+	B3	10.6	E	AMBER
G78	Hawthorn, alder, goat willow, holly	14	520	6	6	6	6	M	F	F	Minor deadwood, basal cavities and canopy cavities. Linear feature along field boundary. One collapsed willow	20+	B3	6.2	E	AMBER
T79	Hawthorn	3	135	1	1	1	1	EM	F	F	Prolific ivy	10+	C2	1.6	N	GREEN
G79#	Hawthorn, alder	9	320	4	4	4	4	EM	F	F	Bank side trees unable to access.	40+	B2	3.8	N	GREEN
T80	Hawthorn	3	135	1	1	1	1	EM	F	F	Prolific ivy	10+	C2	1.6	N	GREEN
G80	Hazel, elm, ash, hawthorn, sycamore	14	300	3	3	3	3	SM	F	F	Linear bank understory vegetation. Max DBH reported	40+	B2	3.6	E	GREEN

Tree Ref. No.	Species	Height (m)	DBH (mm)	Canopy spread (m)				Age class	Struc cond.	Physiol cond.	General Observations and Comments	ERC	Category grading	RPA radius (m)	AIA	RAG status
				N	E	S	W									
T81	Hawthorn	4	194	3	3	3	3	EM	F	F	Prolific ivy	10+	C2	2.3	N	GREEN
G81	Sycamore, ash	16	700	7	7	7	7	M	F	F	Minor deadwood	40+	B2	8.4	P	RED
T82	Hawthorn	3	177	3	3	3	3	EM	F	F	Prolific ivy	10+	C2	2.1	E	AMBER
G82#	Alder, ash	15	160	6	6	6	6	EM	F	F	Some Ash dieback and blushing bracket. Bank side trees	40+	B2	1.9	N	GREEN
T83	Hawthorn	4	239	3	3	3	3	M	F	F	Prolific ivy. Collapsed root plate	10+	C2	2.9	E	AMBER
H83#	Hawthorn, goat willow	6	368	3	3	3	3	M	F	F	Hedgerow line with willow	10+	C2	4.4	P	RED

Tree Ref. No.	Species	Height (m)	DBH (mm)	Canopy spread (m)				Age class	Struc cond.	Physiol cond.	General Observations and Comments	ERC	Category grading	RPA radius (m)	AIA	RAG status
				N	E	S	W									
T84	Hawthorn	4	156	3	3	3	3	EM	F	F	Prolific ivy	10+	C2	1.9	E	AMBER
G84	Beech, elm	32	1090	10	10	10	10	M	F	F	1090 mm max DBH reported. Elm 560 mm. South of track. Larger woodland group away from drive bank trees	40+	A2	13.1	E	GREEN
T85	Hawthorn	3	150	2	2	2	2	EM	F	F	Prolific ivy	10+	C2	1.8	R	RED
G85	Ash	25	850	7	7	7	7	M	F	F	Max DBH reported. Located on north side of track. Suckering at base of larger Ash. Major dead wood and knot holes in both.	40+	B2	10.2	E	GREEN
T86	Hawthorn	5	280	5	3	3	3	M	F	F	Prolific ivy, historic root plate movement	10+	C2	3.4	E	AMBER
G86	Sycamore, ash, hawthorn	17	650	7	7	7	7	M	F	F	Minor deadwood, single formed canopy for group	40+	B2	7.8	P	RED

Tree Ref. No.	Species	Height (m)	DBH (mm)	Canopy spread (m)				Age class	Struc cond.	Physiol cond.	General Observations and Comments	ERC	Category grading	RPA radius (m)	AIA	RAG status
				N	E	S	W									
T87	Hawthorn	5	324	4	4	3	3	M	F	F	Growing out of wall.	20+	C2	3.9	E	AMBER
H87#	Hawthorn	6	220	3	3	3	3	M	F	F	Hedgerow line with few ash	10+	C2	2.6	R	RED
T88	Ash	14	910	8	8	8	8	M	F	F	Tear outs, prolific epicormic flush along stem and branches, buttress roots. Full canopy	20+	B2	10.9	E	AMBER
G88	Hawthorn	7	592	6	6	3	5	OM	F	F	Couple of collapsed stems. Cavities. Deadwood.	20+	C3	7.1	E	AMBER
T89	Ash	10	420	4	4	4	4	SM	F	F	Minor deadwood.	40+	C2	5.0	E	AMBER
H89#	Hawthorn, blackthorn	1.5	120	1	1	1	1	SM	F	F	Well managed hedgerow. Max DBH 120 mm reported.	20+	B2	1.4	N	GREEN

Tree Ref. No.	Species	Height (m)	DBH (mm)	Canopy spread (m)				Age class	Struc cond.	Physiol cond.	General Observations and Comments	ERC	Category grading	RPA radius (m)	AIA	RAG status
				N	E	S	W									
T90	Alder	10	220	4	4	4	4	EM	F	F		40+	B2	2.6	N	GREEN
G90	Beech	22	960	9	9	9	9	M	F	F	Max DBH reported	40+	A2	11.5	E	GREEN
T91	Hawthorn	5	562	4	4	4	4	M	F	F	Dense compact canopy.	20+	C2	6.7	N	GREEN
G91	Beech	28	1350	10	10	10	10	M	G	G	One ivy covered stem. Some stem hollowing. Kretschmaria deusta and artist bracket on separate trees.	40+	B2	16.2	E	GREEN
T92	Ash	17	700	7	7	7	7	M	F	F	Full canopy, minor deadwood	20+	B2	8.4	R	RED
H92#	Hawthorn, ash	6	220	3	3	3	3	M	F	F	Hedgerow line with few ash	10+	C2	2.6	P	RED

Tree Ref. No.	Species	Height (m)	DBH (mm)	Canopy spread (m)				Age class	Struc cond.	Physiol cond.	General Observations and Comments	ERC	Category grading	RPA radius (m)	AIA	RAG status
				N	E	S	W									
T93#	Ash	12	700	6	8	4	5	M	F	P	Major to moderate deadwood. King Alfreds cakes present. Ash dieback and stem hollowing	20+	C3	8.4	N	GREEN
G93	Oak, sycamore	23	860	5	11	6	6	M	F	F	Telephone pole within group. Minor deadwood in canopy. One early mature Oak with lightening strike scar from canopy to base	20+	B2	10.3	N	GREEN
T94	Ash	27	1000	7	9	9	7	M	F	F	Large basal flare 2.5 metre round. Some stem tear outs	40+	A2	12.0	R	RED
G94	Oak, beech	20	870	9	9	9	9	M	F	F	Co-dominant stems on Beech at 2 metre. Tight union and reactive stem growth. Old bark wound on Oak with minor deadwood	20+	B2	10.4	N	GREEN
T95#	Ash	22	1000	9	12	12	6	M	F	F	Large basal flare. Moderate dead wood and some tear out	40+	A2	12.0	N	GREEN
G95#	Ash	17	750	8	7	6	6	M	F	F	Large limb failures with crown cavities and deadwood.	20+	B3	9.0	E	AMBER



Tree Ref. No.	Species	Height (m)	DBH (mm)	Canopy spread (m)				Age class	Struc cond.	Physiol cond.	General Observations and Comments	ERC	Category grading	RPA radius (m)	AIA	RAG status
				N	E	S	W									
T96#	Ash	14	900	8	8	6	6	M	F	F	Limb fractures, horizontal cracking, crown cavities and small basal cavity	20+	B2	10.8	E	AMBER
G96	Ash, hawthorn	14	474	5	5	5	5	EM	F	F	Minor deadwood. Full canopy.	40+	B2	5.7	E	AMBER
T97	Hawthorn	6	303	4	3	3	3	M	F	F		20+	C2	3.6	E	AMBER
G97#	Sycamore, ash	17	900	10	6	6	5	M	F	F	Large limb failures with crown cavities and deadwood	20+	C2	10.8	N	GREEN
T98	Ash	18	790	5	3	4	6	OM	F	P	Basal cavity, previous branch snapouts with stunted canopy and dense epicormic shooting	<10	C3	9.5	N	GREEN
G98#	Alder	10	220	5	5	5	5	SM	F	F	Moderate to major deadwood. Riparian bank side trees.	40+	C3	2.6	E	GREEN

Tree Ref. No.	Species	Height (m)	DBH (mm)	Canopy spread (m)				Age class	Struc cond.	Physiol cond.	General Observations and Comments	ERC	Category grading	RPA radius (m)	AIA	RAG status
				N	E	S	W									
T99	Elder	4	156	2	2	2	2	M	F	F		20+	C2	1.9	E	AMBER
G99	Ash	29	890	8	8	8	8	M	F	F	Some suckering at base	40+	B3	10.7	E	GREEN
T100	Ash	9	550	4	6	2	1	OM	P	P	80% deadwood with small epicormic growth and root plate movement	<10	C3	6.6	E	AMBER
G100	Hawthorn, willow, sycamore	9	130	3	3	3	3	SM	F	F	Understory group leading to water treatment	20+	C3	1.6	E	GREEN
T101	Hawthorn	4	299	3	2	2	2	M	F	F		20+	C3	3.6	N	GREEN
G101	Alder	9	529	4	4	4	4	SM	F	F	7 stems 200 mm	40+	C2	6.3	E	AMBER

Tree Ref. No.	Species	Height (m)	DBH (mm)	Canopy spread (m)				Age class	Struc cond.	Physiol cond.	General Observations and Comments	ERC	Category grading	RPA radius (m)	AIA	RAG status
				N	E	S	W									
T102#	Ash	17	800	8	8	8	8	M	F	F	Full canopy, minor deadwood	20+	B2	9.6	R	RED
G102	Alder, ash	14	563	3	3	3	3	M	F	F	Ash in significant decline. Linear boundary feature containing large declining alders. Fungal fruiting bodies on alder. Large amount of hollowing/moderate deadwood. Canopy dieback.	20+	C3	6.8	R	RED
T103#	Sycamore	15	750	8	8	8	8	M	F	F	Full canopy	20+	B2	9.0	E	AMBER
G103	Hawthorn, ash	1	80	1	1	1	1	SM	F	F	Predominantly undersized with average 80 mm from the east.	20+	B2	1.0	P	RED
T104	Hawthorn	7	375	4	4	4	4	EM	F	F		20+	C3	4.5	E	GREEN
G104	Alder	15	350	5	5	5	5	EM	F	F	Moderate to major deadwood. Bank side trees	40+	C3	4.2	R	RED

Tree Ref. No.	Species	Height (m)	DBH (mm)	Canopy spread (m)				Age class	Struc cond.	Physiol cond.	General Observations and Comments	ERC	Category grading	RPA radius (m)	AIA	RAG status
				N	E	S	W									
T105#	Ash	19	1000	8	8	8	8	M	P	P	Canopy in significant decline signs of ash dieback in canopy. Minor to major deadwood in canopy.	40+	C3	12.0	E	GREEN
G105	Ash	32	1130	12	12	12	12	M	F	F	Some stem hollowing and moderate deadwood. Historic snap outs. Large basal flaring on all trees.	40+	A2	13.6	E	GREEN
T106	Ash	12	350	5	5	5	5	EM	F	F		40+	B2	4.2	R	RED
G106	Ash	8	160	3	3	3	3	Y	F	F	Growing near Fence,	40+	C3	1.9	E	GREEN
T107	Ash	6	850	2	2	2	2	M	P	P	Habitat pole with limited tree growth. Hollow stem	10+	U	10.2	E	GREEN
G107	Hawthorn	9	368	3	3	3	3	SM	F	F	Linear understory group of hawthorns	20+	B2	4.4	E	GREEN

Tree Ref. No.	Species	Height (m)	DBH (mm)	Canopy spread (m)				Age class	Struc cond.	Physiol cond.	General Observations and Comments	ERC	Category grading	RPA radius (m)	AIA	RAG status
				N	E	S	W									
T108	Hawthorn	5	314	4	4	4	4	EM	F	F		20+	C3	3.8	E	GREEN
G108	Ash	30	1100	6	11	6	11	M	F	F	Stem hollows branch cavities moderate to major deadwood.	40+	B2	13.2	E	GREEN
T109	Alder	11	687	6	6	6	6	M	F	F		40+	C3	8.2	R	RED
G109	Hawthorn	6	269	4	4	4	4	M	F	F	Collapsing stems. Average DBH 110 mm x 6	20+	B2	3.2	E	AMBER
T110#	Hawthorn	8	280	2.5	2.5	2.5	2.5	M	F	P		<10	U	3.4	N	GREEN
G110	Hawthorn, willow, hazel	10	190	4	4	4	4	SM	F	F	Linear feature. Max DBH reported.	40+	C3	2.3	R	RED

Tree Ref. No.	Species	Height (m)	DBH (mm)	Canopy spread (m)				Age class	Struc cond.	Physiol cond.	General Observations and Comments	ERC	Category grading	RPA radius (m)	AIA	RAG status
				N	E	S	W									
T111#	Ash	18	600	6	6	6	6	EM	F	F	Moderate to major deadwood large hollowing to dead stems. Single hawthorn present at base of ash.	40+	C1	7.2	E	GREEN
G111	Hawthorn	6	300	2	2	2	2	EM	F	F	Linear boundary.	10+	C2	3.6	N	GREEN
T112#	Ash	14	322	5	4	5	5	EM	F	F	Multi stem ash suckering from base stump	40+	B2	3.9	N	GREEN
G112#	Alder, willow spp.	6	120	3	3	3	3	SM	F	F		10+	C3	1.4	R	RED
T113	Hawthorn	6	226	4	4	4	4	EM	F	F	Average DBH 80 mm	20+	C3	2.7	R	RED
G113#	Hawthorn, goat willow, hazel	6	200	3	3	3	3	SM	F	F	Linear hawthorn feature following culvert. Max DBH reported.	20+	B2	2.4	R	RED



Tree Ref. No.	Species	Height (m)	DBH (mm)	Canopy spread (m)				Age class	Struc cond.	Physiol cond.	General Observations and Comments	ERC	Category grading	RPA radius (m)	AIA	RAG status
				N	E	S	W									
T114	Ash	16	700	7	7	7	7	EM	P	F	Significant damage to base. Root cutting at base for fence line.	40+	B2	8.4	R	RED
G114	Blackthorn, hawthorn, goat willow	9	400	5	5	5	5	SM	F	F	Max DBH reported	40+	B2	4.8	N	GREEN
T115	Alder	17	768	6	6	6	6	SM	F	F		40+	B2	9.2	R	RED
G115	Sycamore	22	790	9	6	9	6	M	F	F	Max DBH reported. Some basal flaring and aerial rooting. 720 mm and 340 mm DBH on twin stem sycamore.	40+	B2	9.5	E	AMBER
T116	Hawthorn	6	456	5	7	3	3	M	F	F	Some stem hollowing collapsing stem multi stem tree.	20+	C3	5.5	R	RED
G116#	Hawthorn	5	100	1	1	1	1	SM	P	P	3 declining hawthorns	20+	U	1.2	E	AMBER

Tree Ref. No.	Species	Height (m)	DBH (mm)	Canopy spread (m)				Age class	Struc cond.	Physiol cond.	General Observations and Comments	ERC	Category grading	RPA radius (m)	AIA	RAG status
				N	E	S	W									
T117	Crack willow	2	220	1	1	1	1	M	F	F	Regenerated stump	40+	C3	2.6	N	GREEN
G117	Goat willow	11	390	6	6	6	6	M	F	F	Collapsed phoenix tree. 9 stems average 130 mm	40+	B2	4.7	E	AMBER
T118	Goat willow	9	550	5	5	5	5	EM	F	F		40+	B2	6.6	N	GREEN
G118#	Alder	8	200	2	2	2	2	SM	F	F	Flanking both river sides	20+	C2	2.4	P	RED
T119	Alder	10	460	6	6	6	6	M	F	F	Basal flare at base and stem rot.	40+	B2	5.5	E	AMBER
G119	Hawthorn	7	311	3	3	3	3	SM	F	F	Linear row of hawthorn	20+	B2	3.7	E	AMBER

Tree Ref. No.	Species	Height (m)	DBH (mm)	Canopy spread (m)				Age class	Struc cond.	Physiol cond.	General Observations and Comments	ERC	Category grading	RPA radius (m)	AIA	RAG status
				N	E	S	W									
T120#	Hawthorn	4	200	4	4	0	4	M	F	F	Taken from half 0.5 metres collapsed stem	20+	C3	2.4	E	AMBER
G120	Ash, lime	7	90	2	2	2	2	Y	F	P	Contains some deadwood and signs of ash dieback. Linear feature above undersize hedgerow.	<10	U	1.1	E	GREEN
T121#	Goat willow	9	383	5	5	5	5	SM	F	F		40+	B2	4.6	N	GREEN
G121	Ash	29	1200	10	10	10	10	M	F	F	Max DBH reported. Major deadwood hollowing and snap outs. Knot holes.	40+	B2	14.4	E	GREEN
T122	Alder	19	930	11	8	9	11	M	F	F	Twin stem, mature alder in between culvert and fence line	40+	A2	11.2	E	AMBER
G122	Hawthorn	4	170	2	2	2	2	SM	P	P	Collapsed stems.	<10	U	2.0	E	AMBER

Tree Ref. No.	Species	Height (m)	DBH (mm)	Canopy spread (m)				Age class	Struc cond.	Physiol cond.	General Observations and Comments	ERC	Category grading	RPA radius (m)	AIA	RAG status
				N	E	S	W									
T123	Sycamore	16	790	6	6	6	6	M	F	F	Basal hollowing and trunk cavity	40+	B2	9.5	E	AMBER
G123	Hawthorn	7	320	4	4	4	4	SM	F	F	Understory group of hawthorn max DBH reported	20+	B2	3.8	E	GREEN
T124	Silver birch	10	800	6	5	6	6	V	F	F	Potential veteran. Abundant aerial rooting, fungal bracket, hollowing stem, witches' broom and stem bulges. Bird tree growing and suckering.	20+	A3	9.6	E	GREEN
G124	Alder	13	620	5	5	5	5	M	F	F	Group of two alders in between culvert and fence line.	40+	B2	7.4	E	GREEN
T125	Hawthorn	7	210	3	3	2	2	SM	F	F		20+	B2	2.5	E	GREEN
G125	Hawthorn	9	509	3	3	3	3	EM	F	F	Linear understory group of hawthorns.	20+	B2	6.1	E	AMBER

Tree Ref. No.	Species	Height (m)	DBH (mm)	Canopy spread (m)				Age class	Struc cond.	Physiol cond.	General Observations and Comments	ERC	Category grading	RPA radius (m)	AIA	RAG status
				N	E	S	W									
T126	Hawthorn	10.5	394	5	3	2	4	M	F	F	Larger hawthorn within linear group. Some aerial rooting	20+	B2	4.7	E	AMBER
G126#	Crab apple, hawthorn	6	80	3	3	3	3	Y	F	F	Max DBH reported. Recently hedgerow planting with lots of undersized stems.	40+	C3	1.0	E	GREEN
T127	Hawthorn	8	230	2.5	2.5	2.5	2.5	M	F	F	Deadwood.	20+	C3	2.8	N	GREEN
G127	Alder	15	500	5	5	5	5	M	F	F	Stem cavities, tear outs and knot holes throughout. Between existing culvert and fence line.	40+	B2	6.0	E	AMBER
T128#	Hawthorn	5	141	2	2	2	2	SM	F	F	2 x 100 mm DBH stems	20+	C3	1.7	E	AMBER
G128	Ash	27	900	8	8	8	8	M	F	F	Average 660-900 mm DBH. Max DBH reported. Lots of deadwood and knot holes throughout. On banking.	40+	B2	10.8	E	AMBER

Tree Ref. No.	Species	Height (m)	DBH (mm)	Canopy spread (m)				Age class	Struc cond.	Physiol cond.	General Observations and Comments	ERC	Category grading	RPA radius (m)	AIA	RAG status
				N	E	S	W									
T129	Sycamore	18.5	940	8	8	8	8	M	F	F	Large basal flare and aerial rooting	40+	A2	11.3	E	AMBER
G129#	Hawthorn	6	220	3	3	3	3	SM	F	F	Understory group.	20+	C3	2.6	E	AMBER
T130	Ash	25	1100	10	10	10	10	M	G	G		40+	A1	13.2	N	GREEN
G130	Ash	24	990	10	10	10	10	M	F	F	Lots of deadwood throughout. On banking. Max DBH reported. Snap outs and bacterial growls some stem hollowing,	40+	B2	11.9	E	AMBER
T131	Alder	15	1013	8	8	7	8	M	F	F	Twin stem alder between culvert and fence line.	40+	A2	12.2	E	GREEN
G131	Alder, wych elm, hazel, hawthorn, rowan, ash	16	600	6	6	6	6	M	F	F	Some collapsed stem moderate dead wood.	40+	B2	7.2	E	GREEN



Tree Ref. No.	Species	Height (m)	DBH (mm)	Canopy spread (m)				Age class	Struc cond.	Physiol cond.	General Observations and Comments	ERC	Category grading	RPA radius (m)	AIA	RAG status
				N	E	S	W									
T132#	Hawthorn	5	220	2	2	2	2	SM	F	F	6 x 90 DBH stems.	20+	C3	2.6	E	AMBER
G132	Hawthorn	5	170	3	3	3	3	SM	F	F		40+	C3	2.0	E	AMBER
T133	Ash	27	1200	11	7	11	7	M	F	F	Ivy clad stem with knot holes. Large basal flare and aerial rooting.	40+	A2	14.4	E	AMBER
G133#	Hawthorn, alder, sycamore, elm, ash	12	220	5	5	5	5	SM	F	F	Multi-stem alder average 220 mm DBH.	40+	B2	2.6	E	AMBER
T134	Ash	28	1500	12	7	12	6	M	F	F	Large basal flare. Bird tree with epicormic branches. Some tear outs and small knot holes.	40+	A2	18.0	E	AMBER
G134#	Hawthorn, alder	9	160	3	3	3	3	SM	F	F	Alder trees near pipeline within fenced off area.	40+	C3	1.9	E	AMBER

Tree Ref. No.	Species	Height (m)	DBH (mm)	Canopy spread (m)				Age class	Struc cond.	Physiol cond.	General Observations and Comments	ERC	Category grading	RPA radius (m)	AIA	RAG status
				N	E	S	W									
T135	Ash	18	600	5	5	7	5	M	F	F	Prolific ivy cover and hawthorn wrapping round base of tree	40+	B2	7.2	E	AMBER
G135#	Sycamore, ash, hawthorn	20	600	7	7	7	7	M	F	F	Riverbank vegetation	40+	B2	7.2	N	GREEN
T136#	Hawthorn	4	90	3	3	3	3	SM	F	F	Tree in significant decline.	<10	U	1.1	E	AMBER
G136#	Hawthorn	6	90	3	3	3	3	SM	F	F	Dumped collapsed stems within group	20+	C3	1.1	N	GREEN
T137	Ash	28	1000	12	12	12	12	M	F	F	Located at top of bank on field boundary. Some bacterial galls. Minor to major deadwood. Large stem flare. Some cushion fungus and Daldinia concentrica	40+	A2	12.0	E	GREEN
G137	Sycamore, cypress, sycamore, hawthorn, alder, ash larch, elm, oak	22	920	6	6	6	6	M	F	F	Stem approx. 1 m from fence line. Max DBH at riverside 920 mm taken from alder. Within woodland on banking between 400 mm DBH and 700 mm DBH.	40+	B2	11.0	E	AMBER

Tree Ref. No.	Species	Height (m)	DBH (mm)	Canopy spread (m)				Age class	Struc cond.	Physiol cond.	General Observations and Comments	ERC	Category grading	RPA radius (m)	AIA	RAG status
				N	E	S	W									
T138	Ash	25	1000	10	8.5	10	8	M	F	F	Located at top of bank on field boundary. Some bacterial galls. Minor to major dead wood. Large stem flare. Some cushion fungus and Daldinia concentrica	40+	A2	12.0	E	GREEN
G138#	Hawthorn	6	120	3	3	3	3	SM	F	F	Dumped collapsed stems within hawthorn group.	20+	C3	1.4	N	GREEN
T139	Ash	20	1410	7	7	10	7	OM	F	F	Daldinia concentrica, knot holes and snap outs. 5-6 m basal flare. Bacterial galls in branches. Hollow base and occluded historic wounds. Included union. Co-suppressed lower crown	40+	A2	16.9	E	AMBER
T140#	Alder	16	950	8	6	8	8	M	F	F	Major deadwood. Part of coppice stool that has lost multi stem leader at base. Knot holes. Present on the side of culvert edge.	40+	A2	11.4	E	GREEN
T141#	Hawthorn	4	170	3	3	3	3	EM	F	F	Leaning over ditch. Unable to access.	20+	C3	2.0	E	AMBER

## Appendix G. Newton Conservation Area<sup>19</sup>



<sup>19</sup> RVBC (2019). Newton Conservation Area.[online] Available at: [https://www.ribblevalley.gov.uk/downloads/file/3590/newton\\_conservation\\_area\\_map](https://www.ribblevalley.gov.uk/downloads/file/3590/newton_conservation_area_map) [Accessed: 08 October 2020]