Arboricultural Impact Assessment

WC-517.1a

Huddersfield Bus Depot, Old Fieldhouse Lane,
Huddersfield HD2 1AG

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Site address	Huddersfield Bus Depot, Old Fieldhouse Lane, Huddersfield HD2 1AG
Grid reference:	SE 15899 18679
Report prepared by:	Jack Delaney MICFor MArborA
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Contents

Executive Summary

Woodsage Consulting Ltd have been instructed by JANUS Architecture to prepare an Arboricultural Impact Assessment for the land at Huddersfield Bus Depot, in relation to the proposed development of the site.

The development proposals are for the electrification of an existing diesel bus depot currently operated by First Bus.

According to information which is available on the Kirklees Council website, none of the trees on or immediately adjacent to the site are subject to tree preservation orders and the site is not located within a conservation area.

The site survey identified a total of 16 trees and four groups of trees with the potential to be impacted by the development proposals. These include:

- four category B trees and one group of moderate quality; and
- 12 category C trees and three groups of low quality.

The development proposals do tree necessitate any tree removals or facilitation pruning.

The RPAs of the retained trees are to be suitably protected throughout the development process by temporary tree protection fencing.

Providing the recommendations made within this report are followed, the development is considered achievable, with minimal impact in arboricultural terms to the site and surrounding area.

1. Introduction

1.1. Instruction and Scope of Report

1.1.1. Woodsage Consulting Ltd have been instructed by JANUS Architecture to prepare an Arboricultural Impact Assessment for the land at Huddersfield Bus Depot, in relation to the proposed development of the site.

1.1.2. The purpose of this report is to allow the local planning authority (LPA) to assess information regarding trees at the site as part of the planning submission and to demonstrate to the LPA that appropriate consideration has been given to the subject of trees as part of the development.

1.1.3. In accordance with *BS 5837:2012*[1] this report sets out to:

- assess the quality and value of the trees on and immediately adjacent to the site;
- identify trees for removal and/or retention in relation to the development proposals;
- prescribe tree protection measures, which will ensure the successful retention of the retained trees at the site (these measures will be further detailed in an outline Arboricultural Method Statement (AMS)); and,
- where necessary, provide preliminary recommendations for replacement tree planting.

1.1.4. The contents of this report are concerned with arboricultural issues alone; although other disciplines such as engineering and ecology may be referenced, it is important to gain advice from an appropriate expert on these matters.

1.2. Site Details

1.2.1. Huddersfield Bus Depot - hereafter referred to as 'the site' and shown in ***Fig. 1.1***, below - is located approximately 1.6 miles to the north-east of Huddersfield town centre.

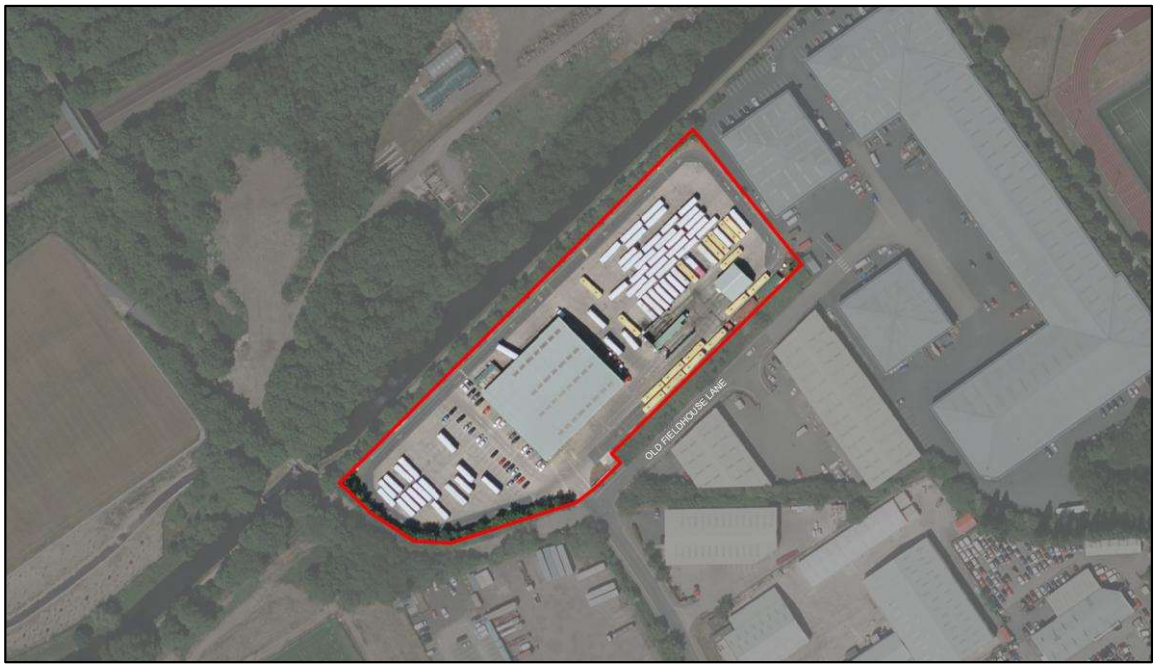

Figure 1.1: *Aerial imagery showing the application site red line boundary*[2].

[1] British Standards (2012). *BS 5837:2012 - Trees in Relation to Design, Demolition and Construction: Recommendations*. British Standards Institute, London.

[2] Microsoft Corporation (2026). *Bing Maps* [online]. Available at: https://www.bing.com/maps?cp=53.664313%7E-1.759561&lvl=16.9&style=h (accessed 27th April 2026].

1.2.2. The site is centred on OS Grid Reference SE 15899 18679 and covers approximately 1.54 ha.

1.2.3. The site is bound by the Huddersfield Broad Canal to the north-west, by commercial properties to the north-east, by Old Fieldhouse Lane to the south-east, and by a public footpath to the south-west.

1.2.4. The site comprises depot and office buildings, external yards, and car/bus parking facilities.

1.3. Site Topography and Elevation

1.3.1. The site lies at an elevation ranging between 57-61 m above ordnance datum (AOD).

1.3.2. The topography of the site is level.

1.4. Desk Based Study and Planning Context

1.4.1. According to the Cranfield Soil and Agrifood Institute[3], the soils at the site consist of *Soilscape 20.* These are loamy and clayey floodplain soils, with a naturally high groundwater. No further detailed soil analysis was carried out as part of the survey. However, it is worth noting that a significant proportion of the site is covered by existing sealed surface, which is likely to have influenced the underlying soil characteristics.

1.4.2. According to information which is available on the Kirklees Council website[4], none of the trees on or immediately adjacent to the site are subject to tree preservation orders and the site is not located within a conservation area.

1.4.3. According to information which is available on the website of the Multi-Agency Geographic Information for the Countryside (MAGIC)[5], there are no ancient woodland, traditional orchard or wood pasture/parkland priority habitats on or adjacent immediately adjacent to the site.

1.5. Development Proposals

1.5.1. The development proposals are for the electrification of an existing diesel bus depot currently operated by First Bus.

[3] Cranfield University (2026). *Land Information System (LandIS) - Soilscapes Viewer* [online]. Available at: https://www.landis.org.uk/soilscapes (accessed 27th April 2026].

[4] Kirklees Council (2026). *TPO/Conservation Area Map* [online]. Available at: https://www.kirklees.gov.uk/beta/trees-listing-and-conservation/tree-preservation-orders.aspx (accessed 27th April 2026].

[5] MAGIC (2026). *Magic Map* [online]. Available at: https://magic.defra.gov.uk/MagicMap.html (accessed 27th April 2026).

2. Methods

2.1. Survey Details

2.1.1. The site survey was carried out on Wednesday the 1st of April 2026.

2.1.2. The weather at the time of the site survey was fine and dry; visibility of the trees was not impeded.

2.2. Survey Personnel

2.2.1. The survey was carried out by Jack Delaney, a Chartered Arboriculturalist and Member of the Institute of Chartered Foresters, with 20 years' experience in the arboricultural sector. Jack holds a Foundation Degree (FdSc) in Arboriculture with distinction, is a Professional Member of the Arboricultural Association, a LANTRA-qualified Professional Tree Inspector, and a trained and registered user of Quantified Tree Risk Assessment (QTRA).

2.3. Survey Methodology

2.3.1. Only substantial trees with a stem diameter of 75 mm or above were included as part of the survey, as is recommended in *BS 5837:2012*.

2.3.2. The trees were inspected from ground level using the Visual Tree Assessment (VTA)[6]. Although notable defects of trees were recorded, the site survey did not constitute a full tree safety assessment. No specialist decay detection equipment was used as part of the survey, though sounding and probing tools were used where necessary.

2.3.3. In circumstances where trees form a cohesive feature, they have been recorded, assessed and plotted as groups, hedgerows, or woodlands. Whilst not every tree within a group, hedgerow, or woodland has been surveyed, a representative sample has been measured in order to calculate the crown spread and root protection area (RPA).

2.3.4. Tree information was recorded in accordance with *Section 4.4* of *BS 5837: 2012*, and includes tree species, height, stem diameter at breast height (DBH), crown spread, crown clearance, life stage, condition (physiological and structural), and safe useful life expectancy (SULE).

2.3.5. Trees were allocated to one of four categories (U, A, B or C) as defined in ***Tab. 2.1***, below, to reflect amenity value and suitability for retention, in consideration of the development proposals.

Table 2.1: BS 5837: 2012 *cascade chart*[1].

BS 5837: 2012 Category	Definition	Retention	Colour code
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.	Highly desirable	Light green
Category B	Trees of moderate quality with an estimated remaining life expectancy of at least 20 years; trees lacking the special quality to merit category A designation.	Desirable	Dark blue
Category C	Trees of low quality with an estimated remaining contribution of at least 10 years, or 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.	Feasible, but may be removed if posing a constraint to development	Grey

[6] Mattheck, C., Breloer, H. (1994). *The Body Language of Trees, a Handbook for Failure Analysis*. Her Majesty's Stationary, London.

BS 5837: 2012 Category	Definition	Retention	Colour code
Category U	Trees that have serious, irremediable, structural and/or physiological defects, including those that will become unviable after removal of other category U trees.	Potentially unfeasible	Red

2.3.6. Subcategories 1, 2 and 3 have also been applied to the trees, to reflect arboricultural (1) and landscape (2) qualities, and cultural values (3), respectively.

2.3.7. Tree dimensions were determined using the following methods[7]:

- Tree heights were measured from the base of the main stem to the top of the crown, using an electric clinometer
- Crown spreads were measured at each cardinal point, using a laser distometer
- Crown clearances were measured from the base of the main stem to the first significant branch, using an electric clinometer
- The DBH of trees was measured at 1.5 m above ground level using a diameter tape measure, employing the methods detailed in *Annex C* of *BS 5837:2012*

2.3.8. DBHs were then used to calculate tree RPAs using the following equations:

1. For single stem trees, the RPA was calculated as a circle with a radius 12 times the DBH
2. For trees with 2-5 stems, the combined stem diameter was first calculated using the formula:

$$\sqrt{(\textbf{Stem 1 DBH})^2 + (\textbf{ Stem 2 DBH})^2 + \ldots (\textbf{Stem 5 DBH})^2}$$

3. For trees with 6 or more stems, the combined stem diameter was first calculated using the formula:

$$\sqrt{(\mu\, \boldsymbol{DBH})^2 \textbf{ x number of stems}}$$

2.3.9. The default RPA for individual trees has been plotted as a circle centred on the base of the main stem. Where pre-existing site conditions (e.g. roads, structures or underground services) are likely to have constrained root development, RPAs have been modified to a polygon of equivalent area to reflect probable asymmetric rooting patterns.

2.3.10. For tree groups, hedgerows, and woodlands, the calculated RPAs are based on an offset from the canopy edge. This offset is determined with reference to the trees with the largest stem diameters and crown spreads located at the edge of the group, hedgerow or woodland feature.

2.3.11. For ancient and veteran trees (including those on the boundary of tree groups or woodlands), RPAs have been calculated in accordance with government standing advice[8]. This is based on a calculation of fifteen times the DBH or a minimum of five metres beyond the crown spread, whichever results in the greater area, with adjustments made where necessary to reflect pre-existing site conditions.

[7] Height, crown spread and crown clearance have been recorded to the nearest half metre for dimensions up to 10 m, and the nearest whole metre for dimensions over 10 m.

[8] Natural England (2026). *Ancient woodland, ancient trees, and veteran trees: advice for making planning decisions* [online]. Available at: www.gov.uk/guidance/ancient-woodland-ancient-trees-and-veteran-trees-advice-for-making-planning-decisions (accessed 27th April 2026].

2.3.12. Where access to trees was obstructed or obscured, DBH, height, and crown spread measurements may have instead been estimated

2.4. Constraints

2.4.1. The survey was constrained by the season in which it took place; certain tree pathogens and/or defects, for example, the fructifications of decay fungi are only visible at specific times of the year.

2.4.2. The locations of the trees shown in the ***Tree Constraints Plan*** in ***Appendix 4*** have been determined using a topographical plan of the site, which was issued by JANUS Architecture.

2.4.3. Where tree stem locations are not shown on the topographical plan, these have been plotted using a combination of GPS, site features, and manual measurements. Aerial imagery has also been utilised to plot tree group canopy spreads. Although these methods provide a good representation of the surveyed trees, it should be noted that the GPS used is not sub-metre accurate and aerial imagery may not reflect the exact current dimensions of the trees.

2.4.4. There are trees on the site which:

- are situated within dense areas of understorey vegetation;
- are positioned on neighbouring property; and/or,
- have epiphytic plants established upon them.

Whilst such trees were surveyed insofar as was reasonably practicable, the accuracy of such data cannot be guaranteed.

2.4.5. All visual observations and recommendations specified within this document relate to the condition of the trees and surroundings at the time of the survey. As such, any subsequent changes to landform in the proximity of the trees could invalidate the advice given.

2.4.6. Trees are dynamic living organisms, and their condition can change rapidly; the information given in this report is therefore valid for a period of 12 months. This period may be reduced if significant changes occur to the trees, or the ground conditions, which surround them.

3. Survey Results

3.1. Arboricultural Observations

3.1.1. The site survey identified a total 16 individual trees and four groups of trees with the potential to be impacted by the proposed development.

3.1.2. The surveyed trees comprise a total of 16 species, 14 genera, and nine families.

Table 3.1: *Botanical families by species and genera richness.*

Family	No. of Species	No. of Genera
Rosaceae	5	4
Betulaceae	3	3
Sapindaceae	2	1
Oleaceae	1	1
Aquifoliaceae	1	1
Elaeagnaceae	1	1
Adoxaceae	1	1
Scrophulariaceae	1	1
Cornaceae	1	1

3.1.3. ***Tab. 3.1***, above, indicates that there is moderate diversity in terms of the range of botanical families, genera, and species at the site.

3.1.4. Tree stock diversity is important for a range of ecological reasons and contributes to:

- increased resilience to pests and diseases;
- improved adaptability to climate change;
- enhanced biodiversity through the support of a wider range of invertebrates, birds, fungi, and mammals; and,
- greater structural continuity and long-term canopy stability.

3.1.5. The tree species and cultivars recorded at the site include field maple *Acer campestre*, sycamore *Acer pseudoplatanus*, grey alder *Alnus incana*, summer lilac *Buddleia davidii*, silver birch *Betula pendula*, common dogwood *Cornus sanguinea*, common hazel *Corylus avellana*, common hawthorn *Crataegus monogyna*, common ash *Fraxinus excelsior*, sea buckthorn *Hippophae rhamnoides*, common holly *Ilex aquifolium*, crab apple *Malus sylvestris*, purple cherry plum *Prunus cerasifera* 'Pissardii', blackthorn *Prunus spinosa*, elder *Sambucus nigra*, and rowan *Sorbus aucuparia*.

3.1.6. The surveyed trees range from young to semi-mature in age class.

3.1.7. They trees are arranged around the perimeter of the site:

- To the north-west and north-east, the trees are located off-site
- To the south-west, the trees are located around perimeter of the site car park

3.2. Tree Categorisation

3.2.1. The surveyed trees include:

- four category B trees and one group of moderate quality; and
- 12 category C trees and three groups of low quality.

3.2.2. There were no category A trees of high quality or category U trees with SULEs of less than 10 years identified at the site.

3.2.3. A summary of the *BS 5837:2012* categories of trees at the site is given in ***Tab. 3.2***, below.

Table 3.2: *Summary of* BS 5837:2012 *tree categories.*

BS 5837:2012 Category	Description	Tree/Group Ref.	Line Totals
A	High-quality trees, which should be retained throughout the proposed development.	-	-
B	Moderate-quality trees, which should where possible be retained throughout the proposed development.	T002, T006, T011, T015 G003	4 Trees 1 Group
C	Low-quality trees, which, if removed to facilitate the development, can be readily mitigated.	T001, T003, T004, T005, T007, T008, T009, T010, T012, T013, T014, T016 G001, G002, G004	12 Trees 3 Groups
U	Trees of such a condition that they cannot realistically be retained in the context of the current land use for longer than 10 years	-	-
		Totals:	**16 Trees 4 Groups**

3.2.4. The full results of the survey can be viewed in the ***Tree Survey Schedule*** in ***Appendix 1***. Images of the trees can be viewed in ***Appendix 2***. Tree locations, and the above and below ground constraints posed by trees, can be viewed in the ***Tree Constraints Plans*** in ***Appendix 4***.

4. Impact Assessment

4.1. Tree Removals

4.1.1. The development proposals do not require any tree removals.

4.2. Facilitation Pruning

4.2.1. The development proposals do not require any facilitation pruning.

4.3. Tree Root Protection Areas (RPAs)

4.3.1. The RPAs of the following tree groups will be encroached onto by proposed EV infrastructure which will be mounted on to unmade ground:

- G003 (16 x power units and 5 x overhead gantries)
- G004 (3 x power units and 5 x overhead gantries)

4.3.2. The proposals to erect cable gantries on unmade ground within the RPAs of G003 and G004 is considered feasible, providing that the following mitigation measures are implemented to minimise disturbance to tree roots:

- The proposed cable gantries should be constructed upon pile foundations of the smallest feasible diameter, which will reduce the possibility of striking major tree roots
- Site investigation should be carried out by means of hand tools or compressed air soil displacement to a minimum depth of 60 cm, to determine the optimal location of piles in relation to tree roots
- The pile type should be selected bearing in mind the need to protect the soil and adjacent roots from the potentially toxic effects of uncured concrete; for example, sleeved bored or screw piles

4.3.3. The proposals to install Heliox power units within the RPAs of G003 and G004 is considered feasible with minimal impact upon tree roots, since these will be either mounted directly on to existing hardstanding or upon new concrete slabs mounted on top of the existing unmade ground.

4.3.4. The temporary tree protection fencing which is detailed in ***Section A3.4*** of the ***Outline AMS*** in ***Appendix 3*** and which is shown in the ***Tree Protection Plan*** in ***Appendix 5***, will help to ensure that the RPAs of the retained trees are suitably protected from development activities.

4.4. Shade Analysis

4.4.1. The development proposals do not include residential use; therefore, detailed assessment of shading from the trees has not been carried out.

4.5. Underground Utilities

4.5.1. At the time of writing, the client had not provided detailed plans indicating the location of proposed utilities and/or service runs. However, it is understood that all EV infrastructure cabling will be routed above ground, and as such, will not impact the tree RPAs.

4.5.2. Details of all new utilities, drainage routes, and final site levels should be submitted to the Project Arboriculturalist to enable an assessment of their potential impact on the retained trees. This information can then be incorporated within the final AMS.

4.5.3. Any installation of new utilities as part of the development should be carried out in accordance with the National Joint Utilities Group (NJUG) guidance, *Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees (Volume 4).*

5. Recommendations

5.1. Tree Protection Measures

5.1.1. Construction, and any other works involving excavations, can cause irreversible damage to trees - particularly those which have reached maturity - which are far less capable of adapting to alterations in their surrounding environment. Whilst above-ground injuries are usually obvious, root damage is often concealed, though can have equally devastating impacts to tree health.

5.1.2. Direct root damage includes root severance, which can be caused by digging of trenches and ditches, and the stripping of topsoil. Indirect damage may involve the raising of soil levels, alterations in drainage patterns, the laying of impervious surfaces, and soil compaction.

5.1.3. Compaction of soils is a common cause of death or damage to retained trees on development sites. Soil compaction reduces soil pore space, which in turn reduces soil air, the passage of water and available nutrients. These anaerobic conditions prevent root growth and the proliferation of soil microbes essential to tree health. Symptoms in trees may include crown die-back, sparse and small foliage, and poor extension growth; however, these are usually not evident until well after the occurrence of compaction. Even one pass of a vehicle in wet conditions can cause irreparable soil compaction.

5.1.4. To avoid both direct and indirect damage to the retained trees, temporary tree protection fencing should be installed prior to development works commencing in the locations shown in the ***Tree Protection Plan***.

5.1.5. It is recommended that development works follow the ***Outline AMS***, which includes the specifications for temporary tree protection fencing and other protective measures to be adhered to throughout the development.

5.1.6. As aspects of the development may be subject to change, the ***Outline AMS*** should be reviewed by the Project Arboriculturalist prior to the commencement of development works.

Appendices

Appendix 1: Tree Survey Schedule

Table Key			
Tree/Group Ref: Reference numbers, as labelled in the ***Tree Constraints Plan*** in ***Appendix 4***			**DBH:** Diameter at breast height (1.5 m), in millimetres
Height (Ht.): Overall height of tree, in metres			**SULE:** Safe useful estimated life expectancy of the tree, in years
Crown Spread (CS): Radius of crown to N, E, S, and W aspects, in metres			**Crown Clearance (CC):** Clearance from ground level of lowest branch, in metres
Structural Condition (SC): An assessment of structural condition. **G** = Good; **F** = Fair; **D** = Decaying; **C** = Collapsing; **PD** = Physical Defect			**Physiological Condition (PC)**: An assessment of vitality and vigour **F** = Fair; **P** = Poor; **D** = Dead
Species: Common (and *binomial name*)			**#:** Denotes estimated value
Age	**Young (Y):** Newly planted or self-seeded tree	**Early-mature (EM):** Trees in second third of life expectancy for species type	**Over-mature (OM):** Mature trees which have entered stages of natural decline
	Semi-mature (SM): Trees in within first third of life expectancy for species type	**Mature (M):** Trees in final third of life expectancy for species type	**Veteran/Ancient (V/A):** Trees of any age with veteran characteristics or which are remarkably old for the species type
BS 5837: 2012 **Categories**	**Category A:** Trees of high quality with an estimated remaining life expectancy of at least 40 years, and that are particularly good examples of their species type		**Category C:** Unremarkable trees of low quality offering limited arboricultural merit and/or of such impaired condition that they do not warrant in higher categorisation
	Category B: Trees of moderate quality with an estimated remaining life expectancy of at least 20 years, though lacking the necessary qualities to warrant Category A designation		**Category U:** Trees which display serious, irremediable, structural and/or physiological defects

Individual Trees

Tree Ref:	Species	Age	SULE	Ht.	DBH	CS				CC	Comments	PC	SC	*BS 5837: 2012* Category	Recommendations
						N	E	S	W						
T001	Purple cherry plum *Prunus cerasifera* 'Pissardi'	SM	20-40	7	110 100 140 90 90 80	3.5	3.5	3.5	3	3	Multiple-stemmed tree. No obvious significant defects, though of limited arboricultural merit and lacks the necessary qualities for higher *BS 5837* categorisation.	F	F	C1	No works recommended
T002	Common ash *Fraxinus excelsior*	SM	40-80	9.5	200#	4	3.5	4	3.5	3.5	Unable to access base of main stem due to dense understorey vegetation. Dense ivy *Hedera helix* established on main stem and first order branches, which obscures tree features and potential defects.	F	G	B1	No works recommended

Tree Ref:	Species	Age	SULE	Ht.	DBH	CS				CC	Comments	PC	SC	*BS 5837: 2012* Category	Recommendations
						N	E	S	W						
T003	Sea buckthorn *Hippophae rhamnoides*	SM	10-20	9	200	3	1	2	3	5.5	Asymmetrical form due to proximity with adjacent trees. Minor deadwood < 100 mm in diameter scattered throughout the crown.	F	F	C1	No works recommended
T004	Sycamore *Acer pseudoplatanus*	SM	40-80	8	150#	3.5	3	3	2	4.5	Unable to access base of main stem due to dense understorey vegetation. Dense ivy *Hedera helix* established on main stem up to 4 m, which obscures tree features and potential defects. Limited arboricultural merit and lacks the necessary qualities for higher *BS 5837* categorisation.	F	G	C1	No works recommended
T005	Common ash *Fraxinus excelsior*	SM	20-40	9.5	140	3.5	1.5	1	1.5	4.5	Asymmetrical form due to proximity with adjacent trees. Limited arboricultural merit and lacks the necessary qualities for higher *BS 5837* categorisation.	F	F	C1	No works recommended
T006	Common ash *Fraxinus excelsior*	SM	40-80	10	210	3.5	2.5	4	3	4	No obvious significant defects, though lacks the necessary qualities for higher *BS 5837* categorisation.	F	G	B1	No works recommended
T007	Blackthorn *Prunus spinosa*	SM	20-40	6.5	130 140	3.5	3	5	3.5	3	Bifurcates at ground level into two co-dominant stems. No obvious significant defects, though of limited arboricultural merit and lacks the necessary qualities for higher *BS 5837* categorisation.	F	F	C1	No works recommended
T008	Rowan *Sorbus aucuparia*	SM	20-40	5.5	120, 90	1	1	2	2.5	4	No obvious significant defects, though of limited arboricultural merit and lacks the necessary qualities for higher *BS 5837* categorisation.	F	F	C1	No works recommended
T009	Rowan *Sorbus aucuparia*	SM	20-40	5	150	2.5	2	2.5	2.5	3	No obvious significant defects, though of limited arboricultural merit and lacks the necessary qualities for higher *BS 5837* categorisation.	F	G	C1	No works recommended

Tree Ref:	Species	Age	SULE	Ht.	DBH	CS				CC	Comments	PC	SC	*BS 5837: 2012* Category	Recommendations
						N	E	S	W						
T010	Blackthorn *Prunus spinosa*	SM	20-40	7.5	150# 150#	4	3.5	4	3	3.5	Unable to access base of main stems. Bifurcates at ground level into two co-dominant stems. No obvious significant defects, though of limited arboricultural merit and lacks the necessary qualities for higher *BS 5837* categorisation.	F	F	C1	No works recommended
T011	Sycamore *Acer pseudoplatanus*	SM	40-80	10	150# 200#	4	4	3	1.5	4	Unable to access base of main stem due to dense understorey vegetation. Bifurcates at ground level into two co-dominant stems. Asymmetrical form due to proximity with adjacent trees.	G	F	B1	No works recommended
T012	Grey alder *Alnus incana*	SM	10-20	9.5	290 160	3.5	2	4	3	4.5	Bifurcates at ground level into two co-dominant stems. Oozing lesions on main stem and deadwood < 100 mm in diameter scattered throughout the crown, which may indicate *Phytophthora alni* infection.	F	F	C1	No works recommended
T013	Rowan *Sorbus aucuparia*	Y	10-20	6	30# 60# 90#	1.5	1	1.5	1.5	2.5	Unable to access base of main stem due to dense understorey vegetation. Bifurcates at ground level into multiple co-dominant stems. Minor deadwood < 100 mm in diameter scattered throughout the crown.	F	F	C1	No works recommended
T014	Blackthorn *Prunus spinosa*	SM	20-40	5	140 150	1.5	4	3	3	2	Bifurcates at ground level into two co-dominant stems. Asymmetrical form due to proximity with adjacent trees.	F	F	C1	No works recommended
T015	Grey alder *Alnus incana*	SM	40-80	11	360	4	4	4	4	5	Minor deadwood < 100 mm in diameter scattered throughout the crown.	F	G	B1	No works recommended
T016	Sycamore *Acer pseudoplatanus*	SM	40-80	9	150# 80#	3.5	3.5	3	3	3	Unable to access base of main stem due to dense understorey vegetation. Bifurcates at ground level into two co-dominant stems. Asymmetrical form due to proximity with adjacent trees.	F	F	C1	No works recommended

Groups of Trees

Group Ref:	Species Composition	Age	SULE	Mx. Ht.	Mx. DBH	CC	Comments	PC	SC	*BS 5837*:2012 Category	Recommendations
G001	Sycamore *Acer pseudoplatanus* Silver birch *Betula pendula* Common ash *Fraxinus excelsior* Blackthorn *Prunus spinosa*	Y SM	40-80	12	200#	4	Group containing approx. 10 trees. Unable to access bases of trees due to dense understorey vegetation. Dense ivy *Hedera helix* established throughout the group, which obscures tree features and potential defects. Several standing dead trees < 100 mm in diameter are apparent within the group.	F	F	B1	No works recommended
G002	Hazel *Corylus avellana* Sea buckthorn *Hippophae rhamnoides* Common holly *Ilex aquifolium* Blackthorn *Prunus spinosa* Elder *Sambucus nigra*	Y SM	20-40	6	100	0	Dense understorey group. No obvious significant defects, though of limited arboricultural merit and lacks the necessary qualities for higher BS *5837* categorisation.	F	F	C1	No works recommended
G003	Sycamore *Acer pseudoplatanus* Hazel *Corylus avellana* Common hawthorn *Crataegus monogyna* Common ash *Fraxinus excelsior* Blackthorn *Prunus spinosa* Elder *Sambucus nigra*	Y SM	40-80	10	300#	3	Off-site linear group. Individually, the trees are generally of low quality, though as a cohesive feature, they contribute moderately to the local amenity.	F	F	B2	No works recommended

Group Ref:	Species Composition	Age	SULE	Mx. Ht.	Mx. DBH	CC	Comments	PC	SC	*BS 5837*:2012 Category	Recommendations
G004	Field maple *Acer campestre* Summer lilac *Buddleia davidii* Common dogwood *Cornus sanguinea* Common hawthorn *Crataegus monogyna* Common ash *Fraxinus excelsior* Crab apple *Malus sylvestris* Rowan *Sorbus aucuparia*	Y SM	40-80	8	250	2	Off-site group. No obvious significant defects, though of limited arboricultural merit and lacks the necessary qualities for higher BS *5837* categorisation.	F	F	C1	No works recommended

Appendix 2: Images of Trees

Plate 1: *T001*

Plate 2: *T002 (left) & T003 (right)*

Plate 3: *T004, T005, & T006 (left to right)*

Plate 4: *T007, T008, & T009 (left to right)*

Plate 5: *T010*

Plate 6: *T011, T012, T013, & T014 (left to right)*

Plate 7: *T015*

Plate 8: *T016*

Plate 9: *G001*

Plate 10: *G002*

Plate 11: *G003*

Plate 12: *G004*

Appendix 3: Outline Arboricultural Method Statement (AMS)

A3.1 Introduction

A3.1.1 Woodsage Consulting Ltd have been instructed by JANUS Architecture to prepare an Outline AMS in relation to the proposed development of the land at Huddersfield Bus Depot, in relation to the proposed development of the site.

A3.1.2 The development proposals are for the electrification of an existing diesel bus depot currently operated by First Bus.

A3.1.3 This Outline AMS should be read in conjunction with the Arboricultural Impact Assessment (Ref: WC-517.1a).

A3.2 Timing of Works

A3.2.1 It is not the Project Arboriculturist's role to determine the timing and implementation of works on site however, an input into the process can avoid issues once work is underway.

A3.2.2 The phasing of works should be carried out in accordance with ***Tab. A3.1***, below.

Table A3.1: *Development Sequence and Tree Protection Measures.*

Stage	Description
1	Site induction
2	Install the temporary tree protection fencing to the specifications detailed in ***Section A3.4*** of this ***AMS***, in the locations shown in ***Tree Protection Plan***.
3	Inspection of tree protection measures by the Project Arboriculturalist.
4	Carry out development works: • Precautionary measures detailed in ***Section A3.6*** of this ***AMS*** to be followed throughout the development
5	Remove the temporary tree protection fencing once development works are completed.
6	Final inspection by the Project Arboriculturalist.

A3.3 Site Supervision

A3.3.1 Prior to works commencing, it is the responsibility of the main contractor, or assigned agent, to ensure that details regarding tree protection are understood and adhered to by all site personnel.

A3.3.2 During the site induction, the final AMS and a copy of the ***Tree Protection Plan*** - which can be viewed in ***Appendix 5*** - should be made available to all contractors attending the site.

A3.4 Temporary Tree Protection Fencing

A3.4.1 The temporary tree protection fencing shall be installed prior to the commencement of development works and should be fit for the purpose of excluding site personnel and machinery. The default specification should be in accordance with *BS 5837: 2012 - Trees in Relation to Design, Demolition and Construction: Recommendations.*

A3.4.2 **Specification:** Barriers shall be a minimum 2 m high and should consist of a vertical and horizontal scaffold framework, well braced to resist impacts, as illustrated in ***Fig. A3.1***, below, and ***Fig. A3.2***, on the next page.

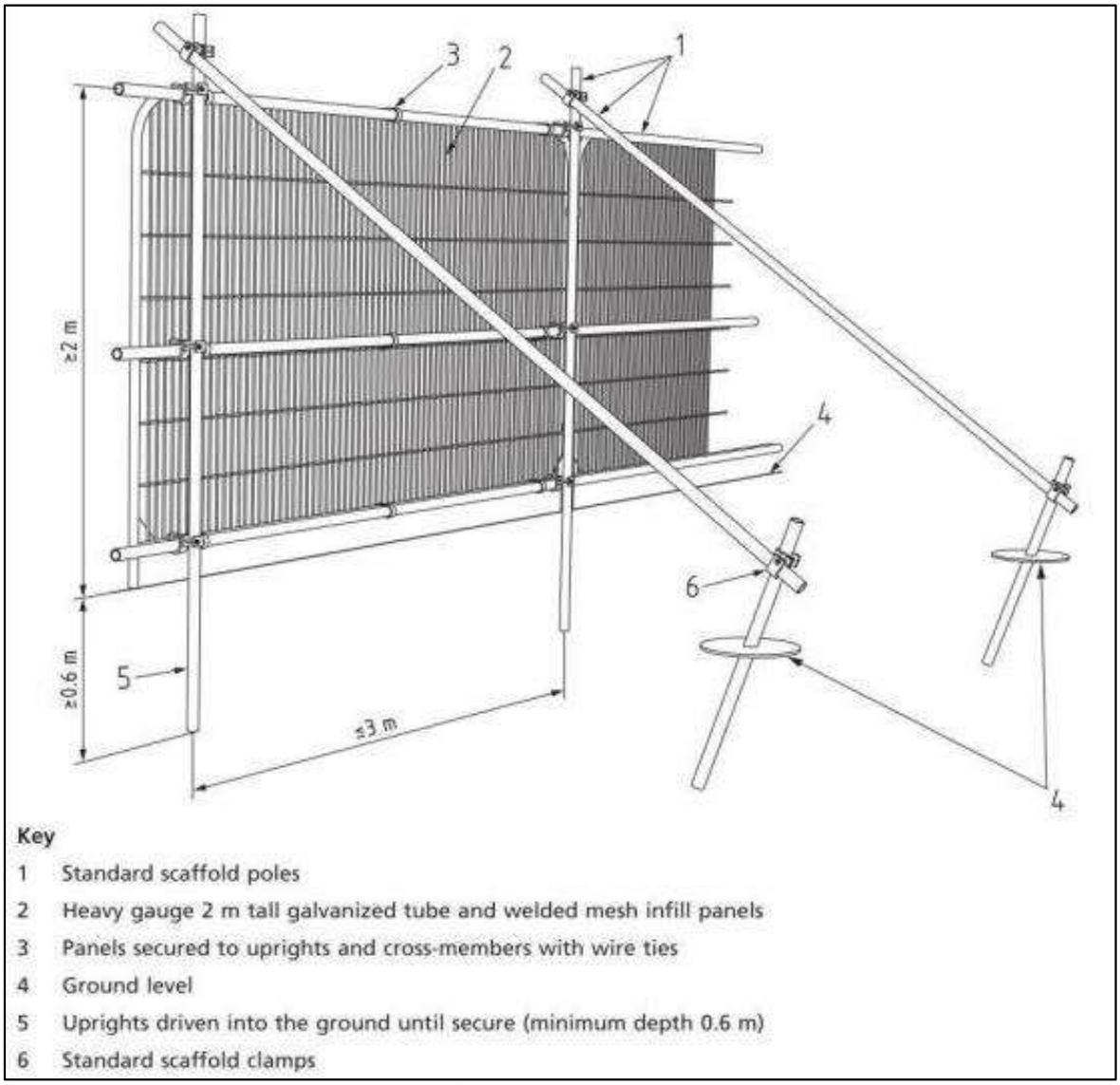

***Figure A3.1**:* BS 5837: 2012 *default specifications for temporary tree protection fencing.*

A3.4.3 The vertical tubes shall be spaced at a minimum interval of 3 m and driven securely into the ground. Onto this framework, welded mesh panels should be securely fixed.

A3.4.4 All-weather notices shall be attached to the barriers at 9 m intervals with the words 'TREE PROTECTION ZONE - NO ACCESS' clearly visible.

A3.4.5 **Location:** The temporary tree protection fencing should be installed in prior to the development commencing, in the locations shown in the ***Tree Protection Plan***.

A3.4.6 The protected areas should be regarded as sacrosanct, and once installed, tree protection fencing should not be removed or altered without prior consultation with the Project Arboriculturist.

A3.4.7 If any breach in the tree protection fencing occurs, it is the Site Manager's responsibility to report this to the Project Arboriculturalist, so that appropriate measures may be taken. Any breach which results in death or damage to these trees could result in a criminal offence being committed.

***Figure A3.2**: Examples of scaffold framework temporary tree protection fencing.*

A3.5 Precautionary Measures

A3.5.1 No materials hazardous to tree health, such as oil, bitumen or cement should be stored within the temporary protective fencing. Where possible, this area should be extended to 10 m away from the fencing.

A3.5.2 Where there is a risk of polluted water runoff into root protection areas (RPAs), heavy duty plastic sheeting and sandbags must be used to contain any spillages and prevent contamination. No fires should be lit within 20 m of the protective fencing.

A3.5.3 In favourable conditions, the majority of tree roots are typically found within the top 60 cm of soil; therefore, the existing levels within tree RPAs should be observed and maintained.

A3.5.4 Any unavoidable excavations into the soil within tree RPAs should be undertaken using either compressed air soil displacement or hand tools, subject to prior approval from the Project Arboriculturalist. If roots are encountered which occur in clumps or which are greater than 25 mm in diameter, these should not be severed without first consulting the Project Arboriculturalist.

A3.6 Responsibility and Site Management

A3.6.1 It is the responsibility of the main contractor or assigned agent to ensure that details regarding tree protection are understood and followed by all site personnel.

A3.6.2 Inspections by the Project Arboriculturalist are to be undertaken at the following stages of the development:

1. Once the temporary tree protection fencing has been installed in the locations shown in the ***Tree Protection Plan*** and prior to development works commencing.
2. Upon completion of the development works.

A3.6.3 After each inspection, a letter should be submitted by the Project Arboriculturalist to the LPA Arboricultural Officer, to confirm if the method statement has been followed correctly, and if trees have not been adversely affected by development works.

A3.7 Project Arboriculturalist Contact Details

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