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ARBORICULTURAL IMPACT ASSESSMENT SURVEY & REPORT

Former MSD Facility, Breakspear Road South, Ickenham

Report Reference: BG22.113.6

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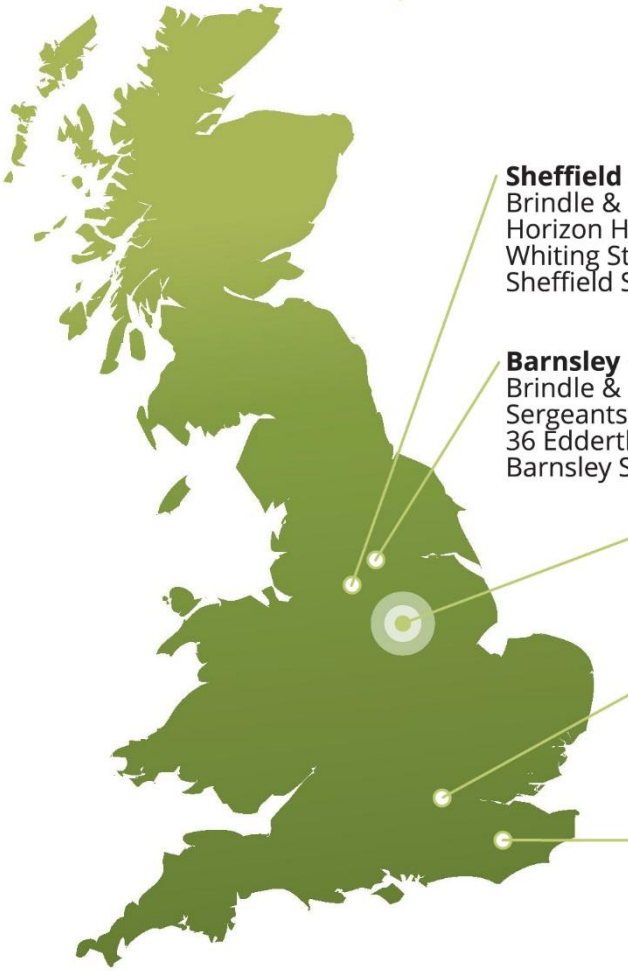

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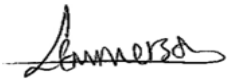
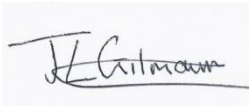
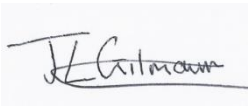
1st Check by	Laura Emmerson		16/03/2022
2nd Check by	Joe Gilmour		18/03/2022
Issued by (PDF)	Joe Gilmour		18/03/2022
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Contents

1 Summary

1.1 Brindle & Green were commissioned by Keltbray Holdings Ltd. to undertake an arboricultural survey at the former MSD facility, Breakspear Road South, Ickenham. This report summarises any potential arboricultural impacts and outlines a Tree Protection Plan in relation to a full planning application for the redevelopment of the existing site into an open storage yard with associated warehouses, parking, and access infrastructure. Design plans are provided within Appendix 4 of this report. The survey was carried out on the 23rd and 24th of February 2022.

1.2 This report is concerned with trees that have the possibility to be impacted as a result of development proposals at the former MSD facility, Breakspear Road South, Ickenham. This includes trees within the site boundary as well as any outside the boundary that may be impacted by the development and any subsequent post development activity.

1.3 Use of the online mapping software of Hillingdon Council confirmed that the site was not located within a Conservation Area, nor were there any Tree Preservation Orders relevant to the project site.

1.4 The report and accompanying tree survey schedule are produced in accordance with the guiding principles of British Standard BS5837:2012 *'Trees in Relation to Design Demolition and Construction - Recommendations'.*

1.5 A number of individual tree and group removals are recommended to facilitate the proposed development. Both Category C and Category B individuals have been proposed for removal, whilst only Category C groups have been recommended removal. Plan revisions have also been recommended to avoid conflict between a proposed warehouse and retained trees. A Tree Protection Plan, complete with removal recommendations and mitigation measures, has been proposed for the development. The proposed mitigation will be the use of CEZs and permanent ground protection. The Tree Protection Plan can be seen in Appendix 2 of this report.

1.6 A BS5837 tree survey aims to inform tree mitigation and/or removal for potential development at the site; it is not a health and safety survey. Observations on tree form and condition, from which management recommendations are made, are based upon ground-level visual assessments only. It is important to note that trees are dynamic and often unpredictable; even apparently healthy trees may occasionally fail.

Arboricultural Considerations	Recommendations	Timing
Arboricultural	Exclusion fencing should be placed to protect trees to be retained where applicable.	Pre-construction secured as condition of planning.
Replanting/ Planting	Replanting with a mix of native and ornamental species.	Post Construction.
Felling/Clearance	Any felling/shrub removal should be completed outside of the breeding bird season or under ecological supervision.	Between October - February (or March – September under supervision).
CEZ's & Root protection	Construction Exclusion Zones and ground protection should be implemented before the commencement of works to ensure that no damage is sustained to trees aimed at retention.	Pre-Construction

2 Introduction

2.1 The purpose of this survey was to provide an assessment of trees which may be impacted by development proposals at the former MSD facility, Breakspear Road South, Ickenham. A tree survey schedule compliant with the guiding principles of British Standard 5837:2012 'Trees in Relation to Design, Demolition and Construction – Recommendations' is contained within this report and all survey data is recorded in this schedule.

2.2 The red line boundary is approximately 4.87 hectares in extent and comprises an area of land previously in use as a former MSD facility. As such, numerous disused buildings with surrounding hardstanding and concrete access drives are spread through the site. Open areas of amenity grassland surround the buildings with scattered trees and shrubs of varying maturity throughout. A semi-mature, mixed species woodland (W1) is located in the north-eastern section of the site, with an area of unmanaged grassland and dense scrub west of the woodland. To the east, a tall, mature group predominated by common oak and common ash (G7) runs parallel with an access track behind site boundary fencing. The majority of the arboricultural value comes from W1, G7, and from the Category B mature common oak trees (T2 and T3) within the site boundary. Whilst other individuals within the red line boundary do provide arboricultural and landscape value, this varies significantly throughout the site. The site is located west of Breakspear Road South, in Ickenham, in the London borough of Hillingdon. The site is the subject of a full planning application for the redevelopment of the existing site into an open storage yard with associated warehouses, parking, and access infrastructure. Design plans are provided within Appendix 4 of this report.

2.3 Results and recommendations contained within this report have been prepared by an experienced arboriculturist and are therefore the view of Brindle & Green Limited. The survey is based on information provided by our client, the development proposals, and the results of the desk study and our survey of the site. This report pertains to this information only.

3 Methodology

3.1 The survey was undertaken in accordance with the guiding principles of British Standard 5837:2012 'Trees in Relation to Design, Demolition and Construction – Recommendations.' Information recorded during the survey. Information recorded in the survey includes:

3.1.1 **Species** – the species identification is based on visual observations and the common English name of what the trees appeared to be is listed. In the case of groups only the principal species are recorded, other minor species may be omitted.

3.1.2 **Tree Height** – are estimated in metres. Estimated mature heights are given in brackets. In the case of groups, the mean current height is recorded.

3.1.3 **Crown Height** – the height to the lowest branch is estimated in metres. In the case of groups of trees minimum crown height was recorded.

3.1.4 **Trunk Diameters** – measured at 1.5 metres above ground and recorded in millimetres to the nearest 10mm. However, in accordance with British Standard 5837:2012 'Trees in Relation to Design, Demolition and Construction – Recommendations.' where the trunk of any tree divides below 1.5 metres it is considered a multi-stemmed tree and an average is recorded. In the case of groups of trees, the maximum diameter was recorded.

3.1.5 **Crown Spread** – was recorded in metres along each of the cardinal points. In the case of groups of trees the maximum peripheral spread was recorded.

3.1.6 **Life Stage** – recorded as follows:

NP: **Newly planted** – a tree within 3 years after planting

Y: **Young**– a tree within its first one third of life expectancy

SM: **Semi-mature** – a tree within its second third of life expectancy

M: **Mature** – a tree in its final one third of life expectancy

V: **Veteran** - a tree with habitat features such as wounds or decay. A veteran may be a young tree with a relatively small girth in contrast to an ancient tree, but

bearing the 'scars' of age such as decay in the trunk, branches or roots, fungal fruiting bodies, or dead wood.

A: **Ancient** – a tree that has passed beyond maturity and is old, or aged, in comparison with other trees of the same species and is of interest biologically, aesthetically or culturally because of its age, size and condition.

3.1.7 **The Condition of Trees -** is based upon a preliminary assessment categorised thus:

Good
Fair
Poor
Very Poor/Dead

In the case of groups, the category awarded is that typical of the group.

3.1.8 **Preliminary Recommendations –** works required regardless of development proposals.

3.1.9 **Life Expectancy –** estimated; i.e. given as follows which corresponds with Table 1 of British Standard 5837:2012 'Trees in Relation to Design, Demolition and Construction – Recommendations.' - <10, 10+, 20+, 40+.

3.1.10 **BS 5837:2012 Tree Category:**

Cascade Chart for Tree Quality Assessment (see BS5837:2012 for full reference)			
Trees Unsuitable For Retention			
Category U Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years	Trees that have a serious, irremediable, structural defect, such that their early loss is expected due to collapse, including those that will become unviable after removal of other category U trees (e.g. where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning). Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline. Trees infected with pathogens of significance to the health and/or safety for the trees nearby, or very low-quality trees suppressing adjacent trees of better quality NOTE Category U trees can have existing or potential conservation value which it might be desirable to preserve		
Subcategory	1. Mainly Arboriculture Qualities	2. Mainly Landscape Qualities	3. Mainly Cultural Values, Including Conservation

Trees to be considered for retention			
<u>Category A</u> Trees of high quality with an estimated remaining life expectancy of at least 40 years	Trees that are particularly good examples of their species, especially if rare or unusual; or those that are essential components of groups or formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue)	Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features	Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture)
<u>Category B</u> Trees of moderate quality with an estimated remaining life expectancy of at least 20 years	Trees that might be included in category A, but are downgraded because of impaired condition (e.g. presence of significant though remediable defects, including unsympathetic past management and storm damage), such that they are unlikely to be suitable for retention for beyond 40years; or trees lacking the special quality necessary to merit the category A designation	Trees present in numbers, usually growing as groups or woodlands, such that they attract a higher collective rating than they might as individuals; or trees occurring as collectives but situated so as to make little visual contribution to the wider locality	Trees with material conservation or other cultural value
<u>Category C</u> 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 collective landscape value; and/or trees offering low or only temporary/ transient landscape benefits	Trees with no material conservation or other cultural value

3.1.11 **Root Protection Area** - The root protection areas (RPA's) are calculated and recorded in the Tree Survey Schedule where it is expressed both in linear and square metres; it is at this distance/around this area that the tree protective barriers should be erected around any trees to be retained. Where construction is proposed within these areas, special techniques should be employed, and general guidance is therefore provided herein.

3.1.12 **Limitations** - Significant trees included within the plan provided were plotted using a Trimble TDC100 handheld device. Normal error of 1-2m can be experienced using this device however, care was taken to make sure the most accurate reading possible at the time of survey was taken.

4 Arboricultural Impact Assessment

4.1 Presence of Tree Preservation Orders (TPOs), Conservation Areas (CAs) or Other Regulatory Protection

4.1.1 Use of the online mapping software of Hillingdon Council confirmed that the site was not located within a Conservation Area, nor were there any Tree Preservation Orders relevant to the project site.

4.2 Potential Incompatibilities Between the Layout and the Trees Proposed for Retention

4.2.1 Severing just one of a tree's major roots during careless excavation for construction or services can cause the loss of up to 20 per cent of the root system; this undermines the tree's ability to absorb water and leaves it unstable in high winds. In general, 80-90 per cent of all tree roots are found in the top 600mm of soil and almost 99 per cent of the tree's total root length occurs within the topmost 1m of soil, with some variations depending on soil porosity. The undoubted nuisance that fine root systems create for the development of specific sites must be weighed against the importance that they play in soil stabilisation on sloping ground (acting in a similar way to geotextile matting).

4.2.2 The impact of the development on tree roots without mitigation, is likely to cause compaction of the soil and reduction in soil aeration, thus preventing the uptake of nutrients. This can ultimately cause root death and may result in the premature loss of the tree.

4.2.3 Eight Construction Exclusion Zones (CEZs) are to be established prior to the commencement of any works onsite.

- CEZ1 will protect T1, a semi-mature Lombardy poplar, at the western extent of the site. The exclusion fencing will surround the tree, using the western boundary, protecting as much of the notional RPA as possible whilst leaving sufficient room for the proposed hardstanding car parking east of the tree. The existing fencing to the west of T1 is to be removed prior to the installation of CEZ1.

- CEZ2 will protect T30, a Category B mature common oak in the northern extent of the site. The exclusion fencing will surround T30, protecting as much of the notional RPA

as possible whilst leaving sufficient room for nearby footpath construction. The southern crown of T30 will require crown lifting works to be raised by approximately 0.5m, to accommodate the exclusion fencing.

- CEZ3 will protect T2, a Category B semi-mature common oak, and T31, a Category C young common oak, at an existing drainage ditch within the site. The exclusion fencing will surround the trees, leaving a gap for the existing ditch and for the proposed hardstanding road south of T2. The fencing will run under the southern crown of T2 to allow for the installation of the proposed hardstanding road. The southern crown of T2 is to be raised by approximately 0.5-1m to allow for the installation of the exclusion fencing. The road is to be established using permanent ground protection to protect the rooting area of T2.

- CEZ4 will protect T32, a Category C young common oak growing east of T31. The exclusion fencing will surround the entire notional RPA of the tree.

- CEZ5 will protect T3, a Category B mature common oak, and T4, a Category C mature common oak, at an existing drainage ditch within the site. The exclusion fencing will surround the trees, around the existing ditch. The fencing will protect as much of the notional RPAs of the trees as possible whilst leaving sufficient room for the installation of the proposed road and footpath to the north and south. The road and footpath are to be constructed using permanent ground protection to protect the rooting areas of T3 and T4.

- CEZ6 will protect T5 – T9, five trees of mixed species, growing in a smaller cluster south-east of T2 – T4. The exclusion fencing will surround the five trees, protecting as much of the notional RPAs of each tree as possible whilst leaving sufficient room for construction. The exclusion fencing is to be installed prior to the demolition of existing buildings in close proximity to the trees.

- CEZ7 will protect G1 near the southern boundary of the site. The exclusion fencing will surround the group to protect the entire notional RPA of the two dominant Leyland cypress in the group. The fencing is to be installed after the removal of the existing outbuilding in close proximity west of the group. The young, Category U common ash growing at the side of the building is to be removed.

- CEZ8 will protect W1 and trees inclusive of the woodland, G7 and trees inclusive of the group, the retained sections of G2, and T46, at the north-eastern and eastern

extents of the site. To the north-east, the exclusion fencing will run along the edge of W1, protecting the entirety of the woodland whilst leaving sufficient room for nearby construction of Y2. Along the eastern boundary, the exclusion fencing will run along the boundary of G7 and G2, protecting as much of the notional RPA of the groups and inclusive trees as possible whilst leaving sufficient room for nearby construction of Y2 and Y3. The exclusion fencing will run under the western crowns of T44 and T45, and the southern crown of T46, to allow for nearby construction to take place.

CEZs are always to be afforded protection and will be protected by fencing. No equipment or machinery will be stored within CEZs, nor will vehicles or personnel enter these areas. Ground levels will not be changed within CEZs and existing vegetation will be left undisturbed. The indicative locations of the CEZs can be seen on the Tree Protection Plan in Appendix 2; the precise fencing location may require minor adjustment onsite, due to local site conditions, but is not expected to differ from that shown on the Tree Protection Plan.

4.2.4 Plans show overlap of up to approximately 16% of the Root Protection Area (RPA) of T2 and T3 with a proposed hardstanding access road between the trees. It is assumed that new hardstanding is to be established, replacing the existing access road within the site. This degree of overlap with the rooting area of T2 and T3 is considered suitable based upon the use of permanent ground protection (3D cellular confinement systems, e.g., Terram Geocells) where the overlap occurs. Cellular confinement systems distribute the load associated with vehicle use laterally across the ground surface, helping to prevent soil compaction. A geocell depth of 150mm is considered appropriate for regular vehicle use. The ground protection will remain in place permanently to protect the roots. The hardstanding applied must have a permeable finish to allow water to percolate to the roots. Existing hardstanding and surface vegetation within the RPA of T2 and T3 should be removed with hand tools. Note, the geocell surface is installed above ground and, therefore, normally results in a surface that is raised between 100-200mm above ground level (depending on the geocell depth and the stone infill depth).

4.2.5 Plans show overlap of approximately 13% of the RPA of T46 with a proposed hardstanding access road south of the tree. The hardstanding access road is assumed to replace, and extend, the existing road. This degree of overlap with the rooting area of T46 is considered suitable based upon the use of permanent ground where the overlap occurs. A geocell depth of 150mm is considered appropriate for regular vehicle

use. Existing hardstanding and surface vegetation within the RPA of T46 should be removed with hand tools.

4.2.6 Similarly, plans also show overlap of up to approximately 11% of the RPAs of T4 and T5 with a proposed hardstanding footpath between the trees. It is assumed that new hardstanding is to be established, replacing the existing hardstanding within the site. This degree of overlap with the rooting area of T4 and T5 is considered suitable based upon the use of permanent ground protection where the overlap occurs. A geocell depth of 100mm is considered appropriate for regular pedestrian use. Existing hardstanding and surface vegetation within the RPA of T4 and T5 should be removed with hand tools.

4.2.7 Development plans show overlap of approximately 4% of the RPA of T30 with a proposed hardstanding footpath south of the tree. This level of overlap is deemed appropriate without the requirement for permanent ground protection.

4.3 The Working and Access Space Needed for Construction

4.3.1 Construction vehicles will use the existing access road in the south-western corner of the site, from Breakspear Road South.

4.3.2 Access into exclusion zones is strictly prohibited without prior amendments to the mitigation proposed. Similarly, building materials must also be stored outside of the CEZs to avoid soil compaction or physical damage.

4.4 Trees proposed for removal and justification to facilitate the development.

4.4.1 **Attenuation Ponds:** To facilitate the construction of the proposed attenuation pond north of the proposed car parking, T26 – T29 and G6 are recommended for removal. T26 – T29 are each Category C individuals, young and semi-mature in age, in an overall fair condition. T26 – T29 provide no significant value to the site. G6 is a low-quality Category C group of young common oak, in fair condition, that provides no significant value to the site.

4.4.2 **Y2:** The partial removal of G2 is recommended to facilitate Y2. G2, a Category C mature treeline of Leyland cypress, shows major conflict with the proposed storage yard and should be removed up to the eastern boundary of the site.

4.4.3 **Y3:** To facilitate the construction of the proposed storage yard Y3, T20 – T23, G3, G4, and G8 are recommended for removal. T20 is a Category C semi-mature Leyland cypress in fair condition with no significant value. T21 and T22 are two Category C crab apples in fair condition, growing in close proximity to the cherry laurel group G4. T23 is a Category C Norway maple in fair condition, providing no significant value to the site. G3, a low-quality mixed species group, is dominated by Leyland cypress and provides no significant value to the site. G4, a low-quality group of cherry laurel, is located along the side of an existing building, following a wooden fence line. Partial removal of G4 has previously taken place to avoid conflict with an existing footpath. G8, a Category C group of young common ash and common oak, grows along an existing wooden fence, within a planting bed, and provides no significant value to the site.

4.4.4 **Y4:** To facilitate the construction of the proposed storage yard Y4, T17, T24, and T25 are recommended for removal. T17 is a Category C semi-mature wild cherry in poor condition. T17 has multiple large tear wounds to the stem that have failed to occlude and now exhibit decay. T24, a Category B Norway maple in good condition, demonstrates an overall good form with no obvious major defects present. T25, a Category C *Picea* sp., provides no significant value to the site and is growing atop a stone outcrop with limited room for growth.

4.4.5 **Y5:** No proposed removals.

4.4.6 **Warehouse 1:** No proposed removals.

4.4.7 **Warehouse 2:** T15, a Category C semi-mature common ash, is recommended for removal to facilitate the proposed warehouse 2. T15 is in fair physiological condition, but provides minimal landscape value to the site. Two pruning wounds are present to the southern aspect of the stem, that have failed to fully occlude.

4.4.8 **Warehouse 3:** T16, T18 and T19 are recommended for removal to facilitate the construction of the proposed warehouse 3. T16 is a Category C mature silver birch growing in a dense patch of surrounding scrub. T16 is in fair condition with no significant value. T18 is a Category C semi-mature Norway maple with multiple wounds in the crown that have failed to occlude. A failed cypress from the nearby group G2 rests against the stem of T18. T19 is a Category B semi-mature silver birch in good

condition with no obvious major defects. Whilst T19 is in good condition, it does not provide significant value to the site.

4.4.9 **Warehouse 4:** No proposed removal.

4.4.10 **Warehouse 5:** No proposed removal.

4.4.11 **Access Road:** Five Category C individuals, T10 – T14, are recommended for removal to facilitate the proposed access road and entrance to the proposed storage yard Y5. T10 – T14 comprise four semi-mature common ash and one young wild cherry, each in fair condition, that provide minimal value to the site. G5, a mixed species group planted as a decorative group within an existing access road roundabout, is recommended for removal to facilitate the proposed access road. G5 is generally low-quality and unremarkable, providing minor landscape value to the site.

4.5 Mitigatory Replanting/planting

4.5.1 To increase the amenity and arboricultural value of the site, the development should incorporate new planting within the scheme to offset proposed removals. Current development plans exhibit considerable new planting throughout the site, including the establishment of an ecological corridor along the southern boundary. Replanting should use high quality stock of mix of native and ornamental species to provide ecological, landscape and aesthetic value to the scheme. Stock selection should be discussed with a qualified arboricultural consultant to ensure appropriate trees are selected for the space available. To ensure the site is replanted appropriately a robust landscape strategy will be developed.

4.6 Proximity of Trees to Structures – the Default Position – Development Outside of the RPA or Technical Solutions Where There is an Overriding Justification

4.6.1 Stout fencing and CEZs must be put in place before the commencement of works to protect retained trees. Where applicable, the ecotone/shrubbery between the tree and the proposed fencing location may need to be cut back and reduced to incorporate the fencing (Appendix 2). All fencing should be implemented before the commencement of building works and stay intact for the duration. Regular checks of the stout fencing should be carried out to ensure it remains intact. See Appendix 2 for the proposed location of exclusion fencing.

4.6.2 Overall, the processes of construction are highly unlikely to have a detrimental effect upon the health of the retained trees, assuming recommendations made in this report are always adhered to by the contractors e.g., the positioning of a stout fence between the retained trees and construction activities prior to the commencement of works.

4.7 Shading – Buildings and Open space, Privacy and Screening, Direct Damage, Future Pressure for Removal and Seasonal Nuisance

4.7.1 Due to the nature of the development, shading will have minimal impact on the proposed development. A shading plan for all trees surveyed can be seen in Appendix 2.

4.7.2 The impact of trees on buildings and vice versa and allowance for future growth have all been considered in the siting of the proposed plans. Tree size, future growth and light/shading have received due attention and are not considered to be an issue.

4.8 Installation of services

4.8.1 A plan of service routes is not yet currently available. Any underground services already existing on site should be utilised where possible to avoid further disturbance of RPAs. If underground services are to be installed during the establishment of the main access, they are to follow the access into the site (following the roads). If underground services are to be installed this way, then the likelihood of negatively impacting trees is kept to a minimum. Service trenches should be laid at the greatest distance from the trees as possible. Section 7.7 of BS5837:2012's guidance on services suggests re-routing into an RPA should be avoided when at all possible. If plans were to change and services were to infringe on root protection areas, effort should be taken to lay them using trenchless 'no dig' methods in order to avoid cutting major roots. Modifications to the alignment should also be made to avoid adverse effects on tree growth and soil stability. Services near existing trees and potential new planting should be ducted when possible for future maintenance. Grouping services will also minimise future disturbance where applicable.

4.9 Facilitative pruning works

4.9.1 Crown lifting works are recommended to raise the southern crown of T30 by approximately 0.5m, facilitating the establishment of CEZ2.

4.9.2 Crown lifting works are also recommended to raise the southern crown of T2 by approximately 0.5-1m, facilitating the establishment of CEZ3.

4.9.3 Any appointed contractor must carry out tree works according to BS3998(2010) ‘Recommendations for Tree Work’.

5 Conclusion

5.1 A number of individual and group removals are recommended to facilitate the proposed development. Category C and Category B individuals along with several Category C groups have been recommended removal. All other trees identified within this report should be retained and protected as outlined via CEZs and permanent ground protection.

5.2 Felling will take place outside of the breeding bird season (March-September) to prevent disturbance. Alternatively, this may be completed under ecological supervision/ reasonable avoidance measures.

5.3 Due to the nature of the development, it is unlikely there will be any major impacts on trees with higher landscape and amenity values if CEZs and permanent ground protection are established.

Appendix 1: Tree Survey Schedule

Tree ID	Common Name	Maturity	Height and direction of first significant branch (m)	Height (m)	No. of Stems	Calculated Stem Diameter (mm)	Radius of Nominal Circle (m)	RPA**(m2)	Crown Spread (m)				Crown Height (m)				Crown	Stem	Basal Area	BS5837 Category	Subcategories	Life Expectancy	Phys Condition	Comment
									N	E	S	W	N	E	S	W								
T1	Lombardy Poplar	Semi-mature	SW 1	11	1	418.0	5.0	79.0	3.5	4	2.5	3	2.5	2.5	2.5	2.5	Good	Fair	Fair	C	N/A	10 to 20 yrs	Fair	Significant epicormic growth. Minor deadwood to lower stem, insignificant. Large sucker at base. Included bark at branch junctions. Suitable for removal if required.
T2	Common Oak	Semi-mature	SW 2	9	1	499.0	6.0	112.6	5	5	5	5	1.5	1.5	2	1.5	Good	Good	Fair	B	1 Arboricultural Values;2 Landscape Values	20 to 40 yrs	Fair	High quality, semi-mature common oak. Reasonably significant amount of pruning of moderate stems in the lower crown, some with new growth. Growing on short slope to wet ditch.
T3	Common Oak	Mature	SE 3	11	1	854.0	10.2	329.9	5	4	6	6.5	2	1.5	2	2	Good	Fair	Fair	B	1 Arboricultural Values;2 Landscape Values	20 to 40 yrs	Fair	Crown in good form with some pruning to moderate limbs. Some historic pruning fully occluded. Pruning wound not fully occluded with potential decay north-west at 4m. Three minor basal cavities, most significant to the south with an unidentified fungus at the base. Growing on slope down to ditch. Existing tag 0561.
T4	Common Oak	Mature	SW 2.5	12	1	1015.0	12.2	466.1	6.5	7.5	10.5	8	2.5	2	3	2.5	Fair	Fair	Fair	C	N/A	10 to 20 yrs	Fair	Existing tag 0562. Growing at edge of slope to ditch. Considerable epicormic growth. Pruning of moderate limbs to stem. Minor ivy colonisation east

Tree ID	Common Name	Maturity	Height and direction of first significant branch (m)	Height (m)	No. of Stems	Calculated Stem Diameter (mm)	Radius of Nominal Circle (m)	RPA**(m2)	Crown Spread (m)				Crown Height (m)				Crown	Stem	Basal Area	BS5837 Category	Subcategories	Life Expectancy	Phys Condition	Comment
									N	E	S	W	N	E	S	W								
																								of stem. Major deadwood SE at 3m. Two bird nests. Significant, irreversible failure of the main stem to the NE at approximately 6m. Large amount of fallen limbs straddling ditch. Broken limb section resting in the crown.
T5	Field Maple	Mature	SW 1.5	9	1	585.0	7.0	154.8	6	7.5	6	7	3	3	2.5	2	Fair	Fair	Fair	C	2 Landscape Values	10 to 20 yrs	Fair	Existing tag 0563. Minor landscape value. Considerable number of burrs to central stems, some in poor condition. Failed branch north-east at 2m with decay. Minor deadwood. Minor limb pruning in lower crown. Suitable for removal if necessary.
T6	Norway Maple	Young	S 1.5	7	1	240.0	2.9	26.1	3	4	3.5	3	2.5	2.5	2	1.5	Fair	Fair	Good	C	N/A	10 to 20 yrs	Fair	Generally unremarkable, young or early semi mature. 4+ wounds to stem and limbs not fully occluded.
T7	Field Maple	Mature	W 2	7	1	398.0	4.8	71.7	3	5.5	5.5	5.5	2	1.5	3	1.5	Fair	Good	Good	B	2 Landscape Values	20 to 40 yrs	Good	Early mature. Minor wound at base not fully occluded. Crown skew away from T5. Minor deadwood to the north. Two vertical wounds with bark loss to limbs south. Minor pruning.
T8	Weeping Ash	Semi-mature	NW 2	6	1	317.0	3.8	45.5	4	3	6	4.5	0.5	4	0.5	0.5	Poor	Poor	Fair	C	N/A	10 to 20 yrs	Poor	Weeping growth form with twisting branches. Considerable number

Tree ID	Common Name	Maturity	Height and direction of first significant branch (m)	Height (m)	No. of Stems	Calculated Stem Diameter (mm)	Radius of Nominal Circle (m)	RPA**(m2)	Crown Spread (m)				Crown Height (m)				Crown	Stem	Basal Area	BS5837 Category	Subcategories	Life Expectancy	Phys Condition	Comment
									N	E	S	W	N	E	S	W								
																								of minor pruning wounds not fully occluded. Significant deadwood east. Bird nest in crown. Bracing of limbs in the upper crown. Brittle limbs, considerable fallen limbs on ground. Existing tag 0566.
T9	Field Maple	Mature	SW 2	6.5	1	569.0	6.8	146.5	6.5	9	7	5	2.5	1.5	1.5	3.5	Poor	Fair	Fair	C	2 Landscape Values	10 to 20 yrs	Fair	Existing tag 0567. Minor landscape value. Significant amount of minor and moderate deadwood. Considerable amount to the north, causing crown skew. Moderate deadwood to central stem. Crown skew south away from neighbouring trees. Natural limb bracing in crown. Inrolled woundwood to the stem.
T10	Common Ash	Semi-mature	W 2.5	7.5	5	313.2	3.8	44.4	3.5	3	3.5	4	2	1.5	1.5	1.5	Good	Fair	Fair	C	N/A	10 to 20 yrs	Fair	Generally unremarkable. Minor deadwood to lower stem. Multi stemmed at base. Bark level damage at base. Included bark at junctions.
T11	Common Ash	Semi-mature	S 2	7.5	1	276.0	3.3	34.5	3.5	3.5	4.5	3.5	2	4	1.5	1	Fair	Fair	Fair	C	N/A	10 to 20 yrs	Fair	Pruning of minor limbs. Deadwood to lower crown east. Failed limb south at approximately 3.5m. Unremarkable.
T12	Common Ash	Semi-mature	S 2	8	1	428.0	5.1	82.9	2.5	6	5.5	5.5	5.5	2.5	2.5	2.5	Fair	Fair	Fair	C	2 Landscape Values	10 to 20 yrs	Fair	Crown skew due to T13 and significant deadwood to the

Tree ID	Common Name	Maturity	Height and direction of first significant branch (m)	Height (m)	No. of Stems	Calculated Stem Diameter (mm)	Radius of Nominal Circle (m)	RPA**(m2)	Crown Spread (m)				Crown Height (m)				Crown	Stem	Basal Area	BS5837 Category	Subcategories	Life Expectancy	Phys Condition	Comment
									N	E	S	W	N	E	S	W								
																								north. Moderate pruning. Minor deadwood lower crown west.
T13	Common Ash	Semi-mature	W 2	7.5	1	425.0	5.1	81.7	5.5	6	4.5	5.5	2	2	2	2.5	Good	Fair	Fair	C	2 Landscape Values	10 to 20 yrs	Fair	Minor deadwood to lower crown. Two failed branches to stem at 2m. Moderate deadwood to central stem in upper crown.
T14	Wild Cherry	Young	W 2	6	1	155.0	1.9	10.9	3	2	4	4	2	2	1	2	Fair	Fair	Fair	C	N/A	10 to 20 yrs	Fair	Generally unremarkable. Crown skew due to T13 east. Grows over barbed wire fence north.
T15	Common Ash	Semi-mature	SW 2	9.5	1	323.0	3.9	47.2	4.5	6	5	5	2.5	2	2.5	1.5	Good	Fair	Fair	C	N/A	10 to 20 yrs	Fair	Generally unremarkable with a good crown. Minor pruning to the lower crown. Two pruning wounds south to stem not fully occluded. Growing close proximity to hardstanding.
T16#	Silver Birch	Mature	N/A	12	1	220.0	2.6	21.9	4.5	5.5	6.5	5	1	3.5	2	3	Fair	Ivy	N/A	C	N/A	10 to 20 yrs	Fair	Estimated due to dense surrounding scrub. Inaccessible and location not shown on topo so estimated. Ivy to stem. Estimated to be single stem. Crown skew south. Suitable for removal.
T17	Wild Cherry	Semi-mature	W 2	9	1	514.0	6.2	119.5	6	5	6	2.5	3.5	1	2.5	6	Fair	Poor	Fair	C	2 Landscape Values	10 to 20 yrs	Poor	Crown skewed due to building to the west. Metal pipe occluded into stem to the south at base. Hardstanding in RPA. Multiple severe, large tear wounds to the stem

Tree ID	Common Name	Maturity	Height and direction of first significant branch (m)	Height (m)	No. of Stems	Calculated Stem Diameter (mm)	Radius of Nominal Circle (m)	RPA**(m2)	Crown Spread (m)				Crown Height (m)				Crown	Stem	Basal Area	BS5837 Category	Subcategories	Life Expectancy	Phys Condition	Comment
									N	E	S	W	N	E	S	W								
																								not fully occluded with decay. Minor pruning. Existing tag 0553.
T18	Norway Maple	Semi-mature	E 1.5	8.5	1	303.0	3.6	41.5	3	5	4.5	4	4	2.5	1.5	2	Fair	Fair	Fair	C	N/A	10 to 20 yrs	Fair	Failed cypress at base from G2, resting against stem. Minor damage to lower crown too. Wound to three limbs not fully occluded. Generally unremarkable. Suitable for removal if required.
T19	Silver Birch	Semi-mature	SW 2.5	11.5	1	417.0	5.0	78.7	5	6.5	6	5.5	7	7	3	4.5	Good	Good	Good	B	N/A	20 to 40 yrs	Good	In good condition with no obvious severe defects. Minor deadwood east at 2m. Minor failed limbs being occluded.
T20	Leyland Cypress	Semi-mature	N/A	9	2	349.2	4.2	55.2	3	1	3	2	2	4.5	2	2	Fair	Fair	Fair	C	N/A	10 to 20 yrs	Fair	Generally unremarkable. Crown skew due to G2. Log piles around base.
T21	Crab Apple	Semi-mature	NE 2	6	1	203.0	2.4	18.6	2.5	4	2.5	1	3	1.5	1.5	4	Fair	Fair	Fair	C	N/A	10 to 20 yrs	Fair	Generally unremarkable. Two major pruning cuts west, one with tear wound not fully occluded. Crown skew away from path due to pruning. Laurel group to the east. Purple Crab Apple (*Malus x purpurea*).
T22#	Crab Apple	Semi-mature	NE 2	6	1	175.0	2.1	13.9	3	2.5	3	2.5	2.5	2.5	2	1.5	Fair	Fair	Fair	C	N/A	10 to 20 yrs	Fair	Stem leans into laurel to the south-east. South-east canopy growing through Laurel. Unremarkable. Suitable for removal if required. Purple Crab Apple (Malus x purpurea).

Tree ID	Common Name	Maturity	Height and direction of first significant branch (m)	Height (m)	No. of Stems	Calculated Stem Diameter (mm)	Radius of Nominal Circle (m)	RPA**(m2)	Crown Spread (m)				Crown Height (m)				Crown	Stem	Basal Area	BS5837 Category	Subcategories	Life Expectancy	Phys Condition	Comment
									N	E	S	W	N	E	S	W								
T23	Norway Maple	Semi-mature	W 1.5	7	1	219.0	2.6	21.7	2.5	3	3.5	3	2.5	3	2.5	2	Fair	Fair	Fair	C	N/A	10 to 20 yrs	Fair	Very light ivy to stem. Canopy grows into laurel group. Good even crown.
T24	Norway Maple	Mature	S 2	10.5	1	518.0	6.2	121.4	4.5	4.5	5	4.5	2	1.5	1.5	1.5	Good	Good	Good	B	2 Landscape Values	20 to 40 yrs	Good	Hardstanding and building in RPA. Good shape and form. No serious visual defects. Good condition. Minor deadwood to stem but insignificant. Wound to limb south not occluded.
T25#	Colorado Blue Spruce	Semi-mature	N/A	6	1	222.0	2.7	22.3	1.5	2.5	2	1	0.5	0.5	0.5	0.5	Fair	Fair	Poor	C	N/A	10 to 20 yrs	Fair	Growing on a stone outcrop. Stem lean south-east. Burrow at base. Limited room for growth. Unremarkable. Suitable for removal.
T26	Common Oak	Young	NE 1.5	4.5	1	79.0	0.9	2.8	1.5	1.5	1.5	1.5	1.5	2	2	1.5	Fair	Fair	N/A	C	N/A	10 to 20 yrs	Fair	Unremarkable young oak surrounded by bramble. Base obscured. Not shown on topo. No obvious visual defects.
T27#	*Prunus* sp.	Semi-mature	SW 0.5	5.5	1	206.0	2.5	19.2	3	3	3	3	1.5	1.5	1.5	1.5	Good	Fair	Fair	C	N/A	10 to 20 yrs	Fair	Flowering cherry. Vertical bark level wound to stem. Good even crown. Growing on edge of slope to ditch.
T28#	Common Oak	Young	SW 1.5	5	1	155.0	1.9	10.9	2.5	2	2	1.5	1	1	1	1	Fair	Fair	Fair	C	N/A	10 to 20 yrs	Fair	Unremarkable young oak growing in ditch. Crown skew due to flowering cherry. Pruning wound to stem west at 1m. Pruning wound south not occluded.
T29#	Common Ash	Young	NW 1.5	5.5	1	100.0	1.2	4.5	1.5	1.5	1.5	1.5	1.5	2.5	1.5	1.5	Fair	Fair	N/A	C	N/A	10 to 20 yrs	Fair	Unremarkable young ash surrounded by dense bramble in ditch. No obvious

Tree ID	Common Name	Maturity	Height and direction of first significant branch (m)	Height (m)	No. of Stems	Calculated Stem Diameter (mm)	Radius of Nominal Circle (m)	RPA**(m2)	Crown Spread (m)				Crown Height (m)				Crown	Stem	Basal Area	BS5837 Category	Subcategories	Life Expectancy	Phys Condition	Comment
									N	E	S	W	N	E	S	W								
																								visual defects. Stem estimated.
T30#	Common Oak	Mature	SE 1.5	9	1	530.0	6.4	127.1	6	6	6	6	2	1.5	2	2	Fair	Good	Fair	B	1 Arboricultural Values	20 to 40 yrs	Fair	Mature common oak surrounded by wooden fencing to protect the stem. Minor and moderate deadwood to the crown. Moderate deadwood in the upper crown. Canopy estimated. Plastic occluded into stem at base. Large pruning wounds to limbs not fully occluded. Fallen limb resting on fence. Bird nest. Not shown on topo.
T31#	Common Oak	Young	N/A	4.5	1	200.0	2.4	18.1	3.5	3	1.5	3.5	2	1.5	2.5	2.5	Fair	Fair	Fair	C	N/A	10 to 20 yrs	Fair	Growing at fence line surrounded by dense bramble, estimated as visibly obscured and inaccessible. Generally unremarkable. Crown skew. Suitable for removal. Surrounded by a fence line group too small for survey. Consists of dense bramble, young oak, generally fair to poor. All suitable for removal if required.
T32#	Common Oak	Young	N/A	4	1	180.0	2.2	14.7	3.5	3.5	1.5	3.5	1	1	3	1	Fair	Fair	Fair	C	N/A	10 to 20 yrs	Fair	Growing at fence line, estimated. Generally unremarkable. Crown skew due to fence. Suitable for removal.
T33#	Common Ash	Mature	S 2.5	9	1	394.0	4.7	70.2	4.5	4.5	5	5	7.5	4	2.5	5.5	Fair	Fair	Fair	C	2 Landscape Values	10 to 20 yrs	Fair	Growing at fence line at woodland edge. Bifurcation at 1.5m with included bark.

Tree ID	Common Name	Maturity	Height and direction of first significant branch (m)	Height (m)	No. of Stems	Calculated Stem Diameter (mm)	Radius of Nominal Circle (m)	RPA**(m2)	Crown Spread (m)				Crown Height (m)				Crown	Stem	Basal Area	BS5837 Category	Subcategories	Life Expectancy	Phys Condition	Comment
									N	E	S	W	N	E	S	W								
																								Deadwood to lower crown.
T34#	*Acer* sp.	Semi-mature	SW 3	6.5	1	255.0	3.1	29.4	2.5	2.5	4.5	1.5	6	5	0.5	5	Poor	Fair	Fair	C	N/A	10 to 20 yrs	Poor	Significant deadwood in the upper crown, resultant skew. Canopy almost entirely west over fence.
T35#	Common Ash	Semi-mature	W 1	9	2	251.0	3.0	28.5	0	4.5	1	4.5	0	2.5	7	3.5	Poor	Poor	Fair	C	2 Landscape Values	10 to 20 yrs	Poor	Significant failure to smaller stem. Considerable deadwood in the crown. Resultant skew. Included bark at forks between limbs.
T36#	Common Ash	Semi-mature	SE 3.5	10	1	253.0	3.0	29.0	2	4	4.5	2	7	3	2	5	Fair	Fair	Fair	C	2 Landscape Values	10 to 20 yrs	Fair	Growing at fence line. Overhang. Crown skew. Pruning wounds to stem north at 2m not occluded. Unremarkable.
T37#	*Prunus* sp.	Mature	S 2	10	1	310.0	3.7	43.5	2	4.5	5	1	7.5	1.5	1.5	7.5	Fair	Fair	Fair	C	2 Landscape Values	10 to 20 yrs	Fair	Mature *Prunus* at fence line. Crown skewed with deadwood in the north western canopy. Broken fence bent around stem.
T38#	Common Ash	Semi-mature	S 3	10	1	287.0	3.4	37.3	1.5	4.5	4	3.5	6.5	2	3.5	4.5	Fair	Fair	Fair	C	N/A	10 to 20 yrs	Fair	Minor and moderate deadwood particularly to the north, crown skew. At fence line. Stem lean north-east with compensatory kink. Epicormic growth at 0.5m growing through fence in poor condition.
T39#	Grey Alder	Semi-mature	SW 3	10	1	257.0	3.1	29.9	2.5	2.5	3	2.5	6.5	4.5	3	6.5	Fair	Good	Good	C	N/A	10 to 20 yrs	Fair	Minor deadwood to lower crown south-west. No obvious significant defects.

Tree ID	Common Name	Maturity	Height and direction of first significant branch (m)	Height (m)	No. of Stems	Calculated Stem Diameter (mm)	Radius of Nominal Circle (m)	RPA**(m2)	Crown Spread (m)				Crown Height (m)				Crown	Stem	Basal Area	BS5837 Category	Subcategories	Life Expectancy	Phys Condition	Comment
									N	E	S	W	N	E	S	W								
T40#	Common Oak	Mature	SW 4	12	1	500.0	6.0	113.1	8.5	7.5	5	8.5	4	8	6	1.5	Fair	Good	Fair	B	1 Arboricultural Values;2 Landscape Values	20 to 40 yrs	Fair	Large mature oak growing behind fence line. Light ivy to stem. Moderate and major deadwood to the crown north-west. Valuable tree, landscape value at boundary. Estimated from site side of fence line. Stem lean towards site.
T41#	Common Oak	Mature	NE 4	12	1	500.0	6.0	113.1	6	7	8	9	8	4	6	3.5	Fair	Ivy	Fair	B	1 Arboricultural Values;2 Landscape Values	20 to 40 yrs	Fair	Estimated from site. Large mature oak with ivy to stem. Moderate deadwood in the crown. Valuable. Retain.
T42#	Common Ash	Semi-mature	W 4	10	2	429.4	5.2	83.4	5	5	1.5	5	4	6	8.5	3.5	Fair	Ivy	Fair	C	2 Landscape Values	10 to 20 yrs	Fair	Growing at fence line. Ivy to stems. Overhanging site. Crown skew due to proximity of mature oak.
T43#	Common Ash	Semi-mature	SW 3.5	13	1	380.0	4.6	65.3	4.5	5	5.5	6	6	6.5	5	2.5	Good	Ivy	Fair	C	2 Landscape Values	10 to 20 yrs	Fair	Fence line. Ivy to stem. Overhanging site. Slight crown skew. Landscape value.
T44#	Common Oak	Mature	W 4	12	1	600.0	7.2	162.9	8	6	9.5	9.5	6	8	2	2.5	Good	Ivy	Fair	A	1 Arboricultural Values;2 Landscape Values	>40 yrs	Good	At fence line overhanging site. Large mature oak with significant value. Ivy to stem previously severed. Moderate pruning over the site. Tear wound to limb west over site not fully occluded. No significant deadwood. High value.
T45#	Common Oak	Mature	S 3.5	9.5	1	400.0	4.8	72.4	6	6.5	6.5	6	4.5	5	1.5	2.5	Good	Ivy	Fair	B	1 Arboricultural Values;2	20 to 40 yrs	Good	Topo location wrong, behind fence. Estimated from site.

Tree ID	Common Name	Maturity	Height and direction of first significant branch (m)	Height (m)	No. of Stems	Calculated Stem Diameter (mm)	Radius of Nominal Circle (m)	RPA**(m2)	Crown Spread (m)				Crown Height (m)				Crown	Stem	Basal Area	BS5837 Category	Subcategories	Life Expectancy	Phys Condition	Comment
									N	E	S	W	N	E	S	W								
																					Landscape Values			Heavy ivy to stem obscures vision. Good even crown. Overhanging site. Valuable individual.
T46#	Common Oak	Mature	NE 3.5	11.5	2	680.1	8.2	209.2	7	6	7	6	4	6	4	3.5	Good	Ivy	Fair	B	1 Arboricultural Values;2 Landscape Values	20 to 40 yrs	Good	Heavy ivy severed at base. Good shape and form. No major visual defects. To be retained. Overhanging site. Estimated from site side. High canopy east. Growing in close proximity to wet ditch to the north.

*RPA = The minimum distance, measured from the tree's trunk, at which tree protective barriers should be erected.

**RPA = The minimum area in M^2 around which tree protective barriers should be erected.

#Access restricted, inspection limited, dimensions limited.

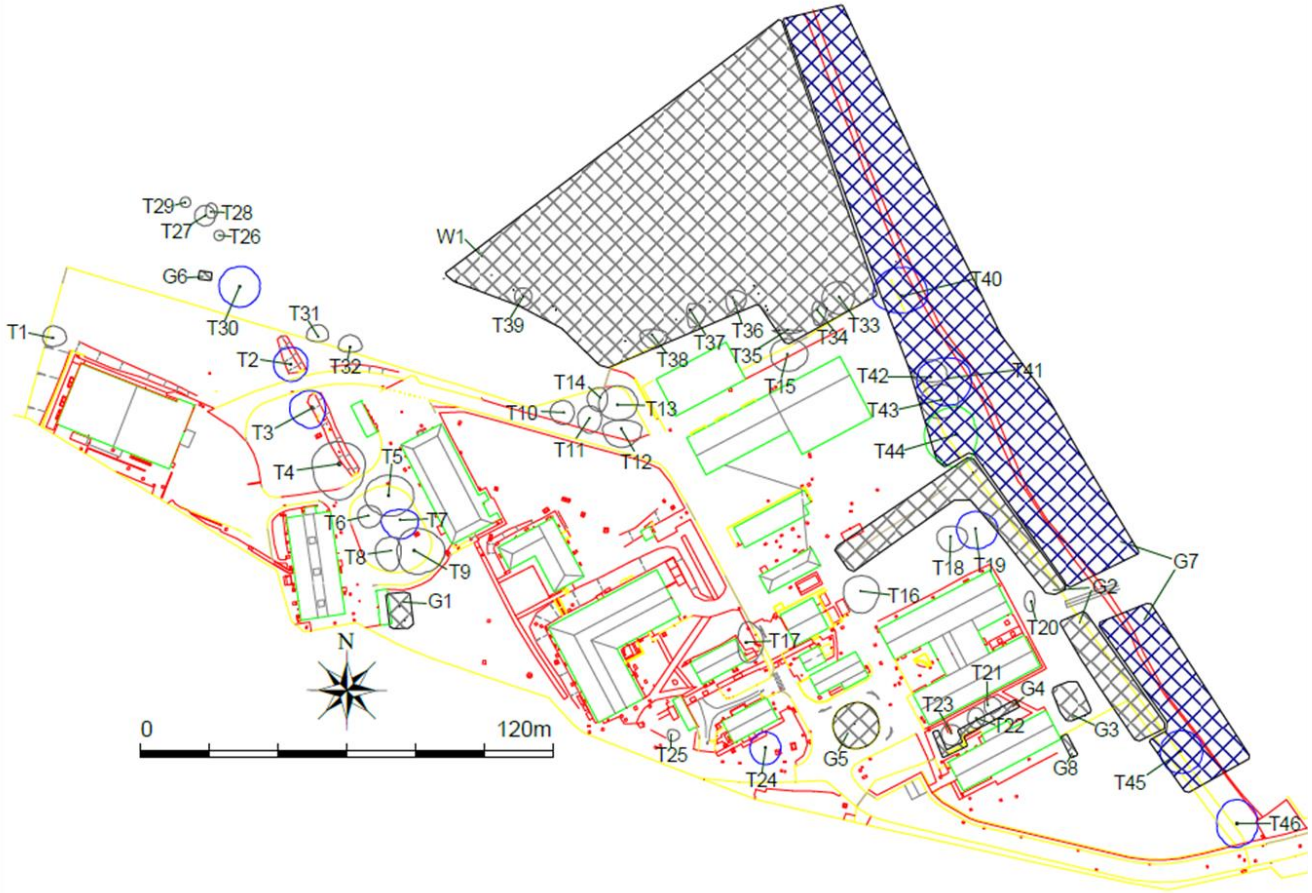
Key: **Life Stage** – recorded as follows:

NP: Newly planted – a tree within 3 years after planting
Y: Young– a tree within its first one third of life expectancy
SM: Semi-mature – a tree within its second third of life expectancy
M: Mature – a tree in its final one third of life expectancy
V: Veteran - a tree with habitat features such as wounds or decay. A veteran may be a young tree with a relatively small girth in contrast to an ancient tree but bearing the 'scars' of age such as decay in the trunk, branches or roots, fungal fruiting bodies, or dead wood.
A: Ancient – a tree that has passed beyond maturity and is old, or aged, in comparison with other trees of the same species and is of interest biologically, aesthetically or culturally because of its age, size and condition

Group ID	Species	BS5837 Category	Description/Comments
G1	Leyland Cypress, Common Ash	C	Low quality group of two semi-mature Leyland cypress. Significant bramble burden to the east. Existing tag 0568 to multi stemmed individual with prolific ivy. Stem estimates recorded. Building in RPA to the west. Fair to poor condition. Low value. Height approximately 10m. Suitable for removal if required. Category U common ash at side of building with prolific pruning.
G2	Leyland Cypress, Common Ash, Silver Birch, *Prunus* sp.	C	Mature treeline of Leyland cypress, uniform and in good condition. Landscape value. 30+ individuals, mostly single stemmed. Stem average 250mm. Height average approximately 13m. Young common ash to the west as well as two semi-mature silver birch. Flowering cherry on the southern side of the group. One failed individual within the group to be removed.
G3	Leyland Cypress, Common Ash, Blackthorn	C	Small, low quality mixed species group. Young to semi-mature. Multiple stems under 75mm. Height approximately 9m max. Suitable for removal. Three cypress dominate group, stems approximately 220mm average.

Group ID	Species	BS5837 Category	Description/Comments
G4	Cherry Laurel	C	Dense group of cherry laurel along side of building and wooden fence. Suitable for removal if required. Height average 4-5m. Unremarkable. Some removal near path west.
G5	Colorado Blue Spruce, Golden Leyland Cypress, Leyland Cypress, Common Yew, *Abies* sp., *Pinus* sp., *Cupressus* sp.	C	Mixed species conifer group planted as decorative roundabout. Managed around lower canopy to prevent conflict with vehicles. Inaccessible so stems not measured but surrounded by hardstanding. Max stem estimated at approximately 200mm. Max height estimated at 10m. Landscape value.
G6	Common Oak	C	Low quality cluster of 5 young oak. Unremarkable. Some pruning wounds. Dense bramble. Average stem 120-150mm. Suitable for removal. Not on topo.
G7	Common Oak, Common Ash, Field Maple, Norway Maple	B	Valuable boundary group growing either side of a dirt track behind site boundary fencing. Dominated by large mature common oak with consistent deadwood features. Valuable group that should be retained and protected. Largest individuals surveyed from site side of fencing. Average stem of largest trees estimated at approx. 500mm. Average height approximately 11-12m.
G8	Common Ash, Common Oak	C	Low quality group of young ash and oak with heavy ivy. Height approximately 5m. Stem approximately 80-100mm. Low quality. In planting bed. Suitable for removal. Growing along a wooden fence.
W1	Common Ash, Norway Maple, Common Oak, Grey Alder, *Prunus* sp.	C	Poor quality wire fence. Very dense bramble. Semi-mature woodland. Consists of predominantly planted lines of semi-mature common ash and Norway maple, mostly ash. Height is approximately 10-11m average. Average stem diameter 200mm. No established understory. Tree planting guards still scattered throughout. Occasional dead individuals. Generally, in good to fair condition with some failed limbs to individuals. *Prunus* appear to be in poor condition with considerable deadwood. Dense scrub around edges. Fence line separates woodland from eastern group with large mature oaks. Occasional stem measurements taken at woodland edge. Western boundary consistent of mostly scrub.

Appendix 2: Tree Plans & Tree Protection Plan



Job reference: BG22.113

Project Title: Former MSD Facility, Uxbridge

Drawing Title: Tree and Group Locations with Quality Assessment

Drawn by: HR

Date: 11/03/2022

Legend:

- Category A Tree Canopy Spread & Group Locations
- Category B Tree Canopy Spread & Group Location
- Category C Tree Canopy Spread & Group Locations
- Category U Tree Canopy Spread & Group Locations

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Job reference: BG22.113

Project Title: Former MSD Facility, Uxbridge

Drawing Title: Tree and Group Locations with Quality Assessment (Plans Overlaid)

Drawn by: HR

Date: REV1 – 27/09/2022

Legend:

- Category A Tree Canopy Spread & Group Locations
- Category B Tree Canopy Spread & Group Location
- Category C Tree Canopy Spread & Group Locations
- Category U Tree Canopy Spread & Group Locations

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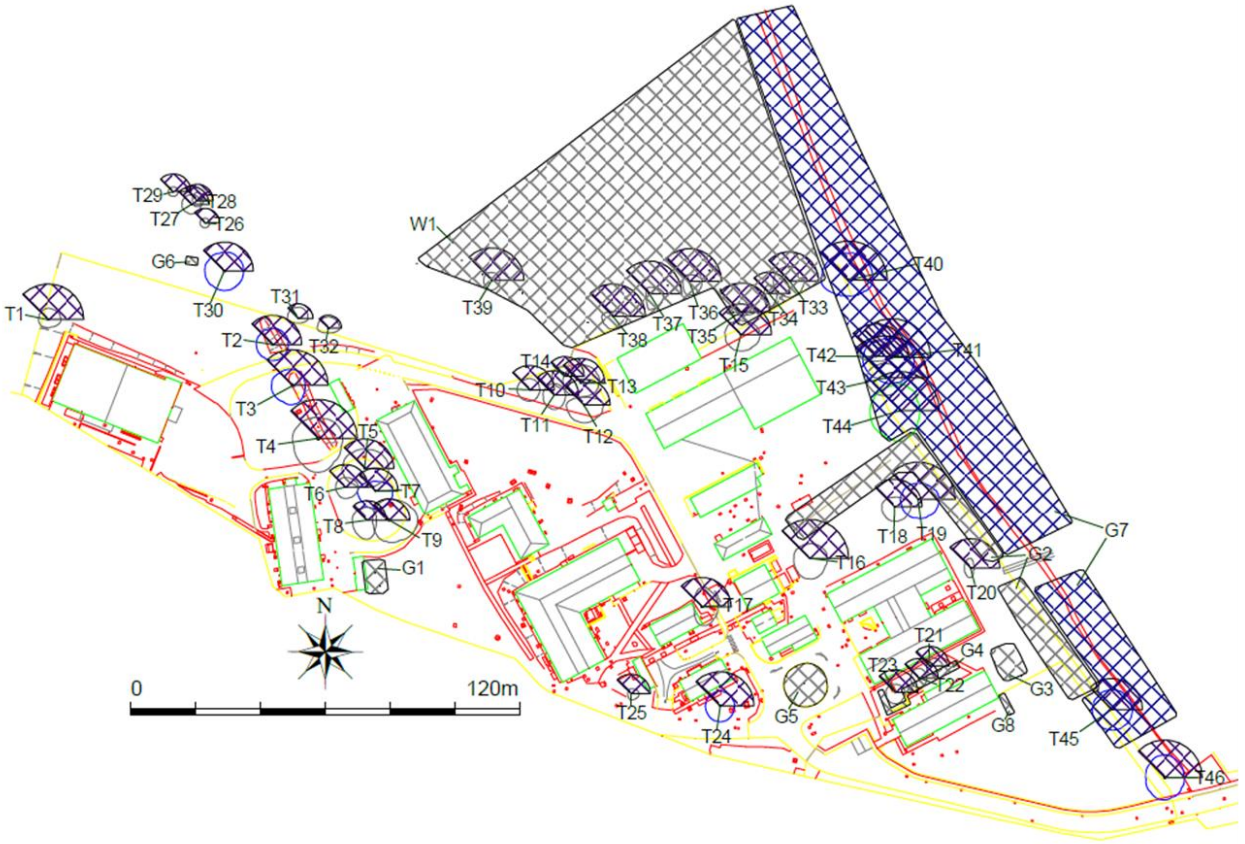

Job reference: BG22.113

Project Title: Former MSD Facility, Uxbridge

Drawing Title: Shade Plans

Drawn by: HR

Date: 11/03/2022

Legend:

Current Shading

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Job reference: BG22.113

Project Title: Former MSD Facility, Uxbridge

Drawing Title: Shade Plans (Plans Overlaid)

Drawn by: HR

Date: REV1 – 27/09/2022

Legend:

Current Shading

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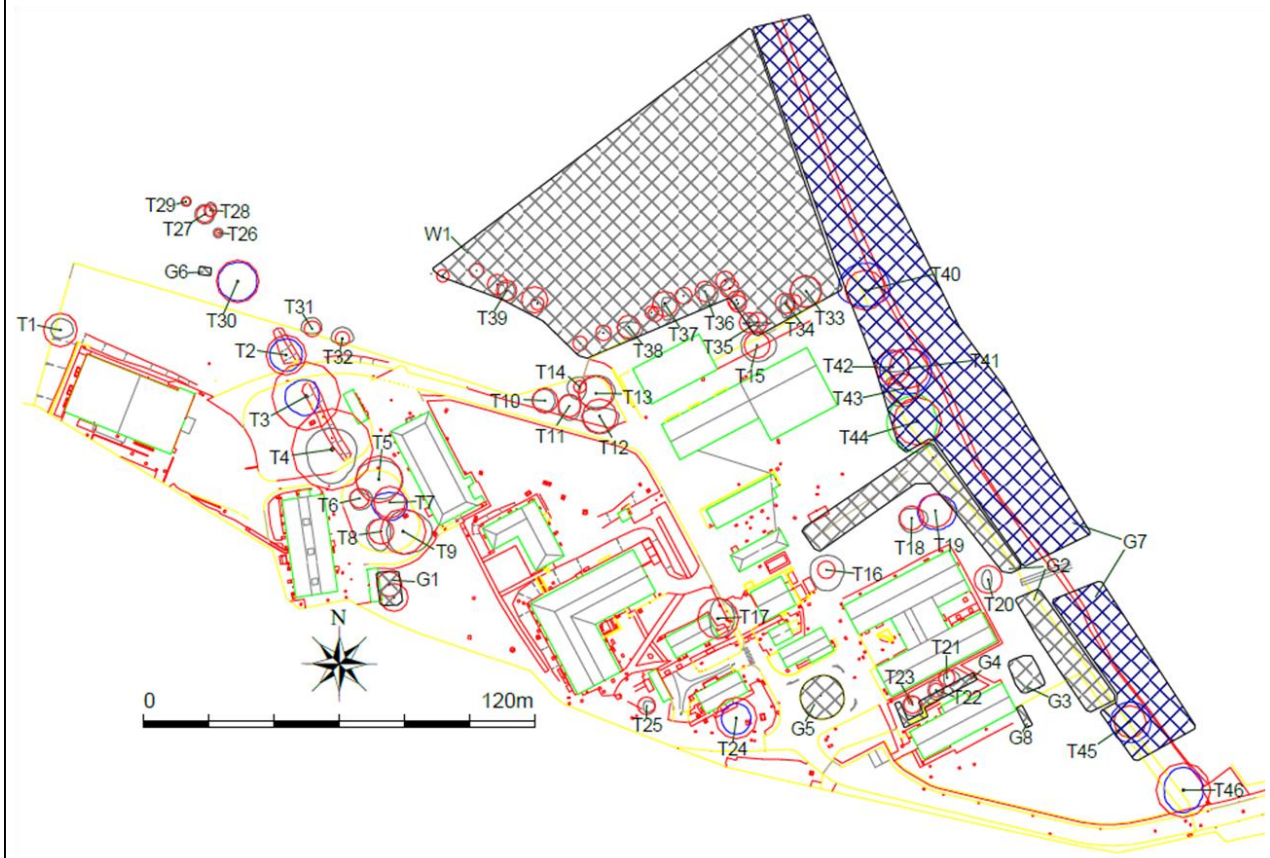

Job reference: BG22.113

Project Title: Former MSD Facility, Uxbridge

Drawing Title: Root Protection Areas

Drawn by: HR

Date: 11/03/2022

Legend:

- Root Protection Area (RPA)
- Category A Tree Canopy Spread
- Category B Tree Canopy Spread
- Category C Tree Canopy Spread
- Category U Tree Canopy Spread

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Job reference: BG22.113

Project Title: Former MSD Facility, Uxbridge

Drawing Title: Root Protection Areas (Plans Overlaid)

Drawn by: HR

Date: REV1 – 27/09/2022

Legend:

- Root Protection Area (RPA)
- Category A Tree Canopy Spread
- Category B Tree Canopy Spread
- Category C Tree Canopy Spread
- Category U Tree Canopy Spread

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Job reference: BG22.113

Project Title: Former MSD Facility, Uxbridge

Drawing Title: Tree Protection Plan (Plans Overlaid)

Drawn by: HR

Date: REV1 – 27/09/2022

Legend:

Suggested Location of Exclusion Fencing

Trees Suitable for Removal

Location of Permanent Ground Protection

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Appendix 3: Tree Retention General Guidance

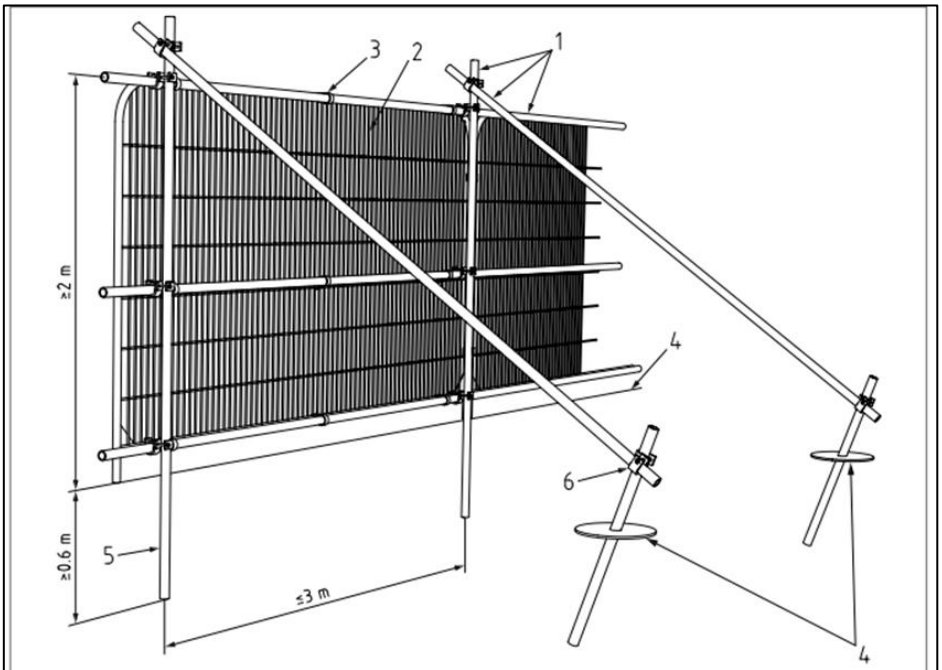
This appendix provides general guidance in regards to protective and mitigation measures for above- and below-ground tree constraints, including: tree protection barriers, temporary ground protection, no-dig cellular confinement systems and specialist foundations. Appendix 3 does not provide site specific information; for this please see the Arboricultural Impact Assessment section of this report.

1. **Below Ground Constraints** to achieve any development, various construction activities are required and great care and consideration needs to be given as to how such activity can proceed whilst avoiding damage to retained trees.

1.1. In order to avoid damage to their roots, retained trees should be protected using protective barriers as detailed in British Standard 5837:2012 'Trees in Relation to Design, Demolition and Construction – Recommendations' and as illustrated in Figures 1 and 3. Such barriers will be erected around the RPA or as shown in the Tree Protection Plan prior to the commencement of the demolition/construction activity; it must remain in situ and intact until completion. The area within these barriers will be considered sacrosanct throughout the works, with no work permitted within them; any exceptions to this will be detailed in the site specific Arboricultural Impact Assessment. All-weather notices should be attached to the tree protection barriers with words such as 'Construction Exclusion Zone – No Access' or 'Tree Protection Area – Keep Out'.

1.2. Tree Protective Barriers should also be erected, prior to the commencement of construction, around those areas identified for soft landscaping/tree planting so as to protect the soil from compaction and denaturing. Correct setting out of the barriers and ground protection should be confirmed on site by the project arboriculturist prior to the commencement of any other operations on site.

1.3. Where space is required within the RPA to facilitate the erection of scaffold this may be satisfactorily achieved incorporating ground protection within the scaffold structure as illustrated in Figure 3 below.



Key

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

Figure 1 – Tree Protection Barrier

British Standard 5837, (2012),), *'Trees in Relation to Construction: Recommendations', Page 20*

Figure 2 - Barrier Notice

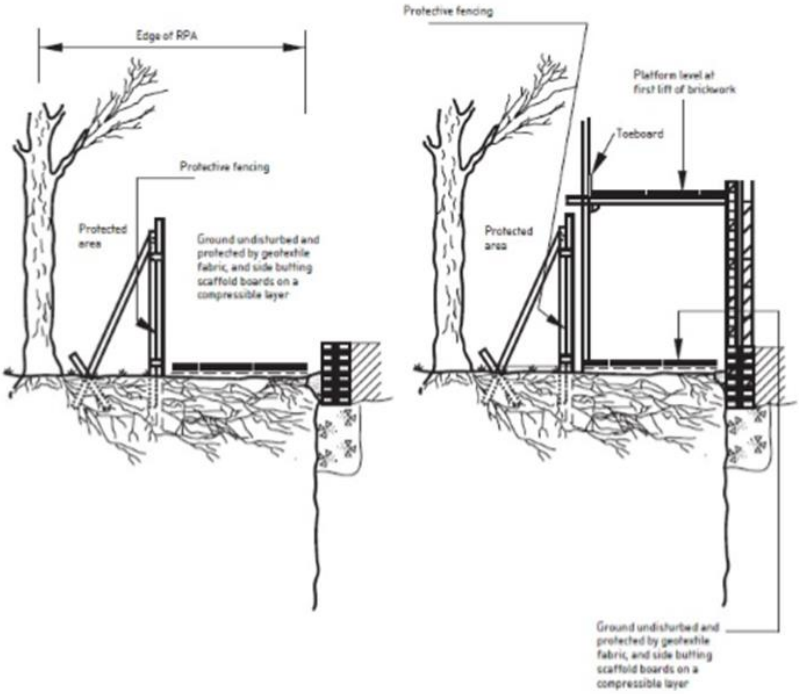


Figure 3 – Adapted Barrier Incorporating Temporary Ground Protection

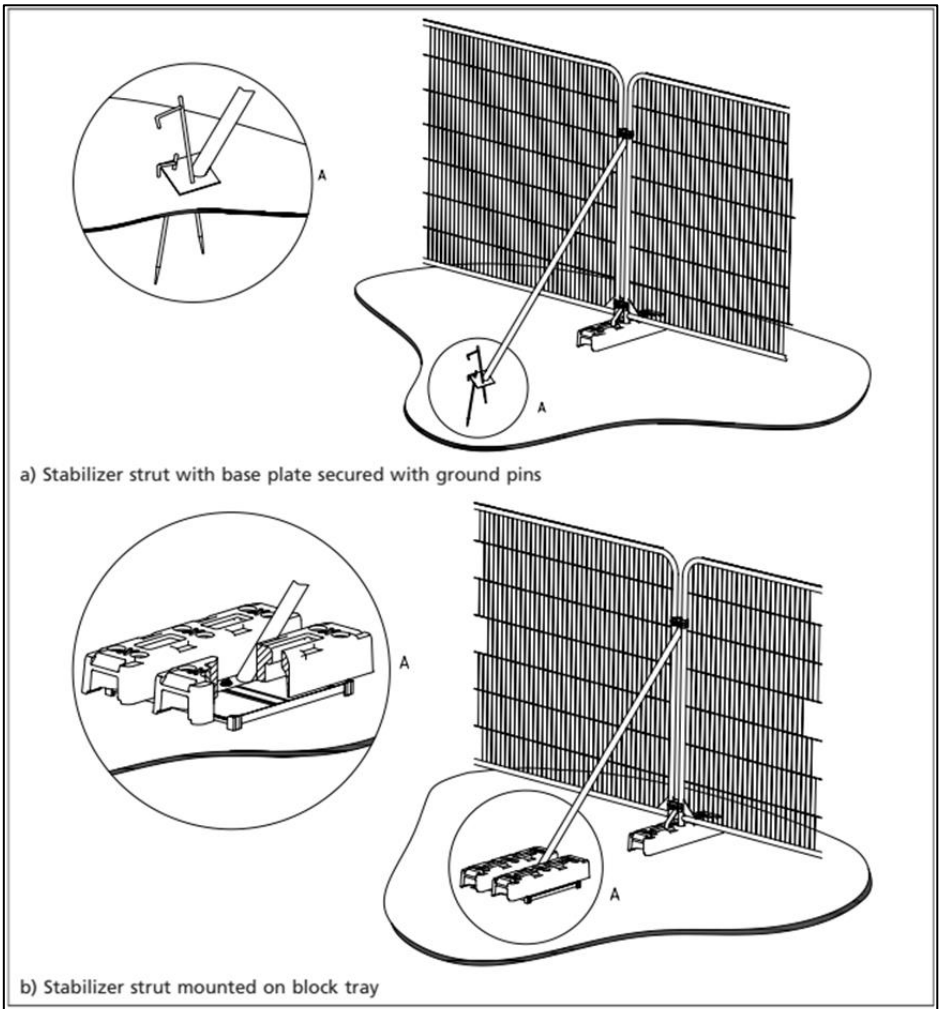


Figure 4 - Examples of above-ground stabilizing systems
British Standard 5837, (2012), *'Trees in Relation to Construction: Recommendations', Page 21*

2. **Above Ground Constraints**: Consideration must also be given to the aerial parts of the tree in relation to any construction; particularly residential buildings. Conflict frequently arises where dwellings are placed close to trees giving rise to concerns relating to shade, falling debris such as leaves and twigs and from apprehension arising from a perceived threat of tree failure. These concerns can often be overcome, at least in part, by carefully ensuring adequate useable garden space is provided and is not dominated by trees and that principal windows face away from trees; in some instances it may be appropriate to locate glazed panels into the roof structure. The LPA are likely to resist any proposal that results in built structures close to trees or that makes inadequate provision for their future growth. Usually, and particularly in the case of immature trees, the distances required to avoid conflict will be greater than

those expressed as the RPA. It is however, equally important to note that issues arising from shade are often overstated and that some shade is not only tolerable but may be beneficial. It is also important to bear in mind that different tree species cast different shade patterns depending upon juxtaposition, size, habit, canopy density, evergreen/deciduous. The following guidance is given by the Building Research Establishment (BRE): "Tree locations are … important; deciduous species are best because they are leafless when solar gains are most valuable, while providing some shade in summer." (BR380 Page 69) Deciduous trees give shade in summer but allow access to sunlight in winter." (BR 209 page 22). "The question of whether trees aforementioned should be included in the (solar gain*) calculation depends upon the type of shade they produce. Normally, trees and shrubs need not be included, partly because their shapes are impossible to predict, and partly because the dappled shade of a tree is more pleasant than the deep shadow of a building. This applies especially to deciduous trees." (BR209 page 13).

3. **SPECIALIST CONSTRUCTION METHODS FOR WORKS WITHIN THE RPA**

3.1. **Specialist Foundations:** The use of specially engineered foundations, such as micro pile and suspended beam, within the RPAs of retained trees may be justifiable. These designs enable construction within the RPA as they limit excavation to a minimum. The location of any mini piles would need to be flexible so as to avoid damage to major roots and the necessary excavation for the piles may need to be carried out by hand; the piles should be sleeved so as to contain concrete which contains 'tree-toxic' chemicals. In these circumstances, a suspended floor slab will need to be incorporated and the void beneath should be externally vented so as not to inhibit gaseous exchange, in some instances i.e. where more than 20% of the RPA is to be covered, there will need to be provision for the redistribution of rainwater beneath the slab. Where pile foundations are to be employed, consideration needs to be given to the selection of the type of piling rig so as to avoid conflict with low, overhanging tree branches.

3.2. **Hard Surfacing - New:** It is permissible to construct hard surfacing for drives and paths within the RPA; however, it can have implications for tree roots. These implications can often be overcome and/or minimised by employing 'no-dig' construction methods, typically three-dimension cellular confinement systems. These techniques result in structures which are load bearing and

negate the need for deep excavation. Any final surface must be porous so as to permit gaseous exchange and moisture percolation. Further advice of a structural engineer must be sought to design the final specification in accordance with these parameters, with the final design being agreed with an arboricultural consultant.

3.3. **Hard Surfacing - Existing**: Where hard surfacing exists within the area defined as the RPA, it is acceptable to erect protective barriers at the extent of that hard surface since the surface itself will afford protection to any tree roots beneath. However, where is proposed to remove/regrade existing hard surfacing, care must be taken to avoid collision between overhanging tree branches and passing construction traffic. It is advised that, to minimise root disturbance, the existing surface is broken and gathered for disposal using hand operated tools; any backfilling must utilise top quality top soil laid at approximately 50mm deep with a composted bark mulch laid over that to a maximum depth of 75mm. In the long term this approach brings a positive arboricultural impact.

3.4. **Temporary Site Accommodation** – Page 20 of BS5837 (2012) advises that in some circumstances it is appropriate to use site cabins as components of the tree protective barriers where they can serve as an effective means of protecting the soil from many of the construction related activities. Further advice of an arboricultural consultant should be sought should this matter be of relevance or advantageous.

3.5. **Temporary Ground Protection** - In some instances it may be advantageous to work within the RPA, e.g. to access a site, either for pedestrians or machinery. Temporary ground protection would be necessary in to dissipate the load applied, thus avoiding soil compaction and denaturing. As per BS5837 (2012), the ground protection might comprise one of the following:

A) For pedestrian movements only, a single thickness of scaffold boards should be 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.

B) For pedestrian operated plant up to a gross weight of 2t, proprietary, inter-linked ground protection boards could be placed on top of a compression resistant layer (e.g. 150 mm depth of woodchip), laid onto a geotextile.

C) For wheeled or tracked construction traffic exceeding 2t gross weight, an alternative system (e.g. pre-cast reinforced concrete slabs) could be employed.

D) An engineer should be consulted regarding the design of a temporary access with the final specification being agreed with an arboricultural consultant.

4. OTHER CONSIDERATIONS

4.1. **Trees Subject to Statutory Controls:** Trees and hedgerows can be subject to statutory control and severe penalties can result from unauthorised works or damage. It is recommended that prior to commencement of any tree works, the Local Planning Authority (LPA) are contacted. When proposing to do works to trees within a Conservation Area (with some exceptions) six weeks written notice must be given to the LPA; this notice need not take any form other than a written specification of what is proposed and a plan illustrating the position of the tree(s). This notice is often referred to as a Section 211 Notice. Many LPAs prefer that their standard pro-forma is submitted to ensure the necessary detail is included in the notice..

4.1.1. Having received the notice the LPA has essentially only one of two options at its disposal i.e.:

- Impose a TPO in respect of those trees/some of those trees subject to the notice. This prevents any works being carried out without the express, written consent of the LPA,

Or

- Do nothing. It is considered best practice for an LPA to acknowledge receipt of the notice but there is no obligation for it to do so. After six weeks of serving the notice the tree owner may proceed with the works detailed in the Section 211 Notice. The LPA cannot, in response to a Section 211 Notice, issue a conditional consent. TPOs are made in the interests of preserving amenity, usually taken to mean public visual amenity. Trees largely removed from public view which have little visual impact are not usually made the subject of a TPO. The written consent of the LPA must be

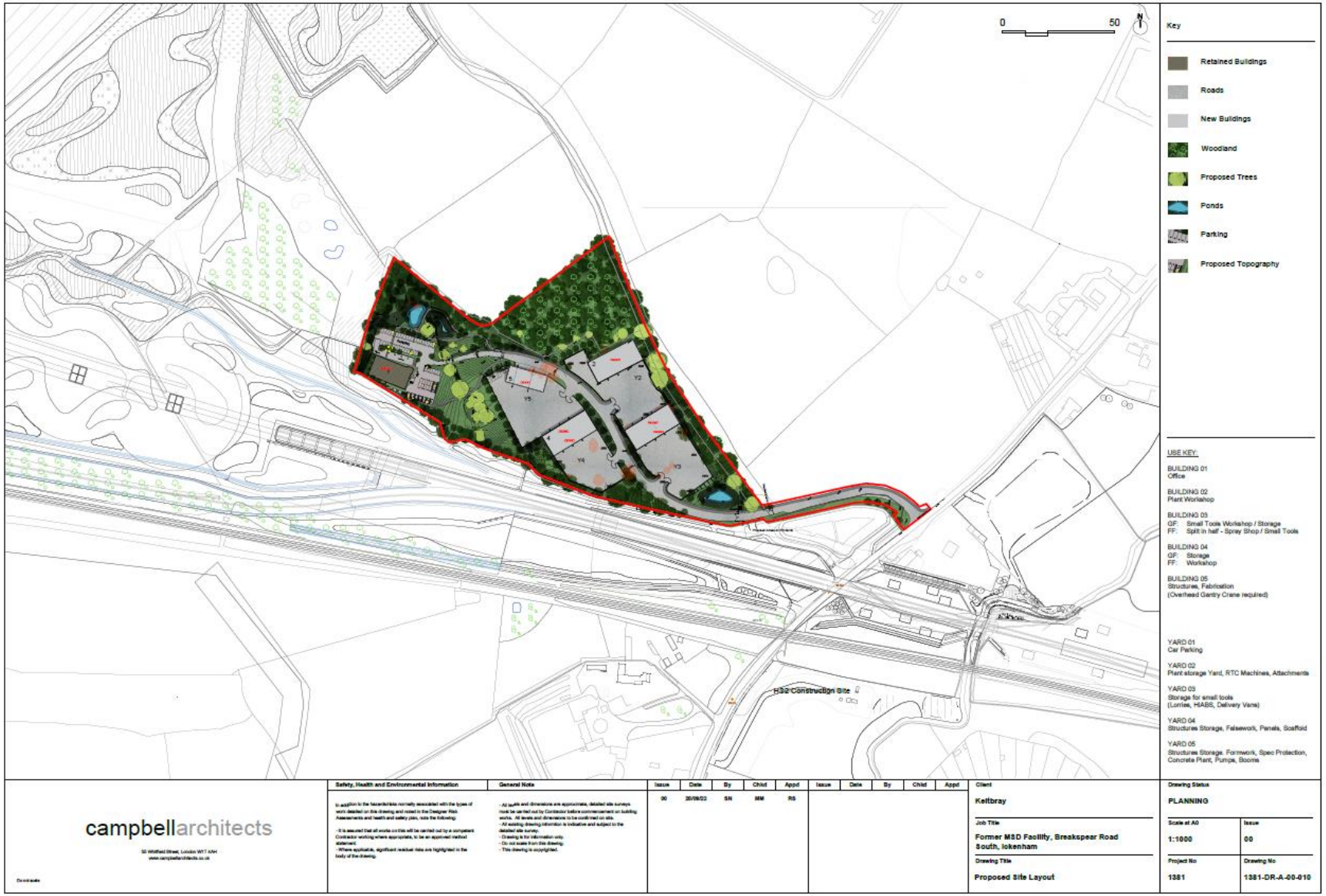
obtained prior to undertaking works to trees subject to TPO unless, as with trees in Conservation Areas, certain exemptions apply. With regard to trees subject to TPO's it is a requirement that a standardised application form is used; this form is available from the LPA. Where trees are protected Brindle & Green Limited are happy to act as the client's agent, liaising as necessary with the LPA and producing the written submissions/notices/applications as required.

4.2. **Trees and Wildlife**: Trees play host to nesting birds, many of which are protected by law. All British bat species are also protected and can be found in trees. Great care needs to be taken to avoid disturbance and consideration should be given to the timing of tree works in order to avoid disturbance. Where the presence of protected species is suspected, Natural England should be contacted for advice.

4.3. **Implementation of Tree Works**: Guidance on hiring an Arborist is available from Brindle & Green Ltd. Also, the Arboricultural Association's Register of Contractors is available free from Ullenwood Court, Ullenwood, Cheltenham, Gloucestershire, GL53 9QS (Telephone 01242 522152 , www.trees.org.uk). Any appointed contractor should carry out all tree works to BS 3998 (2010) 'Recommendations for Tree Work.'

4.4. **New Planting**: It is possible that any planning permission issued will carry a condition requiring new tree planting, particularly in instances where a proposal involves the removal of trees. Further advice is available upon request.

Appendix 4: Proposed Plans


0
50
N
Key
Retained Buildings
Roads
New Buildings
Woodland
Proposed Trees
Ponds
Parking
Proposed Topography
USE KEY:
BUILDING 01
Office
BUILDING 02
Plant Workshop
BUILDING 03
GF: Small Tools Workshop / Storage
FF: Split in half - Spray Shop / Small Tools
BUILDING 04
GF: Storage
FF: Workshop
BUILDING 05
Structures, Fabrication
(Overhead Gantry Crane required)
YARD 01
Car Parking
YARD 02
Plant storage Yard, RTC Machines, Attachments
YARD 03
Storage for small tools
(Lorries, HIABS, Delivery Vans)
YARD 04
Structures Storage, Falsework, Panels, Scaffold
YARD 05
Structures Storage. Formwork, Spec Protection, Concrete Plant, Pumps, Booms
HS2 Construction Site
campbellarchitects
Safety, Health and Environmental Information
General Note
Issue
Date
By
Chkd
Appd
00
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SN
MM
RS
Client
Keltbray
Job Title
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Drawing Title
Proposed Site Layout
Drawing Status
PLANNING
Scale at A0
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