Metrodome Leisure Complex
Barnsley
– BS 5837:2012 Tree Survey
Barnsley Premier Leisure

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Report to:	**Barnsley Premier Leisure** **Metrodome Leisure Complex** **Queens Ground** **Queens Road** **Barnsley** **South Yorkshire** **S71 1AN**
Report Title:	**Metrodome Leisure Complex, Barnsley** **BS 5837:2012 Tree Survey**
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Originated By:

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Executive Summary

On behalf of Barnsley Premier Leisure (The Client), Ecus Limited (Ecus) have carried out a tree survey to BS 5837:2012 '*Trees In Relation To Design, Demolition and Construction-Recommendations'* in April 2019 at the Barnsley Metrodome Leisure Complex.

The survey records all trees within the site and all those which may be affected by development proposals within the site boundary, recording a number of parameters including species, crown spread and Root Protection Area (RPA).

The RPA of any given tree is the area of ground around that tree which should not be disturbed by excavation, compaction, changes in level or other construction/demolition operations. The extent of the RPA is calculated in accordance with BS 5837:2012, and is an important part of the methodologies described in this report.

The survey recorded two tree groups and 12 individual trees.

None of trees are protected by Barnsley Metropolitan Borough Council Tree Preservation Orders (TPO). The site is not located within a Conservation Area.

For ready reference, Figure 1 (Chapter 1) is a simplified version of the 'Design and Construction Process and Tree Care' table outlined in BS 5837:2012. The table clearly identifies processes and obligations expected at the various stages of the construction project. BS 5837:2012 is considered an iterative process, and as such the project arboriculturist's advice should be ongoing.

Contents

List of Figures and Tables

1. Introduction

1.1 Context of this document in the Planning System

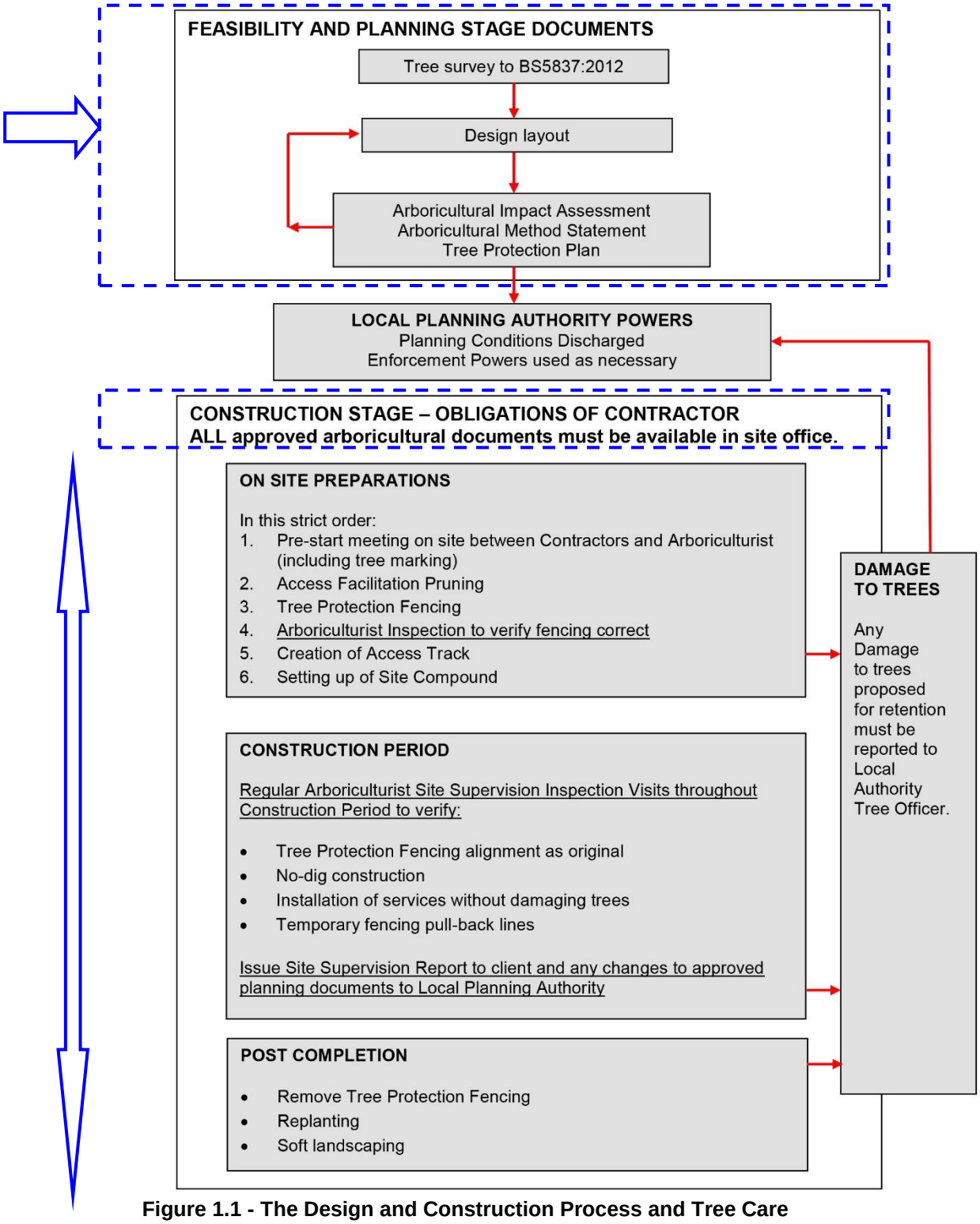


Figure 1.1 - The Design and Construction Process and Tree Care

1.1.1 This document has been prepared at the feasibility and planning stage of a project.

1.1.2 If it becomes an approved Planning Arboricultural Method Statement of tree protection measures and/or Tree Protection Plan, **a copy should be to hand in the Site Office at**

all times during the Construction Stage.

1.2 Location

1.2.1 Ecus Limited (Ecus) were commissioned by Barnsley Premier Leisure (The Client) to undertake a tree survey of the site at Metrodome Leisure Complex, Queens Ground, Queens Road, Barnsley, South Yorkshire, S71 1AN, UK Grid Reference SE 35235 06660. The site location is shown on Figure 1.2.

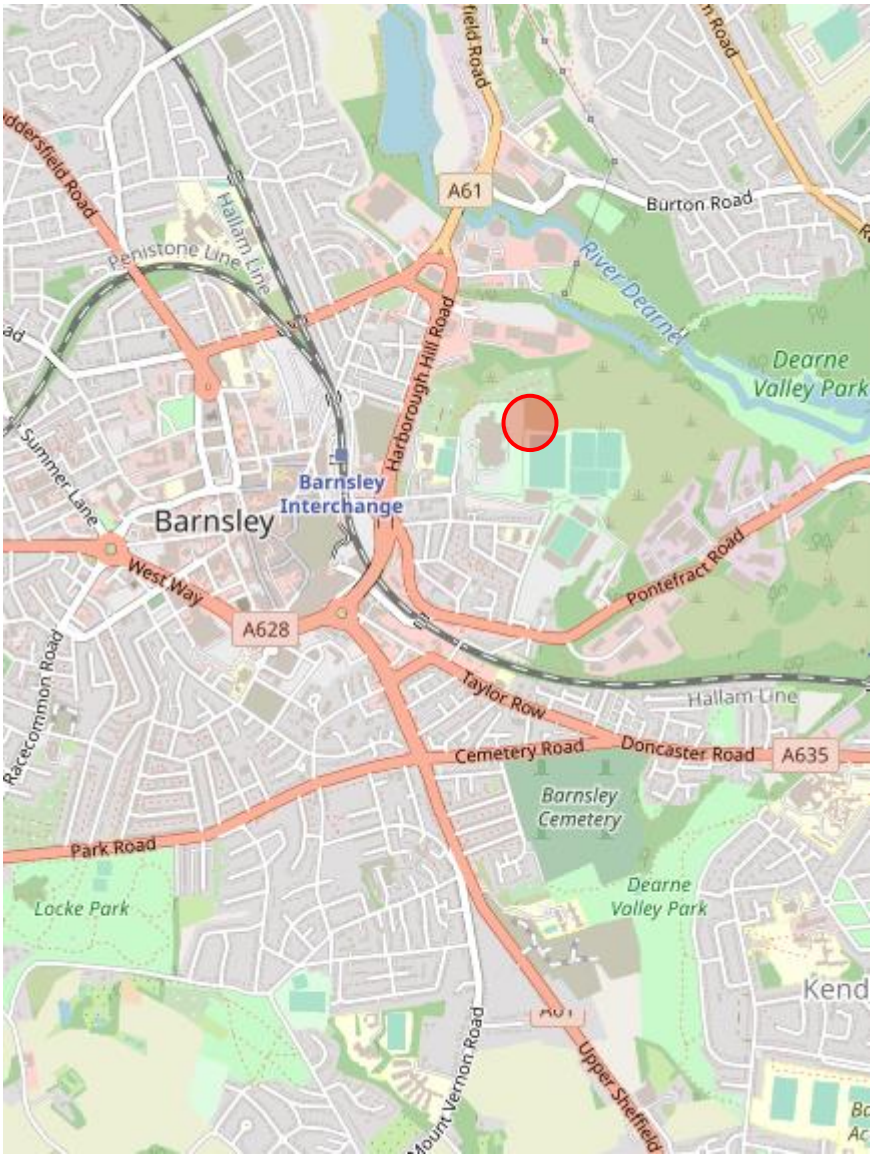


Figure 1.2 – Location Plan
© OpenStreetMap contributors

1.2.2 The survey was carried out in accordance with BS 5837:2012 '*Trees In Relation To Design, Demolition and Construction- Recommendations*'. This report sets out the findings of the survey and recommendations have been made for preliminary tree work that may be required.

Tree Designations

1.2.3 The survey included identification of any existing designations affecting trees on site such as Tree Preservation Orders (TPO) and Conservation Area status by checking the map

information available on xxx Barnsley Metropolitan Borough Council website www.barnsley.gov.uk.

1.2.1 This check confirmed that there are no TPOs on any of the trees surveyed. The site is not within a Conservation Area.

2. Tree Survey Methodology

Site survey

2.1.1 Ecus carried out the tree survey in April 2019 when the trees were partially in leaf. The tree survey was a ground based visual inspection carried out by a suitably qualified arboriculturalist. The trees were not tagged as part of the survey.

2.1.2 The inspection of the trees, the site and the immediate surrounding area was carried out by Peter Simpson, MICFor, MArborA.

2.1.3 Weather on the day of the survey was dry and warm. Weather conditions on the day of the survey allowed for a thorough inspection of all trees included in this survey.

2.1.2 The following characteristics were recorded:

- Species
- Stem diameter at 1.5 m above ground level (mm).
- Estimated height (m)
- Approximate crown spread (m) as North, South, East and West measurements.
- An estimate of the number of years that the tree is likely to remain suitable for retention.

  <10 = less than 10 years;

  10+ = 10 - 20 years;

  20+ = 20 - 40 years; or

  40+ = more than 40 years
- Age class

  YNG = Young and recently established trees;

  SM = Semi-mature trees age less than 1/3 life expectancy;

  EM = Middle age trees 1/3 – 2/3 life expectancy;

  M = Mature trees over 2/3 life expectancy; and

  OM = Over mature – declining or moribund trees of low vigour.
- Condition category in accordance with BS5837:2012 '*Trees In Relation To Design, Demolition And Construction- Recommendations'*. The categories listed are defined as per BS 5837:2012 and briefly are:

  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;

  Category A = Those of high quality and value, best trees with a long expected safe life;

  Category B = Those of moderate quality and value; and

  Category C = Those of low quality and value and trees less than 15cm diameter.
- Value subcategories in accordance with BS 5837:2012. The subcategories listed are defined as per BS 5837:2012 and briefly are:

1 = Mainly arboricultural values

2 = Mainly landscape values

3 = Mainly cultural values, including conservation

- General notes about physiological and structural condition and any management recommendations.

2.1.4 The survey recorded all trees on site with a stem diameter of 75 mm or more at 1.5 m height and includes all trees outside the site boundary which may be affected by any future development of the site, either by their crown overhanging the site or their Root Protection Area (RPA) potentially extending into the site.

2.1.5 A full topographic survey of the site was provided; this was used as the basis for producing the tree survey plan. The topographic survey did not identify some tree locations within or outside the development site and therefore some tree locations were estimated. These trees are marked with a cross on Figure 3.1.

2.1.6 Estimated tree locations are plotted with the internal GPS of a handheld data collection device, and an accuracy of +/- 2 m should be assumed.

2.1.7 At the time of carrying out a site survey it is not always possible to know which trees will be in conflict with development proposals. Therefore, when proposals are confirmed, it may be that arrangements are made to check measurements on site, especially where development is proposed very close to existing trees.

2.1.8 Trees are living organisms that change over time. The condition of all trees described by this survey must be checked by a qualified arboriculturalist or tree surgeon before works commence, especially if there have been any storm events or 12 months or more have passed since the survey was carried out.

Calculation of Root Protection Area (RPA)

2.1.9 Below ground constraints to development are represented by the root plate around a tree which needs protecting in order for the tree to be incorporated into a proposed scheme, without adverse harm to the tree or structural integrity of any proposed foundation structures. This area is illustrated by the RPA and is calculated according to the formulae set out in BS 5837:2012 clause 4.6.1.

2.1.10 Any deviation in the RPA from the original circular plot should take account of physical site conditions that influence the disposition of tree roots, e.g. streams, building foundations and retaining walls.

3. Tree Survey Results

General Site Description

3.1.1 The site is currently a community allotment located in the north east corner of the Metrodome Leisure Complex.

3.1.2 The trees surveyed during the site visit are located on the banking which surrounds the site, which are formed where the levelled area on which the complex is formed drops away to the surrounding land. A small group of mixed species trees stands within the allotment garden.

3.1.3 The site is within a community allotment, though the gate to this is locked to prevent casual access. The trees are visible to users within the car park and those on the banking act as a screen to the site from the surrounding area.

Results of Tree Survey

3.1.4 The Tree Survey Schedule in Table 3.1 (Appendix 1) describes the results of the tree survey and includes preliminary management recommendations. The table should be read in conjunction with Figure 3.1 Tree Survey and Tree Constraints Plan (Appendix 3). This drawing illustrates the location of the trees surveyed, the extent of their canopies as well as the Root Protection Areas (RPA) of each tree and tree group.

3.1.5 Two tree groups and 12 individual trees have been recorded during the survey. A full survey to BS 5837:2012 was carried out for those trees, including the recording of the stem diameter to determine the Root Protection Area (RPA) of the trees.

3.1.6 Six species of trees have been recorded on site. The species mix is typical of this type of site with sycamore (*Acer pseudoplatanus*) the commonest tree. These are prevalent on the banking around the site, and are most likely self-set trees, rather than part of a coordinated planting scheme.

3.1.7 The crack willow T012 (*Salix fragilis*) forms the northern end of a short row of trees along the eastern boundary, and is typical of the species, being multi stemmed with a spreading habit.

3.1.8 The central group (G013) contains a mix of amenity species with a number of large multi stemmed field maples (*Acer campestre*), which have possibly been coppiced in the past. This group appears to be mostly self-set trees, with the alder (*Alnus glutinosa*) in particular growing in a dense stand.

3.1.9 All the trees are semi-mature and none are of any great quality. The trees on the bank (T001 to T004) have suffered a degree of level changes within their RPA, though this appears to have little detrimental effect on their health.

Tree Constraints and General Design Advice

3.1.10 Trees recorded within the survey are not of any great quality. The trees growing on the slope (T001 to TG011) are unlikely to be affected by development within the allotment area due to their positioning and past soil level changes.

4. Recommendations

Requirements for Tree Works

4.1.1 There are no trees requiring immediate attention for reasons of health and safety/tree vitality/biodiversity

Requirements for Development

4.1.2 This tree survey provides a base on which the architect or land-owner can design a layout, whilst being aware that for a tree to be retained, its Root Protection Area must be retained intact, and have no cut or fill operations proposed within it.

4.1.3 It may be possible for development proposals to intrude slightly into the Root Protection Areas, if the intrusion is insignificant, or made insignificant by a specific methodology described in a Method Statement.

4.1.4 Some trees may need to be removed to create access for construction or demolition operations. Some trees may require some tree surgery in order to best prepare them for successful retention within the construction site, for example, canopy reduction may be the right solution for an individual tree growing very close to a building proposed for demolition. Such preparatory tree surgery is referred to as 'Access Facilitation Pruning' in BS 5837:2012, and, if required, specific details should be included in a Method Statement or separate Works Specification.

4.1.5 Some trees may need to be removed to physically accommodate the development proposals. Some trees may need to be removed in order to avoid posing a conflict with the management and users of the redeveloped site.

4.1.6 It is possible to build hard-surfacing within the Root Protection Areas, provided a no-dig construction is used. This should be described in a Method Statement.

4.1.7 If the site is to be developed and some trees removed, provisions should be made for the replacement planting of trees within the site, prioritised in areas that offer opportunities to increase site screening and/or internal amenity to help compensate for tree loss. Spatial constraints for areas in which trees are to be planted should be considered within the species selection process. Generally, for larger sites these opportunities should be identified within a landscape scheme, complete with tree planting schedule and five year aftercare program to aid establishment.

4.1.8 The next stage of planning process is to prepare the following associated documents:

- Development layout plans;
- Tree Protection Plans;
- Arboricultural Impact Assessment/Arboricultural Method Statement; and
- Access Facilitation Pruning Works Specification (if required).

4.1.9 It is recommended that any trees that require removal or significant canopy works should be checked in advance of works by an ecologist to ensure there is no possibility of any disturbance to nesting birds or roosting bats.

Arboricultural Constraints on Future Design

4.1.10 BS 5837:2012 is an iterative process. We recommend that a copy of the draft site layout is provided to the project Arboriculturalist at the earliest opportunity for review.

4.1.11 The Arboriculturalist will use this plan to identify any conflicts or issue arising between the proposed layout and existing trees and suggest any necessary improvements or adjustments.

4.1.12 By following this process delays and readjustments at the later phases of planning can be avoided and the health and vitality of the trees maintained.

Important Founding Principle of *BS 5837:2012 Trees In Relation To Construction*

4.1.13 The most important and effective process, in terms of preventing damage to trees on a construction site, is the timely erection of tree protection fencing. **This must be erected as the first operation on site**, for example, before access track construction, before Contractors site cabins, and before trenching for service runs.

5. References

Books and Papers

BS 3998:2010 *Tree Work – Recommendations*. ISBN 978 0 580 53777 6

BS 5837:2012 *Trees In Relation To Design, Demolition And Construction – Recommendations*. ISBN 978 0 580 69917 7

BS 8545:2014 *Trees: From Nursery to Independence in the Landscape – Recommendations.*

Volume 4 NJUG *Guidelines for The Planning, Installation and Maintenance of Utility Apparatus in Proximity To Trees*, Volume 4: Issue 2: 16/11/2007, www.njug.org.uk

Appendix 1 – Tables

Table 3.1 – BS 5837:2012 Tree Survey Schedule

Key:	Measurements	Age – Class	Overall Condition	BS 5837:2012 : Cascade Chart for Quality Assessment/Retention Category	Symbols:
	MS – Multi-stemmed	YNG – Young Mature	G – Good	A – High	< = less than
	Ht - Height in metres	SM – Semi-mature	F – Fair	B – Moderate	~ = approximately
	Stem – Stem Diameter at 1.5m in mm	EM – Early mature	P – Poor	C – Low	> = greater than
	Crown – Crown spread in metres	M – Mature	D - Dead	U – Unsuitable for retention	
	TD - Trunk division (height in metres)	OM – Over mature		**Sub-categories:**	
		Est Yrs – estimate of years remaining (40+ years; 20+ years; 10+ years, <10 years)		**1** = mainly arboricultural values **2** = mainly landscape values **3** = mainly cultural values.	
RPA = Root protection area (equivalent to a circle with a radius 12 x the stem diameter of single stem trees or 12 x the notional stem diameter of multi stemmed trees as per BS 5837:2012 clause 4.6). This will be capped to 707m² for trees with a stem diameter larger than 1.25m.					

Tree No	Species	Ht (m)	Stem Diam @ 1.5 m (mm)	Canopy Spread (m) N- E- S- W				Height of Crown Clearance	Age Class	Est yrs	Overall Condition	Comments	Management Recommendations	BS 5837 Category	RPA Radius (m)	RPA (m²)
T001	Ash, Common (*Fraxinus excelsior*)	10	260	4	3.5	4	4	1	Semi Mature	20+ Years	Good	Soil level change within RPA	No action required	C2	3.12	30
T002	Sycamore (*Acer pseudoplatanus*)	12	280	4	4	4	4	2	Semi Mature	40+ Years	Fair	Birds nest in crown	No action required	C2	3.36	36
T003	Sycamore (*Acer pseudoplatanus*)	12	320	4	4	4	4	2	Semi Mature	40+ Years	Fair	Soil level change at base	No action required	C2	3.84	45
T004	Sycamore (*Acer pseudoplatanus*)	9	180	3	3	3	3	1	Semi Mature	40+ Years	Fair	Behind security fence, unable to inspect closely	No action required	C2	2.16	15
T005	Maple, Norway (*Acer platanoides*)	9	80	1	1	1	1	1	Semi Mature	20+ Years	Fair	Behind security fence, unable to inspect closely	No action required	C2	0.96	3

Tree No	Species	Ht (m)	Stem Diam @ 1.5 m (mm)	Canopy Spread (m) N- E- S- W				Height of Crown Clearance	Age Class	Est yrs	Overall Condition	Comments	Management Recommendations	BS 5837 Category	RPA Radius (m)	RPA (m^2)
T006	Sycamore (*Acer pseudoplatanus*)	10	140, 120,	3	1	3	2	1	Semi Mature	20+ Years	Fair	Behind security fence, unable to inspect closely	No action required	C2	2.208	15
T007	Sycamore (*Acer pseudoplatanus*)	12	160, 120, 160, 130, 120,	3.5	3.5	3.5	3.5	0	Semi Mature	20+ Years	Fair	Multi stemmed, Behind security fence, unable to inspect closely	No action required	C2	3.732	43
T008	Sycamore (*Acer pseudoplatanus*)	10	150	3	3	3	3	0	Semi Mature	20+ Years	Fair	Hawthorn growing through crown, behind security fence, unable to inspect closely	No action required	C2	1.8	10
T009	Sycamore (*Acer pseudoplatanus*)	11	160	2	2	2	2	1	Semi Mature	20+ Years	Fair	Behind security fence, unable to inspect closely	No action required	C2	1.92	11
T010	Sycamore (*Acer pseudoplatanus*)	10	180, 140,	4	4	4	4	1	Semi Mature	20+ Years	Fair	Behind security fence, unable to inspect closely	No action required	C2	2.736	23

Tree No	Species	Ht (m)	Stem Diam @ 1.5 m (mm)	Canopy Spread (m) N- E- S- W				Height of Crown Clearance	Age Class	Est yrs	Overall Condition	Comments	Management Recommendations	BS 5837 Category	RPA Radius (m)	RPA (m^2)
T011	Scrubby group of Sycamore (*Acer pseudoplatanus*), Ash, Common (*Fraxinus excelsior*), oak (*Quercus sp*.) and hawthorn (*Crataegus monogyna*)	Ave 12	Ave 200	As per plan				0	Semi Mature	20+ Years	Fair	Scrubby group growing on bank side, all semi mature, between 150 and 200 mm dbh, behind security fence, unable to inspect closely	No action required	C2	0	476
T012	Willow, crack (*Salix fragilis*)	14	140, 140, 140, 140, 140,	4	4	4	4	0	Early Mature	20+ Years	Fair	Behind security fence, unable to inspect closely	No action required	C2	3.756	45

Tree No	Species	Ht (m)	Stem Diam @ 1.5 m (mm)	Canopy Spread (m) N- E- S- W				Height of Crown Clearance	Age Class	Est yrs	Overall Condition	Comments	Management Recommendations	BS 5837 Category	RPA Radius (m)	RPA (m²)
T013	Scrubby group of Sycamore (*Acer pseudoplatanus*), Ash, Common (*Fraxinus excelsior*), field maple (*Acer campestre*), common alder (*Alnus glutinosa*) and hawthorn (*Crataegus monogyna*)	12	Ave 200 but many MS	As per plan				0	Early Mature	40+ Years	Fair	Field maple multi stemmed, alders growing in dense group, much soil disturbance surrounding group.	No action required	C2	0	248
T014	Birch, Silver (*Betula pendula*)	16	200, 200,	3.5	3.5	3.5	3.5	1	Early Mature	20+ Years	Fair	Co dominant from 0.5 m	No action required	C2	3.396	36

Appendix 2 – Site Photographs

Plate 1: T001 (l) to T004 (r) looking north

Plate 2: Eastern boundary looking NE, G011 centre

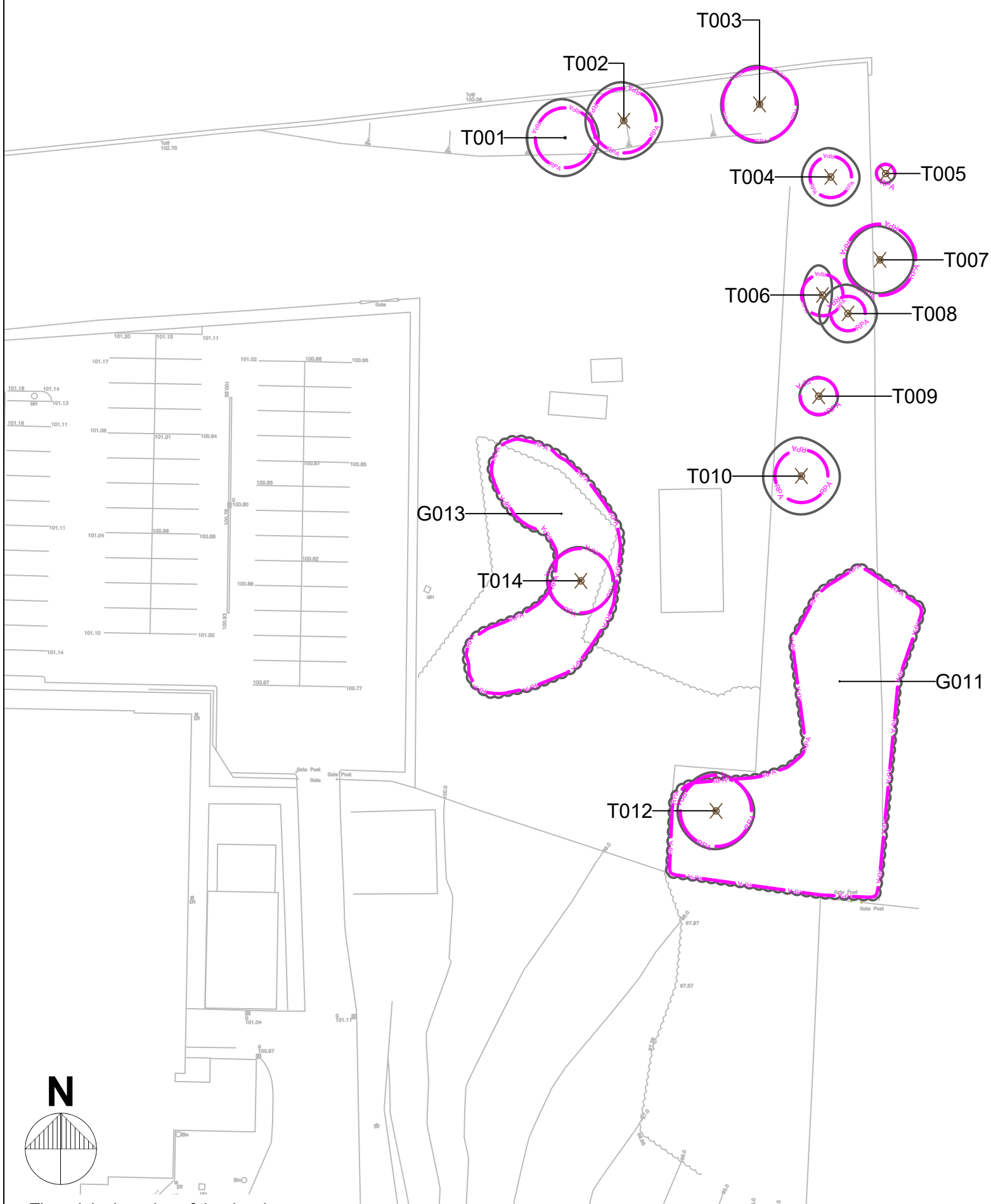
Plate 3: Willow T012 looking east

Plate 4: General view along eastern boundary, looking north T010 to T003 left

Plate 5: G013 looking south

Plate 6: G013 looking west, with T014 at front of group

Appendix 3 – Figures



The original version of the drawing was produced in colour. Monochrome copies should not be relied upon.

REV	DATE	DRAWN BY	CHECKED BY	REVISION COMMENT
A	24.04.19	PS	Ecus	Preliminary

DRAWING STATUS: For Planning

GENERAL NOTES - TREE SURVEY

- Drawing for Planning purposes only.
- Refer to arboricultural report produced by ECUS Ltd titled 12739 Barnsley Metrodome BS5837 Tree Survey.
- Based on topographic survey provided by HH Surveys Ltd dated 29.11.17..
- Check all dimensions on site.
- Do not scale from this drawing.
- Report any discrepancies and omissions to Ecus Ltd.
- This drawing is Copyright.

3RD-PARTY INFORMATION

NB This drawing includes information provided by independent surveyors and / or consultants, to whom all queries shall be made. Ecus Ltd can accept no liability for its context or accuracy.

KEY

Trunk location from topographic survey

Trunk location approximated by ECUS

Tree categories (BS 5837:2012)

Category A Trees

Category B Trees

Category C Trees

Category U Trees

Root Protection Area (RPA) of category A, B and C trees

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Figure 3.1
Tree Survey and Tree Constraints Plan

By	Date	Scale @ A3	Drg. no.
PS	**April 2019**	**1:500**	**12739-ARB-01**