West Yorkshire Combined Authority

TRANSFORMING CITIES FUND DEWSBURY BUS STATION

Arboricultural Assessment Report

DECEMBER 2021

PUBLIC

West Yorkshire Combined Authority

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Arboricultural Assessment Report

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1 INTRODUCTION

1.1 BACKGROUND

1.1.1 WSP UK Limited (WSP) was commissioned by West Yorkshire Combined Authority to undertake an Arboricultural Constraints Assessment; comprising an arboricultural walkover survey, of Dewsbury Bus Station. The arboricultural survey focused primarily on the footprint of the bus station, referred to as the 'Site' as shown in **Figure 2-1.**

1.1.2 The Site is centred on British National Grid Reference SE24402153 and is located within Dewsbury Town Centre. The 'Survey Area' is defined as all arboricultural features located inside or along the red line boundary of the Site. Where trees were located beyond but in close proximity to the Site, these were also surveyed.

1.1.3 The Transforming Cities Fund (TCF) comprises a £317m programme of investment that aims to deliver a transformational programme of new infrastructure and help create a step change in travel across the Leeds City Region (LCR). West Yorkshire Combined Authority (WYCA), on behalf of the LCR, submitted a Strategic Outline Business Case (SOBC) funding bid to the Department for Transport (DfT) under the TCF programme in November 2019. The SOBC detailed the development of 22 packages of schemes across the city region, identified to achieve the LCR TCF vision and programme objectives as outlined below.

1.1.4 The West Yorkshire Combined Authority's TCF Vision:

"to support delivery of inclusive growth across the Leeds City Region, through an innovative and coordinated walking, cycling and bus package, which provides genuine sustainable and healthy travel options for our communities along our corridors of greatest economic need, and transforms accessibility from new development sites and accommodates growth at key public transport hubs."

1.1.5 The vision has shaped the TCF objectives which are:

- Enabling inclusive growth – "*To enable as many people as possible to contribute to and benefit from economic growth and contribute to improved health and wellbeing of our residents"*.
- Boosting productivity – "*Working with businesses and universities to close the productivity gap, create thousands of jobs and add substantially to our economy."*
- Supporting clean growth – "*Achieving our target for a net zero carbon economy by 2038 through lowering carbon emissions and taking advantage of new innovations to create jobs and growth*."
- Delivering 21st century transport – "*Creating a transport system which addresses the challenges we face around capacity, connectivity, sustainability and air quality."*

1.1.6 The Dewsbury Bus Station Scheme (hereafter referred to as the 'Proposed Scheme') will be funded from the TCF through sub-package interventions.

1.1.7 The Proposed Scheme through a package of targeted interventions, will seek to contribute to the fulfilment of the TCF vision, in terms of better connecting people through affordable and sustainable transport measures. The Proposed Scheme will incorporate active travel corridors, cycling infrastructure, and pedestrian facilities. The final set of confirmed options are still to be finalised but will likely include measures such as strategic cycle routes, crossing upgrades, junction reconfiguration and bus priority measures.

1.1.8 PROJECT BACKGROUND

1.1.9 The Proposed Scheme consists of several proposals to improve the facility for passengers including:

- Refurbishment of the bus station building to a higher standard (internal concourse);
- Building entrance improvements including glazing and a proposed atrium area to improve the sense of place;
- Strengthening signage and wayfinding to improve integration and accessibility;
- Reconfiguration of the bus apron area to improve safety and efficiency;
- Landscaping and boundary improvements;
- Sustainability improvements to contribute to carbon reduction and energy efficiency;
- Possible green route through the site to improve pedestrian linkages; and
- Integration with Kirklees Aldams Road and South Street proposals

1.2 SCOPE OF THE REPORT

1.2.1 The scope and level of detail included within this report is commensurate with that required for the adequate consideration of arboricultural features as part of informing and influencing the design of the Proposed Scheme in relation any significant arboricultural constraints identified.

1.2.2 The walkover survey and assigning of quality categories was carried out in accordance with *British Standard BS 5837:2012 Trees in relation to design, demolition and construction – Recommendations* (BS 5837). The BS 5837 '*gives recommendations and guidance on the relationship between trees and the design, demolition and construction process. It sets out the principles and procedures to be applied to achieve a harmonious and sustainable relationship between trees and structures*[1]'.

1.2.3 The BS 5837 does not provide explicit parameters for measuring the sensitivity of an arboricultural feature nor does it provide a methodology for the classification of effects. However, it does provide guidance on how to assess the quality of an arboricultural feature and further recommends an evaluation of impacts, both direct and indirect.

1.2.4 This report and its appendices therefore provide an arboricultural appraisal intended to demonstrate to the local planning authority, Kirklees Council, that trees have been properly considered throughout the design of the Proposed Scheme.

1.3 VALIDITY PERIOD

1.3.1 Trees are dynamic organisms which are influenced by a variety of environmental variables and whose health and condition can rapidly change. Any recommendations made within this report are valid for a period of 24 months from the date of survey, when any site conditions change or pruning or other works unspecified in the report are carried out to, or affecting, the subject trees, whichever is the sooner.

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[1] British Standards Institute. 2012. *BS 5837: 2012 Trees in relation to design, demolition and construction – Recommendations*. London: BSI.

1.3.2 Provisional Tree Preservation Orders (TPO) may be made whenever a local planning authority deems it appropriate with only those persons interested in the land served with a copy of the Order. Because of this, any reference to the presence of a TPO is only valid on the date at which the desk study search was undertaken. In instances where works unspecified in this report are to be undertaken, which may impact trees, a further search for the presence of TPOs should be carried out prior to commencement.

1.4 RELEVANT LEGISLATION, POLICY AND GUIDANCE

1.4.1 This report has been compiled with reference to the following legislation, policy and guidance. Additional information relating to context and applicability is provided in **Appendix B**.

LEGISLATIVE FRAMEWORK

- *The Town and Country Planning Act 1990*;
- *The Town and Country Planning (Tree Preservation) (England) Regulations 2012*; and,
- *The Natural Environment and Rural Communities (NERC) Act 2006*.

POLICY

- *National Planning Policy Framework (NPPF) 2019*[2] *(revised 20 July 2021); and,*
- Kirklees Local Plan (2019).

GUIDANCE

- *British Standards Institute. BS 5837: 2012 Trees in relation to design, demolition and construction – Recommendations. London: BSI.; and,*
- *Ministry of Housing, Communities & Local Government, Tree Preservation Orders and trees in conservation areas (2014)*[3]*.*

1.5 LIMITATIONS

1.5.1 This report in no way constitutes a health and safety survey. Where concerns for tree health and safety exist the necessary and appropriate tree inspections should be carried out.

1.5.2 Assessment of statutory and non-statutory constraints have been carried out using publicly accessible third-party information and aerial imagery. While this is deemed to be broadly accurate, in some instances no specific date is given for the information and images used.

1.6 CONFIDENTIALITY

1.6.1 This report is addressed to and may be relied upon by West Yorkshire Combined Authority.

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[2] Ministry of Housing, Communities & Local Government (2019) *National Planning Policy Framework*. [Online] Available at https://www.gov.uk/government/publications/national-planning-policy-framework--2 (Last accessed 20 July 2021)

[3] Ministry of Housing, Communities & Local Government (2014) *Tree Preservation Orders and trees in conservation areas* [Online] Available at https://www.gov.uk/guidance/tree-preservation-orders-and-trees-in-conservation-areas (Last accessed 28 July 2021)

1.6.2 This assessment has been prepared for the sole use of the above-named party. This report shall not be relied upon or transferred to any other parties without the express written authorisation of WSP.

1.6.3 No responsibility will be accepted where this report is used in its entirety, on in part, by any other party. Information provided by other is taken in good faith as being accurate. WSP cannot and will not accept liability for any deficiencies in third party information.

2 SITE DESCRIPTION

2.1 SITE AND STUDY AREA

2.1.1 **Table 2.1** provides a description of the site with the site location presented on **Figure 2-1.**

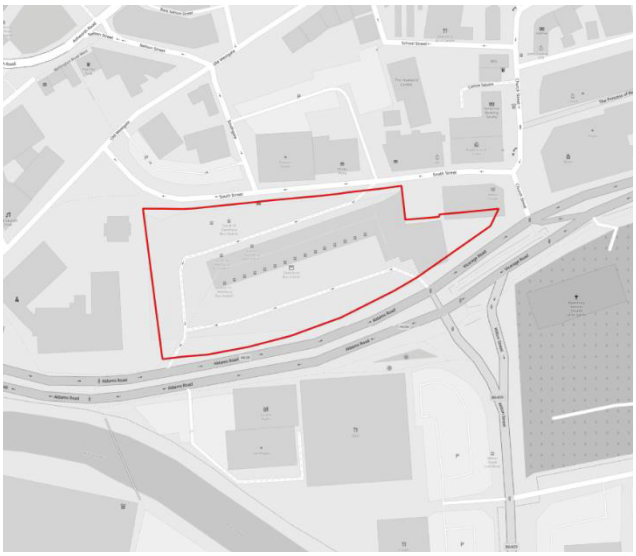
2.1.2 An 'arboricultural study area' has been applied which encompassed the site and a 15m buffer of the site. The purpose of the buffer is to ensure that arboricultural features which are bordering or outside the footprint of the Proposed Scheme but whose root protection areas or crowns extents extend into the developable area, are recorded and considered. Only trees within the study area have been assessed.

2.1.3 The Site is located within the Local Planning Authority (LPA) of Kirklees Council.

Table 2-1 – Site Details

Item	Description
Site Name	Dewsbury Bus Station
Address	The Site is located within Dewsbury Town Centre, Aldams Rd, Dewsbury WF12 8AR.
British National Grid Reference	SE24402153
Site description and topography	▪ North – immediate north is South Street, which comprises predominantly commercial grocery and retail stores. ▪ East – is Church Street which adjoins A638 Aldams Road to the south, a main carriageway which runs through Dewsbury. Beyond the A638 are further commercial and industrial areas, with the River Calder circa. 150m from the Site. ▪ West – is Dewsbury Police Station, off Old Westgate.

Figure 2-1 – Site Location (boundary edged in red)



3 BASELINE ARBORICULTURAL RESOURCE

3.1 BASELINE DATA COLLECTION

3.1.1 Baseline data collection has been undertaken with reference to BS 5837 and has been undertaken using the following data sources:

- An arboricultural desk study; and
- A walkover survey of all arboricultural features within the arboricultural study area.

3.1.2 Full details of the methodology used to obtain baseline data are provided in **Appendix C.**

3.2 ARBORICULTURAL DESK STUDY

3.2.1 A desk-study has been undertaken as a means of identifying any statutory and non-statutory constraints which may apply to arboricultural features within the arboricultural study area and influencing distance.

3.2.2 The desk-based review has considered the following statutory and non-statutory environmental constraints:

- Tree Preservation Orders (TPO);
- Conservation Areas;
- Ancient Woodland[4]; and
- Ancient, veteran or notable trees[5].

TPOs and Conservation Areas

3.2.3 Kirklees Council is responsible for implementing any legal controls imposed through TPOs and Conservation Areas within the study area. The statutory status of arboricultural features within the study area was checked on the local authorities website[6] on 26 August 2021.

3.2.4 The arboricultural desk study confirmed the absence of any TPOs or Conservation Areas and therefore, no statutory constraints apply.

Ancient woodland, ancient, veteran and notable trees

3.2.5 The desk study confirmed the absence of any ancient woodland, ancient, veteran or notable trees on or adjoining the site.

[4] Magic (DEFRA), 2018. *Multi Agency Geographic Information for the Countryside* [online] Available at: < https://magic.defra.gov.uk/MagicMap.aspx> [Last Accessed 26 August 2021].

[5] Ancient Tree Inventory, 2018. *Ancient Tree Inventory* [online] Available at: <https://ati.woodlandtrust.org.uk> [Last Accessed 26 August 2021].

[6].Kirklees Council [Online] Available at: < https://www.kirklees.gov.uk/beta/trees-listing-and-conservation/tree-preservation-orders.aspx > [Last Accessed 26 August 2021]

3.3 SITE VISIT / SURVEY

3.3.1 An arboricultural walkover survey of the arboricultural features within the arboricultural study area was undertaken during October 2021.

3.3.2 The arboricultural survey was undertaken in accordance with BS 5837 with OS master maps and a Topographical Survey forming the base mapping.

3.3.3 A total of 17 arboricultural features were surveyed, each were recorded as individual trees. Full details of the features recorded are provided within the Arboricultural Survey Schedule included in **Appendix D** of this report with a summary of the BS 5837 categories and quality of trees provided in **TableTABLE 3-1.**

Table 3-1 – Arboricultural features and their quality categories in accordance with BS 5837

BS 5837 Category	Quality	Individual Trees, Groups, Woodlands, Hedgerows	Total
Category A	High Quality		0
Category B	Moderate Quality	T3, T5, T7, T8, T9, T10, T11, T12, T13, T14, T15	11
Category C	Low Quality	T1, T2, T4, T6, T17	5
Category U	Unsuitable	T16	1
		TOTAL	**17**

3.4 SUMMARY OF ARBORICULTURAL FEATURES

3.4.1 None of the arboricultural features assessed were trees of high quality (Category A).

MODERATE QUALITY ARBORICULTURAL FEATURES

3.4.2 11 individual trees were considered to offer a moderate quality (Category B). Seven of the individual trees (T3, T5, T7, T8, T9, T14 and T15) were semi-mature to early mature cherry (prunus sp.) with the remaining four trees (T10, T11, T12 and T13) being rowan (Sorbus aucuparia) of a semi-mature age. The trees ranged in heights from 5-12 metres, with stems no greater than 490 millimetres; measured at 1.5 metres above ground level. The trees were all situated in areas of incidental open space, where low forming shrub masses has been planted beneath the crowns.

3.4.3 The trees were all devoid of any obvious defects and exhibited good to fair physiological and structural conditions, at the time of assessment.

LOW QUALITY ARBORICULTURAL FEATURES

3.4.4 Five arboricultural features (T1, T2, T4, T6 and T17) were categorised as low quality (Category C).

3.4.5 T1 was situated toward the north west corner of the site and comprised a semi-mature *Sorbus sp.* of six metres in height and a stem measuring 210 millimetres at 1.5 metres above ground level. The presence of dense shrubs surrounding the base and lower main stem of the tree obscured closer inspection and for this reason, T1 was downgraded to a low quality.

3.4.6 T2, an early mature rowan (*Sorbus aucuparia*), was located within the south west corner of the site, set amongst a number of trees within an area of incidental open space. Similarly to T1, T2's base and lower stem was obscured from close inspection with the crown biased to the east due to suppression caused by a neighbouring cherry (T3).

3.4.7 To the south of T3 stood T4, a semi-mature ash (*Fraxinus excelsior*) which exhibited a fair physiological condition, with a sparse crown and evidence of die back at the extremities of the crown, considered to be a symptom of ash dieback (*Hymenoscyphus fraxineus*).

ARBORICULTURAL FEATURES UNSUITABLE FOR RETENTION

3.4.8 A single Category U tree was recorded, namely T16. T16 was an early mature bird cherry (*Prunus padus*) which was dying back extensively and exhibited a poor physiological condition at the time of assessment, with 90% of the crown's foliage lost. Given its poor state of health and severely reduced vigour, T16 offers limited long-term retention value and should be removed.

3.5 TREE CONSTRAINTS PLAN

3.5.1 The location of the surveyed arboricultural features is shown on the Tree Constraints Plan (TCP) which is included in Appendix E.

3.5.2 The purpose of the TCP is to visually identify the constraints imposed by the existing arboricultural features in terms of their quality, stem, crown and roots. This information must be considered when determining future land use or compiling an outline or detailed design and should be used to assess impact of demolition or construction activities.

3.5.3 The TCP has been compiled in accordance with the following specification:

GENERAL

3.5.4 The TCP shows the position of each feature including its stem/extent, current crown spread and its root protection area. The features have also been colour coded based upon the quality category within which they have been placed.

LOCATION / EXTENT

3.5.5 Arboricultural features have been located using topographical survey data where stem locations have been provided. In instances where topographical data is unavailable then features have been positioned using Ordnance survey data and/or aerial imagery. In these instances, locations should be considered as approximate only and will have an assumed accuracy of two to five metres.

ROOT PROTECTION AREAS (RPA)

3.5.6 Indicative root protection areas have been plotted with a radius of a nominal circle as an initial design/assessment tool. No alteration to root protection areas have been illustrated on the plans within Appendix E.

3.5.7 Barriers to root growth have been identified on the basis that in a typical instance approximately 90% of roots occur in the upper one metre of soil[7]. Barriers do not have to prevent all root growth but simply restrict it sufficiently that the area beyond the barrier is unlikely to be critical to maintaining the vitality of the arboricultural feature.

3.5.8 Structures such as walls, paths, parking areas and internal or unpaved roadways are generally not considered to form significant barriers to root growth due to potentially shallow foundations and sub-bases.

[7] Roberts, J., Jackson, N., Smith, M,. 2006. *Tree Roots in the Built Environment*. London: The Stationery Office

4 ARBORICULTURAL IMPACT ASSESSMENT

4.1.1 The following Arboricultural Impact Assessment (AIA) evaluates the direct and indirect effects associated with construction of the Proposed Scheme on existing trees. It further identifies necessary mitigation measures where these are deemed appropriate.

4.1.2 The AIA has been compiled with reference to *BS 5837.* Additional information relating to application of BS5837 is provided in **Appendix C.**

4.2 ASSUMPTIONS AND LIMITATIONS

4.2.1 This AIA has been compiled on the basis of the following assumptions and limitations:

Assumptions

- That all construction activities will be confined to the area within the Site and not into areas of third-party land beyond the Red Line Boundary.

Limitations

- Detailed information pertaining to any earthworks across the Proposed Scheme has not been fully disclosed;
- Enabling works (such as the installation or diversion of services by statutory undertakers beyond the Red Line Boundary) have not been considered; and,
- Some of the features subject to this assessment have been plotted using aerial imagery and on-site GPS coordinates and cannot always be relied upon. The accompanying tree constraints and tree retention plans therefore have features plotted with approximate locations only.

4.3 PROPOSED SCHEME

4.3.1 The proposed scheme involves a new 'fit for purpose' bus station at Dewsbury to provide greater access to the town centre. The Proposed Scheme aims to improve access to the bus station, refurbish the internal building to a higher standard, as well as offer opportunities to improve the energy efficiency on site. The Proposed Scheme aims to enhance the appearance of the bus station, improve accessibility within the bus station and also to the town centre, as well as boosting pedestrian and cycle access to the site.

4.4 ARBORICULTURAL FEATURES TO BE REMOVED FOR THE PROPOSED SCHEME

4.4.1 The proposed scheme has been designed so that, where possible, existing trees are retained. The majority of the trees are situated on the boundaries of the site, which provide good screening value from wider vantage points beyond the site and provide an established level of privacy. The majority of these are to be retained. However, the site will be subject to redesign with the Proposed Scheme not able to be retro-fitted into the existing site layout without inevitable impacts to the existing tree cover.

4.4.2 In order to accommodate the Proposed Scheme, it will be necessary to remove a small number of trees within the site. The trees to be removed are detailed within **Table 4-1** and are identified on the Preliminary Tree Protection Plan, in **Appendix F** of this report.

Table 4-1 – Trees to be Removed to Facilitate the Proposed Scheme

WSP Feature Number	Species	BS5837:2012 Category	Reason for Removal
T7	Bird cherry	Category B – Moderate Quality	Removed to facilitate the proposed realigned pedestrian walkway at the entrance on the SW boundary. There is scope within other sections of the new design for replanting of new, suitable replacement trees which will establish into healthy specimens.
T8	Bird cherry	Category B – Moderate Quality	Removed to facilitate the proposed realigned pedestrian walkway at the entrance on the SW boundary. There is scope within other sections of the new design for replanting of new, suitable replacement trees which will establish into healthy specimens.
T15	Bird cherry	Category B – Moderate Quality	Removed to facilitate the proposed bin store and 2.4m boarded wooden fence. The area will also be repaved, which will be completed so as to not damage roots. However, with the proximity of the bin store, fence, pruning works needed to establish the 2.4m fence and disturbance from the new paving, the tree will suffer as a result. There is scope within other sections of the new design for replanting of new, suitable replacement trees which will establish into healthy specimens.
T16	Bird cherry	Category U – Unsuitable for retention	Tree to be removed as it has almost no vitality left, dying from the top down. Will need to removed as a course of management due to it being a safety risk to the general public.

T17	Cotoneaster	Category C – Low Quality	Removed to facilitate the proposed bin store and 2.4m boarded wooden fence. The area will also be repaved, which will be completed so as to not damage roots. However, with the proximity of the bin store, fence, pruning works needed to establish the 2.4m fence and disturbance from the new paving, the tree will suffer as a result. Pruning works will result in the tree sprouting suckers from the roots and dense epicormic growth from retained stems/branches, requiring constant maintenance and hindering the amenity value of the section. There is scope within other sections of the new design for replanting of new, suitable replacement trees which will establish into healthy specimens.

4.4.3 T7 and T8 are of moderate quality and form part of a screening canopy that will be retained, which will result in minimal residual effects. T15 is a dense tree dominating the northern part of the section. The number of stress factors detailed in the above table, and constant maintenance needed due to suckering from roots, it is best to remove the tree and replant a suitable replacement in another part of the new design.

4.4.4 T16 is declining with such low vitality that it will effectively be dead in the next 1-2 years. Removal is advised for safety consideration due to the public nature of the area.

4.4.5 T17 is of low-quality with low retention value and not considered to be a material consideration, being replaceable in the short-term with the incorporation of new tree planting. The removal would result in minimal residual effects.

4.5 DIRECT IMPACTS FROM THE CONSTRUCTION OF THE PROPOSED SCHEME

WORKS WITHIN THE RPA

4.5.1 The proposed scheme has been designed so that major works are not required within the RPAs of retained trees. However, as detailed within, there are some aspects of the Proposed Scheme that will require works to be undertaken within the RPAs of retained trees.

Table 4-2 – Proposed Works in RPAs of Retained Features

WSP Feature Number	Species	BS5837:2012 Category	Proposed Works within RPA
T3	Wild Cherry	Category B – Moderate Quality	Removal of existing wearing course (hardstanding), installation of new kerb lines and resurfacing works for the proposed Driver Walkway.
T9	Bird, Wild Cherry	Category B – Low Quality	Removal of existing wearing course (hardstanding), installation of new kerb

WSP Feature Number	Species	BS5837:2012 Category	Proposed Works within RPA
			lines and resurfacing works for the proposed Pedestrian Walkway
T10 - T14	Rowan, Bird Cherry	Category B – Moderate Quality	Removal of existing paving and grey-infrastructure and installation of new paving.

4.5.2 Removal of existing wearing course (hardstanding), installation of new kerb lines and resurfacing works for the proposed Driver and Pedestrian Walkways will incur into the indicative RPA's of T3 and T9. A kerb line runs within 1-2 metres of the bases of all 3 trees with this grey-infrastructure assumed to have been present throughout the lifespan of these trees.

4.5.3 The likelihood of roots establishing, particularly within the upper 300 millimetres of soil, is considered unlikely based on an understanding of root morphology with the trees likely to have adapted to a constrained growing environment and assumed to have focussed root development into less compacted and more porous soil to the north, south and west of the trees. A large percentage of the RPAs shall be untouched. The impact arising from these works is considered minimal given that significant, structural roots are unlikely to have established to the west and providing that a sympathetic methodology; as detailed in the Arboricultural Method Statement (AMS) provided in **Appendix G**, is adhered to during uplift and removal of the existing grey-infrastructure and implementation of the Proposed Walkways.

4.5.4 Removal of existing paving and grey-infrastructure and installation of new paving will require incursion into the RPA's of T10 - T14. The existing paving is assumed to have been in place throughout the lifespan of the trees.

4.5.5 T10 - T13 are growing within a border and will have a low percentage of their RPA's disturbed along the west edge of the border, with the likelihood of roots establishing in the soil of the border and less likely under the paving. The paving will be lifted in such a way so as to not damage the existing roots.

4.5.6 T14 is surrounded by paving. This paving will be removed so as to not damage the roots. The paving will be reinstated without damaging the roots and compacting the soil, and a planting pit will be established around the tree base, allowing for better growing conditions.

4.5.7 At the time of writing, details on the finished surfaces which will be used were not known.

SPATIAL REQUIREMENTS

4.5.8 It is considered likely during the construction of the bin area and fence in the eastern section of the Proposed Scheme, that contractors will require sufficient working room which may fall within the RPA of retained trees T10,11,12,13,14.

4.5.9 In the event that this is required, the existing paving should be retained and act as temporary ground protection to minimise the likelihood of the trees being negatively impacted by the provision of working space within RPAs. Once the bin area and fence have been constructed, the existing paving should be removed. The AMS included as part of the assessment discusses the methodology for these works in more detail.

REMOVAL OF SERVICES

4.5.10 There are assumed to be no areas on site where the removal of existing underground services is likely to require works within the RPAs of retained trees. The locations and specifications of existing and proposed underground services were unknown at the time of writing, however, it is considered likely that new services will be required.

4.5.11 If the installation of new services is required within the RPAs of retained trees, specific tree protection and mitigation measures will need to be clearly outlined following discussion with the Project Arboriculturist during a Pre-Commencement site meeting.

GROUND REMEDIATION

4.5.12 No information regarding proposed soil remediation works has been considered.

4.6 INDIRECT IMPACTS FROM THE CONSTRUCTION OF THE PROPOSED SCHEME

TREE PRUNING AND MANAGEMENT

4.6.1 In addition to the proposed tree removal, it may be necessary to undertake remedial pruning works to retained trees present on the site in order to minimise the potential for branch damage to occur during construction. These works will need to be specified once the contractors spatial requirements are known.

4.6.2 All tree works undertaken must comply with *British Standard 3998:2010 – Tree Work Recommendations* and should therefore be carried out by skilled tree surgery contractors. It would be recommended that quotations for such work be obtained from Arboricultural Association Approved Contractors as this is a recognised accreditation for tree work contractors.

4.6.3 All vegetation and, particularly, woody vegetation proposed for clearance should be removed outside of the bird-breeding season (bird nesting is March - September inclusive). Birds are protected under the *Wildlife and Countryside Act, 1981* (as amended) whilst on the nest. Where this is not possible, vegetation to be removed or pruned should be checked for the presence of nesting birds by a competent ecologist.

5 SUMMARY OF ARBORICULTURAL IMPACTS

5.1.1 A walkover survey of the arboricultural features within the arboricultural study area was undertaken on 7th October 2021. The arboricultural survey was undertaken in accordance with BS 5837 with OS master maps and a Topographical Survey forming the base mapping.

5.1.2 A desk study was conducted on 26th August 2021 which established that none of the arboricultural features are subject to either TPO or conservation area statutory constraints. The desk study also confirmed no record of ancient or veteran trees.

5.1.3 A total of 17 arboricultural features, all of which are individual trees. 11 of the trees are of moderate quality, five of low quality and one which is not worthy of retention.

5.1.4 An AIA has been undertaken which established that to facilitate the Proposed Scheme arboricultural features would require removal, this comprises of two of moderate quality, two low quality trees and one unsuitable for retention.

5.1.5 The Proposed Scheme includes a landscape design which will introduce native tree planting which can improve the quality and diversity of trees on the site.

5.1.6 The retained trees can be protected through demolition and construction. Principles for tree protection are set out in the AMS which includes the need for arboricultural supervision and tree protection fencing.

5.1.7 In summary, it is considered that the Proposed Scheme of the site will not have a significant impact upon the visual amenity of the local area as a result of the proposed tree removal necessary to implement it, nor will it greatly impact to the existing arboricultural resource to its detriment. Additionally, the proposed works are unlikely to impact significantly upon the long-term health of retained trees.

5.1.8 There is the potential for a net gain in amenity value and tree canopy cover if the existing trees on site are supplemented with additional new tree planting. Whilst some works are to be undertaken within the RPAs of retained trees, these aren't deemed to be at detriment to the trees with many of the trees along the sites southern boundary already coexisting with grey infrastructure impacting on their perceived rooting environment. The nature of the proposed works are such that they can be completed without impacting significantly upon the trees subject to the adoption of an appropriate working methodology as outlined in the AMS included as **Appendix G.**

Appendix A

GLOSSARY OF TERMS AND ACRONYMS

GLOSSARY OF TERMS

Table A-1 - Glossary of Terms

Term	Definition
Arboriculturist	A person who has, through relevant education, training or experience, gained expertise in the field of trees in relation to construction.
British Standard BS 5837:2012	Provides guidance and recommendations for the integration of trees and development. To be interpreted by appropriately qualified and experienced persons.
Conservation Area	An area of special architectural or historic interest identified by the Local Planning Authority.
Construction Exclusion Zone	An area within which all site clearance and construction activities, access and storage of materials are prohibited.
Crown	The upper part of a tree, measured from the lowest branch, including all branches and foliage.
Root Protection Area	Layout design tool indicating the minimum area around a tree deemed to contain sufficient roots and rooting volume to maintain the tree's vitality.
Tree Preservation Order	An order made by the Local Planning Authority to protect specific trees, groups of trees or woodlands in the interests of amenity.

Table A-2 – List of acronyms used within this report

Acronyms	
AIA	Arboricultural Impact Assessment
AMS	Arboricultural Method Statement
BS 5837	British Standard BS 5837:2012 '*Trees in relation to design, demolition and construction – Recommendations*'
CEZ	Construction Exclusion Zone
HGV	Heavy Goods Vehicle
PZ	Precautionary Zone
RPA	Root Protection Area
TPO	Tree Preservation Order

Appendix B

RELEVANT LEGISLATION, POLICY AND GUIDANCE

This report has been compiled with reference to relevant legislation, policy and guidance. An overview and context are provided in **Table B-1**.

Table B-1 – Summary of relevant legislation, policy and guidance

Legislation

Town and Country Planning Act 1990

Section 197 places a duty on the local planning authority to ensure that, where appropriate, planning conditions are imposed which require the preservation or planting of trees.

Section 198 provides local planning authorities with the powers to impose Tree Preservation Orders where it is expedient in the interests of amenity.

The role of a TPO is to protect specific trees, groups of trees and woodlands for the purpose of amenity. In the Secretary of State's view 'Orders should be used to protect trees and woodlands if their removal would have a significant negative impact on the local environment and its enjoyment by the public.

Town and Country Planning (Tree Preservation) (England) Regulations 2012

These Regulations govern the administration of Tree Preservation Orders. They make it a statutory offence to undertake specified activities without the formal consent of the local planning authority. Prohibited activities include:

- cutting down;
- topping;
- lopping;
- uprooting;
- wilfully damaging; and,
- wilfully destroying.

Exemptions for the need to obtain formal consent include, but are not limited to:

- dead trees;
- the removal of dead branches;
- works necessary to remove a risk of serious harm; and,
- works necessary to implement a planning permission (excluding outline planning permission) or where permission is granted under the *Town and Country Planning (General permitted Development Order 1995)(as amended)*.

The Natural Environment and Rural Communities (NERC) Act 2006

Section 40 of the *Natural Environment and Rural Communities Act 2006* places a duty on local authorities and government departments to have regard for the conservation of biodiversity when exercising their normal functions.

Biodiversity comprises all living things including animals, plants, fungi and micro-organisms and includes the communities and habitats that they form. Trees form integral elements of the natural environment either due to rarity (e.g. Common Juniper (*Juniperus communis*)), as part of an important habitat (e.g. ancient woodland) or because they directly support another species (e.g. a bat roost or nesting bird). Even widespread, common or non-native tree species are important due to their positive contribution towards a sustainable natural environment.

The NERC Act requires that development activities must be undertaken with due regard for trees and their biodiversity value. Trees should be retained wherever practicable and opportunities taken to maintain and enhance their environmental contribution.

Policy

National Planning Policy Framework. (2019)

The National Planning Policy Framework includes relevant guidance in *Chapter 15: Conserving and Enhancing the Natural Environment*. Guidance provided includes:

Paragraph 170(b) recognises the economic and other benefits that trees, and woodlands provide and the fact that they should be considered as part of a planning decision;

Paragraph 175(c) identifies the principle that 'development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons and a suitable compensation strategy exists'.

Kirklees Local Plan – Policy LP33:Trees (2019)

Section 13.4 The Council will not grant planning permission for developments which directly or indirectly threaten trees or woodlands of significant amenity.

Guidance

British Standards Institute. 5837:2012 Trees in relation to design, demolition and construction – Recommendations (2012)

British Standard BS 5837:2012 provides recommendations and guidance on the relationship between trees and design, demolition and construction processes. It sets out principles and procedures to be applied to achieve a harmonious and sustainable relationship between trees and structures and is applicable whether or not planning consent is required.

Ministry of Housing, Communities & Local Government, Tree Preservation Orders and trees in conservation areas (2014)

Provides explanatory guidance on the administration of trees protected by a Tree Preservation Order (TPO) or conservation area.

A key element includes guidance on the use of Orders in instances where the removal of trees where removal would have a 'significant negative impact on the local environment and its enjoyment by the public.' Further guidance is provided on the definition of amenity and includes:

- Visibility - Trees should be visible, in whole or in part, from a public place such as a road, footpath or publicly accessible land.
- Value - Public visibility is in itself not sufficient to warrant inclusion within a TPO. Arboricultural features should also exhibit merit in terms of one or more of the following criteria:

  1. Size and form;
  2. Future potential;
  3. Rarity, cultural or historical value;
  4. Contribution to, and relationship with, the landscape; and
  5. Contribution to the character or appearance of a conservation area.

- Other Factors - Other factors such as nature conservation may be considered when making a TPO but on their own would not warrant making an Order.

Forestry Commission and Natural England, Ancient woodland, ancient trees and veteran trees: protecting them from development (2018)

The Forestry Commission and Natural England have published guidance giving information for the protection of ancient woodland, ancient trees and veteran trees from development. In summary this guidance advises on the use of semi-natural buffer zones as a means of protection with minimum distances identified as:

- Fifteen metres between any development and ancient woodland.
- Fifteen times the diameter of its stem or 5m from the edge of its canopy, if that's greater, around any ancient or veteran tree.

Further guidance is provided on the compensation measures which may be applied should adverse impacts arise.

Appendix C

ARBORICULTURAL SURVEY METHODOLOGY

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SURVEY METHODOLOGY

WALKOVER SURVEY

A walkover survey was undertaken on 07 October 2021. The walkover survey was conducted by with aerial imagery used as base mapping and GPS for positioning trees.

The walkover survey was undertaken in accordance with the following criteria:

- Arboricultural features have been recorded as tree groups or wooded areas where this has been deemed appropriate. Tree groups have been recorded on the basis that they form distinct arboricultural features either aerodynamically, visually or because they contain trees of similar cultural and biodiversity value. Wooded areas are recorded where larger expanses of trees exist and included features which may otherwise be referred to as copses, spinneys or shelterbelts.
- Hedges have been recorded where they form substantial internal or boundary features or where they contribute meaningfully to the landscape character of the local area.
- The trees have been inspected using the Visual Tree Assessment methodology as developed by Mattheck and Breoler[8].
- The tree survey was carried out from ground level only.
- No tissue samples were taken nor was any internal investigation of the subject trees undertaken.
- Tree heights and crown spreads have been estimated to the nearest 1m.
- Notes have been recorded where they relate to the quality of the arboricultural feature. Management recommendations have been provided where work is necessary for the abatement of a hazard which presents a high level of risk to persons or property. Such management recommendations have been communicated to the tree owner/manager separately from this report.

Stem diameters have been measured in accordance with Annex C of BS 5837. Diameters of single stem trees on level ground have been measured at 1.5m above ground level.

The diameters of other commonly encountered stems have been measured as per the guidance. The combined stem diameters for multi-stemmed trees have been calculated in accordance with BS 5837 paragraph 4.6.1.

By default, Root Protection Areas (RPAs) are calculated as an area equivalent to a circle with a radius 12 times the stem diameter and are capped at a distance of 15 metres. However, for ancient and veteran trees RPAs are calculated with a radius of 15 times the stem diameter or five metres beyond the edge of the tree's canopy, whichever is greater[9]. In these instances, the overall size of the RPA remains uncapped.

[8] Mattheck, C., Breloer, H., 2006. *The body language of trees*. Norwich: The Stationary Office

[9] Lonsdale, D., 2013. *Ancient and other veteran trees: further guidance on management*. London: The Tree Council.

QUALITY ASSESSMENT

The quality of arboricultural features has been determined in accordance with BS 5837 Table 1 a copy of which is provided in **Figure C-1.** The purpose of the quality assessment is to enable informed decisions to be made regarding the removal and retention of arboricultural features in the context of development. For an arboricultural feature to be included within a particular quality category it should accord with the description provided.

The quality of each arboricultural feature is defined based on its sub-category. Sub-categories carry equal weight, do not influence retention priority and are simply included to indicate the primary value associated with each surveyed item. Sub-categories 1, 2 and 3 are intended to reflect arboricultural, landscape and cultural values, respectively.

The quality and sub-category assigned to each arboricultural feature are identified within the Arboricultural Survey Schedule included in **Error! Reference source not found.** of this report.

Figure C-1 - BS 5837 Table 1 - Cascade Chart for Tree Quality Assessment

Table 1 **Cascade chart for tree quality assessment**

Category and definition	Criteria (including subcategories where appropriate)			Identification on plan
Trees unsuitable for retention (see Note)				
Category U Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years	• Trees that have a serious, irremediable, structural defect, such that their early loss is expected due to collapse, including those that will become unviable after removal of other category U trees (e.g. where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning) • Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline • Trees infected with pathogens of significance to the health and/or safety of other trees nearby, or very low quality trees suppressing adjacent trees of better quality *NOTE Category U trees can have existing or potential conservation value which it might be desirable to preserve; see **4.5.7**.*			See Table 2
	1 Mainly arboricultural qualities	**2 Mainly landscape qualities**	**3 Mainly cultural values, including conservation**	
Trees to be considered for retention				
Category A **Trees of high quality** with an estimated remaining life expectancy of at least 40 years	Trees that are particularly good examples of their species, especially if rare or unusual; or those that are essential components of groups or formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue)	Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features	Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture)	See Table 2
Category B **Trees of moderate quality** with an estimated remaining life expectancy of at least 20 years	Trees that might be included in category A, but are downgraded because of impaired condition (e.g. presence of significant though remediable defects, including unsympathetic past management and storm damage), such that they are unlikely to be suitable for retention for beyond 40 years; or trees lacking the special quality necessary to merit the category A designation	Trees present in numbers, usually growing as groups or woodlands, such that they attract a higher collective rating than they might as individuals; or trees occurring as collectives but situated so as to make little visual contribution to the wider locality	Trees with material conservation or other cultural value	See Table 2
Category C **Trees of low quality** with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150 mm	Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories	Trees present in groups or woodlands, but without this conferring on them significantly greater collective landscape value; and/or trees offering low or only temporary/transient landscape benefits	Trees with no material conservation or other cultural value	See Table 2

NOTES AND LIMITATIONS

Arboricultural survey data is of a preliminary nature and has been collected based on a walkover survey.

Only defects visible from the ground have been noted and each individual feature may not have been inspected closely due to access difficulties, the presence of dense ivy, other vegetation or safety constraints. Safety related features have recorded on the basis that the arboricultural features will be subject to a normal programme of tree hazard assessment and only those features which materially affect the quality of the feature or pose a real and immediate safety concern have been recorded.

Arboricultural survey data is typically valid for a period of two years unless otherwise stated. Significant environmental events (such as extreme weather conditions) or changes to the Site may render it invalid within a shorter timescale.

Records held on the Ancient Tree Inventory[10] are collected on a voluntary basis, therefore the absence of records does not demonstrate the absence of ancient or veteran trees but may simply indicate a gap in recording coverage.

Whilst arboricultural surveys are not seasonally limited it is the case that certain pests and diseases may be more or less evident at different times of the year. This is especially true of certain wood decaying fungi such as the Giant Polypore (*Meripilus giganteus*) where fruiting bodies are short-lived, and the early stages of root decay may not result in other identifiable symptoms. Walkover survey data is therefore based upon observations made at the time of the site visit and may be subject to change should further or more detailed inspections be undertaken.

The survey has only been undertaken from land within the client's ownership, from public land or from areas where formal access has been arranged.

The position of arboricultural features not recorded on a topographical survey has been estimated using aerial photography. The position and extent of these features should be regarded as approximate only

[10] Ancient Tree Inventory, 2018. *Ancient Tree Inventory* [online] Available at: <https://ati.woodlandtrust.org.uk>

Appendix D

TREE SCHEDULE

Public

Measurements	
Height	Overall height (m) – maximum and minimum heights may be recorded for tree groups, wooded areas and hedges where these vary considerably.
Stem Dia.	Diameter measured (mm) in accordance with BS 5837 paragraph 4.6.1, Annex C. Average stem diameter is provided for tree groups, woodlands and hedges.
Crown Radius	Estimated on site or measured using a digital distometer radially from the stem (m). Cardinal points north (N), east (E), south (S) and west (W) provided.
LCH LBH	Lowest crown height (m)* Lowest branch height (m)*

Life Stages	
Young	Young trees; Establishing and typically with good vigour and fast growth rates and strong apical dominance; < 1/3rd estimated life expectancy
Semi-mature	Semi-mature trees; 1/3rd estimated life expectancy
Early-mature	Early mature; > 2/3rd estimated life expectancy. The stage in the life cycle of a tree between youth and maturity.
Mature	Mature; > 2/3rd estimated life expectancy, generally good vigour and achieving full height potential with crown still spreading
Veteran	Biological, cultural or aesthetic value comprising niche saproxylic habitat. Individuals of large proportions (stem girth) in comparison to trees of the same species/ exists significantly beyond its normal life expectancy.

Quality Assessment of BS Category		ULE (relates to BS Category)
Category A	Trees of high quality with an estimated remaining life expectancy of at least 40 years.	40+ years
Category B	Trees of moderate quality with an estimated remaining life expectancy of at least 20 years.	20-40 years
Category C	Trees of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150mm.	10-20 years
Category U	Trees in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years.	<10 years

Sub-categories: 1 - Mainly arboricultural value
2 - Mainly landscape value
3 - Mainly cultural or conservation value

* In some instances, where an arboricultural feature abuts the edge of the Study Area then only the portion of the crown within/overhanging the Study Area will be surveyed and recorded.

Abbreviations and Notes

est - Estimated stem diameter
avg - Average stem diameter for multiple stems
up to - Maximum stem diameter of a group
erc - Estimated remaining contribution

The BS category particular consideration has been given to the following:

- The presence of any structural defects in each tree/group and its future life expectancy
- The size and form of each tree/group and its suitability within the context of a proposed development
- The location of each tree relative to existing site features e.g. its screening value or landscape features
- Age class and life expectancy

Structural Condition	
Good	No significant structural defects.
Fair	Structural defects that can be remediated.
Poor	Significant defects beyond remediation, presents a risk of failure in the foreseeable future.
Dead	Dead tree with structural integrity of tree severely compromised.

Physiological Condition	
Good	No significant health problems.
Fair	Symptoms of ill-health that can be remediated.
Poor	Significant ill-health. Unlikely the tree will recover in the long term.
Dead	Advanced state of decline and unlikely to recover or dead.

Root Protection Area (RPA)

- The RPA Radius column provides the extent of an equivalent circle from the centre of the stem (m).
- The RPA is calculated using the formulae described in paragraph 4.6.1 of British Standard 5837: 2012 and is indicative of the rooting area required. Tree roots extend beyond the calculated RPA in many cases and where possible a greater distance should be protected. An average stem diameter is provided for tree groups, wooded areas and hedges
- Where veteran trees have been identified the RPA has been calculated in accordance with Natural England guidance i.e. 15x the stem diameter or 5m beyond the crown whichever is greater.

Arboricultural Survey Summary

Table 1 - Summary of Individual Tree, Groups of Trees, Woodlands and Hedgerows by BS5837:2012 Category

Category	Individual Trees, Groups, Woodlands, Hedgerows	Total
Category A		0
Category B	T3, T5, T7, T8, T9, T10, T11, T12, T13, T14, T15	11
Category C	T1, T2, T4, T6, T17	5
Category U	T16	1
	Total	17

Chart 1

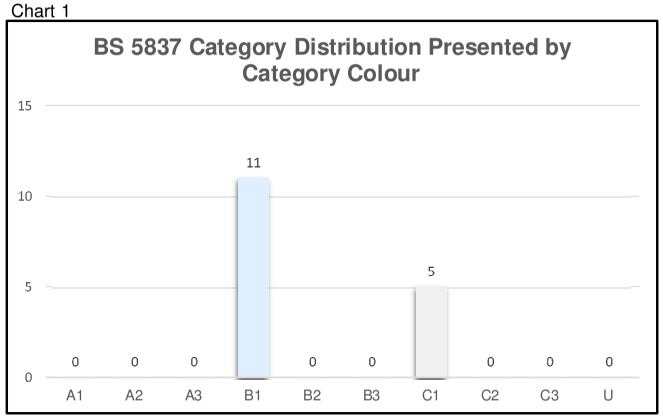


Chart 2

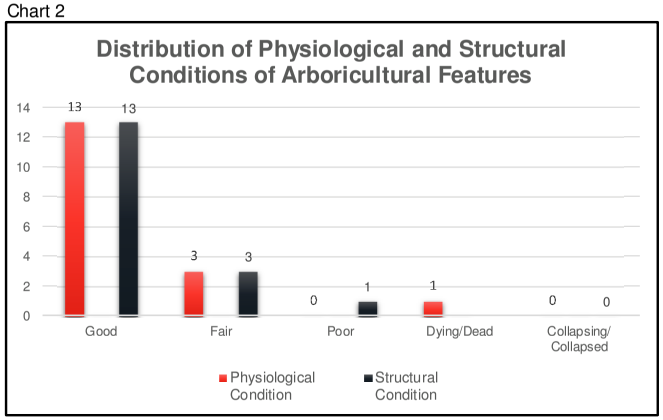
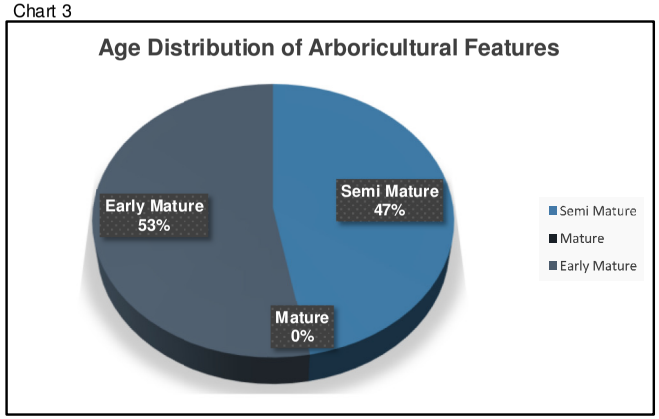


Chart 3



BS 5837 Category Distribution displays the proportion of trees assessed in each category type to enable a better understanding of the category distribution across the population. Trees have been divided into one of four categories based on Table 1 of BS5837 Cascade chart for tree quality assessment.

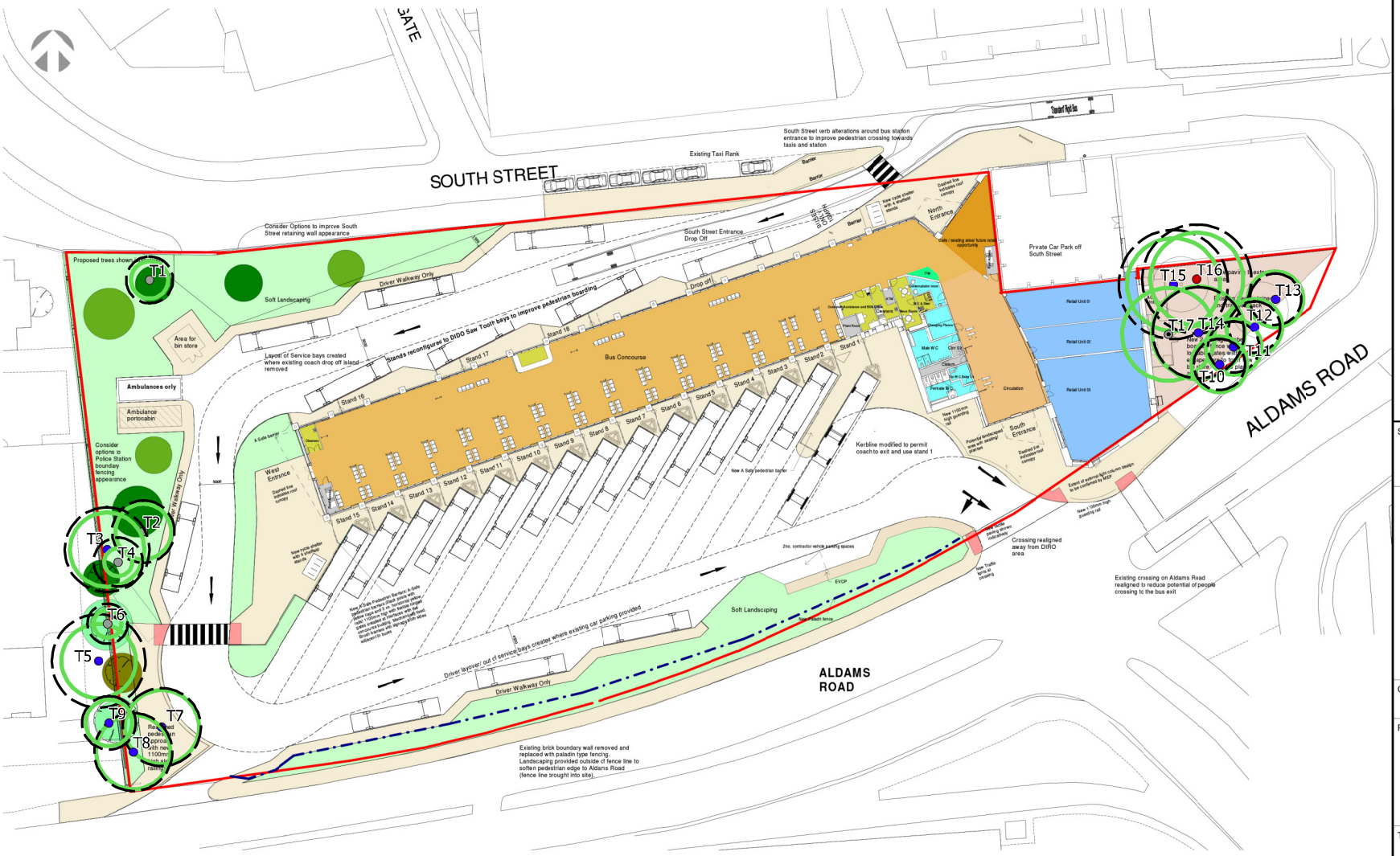
One of the key factors in assessing the long-term value and vulnerability of the resilience of the tree population to pests and diseases is the overall condition of that population. Physiological condition provides an indication of the physiological vitality of the tree whilst tree structural condition is related to the presence of defects (e.g. large cavity or codominant branches with included bark) that can lead to tree failure. An assessment of the condition allows for an assessment of the overall health of the tree population

Age Distribution of Arboricultural features shows the percentage of the tree population in each age category. The distribution of age category across the population is useful for understanding the expected longevity of the existing tree cover which can be used for determining mitigation, management and replacement. A population requires sufficient large, mature trees to deliver the widest range of environmental benefits in urban areas and enough trees of a younger age classes to replace these mature trees as they eventually die.

Appendix E

TREE CONSTRAINTS PLAN

Public



LEGEND

- Arboriculture Study Area
- Indicative Tree Canopy
- Indicative Root Protection Area

Category Grading

- B
- C
- U

Prefix

T Tree
G Group

STATUS:

FOR INFORMATION ONLY

WSP, 6 Devonshire Square
London, EC2M 4YE
Tel: +44 (0) 20 7337 1700
www.wsp.com

CLIENT:

-

PROJECT:

DEWSBURY BUS STATION

TITLE:

TREE CONSTRAINTS PLAN

SCALE @A3:	DRAWN:	APPROVED:
1:600	NB	BW
VERSION: 00	DATE: 12/11/21	DATE: 15/11/21
PROJECT No: 70077924	DRAWING No: 70077924-WSP-DR-ARB-001	

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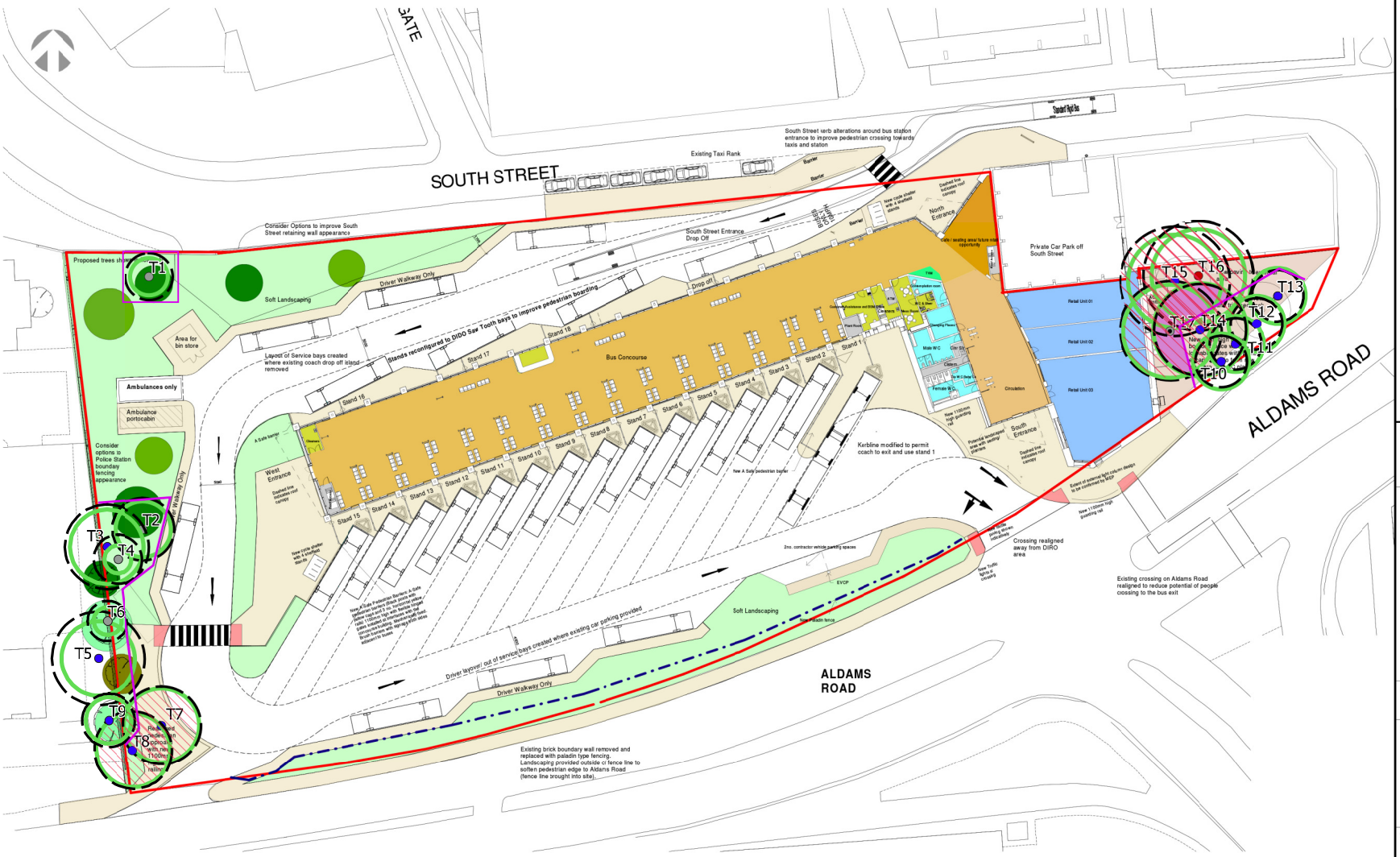
Appendix F

PRELIMINARY TREE PROTECTION PLAN

Public



LEGEND

- Arboriculture Study Area
- Indicative Tree Canopy
- Indicative Root Protection Area

Category Grading

- B
- C
- U

- Special Construction Area
- Arboricultural Feature Removed
- Indicative Tree Protection Fencing

Prefix

T Tree

STATUS:

FOR INFORMATION ONLY

WSP, 6 Devonshire Square
London, EC2M 4YE
Tel: +44 (0) 20 7337 1700
www.wsp.com

CLIENT: West Yorkshire Combined Authority

PROJECT: DEWSBURY BUS STATION

TITLE: Preliminary Tree Protection Plan

SCALE @A3:	DRAWN:	APPROVED:
1:600	NB	BW
VERSION: 00	DATE: 12/11/21	DATE: 15/11/21
PROJECT No: 70077924	DRAWING No: 70077924-WSP-DR-ARB-001	

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Appendix G

ARBORICULTURAL METHOD STATEMENT

Public

INTRODUCTION

This AMS describes the arboricultural protection measures identified as necessary for the protection of retained trees as part of the Proposed Scheme. It presents in principle the arboricultural protection measures which will be applied during demolition and construction. It is envisaged that these protection measures will be reviewed by the Design Team prior to the issuing of any tender documentation and that they will be revised to accommodate any design amendment or known construction methodologies.

General Protection Requirements

Retained trees will need to be adequately protected during demolition and construction works. In most instances, this protection will extend to the erection of the mandatory tree protection barriers placed at the extent of the calculated RPAs to create construction exclusion zones (CEZ). The measures to protect trees should follow the guidance in BS5837. The purpose of these measures should be understood from the outset and well-considered in that they protect trees to be retained within the and adjacent to the Site whilst allowing sufficient access for the implementation of the Proposed Scheme.

Protective measures should be in accordance with this AMS and the Tree Protection Plan included at Error! Reference source not found. and will remain unaltered and in situ, unless otherwise specified, for the entire duration of the construction.

Arboricultural features that are to be removed in accordance with this report and the approved scheme, are to be felled prior to the erection and implementation of protective barriers.

Unless pre-existing, barriers will be erected prior to commencement of any demolition and/or construction work. Once installed, the area protected by fencing or other barriers will be regarded as a CEZ. Fencing and barriers will not be removed or altered without prior consultation with the Project Arboriculturist and in agreement with the acting local authority.

Any trees which are to be retained and which have the potential to be affected by the development works should be routinely monitored both during and after construction. The purpose of this monitoring regime will be to identify any symptomatic changes within trees or identify unexpected injurious contact and better inform any remedial works deemed appropriate as a result.

Wide or tall loads should not come into contact with retained trees. Oil, bitumen, cement or other material that is potentially injurious to trees should not be stacked or discharged within 10m of a tree stem. No concrete should be mixed within 10m of a tree. Allowance should be made for the slope of ground to prevent materials running towards the tree.

No fires will be lit where flames are anticipated to extend to within 5m of tree foliage, branches or trunk, taking into consideration wind direction and size of fire. Notice boards, telephone cables or other services should not be attached to any part of a retained tree.

TREE WORKS

In the interests of safety to contractors and site personnel, all tree works referred to herein must be carried out prior to any site works commencing, including demolition, or any building materials being delivered.

Table G-1 – Specified Tree Works

WSP Tree Number	Species	Works	BS5837:2012 Category
T7	Ash	Fell to ground level	Category C
LG8	Whitebeam, Sycamore, Norway maple	Fell to ground level	Category C
T13	Crack willow	Fell to ground level – off site tree, prior permissions required.	Category U

Stump removal

Stumps of those trees removed should, ideally, be carried out by "stump grinding" using a hand-operated machine. The stump should be ground to a minimum of 300mm deep or to extend through the base of the stump leaving the major roots disconnected.

Stump removal by digging out, whether done by hand or machine, is a much more intrusive process than stump grinding. Where possible, a high stump should be left for which either a machine (e.g. digger or excavator) can latch on to, or when winching out a stump, a suitable attachment point is preserved. When winching, a ground or other type of anchor should be used rather than a tree to be retained. If there is no alternative to using a retained tree as an anchor, appropriate protective measures should be adopted to avoid damage occurring.

After stump removal, the hole left should be filled with soil or other material appropriate to the future site usage and for any surface treatment that is to be installed.

Considerations

All tree works undertaken must comply with British Standard 3998:2010 – Tree Work Recommendations and should therefore be carried out by skilled tree surgery contractors. It would be recommended that quotations for such work be obtained from Arboricultural Association Approved Contractors as this is a recognised accreditation for tree work contractors.

All vegetation and, particularly, woody vegetation proposed for clearance should be removed outside of the bird-breeding season (bird nesting is March - September inclusive). Birds are protected under the Wildlife and Countryside Act, 1981 (as amended) whilst on the nest. Where this is not possible, vegetation to be removed or pruned should be checked for the presence of nesting birds by a competent ecologist.

A tree should be felled in one piece only when there is no significant risk of damage to people, property or protected species. Where restrictions (e.g. lack of space, buildings, other features, land ownership or use, or other trees which are to be retained) are present, trees should be dismantled in controlled sections.

Prior to commencing with any planned works within the RPAs of retained trees, an appropriately qualified arboricultural consultant acting as Environmental Clerk of Works (ECoW) shall be appointed. They shall be present on site at period intervals throughout the duration of demolition and construction works.

SITE AND ARBORICULTURAL MANAGEMENT AND MONITORING

Effective tree protection can only be achieved by adherence to a logical sequence of works combined with effective site and arboricultural management and monitoring.

The Site Manager will be responsible for overseeing the day to day running and protection of all retained trees and for liaising with the project arboricultural consultant about any tree related matters, particularly prior to any specified tree works and demolition or construction works that may or will affect the RPAs or physical structures of retained trees.

It is the responsibility of the acting Site Manager to ensure that any planning conditions attached to the planning consent are adhered to at all times and that a monitoring regime and supervision of any works within or adjacent to the RPAs are adopted.

The purpose of appropriate arboricultural management and monitoring is not to place restrictions or be onerous to the delivery of the Scheme but to ensure that all tree protection measures are fit for purpose, are implemented in accordance with any approved details and as a means of enabling any previously unforeseen arboricultural issues to be promptly identified and suitably addressed. In doing so, the trees can be appropriately protected and incorporated into the Scheme.

The Site Manager will be responsible for ensuring that all site personnel are made aware of the requirements of this AMS and that any future amendments are known and understood. Copies of the approved AMS will be available onsite, the requirements of which will be incorporated into all relevant site management documents and site induction procedures.

PRE-COMMENCEMENT

A pre-commencement meeting will be held between the Principal Contractor (Site Manager), acting local authority Tree Officer and the project arboriculturist (acting as ECoW). The purpose of this meeting will be to ensure that all aspects of the tree protection measures are clear and understood and that any future sequencing and supervisory arrangements are agreed. The details of this meeting will be recorded and will be circulated to all parties in writing.

The Site Manager should appoint a project arboriculturist who is suitably qualified and/or experienced for the role of ECoW. This person must:

- Be present on site whenever work is being undertaken close to retained trees, within the RPA or within a CEZ as specified within this AMS;
- Be aware of their arboricultural responsibilities;
- Have the authority to stop any work that is causing, or has the potential to cause harm to any retained tree;
- Be responsible for ensuring that all site operatives are aware of their responsibilities toward retained trees and the consequences of any failure to observe those responsibilities; and,
- Make immediate contact with the local authority and Site Manager in the event of any tree related problems occurring, whether actual or potential.

The Site Manager will be responsible for providing a toolbox talk to any on site operatives following the meeting. The purpose of this toolbox talk will be to inform the operatives of how to protect all

retained trees. The toolbox will be repeated by the Site Manager when new external trades / Contractors commence work on site.

The toolbox talk shall focus on informing Contractors on the following topics:

- The protection of trees is a requirement of planning approval and failure to comply could result in in stop notices being applied or fines;
- How trees can be harmed on development sites;
- How the trees on this site will be protected by tree protection fencing and ground protection;
- Discussion on particular methods of working near the trees as outlined in this Method Statement;
- How to report an issue before it becomes a problem; and,
- Evidence of the toolbox being carried out shall be collected.

DURING / POST-DEMOLITION AND CONSTRUCTION

Once works commence the project arboriculturist (acting as ECoW) will undertake a programme of arboricultural monitoring. This may include phone and email contact with the Site Manager, regular site visits and direct monitoring of sensitive works.

Beyond the supervision requirements specifically outlined in this AMS, the frequency of monitoring will be determined by the intensity and proximity of works to trees and will be flexible enough to accommodate changes in the scheduling of tasks as they occur on the site.

The project arboriculturist will maintain a record of all aspects of the arboricultural monitoring which has been undertaken. This will provide a record of compliance with any agreed tree protection measures and will assist in the efficient discharge of any relevant planning conditions or demonstration of compliance with any statutory requirements.

SEQUENCING OF WORKS

A logical sequence of events will need to be observed and should be phased as outlined in **Table G-2.**

Table G-2 – Sequence of Arboricultural Management, Protection and Monitoring

Stage	Description of Sequence
Stage 1	Pre-commencement site meeting between the Principal Contractor (Site Manager), acting local authority Tree Officer and the project arboriculturist (acting as ECoW).
Stage 2	Carry out tree works; including tree removals, as specified in **Table H-1** of this AMS.
Stage 3	Installation of tree protection measures in accordance with the approved Tree Protection Plan (refer to **Appendix G**)
Stage 4	Commence initial set up of the site including installation of compound, site offices and facilities.
Stage 5	Undertake proposed demolition works in accordance with approved plan/s. Existing wearing courses within unprotected RPAs are to be retained in situ as temporary ground protection.

Stage	Description of Sequence
Stage 6	Existing wearing course/s, kerb lines and other grey-infrastructure within the RPAs of retained trees (works within the Precautionary Zone) to be carried out under supervision of the project arboricultural consultant (ECoW).
Stage 7	Review, remediation or additional protection measures to be discussed with the Site Manager and project arboricultural consultant (ECoW), where necessary.
Stage 8	Undertake and complete construction works.
Stage 9	Undertake any landscaping works outside of the construction exclusion zones.
Stage 10	Removal of all machinery and materials form site.
Stage 11	Dismantle and removal of protective measures. Undertake a "snagging survey" and address any issues found.
Stage 12	Undertake landscaping works within the construction exclusion zones.
Stage 13	Sign off from project arboricultural consultant (ECoW),

TREE PROTECTION FENCING

Protective measures are to be installed immediately following the completion of the tree works and are to be sited and aligned in accordance with the approved Preliminary Tree Protection Plan prior to the commencement of any works on site.

Purpose

To protect retained trees including their stems, crowns, rooting areas and the soil within which they grow.

General Requirements

Tree protection fencing will be used to prevent access to the root protection areas (RPAs) or main stems and bases of retained trees where other protection measures (e.g. ground protection) are to be utilised. In all instances the following specification will be strictly adhered to:

- The area to the rear of the tree protection fencing shall be considered to form a Construction Exclusion Zone (CEZ). No construction activities, storage of materials or pedestrian or vehicular access shall take place within this area;
- All weather notices will be attached to the tree protection fencing at suitable intervals and shall include suitably sized informative text containing the following statement:

''TREE PROTECTION FENCING

CONSTRUCTION EXCLUSION ZONE – NO ACCESS''

- Regular checks will be carried out by an appointed person to ensure that all tree protection fencing is still in place and functioning. If the protective measures become damaged or there is any damage to retained trees, these areas are to be cordoned off immediately with high visibility plastic mesh fencing and the Site Manager shall inform the project arboriculturist immediately. All

work within in this area is to cease until the project arboriculturist has made a visit to the site. Any damage will be rectified without delay.

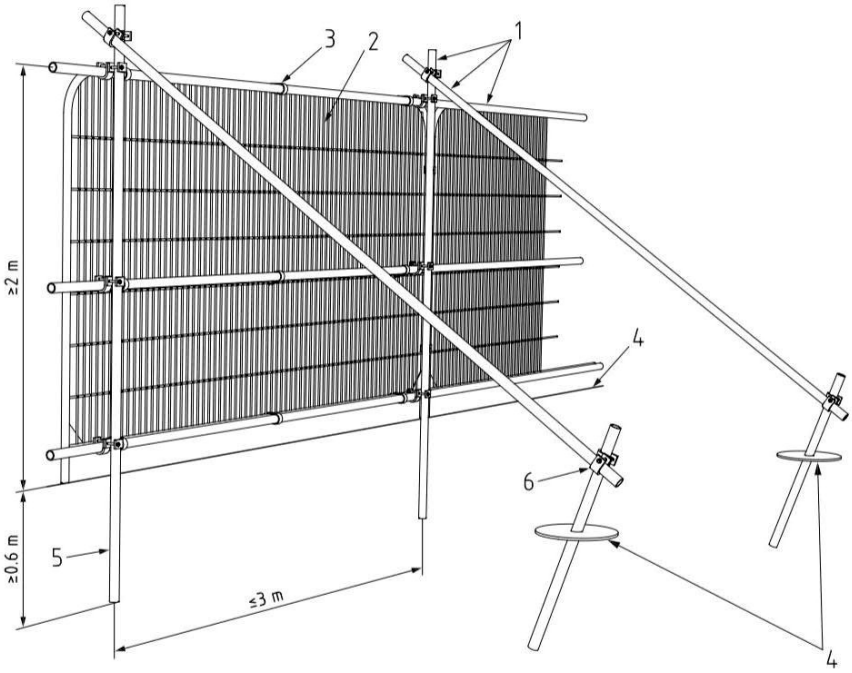
Timing

- Tree protective fencing shall be erected prior to any works onsite including site clearance, groundwork or the importation of plant and materials.
- Once erected tree protection fencing shall remain in-situ until all construction activities are complete in accordance with the sequencing outlined in **Table G-2.**

Specification for Fencing

- **Protective Fencing to be erected around the RPA of T1, T2-T9 and T10-T14 which shall follow the specification detailed below.**
- In this instance, the protection fencing shall be fit for the purpose of excluding construction activity and appropriate for the degree and proximity of work taking place. An example of the type of tree protection fencing to be used is included in **Figure G-1.**

Figure G-1 - Example of appropriate tree protection fencing



Key:

1. Standard scaffold poles
2. Heavy gauge 2m tall galvanised tube and welded mesh infill panels
3. Panels secured to uprights and cross-members with wire ties
4. Ground level
5. Uprights driven into the ground until secure (minimum depth 0.6m)
6. Standard scaffold clamps

DEMOLITION WORKS

WORKS WITHIN THE RPA OF RETAINED TREES

Prior to commencing with any planned works within the RPAs of retained trees, an appropriately qualified project arboricultural consultant acting as ECoW shall be appointed. They shall be present on site during these works at period intervals throughout both demolition and construction.

General Requirements

The Site Manager should seek to comply with the following specification:

- Avoid the need for any excavation or lowering of soil levels other than the removal, using hand tools only, of any turf, surface vegetation or organic matter. Levels may be raised using a granular fill which will remain gas and water permeable for the duration of its design life;
- Avoid any localised compaction of the underlying soil by evenly distributing any anticipated loading over a suitably large area; and,
- Utilise a sub-base and wearing course that is permeable to air and water (this includes and separation membranes that may be required).

EXISTING HARD SURFACES

To the north of those retained trees along the southern boundary; within the perceived RPAs, is an expansive area of concrete hard surfacing and kerb lines. As part of the Proposed Scheme, this existing hard surfacing is to be removed and, in places, re-surfaced.

Given the constrained nature of the site, spatial working requirements will be required for contractors during both demolition and construction and these existing areas of hardstanding should be retained, as far as practicable, for demolition and construction activities. This may extend to, but not limited to, moving materials, passage of contractors, light load-bearing machinery and placing scaffolding atop to minimise further compaction of soils within the RPAs.

All of these works are to be undertaken under direct on-site arboricultural supervision, during the relevant phase of the development. This should be clearly outlined at the pre-commencement site meeting.

Precautionary Zone

The areas of RPA outside the protection of protective fencing will become the *'precautionary zone'* (PZ) – as identified on the **Tree Protection Plan.** This area is not to be modified in anyway without the prior approval of the project Arboricultural Consultant (ECoW).

The following rules apply within the precautionary zone.

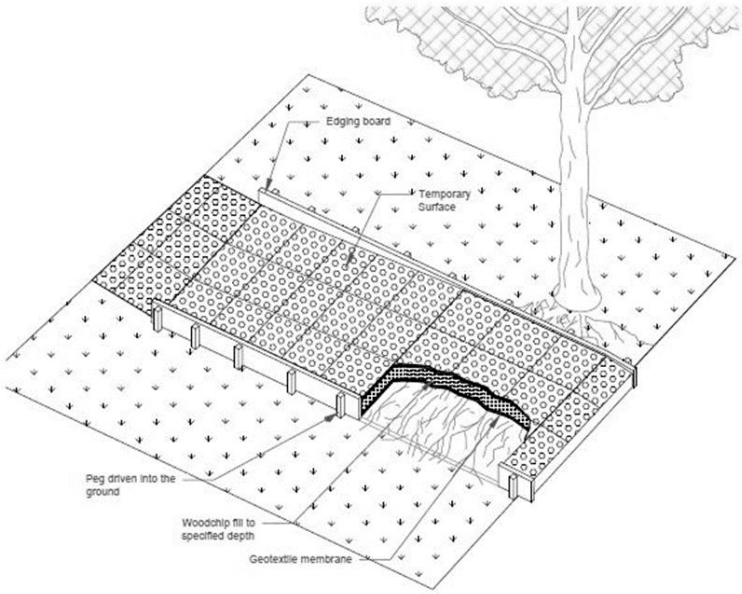
- No materials or soils are to be stored within the precautionary zone;
- Oil, bitumen, cement or other material that is potentially injurious to trees will not be stacked or discharged within 10m of a tree stem. No concrete mixing will be done within 10m of a tree. Allowance will be made for the slope of ground to prevent materials running towards the tree;
- Wide or tall loads etc. should not come into contact with retained trees. Banks man should supervise transit of vehicles where they are in close proximity to retained trees;
- No fires will be lit where flames are anticipated to extend to within 5m of tree foliage, branches or trunk, taking into consideration wind direction and size of fire;

- Notice boards, telephone cables or other services will not be attached to any part of a retained tree;
- If unexpected large roots (>25mm diameter) are encountered during excavation for construction works the arboricultural consultant should be contacted immediately. No exposed roots will be left uncovered. They will be covered over as soon as possible to minimise the risk of drying out and dying; and,
- As recommended within section 8.8.3 of BS5837:2012 - Post Development Management of Existing Trees, all retained trees should be subjected to sound arboricultural management where there is public access in order to satisfy the landowner's duty of care.

The suitability of this surfacing as ground protection and whether it needs to be reinforced to bear the weight of the machinery to be utilised, should be assessed by a suitable qualified structural engineer and discussed with the project Arboricultural Consultant (ECoW).

In most instances the ground within the RPA must be protected before any works take place on site. The ground protection might comprise of one of the following (section 6.2.3.3 of BS5837):

Figure G-2 - Temporary Ground Protection example

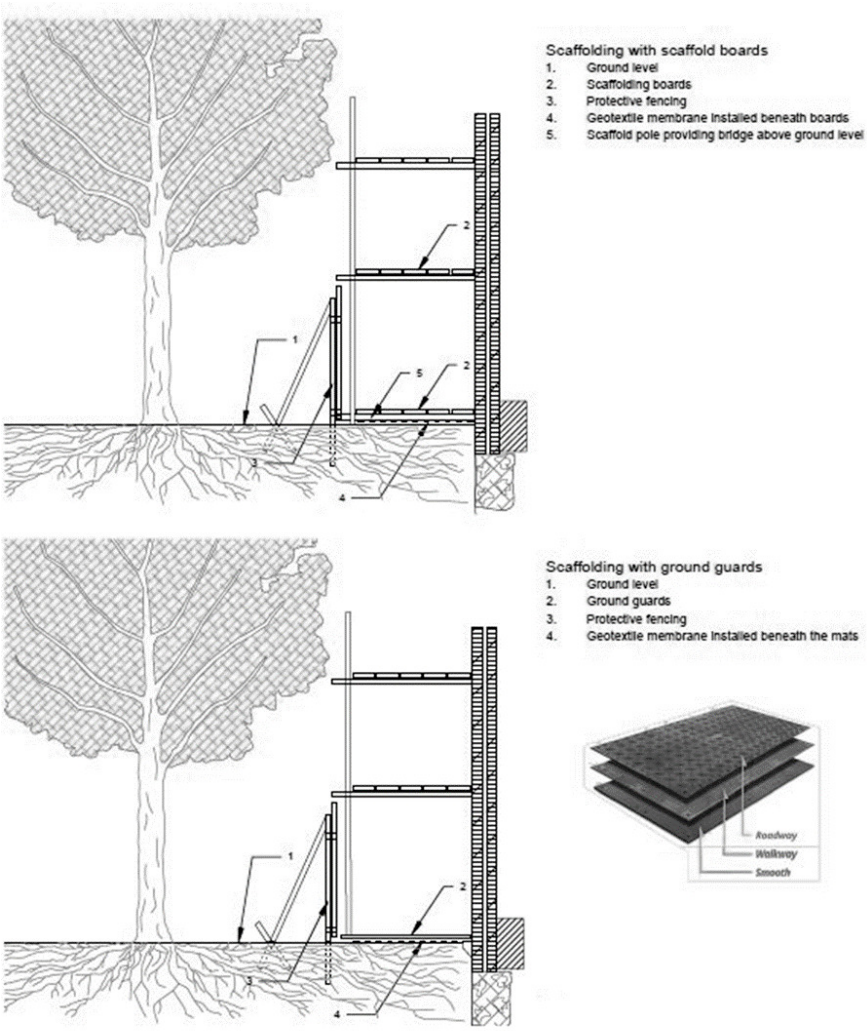


- For pedestrian movements only, a single thickness of scaffold boards placed either on top of a driven scaffold frame, so as to form a suspended walkway, or on top of a compression-resistant layer (e.g. 100mm depth of woodchip), laid onto a geotextile membrane;
- For pedestrian-operated plant up to a gross weight of 2 tonnes, proprietary, inter-linked ground protection boards placed on top of a compression-resistant layer (e.g. 150mm depth of woodchip), laid onto a geotextile membrane; and,
- For wheeled or tracked construction traffic exceeding 2 tonnes gross weight, an alternative system (e.g. proprietary systems or pre-cast reinforced ground protection boards) placed on top of a compression-resistant layer (e.g. 150mm depth of woodchip), laid onto a geotextile membrane.

Once the Temporary Ground Protection has been installed the contractor responsible for the tree protection should seek written confirmation from the project arboriculturist that it has been installed in the correct position and is to the required standard.

Where scaffolding is to be placed in the RPAs, the following specification should be adhered to. It may be deemed suitable to erect scaffolding on top of the existing Tarmacadam Footpath.

Figure G-3 – Placement of Scaffolding within the RPA



SUPERVISION OF DEMOLITION AND UPLIFT OF EXISTING HARD-STANDING, KERBING AND LOW STRUCTURES - WORKING METHODOLOGY

At the time of preparing this AMS, it is known that existing surfaces (concrete wearing courses and other grey-infrastructure) will be removed **within the perceived RPAs (precautionary zone) of retained trees T2, T5, T6, T10, T11, T12, T13 and T14**.

Supervision by the project arboricultural consultant (acting as ECoW) will be required during demolition and construction in the PZ.

General Requirements

The purpose of the Working Methodology is to ensure that the assumed rooting area, referred to as the RPA, of retained trees is protected from unnecessary damage.

- In the PZ, hand tools only; including the use of powered hand-tools, will be employed.
- In some situations, at the discretion of the project arboriculturist, it may be possible to use an excavator using a hydraulic breaker and a suitably sized toothless grading bucket. If an excavator is to be used, it must be situated outside of the RPAs, on top of the hard surfacing working away from the RPAs;
- Following further review following removal of hard surfaces, it may be necessary to undertake ground decompaction to provide the retained trees with more soil aeration. Decisions will be made on site following removal of the existing surfaces; and,
- The cutting of some roots may not entirely be avoidable during these works. As such any roots located / identified during these works shall be pruned back as they became exposed by the ECoW. Roots shall be wrapped with hessian material, which is to be kept damp, until the hessian can be removed and the area back filled with topsoil. At no time will roots be left exposed and allowed to dry out.

Uplift of Hard Surfaces Methodology

To avoid any accidental damage to roots that may be present, it is proposed that works within or near to root protection areas and the identified precautionary zones are supervised at all times by the appointed ECoW.

The removal of all existing hard surfacing will be undertaken using the methodology set out below.

- Step 1 –The existing areas of hardstanding around the perimeter of the precautionary zone should remain in place to act as temporary ground protection for the siting of spoil or machinery, where deemed suitable;
- Step 2 – The wearing course will be broken up using a handheld pneumatic breaker, hand tools and wheelbarrows to break up and remove the surfacing. Where is necessary to remove the subbase, this is to be undertaken using a fork to loosen the material and moved using shovels and wheelbarrows;
- Step 3 - The removal of any substantial concrete hard surfacing will need to be undertaken using a large excavator operating only from the north side of the trees, positioned atop existing hardstanding, outside of the precautionary zone and will be uplifted with minimal excavation; *NB. at all stages, it will be necessary to apply appropriate damping-down to avoid dust from damaging long-term tree health.*
- Step 4 – Utilise the existing hard surfaces throughout the duration of demolition and construction, where feasible. If this is not feasible, the temporary ground protection methods listed in **TEMPORARY GROUND PROTECTION** should be employed;
- Step 5 - Any roots found with a diameter of less than 25 millimetres shall be cleanly severed by the project arboricultural consultant. Any roots of 25mm and above shall be excavated around without damaging them; the arboricultural consultant shall decide if it's feasible or necessary to retain the root, if not it shall be severed; and,
- Step 5 – Continue to gradually break up the wearing course around the lower stems of each tree. Any exposed roots shall be wrapped in Hessian which is to be kept damp until new topsoil or finished surfacing is laid.

REMOVAL OF UNDERGROUND SERVICES

There are assumed to be no areas on site where the removal of existing underground services is likely to require works within the RPAs of retained trees. The locations and specifications of existing and proposed underground services were unknown at the time of writing, however, it is considered likely that new services will be required.

Existing services within the site should be retained wherever possible. Where existing services within RPAs require installing or upgrading, the upmost care must be taken to minimise disturbance. Where feasible, trenchless techniques are to be employed.

Any trenches which are to be excavated are to be dug by hand and radially to the trees stem under direct on-site project arboricultural supervision. These works should be carried out under National Joint Utilities Group (NJUG) guidelines.

Any requirements for these works will need to be clearly outlined following discussion with the project arboriculturist during a pre-commencement site meeting.

CONSTRUCTION WORKS

Prior to the construction of the Proposed Scheme, a copy of the construction method statement should have been submitted and approved by the project arboriculturist and LPA Tree Officer, to ensure that there is no conflict with this AMS.

The Proposed Scheme will require the excavation of soils and the installation of a retaining wall will be installed along the line of the southern boundary. Within the perceived RPAs of trees LG6 and LG9, excavations will be undertaken along the line of the retaining wall prior to its installation.

These excavations will be undertaken under arboricultural supervision. Excavation within RPAs will be undertaken by hand to the required depth of the foundation. The total depth of the manual excavation will be outlined at the pre-commencement site meeting.

The soil is to be loosened with the aid of a fork or pickaxe and then cleared with the aid of an Air-spade, Air-vac and or shovel. Any roots found will be cleanly severed by the project arboricultural consultant with either a hand saw or secateurs.

LANDSCAPING

Landscaping (e.g. planting, turfing, fencing). around retained trees may only be carried out once all tree protection measures have been removed. The following considerations should be adhered to:

- All excavations within the RPAs of retained trees shall be undertaken by hand and without reducing current ground levels unless it is agreed in writing with the LPA;
- At no time is the use of a rotavator permitted within the RPAs of retained tree;
- Any tree roots discovered will be left in-situ and shall not be cut or otherwise damaged;
- Where possible, the soil structure within the Root Protection area shall be preserved;
- No works will be carried out within the RPAs of any trees if the soil moisture is of such a level that soil compaction may be likely; and,
- Should the soil become compacted or has poor structure which would hinder the development of the existing trees and plants or any new plantings the project arboriculturist should be consulted about soil decompaction techniques.

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