HIF Banwell Bypass and Highways Improvements Project

ES Appendix 7.D Arboricultural Impact Assessment & Method Statement

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Contents

Page

1 The Project

1.1 Scheme Overview

1.1.1 The following section provides a brief description and overview of the Banwell Bypass and Highways Improvements Project. Reference should be made to Environmental Statement (ES) Chapter 1 - Introduction for the Scheme objectives, and Environmental Statement Chapter 2 - Scheme Description for the full description.

1.1.2 The Scheme comprises the following distinct elements:

a) a bypass of the village of Banwell (referred to as the "Banwell Bypass");

b) a route connecting the A371 at Castle Hill and the A368 at East Street (referred to as the "Southern Link"); and

c) Mitigation and enhancement measures, which broadly consist of the following:

- Environmental mitigation and enhancement measures in connection with the Banwell Bypass and the Southern Link, examples of which include (but are not limited to) flood compensation areas, planting and habitat creation, attenuation basins etc.
- Placemaking improvements within Banwell, comprising mitigation and enhancement measures to the public realm; and
- Traffic mitigation in connection with the Banwell Bypass and the Southern Link, including Improvements to the wider local road network.

1.1.3 Together, these elements comprise the "Scheme". Each element as listed is described in more detail below.

Banwell Bypass

1.1.4 The Banwell Bypass would be located within the administrative area of North Somerset. The village of Banwell is located approximately 8km east of Weston-Super-Mare. The Bypass would primarily consists of:

a) Signalisation and capacity improvements to the Summer Lane/Wells Lane junctions on the A371;

b) A 40mph single carriageway bypass, connecting the existing A371 (Knightcott Road, east of Summer Lane) to A368 (east of Towerhead Farm);

c) A 3 metre wide walking and cycling route provided along the majority of the Banwell Bypass providing a link from Weston-Super-Mare and to Sandford;

d) Banwell Bypass West Junction - a three arm roundabout located east of Knightcott Industrial Estate at the western end of Banwell;

e) Wolvershill Road Junction – a traffic signalised junction, providing access for all users to the west, east, and north. Access to the south would be restricted to public transport and walking, cycling and horse-riders, and limited agricultural access only;

f) Riverside Crossing – an overbridge across Riverside and the River Banwell. There would not be a direct connection between Riverside and the Bypass;

g) A side road connection between Riverside and Moor Road [TBC]; and

h) Banwell Bypass East Junction - A three-arm traffic signalised junction, with dedicated turning lanes from the bypass towards the Southern Link .

Southern Link Road

1.1.5 The Southern Link would be located within the administrative area of North Somerset and within the Mendip Hills Area of Outstanding Natural Beauty (AONB). The Southern Link would be a 30mph single carriageway, connecting the A368 (East Street) to the A371 at Castle Hill. The Southern Link would link into the Bypass at the Banwell Bypass East Junction. A T-junction located along the Southern Link would provide access into the east of Banwell (at East Street).

Mitigation Measures

Environmental mitigation and enhancement measures in connection with the Banwell Bypass and the Southern Link.

1.1.6 The Scheme would include mitigation measures which are provided to offset the impact of the Banwell Bypass proposal. These include (but are not limited to):

a) flood mitigation to ensure that the Banwell Bypass does not increase flood risk for third-party properties;

b) land for essential mitigation, such as ecology and landscape mitigation; and

c) sustainable urban drainage systems (e.g. attenuation basins and swales), and additional groundwater mitigation, to prevent adverse water quality impacts (including the Source Protection Zone (SPZ)).

Placemaking improvements within Banwell

1.1.7 As a result of the Banwell Bypass, there would be a reduction in traffic through Banwell. The reduction in traffic (and resulting reduction in congestion) through the village could result in higher traffic speeds without mitigation.

a) A reduced 20mph speed limit through Banwell would discourage vehicles from travelling at higher speeds, whilst also discouraging the use of the road as a through route (instead of the Banwell Bypass).

b) The reduction of traffic through Banwell due to the provision of the Banwell Bypass provides the opportunity to make improvements to the existing road and public spaces within Banwell to enhance the historic and urban setting of the village. These improvements would include, but are not limited to:

c) Alteration to the road and footways including resurfacing, widening and narrowing (which would encourage drivers to comply with the posted 20mph speed limit);

d) Incorporation of active travel measures;

e) Soft landscaping and ecological improvements; and

f) Street signage improvements.

Improvements to the wider local road network

1.1.8 Improvements to the local road network and junctions including the surrounding villages of Churchill, Sandford and Winscombe are proposed to mitigate increases in traffic as a result of the Banwell Bypass and Southern Link. These mitigation measures would consist of:

a) Lowered speed limits:

- 20mph: A368 through Churchill, A368 through Sandford, A371 through Winscombe.
- 30mph: A368 between Churchill and Sandford Villages.

b) Gateway Features when entering and exiting the villages of Sandford, Churchill and Winscombe;

c) Non-physical traffic calming measures through and between villages (e.g. road markings and speed signage);

d) Capacity improvements to the Churchill Junction (A38/A371);

e) Provision of new / improvements to existing pedestrian and cycling crossings;

f) Active travel measures along the A368, with improved footway/cycleway access from Churchill and Langford to Churchill Academy;

g) Improvements to footways, shared pedestrian, and cycleway; and

h) Soft landscaping, native planting, rewilding, and ecological enhancements.

1.2 Context

1.2.1 North Somerset Council's (NSC) Housing Infrastructure Fund (HIF) proposal supports potential housing sites (subject to the emerging Local Plan 2038).

1.2.2 A business case was submitted to Homes England to secure funding for a package of infrastructure improvements in February 2019 and a successful funding announcement was made at the end of October 2019.

1.2.3 The Bypass would provide a highway connection to enable potential housing sites that may be allocated in the emerging Local Plan and alleviate the anticipated impact of further traffic growth upon the already congested Banwell village.

1.2.4 NSC appointed Alun Griffiths (Contractors) Ltd, with Arup and TACP (the 'AGC Team') as their technical and environmental advisors, to develop a solution including optioneering, design and planning support of the proposed HIF Banwell Bypass and Highways Improvements Project Stage 1 (the "Scheme"). Stage 1 of the project includes: optioneering; preliminary design; Environmental Impact Assessment (EIA); planning permission; Statutory Processes. Stage 2 of the project is the detailed design and construction phase, following planning determination and land acquisition.

1.3 Scheme objectives

1.3.1 NSC's overall objectives for the Scheme are to deliver, within cost, quality, and programme targets:

a) Improve the local road network to deal with existing congestion issues.

b) Improve and enhance Banwell's public spaces by reducing traffic severance and improving the public realm.

c) Provide the opportunity to increase active and sustainable travel between local villages and Weston-super-Mare.

d) Deliver infrastructure that enables housing development (subject to Local Plan).

e) Ensure the development respects the local area and minimises visual impact upon the surrounding countryside and Mendip Hills Area of Outstanding Natural Beauty (AONB).

f) Innovative and efficient in reducing and offsetting carbon from the design and construction of the infrastructure.

g) Ensure the development provides the opportunity to increase Biodiversity Net Gain by at least 10%.

h) Proactively engage with stakeholders in a way that is both clear and transparent.

1.4 Purpose of this Report

1.4.1 The purpose of this report is to present the Arboricultural Impact Assessment & Method Statement.

2 Arboricultural Impact Assessment & Method Statement

ARBORICULTURAL IMPACT ASSESSMENT & METHOD STATEMENT

Banwell Bypass

April 2022

Barton Hyett Associates
Arboricultural Consultants

Summary table		
Site Name:	Banwell Bypass	
Project reference:	4660	
Site Address:	Land near Moor Road, Golling, Banwell	
Nearest Postcode:	BS29 6EE	
Central Grid reference:	ST 39504 59902	
Local Planning Authority:	North Somerset Council	
Relevant planning policies:	North Somerset Council Core Strategy: CS4 Nature conservation; CS9 Green infrastructure. Sites and Policies Plan: DM9 Trees and woodlands. Supplementary Planning Document (SPD) Biodiversity and trees.	
Statutory Controls:	Tree Preservation Order	Conservation Area
	Yes; TPO No: 1073 covers G18 & G25; TPO No: 975 covers T59; TPO No: 92 covers T60, T61 and T62	Yes; G28, T66 and T67 are within the Banwell Conservation Area
Soil Type: (Source: BGS online soils map © NERC 2021)	Superficial/Drift	Bedrock
	Tidal Flat Deposits - Clay, silt and sand	Blue Anchor Formation - Limestone
Topographical Survey:	None available at present	
Report author:	David Holmes *FdSc, MArborA*	
Checked by:	Richard Hyett *MSc, BSc (Hons), MICFor, MArborA*	
Date of issue:	13th of April 2022	

Arboricultural ASSOCIATION Professional Member

Institute of Chartered Foresters registered

PR01027

Barton Hyett Arboricultural Consultants

REPORT CONTENTS:

1. INTRODUCTION

1.1. I am David Holmes, an arboriculturist with 13 years of experience and a professional member of the Arboricultural Association.

1.2. Barton Hyett Associates Ltd have been instructed to survey trees located at Banwell ('the site') in accordance with the recommendations of British Standard 5837:2012 '*Trees in relation to design, demolition and construction - recommendations*'.

1.3. The scope of the instruction was to inspect trees relevant to a planning application for a new by-pass and provide written advice on how they inform feasibility and design options for the proposed development. The instruction also required an assessment of the potential impact (the Arboricultural Impact Assessment) of the proposed development on the site's arboricultural resource to be undertaken.

2. SITE DESCRIPTION

2.1. Banwell is a village in north Somerset. Weston-super-Mare is located approximately 4.75 miles to the west and the city of Bristol is located 15 miles to the north-east.

2.2. The site follows the route of a proposed by-pass to the north of the village. Starting at Knightcott Road, the route runs north-east across Wolvershill Road, passing north of Cook's Lane, where the route turns south-east and crosses Moor Road and Riverside. Here the route runs across the playing fields and Eastermead Lane, continuing southwards to meet Towerhead Road where the route then runs south-westerly before meeting up with Castle Hill and Dark Lane.

2.3. The route crosses agricultural fields and paddocks as well as public access land and several drainage ditches.

3. TREE SURVEY FINDINGS

3.1. A total of 68 trees, 29 group features and 94 hedgerows were surveyed. These are summarised in terms of their quality in accordance with the recommendations of BS5837 below, and shown in more detail on the Tree Survey and Constraints Plan (**Section 2**) and within the Tree Survey Schedule (**Section 5**).

	Total	A - High quality trees whose retention is most desirable.	B - Moderate quality trees whose retention is desirable.	C - Low quality trees which could be retained but should not significantly constrain the proposal.	U - Very poor quality trees that should be removed unless they have high conservation value.
Trees	**68**	3	58	7	-
Groups	**29**	1	20	7	1
Hedgerows	**94**	9	85	-	-
Total	**191**	**10**	**166**	**14**	**1**

Table 1: Summary of arboricultural features of each BS5837 quality category

4. KEY ARBORICULTURAL FEATURES

4.1. Adjacent to Moor Road are 6x hybrid black poplar, with T10-T12 being categorised as high quality (Category A) trees and T13-T15 as moderate quality (Category B). These trees are prominent within the landscape.

4.2. One of the most prominent features on the site is Banwell Wood which contains ancient woodland. It lies to the east of the village of Banwell. The proposed route runs to the north and west of the wood, with G18 and G25 being small compartments of this feature recorded for the survey.

4.3. The character of the landscape to the north of the village is defined by hedgerows, with the majority of these under management and recorded as moderate quality (Category B) features.

5. PROPOSED DEVELOPMENT

5.1. The development proposal is for the construction of a new by-pass road following the route described at paragraph 2.2, with associated infrastructure.

5.2. The proposed site layout is shown on the proposed site plans, drawings No: *BNWLBP-ARP-HGN-X_BB_Z-DR-CH-000001, BNWLBP-ARP-HGN-X_BB_Z-DR-CH-000002, BNWLBP-ARP-HGN-X_BB_Z-DR-CH-000003, BNWLBP-ARP-HGN-X_BB_Z-DR-CH-000004 and BNWLBP-ARP-HGN-X_BB_Z-DR-CH-000005,* dated: March 2022 (as amended and submitted).

6. IMPACT ASSESSMENT

6.1. The impact assessment considers the effects of any tree loss required to implement the proposed development as well as any reasonably foreseeable potentially damaging activities proposed in the vicinity of retained trees. This is undertaken with reference to BS5837:2012 and considering the nature of the proposed development. Actual and potential impacts can include tree removal to facilitate the development, soil compaction in close proximity to trees, and direct impact damage to the canopy and roots of retained trees from construction activities. A summary of anticipated impacts resulting from the proposed development is provided below.

- **Trees to be removed**

6.2. To construct the new by-pass, 42 individual trees, 17 group features and 68 hedgerows are proposed to be removed. These removals are summarised by quality category in the table overleaf (**Table 2**) and shown on the Tree Retention and Removal Plan in **Section 3**.

6.3. The most prominent visual features to be lost are the hybrid black poplars, T10-T15, which are high-quality (T10-T12) and moderate-quality (T13-T15). Given the alignment of the proposed by-pass, it is not possible to retain these trees.

6.4. The majority of the trees necessary to be removed for the proposal are of moderate quality (Category B), with hedgerows making up a large proportion of this. However, many of these hedgerows are only being partially removed. Whilst trees directly in the path of the route would need to be removed, there are also cutting and embankments, attenuation ponds and supporting infrastructure which has been considered to allow for construction space.

6.5.

	Total	A - High quality trees whose retention is most desirable.	B - Moderate quality trees whose retention is desirable.	C - Low quality trees which could be retained but should not significantly constrain the proposal.
Trees	**42**	T10, T11, T12	T5, T6, T7, T9, T13, T14, T15, T18, T19, T20, T21, T22, T23, T24, T25, T26, T28, T30, T32, T34, T35, T36, T41, T43, T46, T47, T48, T49, T50, T51, T54, T55, T58, T59, T66	T4, T16, T17, T33
Groups	**17**	-	G3*, G4, G5, G7, G8, G12, G13, G16*, G19, G22, G27	G2, G6, G14, G23, G28, G29
Hedgerows	**68**	-	H3, H5*, H6, H8*, H9, H10*, H11, H12*, H13*, H15*, H16*, H19, H20, H21, H22, H23, H24, H25, H28*, H29*, H31, H32, H33*, H34*, H35*, H36*, H37, H38, H39*, H40*, H41*, H42*, H43*, H44*, H45*, H47*, H48*, H49, H51, H52, H58, H59, H60, H61*, H62*, H63, H65, H71, H72, H74*, H75, H76*, H78, H80*, H81*, H83, H84*, H85, H86, H89, H90*, H91*	H56, H57, H64, H82*
Total	**127**	**3**	**110**	**14**

Table 2: summary of proposed removals of each BS5837 quality category (- indicates partial removal)*

6.6. A significant number of hedgerows are proposed for removal to facilitate the scheme and to mitigate for this, new hedgerows should be planned to define boundaries. The hedgerows proposed for removal consist mainly of hawthorn, blackthorn, bullace, field maple, dogwood, spindle and elm. New hedgerows should retain this species mix to ensure biodiversity is preserved. Elder, although common in hedgerows, should be avoided as the shading it casts out-competes other species creating gaps, and it is also brittle when mature. A well maintained hedgerow is more economically sound in the mid to long-term than timber fencing which it will outlast, and through laying, a hedgerow can be renewed indefinitely

- **Impacts on retained trees**

6.7. The retained trees within partially removed groups G3 and G16 will require close monitoring post-felling of the adjacent trees. Removing trees from the edge of groups can leave the retained trees exposed to wind-throw. Resilience pruning carried out after the felling of edge trees could be utilised to reduce the likelihood of limb or even whole-tree failures.

6.8. There will realignment, removal and tie-ins to sections of existing road and associated infrastructure. This work would be within the highways construction area and unlikely to have an impact on retained trees.

6.9. Service runs, drainage swales, vehicle restraint systems, lighting columns, signage and other supporting infrastructure should be designed to not enter the RPAs of retained trees. An assessment of the site layout indicates this will be possible. Should services need to be installed near, or within RPAs, the project arboriculturist should be consulted and an appropriate installation method statement prepared.

6.10. No ground-level changes, foundations or underground utilities are proposed within the root protection areas of retained trees.

6.11. Areas for new planting have been incorporated into the scheme as shown on the Environmental Masterplans. Specific details have not been supplied of replacement trees. It is recommended that group plantings along new embankments are planted with native broadleaves to ensure the loss of copy cover is fully mitigated, using the existing tree stock as a template for which biodiversity can be retained. Large areas of green space, such as wide verges (with no visibility-splay issues) or the centre of roundabouts should be used to plan large specimen trees. Establishing a tree species of significance to the local area would show a considered planting approach.

6.12. Where signage (including bus-stops), traffic lights or pedestrian crossings are proposed, the new tree locations should be designed as to allow sufficient clearance. This would avoid post-development pressure to fell trees due to obstructing signage, etc. Thought should be given for potential future growth of trees and the likely amount of work required to keep foliage clear of street-furniture. Careful planning of locations along with formative pruning in the early years can reap benefits in the long-term. Pruning is best carried out little and often in the early years when the trees are young and vigorous. Neglecting the trees post-planting, only to carry out extensive pruning works in future years will put a large demand on the resources of the trees and reduce longevity of the tree-stock.

- **Conclusion**

6.13. With regards to retained tress, the proposal is feasible from an arboricultural perspective, and if carefully implemented according to an approved Arboricultural Method Statement there would be no or only a low potential negative impact on the retained trees.

7. ARBORICULTURAL METHOD STATEMENT

7.1. The aim of this Arboricultural Method Statement (AMS) is to prevent and/or minimise the impacts of site operations on retained trees and hedges during construction of the Scheme. It gives step-by-step guidance and specifications for works which have the potential to result in loss of or damage to trees.

7.2. This AMS must be read with reference to the Tree Retention and Removal Plan (TRR) in **Section 3** and the Tree Protection Plan (TPP) in **Section 4**.

8. KEY PERSONNEL AND INDIVIDUAL RESPONSIBILITIES

8.3. The Client shall hold overall responsibility for the project and shall appoint professionals and delegate responsibility in relation to the Scheme of Tree Protection as follows:

8.4. The Project Site Manager shall hold the responsibility to ensure that all key contractors and all other persons working on-site have a responsibility to be aware of trees and to abide by tree protection procedures set out within the AMS.

8.5. The Project Arboriculturist (as appointed) shall be responsible for independently monitoring/supervising the effectiveness of tree protection at regular intervals and report all findings in writing back to the client, the project site manager and the local planning authority. They shall also be instructed to provide additional advice should unforeseen circumstances develop.

8.6. Other appointed individuals and their contact information shall be recorded as part of the on-site pre-commencement site meeting.

9. HOW THE AMS MUST BE USED

9.1. The AMS must be used as a reference source for site operatives in order to guide tree-related aspects of the construction process. A precautionary approach is required.

9.2. The AMS must be referred to by site managers during the construction operation itself. A copy of this document must, therefore, be kept available in the main Site Office for quick and easy reference.

10. WORK PHASES

10.1. In relation to the above site, it is anticipated that arboricultural working methods are likely to be quite straightforward. The following sequence of work should be followed:

1. Pre-commencement site meeting
2. Tree and hedge removals and pruning
3. Erection of highways zone security fencing and temporary tree protection barriers and notices
4. Demolition of buildings and unused sections of highway, groundworks and main construction phase
5. Removal of temporary tree protection barriers
6. Soft landscaping
7. Project completion

11. CONSTRUCTION PLANNING

11.1. The Project Arboriculturist will remain on hand in an advisory role to answer any questions relating to tree protection that may arise during construction planning or during the build phases.

11.2. The Project Arboriculturist should be consulted if any conflict with the Construction Method Statement or other approved construction schemes that may affect retained trees is identified during planning or construction stages.

11.3. The site operations must be sequenced in accordance with the over-arching timetable of work stages set out within the AMS. Should any change to the sequence of operations be necessary, or if any other incidents occur, the Project Arboriculturist must be consulted. The Project Arboriculturist shall then evaluate any potential arboricultural impacts that could arise and specify additional tree protection/remediation measures as required. Confirmation that the proposed changes are acceptable within the context of relevant planning permission must be obtained in writing from the local planning authority prior to any new operations on site.

11.4. Where site operations have the potential to result in more substantial impacts on retained trees, an arboricultural watching brief shall be required.

11.5. The locations of contractor compound, storage, parking and working space for plant will be discussed and agreed at the pre-commencement meeting and recorded on a plan. There appears to be ample scope for these area to be located outside of the root protection areas (RPAs) of retained trees or on existing hard surfacing, and priority will be given to these areas. Where use of an unsurfaced area within an RPA is unavoidable, the area must be provided with temporary ground protection as discussed and agreed with the Project Arboriculturist.

12. SITE INDUCTION

12.1. Prior to commencing relevant works on site, all site operatives must be briefed by the Site Manager in relation to site procedures and rules that relate to retained trees as well as the content of the AMS. A 'tree awareness' site induction form is provided in **Section 9** to assist with this.

13. ARBORICULTURAL MONITORING AND CONTINGENCY PLANS

13.1. The Project Arboriculturist will remain on hand in an advisory role and will intervene should a request be made.

13.2. In the event of unforeseen incidents occurring that may adversely affect or threaten the welfare or security of the trees, the resident Site Manager shall inform the Project Arboriculturist at the earliest opportunity and not more than one working day following the incident.

13.3. The Project Arboriculturist will visit the site to inspect and assess the circumstances and make appropriate recommendations. The Local Planning Authority Tree Officer will be informed by the Project Arboriculturist of such incidents, and recommendations will be submitted for approval by the Local Planning Authority; initially verbally, and then in writing. A record of any emergency incidents and works shall be maintained by the Project Arboriculturist.

13.4. Incidents which may merit such contingency plans include:

- Accidental/unauthorised damage to the branches, roots or trunk of trees
- The spillage of chemicals within or adjacent to a Root Protection Area
- The discharge of toxins/waste within or adjacent to a Root Protection Area
- The unscheduled breaching of a tree protective barrier or Construction Exclusion Zones.

14. PRE-COMMENCEMENT SITE MEETING

14.1. The purpose of the meeting is to enable all relevant parties within the development team to meet, to be aware of the requirements of the AMS, and to agree a coordinated approach to the project.

14.2. The meeting shall be pre-arranged, and the Local Planning Authority Tree Officer shall be given five working days' written notice and invited to attend.

14.3. Required attendees:

- Site project manager
- Project arboriculturist

- Contractors (including arborist) and other relevant parties

14.4. Matters to be addressed:

- Identification of persons present and exchange of contact information
- Familiarisation with all aspects of the AMS
- Familiarisation with the site in relation to the AMS
- Locations of contractor compound, storage, parking and working space for plant to be finalised.

14.5. The Project Arboriculturist shall provide written confirmation to the Local Planning Authority Tree Officer that the meeting has occurred and that specified matters have been addressed.

15. TREE AND HEDGEROW REMOVAL

15.1. All tree work will be discussed and agreed in detail at the pre-commencement meeting. The approved removals is shown as RED shaded trees and RED shaded areas on the tree retention and removal plan BHA_4660_02 (sheets 1 - 4) in **section 3**, and is specified below.

15.2. All tree work will be carried out by a suitably qualified and experienced tree surgery contractor, and in accordance with British Standard BS3998: 2010 Tree work - recommendations.

15.3. All tree work operations must be carried out in-line with the contractor's own site specific risk assessment and method statement that shall be approved prior to commencement by the Site Manager.

15.4. All arisings shall be disposed of as instructed by the Site Manager.

15.5. The following tree felling work will be carried out before the installation of the tree protection barriers (refer to the Tree Retention and Removal Plan in **Section 3**):

Trees, groups and hedgerows to be wholly removed		**Groups and hedges to be partially removed**
Trees	T4, T5, T6, T7, T9, T10, T11, T12, T14, T15, T16, T17, T18, T19, T20 T21, T22, T23, T24, T25, T26, T32, T33, T34, T35, T41, T43, T46, T47, T48, T49, T50, T51, T54, T55, T58, T59, T63, T66	-
Groups	G2, G4, G5, G6, G7, G8, G12, G13, G14, G19, G22, G23, G27, G28, G29	G3, G16
Hedgerows	H3, H6, H9, H11, H19, H20, H21, H22, H23, H24, H25, H31, H32, H37, H38, H49, H51, H52, H56, H57, H58, H59, H60, H63, H64 H65, H71, H72, H75, H78, H83, H85, H86, H89	H5, H8, H10, H12, H13, H15, H16, H28, H29, H33, H34, H35, H36, H39, H40, H41, H42, H43, H44, H45, H47, H48, H61, H62, H74, H76, H80, H81, H82, H84, H90, H91

Table 3: summary of proposed removals

16. ERECT TREE PROTECTION BARRIERS AND NOTICES AND TEMPORARY GROUND PROTECTION

16.1. The tree protection barriers are to be installed in locations as specified on the Tree Protection Plan (TPP) in **Section 4**, and as marked-out and agreed at the pre-commencement meeting. The barriers will form the Construction Exclusion Zones (CEZs).

16.2. If a risk of run-off ground contamination beyond the protective measures is identified, a run-off containment system (e.g. Kraken contamination containment barriers or similar with impermeable membrane attached) must be affixed to the base of the fencing panels.

16.3. The tree protection barrier must be installed in accordance with the default BS5837:2012 specification Figure 3 that is shown on the TPP.

16.4. All-weather A3-sized notices as included below shall be attached to the tree protection barrier at 10-metre intervals.

16.5. The Project Arboriculturist must approve the condition and positioning of the barrier, notices and temporary ground protection and report to LPA Tree Officer prior to commencement of further stages in the construction process.

16.6. The barriers must not be moved, altered or allowed to drift during construction activity. The barrier and ground protection will be checked at the beginning and end of each working day to ensure they remain fit for purpose of excluding any site activity and protecting the ground. They will remain in situ until all construction work on site has been completed.

16.7. The CEZ formed by the barriers is to remain completely undisturbed for the duration of all development works. No construction activity of any description including but not limited to the following must occur within this area at any time:

- No excavation of any description.
- No storage, disposal of soil, rubble or materials of any other description.
- No alterations to existing levels or ground conditions.
- No use of any tracked or wheeled machinery of any description.
- No tree works, without the written consent of the Local Planning Authority's Development Management service
- No erection of temporary structures of any description.
- No fixtures or fittings of any description, security lighting, signage etc shall be attached to any part of a tree.
- No fires shall be light within 10 metres of the canopies of any tree or spread of any hedge.
- No chemicals, fuel, liquids/waste residues of any other description to be stored or disposed of within close proximity to or drained towards/ into protection areas.

17. INSTALLATION OF HIGHWAYS CONSTRUCTION ZONE PERIMETER SECURITY FENCING AND ADDITIONAL TREE PROTECTION BARRIERS AND NOTICES

17.1. The tree protection barriers are to be installed in locations as specified on the Tree Protection Plan (TPP) in **Section 4.** The barriers will form the Construction Exclusion Zones (CEZs).

17.2. The majority of the protection of trees and hedgerows from construction activity will be provided by the final perimeter security fencing. Therefore, the security fencing and additional protection barriers will be installed as the first operation on site within each work-site before any deliveries or construction activity begin.

17.3. The specification for protective fencing will be of welded mesh panel fencing (HERAS-type). 1) The exact layout and specification for this fencing will be provided to the fencing contractor by the Project Site Manager or in advance. NB: Installation of perimeter security fencing and other tree protection fencing can be installed field-by-field by 'rolling-out' ahead of other construction activities. The sequencing of any 'rolling-out' will be discussed and agreed in detail at the pre-commencement meeting.

17.4. The temporary tree protection barriers must be installed in accordance with the default BS5837:2012 specification Figure 3 that is shown on the TPP. They will be of welded mesh panels secured to each other and with stabiliser struts. The panels and struts will be secured to the ground to prevent drift.

17.5. All-weather A3-sized notices as included below shall be attached to the temporary tree protection barriers at 10 metre intervals.

17.6. The Project Arboriculturist must approve the condition and positioning of the temporary barriers and notices and report to LPA Tree Officer prior to commencement of further stages in the construction process.

17.7. The barrier protection must not be moved, altered or allowed to drift during construction activity. The barriers will be checked at the beginning of each working day to ensure they remain fit for purpose of excluding any site activity and protecting the ground. They will remain in situ until all construction work on site has been completed.

18. GROUNDWORKS AND MAIN CONSTRUCTION PHASE

18.1. All works and excavations must be carried out outside of the CEZs. All restrictions and precautions specified in this AMS and in section 8 below must be adhered to.

18.2. All further excavations for services must be located outside of CEZs.

19. REMOVE TREE PROTECTION BARRIERS

19.1. The tree protection barriers must not be removed without the prior approval of the Project Arboriculturist.

19.2. The Site Manager will ask the Project Arboriculturist to approve the removal of barriers. The Project Arboriculturist will assess site conditions and confirm that it is an appropriate stage at which to remove the barriers.

19.3. Five working days written notice shall be given to the Local Planning Authority prior to the removal of tree protection measures.

20. SOFT LANDSCAPING

20.1. General landscaping guidance:

1. All new tree planting must be carried out in accordance with the principles of 'BS8545: Trees: from nursery to independence in the landscape – recommendations.'
2. All excavations within the RPA of retained trees must be carried out by hand. Where areas of concentrated pedestrian activity are required within RPAs, work shall be carried out on top of 25mm ply boards set on 100mm wood chip.
3. Where posts are to be concreted into the ground within the RPA of retained trees, excavated post holes must be lined with a heavy duty (damp proof course-type) plastic membrane to prevent any concrete from damaging roots.

20.2. Tree establishment and health/condition monitoring:

1. The detailed landscaping scheme will include a scheme of maintenance which must be sufficiently resourced and carefully adhered to to ensure good tree establishment.
2. Following the completion of construction works, and in order to comply with planning Condition 14, it will be necessary to continue monitoring to assess and evaluate the condition of both newly planted trees and trees that have been retained.
3. Immediately following the completion of landscaping works, the Project Arboriculturist or other suitably qualified and experienced arboricultural/landscape specialist must inspect the condition of all newly planted trees to ensure that planting specifications have been properly adhered to. This will involve checks of tree size and form, staking, individual protection and weed control. Feedback must be provided to the Site Manager and to the Local Authority Tree Officer along with clear specifications for remedial action as may be necessary.
4. Subsequently, at annual intervals, the Project Arboriculturist or other suitably qualified and experienced arboricultural/landscape specialist shall inspect all the trees on the site and make recommendations for remedial action as may be necessary. This will involve visual assessment of the condition of retained trees, an assessment of the effectiveness of tree protection and weed control in relation to newly planted trees and identification of trees that require formative pruning to improve long-term structural form. Again, Feedback must be provided to the Site Manager and to the Local Authority Tree Officer along with clear specifications for remedial action as may be necessary.

Insert Drawing

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SECTION 1

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SECTION 1

BS5837:2012 TREE SURVEY SCHEDULE

BANWELL BYPASS

PROJECT NO: 4660

SURVEYOR: DAVE HOLMES

CLIENT: TACP

SURVEY DATE: 23-24-25/11/2021

Barton Hyett Arboricultural Consultants

INDIVIDUAL TREES

Ref	Species	On/off site	Top Height (m)	No. of Stems	Est diam?	Calc. / Actual Stem Dia. (mm)	Crown radii (m) N-E-S-W	Avg. low crown height (m)	1st branch ht (m)	1st branch dir.	Life Stage	Special importance	General Observations	Health & vitality	Structural condition	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)	RPA m^2	TPO?
T1	Chestnut (Horse)	On	8.0	1		440	4-4-4-4	0.5	2.0	N	SM	None	Typical for species	Good	Good	20+	B1	5.3	88.0	-
T2	Chestnut (Horse)	On	7.0	1		300	3-4-4-3	1.5	2.0	S	SM	None	Typical for species	Good	Good	20+	B1	3.6	41.0	-
T3	Birch (Silver)	On	7.0	1		190	2-4-3-2	1.0	2.0	W	SM	None	Bark damage to north of stem @1m	Good	Fair	10+	C1	2.3	16.0	-
T4	Walnut (Common)	On	8.0	1		450	0-10-6-0	2.5	4.0	S	M	None	Windswept form with asymmetric crown, decay at root collar & old pruning wounds at 2.5m, old fungal fruiting body around pruning wound at 3m to west - possibly dryads saddle, minor deadwood throughout crown	Fair	Fair	10+	C1	5.4	92.0	-
T5	Holly	On	5.0	1		280	3-3-3-3	2.0	0.0	-	SM	None	Hedgerow tree	Good	Fair	20+	B1	3.3	35.0	-
T6	Willow (Crack)	On	4.0	1	Yes	1200	2-2-2-2	0.5	0.0	-	M	None	Old willow stem, topped @2m, adjacent to open drain	Fair	Fair	20+	B1	14.4	651.0	-
T7	Ash (Common)	On	6.0	1	Yes	180	3-3-3-3	2.0	0.0	-	SM	None	Hedgerow tree	Good	Fair	20+	B1	2.2	15.0	-
T8	Willow (Crack)	On	12.0	2	Yes	1200	6-6-7-7	1.0	0.0	-	M	None	Typical for species	Good	Fair	20+	B1	14.4	651.0	-
T9	Willow (Crack)	On	10.0	1		440	6-5-7-6	1.5	0.0	-	M	None	Typical for species	Good	Fair	20+	B1	5.3	88.0	-
T10	Poplar (Hybrid black)	On	20.0	1	Yes	1300.0	6-9-10-8	3.5	3.0	W	M	None	Minor ivy cover to lower stem, mistletoe in crown	Good	Fair	20+	A1	15.0	707.0	-
T11	Poplar (Hybrid black)	On	20.0	1	Yes	1000.0	6-9-6-8	3.5	3.0	W	M	None	Minor ivy cover to lower stem	Good	Fair	20+	A1	12.0	452.0	-
T12	Poplar (Hybrid black)	On	20.0	1	Yes	1000.0	5-9-6-8	3.5	3.0	W	M	None	Minor ivy cover to lower stem	Good	Fair	20+	A1	12.0	452.0	-
T13	Poplar (Hybrid black)	On	20.0	1	Yes	900.0	5-6-6-8	3.5	3.0	W	M	None	Minor ivy cover to lower stem	Good	Fair	20+	B1	10.8	366.0	-
T14	Poplar (Hybrid black)	On	20.0	1	Yes	1000.0	6-8-5-8	3.5	3.0	W	M	None	Minor ivy cover to lower stem, mistletoe in crown	Good	Fair	20+	B1	12.0	452.0	-
T15	Poplar (Hybrid black)	On	20.0	2	Yes	1350.0	10-9-6-8	3.5	3.0	W	M	None	Minor ivy cover to lower stem, mistletoe in crown	Good	Fair	20+	B1	15.0	707.0	-
T16	Cherry (Bird)	On	7.0	1		380.0	6-5-5-5	2.0	2.0	SW	EM	None	Decay to east of main stem	Fair	Fair	10+	C1	4.5	65.0	-

BS5837:2012 TREE SURVEY SCHEDULE

PROJECT NO: 4660

BANWELL BYPASS

SURVEYOR: DAVE HOLMES

CLIENT: TACP

SURVEY DATE: 23-24-25/11/2021

Ref	Species	On/off site	Top Height (m)	No. of Stems	Est diam?	Calc. / Actual Stem Dia. (mm)	Crown radii (m) N-E-S-W	Avg. low crown height (m)	1st branch ht (m)	1st branch dir.	Life Stage	Special importance	General Observations	Health & vitality	Structural condition	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)	RPA m^2	TPO?
T17	Elder	On	5.0	6		370.0	3-3-3-3	1.5	0.0	-	EM	None	Basal decay	Fair	Fair	10+	C1	4.4	62.0	-
T18	Willow (Crack)	On	7.0	1	Yes	1200.0	5-6-4-5	1.0	0.0	-	M	None	Old decayed willow stem, topped @2m	Fair	Fair	20+	B1	14.4	651.0	-
T19	Ash (Common)	On	6.0	7		370.0	5-5-4-4	1.0	0.0	-	M	None	Old decayed ash stem, topped @0.5m with prolific regrowth	Fair	Fair	20+	B1	4.4	62.0	-
T20	Willow (Crack)	On	6.0	1	Yes	1000.0	8-7-6-4	1.0	0.0	-	EM	None	Growing on tract of land between ditch & river, cursory inspection from boundary, topped @3.5m, lower stem	Good	Fair	20+	B1	12.0	452.0	-
T21	Willow (Crack)	On	16.0	1	Yes	1200.0	9-8-7-8	2.0	0.0	-	M	None	Growing on tract of land between ditch & river, cursory inspection from boundary, topped @3m with prolific regrowth, lower stem swathed in	Good	Fair	20+	B1	14.4	651.0	-
T22	Willow (Crack)	On	16.0	1	Yes	1400.0	6-8-8-8	1.0	0.0	-	M	None	Growing on tract of land between ditch & river, cursory inspection from boundary, topped @2m with prolific regrowth, lower stem swathed in	Good	Fair	20+	B1	15.0	707.0	-
T23	Willow (Crack)	On	15.0	1	Yes	1100.0	7-8-6-8	1.0	0.0	-	M	None	Growing on tract of land between ditch & river, cursory inspection from boundary, topped @2.5m with prolific regrowth, lower stem swathed in	Good	Fair	20+	B1	13.2	547.0	-
T24	Willow (Crack)	On	14.0	1	Yes	900.0	5-5-3-6	1.0	0.0	-	M	None	Growing on tract of land between ditch & river, cursory inspection from boundary, topped @3.5m with prolific regrowth, lower stem swathed in	Good	Fair	20+	B1	10.8	366.0	-
T25	Willow (Crack)	On	14.0	1	Yes	1300.0	3-4-5-6	1.0	0.0	-	M	None	Growing on tract of land between ditch & river, cursory inspection from boundary, topped @2.5m with prolific regrowth, lower stem swathed in	Good	Fair	20+	B1	15.0	707.0	-

BS5837:2012 TREE SURVEY SCHEDULE

BANWELL BYPASS

PROJECT NO: 4660

SURVEYOR: DAVE HOLMES

CLIENT: TACP

SURVEY DATE: 23-24-25/11/2021

Barton Hyett Arboricultural Consultants

Ref	Species	On/off site	Top Height (m)	No. of Stems	Est diam?	Calc. / Actual Stem Dia. (mm)	Crown radii (m) N-E-S-W	Avg. low crown height (m)	1st branch ht (m)	1st branch dir.	Life Stage	Special importance	General Observations	Health & vitality	Structural condition	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)	RPA m^2	TPO?
T26	Willow (Crack)	On	16.0	1	Yes	1200.0	6-8-8-7	2.0	0.0	-	M	None	Topped @4m with prolific regrowth, lower stem swathed in ivy	Good	Fair	20+	B1	14.4	651.0	-
T27	Apple	On	6.5	1		210.0	3-4-3-2	1.5	2.0	S	EM	None	Typical for species, chicken wire wrapped around lower stem	Good	Fair	20+	B1	2.5	20.0	-
T28	Apple	On	6.5	1		430.0	5-4-3-4	0.0	2.0	N	M	None	Bark damage to lower stem, scaffold limb failure in upper crown, partially de-laminated limb in lower crown to north	Good	Fair	20+	B1	5.2	84.0	-
T29	Apple	On	6.5	1		430.0	2-2-2-4	0.5	2.5	N	M	None	Bark damage to main stem, extensive decay to east of stem & 1x scaffold limb with small Ganoderma brackets forming on stem, heavily reduced in past around main union leaning asymmetric crown	Fair	Fair	10+	C1	5.2	84.0	-
T30	Apple	On	5.5	1		190.0	3-3-2-3	0.5	1.5	S	EM	None	Typical for species, chicken wire wrapped around lower stem, lowest limb to north has failed	Good	Fair	20+	B1	2.3	16.0	-
T31	Apple	On	5.0	1		310.0	3-2-4-3	0.25	0.25	S	EM	None	Tree has failed at root plate & continues to	Fair	Fair	10+	C1	3.7	43.0	-
T32	Willow (Crack)	On	16.0	1	Yes	1000.0	8-8-6-6	1.5	0.0	-	M	None	Branches in contact with roof of adjacent building	Good	Fair	20+	B1	12.0	452.0	-
T33	Willow (Crack)	On	12.0	1	Yes	1100.0	6-4-6-2	1.5	0.0	-	M	None	1x stem to north has failed at root collar & 1x stem has failed @3.5m	Good	Fair	20+	C1	13.2	547.0	-
T34	Willow (Crack)	On	10.0	5		550.0	4-3-5-4	1.5	0.0	-	EM	None	Typical for species	Good	Fair	20+	B1	6.6	137.0	-
T35	Poplar (White)	On	18.0	2	Yes	1030.0	7-9-6-5	1.5	3.5	SE	M	None	Typical for species	Good	Fair	20+	B1	12.4	480.0	-
T36	Poplar (Hybrid black)	On	20.0	1	Yes	1200.0	6-9-10-8	2.5	3.0	E	M	None	Minor ivy cover to lower stem, mistletoe throughout crown	Good	Fair	20+	B1	14.4	651.0	-
T37	Hawthorn	On	4.5	6	Yes	200.0	1-1-1-1	0.0	0.0	-	EM	None	Multi stemmed tree, swathed in brambles	Good	Fair	20+	B2	2.4	18.0	-

BS5837:2012 TREE SURVEY SCHEDULE

PROJECT NO: 4660

BANWELL BYPASS

SURVEYOR: DAVE HOLMES

CLIENT: TACP

SURVEY DATE: 23-24-25/11/2021

Ref	Species	On/off site	Top Height (m)	No. of Stems	Est diam?	Calc. / Actual Stem Dia. (mm)	Crown radii (m) N-E-S-W	Avg. low crown height (m)	1st branch ht (m)	1st branch dir.	Life Stage	Special importance	General Observations	Health & vitality	Structural condition	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)	RPA m^2	TPO?
T38	Hawthorn	On	5.5	12	Yes	310.0	1-1-1-1	0.0	0.0	-	EM	None	Multi stemmed tree	Good	Fair	20+	**B2**	3.7	43.0	-
T39	Willow (Crack)	On	10.0	1	Yes	400.0	5-5-5-5	2.0	0.0	-	EM	None	Hedgerow tree	Good	Fair	20+	**B1**	4.8	72.0	-
T40	Willow (Crack)	On	3.0	2	Yes	1270.0	1-1-1-1	0.5	0.0	-	M	None	Topped @2.5m & recently flailed	Fair	Fair	20+	**B1**	15.0	707.0	-
T41	Willow (Crack)	On	4.0	1	Yes	1300.0	2-2-2-2	1.5	0.0	-	M	None	Topped @2.5m with prolific regrowth	Good	Fair	20+	**B1**	15.0	707.0	-
T42	Ash (Common)	On	10.0	3	Yes	570.0	6-6-6-5	2.0	0.0	-	EM	None	Multi stemmed hedgerow tree, main stem & scaffold limbs	Good	Fair	20+	**B1**	6.8	147.0	-
T43	Ash (Common)	On	12.0	3		490.0	5-7-6-5	2.0	0.0	-	EM	None	Multi stemmed hedgerow tree	Good	Fair	20+	**B1**	5.9	109.0	-
T44	Ash (Common)	On	14.0	2	Yes	490.0	6-6-6-6	2.0	0.0	-	EM	None	Observed from boundary, within piece of land with locked gate covered by barbed wire, all measurements estimated from nearest viewpoint; multi stemmed hedgerow tree	Good	Fair	20+	**B1**	5.9	109.0	-
T45	Ash (Common)	On	15.0	4	Yes	1020.0	7-9-10-6	3.0	1.5	N	EM	None	Lower stems have mild ivy cover, Inonotus brackets @ 6 & 8m to 2x stems, moderate deadwood to centre of crown	Good	Fair	20+	**B1**	12.2	471.0	-
T46	Elm (Wych)	On	12.0	1		320.0	5-4-6-4	3.5	2.0	N	EM	None	Localised pruning above road	Good	Fair	20+	**B1**	3.8	46.0	-
T47	Ash (Common)	On	14.0	1		560.0	6-7-6-5	4.5	4.0	N	EM	None	Bark damage to west at root collar, mild ivy cover to lower stem, localised pruning above road	Good	Fair	20+	**B1**	6.7	142.0	-
T48	Ash (Common)	Off	12.0	2	Yes	570.0	6-6-6-5	2.0	2.5	S	EM	None	Hedgerow tree, ivy cover to lower stems	Good	Fair	20+	**B1**	6.8	147.0	-
T49	Ash (Common)	Off	11.0	2	Yes	570.0	5-4-7-6	2.0	2.0	S	EM	None	Hedgerow tree, ivy cover to lower stems	Good	Fair	20+	**B1**	6.8	147.0	-
T50	Ash (Common)	Off	15.0	2		690.0	7-7-4-6	2.0	2.0	E	EM	None	Typical for species	Good	Fair	20+	**B1**	8.3	215.0	-
T51	Sycamore	Off	15.0	4		990.0	5-7-6-6	3.0	2.5	S	EM	None	Mild ivy cover to lower stems	Good	Fair	20+	**B1**	11.9	443.0	-

BS5837:2012 TREE SURVEY SCHEDULE

BANWELL BYPASS

PROJECT NO: 4660

SURVEYOR: DAVE HOLMES

CLIENT: TACP

SURVEY DATE: 23-24-25/11/2021

Barton Hyett Arboricultural Consultants

Ref	Species	On/off site	Top Height (m)	No. of Stems	Est diam?	Calc. / Actual Stem Dia. (mm)	Crown radii (m) N-E-S-W	Avg. low crown height (m)	1st branch ht (m)	1st branch dir.	Life Stage	Special importance	General Observations	Health & vitality	Structural condition	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)	RPA m^2	TPO?
T52	Sycamore	Off	13.0	1		570.0	6-6-6-5	4.5	2.5	SW	EM	None	Mild ivy cover to lower stem	Good	Fair	20+	B1	6.8	147.0	-
T53	Sycamore	Off	13.0	1		810.0	7-7-5-8	4.5	2.0	S	M	None	Mild ivy cover to lower stem	Good	Fair	20+	B1	9.7	297.0	-
T54	Sycamore	Off	15.0	1		970.0	7-8-6-8	4.5	2.5	E	M	None	Mild ivy cover to lower stem, moderate deadwood to centre of crown	Good	Fair	20+	B1	11.6	426.0	-
T55	Sycamore	Off	13.0	6		1250.0	6-7-5-6	4.5	2.0	W	EM	None	Mild ivy cover to lower stems	Good	Fair	20+	B1	15.0	707.0	-
T56	Ash (Common)	On	10.0	4	Yes	500.0	5-5-5-6	2.0	0.0	-	EM	None	Typical for species	Good	Fair	20+	B1	6.0	113.0	-
T57	Ash (Common)	On	10.0	2		260.0	4-5-5-5	1.5	0.0	-	EM	None	Typical for species	Good	Fair	20+	B1	3.1	31.0	-
T58	Sycamore	On	12.0	1		620.0	7-7-6-6	1.5	0.0	-	EM	None	Lower stem & scaffold limbs heavily swathed in ivy	Good	Fair	20+	B1	7.4	174.0	-
T59	Sycamore	On	17.0	1		1110.0	8-10-8-8	5.5	5.0	N	M	None	Lower stem heavily swathed in ivy	Good	Fair	20+	B1	13.3	557.0	Yes
T60	Hornbeam	Off	10.0	1	Yes	300.0	6-5-5-5	3.0	0.0	-	SM	None	In private garden	Good	Good	20+	B1	3.6	41.0	Yes
T61	Hornbeam	Off	14.0	1	Yes	1100.0	7-7-5-5	5.5	0.0	-	M	None	In private garden, dieback in upper crown	Fair	Fair	20+	B1	13.2	547.0	Yes
T62	Hornbeam	Off	13.0	1	Yes	900.0	7-5-6-6	5.5	0.0	-	M	None	In private garden, dieback in upper crown	Fair	Fair	20+	B1	10.8	366.0	Yes
T63	Oak (English)	Off	13.0	1	Yes	550.0	5-6-7-6	4.0	2.5	N	EM	None	In private garden, crown in contact with telegraph pole & lines, lower stem & scaffold limbs heavily swathed in ivy	Good	Fair	20+	B1	6.6	137.0	-
T64	Ash (Common)	On	15.0	1	Yes	650.0	7-6-6-8	5.5	0.0	-	M	None	Growing from edge of embankment overhanging Dark Lane, main stem & scaffold	Good	Fair	20+	B1	7.8	191.0	-
T65	Ash (Common)	Off	8.0	1	Yes	350.0	5-5-7-5	3.0	0.0	-	SM	None	On adjacent site	Good	Fair	20+	B1	4.2	55.0	-
T66	Cherry (Bird)	Off	10.0	1	Yes	400.0	5-5-5-5	3.0	0.0	-	SM	None	On adjacent site, lower stem & scaffold limbs heavily swathed in ivy	Good	Fair	20+	B1	4.8	72.0	-

BS5837:2012 TREE SURVEY SCHEDULE

PROJECT NO: 4660

BANWELL BYPASS

SURVEYOR: DAVE HOLMES

CLIENT: TACP

SURVEY DATE: 23-24-25/11/2021

Ref	Species	On/off site	Top Height (m)	No. of Stems	Est diam?	Calc. / Actual Stem Dia. (mm)	Crown radii (m) N-E-S-W	Avg. low crown height (m)	1st branch ht (m)	1st branch dir.	Life Stage	Special importance	General Observations	Health & vitality	Structural condition	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)	RPA m^2	TPO?
T67	Yew (Common)	Off	8.0	1	Yes	350.0	4-4-4-4	3.0	0.0	-	SM	None	On adjacent site	Good	Fair	20+	B1	4.2	55.0	-
T68	Bullace	On	4.5	20		180	2-2-2-2	0.5	0.0	-	EM	None	Multi stemmed tree	Good	Fair	20+	B1	2.2	15.0	-

GROUPS OF TREES

Ref	Species	On/off site	Height range (m)	No. of trees	Est diam?	Max stem diam (mm)	Av. Crown radius (m)	Avg. low crown height (m)	Life Stage	Special importance	General Observations	Health & vitality	Structural condition	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)	TPO?
G1	Ash, elm	On	14	2		360.0	4.0	2.0	SM	None	Close growing trees forming cohesive crown, ivy cover to ash stem	Good	Fair	20+	B2	4.3	-
G2	Ash, hawthorn	On	6-10	4	Yes	300.0	4.0	0.0	SM	None	Hedgerow trees within broad hedge, snagging overhead telecomm lines	Good	Fair	10+	C2	3.6	-
G3	Ash, field maple	On	8	6	Yes	280.0	3.0	1.5	SM	None	Hedgerow trees within broad hedge	Good	Fair	20+	B2	3.3	-
G4	Ash, field maple	On	10-12	3	Yes	500.0	4.5	2.0	SM	None	Hedgerow trees within broad hedge	Good	Fair	20+	B2	6.0	-
G5	Ash, elm	On	10	2	Yes	450	4.0	2.0	SM	None	Hedgerow trees adjacent to open drain	Good	Fair	20+	B2	5.4	-
G6	Elder, ash, hawthorn	On	5	12		140	3.5	0.0	SM	None	Self seeded around building	Fair	Fair	10+	C2	1.7	-
G7	Willow, blackthorn	On	6	20	Yes	90	4.0	0.25	SM	None	Area of wetland, predominantly willow	Good	Fair	20+	B2	1.1	-
G8	Willow	On	7.5	7	Yes	900	2.5	0.5	SM	None	7x willow, largest @900mm diameter - smallest @350mm diameter, in verge at edge of orchard	Fair	Fair	20+	B2	10.8	-
G9	Willow, hawthorn, elder	On	4.5-14	25		910	5.0	0.25	M	None	5x willow with thorn & elder understory, willow to far south of group showing crown dieback & established Ganoderma brackets to lower stem	Good	Fair	20+	B2	10.9	-
G10	White poplar, crack willow, hawthorn, elder	On	18	25	Yes	690	5.5	1.5	M	None	Predominately poplar with 1x willow, hawthorn & elder occur as understory, ivy cover to lower stems	Good	Fair	20+	B2	8.3	-
G11	Crack willow, hawthorn	On	12	4		340	5.0	0.5	EM	None	2x multi stemmed willow & 2x smaller hawthorn	Good	Fair	20+	B2	4.1	-
G12	Crack willow, hawthorn	On	12	8		330	5.0	0.5	EM	None	Multi stemmed willow & smaller	Good	Fair	20+	B2	3.9	-
G13	Hawthorn	On	4.5	2	Yes	90	2.5	0.0	EM	None	Self seeded hawthorn cluster, partially choked by brambles	Good	Fair	20+	B2	1.1	-

BS5837:2012 TREE SURVEY SCHEDULE

BANWELL BYPASS

PROJECT NO: 4660

SURVEYOR: DAVE HOLMES

CLIENT: TACP

SURVEY DATE: 23-24-25/11/2021

Barton Hyett Arboricultural Consultants

On/off Ref (m)	Species	site	Height range	No. of trees	Est diam?	Max stem diam (mm)	Av. Crown radius (m)	Avg. low crown height (m)	Life Stage	Special importance	General Observations	Health & vitality	Structural condition	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)	TPO?
G14	Hawthorn	On	5	10		110	1.5	0.0	SM	None	Hawthorn choked with brambles	Fair	Fair	10+	C2	1.3	-
G15	Ash, field maple, hawthorn, blackthorn	On	5-14	25		470	5.0	4.0	EM	None	Copse of predominantly ash (x8) with thorn & maple occurring as understory, localised pruning above road	Good	Fair	20+	B2	5.6	-
G16	Ash, field maple, wych elm, hawthorn, blackthorn	On	5-14	20		280	2.5	0.0	EM	None	Copse, flailed to clear road	Good	Fair	20+	B2	3.3	-
G17	Ash, hawthorn, field maple, blackthorn	On	5-12	15		440	4.5	1.0	EM	None	Copse of predominantly ash & maple with thorn occurring as understory, localised pruning above road, lower stems swathed in ivy	Good	Fair	20+	B2	5.3	-
G18	Lime, oak, sycamore, field maple, hazel, hawthorn, ash, beech, goat willow	Off	4-20	150		820	5.5	1.5	M	None	Surveyed group is part of a much larger arboricultural feature, southern boundary of surveyed group defined by woodland ride	Good	Fair	40+	A2	9.8	Yes
G19	Ash, goat willow	On	8	3		340	4.0	1.0	EM	None	Typical for species	Good	Fair	20+	B2	4.1	-
G20	Elm	Off	8	2		160	2.0	3.0	None	None	Dead standing trees	None	None	None	U	2.0	-
G21	Cypress	Off	5-10	6	Yes	250	3.0	0.25	SM	None	On adjacent site	Good	Fair	20+	B2	3.0	-
G22	Hawthorn, bullace	On	4	5		240	2.5	0.0	EM	None	Self seeded bullace around hawthorn, partially choked by brambles, old concrete fence posts within root plate, beneath 11kv overhead powerlines, dieback & mistletoe throughout upper crown of hawthorn	Fair	Fair	20+	B2	2.9	-
G23	Hawthorn	On	4.5	2	Yes	100	2.5	0.0	EM	None	Self seeded hawthorn cluster, completely choked by brambles	Fair	Fair	10+	C2	1.3	-
G24	Hawthorn	On	4	2		120	1.5	0.25	EM	None	Remnant parts of old hedge	Good	Fair	20+	B2	1.5	-
G25	Hazel, ash, goat willow, oak, hawthorn	On	3-5	35		110	2.0	0.0	SM	None	Low level scrub arising from clearance beneath 11kv overhead power lines & self seeded stems, area being colonised by brambles	Fair	Fair	10+	C2	1.3	Yes
G26	Sycamore, Norway spruce	Off	15-16	2	Yes	700	4.5	1.5	EM	None	On adjacent site	Good	Fair	20+	B2	8.4	-
G27	Ash, field maple, blackthorn, bullace, hawthorn, oak, spindle, elm	On	3-15	50		310	5.0	0.25	EM	None	Outgrown hedge forming copse	Good	Fair	20+	B2	3.7	-
G28	Sycamore, ash, cotoneaster, buddleia	On	3-15	20		220	3.5	0.25	EM	None	Copse on embankment between Castle Hill & Dark Lane, predominately ash & sycamore with other species occurring as understory	Fair	Fair	10+	C2	2.6	-

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SURVEYOR: DAVE HOLMES

CLIENT: TACP

SURVEY DATE: 23-24-25/11/2021

On/off Ref (m)	Species	site	Height range	No. of trees	Est diam?	Max stem diam (mm)	Av. Crown radius (m)	Avg. low crown height (m)	Life Stage	Special importance	General Observations	Health & vitality	Structural condition	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)	TPO?
G29	Ash, elm, hawthorn	On	5-14	6		560	4.5	1.0	EM	None	2x ash with canker throughout crowns growing on embankment above Dark Lane, lower stems swathed in ivy, other species occur as understory	Fair	Fair	10+	C2	6.7	-

HEDGES

Ref	Species	On/off site	Av. Height (m)	Av. width (m)	Av. Stem diam (mm)	Avg. low crown height (m)	Life Stage	General Observations	Health & vitality	Structural condition	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)
H1	Elm	On	1.5	2	80	0.0	EM	Maintained by flail	Good	Fair	20+	B2	1.0
H2	Hawthorn, elm	On	6.0	2	170	1.0	EM	Elm in decline	Fair	Fair	10+	C 2	2.0
H3	Hawthorn	On	6.0	4	230	0.3	EM	Outgrown hedge, low crown clearance over pavement	Good	Fair	20+	B2	2.8
H4	Hawthorn, elm	On	6.0	2	150	1.0	EM	Outgrown hedge	Good	Fair	20+	B 2	1.8
H5	Elm, elder, ash	On	1.5	2	70	0.0	EM	Maintained by flail, predominantly elm	Good	Fair	40+	B2	0.8
H6	Blackthorn, bullace, field maple, elm, ash	On	5.0	2.5	70	0.0	SM	Predominantly blackthorn thicket to west of H5	Good	Fair	20+	B 2	0.8
H7	Elm, elder, ash, hawthorn, hazel	On	2.0	1.5	70	0.0	EM	Maintained by flail, 11kv power lines run overhead	Good	Fair	40+	B2	0.8
H8	Elm, ash, hawthorn, field maple	On	1.5	2.0	70	0.0	EM	Maintained by flail	Good	Fair	40+	B2	0.8
H9	Buckthorn, hawthorn	On	1.5	2.0	70	0.0	EM	Maintained by flail	Good	Fair	40+	B2	0.8
H10	Hawthorn, elm, field maple, ash	On	1.5	2.0	70	0.0	EM	Maintained by flail	Good	Fair	40+	B2	0.8
H11	Field maple, elm, ash, blackthorn	On	12.0	2.0	450	1.0	EM	Outgrown hedge	Good	Fair	20+	B 2	5.4
H12	Elm, field maple, dogwood, holly	On	1.5	2.0	70	0.0	EM	Maintained by flail	Good	Fair	40+	B2	0.8
H13	Elm, field maple, hawthorn, dogwood, ash	On	1.5	2.0	70	0.0	EM	Maintained by flail	Good	Fair	40+	B2	0.8
H14	Hawthorn, blackthorn, dogwood, elder	On	2.0	2.0	70	0.0	EM	Maintained hedge	Good	Fair	40+	B2	0.8

BS5837:2012 TREE SURVEY SCHEDULE

BANWELL BYPASS

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SURVEYOR: DAVE HOLMES

CLIENT: TACP

SURVEY DATE: 23-24-25/11/2021

Barton Hyett Arboricultural Consultants

Ref	Species	On/off site	Av. Height (m)	Av. width (m)	Av. Stem diam (mm)	Avg. low crown height (m)	Life Stage	General Observations	Health & vitality	Structural condition	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)
H15	Elm, field maple	On	1.5	2.0	70	0.0	EM	Maintained by flail	Good	Fair	40+	B2	0.8
H16	Hornbeam, field maple, hazel, lime, alder	On	2.5	1.5	60	0.0	SM	New hedge around caravan site, gappy in places	Good	Fair	20+	B2	0.8
H17	Hornbeam	On	2.0	1.0	50	0.25	SM	Established as screening between caravan berths	Good	Fair	20+	B2	0.6
H18	Hornbeam	On	2.0	1.0	50	0.25	SM	Established as screening between caravan berths	Good	Fair	20+	B2	0.6
H19	Hornbeam	On	2.0	1.0	50	0.25	SM	Established as screening between caravan berths	Good	Fair	20+	B2	0.6
H20	Hornbeam	On	2.0	1.0	50	0.25	SM	Established as screening between caravan berths	Good	Fair	20+	B2	0.6
H21	Hornbeam	On	2.0	1.0	50	0.25	SM	Established as screening between caravan berths	Good	Fair	20+	B2	0.6
H22	Hornbeam	On	2.0	1.0	50	0.25	SM	Established as screening between caravan berths	Good	Fair	20+	B2	0.6
H23	Hornbeam	On	2.0	1.0	50	0.25	SM	Established as screening between caravan berths	Good	Fair	20+	B2	0.6
H24	Hornbeam	On	2.0	1.0	50	0.25	SM	Established as screening between caravan berths	Good	Fair	20+	B2	0.6
H25	Hornbeam	On	2.0	1.0	50	0.25	SM	Established as screening between caravan berths	Good	Fair	20+	B2	0.6
H26	Hornbeam	On	2.0	1.0	50	0.25	SM	Established as screening between caravan berths	Good	Fair	20+	B2	0.6
H27	Hornbeam	On	2.0	1.0	50	0.25	SM	Established as screening between caravan berths	Good	Fair	20+	B2	0.6
H28	Hawthorn, blackthorn, elm, field maple	On	2.5	2.0	70	0.0	EM	Maintained hedge	Good	Fair	40+	B2	0.8
H29	Hawthorn, blackthorn, elder, dogwood, elm, field maple	On	2.5	2.0	70	0.0	EM	Maintained hedge	Good	Fair	40+	B2	0.8
H30	Hawthorn, elm, elder	On	2.0	2.0	50	0.0	EM	Maintained hedge	Good	Fair	40+	B2	0.6
H31	Hawthorn, elm, elder, blackthorn, field maple, ash	On	2.0	2.0	50	0.0	EM	Maintained hedge, sporadic gaps	Good	Fair	40+	B2	0.6
H32	Elm, hawthorn, field maple, ash	On	1.5	2.5	60	0.0	EM	Maintained by flail, stems adjacent to telegraph poles have been allowed to grow unchecked	Good	Fair	40+	B2	0.8
H33	Elm, ash, elder, blackthorn, hawthorn	On	10.0	2.0	270	1.0	EM	Outgrown hedge, sides flailed with top growth left unchecked	Good	Fair	20+	B 2	3.2
H34	Elm, hawthorn, field maple, ash	On	1.5	2.5	60	0.0	EM	Maintained by flail, stems adjacent to telegraph poles have been allowed to grow unchecked	Good	Fair	40+	B2	0.8
H35	Elm, blackthorn, elder	On	1.5	2.0	50	0.0	EM	Maintained by flail, predominantly elm, 11kv power lines run overhead	Good	Fair	40+	B2	0.6
H36	Blackthorn, ash	On	1.5	3.0	50	0.0	EM	Maintained by flail, predominantly thorn	Good	Fair	40+	B2	0.6

BS5837:2012 TREE SURVEY SCHEDULE

BANWELL BYPASS

PROJECT NO: 4660

SURVEYOR: DAVE HOLMES

CLIENT: TACP

SURVEY DATE: 23-24-25/11/2021

Barton Hyett Arboricultural Consultants

Ref	Species	On/off site	Av. Height (m)	Av. width (m)	Av. Stem diam (mm)	Avg. low crown height (m)	Life Stage	General Observations	Health & vitality	Structural condition	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)
H37	Hawthorn, blackthorn, elm	On	1.5	2.5	50	0.0	EM	Maintained by flail	Good	Fair	40+	B2	0.6
H38	Hawthorn, blackthorn, ash	On	1.5	2.5	50	0.0	EM	Maintained by flail	Good	Fair	40+	B2	0.6
H39	Hawthorn, blackthorn	On	1.5	2.5	50	0.0	EM	Maintained by flail	Good	Fair	40+	B2	0.6
H40	Blackthorn, hawthorn, field maple, elder	On	1.5	2.5	50	0.0	EM	Maintained by flail	Good	Fair	40+	B2	0.6
H41	Elm, hawthorn, blackthorn, bullace, ash	On	12.0	5.5	280	0.0	EM	Outgrown hedge, sides flailed with top growth left unchecked	Good	Fair	20+	B 2	3.3
H42	Blackthorn, hawthorn, elm, bullace	On	4.0	3.0	60	0.0	EM	Unmaintained hedge, predominantly thorn	Good	Fair	40+	B2	0.8
H43	Elm, ash, field maple, elder, hawthorn, blackthorn	On	12.0	5.5	240	0.0	EM	Outgrown hedge	Good	Fair	20+	B 2	2.9
H44	Elm, hawthorn, blackthorn, field maple	On	2.0	1.5	50	0.0	EM	Maintained hedge	Good	Fair	40+	B2	0.6
H45	Elm, field maple, hawthorn	On	2.0	1.5	90	0.0	EM	Maintained hedge, sporadic gaps, 2x elm stems have developed into trees @8m in height	Good	Fair	20+	B2	1.1
H46	Elm, field maple, hawthorn, ash	On	2.0	1.5	90	0.0	EM	Maintained hedge, sporadic gaps	Good	Fair	20+	B2	1.1
H47	Hawthorn, willow	On	6.0	4.0	180	0.0	EM	Outgrown hedge, predominantly thorn, 2x willow topped @2.5m	Good	Fair	20+	B 2	2.2
H48	Hawthorn, elder, blackthorn, willow	On	2.0	1.5	60	0.0	EM	Maintained hedge, partially cooked by branches at western & eastern ends	Good	Fair	20+	B2	0.8
H49	Hawthorn, bullace	On	3.5	2.5	100	0.0	EM	Maintained hedge, sporadic gaps, sides flailed & top growth left unchecked	Good	Fair	20+	B2	1.3
H50	Hawthorn, elm	On	7.0	4.0	170	0.0	EM	Outgrown hedge	Good	Fair	20+	B 2	2.0
H51	Hawthorn, elm, bullace	On	6.0	4.0	110	0.0	EM	Outgrown hedge	Good	Fair	20+	B 2	1.3
H52	Hawthorn	On	5.0	3.5	80	0.0	EM	Outgrown remnant of hedge	Good	Fair	20+	B 2	1.0
H53	Hawthorn, ash	On	6.0	2.5	90	0.0	EM	Remnant section of hedge, sides flailed & top growth left unchecked, predominantly thorn, 1x ash to eastern end @8m in height	Good	Fair	20+	B 2	1.1
H54	Bullace, elder, willow, spindle, ash	On	8.0	4.0	250	0.0	EM	Outgrown hedge, predominantly thorn, with 4x multi stemmed crack willow	Good	Fair	20+	B 2	3.0
H55	Hawthorn, blackthorn	On	4.5	4.0	70	0.0	EM	Outgrown hedge, predominantly hawthorn	Good	Fair	20+	B 2	0.8

BS5837:2012 TREE SURVEY SCHEDULE

PROJECT NO: 4660

BANWELL BYPASS

SURVEYOR: DAVE HOLMES

CLIENT: TACP

SURVEY DATE: 23-24-25/11/2021

Ref	Species	On/off site	Av. Height (m)	Av. width (m)	Av. Stem diam (mm)	Avg. low crown height (m)	Life Stage	General Observations	Health & vitality	Structural condition	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)
H56	Hawthorn	On	2.0	1.0	60	0.0	SM	Sporadic flailed hedge made up of hawthorn & epicormic from black poplar (T10-T15)	None		10+	C2	0.8
H57	Elder	On	2.5	1.5	50	0.0	SM	Sporadic flailed hedge made up of elder bring choked by brambles	None		10+	C2	0.6
H58	Elm, willow, hawthorn	On	8.0	4.0	230	0.0	EM	Outgrown hedge choked with brambles	Good	Fair	20+	B 2	2.8
H59	Hawthorn	On	5.5	2.0	80	0.0	EM	Remnant part of hedge on tract of land between ditch & river, cursory inspection from boundary	Good	Fair	20+	B 2	1.0
H60	Hawthorn	On	2.5	1.0	60	0.0	SM	Sporadic hedge, on tract of land between ditch & river, cursory inspection from boundary	None		20+	B2	0.8
H61	Hawthorn, willow	On	5.5	2.0	80	0.0	EM	Sporadic outgrown hedge on tract of land between ditch & river, cursory inspection from boundary, 4x topped willow within hawthorn hedge	Good	Fair	20+	B 2	1.0
H62	Hawthorn, willow	On	6.0	5.0	110	0.0	EM	Outgrown hedge	Good	Fair	20+	B 2	1.3
H63	Hawthorn, blackthorn, elder	On	5.0	4.0	90	0.0	EM	Outgrown hedge	Good	Fair	20+	B 2	1.1
H64	Hawthorn, elder, willow	On	4.5	3.0	90	0.0	EM	Outgrown hedge, partially choked by brambles	Fair	Fair	10+	C 2	1.1
H65	Hawthorn, ash, white poplar, elder	On	5.5	3.5	100	0.0	EM	Outgrown hedge, choked with brambles to southern end	Good	Fair	20+	B 2	1.3
H66	Hawthorn, crack willow	On	2.0	1.5	60	0.0	EM	Sporadic hedge, maintained by flail	Good	Fair	20+	B2	0.8
H67	Hawthorn, crack willow	On	2.0	1.5	60	0.0	EM	Sporadic hedge, maintained by flail	Good	Fair	20+	B2	0.8
H68	Hawthorn, crack willow	On	2.0	1.5	60	0.0	EM	Sporadic hedge, maintained by flail	Good	Fair	20+	B2	0.8
H69	Hawthorn, goat willow	On	2.0	1.5	60	0.0	EM	Sporadic hedge, maintained by flail	Good	Fair	20+	B2	0.8
H70	Crack willow	On	3.0	2.0	50	0.0	EM	Maintained by flail	Good	Fair	20+	B2	0.6
H71	Hawthorn, crack willow, hawthorn	On	3.5	2.0	90	0.25	M	Sporadic gaps, historically flailed @1m, allowed to grow up to 1.5m then re-flailed, has not been cut in last growing season	Good	Fair	20+	B2	1.1
H72	Blackthorn, privet, hawthorn	On	2.0	1.5	50	0.0	M	Sporadic hedge	Good	Fair	10+	C2	0.6
H73	Blackthorn, willow	On	3.5	2.5	90	0.0	M	Maintained by flail, copiced willow stump to northern end of hedge	Good	Fair	20+	B2	1.1
H74	Hawthorn, dogwood, field maple, blackthorn	On	3.5	2.5	90	0.0	M	Maintained by flail	Good	Fair	40+	B2	1.1
H75	Hawthorn, field maple	On	3.5	2.0	70	0.0	M	Maintained by flail	Good	Fair	40+	B2	0.8

BS5837:2012 TREE SURVEY SCHEDULE

BANWELL BYPASS

PROJECT NO: 4660

SURVEYOR: DAVE HOLMES

CLIENT: TACP

SURVEY DATE: 23-24-25/11/2021

Barton Hyett Arboricultural Consultants

Ref	Species	On/off site	Av. Height (m)	Av. width (m)	Av. Stem diam (mm)	Avg. low crown height (m)	Life Stage	General Observations	Health & vitality	Structural condition	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)
H76	Hawthorn, elder, dogwood	On	4.0	2.0	70	0.0	M	Historically maintained by flail, hedge becoming neglected, ivy establishing within hedge	Good	Fair	40+	B2	0.8
H77	Hawthorn, blackthorn, elder	On	2.5	3.0	50	0.0	M	Maintained by flail	Good	Fair	20+	B2	0.6
H78	Hawthorn, blackthorn, ash	On	5.0	6.0	80	0.0	M	Outgrown hedge, predominantly thorn, with 2x ash, becoming choked with brambles, flailed to clear road & flailed on field side	Good	Fair	20+	B 2	1.0
H79	Hawthorn, blackthorn, willow	On	5.5	15.0	80	0.0	M	Outgrown hedge forming a thicket, predominantly thorn, with willow to centre, becoming choked with brambles, flailed to clear road & flailed on field side	Good	Fair	20+	B 2	1.0
H80	Hawthorn, hazel, blackthorn	On	2.0	1.5	60	0.0	M	Maintained by flail, sporadic gaps to centre	Good	Fair	40+	B2	0.8
H81	Hawthorn, blackthorn, bullace, ash, elm, dogwood, sycamore, field maple	On	6.0	6.0	240	0.0	M	Outgrown hedge, flailed to clear field sides	Good	Fair	20+	B 2	2.9
H82	Elm, field maple, blackthorn	On	2.5	1.5	50	0.0	M	Sporadic hedge, predominantly elm, established kerbside	Good	Fair	10+	C2	0.6
H83	Ash, elm, dogwood, sycamore, hazel, elder, field maple	On	4.5	2.5	70	0.0	M	Maintained by flail	Fair	Fair	20+	B2	0.8
H84	Blackthorn, dogwood, hazel	On	3.0	1.5	90	0.0	M	Laid hedge, maintained by flail	Fair	Fair	20+	B2	1.1
H85	Hawthorn, sycamore, bullace, blackthorn	On	5.0	3.0	220	0.0	EM	Outgrown hedge, mature hawthorn with other species early mature, flailed to clear road & field side, mistletoe within hawthorn crown	Good	Fair	20+	B 2	2.6
H86	Hawthorn, dogwood	On	2.5	2.5	60	0.0	EM	Becoming choked by brambles	Good	Fair	20+	B 2	0.8
H87	Elm, sycamore, ash, elder, dogwood, hawthorn, hazel	On	4.0	2.5	90	0.0	M	Maintained by flail	Good	Fair	20+	B2	1.1
H88	Hornbeam, beech, field maple, hazel	On	2.5	1.5	70	0.0	M	Maintained hedge, predominantly hornbeam	Good	Fair	40+	B2	0.8
H89	Ash, elm, hawthorn	On	5.0	3.0	260	0.0	EM	Outgrown hedge, stems topped for overhead powerlines	Good	Fair	20+	B 2	3.1
H90	Hawthorn, elm, elder	On	2.0	1.5	50	0.0	EM	Maintained by flail, becoming choked by brambles	Good	Fair	20+	B2	0.6
H91	Bullace, blackthorn, elder, hawthorn, dogwood, spindle, field maple, hazel, ash	Off	3.0	5.0	70	0.0	EM	Flailed at 2 different heights - from roadside & field side; becoming choked by brambles	Good	Fair	20+	B 2	0.8
H92	Laurel	Off	3.0	1.5	60	0.0	SM	Boundary hedge	Good	Fair	10+	C2	0.8

BS5837:2012 TREE SURVEY SCHEDULE

PROJECT NO: 4660

BANWELL BYPASS

SURVEYOR: DAVE HOLMES

CLIENT: TACP

SURVEY DATE: 23-24-25/11/2021

Ref	Species	On/off site	Av. Height (m)	Av. width (m)	Av. Stem diam (mm)	Avg. low crown height (m)	Life Stage	General Observations	Health & vitality	Structural condition	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)
H93	Laurel	Off	3.0	1.5	60	0.0	SM	Boundary hedge	Good	Fair	10+	C2	0.8
H94	Dogwood, buddleia, hazel, sycamore, elder, holly, ash, privet	On	3.5	1.0	50	0.0	SM	Growing in thin verge on Castle Hill against fence, appears to have been flailed	Fair	Fair	10+	C2	0.6

IMAGE 1: A view looking west at T10 - T15.

IMAGE 2: A general view looking north from Towerhead Road, with T48 & T49 labelled.

IMAGE 3: A view looking east along Towerhead Road T52 - T54 shown on the north side of the road and G18 to the south side of the road.

IMAGE 4: A view looking east along East Street with T60 labelled.

IMAGE 5: A general view looking north (taken from the western most point of G25).

IMAGE 6: A view looking south along Dark Lane with T64 labelled.

- The tree survey was carried out with reference to the methodology set out in BS5837:2012 'Trees in relation to design, demolition and construction – Recommendations'.
- Trees were surveyed individually or as groups where it was considered that they had grown together to form cohesive arboricultural features either aerodynamically (trees that provide companion shelter), visually (e.g. avenues or screens) or culturally (including for biodiversity). However, where it was considered that there was an arboricultural need to differentiate between attributes trees within groups and / or woodlands were also surveyed as individuals.
- The full tree survey findings are recorded in the following tree survey schedule.
- Within the tree survey schedule, each surveyed TREE (T), GROUP (G), HEDGEROW (H), WOODLAND (W) or SHRUB MASS on or adjacent to the site is given a reference number which refers to its position on the tree survey and constraints plan.
- TREE SPECIES are listed by common name.

The **DIMENSIONS** taken are:

- STEM-No. Indicates the number of main stems (i.e. whether the trunk divides at or below 1.5m; (Used in the calculation of RPA.) "m-s" = Multi-stemmed.
- STEM DIAMETER (measured in millimetres), obtained from the girth measured at approx. 1.5m. For trees with 2 to 5 sub-stems a notional figure is derived from the sum of their cross-sectional areas. For multi-stemmed trees, the notional diameter may be estimated on the basis of the average stem size x the number of stems. (A notional diameter may be estimated where measurement is not possible.)
- HEIGHT (measured in metres), recorded to the nearest half metre for dimensions up to 10m and to the nearest whole metre for dimensions over 10m.
- The CROWN SPREAD, taken at the four cardinal points to derive an accurate representation of the tree crown, recorded up to the nearest half metre for dimensions up to 10m and to up the nearest whole metre for dimensions over 10m.
- CROWN CLEARANCES are expressed both as existing height above ground level of first significant branch along with its direction of growth (e.g. 2.5m-N), and also in terms of the overall crown e.g. the average height of the crown above ground level. Measurements are recorded to the nearest half metre for dimensions up to 10m and to the nearest whole metre for dimensions over 10m.
- ESTIMATES. Where any measurement has had to be estimated, due to inaccessibility for example, this is indicated by a "#" suffix to the measurement as shown in the tree survey schedule.

LIFE STAGE is defined as follows:

Y Young: Normally stake dependent, establishing trees. Should be growing fast, usually primarily increasing in height more than spread but as yet making limited impact upon the landscape.

SM Semi-mature: Established young trees, normally of good vigour and still increasing in height but beginning to spread laterally. Beginning to make an impact upon the local landscape and environment. Semi-Mature (still capable of being transplanted without preparation, up to 30cm girth and not yet sexually mature).

EM Early-mature: Not yet having reached 75% of expected mature size. Established young trees, normally of good vigour and still increasing in height but beginning to spread laterally. Beginning to make an impact upon the local landscape and environment.

M Mature: Well-established trees, still growing with some vigour but tending to fill out and increase spread. Bark may be beginning to crack and fissure. In the middle half of their safe, useful life expectancies.

LM Late-Mature: In full maturity but possibly beyond mature and in a state of natural decline). Still retaining some vigour but any growth is slowing.

A Ancient: A tree that has passed beyond maturity and is old/aged compared with other trees of the same species. Typically having a very wide trunk and a small canopy.

- **PHYSIOLOGICAL CONDITION (HEALTH & VITALITY):**

Essentially a snapshot of the general health of the tree based upon its general appearance, it's apparent vigour and the presence or absence of symptoms associated with poor health, physiological stress etc. (Fungal infections may be recorded here but decay giving rise to structural weakness would be recorded under 'Structural Condition' – see next parameter):

Good: No significant health issues.
Fair: Indications of slight stress or minor disease (e.g. the presence of minor dieback/deadwood or of epicormic shoot growth).
Poor: Significant stress or disease noted; larger areas of dieback than above.
Dead: (or Moribund).

- **STRUCTURAL CONDITION:**

Defects affecting the structural stability of the tree including decay, significant dead wood, root-plate instability or significant damage to structural roots, weak forks (e.g. those where bark is included between the members) etc. Classified as:

Good: No obvious structural defects: basically sound.
Fair: Minor, potential or incipient defects.
Poor: Significant defect(s) likely to lead to actual failure in the medium to long-term.
Dead: (or Moribund).

- **ESTIMATED REMAINING CONTRIBUTION:**

An estimate of the length of time in years that a tree might be expected to continue to make a useful contribution to the locality at an acceptable level of risk (based on an assumption of continued routine maintenance):

- Less than 10 years
- 10+ years
- 20+ years
- 40+ years

- **SPECIAL IMPORTANCE:**

Trees that are particularly notable as high value trees such as ancient trees/woodland or veteran trees. Such trees may be regarded as the principal arboricultural features of a site and pose a significant constraint to potential development.

An *ancient* tree is one that has passed beyond maturity and is very old compared with other trees of the same species. Very few trees reach the ancient life-stage.

Veteran trees are often very old but not necessarily so; they may be regarded as 'survivors' that have developed some of the characteristic features of an ancient tree but have not necessarily lived as long. All ancient trees are veterans but not all veteran trees are ancient.

An ancient woodland is an area that has been wooded continuously since at least 1600 AD. It includes ancient semi-natural woodland (ASNW), plantations on ancient woodland sites (PAWS) and ancient replanted woodland (ARW)

- **QUALITY CATEGORY:**

Trees are classed as category U, A, B or C, based on criteria given in BS5837:2012; summary definitions as follows (see BS5837 for further details). Categories A, B and C are further characterised by the use of sub-categories, which attempt to identify what aspect of the tree is the main source of its perceived value, These are:

(1) arboricultural qualities
(2) landscape qualities, and
(3) cultural, historic or ecological/conservation qualities.

Examples of these qualities for each of the three categories are given below, although these are indicative only. Note: This is NOT a health and safety classification; the classification does not take into account any requirement for remedial tree care or ongoing maintenance apart from that which may affect the trees' general suitability for retention.

CATEGORY A: HIGH QUALITY:

Trees or groups whose retention should be given a particularly high priority within the design process. Normally with an expected useful life expectancy of at least 40 years.

A1: Notably fine specimens; rare or unusual specimens; essential component trees within groups, semi-formal or formal plantings (e.g. dominant trees within an avenue etc.).

A2: Trees, groups or woodlands of particular visual importance as landscape features.

A3: Trees, groups or woodlands of particular significance by virtue of their conservation, historical, commemorative or other value (e.g. veteran trees or wood pasture.)

CATEGORY B: MODERATE QUALITY:

Trees or groups of some importance with a likely useful life expectancy in excess of 20 years. Their retention would be desirable; selective removal of certain individuals may be acceptable but only after full consideration of all alternative courses of action.

B1: Fair quality but not exceptional; good specimens showing some impairment (e.g. remediable defects, minor storm damage or poor past management.)

B2: Acceptable trees situated such as to have little visual impact within the wider locality. Also numbers of trees, perhaps in groups or woodlands, whose value as landscape features is greater collectively than would warrant as individuals (such that the selective removal of an individual would not impact greatly upon the trees' overall, collective value).

B3: Trees, groups or woodlands with clearly identifiable conservation or other cultural benefits.

CATEGORY C: LOW QUALITY:

Trees or groups of rather low quality, although potentially capable of retention for at least approx. 10 years. Also small trees with stems below 15cm diameter.

Potentially retainable, but not of sufficient value to be regarded as a significant planning constraint.

C1: Unremarkable trees of very limited merit or of significantly impaired condition.

C2: Trees offering only low or short-term landscape benefits; also secondary specimens within groups or woodlands whose loss would not significantly diminish their landscape value.

C3: Trees with extremely limited conservation or other cultural benefit.

CATEGORY U:

Trees likely to prove to be unsuitable for retention for longer than 10 years should any significant increase in site usage arise as a result of development.

E.g. dead or moribund trees; those at risk of collapse or in terminal decline; trees that will be left unstable by other essential works such as the removal of nearby category U trees; trees infected by pathogens that could materially affect other trees; low quality trees that are suppressing better specimens.

(Category U trees may have conservation values that it might be desirable to preserve. This category may also include trees that should be removed irrespective of any development proposals.)

- **ROOT PROTECTION AREA (RPA):**

These are normally represented as a circle centred on the base of each tree stem with a radius of 12 times stem diameter, measured at 1.5m above ground level. The shape of the RPA may be altered where site conditions dictate that there are sound reasons to do so.

- **VETERAN OR ANCIENT TREE BUFFER (VTB/ATB)**

In line with the Standing Advice produced by the Forestry Commission and Natural England this is a buffer zone (in metres) around an ancient or veteran tree that should be at least 15 times larger than the diameter of the tree. The buffer zone should be 5m from the edge of the tree's canopy if that area is larger than 15 times the tree's stem diameter.

- **ANCIENT WOODLAND BUFFER (FOR ASNW, PAWS OR ARW)**

In line with the Standing Advice produced by the Forestry Commission and Natural England this is a buffer zone of at least 15 metres to avoid root damage. Where assessment shows other impacts are likely to extend beyond this distance, a larger buffer zone may be required.

THE IMPORTANCE OF TREES

Wider benefits:

There is a growing body of evidence that trees bring a wide range of benefits to the places people live.

Some *Economic* benefits of trees include:

- Trees can increase property values
- As trees grow larger, the lift they give to property values grows proportionately
- They can improve the environmental performance of buildings by reducing heating and cooling costs, thereby cutting bills
- Mature landscapes with trees can be worth more as development sites
- Trees create a positive perception of a place for potential property buyers
- Urban trees improve the health of local populations, reducing healthcare costs

Some *Social* benefits of trees include:

- Trees help create a sense of place and local identity
- They benefit communities by increasing pride in the local area
- They can create focal points and landmarks
- They have a positive impact on people's physical and mental health
- They can have a positive impact on crime reduction

Some *Environmental* benefits of trees include:

- Urban trees reduce the 'urban heat island effect' of localised temperature extremes
- They provide shade, making streets and buildings cooler in summer
- They help remove dust and particulates from the air
- They help to reduce traffic noise by absorbing and deflecting sound
- They help to reduce wind speeds
- By providing food and shelter for wildlife they help increase biodiversity
- They can reduce the effects of flash flooding by slowing the rate at which rainfall reaches the ground
- They can help remediate contaminated soil

On new development sites:

Trees bring many benefits to new development. Where retained successfully they can form important and sustainable elements of green infrastructure, contribute to urban cooling and reduce energy demands in buildings. Their importance is acknowledged in relation to adaptation to the effects of climate change. Other benefits brought by trees include:

- increasing property values;
- visual amenity
- softening, complementing and adding maturity to built form
- displaying seasonal change
- increasing wildlife opportunities in built-up areas
- contributing to screening and shade
- reducing wind speed and turbulence

NATIONAL PLANNING POLICY

The National Planning Policy Framework 2021 (NPPF paragraph 180) states that, when determining planning applications, local planning authorities should apply the following principle:

c) '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.'

In this respect the following definitions apply:

'Ancient woodland: An area that has been wooded continuously since at least 1600 AD. It includes ancient semi-natural woodland and plantations on ancient woodland sites (PAWS)', and

'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.'

Note: Further information from the National Planning Policy Guidance Suite and Standing Advice is provided in the design guidance section.

Other paragraphs of the NPPF 2021 of relevance to this report are:

Paragraph 131: *'Trees make an important contribution to the character and quality of urban environments, and can also help mitigate and adapt to climate change. Planning policies and decisions should ensure that new streets are tree-lined, that opportunities are taken to incorporate trees elsewhere in developments (such as parks and community orchards), that appropriate measures are in place to secure the long-term maintenance of newly-planted trees, and that existing trees are retained wherever possible. Applicants and local planning authorities should work with highways officers and tree officers to ensure that the right trees are planted in the right places, and solutions are found that are compatible with highways standards and the needs of different users.'*

Paragraph 174: *'Planning policies and decisions should contribute to and enhance the natural and local environment by:*
b) recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of the best and most versatile agricultural land, and of trees and woodland.'

- **STATUTORY CONTROLS**

Statutory tree protection

Works to trees which are covered by Tree Preservation Orders (TPOs) or are within a Conservation Area (CA) require permission or consent from the Local Planning Authority. Where information is available on any Statutory designations such as this they are identified within the summary table in Section 1 and on the Tree Survey and Constraints Plan at Section 2.

Notwithstanding specific exceptions and in general terms, a TPO prevents the cutting down, uprooting, topping, lopping, wilful damage or wilful destruction of protected trees or woodlands without the prior written consent of the LPA.

Penalties for contravention of a TPO tend to reflect the extent of damage caused but can, in the event of a tree being destroyed, result in a fine of up to £20,000 if convicted in a Magistrates' Court, or an unlimited fine is the matter is determined by the Crown Court.

Similarly, and again notwithstanding specific exceptions, it is an offence to carry out any works to a tree in a Conservation Area with a trunk diameter greater than 75mm diameter at 1.5 height without having first provided the LPA with 6 weeks written notification of intent to carry out the works.

On many non-residential sites (excluding specific exemptions) there is also a statutory restriction relating to tree felling that relates to quantities of timber that can be removed within set time periods. In basic terms, it is an offence to remove more than 5 cubic metres of timber in any one calendar quarter without having first obtained a felling licence from the Forestry Commission.

Any proposed tree works that are planned to be carried out on site must be carried out in accordance with the statutory controls outlined. Therefore, we recommend that a further check is made with the LPA before any tree works are carried out.

Statutory Wildlife Protection

Although preliminary visual checks from ground level of likely wildlife habitats are made at the time of surveying, detailed ecological assessments of wildlife habitats are not made by the arboriculturist and fall outside of the scope for this report.

Trees which contain holes, splits, cracks and cavities could potentially provide a habitat for protected species such as bats in addition to birds and small mammals. It is advised that in some instances specialist ecological advice may be required. This may result in tree works being carried out following a detailed climbing inspection to the tree to ensure that protected species or their nests/roosts are not disturbed. If any are found, the site manager, site owner or consulting arboriculturist should be informed and appropriate action taken as recommended by the appointed Ecologist or the relevant Statutory Nature Conservation Organisation (SNCO): Natural England, Scottish Natural Heritage or Natural Resources Wales.

It is advised that tree/hedgerow works are carried out with the understanding that birds will generally nest in trees, hedges and shrubs between March and August. This time period only provides an indication of likely nesting times and as such diligence is required when undertaking tree works at all times.

Irrespective of the time of year and other than any actions approved under General Licence, it is an offence to intentionally kill, injure or take any wild bird or to intentionally take, damage or destroy the nest or eggs of any wild bird. Ideally, tree operations should be avoided during the likely bird nesting period. However, any tree works should always only be carried out following a preliminary visual check of the vegetation.

For information, the Wildlife and Countryside Act 1981 (as amended), The Countryside and Rights of Way Act 2000 (as amended) and the Conservation of Habitat and Species Regulations 2010, form the basis of the statutory legislation for flora and fauna in England and Wales. A different legislative framework applies in Scotland and Northern Ireland.

Any proposed tree works that are planned to be carried out on site must be carried out in accordance with any relevant statutory controls, outlined above.

DESIGN GUIDANCE

Approach

The approach adopts the guidelines set out in the British Standard BS 5837:2012 Trees in relation to design, demolition and construction – Recommendations. The process is broken down to coordinate with the key elements within both the RIBA Plan of Work (2013) and British Standard 5837:2012 as set out in the table below:

Information Stage	RIBA Stage	BS5837:2012
Stage A – Tree Survey	2: Concept	4: Feasibility
Stage B – Arboricultural Impact Assessment	3: Developed design	5: Proposals
Stage C – Arboricultural Method Statement	4: Technical design	6: Technical Design
Stage D – Arboricultural Site Supervision	5: Construction	7: Demolition and construction

A hierarchical approach is adopted in order to achieve optimum use of the site and location of built structures. This is set out below:

Avoid

The starting point of Site layout design should be to avoid the RPA of retained trees and provide suitable clearance from above ground constraints [tree canopies]. Where possible building lines should be at least 2m outside the RPA to provide working space for construction. However, protection measures can be taken if such clearance is not achievable.

Mitigate

Where intrusion within the RPA is unavoidable then its impact on the tree can be mitigated by specialist measures:

Foundations that avoid trenching e.g. screw piles, suspended floor slabs or casting at ground level for lightweight structures such as bin and cycle stores.

Limited use may be made for parking, drives or hard surfaces within the root protection areas, subject to advice from a qualified arboriculturist. Cellular confinement systems that enable hard surfaces to be built above existing soil levels are acceptable methods subject to site-specific soil conditions.

Service runs that cannot be routed outside the RPA(s) can be installed by, for example, thrust boring, directional drilling, air excavation or hand digging. These operations often require supervision by the project arboriculturist.

Compensate

Replacement planting can ensure the continuity of tree cover where tree removal is unavoidable or desirable. Off-site provision may be considered in some circumstances but this will require negotiation with the local planning authority.

Considerations:

For proposed residential developments, consideration must be given to numerous factors future tree growth and orientation.

- **Tree constraints**

Root Protection Areas:

With reference to BS5837:2012, a root protection area (RPA) is defined as “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 should be treated as a priority”. “**The default position [when considering design layout in relation to RPAs] should be that structures are located outside the RPAs of trees to be retained**”.

BS5837:2012 states (4.6.2) that, “where pre-existing site conditions or other factors indicate that rooting has occurred asymmetrically, a polygon of equivalent area should be produced.” The BS goes on to state that, “modifications to the shape of the RPA should reflect a soundly based arboricultural assessment of likely root distribution,” and that any deviation from the original circular plot should take into account:

- Morphology and disposition of roots;
- topography and drainage;

- soil type and structure;
- the likely tolerance of the tree to root damage/disturbance.

Additional buffer zones beyond the RPA:

The following text is taken from the Standing Advice produced by the Forestry Commission and Natural England as included in the National Planing Policy Guidance:

'A buffer zone's purpose is to protect ancient woodland and individual ancient or veteran trees. The size and type of buffer zone should vary depending on the scale, type and impact of the development'.

Ancient woodland buffer:

'For ancient woodlands, you should have a buffer zone of at least 15 metres to avoid root damage. Where assessment shows other impacts are likely to extend beyond this distance, you're likely to need a larger buffer zone. For example, the effect of air pollution from development that results in a significant increase in traffic'.

Ancient and veteran tree buffer:

'A buffer zone around an ancient or veteran tree should be at least 15 times larger than the diameter of the tree. The buffer zone should be 5m from the edge of the tree's canopy if that area is larger than 15 times the tree's diameter'.

Above ground:

Above ground constraints posed by trees describe the capacity for trees to have an overbearing or dominating effect on new developments; usually post occupancy. Typical above ground constraints include a number or combination of inconveniences including shading, branch spread, movement of trees during strong winds and so on. If not adequately considered, above ground constraints can lead to repeated requests to fell or heavily prune retained and protected trees.

Shade:

Adverse shading and blocked views from windows raise concerns for incoming residents, which may lead to pressure to fell or remove trees in the future. Wherever possible it is advisable to arrange fenestration away from tree canopies to lessen the conflict, or increase window size to accommodate ambient light.

Conversely, appropriate designed development can use existing or new trees to create necessary and welcome shade and screening.

As part of the adopted approach the above considerations and constraints are assessed cumulatively in order to provide clear and site-specific advice on the areas of a site most suitable for the location of development.

Dependent on the site and nature of the proposed development, the Tree Survey and Constraints Plans may show the following:

Recommended Developable area - an advisory area defined in order to minimise arboricultural impacts using standard approaches to construction. Restricting proposed development to this area will limit the risk of harm to retained trees and of the Local Planning Authority objecting to the proposed development. It may be possible to propose development outside of this area but specific 'low impact' construction techniques may be needed recommended.

Recommended Buffer to development - similar to the Recommend Developable Area but defined as a line marking a suitable buffer to retained trees. More commonly used on large sites or sites where the presence of trees is localised.

- **Tree Opportunities**

Depending on the scale of developments existing trees can often provide opportunities to enhance the existing arboricultural resource of a site by bringing it into good management or by putting in place remedial measures e.g. soil amelioration.

Appropriately designed new tree planting is extremely important in maintaining healthy and sustainable tree populations. For the reasons highlighted, new trees can bring many benefits to new developments. It is critical to the establishment of new tree planting that the locations, species and specification of new trees is appropriate. Subsequently the sourcing of high-quality stock, suitable planting and the provision of post planting maintenance are essential to allow new trees to establish and to allow them to mature.

HOW TREE DAMAGE CAN OCCUR

Above the ground

Damage can occur as a result of knocks and scuffs, breakages of branches and/or tree trunks. This is often but not always associated with machine operations, groundworks excavations, tele handlers, high sided vehicles and crane use. Other forms of above ground damage include fixings to trunk and unauthorised cutting back of branches. Wounds will harm a tree's health and shorten its life by letting in disease-causing organisms.

Below the ground

It is often not appreciated that the majority of most tree roots are generally located within the top 600mm of the ground. On this basis it needs to be understood that damage to roots can occur in three ways:

- Root severance can occur as a result of, for example, soil stripping during site clearance or excavations.
- Root dieback and death can result from compaction of the soil. Compaction can occur as a result of vehicle weight, weight of stored materials or increased pedestrian access. Compaction crushes out soil pore space and prevents tree respiration from occurring (respiration requires gas exchange between the ground and the atmosphere). Compacted soil is denser and therefore inhibits/prevents any further new root growth.
- Pollution of the soil with chemicals such as oil or cement washings can destroy the soil environment, making it inhospitable for the tree cause causing it stress.

The effects of these impacts can be disfiguring to a tree's appearance and also weaken a tree making it more liable to attack by pest and diseases. In addition, root damage or death results in corresponding decline above the ground with dieback occurring within the tree crown.

The effects of damage to trees generally take some time to become fully apparent. In many cases, damaged trees decline slowly after the completion of a new development, until they eventually need to be removed due to ill health.

Tree protection barriers and load distributing 'no-dig' paths are specified in order to prevent soil compaction from taking place.

GENERAL SITE RULES FOR TREE PROTECTION

Do not independently carry out any activity that is at odds with the site scheme of tree protection. This is contained within an approved Arboricultural Method Statement (AMS) and accompanying Tree Protection Plan.

In simple terms: do not carry out any work within any Construction Exclusion Zone (CEZ) without prior liaison with the Project Arboriculturist and written authorisation from the Local Planning Authority.

Within the CEZ:

- No mixing of cement
- No soil/turf stripping, raising/lowering of ground levels (unless advised), deposit or excavation of soil or rubble
- No excavations for services or installation of services
- No storage of materials, machinery fuel, chemicals or other materials of any other description
- No parking/use of tracked or wheeled machinery
- No siting of temporary structures including hard standing areas, portaloos, site huts
- No lighting of fires or disposal of liquids
- Fires on site should be avoided if possible. Where they are unavoidable, they must not be lit in a position where heat could damage foliage or branches. Fires must be a minimum of 20m from the trunk of any retained tree or the centre line of any hedgerow to be retained
- No signs, cables, fixtures or fittings of any other description shall be attached to any part of a retained tree

Barton Hyett
Arboricultural Consultants

TREE AWARENESS – SITE INDUCTION

SITE NAME:……..

DATE OF INDUCTION:…….

Trees are an important part of this development. Retained trees must be kept undamaged so that they can fully benefit the finished project well into the future. All persons working on this site have a responsibility to be aware of trees and to abide by tree protection procedures.

How trees can be damaged – think roots!

Above the ground – contacts and impacts with branches and trunk (machine operations eg tele-handlers, high-sided vehicles, crane use, fixings to trunk, unauthorised cutting back of branches)

Below the ground – root severance (eg soil stripping during site clearance, excavations) and root damage resulting from compaction of soil near trees (eg vehicles, pedestrian, storage of materials). Effects of root damage take time to become obvious, but will result in disfiguring dieback of leaves and branches, or even tree death.

Tree protection procedures

Provided that the simple steps are followed most tree protection is straightforward:

- Stay out of tree Construction Exclusion Zones (CEZs). These are the areas of ground surrounding retained trees that are protected by barriers. If you need to go into a CEZ, you must first gain authorisation from the Site Manager
- No construction activity of any description within CEZs, eg soil stripping, cement mixing, services installation, storage of materials etc
- No fires within 20m of trunk of any retained tree
- If authorised to work within a CEZ, work to the Arboricultural Method Statement, eg demolition, construction, landscaping works etc
- If damage occurs, inform the Site Manager.

Remember

All trees on the site are protected by planning conditions. Many trees on the site may also be legally protected by Tree Preservation Order (TPO) or Conservation Area status

Planning Authority enforcement action needs to be avoided:

- ‘Breach of Conditions’ notices can prevent a site from being signed-off.
- ‘Temporary Stop Notices’ halt site operations and result in associated high costs.
- Wilful damage/destruction of TPO/Conservation Area trees can result in company and/or individual prosecutions - fines can me anything up to £20,000 (County Court fines can be higher). Remember that fines apply to the person committing the offence as well as the site owner and main contractors!

Be aware of tree protection and stick to the procedures. Tree protection is straightforward. If in doubt – ask!

I have received site induction in tree awareness and tree protection procedures

PRINT NAME: ……

SIGN: ……..

DATE: …….

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