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STERLING CAPITOL PLC

CAPITOL PARK, DODWORTH, BARNSLEY, S75 3UB.

ARBORICULTURAL CONSTRAINTS & OPPORTUNITIES REPORT

FEBRUARY 2019

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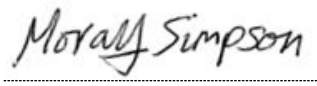
CAPITOL PARK, DODWORTH, BARNSLEY, S75 3UB.

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DRAWINGS	TITLE	SCALE
SH11957-002 REV A	Tree Location and Constraints Plan	1:1250@A2

1 INTRODUCTION

1.1 Brief

1.1.1 Wardell Armstrong LLP (WA) was commissioned by Sterling Capitol PLC to undertake an arboricultural constraints and opportunities survey at a site (hereafter referred to as 'the Site') located at Capitol Park, Barnsley at approximate Ordnance Survey Central Grid Reference: SE 31567 06364

1.1.2 The purpose of this report is to provide an objective assessment of the constraints and opportunities posed by trees and hedgerows that are located on land on and immediately adjacent to the Site. The identified tree constraints can be used by architects, masterplanners and highway engineers to assist in masterplanning / layout design of the proposed Industrial units, ensuring that the development is sustainable in the long term by ensuring that important trees are retained and incorporated into the development design, where possible. This approach accords with best practice as set out in British Standard (BS) 5837:2012, which is a planning policy requirement of most Local Planning Authorities (LPAs) in the UK.

1.1.3 The arboricultural survey included a desktop review and a Site visit. The survey followed the methodology as set out in BS5837:2012 Trees in Relation to Design, Demolition and Construction – Recommendations (The British Standards Institution, 2012).

1.1.4 The position of trees and hedgerows is based on the Topographical Survey Plan prepared by The Harris Partnership Ref. 11138A-101, dated January 2019. Several of the tree and hedgerow positions were not included on the topographical survey plan; thus, their positions were manually plotted while on site and amended utilising aerial photography where necessary. This is considered to provide a fair representation of the tree locations and hedgerow group and woodland canopy spreads, although this is clearly not as accurate as a full topographical survey.

1.2 Site Context

1.2.1 The Site is located adjacent to the existing industrial estate of Capitol Park in Barnsley. This sits directly to the west of the M1 (above junction 37) and to the north of the residential area of Dodworth. In the wider landscape context, the site is located to the

west of Barnsley and is set amongst a mix of industrial units, residential housing and agricultural farmland.

1.2.2 The site itself comprises of agricultural farmland, principally composing of two main fields dissected by a length of hedgerow (H3 as shown on the Tree Location & Constraints Plan Ref. SH11957-002 Rev. A). To the margins of the site are a mix of field boundary hedgerows, hedgerow trees and shelterbelt planting. This is typical of the mixed agricultural/industrial character of the area. Ground levels are highest in the centre of the southernmost part of the site, falling down to the south (to Higham Lane) and to the north towards the second field.

1.3 Development Proposal

1.3.1 The proposed development comprises two large industrial units, one where the existing southern field is located, and one where the existing northern field is located. Both proposed units will be serviced by a single access road which links to Higham Lane via a new roundabout. The proposal also includes for hard standing service areas to facilitate deliveries and standard car park provision.

1.4 Trees & the Planning Process

1.4.1 Under s197 of the Town & Country Planning Act 1990, LPAs have a legal duty to consider the protection of trees and the planting of new trees on development Sites when granting planning permission. LPAs must also consider the potential effects, whether detrimental or positive, that proposed developments will have on retained trees, and the effect that these trees will have on the users of the development.

1.4.2 The Site is located within the administrative boundaries of Barnsley Metropolitan Borough Council (BMBC). At the time of writing, a new Local Plan is emerging, therefore until this is adopted, planning applications will be assessed on saved policies from the Council's Core Strategy, Unitary Development Plan and the supporting adopted 'Trees and Hedgerows' Supplementary Planning Document.

1.4.3 Table B.1 (See Figure 1) taken from British Standard 5837:2012 gives guidance on the level of information required by LPAs in order to make an informed decision on the impact of development on trees. Where trees are present on proposed development

sites, highlighting arboricultural constraints at an early stage in the design process is crucial to ensuring the successful retention and subsequent integration of good quality trees into the design layout.

1.4.4 When the tree constraints have been considered and a detailed site layout designed, specific site layout impacts on the trees proposed to be retained (and on those adjacent to the site) are considered via an Arboricultural Impact Assessment (AIA) and Tree Protection Plan (TPP). When the development design is finalised, considering the arboricultural impacts, it is usual for the LPA to condition the protection of the trees on site during the construction phase. This can be achieved via the production of an Arboricultural Method Statement (AMS) and TPP. These will detail how trees will be protected and include a methodology for any works within tree RPAs in order to ensure that tree protection conditions can be discharged. These steps accord with the recommendations in BS 5837:2012 as detailed in Table B.1 as shown in Figure 1.

1.4.5 This Arboricultural Constraints & Opportunities Report and accompanying Tree Location & Constraints Plan fulfils the requirement to present the existing arboricultural constraints for the Site to enable the LPA to assess the impacts as part of the planning application for the Site.

Table B.1 **Delivery of tree-related information into the planning system**

Stage of process	Minimum detail	Additional information
Pre-application	Tree survey	Tree retention/removal plan (draft)
Planning application	Tree survey (in the absence of pre-application discussions)	Existing and proposed finished levels
	Tree retention/removal plan (finalized)	Tree protection plan
	Retained trees and RPAs shown on proposed layout	Arboricultural method statement – heads of terms
	Strategic hard and soft landscape design, including species and location of new tree planting	Details for all special engineering within the RPA and other relevant construction details
	Arboricultural impact assessment	
Reserved matters/ planning conditions	Alignment of utility apparatus (including drainage), where outside the RPA or where installed using a trenchless method	Arboricultural site monitoring schedule
	Dimensioned tree protection plan	Tree and landscape management plan
	Arboricultural method statement – detailed	Post-construction remedial works
	Schedule of works to retained trees, e.g. access facilitation pruning	Landscape maintenance schedule
	Detailed hard and soft landscape design	

Figure 1: BS 5837:2012 Table B.1.

1.5 Statutory Legal Protection

1.5.1 The two main sources of protection afforded to trees are i) Conservation Area (CA) control and ii) Tree Preservation Orders (TPO).

1.5.2 Trees within Conservation Areas are protected under the *Town & Country Planning Act 1990 (as amended)*, which affords blanket[1] protection to trees with a stem diameter of 75 mm and above when measured at 1.5 m from ground level.

1.5.3 Trees may also be protected by a TPO under the *Town & Country Planning Act 1990 (as amended), The Town and Country Planning (Tree Preservation) (England) Regulations 2012*.

[1] Protection is similar to that afforded to trees protected by TPO.

1.5.4 It is a criminal offence to carry out any unauthorised works to trees that are either protected by a TPO or located within a CA, including:

- Cutting down, uprooting or wilfully destroying a tree, or wilfully damaging, topping or loping a tree in such a manner as to be likely to destroy it;
- Any works that contravene the provisions of a TPO; and/or
- Any works in contravention to the regulations.

1.5.5 Penalties for unauthorised removal/ destruction of trees protected by a TPO and/or CA can be unlimited, if tried in a County Court, and up to £20,000 per tree if tried in a Magistrates Court. For unauthorised pruning and other works that doesn't lead to the removal/ destruction of a protected tree are up to £2,500 per tree.

1.5.6 It should be noted that the felling of trees prior to receiving full planning permission may also require a felling licence under the *Forestry Act 1967*. This requires that any persons wishing to fell 5 m^3 of trees within any three-month period (i.e. January to March, April to June, July to September and October to December) apply for a felling licence from the Forestry Commission. There are a number of exemptions to this requirement, with some of the more relevant exemptions including:

- Pruning trees;
- Felling fruit trees or trees growing in a garden, orchard, churchyard or designated public open space;
- Felling trees that, when measured at a height of 1.3 m from the ground, that have a diameter of 8 cm or less;
- Felling trees immediately required for the purpose of carrying out development authorised by full planning permission;
- Felling necessary for the prevention of danger or the prevention or abatement of a nuisance[2] (e.g. threat/danger to a third party); and
- Felling necessary to prevent the spread of a quarantine pest or disease.

1.5.7 Other legislation that affords a lesser or indirect level of protection to trees includes the following:

- The *Wildlife & Countryside Act 1981 (as amended)*;

[2] NB - This only applies when a real and/or immediate danger is present.

- *Conservation of Habitats and Species (amendment) Regulations 2017*; and
- *Hedgerow Regulations (1997)*.

1.5.8 All of the above provide for the identification and safeguarding of flora and fauna that may be found in association with trees and woodlands.

1.6 Protected Species

1.6.1 Although this is not an assessment of the impacts of development upon ecology, it should be noted that trees can contain features (i.e. cavities, cracks, splits and loose bark) that may support such fauna species as bats and birds.

1.6.2 Bats and their roosts are protected under Schedule 5 of the W*ildlife & Countryside Act 1981 (as amended)*, the Conservation of Habitats & Species Regulations 2017 (as amended) and are also listed under Section 41 of the Natural Environment & Rural Communities (NERC) Act 2006.

1.6.3 Trees provide potential nesting habitat for birds and all 'nesting' UK birds are protected under the *Wildlife & Countryside Act 1981 (as amended)*. Bird species that are listed on Schedule 1 of *The Act* are awarded further protection in the form of increased penalties and protection against disturbance of their active nest(s).

2 THE SURVEY

2.1 Tree Preservation Orders (TPOs) or Conservation Areas (CAs)

2.1.1 WA checked Barnsley Metropolitan Borough Council's (BMBC) online mapping [3] on 6th February 2019 to ascertain whether any trees within and/or immediately adjacent to the site are currently protected by TPO and/or CA status.

2.1.2 The check revealed that the trees on and immediately adjacent to the site are currently not protected by TPOs or CAs are present on/immediately adjacent to the site. The LPA Tree Officer, (Mr E. Jowett), also confirmed that no such protection is in place. However; LPA's can issue TPOs at any time. Therefore, we advise that the protective status of the trees is checked again prior to undertaking any planned works.

2.2 Survey Methodology

2.2.1 The arboricultural survey was undertaken by Scott Reid, Senior Arboriculturist with Wardell Armstrong on 6th February 2019, using the methodology set out in BS5837:2012 *Trees in Relation to Design, Demolition and Construction – Recommendations* (see Appendices 3 and 4).

2.2.2 Weather conditions during the survey were bright and clear.

2.2.3 Each individual surveyed tree (T), tree group (G), woodland (W) and hedgerow (H) was given a sequential reference number.

2.2.4 The surveyed trees and hedgerows were then identified by their common and/or Latin name. Where a number of surveyed trees formed a cohesive feature, such as groups, woodland compartments or whole woodlands, they were recorded, assessed and plotted as groups (G) or as woodland (W). Whilst not every tree within groups are surveyed, a representative sample of the largest edge trees were measured in order to be able to plot the group or woodlands crown spreads and RPAs. Where detailed plans show development proposed within a group or woodland, all trees within

[3] https://www.barnsley.gov.uk/services/parks-and-open-spaces/tree-preservation-orders/
https://www.barnsley.gov.uk/services/conservation/conservation-areas/

influencing distance of the development proposals are usually recorded, plotted and assessed.

2.2.5 A series of measurements were taken where appropriate, including:

- Stem diameters measured at 1.5 m above ground level with a standard diameter measuring tape to enable RPAs to be calculated;
- Tree height and height of first significant branch in the crown above ground level measured using a Truepulse 200L laser to inform on ground clearance, crown/stem ratio and shading; and
- Crown (branch) spreads measured with a Truepulse 200L at the four cardinal points (i.e. north, east, south and west) to enable an accurate representation of the crowns to be plotted on the TPP.

2.2.6 A description of the life stage of each surveyed tree is identified as follows:

- Young – Newly planted trees and self-seeded trees;
- Semi-mature – Large nursery stock that can be newly planted or self-seeded trees still in the early stages of establishment;
- Early mature – Trees in the first third of their life cycle which is characterised by their quickness of growth and subsequently significant increase in size;
- Mature – Trees in the second third of their life cycle, characterised by reaching their ultimate size and slowing of annual incremental growth;
- Late mature – Trees in the final third of their life cycle, often characterised by showing signs of decline; and
- Veteran – Trees that show ancient tree characteristics irrespective of their age, such as crown retrenchment and decaying wood habitat.

2.2.7 An assessment of each tree's physiological and structural condition is identified as G (good), F (fair), P (poor) or D (dead).

2.2.8 An estimated remaining contribution in years within the context of the current site usage was identified as <10, 10+, 20+ or 40+.

2.2.9 The trees were then classified in accordance with the BS5837:2012 tree quality assessment categories ‘A’, ‘B’, ‘C’ and ‘U’ (see category criteria and grading within

Appendix 3). 'A' and 'B' category trees are considered as 'high' and 'moderate' quality, respectively, and are considered as a constraint to development. As such, these trees should be retained and afforded appropriate protection during development, where feasible. 'C' category trees are considered to be of 'lower' quality due to their condition or 'lower' amenity value and are, therefore not usually considered a constraint to development. 'U' category trees are those in such a poor condition or health that they cannot usually be retained within the current site context for longer than ten years. It should be noted that in some cases, category 'U' trees may have valuable habitat/ecological value despite being in poor condition. In such cases, where it is safe to do so, these trees may be recommended for retention and pruning works may be prescribed to enable the trees to be safely retained. Where relevant, we will bring such trees to the client's attention. Where trees are located outside of the red and blue line site boundaries, irrespective of their BS 5837 categorisation, these should be considered as a constraint during the Site layout design process and protected during construction, as such trees are not within the control of the site owner.

2.2.10 Root Protection Areas (RPAs) are calculated for individual trees utilising the methodology set out in BS 5837:2012, which is calculated by multiplying the stem diameter (measured at 1.5 m from ground level) by twelve for single-stemmed trees and a variant on this for multi-stemmed trees. For surveys in England (and outside England where it is a Local Planning Policy requirement), individual veteran trees are given a standard BS 5837 RPA and also a secondary veteran tree RPA, to accord with government's standing advice 'Ancient woodland, ancient trees and veteran trees: protecting them from development' [4] and local planning policy, which is based on a calculation of fifteen times the stem diameter or five metres beyond the crown spread, whichever is greater.

2.2.11 For tree groups, woodlands and hedgerows, the calculated RPAs are based on a set distance from the canopy edge of the tree groups, woodlands and hedgerows. This calculation is based on the largest stem diameter of the trees on the edge of the tree groups and woodlands and the crown spread measurement for these edge trees. A variant of the tree group and woodland RPA calculation is used to calculate hedgerow

[4] https://www.gov.uk/guidance/ancient-woodland-and-veteran-trees-protection-surveys-licences

RPAs, with the calculation based on the largest stem diameter of the hedgerow woody plants and the hedgerow width.

2.2.12 Further details for each tree, and the groups of trees surveyed are set out in the Arboricultural Survey Data Sheet (see Appendix 1) and on the Tree Location & Constraints Plan Ref. SH11957-002 Rev. A.

2.3 Limitations & Assumptions

2.3.1 Trees are influenced by a variety of environmental variables that can affect their health and cause biomechanical/physiological changes. All comments made on tree health reflects their physical condition at the time of the survey. Owing to the changeable nature of trees and other site/environmental conditions that may influence trees, the comments and recommendations made within the tree survey schedule (see Appendix 1) are valid for a period of 12 months from the date of the survey (e.g. 6th February 2019).

2.3.2 Although comments and recommendations on the safety of particular trees may have been made, this survey is not a 'Tree Risk Management Survey' and should not be treated as such. All trees that were surveyed were done so from ground level, only, and as a solely visual inspection. It should be noted that not all trees within groups and woodlands have been individually surveyed so any trees that pose a risk within groups may not have been recorded by this survey.

2.3.3 Where trees have been identified as presenting an imminent risk of failure and, as such, present a high-risk due to structural defects, this information is recorded in the tree survey schedule (Appendix 1). Should the surveyed trees require further detailed assessment (i.e. decay detection or aerial inspections) and/or do not present an imminent safety risk, the information is also detailed within the tree survey schedule.

2.3.4 Care should be taken to note any category 'U' trees in the schedule, as these are likely to pose the highest risk and may require imminent attention to ensure the client's duty of care under the *Occupiers Liability Acts (1957 & 1984)* are fully complied with. Any preliminary management recommendations/further works have been made in accordance with BS 3998: 2010 Tree Works – Recommendations current industry best

practice and in accordance with any statutory obligations owed by the landowners or occupiers.

2.3.5 This survey did not include an ecological survey of the vegetation or habitat present, but any ecological issues incidentally observed during the survey are reported on in the tree schedule.

2.3.6 The survey did not include soil sampling to determine whether the soil has the capacity for volumetric change (e.g. shrinkable). Such analysis should be carried out by a specialist to ensure proposed building foundations are adequate and in accordance with current National House Building Council (NHBC) guidelines. For the purpose of this report, no samples where attained from site for analysis or any other reason.

3 SURVEY RESULTS AND EVALUATION

3.1 Tree Population

3.1.1 The trees assessed on and immediately adjacent to the Site included 11 individual trees, 8 tree groups, 1 woodland and 5 hedgerows.

3.1.2 The quality of the trees on and immediately adjacent to the Site were assessed in accordance with the guidance set out in BS 5837:2012. 11 'C' quality individual trees were found on and immediately adjacent to the site. 2 tree groups were categorised as 'B' Quality and 6 as 'C' quality. 1 woodland was identified during the survey and this was categorised as 'B' quality. On this occasion, no category 'A' or 'U' trees were identified.

3.1.3 A visual summary (in graph format) of the quality of individual trees found on and immediately adjacent to the Site can be found in Figure 2 and for tree groups, hedges and woodlands in Figure 3. Table 1 summarise the BS5837 quality grading of all trees found on and immediately adjacent to the Site, with a detailed description of all trees and groups of trees surveyed (and recommended works) provided within the tree survey schedule, which can be found in Appendix 1.

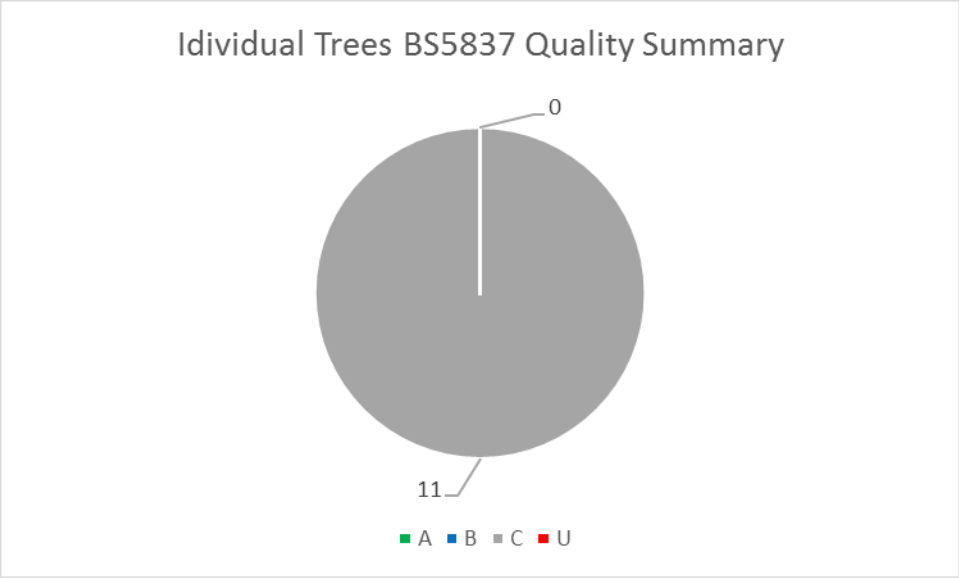


Figure 2: Individual Trees Quality Summary

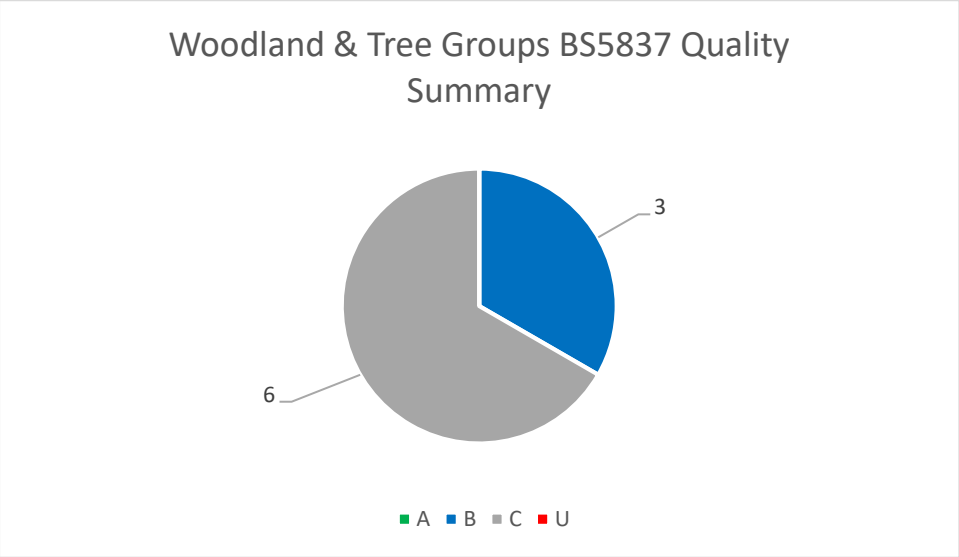


Figure 3: Tree Groups & Woodland Quality Summary

Table 1: Individual Trees Quality Assessment Summary				
Tree Quality	**A**	**B**	**C**	**U**
Individual Trees Identification	None	None	T1, T2, T3, T4, T5, T6, T7, T8, T9, T10 & T11	None
Total	**0**	**0**	**11**	**0**

Table 2: Tree Groups & Woodlands Quality Assessment Summary				
Tree Quality	**A**	**B**	**C**	**U**
Tree Groups & Woodland Identification	None.	W1. G2 & G3	G1, G4, G5, G6, G7 & G8.	None.
Total	**0**	**3**	**6**	**0**

3.2 General Tree Constraints

3.2.1 Trees impose a constraint by virtue of their rooting areas (referred to as RPAs), their current and future size (i.e. height and spread) and species characteristics, particularly their foliage density, branch and fruit drop and the production of honey dew.

3.2.2 Consideration should be given during the design stages for any incompatibilities between the design and tree retention, the effects on amenity value provided by existing trees, working space required during construction, infrastructure requirements for underground and or above ground apparatus and highway visibility requirements.

3.2.3 The RPA is calculated using the tree's diameter at 1.5 m and represents the 'minimum' area that should be left undisturbed around each retained tree, during and following development. Tree root morphology is influenced by many factors including, but not limited to, past land use, the presence of roads, structures and underground services, drainage and soils. Any of these factors may result in non-uniform root growth and, therefore, result in a RPA represented as a polygon RPA that reflects suitable protection of the root system.

3.2.4 Tree roots are generally found within the top 600 mm of soil, depending on soil types and profiles. Any disturbance or sudden changes to the rooting environment can result in damage being caused to roots and alterations to the roots physiological ability to absorb water, nutrients and gaseous exchange.

3.2.5 Where alterations have been made within the trees rooting environment, the damage can often be observed within the crown of the trees, reduced vitality, increased or deadwood production. Trees are likely to decline progressively or in some circumstances may become a hazard where stability and structural integrity has been compromised by site operations.

3.2.6 The RPA must be protected by the installation of tree protection fencing prior to the commencement of any affecting development work on the Site. The fencing will provide a physical barrier that is secured in order to prevent activities considered detrimental to the retention of healthy trees (e.g. excavations, soil stripping, discharge

of substances harmful to trees, storage of materials, fires) and may include specialised engineered solutions for temporary ground protection.

3.2.7 Whilst no traditional construction works should take place within retained tree RPAs, in some circumstances (and where there is an overriding requirement for construction and the retention of trees) it may be appropriate to employ techniques and use materials that allow trees to be retained whilst enabling the construction. For hard surfacing (i.e. drives, roads and footways), utilising no dig construction techniques and using three-dimensional geogrids and permeable wearing courses materials may be appropriate. For built structures within RPAs, the use of pile and above grade beam foundations and/or cantilevered engineering solutions can enable structures to be constructed within RPAs. NB - As this is not appropriate for all tree species and soil types, the Project Arboriculturist should be consulted on the appropriateness of building within retained tree RPAs.

3.2.8 Where aerial parts of the tree crowns extend beyond the edge of the RPA, consideration should be given to protection of these parts, allowing for protection during development processes including working space. It may be appropriate to consider pruning of aerial parts in order to allow construction clearances and future nuisance abatement. However, this must also be considered by the Project Arboriculturist and the LPA.

3.2.9 Where development proposals identify a need for working within the RPA/crown spread of retained trees, and it can be demonstrated that retained trees remain viable, then it is important that the Project Arboriculturist is contacted to advise and prepare an AMS and identify appropriate stages of supervision.

3.3 Arboricultural Supervision

3.3.1 An auditable system of arboricultural Site monitoring is recommended to ensure that (when construction activities commence) the tree protection measures are in place and maintained for the lifetime of the construction phase.

3.3.2 In addition, encroachments within retained tree's RPAs or Construction Exclusion Zones (CEZs) should be undertaken under arboricultural supervision. Many LPAs will not discharge Tree Protection/AMS conditions unless adequate measures are put in

place for supervision of tree protection measures and authorised works/encroachment into RPAs/CEZs. To ensure compliance with conditions of consent and to prevent planning enforcement action, it is recommended that tree protection measures and authorised encroachments are supervised by the Project Arboriculturist.

4 SUMMARY AND RECOMMENDATIONS

4.1.1 The initial BS 5837:2012 tree survey was undertaken by a WA Arboriculturist during February 2019, the results of which have informed this report and associated Tree Location & Constraints Plan Ref. SH 11957-002.

4.1.2 According to Barnsley Metropolitan Borough Council's (BMBC) online mapping service, there are currently no trees within or immediately adjacent to the site protected by CA or TPO status, however if tree works such as felling or pruning are proposed prior to full planning permission being grated for the proposed development, it would be expedient to check prior to the works, as TPO's can be made at any time.

4.1.3 There are no veteran or ancient trees on and immediately adjacent to the Site.

4.1.4 The next stage in the process is to utilise this arboricultural constraints information to inform detailed site layout planning for the site.

4.1.5 If the proposed development is approved by the LPA and when the proposed development is constructed, retained trees will need to be protected with tree protection fencing as per the recommendations set out in BS 5837:2012. An example of the type of tree protection fencing recommended by the Standard is provided within Appendix 4 and an example of the type of signage required is provided within Appendix 5.

4.1.6 Where there are impacts within retained tree and hedgerow RPAs, mitigation measures will be required. An AMS can provide full mitigation details and specifications, which if required can be conditioned by the LPA.

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Appendix 1

Tree Survey Schedule

Location: Capitol Park, Barnsley Constraints (Job. No. SH11957)

 # = Estimated Stem Diameters & Other Measurements

Surveyor: SR

Weather: Bright and clear

Survey Date: 06/02/2019

Item type: **T** (tree), **G** (group), **H** (hedge), **W** (woodland)	Tree/ Group Ref. No.	Botanical or Common Name	Height(m)	Crown Clearance (m) & compass direction	Crown Spread (m)				Stem Diameter @ 1.5m (mm)					Number of Stems	Age Class: **Y** (Young), **SM** (Semi-Mature), **EM** (Early-Mature), **M** (Mature), **LM** (Late-mature), **V** (Veteran)	Condition		Estimated Remaining Contribution: (<10, 10+, 20+, 40+)	BS5837 Categorisation Grading Sub Category	Comments	Preliminary management recommendations/ further works	BS 5837 Root Protection Area (m^2)	BS 5837 Root Protection Radius (m)	Veteran Tree Root Protection Area Radius (m)
					North	East	South	West								Physiological Condition: **G** (Good), **F** (Fair), **P** (Poor), **D** (Dead)	Structural Condition: **G** (Good), **F** (Fair), **P** (Poor)							
W	1	Elm, silver birch, beech, red oak, common alder, hawthorn, Italian alder, elder, aspen, Norway maple, plum, sessile oak, sycamore, field maple.	16	0	As per satellite imagery				250					1	SM-EM	G	G	40+	B 1 2	Large, dense, overgrown shelterbelt which is forming a young woodland. Situated on an old colliery bund located off-site. Mainly non-native species. Dead elms noted along frontage.	Recommend to the land owner to remove dead elms within falling distance of adjacent road. This should be undertaken within 3 months of survey date.	N/A	3.0 from centre of stems	N/A
H	1	Elm, ash, holly, hawthorn.	9	0	Plotted as per satellite imagery (av. 4m spread)				160					1	SM	G	G	40+	N/A	Unmanaged, lapsed hedgerow of principally elm. Growing into overhead telecoms cables. Some vehicle strikes noted to branches. Some early evidence of Dutch elm disease to some of the specimens.	Re-flail smaller specimens to 1m and allow to regrow, in order to bring back into management as a hedgerow. For larger trees, including multi-stemmed ash trees, coppice to just above ground level (Proposed works optional).	N/A	1.9 from centre of stems	N/A
T	1	Italian alder	10	1.4	3	3	3	3	180					1	SM	G	G	40+	C 1 3	Open grown specimen, single-stemmed with a balanced crown. It appears to be in good condition with no major visible defects.	No action required.	15.0	2.2	N/A
H	2	Leyland cypress	3	0	As per satellite imagery (av.width of 2m).				70					1	SM	G	G	20+	N/A	Typical boundary hedgerow, located off-site but potentially within influencing distance.	No action required.	N/A	0.8 from centre of stems	N/A

G	1	Blackthorn, grey alder.	5	0	As per satellite imagery.				80					1	Y	G	G	40+	C 1	An area of scrub vegetation/young trees, of limited arboricultural value.	No action required.	N/A	1.0 from centre of stems	N/A
G	2	Ash (2), alder (1)	11	1 N	As per satellite imagery (av. 7m spread)				250					1	SM	G	F	40+	B 1	Two off-site ash trees. One is intertwined with an alder and is overhanging the boundary wall by 2.5m. Both interfere with telecoms cables and pole.	No action required, as located off site.	N/A	3.0 from centre of stems	N/A
G	3	Field maple, ash, alder, hazel, crab apple, hawthorn, sycamore	12	0	As per satellite imagery.				200					1	SM	G	G	40+	B 1	Dense boundary group of trees, mainly off-site but a small cluster of alder are on the site side of the boundary wall.	No action required.	N/A	2.4 from centre of stems	N/A
T	2	Hawthorn	6	0	3	3.5	3	3.5	140					1	SM	G	G	20+	C 1	Situated off-site. Typical example of species. Very dense crown with many crossing/rubbing branches. Acceptable condition at this time.	No action required.	8.9	1.7	N/A
T	3	Ash	8	1.3	3	3.5	2	3.5	120					1	SM	G	G	40+	C 1	Multi-stemmed from base with a fairly balanced crown. Situated on the boundary line. Acceptable condition at this time. No major visible defects.	No action required.	6.5	1.4	N/A
T	4	Common oak	6	1 S	4	4.5	4	4	250					1	SM	G	G	40+	C 2	Small, self-set specimen. Situated off-site but overhanging the boundary fence by 2.5m. Branches are rubbing against the fence line. It is located adjacent to an electricity pole and beneath cables; possibly limiting its useful future.	No action required.	28.0	3.0	N/A
G	4	Goat willow	5	0	3	3	3	3	70					1	Y	G	G	40+	C 1	Small cluster of willow stems of limited arboricultural value.	No action required.	N/A	0.8 from centre of stems	N/A
H	3	Hawthorn, elder, blackthorn, goat willow, holly	4	0	As per satellite imagery.				50					1	Y	G	G	40+	N/A	A generally neat, well-maintained field boundary hedgerow. There is evidence of past hedge laying present.	No action required.	N/A	0.6 from centre of stems	N/A
T	5	Goat willow	5	0.5	4	4	3	2	110	100	90			3	SM	G	G	40+	C 1	Self-set specimen in acceptable condition at this time but of limited arboricultural value.	No action required.	9.2	1.7	N/A

T	6	Common oak	8	1.5 S	6.5	6.5	5	5	300	320				2	SM	F	F	40+	C 1	Hedgerow tree, bifurcated from base, previously topped in line with the hedgerow. Acceptable condition at this time.	No action required.	87.0	5.3	N/A
T	7	Goat willow	4	0.5	3	3	3	1.5	140					1	SM	G	G	20+	C 1	Self-set specimen in acceptable condition at this time but of limited arboricultural value.	No action required.	8.9	1.7	N/A
T	8	Goat willow	3.5	0.5	2.5	1.5	2.5	2	60					1	SM	G	G	20+	C 1	Self-set specimen in acceptable condition at this time but of limited arboricultural value.	No action required.	1.6	0.7	N/A
G	5	Ash (2), common oak (1)	9	1.5	As per satellite imagery (av.4m spread)				<330					1	SM	F	F	40+	C 1	Three hedgerow trees, all multiple-stemmed as they have been topped in line with the hedgerow in the past. Minor decay pocket at the base of the oak.	No action required.	N/A	4.0 from centre of stems	N/A
T	9	Goat willow	5	1.5	3.5	3.5	3.5	3.5	110					1	SM	G	F	20+	C 1	Self-set specimen in acceptable condition at this time but of limited arboricultural value. Large bark wound noted at base.	No action required.	9.2	1.7	N/A
T	10	Ash	7	1	5	4.5	4	5	260					1	SM	G	G	40+	C 1	Good hedgerow tree with a balanced crown. No major visible defects.	No action required.	31.0	3.1	N/A
H	4	Hawthorn, elder	4	0	As per satellite imagery.				70					1	SM	G	G	40+	N/A	Typical field boundary hedgerow. Fairly well maintained.	No action required.	N/A	0.8 from centre of stems	N/A
G	6	Hawthorn	4	0	3	3	3	3	70					1	SM	G	G	20+	C 1	Small clump of hawthorn stems. An isolated part of what was previously a consistent boundary hedge.	No action required.	N/A	0.8 from centre of stems	N/A
H	5	Common oak, hawthorn, blackthorn, ash, elm, sessile oak, sycamore, willow	5	0	As per satellite imagery.				130					1	SM	G	G	20+	N/A	A lapsed section of hedgerow/hedgerow trees, left unmanaged and degenerating into scrub. Situated beneath electric cables.	No action required.	N/A	1.6 from centre of stems	N/A
G	7	Hazel, ash, Italian alder	6.5	0	As per satellite imagery.				100					1	SM	G	G	40+	C 1	Small group of densely planted trees, pruned back over the adjacent footpath. A utility pole (electric) is situated in the middle of the group.	No action required.	N/A	1.2 from centre of stems	N/A
T	11	Silver fir	10	0	2.5	2.5	2.5	2.5	240					1	SM	G	G	40+	C 1	An open grown specimen with a well balanced crown. It appears to be in good condition with no major visible defects.	No action required.	26.0	2.9	N/A

G 8	Lawson cypress 'ellwoodii'	5	0	2	2	2	2	70					1	SM	G	G	20+	C 1	Two typical garden specimens in close proximity to each other. Both typical of cultivar with no notable defects.	No action required.	N/A	0.8 from centre of stems	N/A

Appendix 2
Survey Methodology

Survey Methodology

The following features of each tree, group of trees or woodland have been recorded in the Arboricultural Data Sheets:

- Species including the common names.
- Height measured in metres from the stem base. Where the ground has a significant slope, the higher ground is selected.
- Crown height is measured in metres and is an indication of the average height at which the main crown begins.
- Stem diameter is measured in millimetres at 1.5m above the adjacent ground level (upslope on sloping ground) or immediately above the root flare for multi-stemmed trees.
- Crown spread is measured in metres and taken at the four cardinal points to derive an accurate representation of the crown.
- Age class of the tree is described as young, semi-mature, early-mature, mature, late-mature or veteran.
- Physiological condition is classed as good, fair, poor, or dead. This is an indication of the health of the tree and takes into account vigour, presence of disease and dieback.
- Structural condition is classed as good, fair or poor. This is an indication of the structural integrity of the tree and takes into account significant wounds, decay and quality of branch junctions.
- Life expectancy is classed as: less than 10 years (<10) (Very Short); 10+ years (Short); 20+ (Medium); or more than 40 years (40+) (Long). This is an indication of the number of years before the removal of the tree is likely to be required.
- Comments include a brief description, if required, of the tree with comments on the form, vitality, health and any significant defects that may be present.

Appendix 3

Tree Categorisation Method

Tree Categorisation Method

Table 1 **Cascade chart for tree quality assessment**

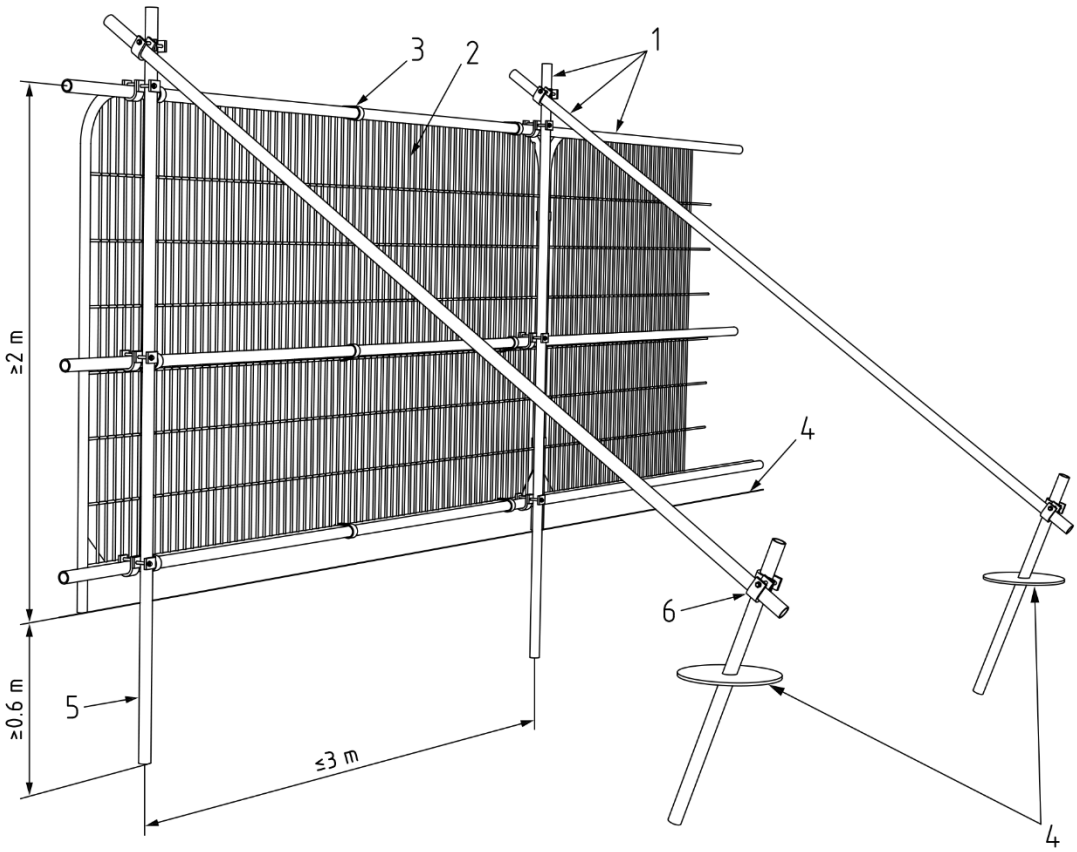
Category and definition	Criteria (including subcategories where appropriate)			Identification on plan
Trees unsuitable for retention (see Note)				
Category U Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 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 of other 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; see **4.5.7**.*			See Table 2
	1 Mainly arboricultural qualities	**2 Mainly landscape qualities**	**3 Mainly cultural values, including conservation**	
Trees to be considered for retention				
Category A **Trees of high quality** with an estimated remaining life expectancy of at least 40 years	Trees that are particularly good examples of their species, especially if rare or unusual; 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)	See Table 2
Category B **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 40 years; 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	See Table 2
Category C **Trees of low quality** with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150 mm	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	See Table 2

A single tree, group or woodland can come under one or more sub-headings. This does not confer on it a higher value than a tree with a single value. For the purposes of this report.

Appendix 4

Tree Protection Fencing

Tree Protection Fencing



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

Appendix 5

Tree Protection Signage

Tree Protection Signage





Appendix 6

Glossary of Common Terms Used in Arboriculture

Glossary of Common Terms Used in Arboriculture

Abscission. The shedding of a leaf or other short-lived part of a woody plant.
Abiotic. Pertaining to non-living agent's e.g. environmental factors.
Absorptive Roots. Non-woody short-lived roots, generally having a diameter less than one millimetre, the primary function of which is the uptake of water and nutrients.
Access Facilitation Pruning. One off pruning operation to provide access for development operation. Pruning that will not be detrimental to trees health or amenity.
Arboricultural Method Statement (AMS). A methodology for the implementation of development where encroachment within the RPA has the potential to cause damage or loss of retained trees.
Arboriculturist. Someone who through relevant training and experience has gained knowledge in the expertise of trees.
Adaptive Growth. The process by where wood formation rates increasing in the cambial zone, as well as wood quality, responds to gravity and other forces acting on the cambium.
Adaptive Roots. The adaptation of existing roots; or a production of new roots in response to damage or decay.
Adventitious Buds, Roots, Shoots. Which grow in other than primary apical control.
Anchorage. The process in which a tree uses its roots system to support itself within the soil structure.
Arisings. Parts of the tree that has been removed for disposal, branches, leaves, roots etc.
Canker. Area of dead cambium killed by overlying pathogenic tissues.
Cavity. A hole in the woody structure of the tree; often caused through decay.
Cleaning Out. The removal of dead, diseased crossing branches, damaged branches and alien structures.
Competent Person. Person with training and experience in accordance with the proposed matter being addressed, having an understanding of a particular matter being approached.
Condition. An indication of the physiological vitality of a tree, but not the stability of a tree.
Construction. A Site based operation that has the potential to affect retained trees.
Construction Exclusion Zone. An area based on the RPA from which construction activity is prohibited.
Coppicing. Removal of all aerial parts of the tree leaving a stump for regeneration of new shoot.
Crown/Canopy. The parts of the tree that supports the leaves.
Crown Lifting. The removal of limbs and small branches to a specified height above ground level.
Crown Thinning. The removal of a proportion of secondary branch growth throughout the crown to produce an even density well balanced crown structure.
Crown Reduction/Reshaping. Removal in the height to a specified description to maintain a flowing crown structure.
Deadwood. Non-functional branches which no longer support natural growing conditions of the tree, but may be beneficial for the support of habitats.
Defect. Any area of the tree that longer has an optimal mechanical uniformity of stress, making the tree unsuitable for its location.
Dieback. Death of woody parts of the tree starting at distal ends of the tree.
Disease. Damage occurring to living organisms as a result of pathogenic micro-organisms.
Distal. Furthest distance away from the main body of the tree.

Dysfunction. In woody tissues, the loss of physiological function, especially water conduction, in sapwood.
Epicormic Growth. Growth from dormant or adventitious buds, not developing from the first shoot.
Girdling Roots. A circling root which constricts the stem or roots, with the potential to cause death and the restriction of flow within the phloem.
Heartwood. Dysfunctional xylem which no longer has conductive properties, but which has become an integral structural part of the tree.
Heave. The swelling of shrinkable clay soils, often when vegetation has been removed allowing soil rehydration to develop, with the potential for listing structures (e.g. walls).
Included Bark/Acute Forks. Face to face contact of bark usually at fork unions, or branch unions.
Lopping/Topping. A term used to describe the removal of large sized branches
Monolith. Removing some or most of the trees crown and sometimes the upper stem, in order to retain as much of the tree as standing deadwood habitat for ecological reasons.
Pathogen. A micro-organism that causes disease within another organism.
Phytotoxic. Toxic to plants.
Pollarding. The removal of the tree canopy to produce knuckles where new growth develops and is removed cyclically usually performed on young trees.
Pruning. Selective removal of parts of the tree to achieve a desired outcome.
Root Protection Area(RPA). An area around a tree identified by multiplying the stem diameter at 1.5 m from ground level by 12 to produce a radial area or rooting volume around a tree to be protected Ref. BS 5837: 2012.
Service. Any above and below ground structure or apparatus for utility provision.
Size of part. Relating to risk assessments, identifying the size of the hazard, or parts of a tree which may cause harm if failure occurs.
Stem(s). The main structure from the ground up supporting the crown.
Stress. In plants, the physiological depletion as a result of environmental influences.
Structure. A manufactured object, such as building, roads, path, wall or excavated structures.
Structural Roots. The primary larger diameter roots which hold and support the aerial parts of the tree.
Subsidence. The shrinkage of soil through the absorption of water via vegetation and the sinking effects on surrounding architectural structures.
Targets. In risk assessment, persons or property at risk of harm as a result of a hazard (falling tree, branch, etc.).
Tree Protection Plan (TPP). A scaled drawing informed by descriptive text where necessary, based upon finalised Site proposals, showing trees for retention and illustrating the tree and landscape protection measures.
Veteran Tree. Tree that, by recognized criteria, shows features of biological, cultural or aesthetic characteristics of, but not exclusive to, individuals surviving beyond the typical age range for the species concerned.
Windthrow. The blowing over a tree at its roots.

DRAWING

DO NOT SCALE FROM THIS DRAWING

KEY

- RED LINE BOUNDARY
- HEDGE
- CATEGORY A CROWN SPREAD
- CATEGORY B CROWN SPREAD
- CATEGORY C CROWN SPREAD
- CATEGORY U CROWN SPREAD
- ROOT PROTECTION AREA
- TREES OUTSIDE OF THE SITE NOT SURVEYED TO BS5837:2012
- T1/G1/ W1/H1 — TREE/TREE GROUP/ WOODLAND/HEDGE NUMBER

TREES
QUALITY CATEGORIES BASED ON BS5837:2012 TREES IN RELATION TO DESIGN, DEMOLITION AND CONSTRUCTION - RECOMMENDATIONS
RPA - ROOT PROTECTION AREA
WHERE RPA IS NOT VISIBLE IT EXTENDS TO THE SAME DISTANCE AS THE CANOPY.
THE ORIGINAL OF THIS DRAWING WAS PRODUCED IN COLOUR - A MONOCHROME COPY SHOULD NOT BE RELIED UPON.

REVISION	DETAILS	DATE	DRAWN	CHK'D	APP'D
A	First Issue	27/02/19	SJB	SR	MS

CLIENT: Peacock & Smith

PROJECT: Capitol Park, Barnsley

DRAWING TITLE: Tree Location & Constraints Plan

DRG No.	REV
SH11957-002	A

DRG SIZE	SCALE	DATE
A2	1:1,250@A2	08-02-19

DRAWN BY	CHECKED BY	APPROVED BY
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