Pre-development Tree Survey BS5837:2012

Land off Boleyn Road

Birmingham

Client:

BM3

August 2020

Report Author:

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1.0. Introduction and Site Description

BM3, commissioned Dr. Stefan Bodnar to undertake an arboricultural survey (BS5837: 2012) on trees within a development site at Land off Boleyn Road, Frankley, Birmingham, B45 0ND

The trees included within the survey and their relationship to the Development Footprint are identified on the drawing in Appendix 2, the aerial photograph relating to the site and photographs of trees involved are included in Appendix 1, together with examples of the trees concerned.

BS 5837:2012 includes an assessment of all trees within the development footprint in addition to those near to the site boundary. The site assessed is indicated in the location plan of trees (Appendix 2). See site plan below in Figure 1.

The site is an area of species rich semi-improved grassland. There is native scrub and young trees on the northern and western boundaries and a mature English oak within the site centre. . See satellite image (figure 1a) and appendixes below.

It is understood that none of the on-site trees are protected by an area Tree Preservation Order (TPO). However, it is recommended that the client fully satisfy themselves that this is the case during contact with the Local Planning Authority. See search from Birmingham City Council interactive GIS below:

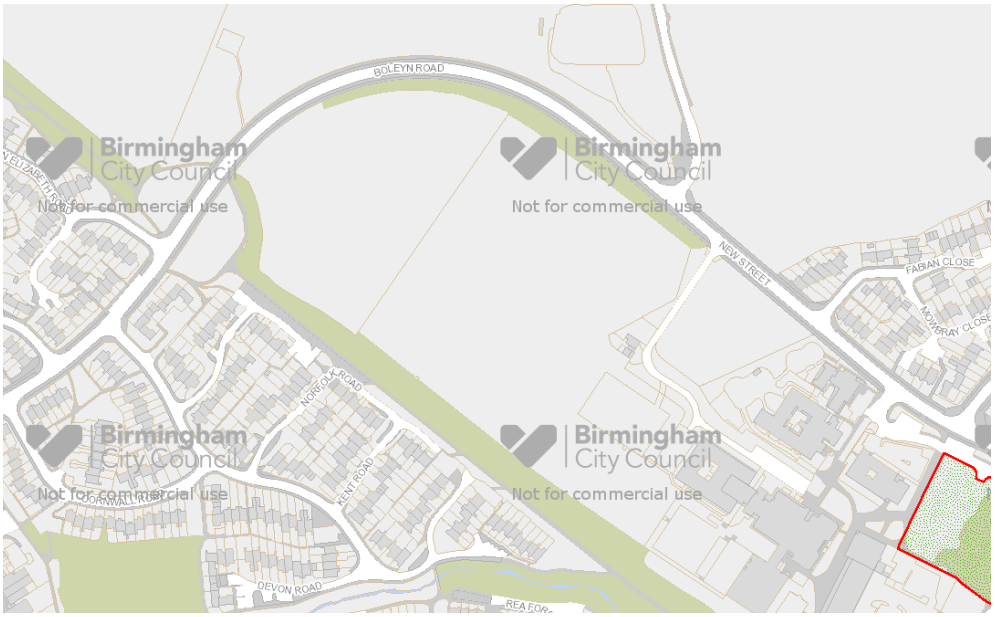
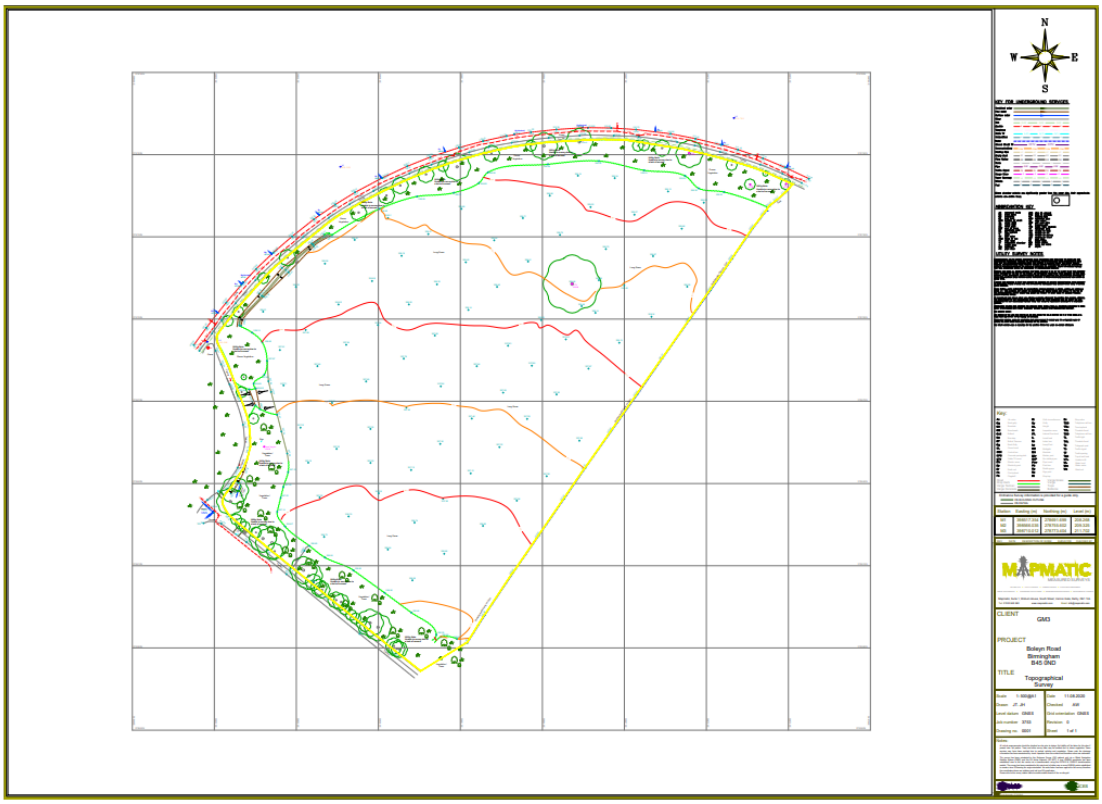


Figure 1a. Satellite location plan

1b. Topographical survey of site



2.0. Arboricultural Survey Methodology

2.1 Condition Status

To determine the status of the trees within the site a full arboricultural survey has been undertaken, assessing species and status of all trees present within the footprint of development. The survey has been carried out in accordance with BS 5837 (2012).

The surveyor has extensive experience of arboriculture, through undertaking BS5837 surveys on many sites between 2005 and 2020. Previous to this, he has undertaken Lantra approved courses for arborists, and is competent to the level of a tree officer operating within a Local Authority, being familiar and having used the systems undertaken by tree officers for undertaking safety and condition surveys for Birmingham City Council. Dr. Bodnar possesses numerous ecological qualifications including a full member of CIEEM and a PhD (Community Forestry, 1998). Recent Certificated BS5837 training (May 2015) from Tree Life Arboricultural Consultancy Ltd.

Individual trees above 75mm (diameter at 1.5m above ground level) have had their position confirmed on the survey drawing. The trees were visually assessed and a schedule prepared listing tree number, species, trunk diameter at 1.5m above ground level, tree height, crown spread (radius), age, class and estimated remaining years. Any specific observation or recommendations with regard to management were also noted.

A plan drawing indicating the location of each tree assessed is included in Appendix 2.

The condition of each tree was assessed according to the following categories:

Category A

Those trees of high quality and value. Significant trees that are structurally sound and can be retained in the long term (i.e., >40 years) or trees that can be retained in the long term following remedial tree surgery. Colour code on the plan: pale green.

Category B

Those trees of moderate quality and value. Trees that may live 15-40 years. Trees that may live for more than 40 years, but whose removal may be required in that time frame to allow development of retained trees. Trees that are defective but could be retained in the medium term by remedial tree surgery. Colour code on the plan: mid blue.

Category C

Those trees of low quality and value. Trees that can only be retained in the short term (.e, 5-15 years) and that have little landscape impact due to poor form or condition. Trees having a stem diameter of <150mm at 1.5m above ground level that could be replaced. Colour code on the plan: grey.

Category U

Unsuitable for retention. Trees that are dead, dying or diseased that will become dangerous in the near future (within years). Colour code on the plan: red.

Categories A, B and C have further sub-categories with regard to the reasons for tree retention:

1: Mainly arboricultural values

2: Mainly landscape values

3: Mainly cultural values, including conservation.

2.2 Root Protection Area (RPA)

In order to avoid damage to the roots or rooting environment of retained trees, the RPA has been calculated for each of the category A, B and C trees. This is a minimum area of m^2, which should be left undisturbed around each retained tree.

These figures are calculated utilising the formula blow taken from BS 5837 (2012):

Single stem tree

$$\text{RPA } m^2 = \frac{\{ \text{Stem diameter (mm) @ 1.5 x 12} \}^2}{1000} \times 3.142$$

Trees with more than one stem below 1.5m above ground level

$$\text{RPA } m^2 = \frac{\{ \text{Basal diameter (mm) @ 10} \}^2}{100} \times 3.142$$

During construction works the root protection areas – 'Construction Exclusion Zones' are to be protected by barriers and ground protection in accordance with Section 9.0 of BS 5837:2012 and as specified and indicated on an approved Tree Protection Plan.

Where construction operations (demolition / hard surfacing) are proposed/ permitted within the Root Protection Area precautions should be taken to maintain the condition and health of the root system in accordance with BS5837:2012.

Construction of hard surfacing within the root protection area should be designed to avoid root loss during excavation. The structure of the hard surface should be designed to avoid localised compaction, including the use of three dimensional cellular confinement system as an integral component of the sub-base.

The hard surfacing in these areas should be a permeable and gas-porous nature such as washed gravel or paving slabs and block pavers (with infiltration spaces). Edge supports such as kerb and edgings on foundations and haunchings are not to be used within the RPA. Consideration should be given to the use of pegged timber edging or propriety or steelpaver or edge restraints.

3.0 Results

The site is an area of species rich semi-improved grassland. There is native scrub and young trees on the northern and western boundaries and a mature English oak within the site centre. The trees and groups on site are mainly B category, with one large mature A category English Oak. In general, A and B category trees or hedges should be retained and carefully protected during any development work with appropriate root protection fencing. As many C category trees or hedges as possible should be protected and retained, although suitable replacement planting within the scheme area could adequately mitigate for losses of category C trees.

A map detailing the location of trees and their BS5837:2012 determined category can be seen in Appendix 2, all other trees on site are noted as being below 150mm stem diameter and therefore, outside the requirements of BS5837:2012. Trees below 150mm stem diameter but above 75 mm stem diameter are included in the topographical survey of the site. Appendix 1 contains images of all the trees and all significant specimens.

Scientific names for species identified:

Common Name	**Species Name**
Ash	*Fraxinus excelsior*
Blackthorn	*Prunus spinosa*
English Oak	*Quercus robur*
Hawthorn	*Crataegus monogyna*
Hazel	*Corylus avellana*
Horse Chestnut	*Aesculus hippocastanum*
Field maple	*Acer campestre*
Sycamore	*Acer pseudoplatanus*
Whitebeam	*Sorbus aria*
Cherry	*Prunus sp.*

Tree no.	Species	Stem diam (mm) DBH	Crown S (m)	Crown W (m)	Crown E (m)	Crown N (m)	Height (m)	Age Class	Estimated remaining contribution (years)	Physiological and Structural Condition	Category	Radius of nominal circle (m)	Root Protection area (m^2)
1	English oak	900	10	10	10	10	15	Mature	40+		A1, A3	10.8	366
G1	Native scrub	To 150	3	3	3	3	6	Native scrub	20+		B2, B3	1.8	10
2	English oak	250	4	4	4	4	7	Young	20+		B2, B3	3	28
3	English oak	250	4	4	4	4	7	Young	20+		B2, B3	3	28
4	Field maple	200	3	3	3	3	8	Young	20+		C2, C3	2.4	18
5	English oak	Basal coppice, 3 stems, 400, 350, 350	8	8	8	8	13	Coppice	20+		B1, B2	6.6	137
6	Cherry	225	4	4	4	4	12	Young	20+		B2, B3	2.7	23

G2	Native scrub	To 250	3	3	3	3	9	Native scrub	20+	Elder, Holly, English oak	B2, B3	3	28
7	Cherry	225	4	4	4	4	12	Young	20+		B2, B3	2.7	23
8	English oak	225	4	4	4	4	12	Young	20+		B2, B3	2.7	23

G = group, H = Hedge

4.0 Discussion

4.1 Tree Protection:

4.1.1 Tree Removal and Retention Plans:

The trees on site are mainly high quality B and A category trees. There were no development plans at the time of survey. It is recommended that all the trees on and off site and their root protection zones, are protected and retained during the development of the site, this is particularly important for the A and B category trees, scrub and hedges. The high quality A category mature oak trees on site has high bat roost potential. If this tree is to be affected by the development in any way, at least three bat emergence surveys, within the active season, by a suitably qualified ecologist will be required, as recommended by BCT 2016 guidelines.

In general, developments should aim to primarily retain and protect trees in the 'A' and 'B' Categories and as many of Group 'C' as can be retained. Although suitable replacement planting, at minimum of a 1:1 ratio with native nectar rich and berry bearing native trees, within the scheme area could adequately mitigate for losses of category C trees. To ensure equilibrium between retained trees, any new trees and the new development, the physiological requirements of trees must be carefully considered within the planting layout.

4.1.2 Avoiding Accidental Damage to Trees: Trees may be negatively affected by the construction period by both direct and indirect actions, which are often borne out of ignorance as to the tress physiological requirements. Careful site planning and management along with the implementation of robust physical protection measures is necessary to ensure the retention of important trees.

4.1.3 Soil and Root Protection: It is essential to safeguard a pre-determined volume of soil around the base of the retained trees to ensure that then ongoing biological functioning of the root system along with the interaction with the soil is not impaired. This requires, that prior to the commencement of development activity on site that a robust protective barrier is erected.

4.1.4 Suitable Barriers: The specifications for this barrier should be as per the British Standard 5837 of 2012 (Trees in Relation to Construction – recommendations). In brief, this consists of 2.3m high panels attached to an adequately braced scaffold structure to deter un-authorized dismantling and robust enough to rebut physical impacts from site plant and machinery. In practice Heras weld-mesh type panels perform well when attached to the above mentioned scaffold structure.

4.1.5 Bird breeding season: All site clearance should ideally take place outside of the bird breeding season. Bird breeding season is between mid March and mid July, although certain species can breed outside these months and if breeding birds are found then work should cease and the advice of an ecologist sought. If clearance is undertaken within the bird breeding season then all site features should preferably be checked immediately prior to clearance by a suitably qualified ecologist.

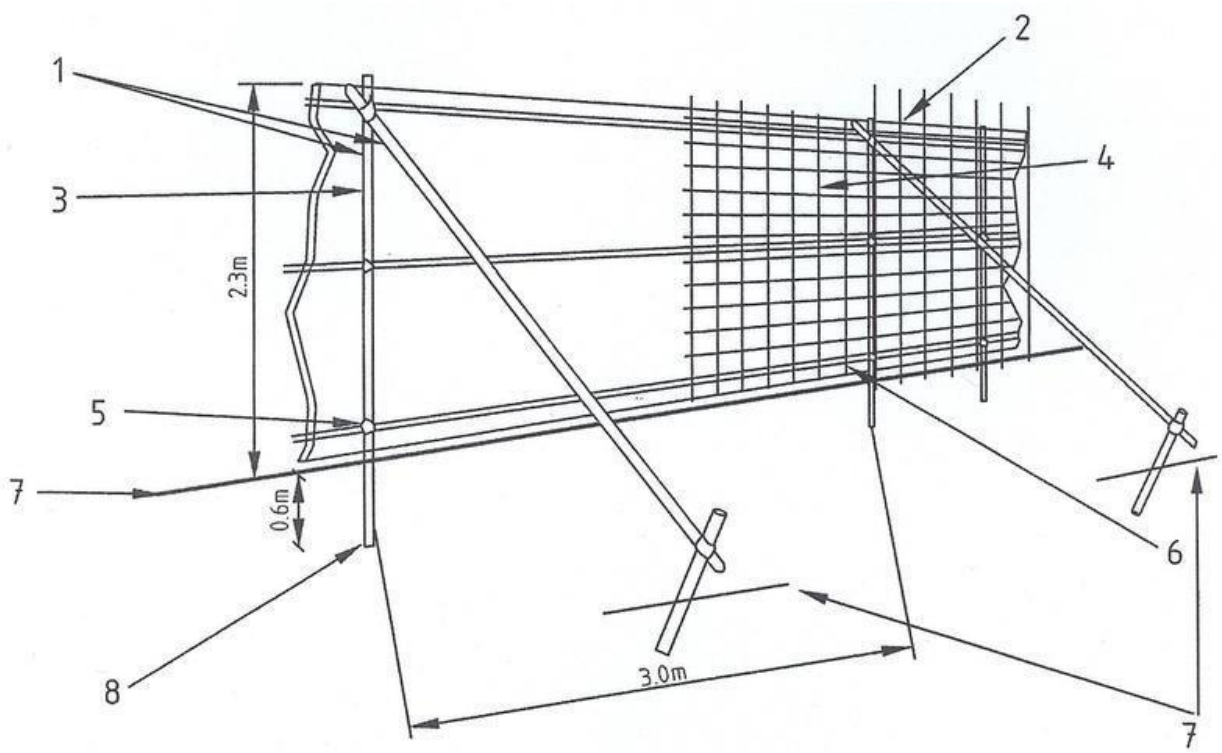
4.1.6 Shading: The mature trees are mainly located along the site edges and therefore are unlikely to create any shading issues. The oak trees within the site require a large root protection zones, no shading issues would be created in housing beyond this root protection zone.

4.2 Tree Protection & Ground Protection

4.2.1 All trees that are being retained on site are to be protected by barriers and/or ground protection before any materials or machinery are brought onto the site, and before any demolition, development or stripping of soil commences. Where all activity can be excluded from the RPA, vertical barriers are to be erected to create a construction exclusion zone. The default barrier specification is to be in accordance with BS 5837:2012 'Trees in Relation to Design, Demolition and Construction - Recommendations' as illustrated in Figure 3 below.

4.2.2 The protected area is to be regarded as sacrosanct, and, once installed, barriers and ground protection is not to be removed or altered without prior recommendation by the project arboriculturist and, where necessary, approval from the Local Planning Authority.

4.2.3 All weather tree protection posters (an example is detailed in Figure 4 below) are to be securely fixed to the tree protection fencing in plain view.



1 Standard scaffold poles
2 Uprights to be driven into the ground
3 Panels secured to uprights with wire ties and, where necessary, standard scaffold clamps
4 Weldmesh wired to the uprights and horizontals
5 Standard clamps
6 Wire twisted and secured on inside face of fencing to avoid easy dismantling
7 Ground level
8 Approx. 0.6m driven into the ground

Figure 3. Example of protective fencing required for all Root Protection Areas.

Figure 4. Example of an all weather tree protection poster.

4.2.4 Care is to be exercised when locating the vertical poles to avoid underground services and, in the case of the bracing poles, also to avoid contact with structural roots. If the presence of underground services precludes the use of driven poles, an alternative specification that provides an equal level of protection is to be prepared in conjunction with the project arboriculturist as illustrated within Figure 3 above.

4.2.5 Where the set-back of the tree protection barrier exposes unmade ground to construction damage, temporary ground protection is to be installed as part of the implementation of physical tree protection measures prior to work starting on site.

4.2.6 Temporary ground protection is to be capable of supporting any traffic entering or using the site without being distorted or causing compaction of underlying soil. Detail is shown in Figure 5 below: Scaffolding and root protection within the RPA.

a) 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.

b) for pedestrian-operated plant up to a gross weight of 2t, 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.

c) for wheeled or tracked construction traffic exceeding 2t 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.

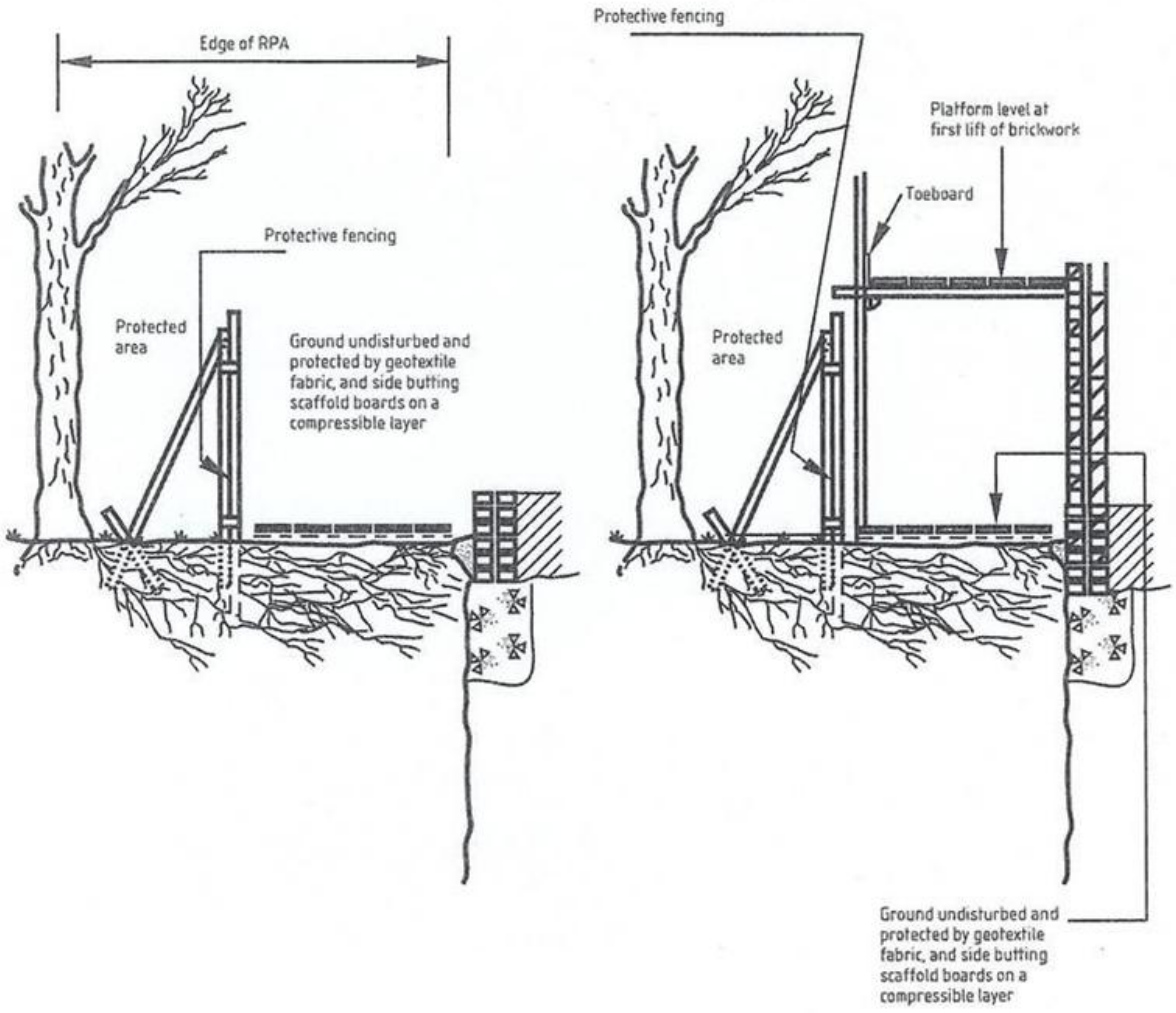


Figure 5. Scaffolding and root protection within the Root Protection Area.

4.3 Landscape considerations:

Consideration should be given to maintaining tree-lined boundary features, landscape impacts, habitat connectivity and reinforcing site boundaries. Further consideration should be given to the appearance of frontages and screening. The appropriate landscape mitigation and compensation will need to be discussed at the pre- application stage with the appropriate Local Authority Planning Landscape Officer. It is recommended that compensation planting is undertaken and located to enable the landscape value of this area to be reinforced, if any trees with landscape value are to be removed from the site.

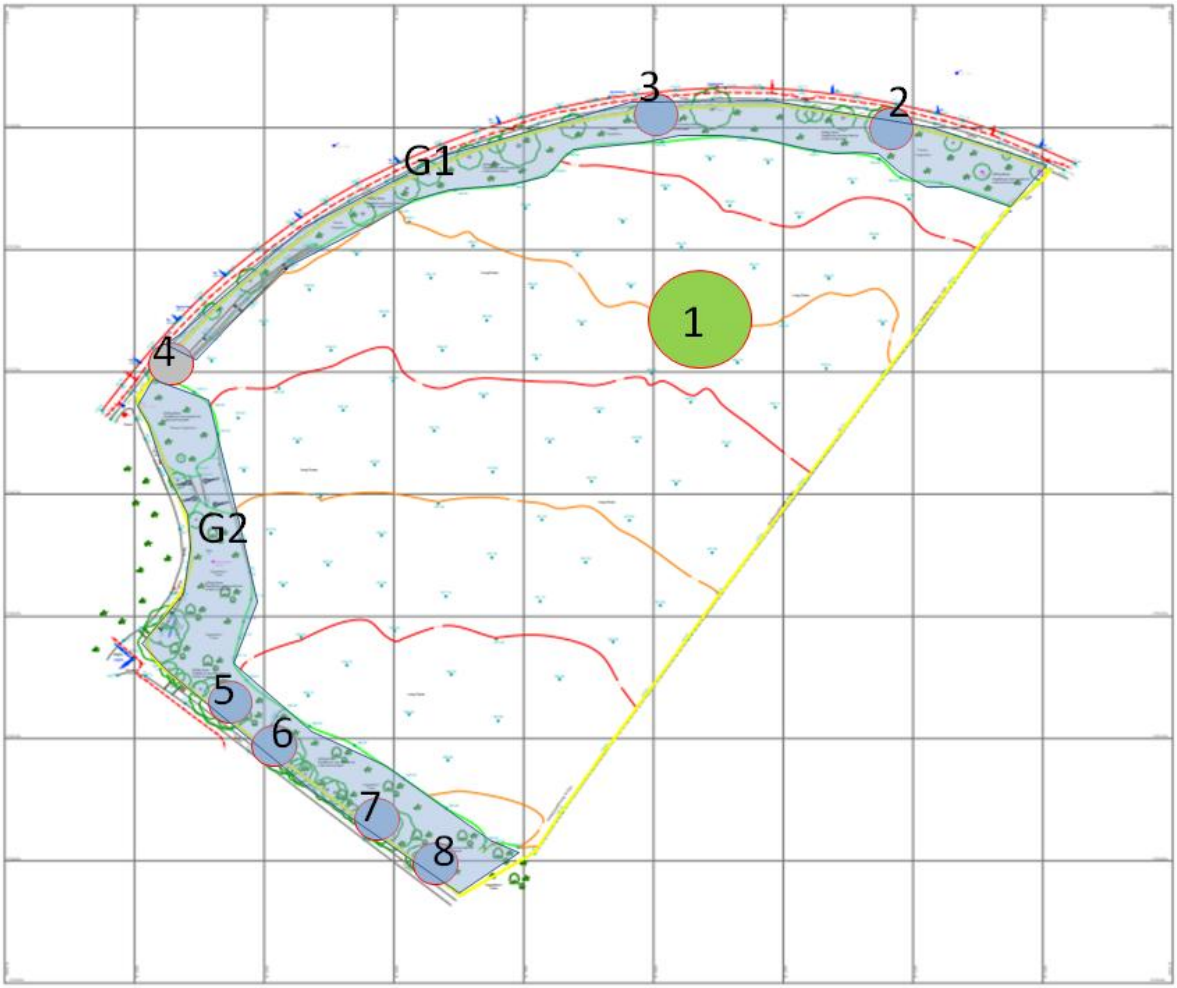
4.4 Mitigation and Compensation:

In compensation for the loss of any of the existing trees, at least an equal number of native trees should be planted as part of the new development. The trees will be species that have wildlife benefits and are sympathetic both to the existing tree structure and suitable for their likely eventual size limitation, such as hawthorn, elder, rowan, crab apple, and silver birch. All trees will be planted as 9-10cm Light Standards. All appropriate British Standards will be applied in terms of planting specifications. The location of the replacement trees should be determined in a detailed landscape design plan including location and species.

REPORT ENDS

Appendix 1: Images of trees and shrub vegetation

Appendix 2: Tree Location Plan



Key

Category A

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Category B

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