



PRE-DEVELOPMENT TREE CONSTRAINTS ASSESSMENT

VICTORIA ROAD WEST



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2016

FINAL

E3 ECOLOGY LTD
PASTURE HOUSE, WARK, HEXHAM, NORTHUMBERLAND, NE48 3DG
01434 230982
WWW.E3ECOLOGY.CO.UK
MAIL@E3ECOLOGY.CO.UK



CLIENT Miller Homes
PROJECT NAME Victoria Road West
PROJECT NUMBER 4671

LEAD AUTHOR Darryl Birch
POSITION Ecologist/Arborist
CONTACT DETAILS Darryl.Birch@e3ecology.co.uk

APPROVED BY James Streets
POSITION Associate Director
CONTACT DETAILS James.Streets@e3ecology.co.uk

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If works are not likely to start within 12 months of this report, it is recommended that an updating survey is undertaken to ascertain any changes which may have occurred to trees surveyed, where failure to carry out the prescribed works within the specified time frames has occurred.

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A. SUMMARY

E³ Ecology Ltd was commissioned by Miller Homes to undertake a pre-development Tree Constraints Assessment (TCA) for trees at the former Siemens site adjacent to Victoria Road West, South Tyneside.

It is proposed to develop 334 residential properties within the site. Plans currently include the creation of two access points along the eastern site boundary with associated visibility splays.

Survey was undertaken on the 17th June 2016 and comprised a thorough inspection of the trees within the site to inform the TCA. This assessment places trees into categories of retention as recommended by the prescriptions of British Standard (BS) 5837:2012: 'Trees in relation to design, demolition and construction - Recommendations'.

Consultation with South Tyneside Council planning department on the 29th June 2016, indicated that all of the trees within the site boundary are protected under group Tree Preservation Order number 309 (2014)/L (97)261- 'Former Siemens Site, Victoria Road West, Hebburn. The site is not within a Conservation area.

All trees served with TPOs are protected under the Town and Country Planning Act 1990 (as amended) and the Town and Country (Tree Preservation) (England) Regulations 2012 (Appendix 1), which should be considered when preparing the final development layout.

56 of the young to mature trees within the site boundary were surveyed separately.

Root Protection Areas (RPAs) were calculated for each tree. These dimensions will be used to inform the positions of buildings, associated landscaping, hard standing and access routes in the final landscape plan and the prescriptions of the Tree Protection Plan (TPP).

26 characteristic groups of trees and areas of scrub vegetation of low to moderate ecological and landscape value were assessed as a whole, across the site.

For the purposes of this survey, each significant tree and groups of trees were assigned a category of retention in accordance with BS5837:2012 (Appendix 2: Tree quality assessment) and an estimated safe use life expectancy (SULE) (Appendix 3) in the context of a future development.

TABLE 1 – TREE CATEGORY SUMMARY (BS5837:2012)	
	NUMBER (GROUPS)
A	2(1)
B	37(14)
C	17(14)

All trees to be retained will have a Construction Exclusion Zone (CEZ) implemented around them as specified in an Arboricultural Implications Assessment (AIA)/Tree Protection Plan (TPP) following production of detailed scale development plans.

Overall, within the context of the surrounding area, the trees within the site have been generally assessed as being of low to moderate landscape, amenity and arboricultural value.

From a general management, hazard assessment and health and safety perspective, all of the trees surveyed were assessed as being in good physiological and structural condition. Details of individual trees are included in the Arboricultural Implications Assessment (AIA) in appendix 4.



Potential impacts of the proposed development without appropriate mitigation are:

- Loss of young to mature trees that are arboricultural, amenity and landscape assets of low, value to the site and surroundings.
- Damage to the roots and crowns of trees adjacent to the site boundary through the incorrect placement of site materials or parking of plant/site machinery.
- Works to or removal of young to mature trees with a high risk of supporting nesting birds.
- Harm or disturbance to tree nesting birds during pruning works and vegetation removal should this take place during the bird breeding season (March to August inclusive).
- Damage to the roots of trees during the removal of existing areas of hard standing.
- Damage to the crowns of trees if pruning works are carried out at the incorrect time of year, by an inexperienced arboricultural contractor
- Damage to trees in the long term through lack of chemical pollution control (diesel spillage, tarmac residues, use of petro chemicals etc.) during the development phase.

Key mitigation and enhancement measures are likely to include:

- The retention of trees on site where possible.
- If trees are to be lost, to replace them on a 2:1 basis with medium and large species trees which will not cause future issues for the development.
- Where trees are retained, all works on site are to be undertaken in accordance with a Tree Protection Plan with working methods.
- All works to trees are to be carried out to the prescriptions specified in an arboricultural method statement, by an approved and experienced arboricultural contractor working to BS-3998:2010.
- All tree works are to be undertaken outside the bird breeding season (March-August inclusive) unless a checking survey is undertaken by an appropriately experienced ecologist and active nests are found to be absent.
- Adequate measures should be taken to protect the roots of retained trees within the root plate areas (see TPP) and the crowns of trees from the movement of high clearance site plant machinery.
- Barriers must prohibit construction works in the areas between the barriers and tree trunks. Barriers are to be installed prior to any preliminary construction or preparation works.
- If trees are to be removed, then where possible it may be practicable to transplant young to semi-mature trees around the site using a 'tree spade' and incorporate them into the overall landscape design (see TPP).
- As part of the landscaping of the new development, native broadleaf species **of local provenance** known to be of a high conservation and amenity value should be planted in order to maximise the value of the site for local biodiversity. With new planting it is always good practice to choose species that in the future will not present a physical risk to buildings or access points.
- Species to be planted should include a combination of native flowering, fruit and seed bearing species with a high biodiversity index, to attract a broad range of invertebrates, foraging birds and foraging mammals. Species could include: oak, wych elm, wild cherry, rowan, lime, hazel, crab apple, common alder, ash, common lime, field maple, Scots pine and bird cherry.
- Areas of hard standing will be stripped and removed to a detailed method statement, to prevent long-term damage to the roots of groups of trees that are to be retained.
- Strict control on the use of polluting chemicals within the site to comply with the Pollution prevention and Control Act 1999, using best practice guidance as proposed in the former



Environment Agency Pollution Prevention Guidelines, PPG 1¹ and PPG 6² (withdrawn 2015).

- **Mitigation measures, such as root protection barriers are to be checked by the project Arborist prior to commencement of demolition or construction works.**

If you are assessing this report for a local planning authority and have any difficulties interpreting plans and figures from a scanned version of the report, E3 Ecology Ltd would be happy to email a PDF copy to you. Please contact us on 01434 230982.

¹ Environment Agency, 2013 (withdrawn July 2015). 'Basic good environmental practices, PPG1: Prevent pollution'.

² Environment Agency, 2014 (withdrawn July 2015). 'Construction and demolition sites, PPG6: Prevent pollution'.

INTRODUCTION

E3 Ecology Ltd was commissioned by Miller Homes to undertake pre-development Tree Constraints Assessment (TCA) for trees at the former Siemens site adjacent to Victoria Road West, South Tyneside.

A.1 BACKGROUND TO DEVELOPMENT

The site is located within the southern area of Hebburn, South Tyneside at an approximate central grid reference of NZ3039 6349. The site location is illustrated below in Figure 1.

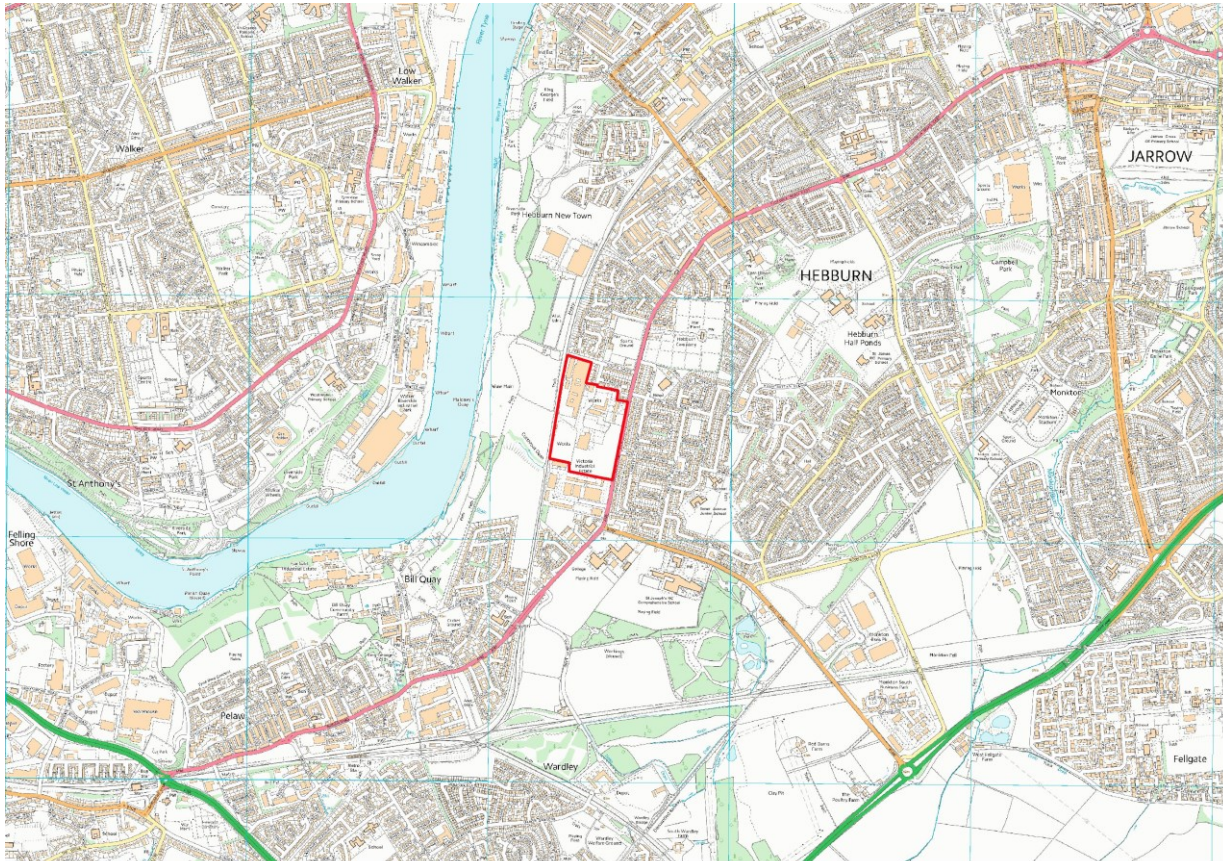


FIGURE 1 – MAP OF SITE AND SURROUNDING AREA
©Crown copyright and database; Reproduced under licence from Ordnance Survey (2016)

A.2 CURRENT DEVELOPMENT INFORMATION

It is proposed to develop 334 residential properties within the site. Plans currently include the creation of two access point along the eastern site boundary with associated visibility splays. Current plans are shown below in figure 2.



FIGURE 2 – MASTERPLAN AS PROPOSED. POD; 544-MIL/SD-10.01/F



A.3 LEGISLATIVE CONTEXT

Trees in any location may be protected by legislation. Where development is proposed, additional legal protection may be appropriate and can be enforced by the local authority. Attention is drawn to legal controls and liabilities under common law for consideration at the earliest stages of potential site development.

The Town and Country Planning Act 1990 (as amended) and the Town and Country (Tree Preservation) (England) Regulations 2012 requires that, except in certain circumstances, “no work shall be carried out which will affect trees over a certain size which are situated in conservation areas”. Six weeks’ notice of intent has to be given to the local authority before the work is carried out. This provides an opportunity for the local authority to make a Tree Preservation Order (TPO), under this Act, to protect the trees.

Section 197 of the Town and Country Planning Act 1990 states “it shall be the duty of the local planning authority to ensure, whenever it is appropriate, that in granting planning permission for any development adequate provision is made, by the imposition of conditions, for the preservation or planting of trees”. It also states that “it shall be the duty of the local planning authority to make such orders under section 198 [of the Act] as appear to the authority to be necessary in connection with the grant of such permission.”

Further detailed legislation surrounding trees is provided in Appendix 5 and 6.

A.4 PERSONNEL

Survey work and reporting was undertaken by:

- Darryl Birch BSc (Hons), MArborA, Lantra Professional Tree Inspector (PTI)

The project was checked by:

- James Streets BSc MSc CEcol MCIEEM

Details of experience and qualifications are available at www.e3ecology.co.uk.

A.5 SCOPE OF STUDY

The scope of the tree constraints assessment describes the trees on and near the development area (if applicable), what the impact of the development proposal on these trees will be and how any adverse impact will be mitigated. The aim being to provide sufficient tree information for the Local Planning Authority (LPA) to assess the impact of the proposal on local character as part of the process of determining the planning application.

This assessment is based on the supporting information provided prior to commencement of the development and the condition of the trees at the time of survey.

B. SURVEY AREA AND METHODOLOGY

B.1 SURVEY AREA

Figure 3, below shows the approximate survey area and individual trees that are on site and within the adjacent land.



FIGURE 3 – AERIAL PHOTOGRAPH OF THE SITE LOCATION SHOWING INDIVIDUAL TREES WITHIN THE CONTEXT OF THE LAND SURROUNDING THE SITE

(Reproduced under licence from Google Earth Pro. 2016)

B.2 DESKTOP STUDY METHODOLOGY

Initially, the site was assessed from aerial photographs and 1:25,000 Ordnance Survey plans. South Tyneside Council planning department was contacted to confirm whether any of the trees on site have Tree Preservation Orders or whether the site is within a conservation area.



B.3 FIELD STUDY METHODOLOGY

B.3.1 SITE INSPECTION

A site visit was undertaken on the 17th June 2016. All observations were carried out from ground level using the Visual Tree Assessment (VTA) method³.

Prescriptions for proposed works on the trees were assigned according to the guidelines in BS 3998:2010: 'Recommendations for tree work' and BS 5837:2012 'Trees in relation to design, demolition and construction – Recommendations' from which arboricultural method statements (AMS) an AIA and TPP can be designed.

Young trees and dead trees with a stem diameter of less than 150mm were not surveyed (except specific notable trees of high value).

Root Protection Areas (RPAs) were calculated for each tree to allow a TPP to be created where conflicts with any aspect of a future development may occur (a scale diagram will be provided in an annexed AIA/TPP report). These are stated within the TCA schedule in m² as a circle centred on the centre of each stem, or in metres as a radius from the centre of each stem.

- Each tree selected was identified and assigned a reference number on the plan.
- Diameters of trees were taken with a diameter at breast height (DBH) tape at 1.5m above adjacent ground level. Heights were calculated using a clinometer at intervals of 10m from the tree, depending on accessibility and visibility of the canopy and the height.
- The crown radius was estimated to the nearest 0.5m along the cardinal points (north, east south, and west) and the crown clearance calculated as the nearest point of the crown to ground level.
- Age class, Safe Use Life Expectancy (SULE) (Appendix 3) and physical condition of the trees were assessed subjectively by the Inspector in order to designate a category of retention of each tree in accordance with the criteria specified within BS5837:2012 (Table 4 and Appendix 2).

B.3.2 RATIONALE

- These techniques identify the quality and value of the tree stock (in a non-fiscal, ecological and landscape sense).
- This allows and informed decision to be made concerning which trees are to be removed or retained during the development stages.
- It also provides an estimate as to how long each tree can be expected to remain on site with an acceptable degree of safety: which is particularly important from a landscape design perspective.
- Management recommendations are made primarily if:
 - A tree is assessed to be potentially hazardous in the short term;
 - If there are hazardous features or defects that could easily be remediated through targeted management; or,
 - If the growth form of certain individual trees, within an amenity context, has become detrimental to the natural growth of neighbouring trees.

³ Mattheck, C., & Breloer, H. (2012). 'The Body Language of Trees: A Handbook for Failure Analysis.' TSO



The timeframe for works or re-inspection is influenced by the urgency of the work required for the health of the tree and or the seasonality of the survey.

B.3.3 ENVIRONMENTAL CONDITIONS

TABLE 2 – SURVEY CONDITIONS				
DATE AND TIME	TEMPERATURE	CLOUD COVER	PRECIPITATION	WIND CONDITIONS
17.06.16	14°C	70%	0	0 – 1SW

B.3.4 SURVEY CONSTRAINTS

There were no access or weather restrictions at the time of the survey.



C. RESULTS AND ANALYSIS

C.1 DESKTOP STUDY

C.1.1 PRE-EXISTING INFORMATION

ORDNANCE SURVEY MAPS AND AERIAL PHOTOGRAPHS

Figures 1 (A1) and 3 (C1) show that the land use to the north and west of the site is dominated by residential housing with scattered areas of amenity greenspaces. A small industrial estate is located adjacent to the southern boundary of the site. Land to the west of the site is made up of a mixture of grassland and scrub with the River Tyne ~360m from the western boundary of the site.

The most recent aerial photograph of the site (Figure 2, C1, 2015) indicates that habitats on site comprise a mosaic of grassland, bare ground, scrub and small blocs of trees. Historic imagery suggests that the Former Siemens factory (comprising a mix of industrial buildings) was present within the site between 2001 and 2013.

C.1.2 CONSULTATION

SOUTH TYNESIDE COUNCIL PLANNING DEPARTMENT

Consultation with South Tyneside Council planning department on the 29th June 2016, indicated that all of the trees within the site boundary are protected under group Tree Preservation Order number 309 (2014)/L (97)261- 'Former Siemens Site, Victoria Road West, Hebburn (Appendix 7).

The site is not within a Conservation area.

C.2 FIELD SURVEY

C.2.1 SITE DESCRIPTION

The site comprises a mosaic of hard standing with ephemeral vegetation, semi improved neutral grassland, scrub and blocks of trees.

There are 26 distinctive tree groups within the site which range from large areas of goat willow and hawthorn scrub and former amenity plantings which have grown to maturity.



C.2.2 TREE SURVEY RESULTS SUMMARY

The figure below illustrates the locations of surveyed trees and tree groups around the site with estimated root plate areas and crown spreads (Large scale plan in appendix 8).



FIGURE 4 – TREE CONSTRAINTS ASSESSMENT PLAN



For the detailed results, please see 'Appendix 4. Detailed Results', summaries of the survey results are shown below in tables 3, and 4 and within figure 4.

TABLE 3 – CATEGORIES OF RETENTION (BS5837:2012) INDIVIDUAL TREES AND GROUPS		
CATEGORY	DEFINITION	NUMBER (GROUP)
A1	Those of high arboricultural quality and value with a remaining life expectancy of >40years	2
A2	Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features	(1)
B1	Mainly arboricultural qualities. Those of moderate arboricultural quality and value with a remaining life expectancy of >20 years	36(3)
B2	Mainly landscape qualities. Trees present in numbers, usually as groups or woodlands, such that they attract a higher collective rating than they might as individuals; or trees occurring as collectives but situated so as to make little visual contribution to the wider locality.	1(11)
C1	Mainly arboricultural qualities. Those of low arboricultural quality and value with a remaining life expectancy of >10years or young trees with a stem Ø below 150mm.	12
C2	Mainly landscape qualities. Trees present in groups or woodlands, but without this conferring on them significantly greater landscape value, and/or trees offering low or only temporary/ transient landscape benefits.	5(14)

26 characteristic tree groups within the site were surveyed as a whole (table 4):

TABLE 4 – TREE GROUPS	
GROUP REFERENCE (TPO GROUP REF) AND BS CATEGORY	DESCRIPTION AND SULE (YEARS)
1(2) A2	Original landscape feature planted upon an earthen bund with contiguous crowns. Individual early mature trees have minor defects, but generally are all in good condition. Species present: Norway maple <i>Acer platanoides</i> , Swedish whitebeam <i>Sorbus x intermedia</i> , wild cherry <i>Prunus avium</i> , balsam poplar <i>Populus balsamifera</i> , sycamore <i>Acer pseudoplatanus</i> and rowan <i>Sorbus acuparia</i> . Overall SULE: 20+
2(3)B2	Original landscape feature planted upon an earthen bund with contiguous crowns. Most of the semi-mature Sorbus is natural regen with browsing damage to lower stems, most likely from deer. Species present: Swedish whitebeam and ash <i>Fraxinus excelsior</i> . Overall SULE 20+
3(5)C2	Large dense group mainly comprised of semi-mature wild cherry, blackthorn <i>Prunus spinosa</i> , goat willow <i>Salix caprea</i> and sycamore. Overall SULE 20+
4/C2	Linear belt of shrubs comprised of privet, laurel and laburnum which has been allowed to grow to maturity. Overall SULE 10+
5(4)B1	Six mature white willows <i>Salix alba</i> with contiguous crowns to form a broad canopy. Hanging and aerial deadwood present and branch failure as is characteristic of the species. Overall SULE 20+
6(4)B1	Large group of semi-mature trees comprising natural regeneration of aspen <i>Populus tremula</i> planted on a landscape earthen bund. Some dead wood in the crowns, forming a contiguous canopy. There is an area of dense scrub associated with this group comprised of damson <i>Prunus domestica</i> , blackthorn, sycamore, gorse <i>Ulex europaea</i> and dog rose <i>Rosa canina</i> Overall SULE 10+
7(5)B2	Group of early mature crack willow <i>Salix fragilis</i> surrounded by impenetrable scrub. Species present include hawthorn <i>Crataegus monogyna</i> , blackthorn and damson. Overall SULE 20+
8(6)B2	Original landscape feature planted upon an earthen bund with contiguous crowns. Semi-mature trees generally in good condition some with minor defects. Species present include: Swedish whitebeam, wild cherry and ash. Overall SULE 20+



TABLE 4 – TREE GROUPS	
GROUP REFERENCE (TPO GROUP REF) AND BS CATEGORY	DESCRIPTION AND SULE (YEARS)
9(7)B2	Original landscape feature planted upon an earthen bund with contiguous crowns. Early mature trees generally in good condition some with minor defects. Species present include: sycamore, bastard service <i>Sorbus x thuringiaca 'fastigiata'</i> , balsam poplar, white willow and hawthorn. All of the whitebeam trees are leaning heavily to the south and will have an SULE of 5 – 10 years. The remainder of the trees have a SULE of 20+ years.
10(C2)	Linear group of semi-mature multi-stemmed crack willows with evidence of minor crown dieback. Other species in the group include: balsam poplar, hawthorn and silver birch <i>Betula pendula</i> . Overall SULE 20+
11(9)B1	Original landscape feature planted upon an earthen bund with contiguous crowns, dominated by sycamore. Semi-mature trees generally in good condition some with minor defects. Other species present in the group include bastard service, ash, and purple sycamore <i>Acer pseudoplatanus purpureum</i> . Overall SULE 20+
12(8)B2	Dense group comprised of early mature wild cherry, aspen and sycamore forming a contiguous canopy. Individual trees have minor defects. Other species present in the group include dog rose, bastard service, Swedish whitebeam and cotoneaster spp. Overall SULE 20+ There is a small group of wild cherry regeneration of low value (C2) associated with this group, but outside the site boundary.
13/B2	Early mature Aspen natural regeneration and recruitment on both sides of the boundary fence. Other species present within the group are sycamore, wild cherry, silver birch and white poplar <i>Populus alba</i> . There is a small cotoneaster hedge associated with this group. Overall SULE 20+
14/C2	Small group of semi-mature balsam poplars, and poplar regeneration all with signs of dieback in their lower crowns as is characteristic of the species. Overall SULE 10+
15/B2	Linear belt of semi-mature trees mainly outside the site boundary. Species present include: silver birch, sycamore, field maple <i>Acer campestre</i> , hazel <i>Corylus avellana</i> , green alder <i>Alnus viridis</i> , Swedish whitebeam and European larch <i>Larix x europaea</i> . Overall SULE 20+.
16(10)B2	Group of mixed semi-mature to mature trees in fair condition. Species present include ash, Swedish whitebeam, goat willow, with a naturally regenerated hazel and hawthorn understorey. Some of the willow are beginning to fail. Overall SULE 20+
17(1)B2	Linear belt of young to mature trees located alongside and outside the boundary fence. Species present include: sycamore, balsam poplar, silver birch, goat willow, Swedish whitebeam, common willow, hawthorn, cypress spp. and rowan. Overall SULE 20+
18(13)B2	Group of mixed scrub with a mix of young to mature trees. Species present include: Goat willow, Swedish whitebeam, hawthorn, silver birch, common whitebeam <i>Sorbus aria</i> , dog rose, small-leaved cotoneaster and bramble. Overall SULE is 20+.
19(12)C2	Large group of young to mature trees forming a belt of scrub. Many self-seeded trees present. Species present include goat willow, Swedish whitebeam, silver birch, hawthorn, rowan, orchard apple <i>Malus domestica</i> , laurel and sea buckthorn <i>Hippophae rhamnoides</i> . Overall SULE 20+
20/C2	Overgrown landscape planting group comprised of mature laurel and hawthorn. Overall SULE 20+
21/C2	Overgrown landscape planting comprising mature laurel, elder and rowan. Overall SULE 20+
22/C2	Two early mature orchard apple trees now overgrown with brambles. Overall SULE 20+
23(11)C2	Large group of self-seeded semi-mature trees including goat willow, Swedish whitebeam, silver birch, crack willow, field maple and white willow. Overall SULE 20+
24(11)B2	Large belt of mixed young to mature trees including silver birch, goat willow, Swedish whitebeam, sea buckthorn and rowan. Overall SULE 20+



TABLE 4 – TREE GROUPS	
GROUP REFERENCE (TPO GROUP REF) AND BS CATEGORY	DESCRIPTION AND SULE (YEARS)
25(11)C2	Group of semi-mature self-seeded trees including goat willow, Swedish whitebeam and silver birch. Overall SULE 20+
26/B2	Linear group of trees growing to the west of the boundary fence, lining the railway. Dominant species is balsam poplar in a variable condition. Other species present include sycamore, elder, Scots pine <i>Pinus sylvestris</i> , black pine <i>Pinus nigra</i> , Norway maple, English oak, hybrid black poplar <i>Populus nigra var.</i> and white poplar. Overall SULE 20+.



D. ASSESSMENT

A.1 TREE CONSTRAINTS ASSESSMENT

This Tree Constraints Assessment and calculations for the tree protection plan were formulated through calculation of the minimum area to be left undisturbed around each retained tree, based on the diameter of their stems. These are design tools which show the below ground constraints represented by the RPA, and the above ground constraints trees pose by virtue of their size and position.

This arbitrary calculation is used in conjunction with an assessment of the ground conditions, including the slope, soil type, proximity of other trees, proximity of impermeable barriers and soil moisture content. Either factor can influence the orientation and spread of the root plate in real terms.

Figure 4 shows the position of the trees and the groups of trees on site, their categories of retention and estimated root plate areas as a calculation of twelve times the diameter at breast height (150cm from level ground adjacent to the bole). These can be used in conjunction with the finalised development layout, to create a scale TPP. This will enable any works prescribed to be carried out to the correct designated tree and for exclusion barriers to be erected in the correct positions to ensure that damage to tree roots and low hanging crowns is avoided.

A.2 IMPACT ASSESSMENT

Potential impacts of the proposed development without appropriate mitigation are:

- Loss of young to mature trees that are arboricultural, amenity and landscape assets of generally low to moderate value to the site and surroundings.
- Damage to the roots and crowns of trees adjacent to the site boundary through the incorrect placement of site materials or parking of plant/site machinery.
- Works to or removal of young to mature trees with a high risk of supporting nesting birds.
- Harm or disturbance to tree nesting birds during pruning works and vegetation removal should this take place during the bird breeding season (March to August inclusive).
- Damage to the roots of trees during the removal of existing areas of hard standing.
- Damage to the crowns of trees if pruning works are carried out at the incorrect time of year, by an inexperienced arboricultural contractor
- Damage to trees in the long term through lack of chemical pollution control (diesel spillage, tarmac residues, use of petro chemicals etc.) during the development phase.



E. RECOMMENDATIONS

In order to address the identified impacts, the following mitigation and enhancement/compensation measures will be required:

- The retention of trees on site where possible.
- If trees are to be lost, to replace them on a 2:1 basis with medium and large species trees which will not cause future issues for the development.
- Where trees are retained, all works on site are to be undertaken in accordance with a Tree Protection Plan with working methods.
- All works to trees are to be carried out to the prescriptions specified in an arboricultural method statement, by an approved and experienced arboricultural contractor working to BS-3998:2010.
- All tree works are to be undertaken outside the bird breeding season (March-August inclusive) unless a checking survey is undertaken by an appropriately qualified ecologist and active nests are found to be absent.
- Adequate measures should be taken to protect the roots of retained trees within the root plate areas (see TPP) and the crowns of trees from the movement of high clearance site plant machinery.
- Barriers must prohibit construction works in the areas between the barriers and tree trunks. Barriers are to be installed prior to any preliminary construction or preparation works.
- If trees are to be removed, then where possible it may be practicable to transplant young to semi-mature trees around the site using a 'tree spade' and incorporate them into the overall landscape design (see TPP).
- As part of the landscaping of the new development, native broadleaf species **of local provenance** known to be of a high conservation and amenity value should be planted in order to maximise the value of the site for local biodiversity. With new planting it is always good practice to choose species that in the future will not present a physical risk to buildings or access points.
- Species to be planted should include a combination of native flowering, fruit and seed bearing species with a high biodiversity index, to attract a broad range of invertebrates, foraging birds and foraging mammals. Species could include: oak, wych elm, wild cherry, rowan, lime, hazel, crab apple, common alder, ash, common lime, field maple, Scots pine and bird cherry.
- Areas of hard standing will be stripped and removed to a detailed method statement, to prevent long-term damage to the roots of groups of trees that are to be retained.
- Strict control on the use of polluting chemicals within the site to comply with the Pollution prevention and Control Act 1999, using best practice guidance as proposed in the former Environment Agency Pollution Prevention Guidelines, PPG 1⁴ and PPG 6⁵ (withdrawn 2015).
- **Mitigation measures, such as root protection barriers are to be checked by the project Arborist prior to commencement of demolition or construction works.**

⁴ Environment Agency, 2013 (withdrawn July 2015). 'Basic good environmental practices, PPG1: Prevent pollution'.

⁵ Environment Agency, 2014 (withdrawn July 2015). 'Construction and demolition sites, PPG6: Prevent pollution'.



F. GLOSSARY OF TERMS

TABLE 5 - GLOSSARY	
TERM	DEFINITION
Absorptive roots	Non-woody, short-lived roots, generally having a diameter of less than one millimetre, the primary function of which is the uptake of water and nutrients.
Adaptive growth	Wood formation around the tree to help maintain a uniform distribution of mechanical stress
Adventitious roots	Roots that develop other than at their normal positions of origin (see epicormic).
Bark	All the tissues of a woody plant lying outside the vascular cambium (including the phloem, cortex and periderm).
Bole	The main stem of a tree below its first major branch.
Branch bark ridge	The raised arc of branch tissues that forms within the acute angle between a branch and its parent stem.
Branch collar	A visible swelling formed at the base of a branch whose diameter growth has been disproportionately slow compared to that of the parent stem.
Canker	A clearly defined patch of dead and sunken or malformed bark.
Canker rot	A disease in which the causal fungus gives rise to both a bark canker and to decay in the underlying wood.
Cambium	Layer of dividing cells producing xylem (woody tissue) internally, and phloem (bark) tissue externally.
Chlorosis	Abnormal yellow or yellow/green coloration of normally green foliage.
Compartmentalisation	The confinement of disease, decay or other dysfunction within an anatomically discrete region of plant tissue, due to passive and or active defences acting at the boundary of the affected region.
Conservation area	These are designated areas of architectural or historical interest, in which there are special procedures for planning applications and a requirement that tree work cannot generally be undertaken unless notice (currently 6 weeks) has been given to the local authority.
DBH (Diameter at Breast Height)	Stem diameter at a height of 1.5m from the adjacent level ground.
Dieback	The death of parts of a woody plant, starting at shoot tips or root tips.
Epicormic shoot	A shoot having developed from a dormant or adventitious bud and not having developed from a first year shoot.
Fruit body	A general term for any kind of fungal, spore bearing structure.
Girdling roots	A girdled stem, branch or shoot is encircled by a band of dead, dying, missing or constricted bark. The distal part then usually dies.
Hazard beam	An upward curved part of a tree in which strong internal stresses may occur without being reduced by adaptive growth; prone to longitudinal splitting.
Included bark (Ingrown bark)	Bark of adjacent parts of a tree (usually forks or acutely joined branches) which are in face to face contact.
Occluded /occlusion	The process whereby a wound is progressively closed by the formation of wood and new bark around it.
Reaction wood	This forms when part of a woody plant is subject to mechanical stress and helps to bring parts of a plant into an optimum position. This stress may be the result of gravity, wind exposure, build-up, soil movement, etc. The reaction wood is not externally visible, although asymmetric growth is a reliable indicator.
Target	A structure or feature underneath or near the tree which could be damaged if the tree was to fail. For example, a building, path or playground.
Torsional ribs	These form when the tree is under helical load (twisted), usually by a prevailing wind, which in essence tightens the vertical structure of the main stem. Ribs form where the tree is attempting to stabilise the growth to by strengthening these sections of the stem with reaction wood. This can eventually lead to shearing of the stem along these lines of weakness either through the normal production of annual growth rings, or the loss of neighbouring trees providing shelter to wind from other directions.
Tree Preservation Order	An order made by a local authority, whereby the authority's consent is generally required for the cutting down, topping or lopping of specified trees.



G. REFERENCES

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APPENDIX 1.DETAILED RESULTS

TABLE 6 – KEY TO AIA SCHEDULE		
St dia. (mm)	Stem diameter, 1.5m from the adjacent ground level	
Cr Rad. (m)	Estimated crown radius (m) using the cardinal compass points (N, E, S, W)	
Cr. Clearance (m)	Crown clearance measured from the lowest point to the ground	
Est cont (years)	Estimated remaining contribution/ safe use life expectancy (SULE)	
Rad RPA (m ²)	Radial root protection area measured from the centre of the tree	
RPA Radius (m)	An arbitrary calculation 12 x the stem diameter at 1.5m from the adjacent ground level	
RP (Months)	Reinspection period	
Time frame	Timing of proposed works (Nwr = No work required)	
Condition	P	Physiological: Poor – Significant weakness Fair – Symptoms of ill health can be remediated Good – no significant health problems
	S	Structural: Poor - Significant weakness Fair – Symptoms of weakness that can be remediated Good – ‘Normal’ Structure
BS Cat	British Standard 5837:2012 tree quality category of retention.	
	A1	High arboricultural quality and value with a SULE of >40 years
	A2	Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features
	A3	Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture)
	B1	Mainly arboricultural qualities. Those of moderate arboricultural quality and value with a remaining life expectancy of >20 years
	B2	Mainly landscape qualities- Trees present in numbers, usually as groups or woodlands, such that they attract a higher collective rating than they might as individuals; or trees occurring as collectives but situated so as to make little visual contribution to the wider locality.
	B3	Mainly cultural values, including conservation – Trees with material conservation or other cultural value
	C1	Mainly arboricultural qualities. Those of low arboricultural quality and value with a remaining life expectancy of >10years or young trees with a stem Ø below 150mm.
	C2	Mainly landscape qualities- Trees present in groups or woodlands, but without this conferring on them significantly greater landscape value, and/or trees offering low or only temporary/ transient landscape benefits.
	C3	Trees with no material conservation or cultural value
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	
Phenological stage	D	Dormant
	B	Bud
	L	In leaf
	F	Flowering
	Fr	Fruiting
	LD	Leaf drop
Age class	NP	Newly planted
	Y	Young
	SM	Semi-mature (1 st /3 rd of life expectancy)
	EM	Early mature (2 nd /3 rd of life expectancy)
	M	Mature (final 3 rd of life expectancy)
	OM	Over mature (beyond life expectancy / declining naturally)
V	Veteran (of great age and potential conservation value)	

TABLE 7 – ARBORICULTURAL IMPLICATIONS ASSESSMENT

Tree ref. No.	English Name	Scientific Name	Height (m)	St dia. at 1.5m (mm)	Stems (no.)	Cr Rad.(m) N	Cr Rad.(m)E	Cr Rad.(m) S	Cr Rad.(m) W	Cr. Clearance (m)	Age (yrs)	SULE	Condition	Comments	Management recommendations	Rad RPA (m2)	RPA Radius (m)	BS cat
T1	Swedish Whitebeam	<i>Sorbus x intermedia</i>	8	300	1	3	3	3	3	3	Mature	20+	Fair	Damage to surface roots. Leaning to the west.	No work required	3.60	40.72	B1
T2	Swedish Whitebeam	<i>Sorbus x intermedia</i>	8	460	1	5	4	4	5	4	Mature	20+	Good	Within planting pit	Nwr	5.52	95.74	B1
T3	Swedish Whitebeam	<i>Sorbus x intermedia</i>	8	390	1	5	5	5	4	4	Mature	20+	Good	Within planting pit	Nwr	4.68	68.82	B1
T4	Swedish Whitebeam	<i>Sorbus x intermedia</i>	8.5	480	1	5	4	4	4	4	Mature	20+	Fair	Leaning to the east. Wound on main stem.	Nwr	5.76	104.24	B1
T5	Swedish Whitebeam	<i>Sorbus x intermedia</i>	8	490	1	5	5	5	4	4	Mature	20+	Fair	Co-dominant stems at 2m	Nwr	5.88	108.63	B1



T6	Sweet Chestnut	<i>Castanea sativa</i>	3.5	80	1	2	2	1	1	1	Young	40+	Good		Nwr	0.96	2.90	C1
T7	Swedish Whitebeam	<i>Sorbus x intermedia</i>	7.5	420	1	4	4	4	4	4	Mature	20+	Good	Within planting pit	Nwr	5.04	79.81	B1
T8	Swedish Whitebeam	<i>Sorbus x intermedia</i>	8	420	1	5	4	4	4	4	Mature	10+	Fair	Sweep in stem. Cavity developing at the base on the road side.	Nwr	5.04	79.81	C1
T9	Swedish Whitebeam	<i>Sorbus x intermedia</i>	3.5	340	1	4	4	4	2	4	Mature	10+	Poor	Within planting pit. Bark necrosis, poor crown growth possibly infected with a bacterial canker.	Nwr	4.08	52.30	C1
T10	Swedish Whitebeam	<i>Sorbus x intermedia</i>	8	350	1	4	4	4	4	4	Mature	20+	Fair	Leaning to the east. Cavity developing at the base behind wound.	Nwr	4.20	55.42	B1
T11	Swedish Whitebeam	<i>Sorbus x intermedia</i>	8	410	1	4	3	4	4	4	Mature	20+	Fair	Leaning to the east	Nwr	4.92	76.06	B1

T12	Swedish Whitebeam	<i>Sorbus x intermedia</i>	8	400	1	5	4	4	4	4	Mature	20+	Fair	Leaning to the east. Wounds on the butt	Nwr	4.80	72.39	B1
T13	Swedish Whitebeam	<i>Sorbus x intermedia</i>	7.5	400	1	4	4	4	4	4	Mature	20+	Good	Sweep in the main stem.	Nwr	4.80	72.39	B1
T14	Swedish Whitebeam	<i>Sorbus x intermedia</i>	7	400	1	4	4	4	3	4	Mature	20+	Good		Nwr	4.80	72.39	B1
T15	Swedish Whitebeam	<i>Sorbus x intermedia</i>	8	400	1	4	3	5	4	4	Mature	20+	Fair	Wound at the base.	Nwr	4.80	72.39	B1
T16	Swedish Whitebeam	<i>Sorbus x intermedia</i>	8	420	1	4	4	5	3	4	Mature	20+	Good		Nwr	5.04	79.81	B1
T17	Swedish Whitebeam	<i>Sorbus x intermedia</i>	8	400	1	4	4	4	4	4	Mature	20+	Fair	Wound on the main stem, partially occluded	Nwr	4.80	72.39	B1
T18	Swedish Whitebeam	<i>Sorbus x intermedia</i>	7.5	420	1	4	4	5	4	4	Mature	20+	Good		Nwr	5.04	79.81	B1
T19	Swedish Whitebeam	<i>Sorbus x intermedia</i>	7.5	380	1	4	3	4	4	4	Mature	20+	Good	Within a planting pit	Nwr	4.56	65.33	B1

T20	Swedish Whitebeam	<i>Sorbus x intermedia</i>	8.5	480	1	4	4	4	4	4	Mature	20+	Good	Within planting pit	Nwr	5.76	104.24	B1
T21	Swedish Whitebeam	<i>Sorbus x intermedia</i>	8	460	1	4	4	5	4	4	Mature	20+	Fair	Wound at the base partially occluded.	Nwr	5.52	95.74	B1
T22	Swedish Whitebeam	<i>Sorbus x intermedia</i>	8	470	1	4	4	4	4	4	Mature	20+	Fair	Wound on the main stem partially occluded	Nwr	5.64	99.95	B1
T23	Swedish Whitebeam	<i>Sorbus x intermedia</i>	8	430	1	4	4	4	3	4	Mature	20+	Good		Nwr	5.16	83.66	B1
T24	Swedish Whitebeam	<i>Sorbus x intermedia</i>	7	360	1	3	4	4	2	4	Mature	20+	Fair	Leaning heavily to the east.	Nwr	4.32	58.64	B1
T25	Swedish Whitebeam	<i>Sorbus x intermedia</i>	7.5	420	1	4	3	4	3	4	Mature	20+	Good		Nwr	5.04	79.81	B1
T26	Swedish Whitebeam	<i>Sorbus x intermedia</i>	7.5	440	1	4	4	4	4	4	Mature	20+	Good	Within planting pit	Nwr	5.28	87.59	B1
T27	Swedish Whitebeam	<i>Sorbus x intermedia</i>	7.5	400	1	5	1	5	4	4	Mature	20+	Fair	Wound at the base, partially occluded	Nwr	4.80	72.39	B1

T28	Swedish Whitebeam	<i>Sorbus x intermedia</i>	7.5	410	1	4	4	4	3	4	Mature	20+	Good		Nwr	4.92	76.06	B1
T29	Swedish Whitebeam	<i>Sorbus x intermedia</i>	7	400	1	4	3	4	3	3	Mature	20+	Good		Nwr	4.80	72.39	B1
T30	Swedish Whitebeam	<i>Sorbus x intermedia</i>	7	370	1	4	4	4	3	4	Mature	20+	Fair	Leaning to the east. Wound on the main stem partially occluded	Nwr	4.44	61.94	B1
T31	Swedish Whitebeam	<i>Sorbus x intermedia</i>	7.5	420	1	5	4	5	5	4	Mature	20+	Good		Nwr	5.04	79.81	B1
T32	Swedish Whitebeam	<i>Sorbus x intermedia</i>	8	450	1	5	4	4	4	4	Mature	20+	Good	Within planting pit	Nwr	5.40	91.62	B1
T33	Sycamore	<i>Acer pseudoplatanus</i>	8	170	1	5	2	3	5	2	Young	40+	Fair	Within TPO group 13. Leaning growth	Nwr	2.04	13.08	C1
T34	Wild Cherry	<i>Prunus avium</i>	6.5	110	1	1	1	1	1	3	Young	40+	Good	Within TPO group 13	Nwr	1.32	5.47	C1
T35	Swedish Whitebeam	<i>Sorbus x intermedia</i>	6.5	350	5	5	3	4	5	1	Mature	20+	Fair	Within TPO group 13	Nwr	9.40	277.63	C1



T36	Swedish Whitebeam	<i>Sorbus x intermedia</i>	6.5	270	5	4	3	4	3	1	Early Mature	40+	Good	Within TPO group 13	Nwr	7.25	165.15	B1
T37	Swedish Whitebeam	<i>Sorbus x intermedia</i>	7	240	1	3	1	3	3	2	Early Mature	40+	Good	Within TPO group 13	Nwr	2.88	26.06	B2
T38	Swedish Whitebeam	<i>Sorbus x intermedia</i>	7	300	5	3	4	3	3	1	Early Mature	40+	Good	Within TPO group 13. Co-dominant stems from the base	Nwr	8.05	203.61	C2
T39	Swedish Whitebeam	<i>Sorbus x intermedia</i>	7	430	5	4	4	4	4	2	Early Mature	40+	Good	Within TPO group 13. Co-dominant stems at the base	Nwr	11.54	418.43	C2
T40	Green alder	<i>Alnus viridis</i>	7	210	1	4	4	4	3	1	Mature	40+	Good	Within TPO group 13	Nwr	2.52	19.95	B1
T41	Swedish Whitebeam	<i>Sorbus x intermedia</i>	7	560	5	5	5	5	3	1	Mature	40+	Good	Within TPO group 13. Multi-stemmed	Nwr	15.00	706.95	B1
T42	Birch sp.	<i>Betula sp.</i>	6	90	1	2	1	1	1	1	Young	20+	Good	Within TPO group 13.	Nwr	1.08	3.66	C1
T43	Birch sp.	<i>Betula sp.</i>	4.5	70	1	2	1	1	1	1	Young	20+	Good	Within TPO group 13.	Nwr	0.84	2.22	C1

T44	Goat Willow	<i>Salix caprea</i>	10	650	5	6	6	3	6	1	Mature	20+	Good	Within TPO group 13. Multiple stems with included bark unions.	Nwr	15.00	706.95	A1
T45	Goat Willow	<i>Salix caprea</i>	10	540	5	2	6	6	6	1	Mature	20+	Good	Within TPO group 13. Multiple stems include included bark unions.	Nwr	14.48	658.78	A1
T46	Swedish Whitebeam	<i>Sorbus x intermedia</i>	4.5	150	1	3	2	2	2	1	Early Mature	20+	Good	Within TPO group 13. Supressed form possibly due to damage caused during the site demolition.	Nwr	1.80	10.18	C1
T47	Swedish Whitebeam	<i>Sorbus x intermedia</i>	5.5	270	1	4	4	4	4	2	Early Mature	20+	Good	Within TPO group 13. Multi-stemmed.	Nwr	3.24	32.98	B1
T48	Swedish Whitebeam	<i>Sorbus x intermedia</i>	5	200	5	3	3	1	3	2	Early Mature	10+	Poor	Within TPO group 13. Damage to root bole due to surrounding demolition	Remove prior to development.	5.36	90.27	C2
T49	Swedish Whitebeam	<i>Sorbus x intermedia</i>	5.5	240	1	4	4	1	4	2	Early Mature	10+	Poor	Within TPO group 13. Damage to base of main stem.	Monitor. Health check in 12 months if retained.	2.88	26.06	C2



T50	Swedish Whitebeam	<i>Sorbus x intermedia</i>	5.5	270	5	1	4	4	3	2	Early Mature	20+	Good	Within TPO group 13.	Nwr	7.25	165.15	C2
T51	Swedish Whitebeam	<i>Sorbus x intermedia</i>	5.5	260	5	4	4	4	3	1	Early Mature	20+	Good		Nwr	6.97	152.64	B1
T52	Swedish Whitebeam	<i>Sorbus x intermedia</i>	4.5	240	5	4	2	3	2	1	Semi Mature	20+	Good	Multi-stemmed at the base	Nwr	6.44	130.31	C1
T53	Birch sp.	<i>Betula sp.</i>	14	280	1	4	4	4	4	1	Mature	20+	Good		Nwr	3.36	35.47	B1
T54	Swedish Whitebeam	<i>Sorbus x intermedia</i>	5	180	1	4	2	3	2	2	Semi Mature	20+	Good		Nwr	2.16	14.66	B1
T55	Sycamore	<i>Acer pseudoplatanus</i>	7	130	1	2	2	2	2	1	Young	20+	Good		Nwr	1.56	7.65	C1
T56	Sycamore	<i>Acer pseudoplatanus</i>	7	150	1	3	3	2	2	1	Young	20+	Good		Nwr	1.80	10.18	C1



APPENDIX 2.TREE QUALITY ASSESSMENT

TABLE 7 – BS 5837: 2012 CASCADE CHART FOR TREE QUALITY ASSESSMENT	
Category and definition	Criteria
Category U (Trees unsuitable for retention) – Red Shading	
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 (i.e. where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning).
	Trees that are dead or are showing signs of significant, immediate, 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. For example habitat reinstatement may be appropriate (e.g. U category tree used as a bat roost: installation of bat box in nearby tree)
Category A. (Trees considered for retention) – Light Green Shading	
Those of high quality with an estimated remaining life expectancy of at least 40 years	Arboricultural qualities - Trees that are particularly good examples of their species, especially if rare or unusual, or essential components of groups, or of formal or semi-formal arboricultural features (e.g. the dominant and/or principle trees within an avenue)
	Landscape qualities - Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features
	Cultural values, including conservation - Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture)
Category B. (Trees considered for retention) - Mid- Blue Shading	
Those of moderate quality with an estimated remaining life expectancy of at least 20 years	Arboricultural qualities - 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 minor 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
	Landscape qualities - Trees present in numbers, usually as groups or woodlands, such that they attract a higher collective rating than they might as individuals; or trees occurring as collectives but situated so as to make little visual contribution to the wider locality
	Cultural values, including conservation – Trees with material conservation or other cultural value
Category C. (Trees considered for retention) Grey Shading	
Those of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150mm	Arboricultural qualities - Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories
	Landscape qualities - Trees present in groups or woodlands, but without this conferring on them significantly greater landscape value, and/or trees offering low or only temporary/transient landscape benefits.
	Cultural values, including conservation – Trees with no material conservation or cultural value
NOTE: Whilst Category C trees will usually not be retained where they would impose a significant constraint on development, young trees with a stem diameter of less than 150mm should be considered for relocation.	



APPENDIX 3.SAFE USE LIFE EXPECTANCY (SULE)

TABLE 8 – SAFE USE LIFE EXPECTANCY (SULE) - (TREE AZ:©BARRELL TREE CARE, 2001)					
Category	Long SULE	Medium SULE	Short SULE	Remove	Small, Young or regularly clipped
	Trees that appear to be retainable at the time of assessment for more than 40 years with an acceptable level of risk	Trees that appear to be retainable at the time of assessment for 15 to 40 years with an acceptable level of risk	Trees that appear to be retainable at the time of assessment for 5 to 15 years with an acceptable level of risk	Trees that should be removed within the next 5 years	Trees that can be reliably transplanted or replaced
A	Structurally sound trees located in positions that can accommodate future growth	Trees that may only live for between 15 to 40 more years	Trees that may only live for between 5 and 15 more years	Dead trees	Small trees less than 5 metres in height
B	Storm damaged or defective trees that could be made suitable for retention in the long term by remedial tree surgery	Trees that may live for more than 40 years but would need to be removed for the safe development of more suitable individuals	Trees that may live for more than 15 years, but would need to be removed for the safe development of more suitable individuals	Dying or suppressed and declining trees through disease or inhospitable conditions	Young trees less than 15 years old but over 5m in height
C	Trees of special significance for historical, commemorative or rarity reasons that would warrant extraordinary efforts to secure their long term retention	Trees that may live for more than 40 years, but should be removed during the course of normal management for safety or nuisance reasons	Trees that may live for more than 15 years, but should be removed during the course of normal management for safety or nuisance reasons	Dangerous trees through instability or recent loss of adjacent trees	Trees that have been regularly pruned to artificially control growth
D		Storm damaged or defective trees that could be made suitable for retention in the medium term by remedial work	Storm damaged or defective trees that require substantial remedial work and are only suitable for retention in the short term	Dangerous trees through structural defects including cavities, decay, included bark, wounds or poor form	
E				Damaged trees that are clearly not safe to retain	
F				Trees that will become dangerous after removal of other trees for reasons given in A – E	



APPENDIX 4. CREATION OF A TREE PROTECTION PLAN

The following factors are to be taken into consideration once development designs are available to provide adequate protection for the root system:

- The likely tolerance of the tree to root disturbance or damage, based on factors such as species, age, condition and presence of other trees;
- The morphology and disposition of the roots, when known to be influenced by past or existing site conditions (e.g. the presence of roads, structures and underground services);
- The soil type and structure;
- Topography and drainage;
- Where any significant part of a tree's crown overhangs the provisional position of tree protection barriers, these parts may sustain damage during the construction period. In such cases, it may be necessary to increase the extent of the tree protection barriers to contain and thereby protect the spread of the crown. This can be mitigated by facilitation (branch end) pruning.

For practical reasons and in the context of the larger trees it is recommended that the area to be protected be capped at 707m², with a radius of 15m or a square with approximately 26m sides. Values stated in Appendix 1 are the absolute values as calculated for that tree and remain as guidance as to the actual root protection zone.



APPENDIX 5.LEGISLATION

A5.i Trees and the Law - General

Trees in any location may be protected by legislation. Where development is proposed, additional legal protection may be appropriate and can be enforced by the local authority. Attention is drawn to legal controls and liabilities under common law for consideration at the earliest stages of potential site development.

A5.ii Legal protection for trees

The Town and Country Planning Act 1990 (as amended) and the Town and Country (Tree Preservation) (England) Regulations 2012 requires that, except in certain circumstances, “no work shall be carried out which will affect trees over a certain size which are situated in conservation areas”. Six weeks’ notice of intent has to be given to the local authority before the work is carried out. This provides an opportunity for the local authority to make a Tree Preservation Order (TPO), under this Act, to protect the trees.

TPOs allow for trees to be protected either as individuals, groups, areas or woodlands. The orders have the effect of preventing the cutting down, topping, lopping, uprooting, willful damage or willful destruction of trees, except in certain circumstances, other than with consent of the local authority.

Even when no specific legal protection exists, it may be necessary to obtain a felling licence. These apply if the volume of timber exceeds specified amounts; site clearance, even of small areas, before detailed planning permission has been granted could exceed the felling licence quota. The Forestry Commission, under the Forestry Act 1967 (as amended) administers felling licenses.

A5.iii Legal protection for trees on development sites

Section 197 of the Town and Country Planning Act 1990 states “it shall be the duty of the local planning authority to ensure, whenever it is appropriate, that in granting planning permission for any development adequate provision is made, by the imposition of conditions, for the preservation or planting of trees”. It also states that “it shall be the duty of the local planning authority to make such orders under section 198 [of the Act] as appear to the authority to be necessary in connection with the grant of such permission.”

It is usually appropriate for a TPO to be placed on trees that are in amenity situation and structurally sound. The effect of proposed development on trees protected by TPO ranks as a material consideration, which should be considered by the local authority, when determining a planning application under section 70 of the Town and Country Planning Act 1990.

Where a TPO exists prior to planning permission being granted it should not normally be a block to effective use of a site. It serves to deter damage to or clearance of trees prior to planning permission being granted and provides a means of enforcing their protection during development work.

When planning permission is granted, planning conditions may be imposed to provide for the erection of protective fencing and other measures for ensuring the well-being of trees during development.

Where circumstances require it, local authorities should apply a planning condition requiring the developer to appoint an arboriculturist to oversee the project. This person has a duty to monitor and confirm the implementation and maintenance of tree protection measures, as agreed with the local authority. Planning conditions may be imposed requiring tree planting to be undertaken



as part of a project, and a TPO can be made to apply to such trees once they have been planted so as to achieve their long term protection.

The consent of the local authority is not needed to carry out work on trees required to enable a person to implement a planning permission. Felling etc. cannot be said to be required when planning permission has been given on an outline application only, nor when development is exempt from planning control.

A5.iv Enforcement of protection during development

The effectiveness of measures to protect trees and ensure their healthy survival through development depends on co-operation between site owners, developers, contractors, arboriculturists and local authorities.

If the local authority considers that there has been a breach of planning conditions that provide for the protection of trees, it can serve an “enforcement notice”; if necessary this can be followed by a “stop notice” (Town and Country Planning Act 1990, sections 172, 183, 184). When considering the need for such enforcement, local authorities should consider that trees can be damaged very easily and that survival of trees is most likely to be achieved by maintenance of protection at all times (*Enforcing planning control* [19]; *DoE Circular 10/97— Enforcing planning control: Legislative provisions and procedural requirements*).

A5.v Common law claims and litigation concerning trees

Problems caused by trees on development sites can result in disputes giving rise to common law claims and litigation. Such problems are particularly likely where trees grow across boundaries between properties and cause damage to the property of a third party. For instance, root activity can affect structures other than those on the development site. The crowns, stems and roots of trees may have structural weaknesses, which if they fail, could result in damage to property or injury to people. Leaves and fruit falling from trees, obstruction of light and problems of poisonous plants have all been considered by the courts. Legal advice should be sought where trees may become a problem.

Careful planning and design should minimize the possibility of litigation after completion of the development.

A5.vi Planting adjacent to boundaries

Problems with trees on or close to boundaries have resulted in litigation on many occasions, and the rights and responsibilities of tree owners and their neighbours are, in this respect, well documented in law. The government has published guidance on high hedges (*Hedge height and light loss* — ODPM, 2002) which advises on reasonable standards for evergreen hedges in domestic gardens. Careful consideration of new planting to anticipate both the likely encroachment of roots or overhang of branches of the fully grown tree relative to the site boundary can prevent potential future conflict, while the possibility of direct mechanical damage to boundary fences and walls can be avoided by allowing room for growth and movement.

A5.vii The Register of Parks and Gardens⁶

The Historic Buildings and Ancient Monuments Act 1953 authorises Historic England to compile a register of “gardens and other land” situated in England that appear to be of special historic interest.

The majority of sites registered are, or were originally, the grounds of private houses, but public parks and cemeteries are also important categories.

⁶ Historic England 2015 <https://historicengland.org.uk/advice/hpg/has/pgb/>



The Register was established in 1980 and there are currently around 1,635 sites included. The Register is held by Historic England and can be accessed through the National Heritage List for England.

The decision as to whether a park or garden merits registration is based on an assessment by Historic England as to whether it can be said to be of "special historic interest". Historic England has published criteria against which sites are judged.

Sites are graded I, II* or II along the same lines as listed buildings. 62% are graded as II, 27% are considered of more than special interest and graded II*, 9% are of exceptional interest and are classified as Grade I.

Applications to register new sites and to deregister or amend the entry for an existing registered site are made to Historic England.

A registered park or garden is not protected by a separate consent regime, but applications for planning permission will give great weight to their conservation. The National Planning Policy Framework (NPPF) defines them as designated heritage assets and as such their conservation should be an objective of all sustainable development. Substantial harm to or total loss of a Grade II registered park or garden should be exceptional and for a Grade II* or I registered park or garden such loss or harm should be wholly exceptional.

Local planning authorities are required to consult Historic England when considering an application which affects a Grade I or II* registered site and the Gardens Trust on all applications affecting registered sites of all grades.

The fact that a site is on the Register does not imply that the park or garden is open to the public.

APPENDIX 6. PROTECTED SPECIES AND TREES

A6.i Bats in Trees

Trees provide habitat for bats in the form of roost sites, including maternity and hibernation roost sites.

As a habitat, trees provide foraging for bats, being a medium for invertebrates, and provide three dimensional feeding corridors to and from roosting sites.

The following should be considered when carrying out any works to the trees.

All bat species are specially protected under the Conservation of Habitats and Species Regulations (2010) and under Schedule 5 of the Wildlife and Countryside Act of (1981) (as amended).

As a result it is illegal to:

- Deliberately kill, injure or capture bats.
- Deliberately or recklessly disturb bats.
- Deliberately or recklessly obstruct access to a bat roost.
- Damage or destroy a bat roost.

Fines of up to £5000 *per bat* affected, up to 6 months in prison and confiscation of vehicles used can be imposed for deliberate or reckless disturbance of bats or damage to a roost site.

If works risk recklessly harming bats then the police can order all construction/renovation work to cease until the issue is properly addressed.

Where bats are found to be present, and the tree is to be affected by the works, a Natural England development licence will need to be in place prior to the commencement of works to that tree.

If bats are found at any time during the work E3 Ecology (01434 230982) should be contacted immediately.

A6.ii Nesting/ Breeding Birds

Habitats on site are likely to provide a suitable nesting and foraging resource for birds.

- Early mature to mature trees on site are almost all suitable as nest sites.
- Ornamental planting in conjunction with the trees may provide foraging opportunities in the form of berries and invertebrates.

Under the provisions of the Wildlife and Countryside Act of (1981) (as amended) it is illegal to knowingly disturb any nesting bird.

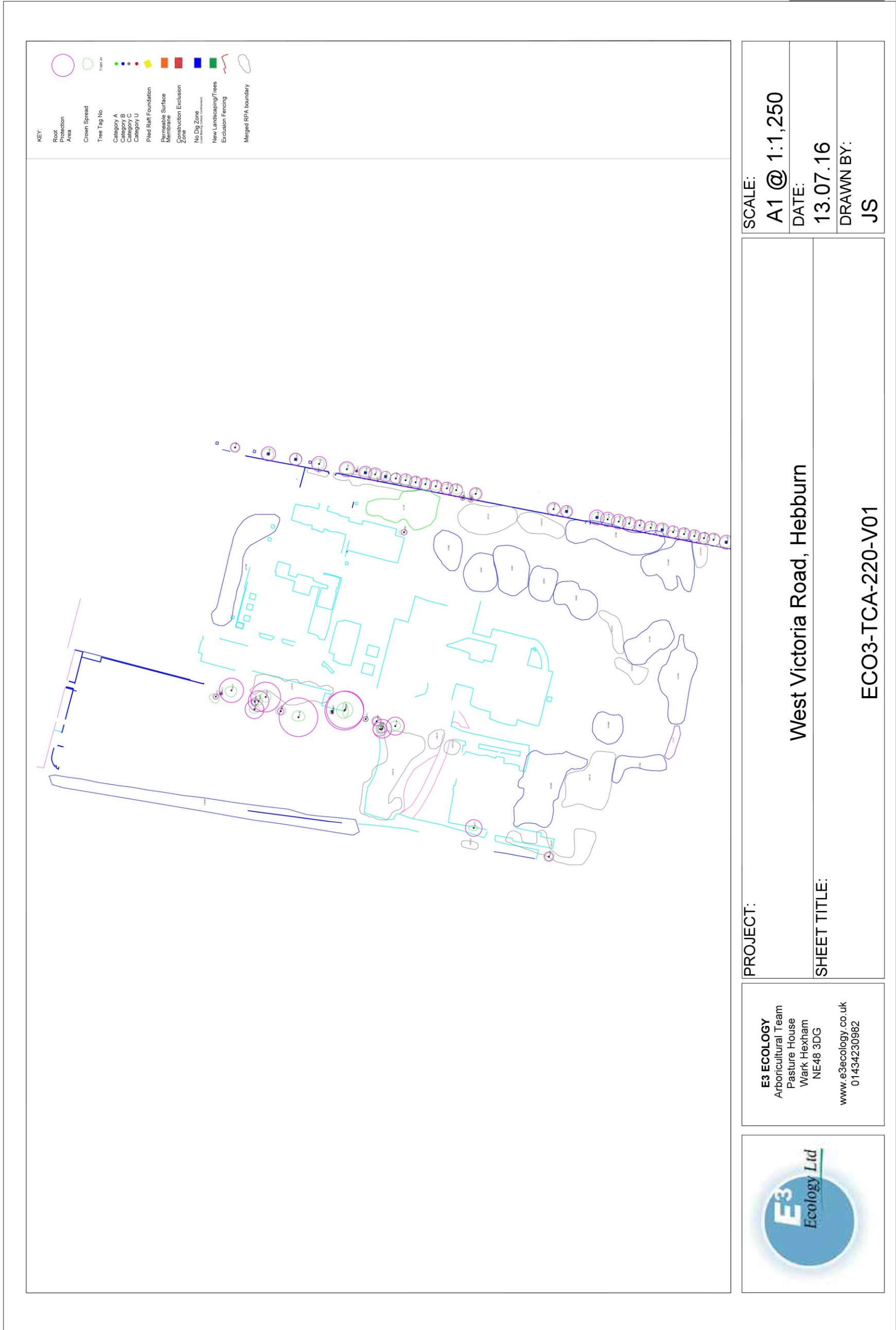
A6.iii Other breeding mammals

Trees provide vital nesting sites for native arboreal mammals, with a contiguous canopy providing an aerial highway to and from foraging sites, providing cover from predators. These factors need to be considered in any landscape design.

Red squirrel are protected under the provisions of the Wildlife and Countryside Act of (1981) (as amended).



APPENDIX 7. TREE CONSTRAINTS ASSESSMENT PLAN (A3)



SCALE:
A1 @ 1:1,250
 DATE:
13.07.16
 DRAWN BY:
JS

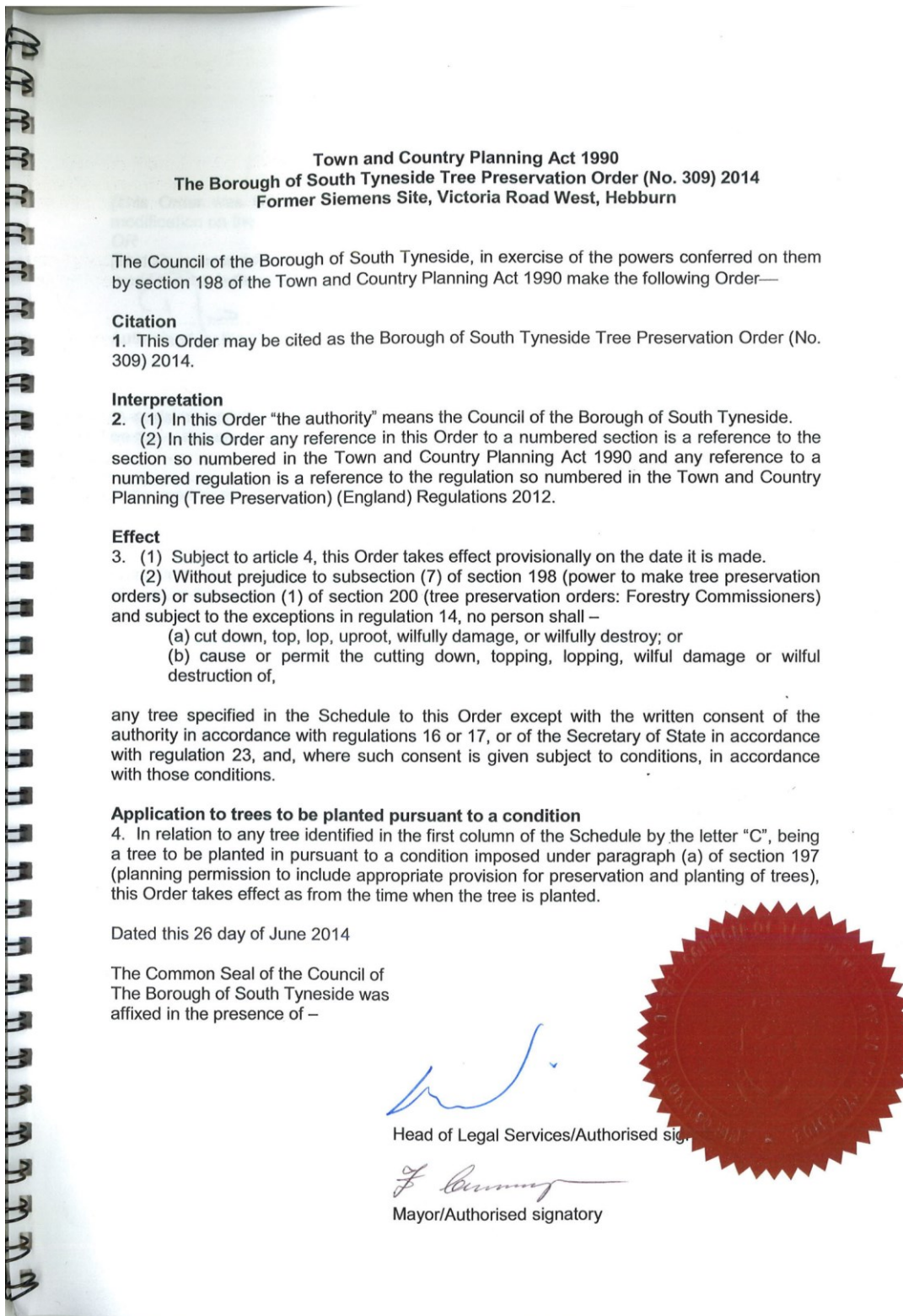
PROJECT:
West Victoria Road, Hebburn
 SHEET TITLE:
ECO3-TCA-220-V01

E3 ECOLOGY
 Arboricultural Team
 Pasture House
 Wark Hexham
 NE48 3DG
 www.e3ecology.co.uk
 01434230982





APPENDIX 8. TPO CITATION





[CONFIRMATION OF ORDER

[This Order was confirmed by the Council of the Borough of South Tyneside without modification on the 6 day of October 2014.]

OR

~~[This Order was confirmed by the Council of the Borough of South Tyneside, subject to the modifications indicated by _____, on the _____ day of _____ 20____]~~

.....
[Authorised by the Council to sign in that behalf]

[DECISION NOT TO CONFIRM ORDER

~~[A decision not to confirm this Order was taken by Council of the Borough of South Tyneside on the _____ day of _____ 20____]~~

.....
[Authorised by the Council to sign in that behalf]

[VARIATION OF ORDER

[This Order was varied by the Council of the Borough of South Tyneside on the _____ day of _____ 20____ under the reference number _____ a copy of which is attached]

.....
[Authorised by the Council to sign in that behalf]

[REVOCATION OF ORDER

[This Order was revoked by the Council of the Borough of South Tyneside on the day of _____ 20____ under the reference number _____]

.....
[Authorised by the Council to sign in that behalf]



The contractor is responsible for the verification of dimensions on the site.
 All dimensions are in millimeters. © Copyright of Rights Reserved South Tyneside Council.

- Tree Schedule**
- G1: 20x Sycamore, 4x Birch, 2x Catalpa
 - G2: 12x Sycamore, 4x Birch, 2x Cherry, 4x Poplar
 - G3: 4x Ash, 20x Sycamore
 - G4: 6x Willow, 10x Poplar
 - G5: 19x Plane, 10x Sycamore, 6x Birch, 11x Willow
 - G6: 5x Cherry, 20x Sycamore, 3x Ash
 - G7: 4x Sycamore, 1x Thunbergia, 1x Willow, 5x Sycamore, 2x Poplar
 - G8: 9x Cherry, 3x Sycamore, 6x Birch
 - G9: 3x Sycamore, 2x Ash, 13x Sycamore
 - G10: 2x Sycamore, 9x Ash
 - G11: 10x Willow, 45x Birch, 14x Sycamore
 - G12: 10x Birch, 2x Pine, 8x Willow, 3x Ash, 1x Sycamore
 - G13: 25x Sycamore, 10x Catalpa, 10x Ash, 1x Malus, 8x Birch, 1x Willow, 2x Ash

Rev	Date	Description	CD/ID
		<i>[Signature]</i>	

South Tyneside Council
 Economic Regeneration

David Diamond - Corporate Director
 Town Hall & Civic Offices, Westcote Road, South Shields, Tyne & Wear, NE33 7PL
 Telephone: (0191) 427 1717 Fax: (0191) 455 7770

Project
 Tree Preservation Order
 No.309
 (2014)

Drawing Title
 Former Siemens Site
 Victoria Road West
 Hebburn

Drawn by AMC Date 29/05/2014
Checked by SMC Date 29/05/2014
Scale 1:2000 Site A3
Project Code Drawing Number

L(97) 261 TPO No.309 (2014)



SCHEDULE

SPECIFICATION OF TREES

Trees specified individually
 (encircled in black on the map)

Reference on map	Description	Situation
None	None	

Trees specified by reference to an area
 (within a dotted black line on the map)

Reference on map	Description	Situation
None	None	

Groups of trees
 (within a broken black line on the map)

Reference on map	Description (including number of trees of each species in the group)	Situation
G1	20 Sycamore, 4 Sorbus, 8 Birch, 2 Crataegus	
G2	12 Sycamore, 4 Sorbus, 2 Cherry, 4 Poplar	
G3	4 Ash, 29 Sorbus	
G4	6 Willow, 10 Poplar	
G5	19 Prunus, 10 Sycamore, 6 Sorbus, 11 Willow	
G6	5 Cherry, 20 Sorbus, 3 Ash	
G7	4 Sorbus thuringiaca, 1 Willow, 5 Sycamore, 2 Poplar	
G8	9 Cherry, 3 Sycamore, 5 Sorbus	
G9	3 Sorbus, 2 Ash, 13 Sycamore	
G10	2 Sorbus, 9 Ash	
G11	10 Willow, 45 Birch, 14 Sorbus	
G12	10 Birch, 2 Pine, 8 Willow, 3 Aspen, 1 Sorbus	
G13	25 Sorbus, 10 Crataegus, 16 Alder, 1 Malus, 8 Birch, 1 Willow, 2 Ash	

Woodlands
 (within a continuous black line on the map)

Reference on map	Description	Situation
None	None	