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THE SEAM, BARNSLEY

BS5837:2012 Arboricultural Report

December 2021

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BS5837:2012 Arboricultural Report

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Date DECEMBER 2021

Version Control

Version	Date	Author	Changes
01	17/12/21	Martin Dilworth	First Issue

This report dated 17/12/21 has been prepared for Barnsley Metropolitan Borough Council (the “Client”) in accordance with the terms and conditions of appointment (the “Appointment”) between the Client and Arcadis Consulting UK Limited (“Arcadis”) for the purposes specified in the Appointment. For avoidance of doubt, no other person(s) may use or rely upon this report or its contents, and Arcadis accepts no responsibility for any such use or reliance thereon by any other third party.

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1 Introduction

1.1 Overview

Arcadis Consulting (UK) Limited (Arcadis) has been commissioned by Barnsley Metropolitan Borough Council 'the Client' to undertake a Preliminary Arboricultural Survey in line with British Standard BS 5837:2012 Trees in relation to design, demolition and construction – Recommendations (British Standards Institution, 2012; henceforth referred to as BS 5837:2012). This is to inform feasibility for the proposed development at land adjacent to Barnsley Rail Station. – hereafter referred to as "the site".

1.2 Site Location and Setting

The site comprises a large car-park located to the north-west of the existing Barnsley Interchange Rail Station and runs parallel to the rail line. The site is centred on Ordnance Survey grid reference SE 34589 06762 and around postcode S70 2EQ . The survey boundary (red line) is illustrated in Image 1 below.

Image 1 Site Boundary. Imagery © 2021 Infoterra Ltd & Bluesky

2 Methodology

2.1 Tree Survey Methodology

An arboricultural survey was undertaken on 30th November 2021 by Martin Dilworth FdSc MArborA (Senior Arboriculturist) in accordance with BS 5837:2012.

Observations were conducted from ground level with the aid of binoculars, utilising the "Visual Tree Assessment" (VTA) system as outlined in The Body Language of Trees, A Handbook for Failure Analysis Research for Amenity Trees No.4 (Mattheck, C. and Breloer, H, 1994).

2.2 Study Area

The study area included the Site itself (represented by the redline boundary on Figure 1) and included all trees which had the potential to be affected by development, where access permits.

2.3 Individual Trees and General Data Capture

For reference, individual trees are identified with the letter T and associated number in Appendix B: Schedule of Trees and on Figure 1: Tree Constraints Plan. The stem diameter of the trees on Site was recorded using a rounded down diameter tape at 1.5m above ground level. Measurements were taken in millimetres. The height of the subject trees was estimated to the nearest metre using a digital clinometer.

Maximum crown spread of the subject tree was measured from the centre of the trunk to the tips of the live lateral branches taken at four compass points (N-E-S-W) using a ground tape. Crown spread measurements were taken in metres.

Tree age was estimated from visual indicators (such as tree size and appearance of bark) which was taken as a provisional guide. Age estimates often need to be modified based on further information such as historical records and local knowledge.

If direct access to the tree was not possible, estimations from appropriate vantage points were taken. Any limitations or estimations are presented within the survey limitations section and noted in the associated schedules.

2.4 Groups of Trees

Where a number of trees have been recorded as a group, they have been considered to form a cohesive arboricultural feature either aerodynamically (e.g., trees that provide companion shelter), visually (e.g. avenues or screens) or culturally, including for biodiversity (e.g. parkland or wood pasture).

Groups of trees were identified with the letter G and number on the associated schedules and plans.

Crown spread were assessed by measuring the furthest spread on each compass point (N-E-S-W). Groups have been plotted using topographical information or aerial imagery. The stem diameter of tree groups has been measured as an average stem diameter of trees within a group. Heights are displayed as the maximum height of the tallest tree within the group or displayed as a range of heights where two or more distinct height layers have been identified. (e.g., canopy, understorey trees/large woody shrubs).

2.5 Categorisation

Trees surveyed have been categorised according to their quality and value in compliance with Table 1 Cascade chart for tree quality assessment of BS 5837: 2012. A glossary of survey terms can be found in Appendix A - Explanation of Terms and the full cascade chart for tree categorisation is displayed in Table B2 of Appendix B.

2.6 Root Protection Area

The Root Protection Area (RPA) of a tree is described in section 3.7 of BS 5837: 2012 as the 'minimum area around a tree deemed to contain sufficient roots and rooting volume to maintain the tree's viability, and where the protection of the roots and soil structure is treated as a priority. It should therefore be recognised that the calculated RPA may not entirely encompass all of the tree's rooting material.

RPAs were calculated in accordance with Section 4.6.1 in BS: 5837:2012 using the measurement of the stem diameter at 1.5m above ground level or at ground level if the tree is multi-stemmed. The shape and size of an RPA can be amended in accordance with Section 4.6.3 of BS: 5837:2012.

Tree RPAs are recorded in the Schedule of Trees (Appendix B) and as a pink shaded area on Figure 1: Tree Constraints Plan and inform the initial Construction Exclusion Zone (CEZ) to protect the trees within and adjoining the Site.

No soil assessment or above/below ground investigations into the true extent of a tree's rooting area were undertaken as they are beyond the scope of this report.

2.7 Survey Limitations

Of the arboricultural features surveyed, two individuals (T20 and T25) and three groups (G2, G3 and G4) were located in areas where access to their main stems was not possible and estimates of stem diameter were required. These tree numbers have been prefixed with a # symbol within Appendix B: Schedule of trees and Figure 1: Tree Constraints Plan.

Trees are living organisms and as such their health and condition are naturally subject to change over time. Unforeseen future circumstances such as neglect, wilful damage or severe/extreme weather conditions may affect the future health and condition of the trees included in this report.

2.8 Statutory and non-statutory Tree Protection

The following constraints checks were undertaken on 2 December 2021;

- A tree constraints check using the Barnsley Metropolitan Borough Council online mapping system (Barnsley Metropolitan Borough Council 2021) ;
- an Ancient Woodland constraints check undertaken using the MAGIC online dataset (DEFRA 2021);
- and a check for catalogued ancient/veteran trees was undertaken using the Woodland Trust online mapping system (Woodland Trust 2021).

The results of these checks are provided in Section 3 of this report.

3 Tree Survey Results

3.1 Tree Assessment and Categorisation

A total of 29 arboricultural features were recorded within the study area, these were recorded as 25 individual trees (T) and four groups of trees (G). The survey data is presented in detail within Appendix B: Schedule of Trees and illustrated in Figure 1: Tree Constraints Plan.

Each arboricultural feature was assigned to one of four categories, as listed in Table 1. below.

Table 1 Tree Categories Recorded

Tree Category	No. of Individual Trees	No. of Groups of Trees
Category A (trees of high quality)	0	0
Category B (trees of moderate quality)	19	2
Category C (trees of low quality)	6	2
Category U (trees of poor quality unsuitable for retention)	0	0
Totals	25	4

3.2 Tree Species Diversity

A total of 13 individual tree species were recorded during the survey and are represented throughout the survey area. A summary of the species surveyed can be found within the Schedule of Trees in Appendix B and also provided in Table 2.

Table 2 Tree Species Recorded

Species	Frequency		Percentage
	Individual Tree	Trees in Group	
Ash (*Fraxinus excelsior*)	1	0	1.0
Cherry sp.(*Prunus* sp.)	1	0	1.0
False acacia (*Robinia pseudoacacia*)	0	18	18.4
Field maple (Acer campestre)	0	11	11.2
Hazel (*Corylus avellana*)	0	7	7.1
Italian alder (*Alnus cordata*)	17	0	17.6
London plane (*Platanus x hispanica*)	0	2	2.0
Norway maple (*Acer platanoides*)	1	0	1.0
Rowan (*Sorbus aucuparia*)	1	0	1.0

Species	Frequency		Percentage
	Individual Tree	Trees in Group	
Silver maple (*Acer saccharinum*)	1	0	1.0
Sea buckthorn (*Hippophae rhamnoides*)	0	1	1.0
Sycamore (*Acer pseudoplatanus*)	3	32	35.7
Willow sp. (*Salix* sp.)	0	2	2.0
Total	**25**	**73**	**100**

3.3 Age Diversity

Arboricultural features within the study area were assessed to be withing the Young to Mature age range, with the majority being Early-Mature classification as illustrated in Table 3.

Table 3 Age Diversity

Age Class	Trees	Groups
Young	1	1
Semi-mature	3	1
Early-mature	16	2
Mature	5	0
Totals	**25**	**4**

3.4 Tree Constraints Check

A search on Barnsley Metropolitan Borough Council website confirmed that no trees surveyed are subject to Tree Preservation Order or located within a Conservation Area.

It was confirmed that there are no designated ancient woodlands and no veteran trees were identified within the survey area.

4 Trees and Planning

4.1 The Planning Process

Local Planning Authorities (LPA) in the UK have a statutory duty to consider both the protection and planting of trees when considering planning applications. The potential impact of development on all trees (including those not protected by a TPO or other statutory designation) is a material consideration in determining a planning application.

BS 5837 provides a framework which sets out how trees should be considered in the planning process and also explicitly applies to development where planning consent is not required.

BS 5837 recommends that a tree survey is undertaken to identify the quality and benefits of trees and the spatial constraints associated with them. This information is then used to produce a Tree Constraints Plan (TCP) illustrating the above and below ground constraints associated with trees (the Root Protection Area (RPA)). The TCP is intended to be used to inform the design process and to identify those trees considered to be a constraint to development due to their quality and value (in a non-fiscal sense).

Following the production of the final scheme design, an Arboricultural Impact Assessment (AIA) is produced to identify the likely direct and indirect impacts of the proposed development, along with a Tree Protection Plan (TPP) to identify trees to be removed and retained and to illustrate the protection of retained trees. An Arboricultural Method Statement (AMS) is also often required as a condition of planning consent to detail how sensitive operations are to be undertaken in close proximity to retained trees.

These documents and plans are considered the minimum requirement for arboricultural matters within a planning application and are intended to ensure both a long term sustainable and harmonious relationship between existing trees and the proposed development.

4.2 National Planning Policy Framework 2021

The National Planning Policy Framework (NPPF 2021) seeks to ensure that new development is sustainable and underlines the importance of green infrastructure, of which trees form an integral part. This includes recognition of the importance of trees in relation to the management of air, soil and water quality along with other associated ecosystem services and climate change adaption. The NPPF also seeks to achieve the protection and enhancement of landscapes and a net gain in biodiversity. Finally, it specifically identifies veteran and ancient trees and woodland as a highly valuable and irreplaceable habitat.

At the heart of the National Planning Policy Framework (NPPF) is a presumption in favour of sustainable development, and specifically states that for decision making, the LPA should be approving development proposals that accord with the development plan without delay.

Section 15 of the NPPF recognises the importance of conserving and enhancing the natural environment, and specifically acknowledges the role of trees and woodland in the provision of natural capital and ecosystem services.

It further acknowledges the importance of ancient woodlands and veteran trees for habitats and biodiversity and requires that planning consent should be refused where development schemes require the removal of such features unless there are wholly exceptional reasons, stating 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.” (Paragraph 180, c)”

Where the LPA does not have a development plan or the development plan is out of date, the LPA should grant planning consent insofar as the development proposals do not breach the NPPF.

5 Further Work

Should any future proposed development require tree removals or incursions into the RPA's of the retained trees, an AIA will be required by the LPA in support of a planning application and/or to ensure that appropriate measures are taken to safeguard trees in the event that planning consent is not required.

A review of any proposed development should be undertaken to ensure that there are no additional trees within the zone of influence of the development that require surveying. For example, if the locations of Site compounds extend the zone of influence.

The AIA should state the trees to be removed due to the design and access requirements and any proposed tree facilitation pruning works. This should also be accompanied by an assessment of the likely impacts due to construction activity on the trees to be retained. Indicative arboricultural mitigation measures should be provided which would include recommendations for tree re-provisioning (planting to replace any trees that require removal). The AIA should be accompanied by an updated TCP and a TPP based on the proposed design.

The AIA should also include a Tree Replacement Strategy which should take into consideration the landscape character, local treescape, and biodiversity features of the immediate and adjoining areas. The species, number, size, type of stock, location, and planting aids for the compensating planting should be chosen for landscape, wildlife, and arboriculture values. To ensure that appropriate and sustainable planting is achieved, advice should be sought from an ecologist and arboriculturist. Furthermore, liaison with the LPA Tree Officer would be necessary during the planning process to agree an approved tree compensation and/or landscape scheme plan.

All new tree planting should be in accordance with British Standard BS 8545:2014 Trees: From Nursery to Independence in the Landscape. Recommendations and all tree works must be carried out by a qualified contractor in accordance with British Standard BS 3998:2010 Tree Work. Recommendations.

This document encloses a Preliminary AMS (APPENDIX C. Preliminary Arboricultural Method Statement) outlining tree protection measures. However, when full construction measures are known, a bespoke AMS may be required to ensure protection of the trees to be retained on and adjoining the Site.

6 Discussion and Conclusions

A total of 29 arboricultural features were recorded within the study area as follows:

- 19 individual trees and two groups were graded as Category B (trees of moderate quality);
- Six individual trees and two groups were graded Category C (trees of poor quality).

A search on Barnsley Metropolitan Borough Council website confirmed none of the trees surveyed are subject to Tree Preservation Order or located within a Conservation Area.

It was confirmed that there are no designated ancient woodlands and no veteran trees were identified within the survey area.

Should future proposed development require tree removal or construction works within RPA's of the retained tree an AIA will be required by the LPA in support of a planning application.

The AIA should also include a Tree Replacement Strategy which should take into consideration the landscape character, local treescape, and biodiversity features of the immediate and adjoining areas. The species, number, size, type of stock, location, and planting aids for the compensating planting should be chosen for landscape, wildlife, and arboriculture values. To ensure that appropriate and sustainable planting is achieved, advice should be sought from an ecologist and arboriculturist. Furthermore, liaison with the LPA Tree Officer would be necessary during the planning process to agree an approved tree compensation and/or landscape scheme plan.

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This document encloses a Preliminary AMS (Appendix C) outlining tree protection measures. However, following planning determination and when full construction measures are known a bespoke AMS may be required to ensure protection of the trees to be retained on and adjoining the Site.

7 References

British Standards Institution (2010) BS 3998:2010, Tree Work Recommendations.

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

British Standards Institution (2014) BS 8545: Trees: From nursery to Independence in the Landscape – Recommendations.

DEFRA (2021) Magic Map: https://magic.defra.gov.uk/MagicMap.aspx [Accessed: December 2021]

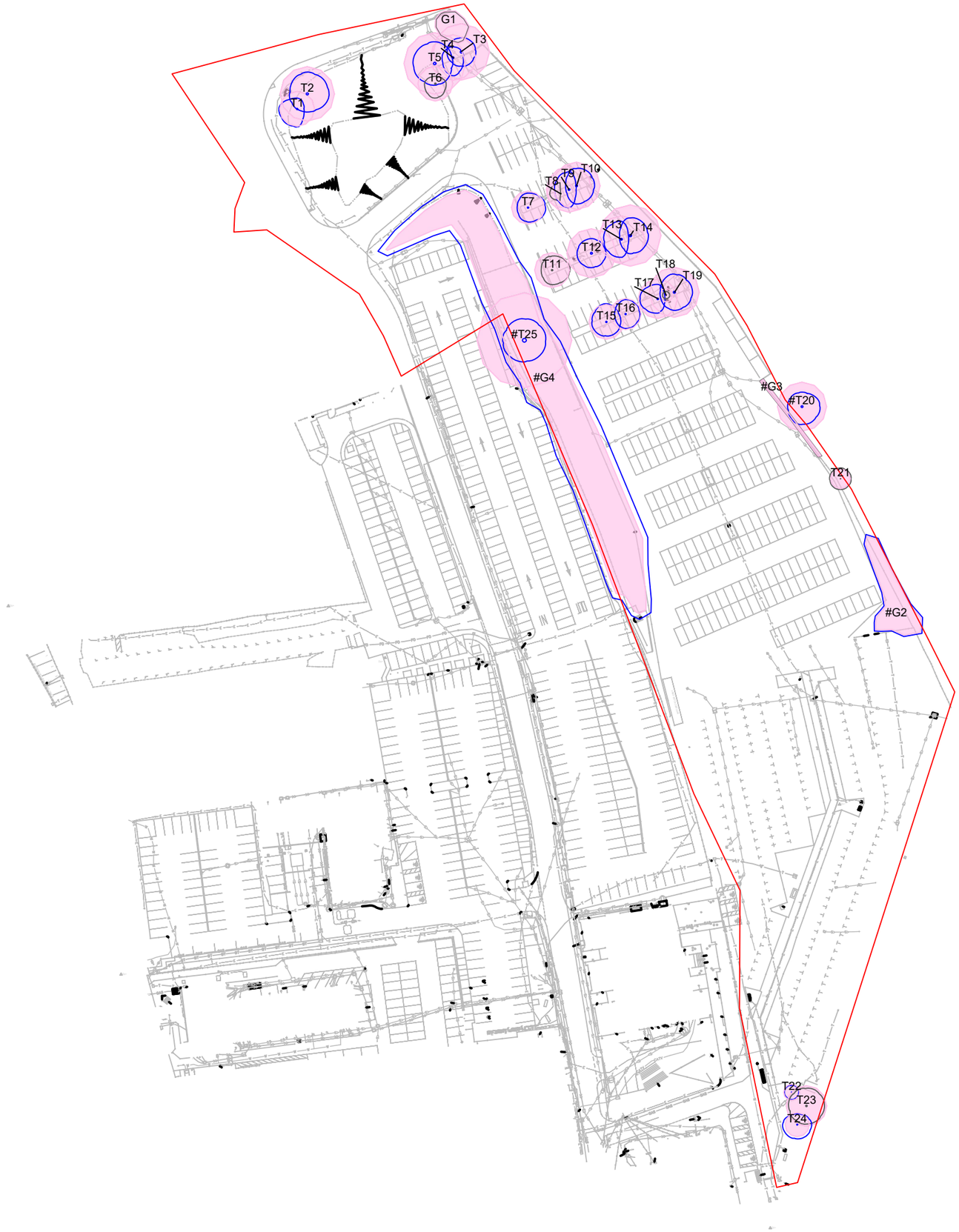
Mattheck, C. and Breloer, H (1994) The Body Language of Trees: A Handbook for Failure Analysis Research for Amenity Trees No.4. HMSO.

National Planning Policy Framework 2021. England. Available at: https://www.gov.uk/government/publications/national-planning-policy-framework--2 [Accessed December 2021].

Woodland Trust (2021). *Ancient Tree Inventory*. [online] Available at: https://ati.woodlandtrust.org.uk/ [Accessed December 2021].

Barnsley Metropolitan Borough Council (2021) Tree Preservation Orders [online] Available at: https://www.barnsley.gov.uk/services/parks-and-open-spaces/tree-preservation-orders/ [Accessed December 2021].

FIGURE 1. Tree Constraints Plan



Legend:

- Survey Boundary
- Canopy extent of A Category tree/group
- Canopy extent of B Category tree/group
- Canopy extent of C Category tree/group
- Canopy extent of U Category tree/group
- BS 5837 Root Protection Area

Rev	Date	Description	Drawn	Check	Approv
P01	16 DEC 21	FIRST ISSUE	MD	JP	BM

Client

Barnsley Metropolitan Borough Council

BARNSLEY Metropolitan Borough Council

PROJECT:

The Seam
Barnsley

JAGUAR LAND ROVER
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FIGURE 1

TREE CONSTRAINTS PLAN

Designed	NA	Date: NA	Signed
Drawn	M.DILWORTH	Date: 16 DEC 21	Signed
Checked	J.POTTS	Date: 16 DEC 21	Signed
Approved	B. MURRAY	Date: 16 DEC 21	Signed
Scale:	1:750	Datum:	AOD
Original Size:	A3	Grid:	OS
Suitability Code:	S2	Project Number:	10051613

Suitability Description:

FOR INFORMATION
NOT TO BE USED FOR CONSTRUCTION

Drawing Number: 10052406_The Seam Barnsley_TCP

Revision: P01

50mm on Original

Print Date:

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APPENDIX A. Explanation of Terms

Age Class

Young – Trees in the first fifth of full life expectancy

Semi-mature – Trees in the second fifth of full life expectancy

Early-mature – Trees in the third fifth of full life expectancy

Mature – Trees in the fourth fifth of full life expectancy

Over Mature – Trees having reached full life expectancy and trees in natural decline

Veteran – Trees of interest biologically, culturally and aesthetically because of their age

Stem Diameter

The diameter of the stem measured in millimetres (mm) at a height of 1.5m above ground level

Crown Spread

Average measured in metres using a ground tape where possible

Physiological Condition

Good – Healthy tree with no signs of ill health and signs of good extension growth for species

Fair – Trees with signs of disease, minor defects and decreased life expectancy due to physical damage

Poor – Trees with significant disease, significantly reduced life expectancy and/or under major physiological stress

Dead – Dead tree or trees with over 70% crown dieback

Structural Condition

Good – Trees with no significant defects

Fair – Trees with remedial defects which require minor tree surgery works

Poor – Trees with remedial defects which require significant tree surgery works or felling

Dead – Trees which require felling

BS 5837 Retention Category

Each tree, group of trees or hedge is assigned to a retention category. Category A trees of high quality and amenity value. Category B trees of moderate quality and amenity value. Category C trees of low quality or amenity value. Category U trees of very low quality or requiring immediate removal due to health and safety concerns

British Standards BS 5837:2012 recommends that these categories may be further broken down into sub-categories A1 A2 A3 pertaining to Arboricultural, Landscape or Cultural values respectively.

APPENDIX B Schedule of Trees

Site: The Seam, Barnsley

Client: Barnsley Metropolitan Borough Council

Surveyor: Martin Dilworth FdSc MArborA

Survey Date: 30th November 2021

Tree reference number	Species	Height (m)	Stem diameter (mm)	Branch spread (m)				Height of crown clearance (m)	RPA Radius (m)	RPA (m^2)	Age class	Physiological condition	Structural condition	Comments	Estimated remaining contribution (years)	Category grading
				N	E	S	W									
T1	Silver maple (*Acer saccharinum*)	10	390	3	2	5	5	2	4.7	68.8	EM	Good	Good	Located in grass verge at base of grass bank. Slight lean in stem towards west previously crown lifted with multiple pruning wounds on stem.	20+	B1
T2	Norway maple (*Acer platanoides*)	14	610	6	6	5	5	2	7.3	168.3	M	Good	Good	Located in grass verge at base of grass bank. Previously crown lifted with multiple pruning wounds on stem.	20+	B1
T3	Italian alder (*Alnus cordata*)	15	630	4	4	4	4	3	7.6	179.6	M	Good	Good	Dense ivy on stem preventing full visual inspection.	20+	B1
T4	Italian alder (*Alnus cordata*)	15	510	3	3	5	3	2	6.1	117.7	EM	Good	Fair	Moderate lean in stem towards south.	20+	B1
T5	Italian alder (*Alnus cordata*)	16	690	6	5	6	6	1	8.3	215.4	M	Good	Good	No signs of ill health or significant structural defects.	20+	B1
T6	Italian alder (*Alnus cordata*)	9	390	2	3	4	3	2	4.7	68.8	EM	Good	Fair	Moderate lean in stem towards south. Dense ivy on stem preventing full visual inspection. Crown suppressed on north side by adjacent tree.	10+	C1
T7	Italian alder (*Alnus cordata*)	9	370	4	5	4	3	2	4.4	61.9	EM	Good	Fair	Slight lean in stem towards east.	20+	B1
T8	Italian alder (*Alnus cordata*)	9	310	3	0	2	3	2	3.7	43.5	EM	Fair	Fair	Crown suppressed on east side by adjacent trees.	10+	C1
T9	Italian alder (*Alnus cordata*)	13	510	5	2	5	4	2	6.1	117.7	EM	Good	Fair	Natural sweep in stem at 1m. Mutual suppression of canopy with adjacent tree.	20+	B1
T10	Italian alder (*Alnus cordata*)	14	530	5	5	5	3	2	6.4	127.1	EM	Good	Good	Mutual suppression of canopy with adjacent tree.	20+	B1
T11	Italian alder (*Alnus cordata*)	10	330 210	4	5	4	3	2	4.7	69.4	EM	Good	Fair	Twin stemmed at 1m. Slight lean in stems towards east.	10+	C1
T12	Italian alder (*Alnus cordata*)	12	550	4	4	4	4	3	6.6	136.8	EM	Good	Good	Slight lean in stem towards east.	20+	B1

Tree reference number	Species	Height (m)	Stem diameter (mm)	Branch spread (m)				Height of crown clearance (m)	RPA Radius (m)	RPA (m^2)	Age class	Physiological condition	Structural condition	Comments	Estimated remaining contribution (years)	Category grading
				N	E	S	W									
T13	Italian alder (*Alnus cordata*)	14	520	5	2	5	5	3	6.2	122.3	EM	Good	Good	Mutual suppression of canopy with adjacent tree.	20+	B1
T14	Italian alder (*Alnus cordata*)	15	510 460	5	5	5	3	3	8.3	213.8	M	Good	Fair	Twin stemmed at 1m. Mutual suppression of canopy with adjacent tree.	20+	B1
T15	Italian alder (*Alnus cordata*)	8	390	5	4	4	4	2	4.7	68.8	EM	Good	Good	No signs of ill health or significant structural defects.	20+	B1
T16	Italian alder (*Alnus cordata*)	12	350	4	4	4	3	2	4.2	55.4	EM	Good	Fair	Moderate lean in stem towards south east.	20+	B1
T17	Italian alder (*Alnus cordata*)	12	440	4	2	4	5	2	5.3	87.6	EM	Good	Fair	Slight lean in stem towards south east.	20+	B1
T18	Italian alder (*Alnus cordata*)	5	150	1	1	1	1	0	1.8	10.2	Y	Fair	Good	Suppressed by adjacent trees.	10+	C1
T19	Italian alder (*Alnus cordata*)	15	560	5	5	5	4	2	6.7	141.9	EM	Good	Good	No signs of ill health or significant structural defects.	20+	B1
#T20	Sycamore (*Acer pseudoplatanus*)	10	#550	4	5	5	4	2	6.6	136.8	EM	Good	Good	Located behind fence on railway land. Unable to fully inspect.	20+	B1
T21	Sycamore (*Acer pseudoplatanus*)	6	90 x 5	3	3	3	3	2	2.7	22.1	SM	Good	Good	Multiple stems at ground level. Located behind fence on railway land, unable to fully inspect.	10+	C1
T22	Rowan (*Sorbus aucuparia*)	4	180	2	2	2	2	2	2.2	14.7	SM	Good	Good	No signs of ill health or significant structural defects.	20+	B1
T23	Ash (*Fraxinus excelsior*)	6	340 250 120 120	5	5	5	5	0	5.5	93.7	SM	Good	Fair	Multiple stems at ground level. Crown touching street light.	10+	C1
T24	Cherry sp.(*Prunus* sp.)	3	270	3	4	4	4	0	3.2	33.0	EM	Good	Good	No signs of ill health or significant structural defects.	20+	B1
#T25	Sycamore (*Acer pseudoplatanus*)	13	#550 550 450 400 400	6	6	6	6	2	12.7	510.1	M	Good	Fair	Multiple stems at ground level. Located with group of trees. Dense undergrowth and ivy on stems preventing full visual inspection.	20+	B1

Tree reference number	Species	Height (m)	Stem diameter (mm)	Branch spread (m)				Height of crown clearance (m)	RPA Radius (m)	RPA (m^2)	Age class	Physiological condition	Structural condition	Comments	Estimated remaining contribution (years)	Category grading
				N	E	S	W									
G1	Sycamore (*Acer pseudoplatanus*) x 3	9	350	5	4	3	5	1	4.2	55.4	EM	Good	Good	Located on steep embankment. Dense undergrowth and ivy on stems preventing full visual inspection.	10+	C2
#G2	London plane (*Platanus x hispanica*) x 2, Sea buckthorn (*Hippophae rhamnoides*) x 1, willow sp. (*Salix* sp.) x 2	8	#300	4	4	4	4	0	3.6	40.7	SM	Good	Good	Dense undergrowth preventing full visual inspection.	20+	B2
#G3	Sycamore (*Acer pseudoplatanus*) x 22	4	#75	1	1	1	1	0	0.9	2.5	Y	Good	Good	Selfseeded young trees located behind fence on railway land.	10+	C2
#G4	False acacia (Robinia pseudoacacia) x 18, Field maple (*Acer campestre*) x 11, Hazel (*Corylus avellana*) x 7, Sycamore (*Acer pseudoplatanus*) x 7	13	#300	5	5	5	5	0	3.6	40.7	EM	Good	Good	Located on steep bank. Dense undergrowth preventing full visual inspection.	20+	B2

# denotes estimated value

Table B2 Key to Categories

Trees unsuitable for retention				
Category and Definition	**Criteria (including subcategories where appropriate)**			**Identification on Plan**
Category U Those in such a condition that they cannot realistically be retained as a living tree 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 U category trees (i.e. 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 or irreversible overall decline. • Trees infected with pathogens of significance to the health and or safety of other trees nearby by or very low-quality trees suppressing adjacent trees of better quality.			Red
Trees to be considered for retention				
Category and Definition	**1. Mainly arboricultural values**	**2. Mainly landscape values**	**3. Mainly cultural values**	**Identification on Plan**
Category A Trees of high quality with an estimated remaining life expectancy of at least 40 years	Trees that are a particularly good example of their species, especially if rare or unusual, or essential components of groups or of formal or semi-formal arboricultural features.	Tree groups or woodlands of particular visual importance as arboricultural and/or landscape features.	Tree groups or woodlands of significant conservation historical, commemorative or other value	Green
Category B Trees of moderate quality with an estimated remaining life expectancy of at least 20 years.	Trees that might be included in the high category but are downgraded because of impaired condition.	Trees present in numbers, usually 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 benefits.	Blue
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.	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 landscape value and/or trees offering low or only temporary/transient landscape benefits.	Trees with no material conservation or other cultural benefits.	Grey

APPENDIX C. Preliminary Arboricultural Method Statement

Overview

This Preliminary Arboricultural Method Statement (AMS) provides generic best practice measures to be adopted in order to protect retained trees during the development process. It has been prepared in order to inform the planning and the construction/ development process. Should a bespoke AMS be recommended by the suitably qualified arboriculturist, one should be drawn up in liaison with the contractor undertaking the works.

Protective Fencing

The purpose of this fencing is to provide protection to the RPAs of retained trees/groups and to protect trees and hedgerows prior to their translocation. The type of fencing used shall be appropriate to the level of adjacent construction activity and shall be agreed with the Local Authority tree officer. Weather-proof notices shall be attached to any protective fencing located adjacent to retained trees displaying the words "Construction Exclusion Zone" and listing restrictions which apply. All personnel must be made aware of these restrictions.

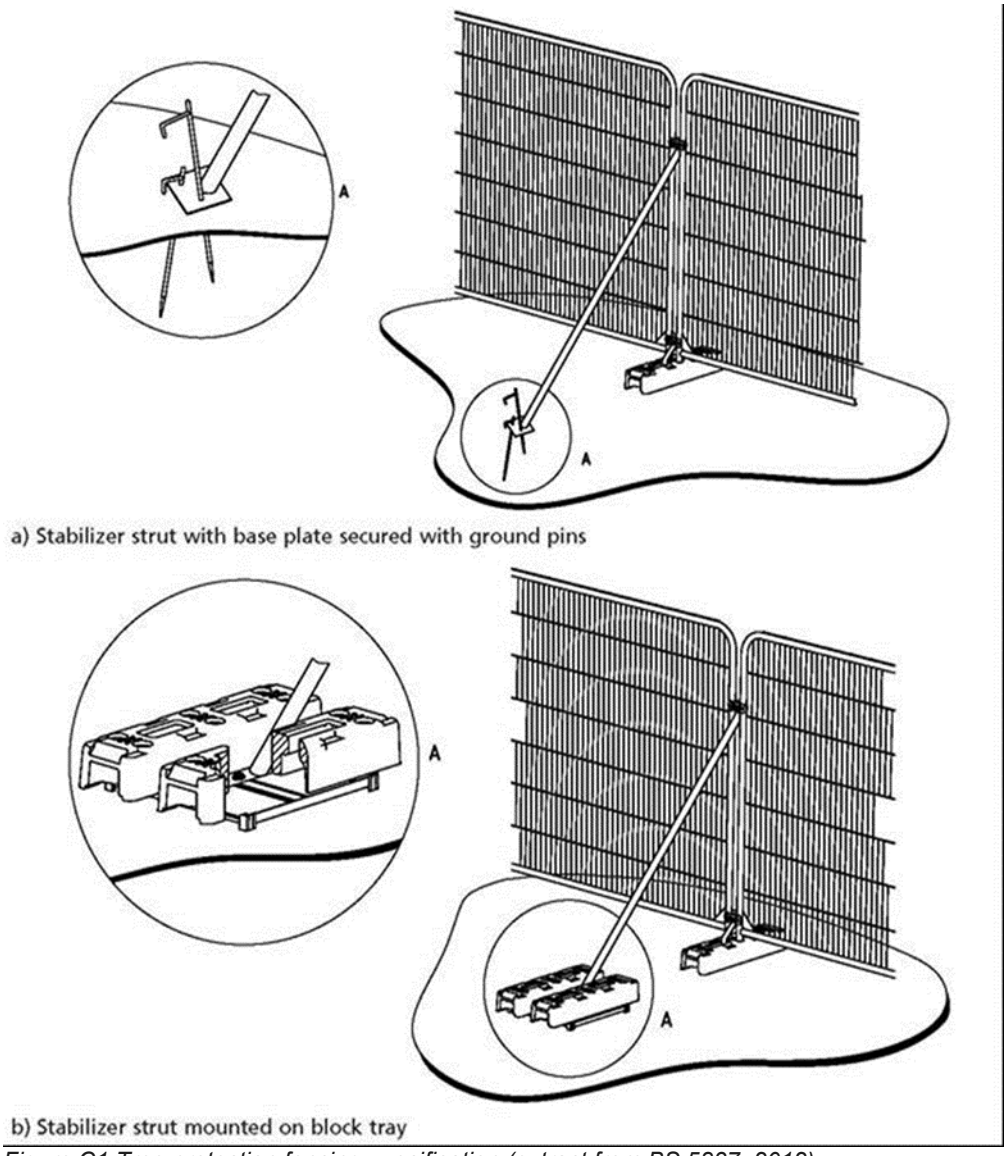

Figure C1 Tree protection fencing specification (extract from BS 5837: 2012)

Construction Exclusion Zone (CEZ)

The Construction Exclusion Zone (CEZ) is the area identified by a suitably qualified arboriculturist as the area to be protected during development, from site clearance and construction work through the use of barriers and/or ground protection to ensure the successful long-term retention of a tree. Fencing or ground protection shall not be taken down or relocated at any time without prior agreement and/or site supervision as recommended by the arboriculturist.

All areas excluded by protective tree fencing shall be treated as CEZs, and the following restrictions shall apply:

- No construction activity must occur within these areas.
- No works on trees unless agreed by a suitably qualified arboriculturist.
- No alterations of ground levels or conditions.
- No chemicals or cement washings.
- No excavation.
- No temporary structures.*
- No storage of soil, rubble or other materials.
- No vehicles or machinery to be used or parked without appropriate ground protection measures as per BS5837 recommendations. This will require the use of a proprietary system of reinforced concrete slabs/steel road plates on a compressible layer, or side butting scaffold boards/ 18mm plywood sheets on a compressible layer. The type of ground protection used shall be appropriate for the likely loading applied.
- No fixtures (lighting, signs etc.) to be attached to trees.
- No fires within 10 metres of the canopies of any tree or hedgerow.

**Site huts, provided they are of the "Jack Leg" type, can be sited to act as ground protection for the duration of the construction.*

Temporary Ground Protection

New temporary ground protection should be capable of supporting any traffic entering or using the site without being distorted or causing compaction of underlying soil. The ground protection might comprise one of the following:

- 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. 100 mm depth of woodchip), laid onto a geotextile membrane;
- For pedestrian-operated plant up to a gross weight of 2 t, proprietary, inter-linked ground protection boards placed on top of a compression-resistant layer (e.g. 150 mm depth of woodchip), laid onto a geotextile membrane;
- For wheeled or tracked construction traffic exceeding 2 t gross weight, an alternative system (e.g. proprietary systems or pre-cast reinforced concrete slabs) to an engineering specification designed in conjunction with arboricultural advice, to accommodate the likely loading to which it will be subjected.

New Permanent Surfacing Within RPAs

Any new surfacing is within the RPAs shall occur above ground level without soil stripping. New surfaces shall be constructed on a cellular confinement to prevent localised compaction of the rooting medium post development. Porous geotextile membranes shall be used both above and below the cellular confinement system to prevent mixing of materials with the binding layer or the soil. The new surface needs to be permeable to air and water (resin bound gravel or similar is recommended). This is to allow roots to respire without there being a build-up of carbon dioxide, and to ensure the roots continue to receive the moisture and oxygen they require to function. Traditional kerbing requires excavation to install and will therefore not be suitable within the root protection areas of retained trees. As an alternative, haunched kerbing, treated timber edging, aluminium L-shaped edging, galvanised metal edging or no fixed edging shall be used. Construction of the new surface will require access into the construction exclusion zone defined by

the temporary ground protection. The ground protection shall not be removed until new surface is installed. The root protection areas should not be left exposed during construction.

General Canopy Protection

Since the canopies of retained trees may be in close proximity to areas of plant operation, the following restrictions will apply:

- All plant will be sited outside the defined RPAs of retained trees / groups, and the appointed contractor will ensure all relevant personnel shall be made aware of the location of branches and the need to avoid causing damage to them.
- Prior to the implementation of lifting operations, a representative from the equipment supply company shall visit the site and ensure all operations can be completed without causing damage to retained trees. A lifting plan will be prepared and submitted for approval prior to all lifting operations. The lifting plan will make provision for the potential for damage of retained trees.
- All lifting operations will be completed under the close direction of a qualified banksman, who will be briefed by the appointed contractor as to the need to avoid damage the stems and branches of retained trees.
- Should additional tree removal or pruning be required the Local Authority Tree Officer shall be contacted and the scope of works agreed in writing.

Hazardous Materials

Any mixing of cement-based materials is to take place outside the RPAs of all trees. Provision shall be made to ensure that the mixing area is contained so that no water runoff enters the RPAs of any trees. All mixers and barrows shall be cleaned within this dedicated mixing area.

All other chemicals hazardous to tree health, including petrol and diesel, are to be stored in suitable containers as specified by the Control of Substances Hazardous to Health (COSHH) Regulations (2002) (Ref 4), and kept away from the RPAs.

Example of Protective Fencing Signs

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