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# APPENDIX 15B: TREE SURVEY

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RPS

**BRI\_A,  
BRIDGWATER, SOMERSET**

**PRE-DEVELOPMENT  
ARBORICULTURAL SURVEY**

Date 3 August 2011

**Our Ref: JKK6834**

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# QUALITY MANAGEMENT

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Date:	3 August 2011
Project Number/Document Reference:	JKK6834 – BRI-A, EDF Accommodation, Bridgwater

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# 1 INTRODUCTION

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- 1.1 RPS was instructed in July 2011, by EDF Group, to provide pre-development arboricultural advice in relation to proposed development of land at Bath Road, Bridgwater, Somerset.
- 1.2 The purpose of the report is to:
- Record the current condition of the trees found on the site and categorise them using criteria outlined in BS5837 - Trees in Relation to Construction-Recommendations 2005.
  - Provide a Tree Constraints Plan that identifies any constraints to development presented by the trees to include root protection areas for the retained trees as described in BS5837 - Trees in Relation to Construction.
  - Provide guidance detailing arboricultural constraints to development and factors to be considered during the detailed design of the proposed development.
- 1.3 The survey was carried out by Brian Wallis, Technical Director, a Chartered Forester, Chartered Environmentalist, Fellow of the Arboricultural Association and holder of the Professional Diploma in Arboriculture, of RPS Group PLC.

## 2 SITE INFORMATION

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- 2.1 The trees surveyed are located on land at Bath Road, Bridgwater Somerset and can be divided into two distinct areas. Firstly to the south, land consisting of car parking, low rise buildings, sports fields and associated infrastructure, both soft and hard, with the Bridgwater Sports and Social Club. Beyond this an area, previously an industrial manufacturing site, that is now being demolished and decontaminated.
- 2.2 The site is approximately 12.72Ha in size and is centred on Ordnance Survey Grid Reference ST 310 381.
- 2.3 The site is located approximately 1.3km north-east of Bridgwater Town Centre to the west of the A39; Bath Road.
- 2.4 The site has boundaries with Bath Road to the east and with the main line railway to the west and Sydenham Manor to the North.
- 2.5 Vehicular and pedestrian access into the Sports Social Club is gained from Bath Road just north of the railway bridge and the access to the industrial area is currently restricted and only available through a security point to the north of the site again off the Bath Road. No general access can be gained to the industrial site.
- 2.6 The site is not located within a Conservation Area and it is understood that no Tree Preservation Orders apply in respect to trees on the site.

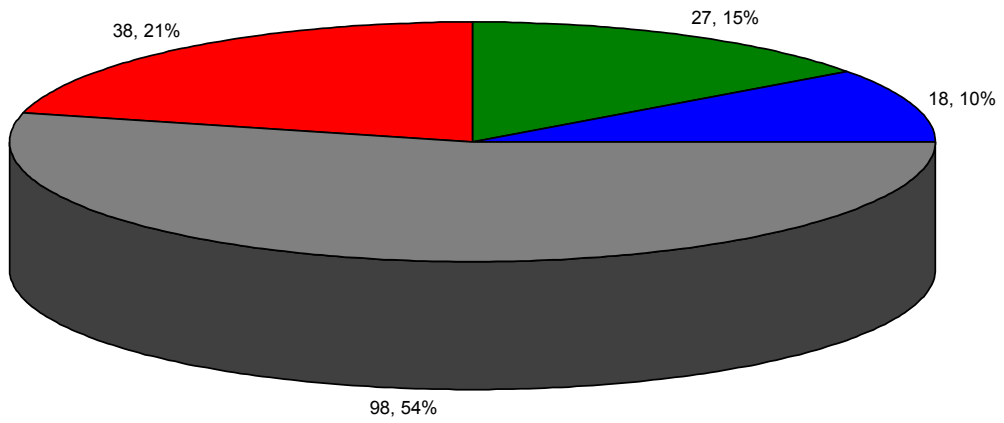
### 3 TREE QUALITY ASSESSMENT

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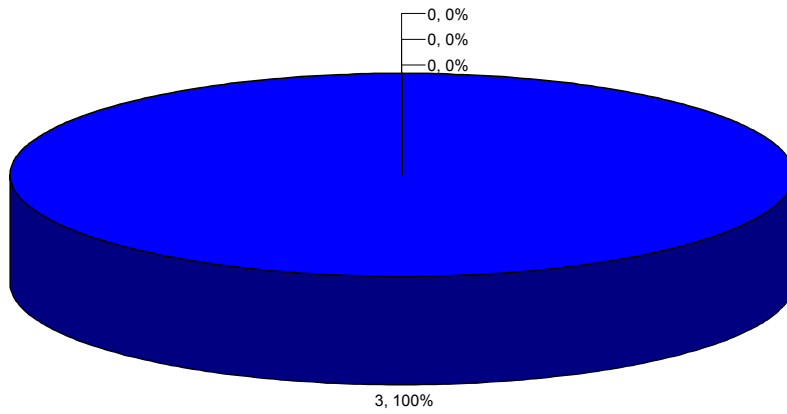
- 3.1 All trees inspected were categorised using BS5837:2005 and the attached Tree Constraints Plan (Figure 1) shows tree positions, numbers and retention categories. Trees have been recorded as individuals and as groups.
- 3.2 Trees have been surveyed as groups where they can be considered as forming a group as they form cohesive features either aerodynamically (i.e. they form a discrete group feature providing companion), culturally (i.e. they are composed of trees of a similar size, age and species subject to the same management) or visually (i.e. where the value of the trees within the group is as a whole rather than individually).
- 3.3 Where trees have been surveyed as groups the details recorded with respect to condition and retention value intend to represent an average tree within the group; however, on occasion, it must be noted that there will be exceptions within any group that do not conform to the typical character of that group.
- 3.4 The initial stage of a tree survey in accordance to BS5837:2005 looks at the trees on the site in terms of life expectancy and condition. Trees are then categorised according to their retention value.
- 3.5 Category A trees are those that have been assessed as being of a high quality and value; significant amendments to the proposed scheme should be considered in preference to their removal. These trees are shown in **Green** on the Tree Constraints Plan.
- 3.6 Category B trees are those that have been assessed as being of a moderate quality and value; amendments to the proposed scheme should be considered in preference to their removal. These trees are shown in **Blue** on the Tree Constraints Plan.
- 3.7 Category C trees are those that have been assessed as being of a low quality and value; the loss of these specimens should not be considered as a constraint to development. These trees are shown in **Grey** on the Tree Constraints Plan
- 3.8 Category R trees are those that have been assessed as having no retention value; these trees should not be a material consideration in the planning process. These trees are shown in **Red** on the Tree Constraints Plan.
- 3.9 Category A, B or C trees are those that should be a material consideration in the planning process whilst category R trees are those which would be lost in the short term for reasons connected to their physiological or structural condition and hence they should not be a consideration in the planning process.
- 3.10 The charts below gives a visual representation of the overall distribution of retention value of the trees and groups surveyed.



### BS5837 Categories – Individual Trees



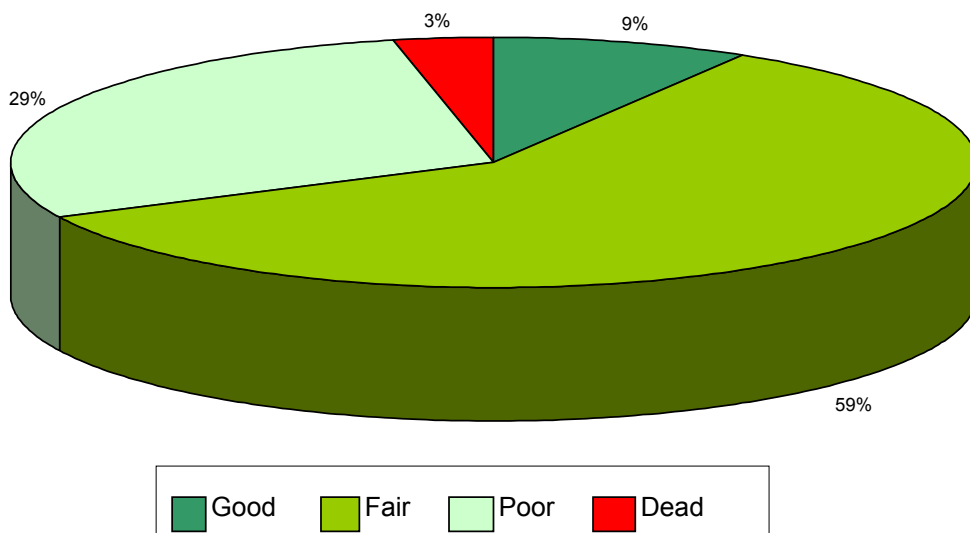
### BS5837 Categories – Tree Groups



### Physiological Condition

- 3.11 Trees considered to be in a good physiological condition are those with crown density and shoot extension growth levels within the expected ranges for their age and species. Generally these trees, subject to being of a suitable structural condition, can be expected to make a lasting contribution to the site. Additionally trees within the good condition class are likely to tolerate changes within their growing environment that occur as a result of development; as such their successful retention will be easier to achieve.
- 3.12 Trees considered to be in a fair physiological condition are those specimens exhibiting lower shoot extension growth and reduced crown density than would typically be expected. These specimens have a lower life expectancy than those within the good condition class and will not tolerate significant changes as a result of development as well as those in the good condition class.
- 3.13 Trees considered to be in a poor physiological condition are those exhibiting crown and shoot dieback and significantly reduced crown density. Trees of a poor physiological condition are not likely to make a lasting contribution to the site and whilst their retention in the short term may be beneficial such retention will only be achievable if the trees are fully protected throughout development as they will not tolerate changes in their growing environment.
- 3.14 The chart below summarises the distribution of tree physiological condition across the site.

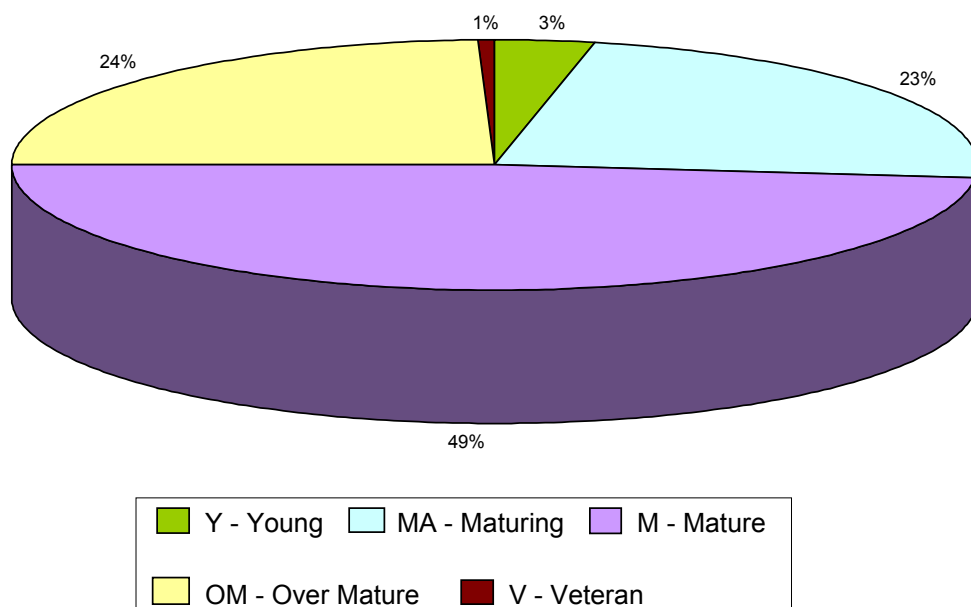
### Physiological Condition



### Age Distribution

- 3.15 Those trees assessed as being young (Y) in age can generally be considered to have significant growth potential. Whilst these specimens are not likely to make a substantial contribution to the landscape character of the site at present they will, if retained, provide succession for the eventual removal of mature or over-mature trees as a result of declining physiological or structural condition.
- 3.16 Maturing trees (MA) will generally make a current contribution to the landscape character and appearance of the site and their retention will provide more immediate succession. These trees will also have significant growth potential.
- 3.17 Mature trees (M) are not considered to have significant future growth potential and have generally reached their maximum expected size for the location. These trees will generally make the highest contribution to the landscape contribution of the site however a tree stock over dominated by mature trees will require careful management to ensure that continuation of canopy cover can be achieved.
- 3.18 Over Mature and Veteran Trees assessed in these classes are generally of a reduced value and useful life expectancy, although they can be viewed as important locally both historically or ecologically. As such if the impact on these trees of the demolition is considered to be significant then adequate and substantial protection will be necessary to ensure protection during the works and that they can withstand the changes to the growing environment. These trees have little growth potential and crown cover should be viewed as being at its maximum.
- 3.19 The chart below shows the distribution of the age class of trees on the site.

**Age Class**



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### Structural Condition

- 3.20 There are variations in the structural condition of the trees surveyed however individual tree condition is largely consistent with expectations for the age, management and species of the tree.
- 3.21 Where there are trees with significant structural defects recommendations have been made to either remove the trees, undertake works to remove hazards or undertake further inspection in order to ascertain what further action should be taken. Many of these recommendations can be found within Table 2 of this report.
- 3.22 One tree of note with respect to its structural condition is the Lombardy Poplar T96, this specimen was noted to have a fungal fruiting body, believed to be of the decay fungi *Ganoderma sp.*, on its main stem. This indicates that internal decay of the trees stem has occurred and it is recommended that tree be felled as the extent of the fruiting bodies on the stem indicates extensive decay within the tree.
- 3.23 Many of the trees on the site are of a particular planting period, especially the Lombardy poplars within the Sports and Social Club areas. These trees have been crown reduced in the past and have since regrown. Creating cut wound points in the crown encourages the wounds to become hosts for decay fungi and dead columns that become attractive to beetles and woodpeckers. Many of the trees are at the end or approaching their useful life expectancy and removal and replacement should be viewed as an appropriate management option in these circumstances.

### Species Distribution

- 3.24 A schedule of the tree species recorded within the survey is included in this report as Appendix 3.

### Visual Amenity

- 3.25 The trees across the site generally make a contribution to the landscape character of the site and those to the boundaries are considered to have a high visual amenity value as they contribute to the street scene and character of the wider area.
- 3.26 The trees within the central area of the site, whilst making a contribution to the sites character, are not significant in the wider context and thus are considered to be of a low to moderate visual amenity value.

### Ecological Value

- 3.27 Generally speaking it is known that trees are of ecological value and that they fulfil an important role in the urban landscape. In particular it should be noted that trees may provide habitat for protected species, notably for birds and bats.

## 4 THE TREE CONSTRAINTS PLAN & DESIGN GUIDANCE

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- 4.1 The Tree Constraints Plan (Figure 1) is designed to show the influence that the trees have upon the site by virtue of their size and position. The plan seeks to act as a design tool that shows both the above and below ground constraints presented by the trees.
- 4.2 The information provided within this section of the report is to assist in the interpretation of the Tree Constraints Plan and aims to ensure that those trees selected for retention can be successfully integrated within the proposed development.

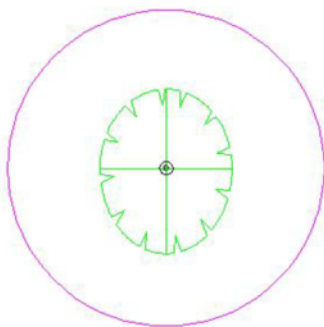
### Tree Retention / Removal

- 4.3 The prioritisation for tree retention should be based upon the guidance contained within BS5837:2005. Category A trees should be seen as the highest priority for retention and category C the lowest.
- 4.4 Category R trees have no retention value and in most circumstances such specimens will not be considered for retention within new development.
- 4.5 When considering the extent of tree retention on site with respect to category C trees priority should be given to the trees that have been included within this category due to their having stem diameters of less than 150mm at 1.5m above ground level, as these specimens are relatively young trees with future potential.

### Below Ground Constraints

#### Root Protection Areas

- 4.6 Root Protection Areas for each tree and group of trees surveyed have been determined in accordance with BS5837:2005 and a schedule of Root Protection Areas is attached to this report as Table 3.
- 4.7 As shown below initial Root Protection Areas (RPA's) for the trees have been plotted onto the Tree Constraints Plan as circles, with the tree located centrally, extending to encompass the area of ground, and thus the rootable soil volume, required for protection.



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- 4.8 It must be noted that there are areas on site where, due to the presence of existing structures and hard surfaces, tree root development will have been restricted as a result of reduced nutrient or moisture availability and a lack of provision for gaseous exchange.
- 4.9 Where possible all development, including new hard landscaping, shall be situated outside of the retained trees designated Root Protection Areas.
- 4.10 As the design and layout of the proposed development is progressed and finalised it is recommended that final Root Protection Areas for the trees are considered and a Tree Protection Plan is produced in conjunction with a detailed Arboricultural Implications Assessment and Method Statement to detail the specific measures for protection of retained trees.

### **Removal of Existing Hard Surfaces and Buildings**

- 4.11 As noted in 4.8 above there are areas on site where buildings and hard surfaces are present within the initial Root Protection Areas of trees.
- 4.12 In addition to the effects that such construction may have upon the shape and location of the Root Protection area of the tree the presence of existing construction within the trees initial RPA's is also of note as removal of such construction, should it be required, has a greater potential to cause harm to the trees due to the need for works in close proximity to them.
- 4.13 Where existing hard surfaces are located within the Root Protection Areas of retained trees care should be taken in their removal and such works should be completed by hand and supervised by an Arboricultural Consultant.
- 4.14 Where existing buildings are located within the Root Protection Areas of retained trees care shall be taken in their demolition and works should be completed from outside the RPA with buildings being pulled back away from the trees. Again it is recommended that such works are supervised by an Arboricultural Consultant.

### **New Hard Surfaces and Buildings within Root Protection Areas**

- 4.15 The construction of new hard surfaces and buildings around trees has the potential to cause soil compaction, to cause root damage and to reduce nutrient and moisture availability to tree roots to the detriment of tree health and vitality.
- 4.16 To minimise harm occurring as a result of such works where installation of new hard surfacing is proposed within the Root Protection Areas of retained trees it must be installed in accordance with no-dig principles. A methodology for new hard surface construction in proximity to trees is attached to this report as Appendix 6.
- 4.17 Should new buildings be proposed within the RPA of an existing tree it will be necessary to take steps to minimise the potential impact to the tree to allow construction. In this respect the guidance contained within BS5837:2005 at paragraph 11.1.2 should be considered. This states "Where it is

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intended to undertake demolition or construction operations within the root protection area, precautions should be taken to maintain the condition and health of the root system and in particular to:

- a) prevent physical damage to the roots during demolition or construction (such as by soil compaction or severing);
- b) make provision for water and oxygen to reach the roots;
- c) Allow for the future growth of the root system;
- d) preserve the soil structure at a suitable bulk density for root growth and function (in particular for soils of a high fines content)."

4.18 To achieve the above criteria a number of solutions can be considered as set out below.

### *Prevention of physical damage to roots*

4.19 To prevent physical damage occurring to roots as a result of severance buildings could be built using a pile and **above** ground beam foundation; thus preventing significant root severance as would occur should trench fill foundations be used.

4.20 Pile locations will have to be selected to minimise the potential for root damage to occur during their installation and exploratory investigation into root location using hand dug trial pits will be required to assist this.

4.21 Alternatively a pile and raft foundation structure could be considered. This again will negate the need for extensive ground works likely to result in root severance. A commercially available solution called Housedeck, which is based upon this principle, is marketed by Abbey Pynford.

4.22 To prevent physical damage of roots occurring as a result of soil compaction it will be necessary to protect the ground within the Root Protection Area during the installation of any foundation and throughout the course of development following this.

4.23 Methods for ground protection are identified within BS5837:2005 and where vehicle movements are required it will be necessary for ground protection measures to be designed by an engineer. Typically it would be appropriate to follow the guidance set out in the enclosed Hard Surface Installation Methodology (Appendix 6) excluding the final surfacing of the construction.

4.24 To minimise the extent of ground protection necessary it will be necessary to plan the operations involving the foundation installation to minimise vehicle movements.

### *Provision for water and oxygen to reach roots*

4.25 The use of a Housedeck or pile and **above** ground beam foundation will allow a void to be left beneath any building constructed thus providing for gaseous circulation and exchange.

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- 4.26 The presence of a void also potentially means that rain water from guttering could be ducted beneath the building; thus allowing water to reach roots.
- 4.27 To control the extent and location of rain water discharge beneath the property a system of ducting similar in nature to that commonly used in street tree planting could be used.

### *Allowance for future root growth*

- 4.28 By constructing any building within a trees RPA in such a way as to prevent root severance and soil compaction and by allowing for continued gaseous and moisture exchange provision will be made for future root growth.

### *Preserve the soil structure at a suitable bulk density for root growth and function*

- 4.29 This can be achieved by ensuring ground protection measures are implemented on site and that vehicle movements within the trees Root Protection Area are minimised.

### **Building Foundations**

- 4.30 Any structures built on the site should comply with the foundation depths for buildings near or adjacent to trees and allow for the potential size of the trees at maturity. The soil types throughout the site will need investigating and appropriate measures taken.
- 4.31 If trees are removed across the site the potential for soil heave should be assessed and foundations designed accordingly. (NHBC Chapter 4.2, 2007)

### **Service Runs**

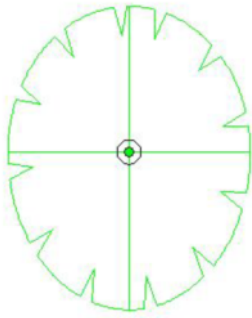
- 4.32 All service runs, utilities and similar infrastructure should take note of trees and allow for working methods that will minimise damage to trees by referring to documents such as NJUG Volume 4 - Guidelines for the planning, installation and maintenance of utility services in proximity to trees. (National Joint Utilities Group 2007)

### **Above Ground Constraints**

#### **Existing Canopy Spreads**

- 4.33 The existing canopy spreads of the trees on site are shown on the Tree Constraints Plan as depicted below.

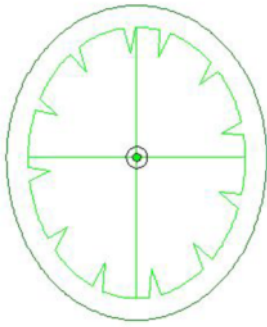




- 4.34 The current spread of the tree is a constraint due to its dominance, size and movement in strong winds. It will typically be unacceptable to design any built development within the current spread of a tree.
- 4.35 Where built development is proposed in close proximity to existing trees consideration should be given to the amount of working space required to allow its construction.
- 4.36 Additionally where development is proposed in close proximity to the existing canopy spread of a tree the likelihood of leaf or fruit fall or an accumulation of honeydew causing nuisance must be given.
- 4.37 It should also be noted that where the Root Protection Areas for retained trees do not extend to the edge of existing canopy spreads it is possible that those parts of the trees extending beyond the RPA fencing may sustain damage during construction.
- 4.38 Where this occurs there are two primary options available to manage and minimise the potential for damage to tree canopies to occur during development and these may be used singularly or in combination.
- 4.39 The first option is to create a Construction Exclusion Zone (CEZ), by the erection of protective fencing, around the full extent of the trees. The second is to undertake pre-development pruning works to the trees to reduce the potential for branch damage to occur.

#### **Future Tree Growth**

- 4.40 Some of the trees surveyed are not yet mature and they have the potential for future growth. Where these are to be retained consideration to their ultimate crown spread should be given as future branch growth may result in interference with proposed development, damage to branches and the need for a tree pruning regime.
- 4.41 To facilitate assessment of future tree growth maximum expected canopy spreads have been marked on the Tree Constraints Plan (Figure 1) as shown below.



- 4.42 The area of mature tree spread is estimated by the arboriculturalist and is their best judgement of mature crown spread based on experience and with regard to the current tree growth observed on the site.
- 4.43 Within the area of maximum branch spread construction activities should be restricted for the long-term health and vigour of the trees. It is considered that within the area of maximum branch spread single storey buildings and the installation of hard surfaces would be an appropriate form of construction, however should car parking be proposed beneath the ultimate spread of trees the likelihood of fruit fall, leaf litter or sap exudate causing a nuisance must be considered.
- 4.44 In addition it is important to consider the likelihood of damage to trees or structures that may be caused by continuous whipping of branches in windy conditions. In such circumstances branches may have to be repeatedly cut back which will introduce wounds in the tree and may spoil its form or shape. In general terms trees should not be retained upon the basis that their ultimate branch spread can be significantly controlled by periodic pruning.

### **Shading**

- 4.45 It should be appreciated during the design of the development that trees can cause shading and obstruction of daylight and sunlight.
- 4.46 It should be recognised that the extent of shading likely will vary with tree species, canopy shape and size, foliage density, time of year and sun elevation and that such shading will often be seasonal and diffuse.

## **5 TREE PROTECTION & PLANNING POLICY**

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### **Tree Protection**

- 5.1 It is understood that none of the trees on the site are protected by a Tree Preservation Order.
- 5.2 The site is not within a Conservation Area.

### **National Policy and Guidance**

- 5.3 BS5837:2005, published in September 2005, provides guidance to the consideration of trees in relationship to proposed development. This document is recognised as best practice when assessing trees on a site that is being considered for development.
- 5.4 In respect of this it can be noted that category A, B or C trees or tree groups are those that should be a material consideration in the planning process whilst category R trees are those which would be lost in the short term for reasons connected to their physiological or structural condition and hence they should not be a consideration in the planning process.

### **Local Policy and Guidance**

- 5.5 The local planning policy and guidance relevant to the site is set out within the saved policies of the Sedgemoor District Local Plan 1991 - 2011.
- 5.6 The primary saved policy of relevance within the Local Plan with respect to trees is:

### **POLICY CNE12**

- 5.7 In considering proposals for development, the Council will seek to protect important trees and hedgerows. Planning permission may be refused where these would not be retained, or acceptably replaced. The Council will also encourage the planting and proper management of new trees and shrubs.

## 6 DESIGN CONSIDERATIONS FOR NEW PLANTING

- 6.1 This section of the report is designed to provide guidance on the factors to be considered for any new tree planting that may be carried out as part of the proposed development.
- 6.2 All new tree planting proposals should take into consideration the future use, layout and design of the site, constraints of soil and climate, the local landscape character and the context of the local surroundings.
- 6.3 As trees generally form the dominant elements of the long-term landscape structure of a site careful consideration of their ultimate size, form, habit, colour, density of foliage and maintenance obligations should be given.
- 6.4 In addition it is important to consider a number of site specific factors regarding the proposed location of new trees. In particular it is inadvisable to plant trees at distances closer to a structure than those shown in the table below (ref: BS5837:2005 Table 3) unless special precautions have been taken. Additionally, on shrinkable soils, account should be taken of the foundation type of existing and proposed nearby structures; new planting should not compromise the structural performance of the foundation.

<b>Minimum distance (m) between young trees or new planting and structures to avoid direct damage to a structure from future tree growth.</b>			
<b>Type of structure</b>	<b>Diameter of stem at 1.5m above ground level at maturity</b>		
	<b>&lt;30cm</b>	<b>30-60cm</b>	<b>&gt;60cm</b>
Drains and underground services			
<1m Deep	0.5	1.5	3
>1m Deep	-	1	2
Masonry boundary walls*	-	0.5	1
	-	(1.0)	(2.0)
In situ concrete paths and drives*	-	0.5	1.5
	(0.5)	(1.0)	(2.5)
Paths and drives with flexible surfaces or paving slabs*	-	0.5	1
	(0.7)	(1.5)	(3.0)
* These distances assume that some movement and minor damage might occur. Guidance on distances which will generally avoid all damage is given in brackets.			

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- 6.5 Where planting new trees adjacent to buildings it is important to also consider the effect of shade and the likely extent and density of the trees crown when fully grown.
- 6.6 Where planting adjacent to roads and within car parks the siting and species selection of the trees should take into account other highway design considerations such as sight lines, lighting schemes, CCTV, underground and overhead service routes and signage. The likelihood of such features to be obstructed or damaged by future tree growth should be considered and consideration to periodic maintenance requirements made.
- 6.7 Trees should not be planted where they might obstruct overhead power lines or cables. In new development underground services should be ducted or otherwise protected (e.g. by the use of root barriers to reduce the risk of root intrusion into service runs) at the time of construction to enable trees to be planted nearby without conflict.
- 6.8 Ground works and preparation for new planting should take into account guidance contained within BS4428 – Code of practice for general landscape operations. In particular the following factors should be considered:

### **Drainage**

- 6.9 New development may have an effect upon the existing drainage pattern and ground water levels of a site. Where ground water conditions are liable to such change expert advice on both drainage and tree selection should be sought.

### **Soil Conditions**

- 6.10 Before any of the landscape operations listed in BS4428 are undertaken and where contamination is apparent soils in areas to be planted should be analysed for structure and content by a specialist laboratory and expert advice taken on remediation measures.
- 6.11 If contaminants (e.g. oil, diesel, toxic materials, heavy metals, etc) are present soils should either be removed to the full depth of new planting and new soil imported or expert advice on remediation measures should be obtained.
- 6.12 Where the structure of the soil is in an unsuitable condition to encourage growth remediation measures, such as the physical decompaction of soil by mechanical plant or compressed air injection, the incorporation of bulky additive materials or the installation of new drainage systems, may be required.

### **Surfaces around Newly Planted Trees**

- 6.13 The settlement of soil within tree pits, which occurs gradually after planting, may cause the overlying surface to move. This may result in the partial collapse or instability of paved surfaces or the disruption of flexible surfaces. The unpaved area around new plantings should, therefore, be of an adequate size to enable surrounding paving to be retained by a conventional edging and foundation. Due allowance should be made for the future growth of stem and roots of a tree when considering the finished dimensions and the design of edge or kerb treatments of tree pits and planted areas.
- 6.14 Where load bearing paving is to be laid over a tree pit it should either:
- be laid when the soil has settled and the level made good; or,
  - be laid on a supported foundation that spans the tree pit; or,
  - incorporate a tree grille with appropriate support around the edges; or
  - utilise structural soil.
- 6.15 In all cases any surface over a tree pit must be permeable to allow adequate moisture infiltration and gaseous exchange.
- 6.16 The use of specialist geo-textiles, cellular confinement systems and structural soils should be considered in the design of any tree pit.
- 6.17 Where there is any risk of a tree pit receiving surface water run off that may be contaminated, for example by rock salt, fuel spillages or other materials harmful to plants, paving should be designed and laid to fall away from the pit.
- 6.18 Maintenance of newly planted trees is of particular importance to ensure their long term survival. A detailed maintenance schedule covering the establishment period should be prepared in conjunction with the landscape design proposals and arrangements made for its implementation.

## 7 CONCLUSIONS

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- 7.1 The retention of the category A and B trees on site should be seen as a priority as these specimens are those most likely to make a continued contribution to the character and appearance of new development.
- 7.2 Where tree removal is required to achieve the proposed development it should be mitigated for by undertaking replacement tree planting.
- 7.3 To achieve a satisfactory juxtaposition between new development and those trees selected for retention the guidance contained within this report should be considered during the detailed design of the site. The design should ensure that, where possible, all buildings and new surfaces are located outside of the retained trees Root Protection Areas.
- 7.4 New development should not only take account of current tree sizes and positions, but also of mature tree size.
- 7.5 Tree protection areas should be established and appropriate protection measures implemented prior to construction. Specifications for erecting protective fencing can be found within Appendix 4.
- 7.6 Guidelines contained within BS5837:2005 Trees in Relation to Construction should be followed when dealing with trees. Working methods and specifications should be followed to limit potential damage to trees throughout the construction period.

## **TABLES**

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**TABLE 1**

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Tree Survey Data

**Key to Inspection Report Form**

Species	Genus and variety
Height	Measured Clinometer Reading or Estimated Height in Metres
Girth (dbh @ 1.5m)	Diameter measured in cms, or estimated, Where multi stemmed below 1.5m the diameter is taken as that just above the root flare
Spread (m)	Canopy height estimated in metres above ground level
Canopy height (m)	Crown Spread, radius estimated in metres
Physiological Condition	Good, Fair, Poor, Dead
Age Class	Y – Young MA – Maturing (Middle Aged) M – Mature OM - Overmature V – Veteran
Useful Life Expectancy (years)	10, 10-20, 20-40, 40+
BS Categorization	See Cascade Appendices 2

## Table 1: Tree Data Schedule

Tree No.	Species	Diameter (mm)*	Height	Crown Spread				Crown Height above Ground	Age Class	Vigour	Structural Condition	Life Expectancy	Comments	BS5837 Category
				N	S	E	W							
1	Prunus avium	440	5	5	5	6	4.5	1	OM	Poor	Poor	<10	Major deadwood present. Crossing branches. Previous branch failure. Branch dieback of Moderate extent. Cavity of Moderate extent at 2 metres. Previous crown reduction. Bark damage. Stem wounds. Hard surfaces within root area. Old pruning wounds evident. Specimen of poor form. Broken branches in crown.  Large scar main stem with decay	R
2	Populus nigra 'Italica'	480	22	4	2	3.5	3	2	OM	Fair	Poor	10-20	Minor deadwood present. Branch dieback of Minor extent. Previous crown reduction. Previously topped at 14m. Epicormic growth on Stem.	C2
3	Populus nigra 'Italica'	400	22	1	0.5	1	1	0	OM	Poor	Poor	10-20	Heavily suppressed form. Minor deadwood present. Branch dieback of Moderate extent. Previously topped at 14m. Epicormic growth on Stem.	C2
4	Populus nigra 'Italica'	520	22	1.5	1	2.5	2	0	OM	Fair	Poor	10-20	Minor deadwood present. Branch dieback of Minor extent. Previously topped at 14m. Epicormic growth on Stem.	C2
5	Populus nigra 'Italica'	480	21	1.5	1	2.5	2	0	OM	Fair	Poor	10-20	Minor deadwood present. Previously topped at 14m. Epicormic growth on Stem.	C2
6	Populus nigra 'Italica'	540	22	1	1.5	3	2	0	OM	Poor	Poor	10-20	Major deadwood present. Previously topped at 14m. Epicormic growth on Stem. Restricted inspection due to Vegetation.  Deadwood in crown	C2
7	Populus nigra 'Italica'	480	22	1	1	2	2	0	OM	Poor	Poor	10-20	Minor deadwood present. Previously topped at 13m. Epicormic growth on Stem. Restricted inspection due to Vegetation. Specimen of poor form.	C2

\* Where the tree is multi-stemmed below 1.5m the diameter is measured above the stem basal flare.

Tree No.	Species	Diameter (mm)*	Height	Crown Spread				Crown Height above Ground	Age Class	Vigour	Structural Condition	Life Expectancy	Comments	BS5837 Category
				N	S	E	W							
8	Populus nigra 'Italica'	460	22	1.5	1.5	2.5	2.5	0	OM	Fair	Fair	10-20	Minor deadwood present. Previously topped at 13m. Epicormic growth on Stem. Restricted inspection due to Vegetation.	C2
9	Populus nigra 'Italica'	420	20	0.5	0.5	1.5	1	0	OM	Poor	Poor	<10	Minor deadwood present. Branch dieback of Moderate extent. Previously topped at 14m. Epicormic growth on Stem.	R
10	Populus nigra 'Italica'	500	22	2	1.5	3	3	0	OM	Fair	Fair	10-20	Minor deadwood present. Previously topped at 14m. Epicormic growth on Stem. Restricted inspection due to Vegetation. No Access Estimated Value	C2
11	Populus nigra 'Italica'	440	21	1.5	0.5	2.5	1.5	0	OM	Fair	Poor	10-20	Minor deadwood present. Branch dieback of Minor extent. Cavity of Major extent at 1.5 metres. Previously topped at 14m. Epicormic growth on Stem. Cavity in large branch 1m from ground	C2
12	Populus nigra 'Italica'	520	23	1	1	3.5	1.5	0	OM	Fair	Poor	10-20	Major deadwood present. Previously topped at 14m. Epicormic growth on Stem. Large section of dead stem in crown	C2
13	Populus nigra 'Italica'	500	22	2	1.5	3.5	2.5	0	OM	Poor	Poor	10-20	Major deadwood present. Previously topped at 14m. Epicormic growth on Stem. Restricted inspection due to Vegetation. No Access Estimated Value	C2
14	Populus nigra 'Italica'	450	22	1	1.5	2.5	1.5	0	OM	Poor	Poor	10-20	Minor deadwood present. Branch dieback of Moderate extent. Previously topped at 14m. Epicormic growth on Stem. Restricted inspection due to Vegetation. No Access Estimated Value	C2
15	Populus nigra 'Italica'	450	22	0.5	0.5	2	1	0	OM	Poor	Poor	10-20	Major deadwood present. Branch dieback of Moderate extent. Previously topped at 15m. Epicormic growth on Stem. Restricted inspection due to Vegetation. No Access Estimated Value	C2

\* Where the tree is multi-stemmed below 1.5m the diameter is measured above the stem basal flare.

Tree No.	Species	Diameter (mm)*	Height	Crown Spread				Crown Height above Ground	Age Class	Vigour	Structural Condition	Life Expectancy	Comments	BS5837 Category
				N	S	E	W							
16	Populus nigra 'Italica'	360	20	0.5	0.5	1.5	0.5	0	OM	Poor	Poor	<10	Heavily suppressed form. Major deadwood present. Previously topped at 14m. Epicormic growth on Stem. Restricted inspection due to Ivy. In decline	R
17	Populus nigra 'Italica'	500	23	2	1.5	3.5	2	0	OM	Fair	Fair	10-20	Major deadwood present. Previously topped at 14m. Epicormic growth on Stem. Restricted inspection due to Ivy. Estimated stem value	C2
18	Populus nigra 'Italica'	450	20	1	1	2.5	1.5	0	OM	Poor	Poor	10-20	Bifurcate stem at 2.5m. Minor deadwood present. Restricted inspection due to Ivy. Estimated Stem Value	C2
19	Populus nigra 'Italica'	450	21	1	1	3	0.5	0	OM	Poor	Poor	10-20	Major deadwood present. Branch dieback of Moderate extent. Previously topped at 15m. Epicormic growth on Stem. Restricted inspection due to Ivy. Estimated Stem Value	C2
20	Populus nigra 'Italica'	500	22	1	1	2.5	1	0	OM	Poor	Poor	10-20	Major deadwood present. Branch dieback of Moderate extent. Previously topped at 14m. Epicormic growth on Stem. Restricted inspection due to Vegetation. Ivy on main stem	C2
21	Populus nigra 'Italica'	450	22	1	1	3	1	0	OM	Fair	Poor	10-20	Major deadwood present. Branch dieback of Moderate extent. Previously topped at 14m. Epicormic growth on Stem. Restricted inspection due to Vegetation. No Access Estimated Value	C2
22	Populus nigra 'Italica'	550	22	1.5	2	3	1.5	0	OM	Fair	Fair	10-20	Minor deadwood present. Previously topped at 14m. Epicormic growth on Stem. Restricted inspection due to Vegetation. No Access Estimated Value, ivy on main stem	C2
23	Populus nigra 'Italica'	500	22	1	1	3.5	1	0	OM	Fair	Fair	10-20	Minor deadwood present. Previously topped at 14m. Epicormic growth on Stem. Restricted inspection due to Vegetation. Ivy on main stem	C2

\* Where the tree is multi-stemmed below 1.5m the diameter is measured above the stem basal flare.

Tree No.	Species	Diameter (mm)*	Height	Crown Spread				Crown Height above Ground	Age Class	Vigour	Structural Condition	Life Expectancy	Comments	BS5837 Category
				N	S	E	W							
24	Populus nigra 'Italica'	390	21	0.5	0.5	2	0.5	0	OM	Fair	Poor	10-20	Minor deadwood present. Previously topped at 14m. Epicormic growth on Stem. Restricted inspection due to Vegetation. Ivy on main stem	C2
25	Populus nigra 'Italica'	650	23	1.5	4.5	2.5	2.5	0	OM	Fair	Poor	10-20	Major deadwood present. Previously topped at 14m. Previous pollarded at 5m, Epicormic growth on Stem. Restricted inspection due to Vegetation. Estimated Stem Value, ivy on main stem	C2
26	Populus nigra 'Italica'	450	22	1.5	2	0.5	2.5	0	OM	Fair	Poor	10-20	Minor deadwood present. Previously topped at 14m. Epicormic growth on Stem. Restricted inspection due to Vegetation. No Access Estimated Value	C2
27	Populus nigra 'Italica'	400	14	0	0.5	0	1.5	0	OM	Dead	Poor	<10	Major deadwood present. Previously topped at 14m. Specimen is of no long term potential. Restricted inspection due to Vegetation. Woodpecker holes upper stem, large section upper crown dead	R
28	Populus nigra 'Italica'	450	19	1	1.5	0.5	1.5	0	OM	Poor	Poor	<10	Major deadwood present. Branch dieback of Major extent. Previously topped at 14m. Epicormic growth on Crown. Specimen is of no long term potential. Restricted inspection due to Vegetation. In sEstimated Valuesere decline, No Access Estimated Value	R
29	Populus nigra 'Italica'	430	19	0.5	1	0.5	1	0	OM	Poor	Poor	<10	Major deadwood present. Previously topped at 14m. Specimen is of no long term potential. Ivy on main stem	R
30	Populus nigra 'Italica'	390	19	0	2	0	2	0	OM	Poor	Poor	<10	Major deadwood present. Branch dieback of Moderate extent. Previously topped at 14m. Restricted inspection due to Vegetation. In decline	R
31	Populus nigra 'Italica'	260	19	0.5	0.5	0.5	0.5	0	OM	Poor	Poor	<10	Heavily suppressed form. Minor deadwood present. Previously topped at m. Epicormic growth on Stem. Restricted inspection due to Ivy. Bird box on main stem, In decline	R

\* Where the tree is multi-stemmed below 1.5m the diameter is measured above the stem basal flare.

Tree No.	Species	Diameter (mm)*	Height	Crown Spread				Crown Height above Ground	Age Class	Vigour	Structural Condition	Life Expectancy	Comments	BS5837 Category
				N	S	E	W							
32	Populus nigra 'Italica'	430	20	1.5	2	1.5	2	0	OM	Fair	Poor	10-20	Minor deadwood present. Previously topped at 14m. Epicormic growth on Stem. Restricted inspection due to Ivy. Woodpecker hole in dead section of stem in crown	C2
33	Populus nigra 'Italica'	370	18	2	1.5	1.5	2.5	0	OM	Poor	Poor	<10	Major deadwood present. Branch dieback of Moderate extent. Previously topped at 14m. Epicormic growth on Stem. Restricted inspection due to Ivy. In decline	R
34	Populus nigra 'Italica'	480	22	1.5	2.5	3	1.5	0	OM	Fair	Poor	10-20	Major deadwood present. Branch dieback of Moderate extent. Previously topped at 14m. Epicormic growth on Stem. Restricted inspection due to Ivy. Woodpecker hole in upper dead stem	C2
35	Populus nigra 'Italica'	500	23	1.5	2.5	2	2	0	OM	Fair	Poor	10-20	Minor deadwood present. Previously topped at 14m. Epicormic growth on Stem. Restricted inspection due to Ivy.	C2
36	Crataegus monogyna	300	6	2.5	3	3	1.5	0	OM	Fair	Poor	10-20	Multi-stemmed. Restricted inspection due to Vegetation.	C1
37	Salix alba	800	19	0	6	6	4	1	OM	Fair	Poor	10-20	Asymmetrical form. Multi-stemmed. Major deadwood present. Previous branch failure. Included bark at branch union. Previous pollarded at 1m, Stem wounds. Restricted inspection due to Ivy. Broken branches in crown.	C2
38	Salix alba	650	16	2.5	7.5	3.5	4	0	OM	Fair	Poor	10-20	Multi-stemmed. Minor deadwood present. Previous branch failure. Included bark at branch union. Previous pollarded at 1m, Restricted inspection due to Ivy.	C2
39	Acer negundo	400	15	4	3	4.5	4	0	OM	Poor	Poor	<10	Asymmetrical form. Heavily suppressed form. Multi-stemmed. Major deadwood present. Included bark at branch union. Branch dieback of Moderate extent. Bark damage. Restricted inspection due to Ivy. In decline	R

\* Where the tree is multi-stemmed below 1.5m the diameter is measured above the stem basal flare.

Tree No.	Species	Diameter (mm)*	Height	Crown Spread				Crown Height above Ground	Age Class	Vigour	Structural Condition	Life Expectancy	Comments	BS5837 Category
				N	S	E	W							
40	Populus x canadensis	390	18	0	0	0	0	0	OM	Poor	Poor	<10	Major deadwood present. Branch dieback of Moderate extent. Epicormic growth on Stem. Restricted inspection due to Ivy.	R
41	Populus x canadensis	470	21	1.5	3.5	3	5	1.5	OM	Poor	Poor	<10	Asymmetrical form. Major deadwood present. Branch dieback of Moderate extent. Restricted inspection due to Ivy. In decline	R
42	Populus x canadensis	430	19	1.5	1.5	2	4.5	1.5	OM	Poor	Poor	<10	Major deadwood present. Branch dieback of Moderate extent. Restricted inspection due to Ivy. In decline	R
43	Populus x canadensis	500	19	2	3.5	3	5.5	1.5	OM	Poor	Poor	<10	Major deadwood present. Previous branch failure. Branch dieback of Moderate extent. Epicormic growth on Stem. Restricted inspection due to Ivy. In decline	R
44	Populus x canadensis	190	11	0.5	0.5	0.5	0.5	0	OM	Dead	Poor	<10	Dead standing	R
45	Populus x canadensis	480	19	1	4.5	2.5	6	3	OM	Poor	Poor	10-20	Major deadwood present. Previous branch failure. Branch dieback of Moderate extent. In decline	C2
46	Populus x canadensis	480	19	3.5	3	6	8	0	OM	Poor	Poor	10-20	Major deadwood present. In decline	C2
47	Populus x canadensis	480	19	1	3.5	8	6	0	OM	Fair	Poor	10-20	Bifurcate stem at 4m. Major deadwood present. Branch dieback of Moderate extent. Signs of decline	C2
48	Populus x canadensis	440	19	2.5	3	5	4	2	OM	Poor	Poor	10-20	Bifurcate stem at 2.5m. Major deadwood present. Branch dieback of Moderate extent. Hard surfaces within root area. Restricted inspection due to Ivy. In decline	C2

\* Where the tree is multi-stemmed below 1.5m the diameter is measured above the stem basal flare.



Tree No.	Species	Diameter (mm)*	Height	Crown Spread				Crown Height above Ground	Age Class	Vigour	Structural Condition	Life Expectancy	Comments	BS5837 Category
				N	S	E	W							
49	Populus x canadensis	760	23	1.5	3	9	4.5	1	OM	Poor	Poor	10-20	Bifurcate stem at 4m. Major deadwood present. Branch dieback of Moderate extent. Epicormic growth on Crown. Hard surfaces within root area. Restricted inspection due to Ivy. Stem leaning to East by 20 degrees.  In decline	C2
50	Populus x canadensis	950	23	7.5	3.5	8	8	1	OM	Fair	Poor	10-20	Bifurcate stem at 2m. Multi-stemmed. Hard surfaces within root area. Restricted inspection due to Ivy. Stem leaning to East by 10 degrees.  In decline	C2
51	Acer pseudoplatanus	370	17	2	3.5	4	3	0.5	MA	Fair	Fair	20-40	Major deadwood present. Restricted inspection due to Ivy.  Tree hung up in canopy	B2
52	Salix alba	800	17	2.5	1.5	1.5	4	0	OM	Poor	Poor	10-20	Asymmetrical form. Major deadwood present. Previous branch failure. Branch dieback of Moderate extent. Previous pollarded at 1.4m, Epicormic growth on Stem. Restricted inspection due to Ivy. Specimen of poor form.  Major decline in upper crown	C2
53	Tilia sp.	180	8	1.5	3.5	4	2.5	0.5	Y	Fair	Fair	10-20	Minor deadwood present.  Part of adjacent tree in crown	C1
54	Acer negundo	430	13	0	9	4.5	3.5	1	MA	Fair	Poor	<10	Asymmetrical form. Bifurcate stem at 2m. Partial root plate failure evident. Stem leaning to South by 30 degrees.  leaning into adjacent trees	R
55	Salix alba	1000	22	8	7	8	4	1	OM	Fair	Fair	10-20	Multi-stemmed. Minor deadwood present. Previous branch failure. Included bark at branch union. Previously topped at 15m. Previous pollarded at 1m, Restricted inspection due to Ivy. Broken branches in crown.  Multiple decay points in crown	C3
56	Acer pseudoplatanus	170	5	4	0	3.5	2.5	1	MA	Poor	Poor	10-20	Asymmetrical form. Heavily suppressed form. Minor deadwood present.	C2
57	Acer pseudoplatanus	460	20	4.5	3.5	4	1.5	1	M	Fair	Fair	20-40	Asymmetrical form. Bifurcate stem at 2.5m. Minor deadwood present. Exposed / damaged surface roots.  Mower damage to surface roots	B2

\* Where the tree is multi-stemmed below 1.5m the diameter is measured above the stem basal flare.

Tree No.	Species	Diameter (mm)*	Height	Crown Spread				Crown Height above Ground	Age Class	Vigour	Structural Condition	Life Expectancy	Comments	BS5837 Category
				N	S	E	W							
58	Prunus avium	220	11	2.5	3	3.5	1.5	1	Y	Fair	Poor	10-20	Crossing branches. Previous branch failure. Included bark at branch union. Previously topped at 3m. Specimen is of no long term potential. Broken branches in crown.	C2
59	Prunus cerasifera	120	3	0.5	1	2.5	0	0.5	MA	Fair	Poor	10-20	Heavily suppressed form. Multi-stemmed. Included bark at stem unions. Specimen is of no long term potential.	C2
60	Acer pseudoplatanus	250	10	3	3	3	3	1	MA	Fair	Fair	40+		A2
61	Malus tschonoskii	200	4	2.5	2.5	3	3	1	MA	Fair	Fair	10-20	Minor deadwood present. Small fruit tree	C1
62	Liquidamber styraciflua	300	10	2.5	3.5	2	3	0	MA	Fair	Fair	20-40	Minor deadwood present. Off site tree. Tree not plotted on topographical survey. Restricted inspection due to No Access. Located in neighbouring garden	B2
63	Sorbus aucuparia	130	4	2.5	1.5	2.5	1.5	1.5	MA	Poor	Poor	<10	Minor deadwood present. Branch dieback of Moderate extent. Signs of decline, container directly adjacent	R
64	Sorbus aucuparia	100	4	0	0	0	0	0	MA	Fair	Fair	10-20	Minor deadwood present. Possible damage to tree by adjacent storage container	C1
65	Crataegus monogyna	310	6	0	0	0	0	0	MA	Fair	Fair	20-40	Multi-stemmed. Minor deadwood present. Hard surfaces within root area.	B1
66	Malus tschonoskii	210	6	2.5	3	2	1.5	2	MA	Poor	Poor	<10	Minor deadwood present. Previous branch failure. Stem wounds. Stem cavity of Moderate extent. Epicormic growth on Stem. In decline	R
67	Sorbus aucuparia	300	7	2	2.5	2	2.5	2	M	Fair	Poor	10-20	Multi-stemmed. Minor deadwood present. Bark damage. Stem wounds. Stem cavity of Moderate extent. Decay in stem cavity	C2

\* Where the tree is multi-stemmed below 1.5m the diameter is measured above the stem basal flare.

Tree No.	Species	Diameter (mm)*	Height	Crown Spread				Crown Height above Ground	Age Class	Vigour	Structural Condition	Life Expectancy	Comments	BS5837 Category
				N	S	E	W							
68	Malus tschonoskii	220	4	2	2.5	2	3	2	MA	Poor	Poor	10-20	Minor deadwood present. Epicormic growth on Stem.	C2
69	Malus tschonoskii	220	5	0	0	0	0	0	MA	Poor	Poor	<10	Major deadwood present. Previous branch failure. Branch dieback of Moderate extent. Strimmer damage. Basal cavity of Moderate extent. Old pruning wounds evident. Broken branches in crown. Part of crown dead	R
70	Crataegus monogyna	340	6	3	3	2.5	2.5	1.5	M	Poor	Poor	10-20	Multi-stemmed. Minor deadwood present. Stem leaning to North by 10 degrees.	C2
71	Crataegus monogyna	280	5	3	3	2.5	2.5	1.5	M	Poor	Poor	<10	Minor deadwood present. Branch dieback of Moderate extent. Tree in decline	R
72	Crataegus crus-galli	250	7	4	3.5	2.5	4	1.5	M	Fair	Fair	20-40	Minor deadwood present. Previous branch failure. Old pruning wounds evident.	B2
73	Sorbus aucuparia	130	5	1.5	0.5	1.5	1.5	2	MA	Poor	Poor	<10	Multi-stemmed. Minor deadwood present. Bark damage.	R
74	Malus tschonoskii	250	5	3.5	4	2.5	2.5	1.5	MA	Fair	Poor	10-20	Minor deadwood present. Crossing branches. Old pruning wounds evident. Broken branches in crown.	C2
75	Sorbus aucuparia	240	4	1.5	1.5	0.5	2	1.5	M	Poor	Poor	<10	Asymmetrical form. Major deadwood present. Previous branch failure. Stem wounds. Specimen of poor form. Broken branches in crown.	R
76	Malus sylvestris	100	3	2	1.5	1.5	2	0.5	Y	Fair	Poor	<10	Multi-stemmed. Stem wounds. Strimmer damage. Wound to base with decay	R
77	Malus tschonoskii	160	3	1.5	2.5	1.5	2.5	1.5	MA	Fair	Fair	10-20	Crossing branches. Strimmer damage. Epicormic growth on Crown. Old pruning wounds evident.	C2

\* Where the tree is multi-stemmed below 1.5m the diameter is measured above the stem basal flare.

Tree No.	Species	Diameter (mm)*	Height	Crown Spread				Crown Height above Ground	Age Class	Vigour	Structural Condition	Life Expectancy	Comments	BS5837 Category
				N	S	E	W							
78	Malus tschonoskii	260	5	3	3	2.5	2	0.5	M	Fair	Poor	10-20	Crossing branches. Previous branch failure. Epicormic growth on Base and Stem. Old pruning wounds evident.	C2
79	Sorbus aucuparia	60	3	1.5	0.5	1	1	1	Y	Poor	Poor	<10	Branch dieback of Moderate extent. Strimmer damage.	R
80	Prunus sp.	150	3	0.5	2.5	2.5	1.5	1.5	MA	Poor	Poor	<10	Crossing branches. Bark damage. Epicormic growth on Base. Old pruning wounds evident.	R
81	Prunus avium	260	4	2.5	3.5	1.5	2.5	1.5	M	Fair	Poor	10-20	Minor deadwood present. Crossing branches. Included bark at branch union. Old pruning wounds evident.	C2
82	Malus tschonoskii	170	4	1.5	2	1.5	1.5	1	MA	Fair	Fair	10-20	Minor deadwood present. Crossing branches. Old pruning wounds evident.	C2
83	Prunus avium	280	6	4	3	2.5	1	1.5	M	Poor	Poor	<10	Major deadwood present. Crossing branches. Old pruning wounds evident. Broken branches in crown. Stem leaning to East by 20 degrees. Decay in mainstem, in decline	R
84	Laburnum anagyroides	150	3	1.5	1	1.5	1.5	0.5	Y	Poor	Poor	<10	Trifurcate stem at 1m. Crossing branches. Stem wounds. Strimmer damage. Stem leaning to East by 15 degrees. Large scar to main stem with associated decay	R
85	Malus tschonoskii	320	5	3.5	2.5	2	3.5	1	M	Poor	Poor	10-20	Minor deadwood present. Crossing branches. Old pruning wounds evident. Broken branches in crown.	C2
86	Acer pseudoplatanus	380	11	2.5	3	2.5	2	1.5	MA	Fair	Fair	20-40	Multi-stemmed. Crossing branches. Old pruning wounds evident. Purple leaved variety	B2
87	Crataegus monogyna	240	7	2.5	1.5	2	2.5	1	MA	Fair	Fair	20-40	Crossing branches. Epicormic growth on Stem.	B2

\* Where the tree is multi-stemmed below 1.5m the diameter is measured above the stem basal flare.

Tree No.	Species	Diameter (mm)*	Height	Crown Spread				Crown Height above Ground	Age Class	Vigour	Structural Condition	Life Expectancy	Comments	BS5837 Category
				N	S	E	W							
88	Prunus avium	320	6	3	2.5	2.5	4	1	M	Fair	Poor	10-20	Minor deadwood present. Crossing branches. Stem wounds. Old pruning wounds evident. Stem leaning to North by 5 degrees. Callusing wound to major limb with decay	C2
89	Prunus cerasifera 'Atropurpurea'	240	5	2.5	2.5	3	2	1.5	M	Poor	Poor	10-20	Multi-stemmed. Minor deadwood present. Crossing branches. Branch dieback of Moderate extent. Epicormic growth on Base and Stem. Old pruning wounds evident.	C2
90	Prunus sp.	140	3	1	1	1	1	0	MA	Dead	Poor	<10		R
91	Prunus cerasifera 'Atropurpurea'	0	4	2	2.5	3	3	1	MA	Poor	Poor	10-20	Multi-stemmed. Crossing branches. Epicormic growth on Stem. Old pruning wounds evident.	C2
92	Liquidambar styraciflua	160	3	2	1	1	1	0	MA	Dead	Poor	<10	Multi-stemmed.	R
93	Malus tschonoskii	130	3	3.5	0	2	1	1	MA	Poor	Poor	<10	Asymmetrical form. Heavily suppressed form. Major deadwood present. Crossing branches. Branch dieback of Moderate extent.	R
94	Acer platanoides	470	11	4	4	6	3.5	0.5	MA	Fair	Fair	20-40	Minor deadwood present. Crossing branches. Included bark at branch union. Old pruning wounds evident.	B2
95	Prunus sp.	130	3	1	1	1	0.5	0	Y	Dead	Poor	<10		R
96	Populus nigra 'Italica'	900	30	4	2.5	4	3.5	0	OM	Fair	Fair	<10	Bifurcate stem at 3m. Minor deadwood present. Epicormic growth on Stem. Ganoderma sp. at base and main stem	R
97	Populus nigra 'Italica'	600	30	0.5	0.5	3	2.5	0	OM	Fair	Poor	10-20	Multi-stemmed. Bark damage. Restricted inspection due to Ivy.	C2

\* Where the tree is multi-stemmed below 1.5m the diameter is measured above the stem basal flare.

Tree No.	Species	Diameter (mm)*	Height	Crown Spread				Crown Height above Ground	Age Class	Vigour	Structural Condition	Life Expectancy	Comments	BS5837 Category
				N	S	E	W							
98	Populus nigra 'Italica'	600	30	0.5	0.5	3	2.5	0	OM	Fair	Poor	10-20	Minor deadwood present. Bark damage. Epicormic growth on Stem. Restricted inspection due to Vegetation.	C2
99	Populus nigra 'Italica'	800	30	0.5	0.5	3	2.5	0	OM	Fair	Poor	10-20	Minor deadwood present. Bark damage. Epicormic growth on Stem. Restricted inspection due to Vegetation.	C2
100	Populus nigra 'Italica'	700	30	0.5	0.5	3	2.5	0	OM	Fair	Poor	10-20	Bifurcate stem at 3m. Minor deadwood present. Bark damage. Epicormic growth on Stem. Restricted inspection due to Vegetation.	C2
101	Populus nigra 'Italica'	750	30	0.5	0.5	3	2.5	0	OM	Fair	Poor	10-20	Multi-stemmed. Minor deadwood present. Bark damage. Epicormic growth on Stem. Restricted inspection due to Vegetation.	C2
102	Populus nigra 'Italica'	650	30	0.5	0.5	3	2.5	0	OM	Fair	Poor	10-20	Multi-stemmed. Minor deadwood present. Bark damage. Epicormic growth on Stem. Restricted inspection due to Vegetation.	C2
103	Populus nigra 'Italica'	550	30	0.5	0.5	3	2.5	0	OM	Fair	Poor	10-20	Multi-stemmed. Minor deadwood present. Bark damage. Epicormic growth on Stem. Restricted inspection due to Vegetation.	C2
104	Populus nigra 'Italica'	550	28	0.5	0.5	2	2	0	OM	Fair	Poor	10-20	Multi-stemmed. Major deadwood present. Bark damage. Epicormic growth on Stem. Restricted inspection due to Vegetation.	C2
105	Populus nigra 'Italica'	750	30	0.5	0.5	2	2	0	OM	Fair	Poor	10-20	Multi-stemmed. Major deadwood present. Bark damage. Epicormic growth on Stem. Restricted inspection due to Vegetation.	C2
106	Populus nigra 'Italica'	650	30	0.5	0.5	2	2	0	OM	Fair	Poor	10-20	Multi-stemmed. Minor deadwood present. Bark damage. Epicormic growth on Stem. Restricted inspection due to Vegetation.	C2

\* Where the tree is multi-stemmed below 1.5m the diameter is measured above the stem basal flare.

Tree No.	Species	Diameter (mm)*	Height	Crown Spread				Crown Height above Ground	Age Class	Vigour	Structural Condition	Life Expectancy	Comments	BS5837 Category
				N	S	E	W							
107	Populus nigra 'Italica'	700	30	0.5	0.5	2	2	0	OM	Fair	Poor	10-20	Multi-stemmed. Major deadwood present. Bark damage. Epicormic growth on Stem. Restricted inspection due to Vegetation.	C2
108	Populus nigra 'Italica'	500	24	0.5	0.5	3	3	0	OM	Fair	Poor	10-20	Multi-stemmed. Major deadwood present. Bark damage. Epicormic growth on Stem. Restricted inspection due to Vegetation. Growing from old stump.	C2
109	Populus nigra 'Italica'	650	30	0.5	0.5	3	3	0	OM	Fair	Poor	10-20	Major deadwood present. Bark damage. Epicormic growth on Stem. Restricted inspection due to Vegetation. Growing from old stump.	C2
110	Populus nigra 'Italica'	650	30	0.5	0.5	6	3	0	OM	Fair	Poor	10-20	Multi-stemmed. Major deadwood present. Bark damage. Epicormic growth on Stem. Restricted inspection due to Vegetation. Old pruning wounds evident. Growing from old stump. Stem leaning to East by 10 degrees.	C2
111	Populus nigra 'Italica'	600	30	0.5	0.5	3	3	0	OM	Fair	Poor	10-20	Major deadwood present. Bark damage. Epicormic growth on Stem. Restricted inspection due to Vegetation. Growing from old stump.	C2
112	Populus nigra 'Italica'	700	30	0.5	0.5	3	3	0	OM	Fair	Poor	10-20	Major deadwood present. Bark damage. Epicormic growth on Stem. Restricted inspection due to Vegetation. Growing from old stump.	C2
113	Populus nigra 'Italica'	650	30	0.5	0.5	3	3	0	OM	Fair	Poor	10-20	Major deadwood present. Bark damage. Epicormic growth on Stem. Restricted inspection due to Vegetation. Growing from old stump.	C2
114	Populus nigra 'Italica'	650	30	0.5	0.5	3	3	0	OM	Fair	Poor	10-20	Major deadwood present. Bark damage. Epicormic growth on Stem. Restricted inspection due to Vegetation. Growing from old stump.	C2

\* Where the tree is multi-stemmed below 1.5m the diameter is measured above the stem basal flare.

Tree No.	Species	Diameter (mm)*	Height	Crown Spread				Crown Height above Ground	Age Class	Vigour	Structural Condition	Life Expectancy	Comments	BS5837 Category
				N	S	E	W							
115	Populus nigra 'Italica'	650	30	0.5	0.5	3	3	0	OM	Fair	Poor	10-20	Major deadwood present. Bark damage. Epicormic growth on Stem. Restricted inspection due to Ivy. Growing from old stump.	C2
116	Populus nigra 'Italica'	700	30	0.5	0.5	3	3	0	OM	Fair	Poor	10-20	Major deadwood present. Bark damage. Epicormic growth on Stem. Restricted inspection due to Vegetation. Growing from old stump.	C2
117	Populus nigra 'Italica'	550	30	0.5	0.5	3	3	0	OM	Fair	Poor	10-20	Major deadwood present. Bark damage. Epicormic growth on Stem. Restricted inspection due to Vegetation. Growing from old stump.	C2
118	Populus nigra 'Italica'	650	30	0.5	0.5	3	3	0	OM	Fair	Poor	10-20	Major deadwood present. Bark damage. Epicormic growth on Stem. Restricted inspection due to Vegetation. Growing from old stump.	C2
119	Populus nigra 'Italica'	650	30	0.5	0.5	3.5	3.5	0	OM	Fair	Poor	10-20	Bifurcate stem at 3m. Major deadwood present. Bark damage. Epicormic growth on Stem. Restricted inspection due to Vegetation. Growing from old stump.	C2
120	Populus nigra 'Italica'	650	30	0.5	0.5	2.5	3.5	0	OM	Fair	Poor	10-20	Bifurcate stem at 3m. Major deadwood present. Bark damage. Epicormic growth on Stem. Restricted inspection due to Vegetation. Growing from old stump.	C2
121	Populus nigra 'Italica'	800	30	0.5	0.5	2.5	3.5	0	OM	Fair	Poor	10-20	Major deadwood present. Bark damage. Epicormic growth on Stem. Restricted inspection due to Vegetation. Growing from old stump.	C2
122	Acer pseudoplatanus	110	4	1.5	2	1	1.5	0.5	Y	Fair	Fair	40+		C1
123	Malus sylvestris	250	4	2.5	3	2.5	2	1.5	M	Poor	Fair	10-20	Minor deadwood present. Crossing branches. Old pruning wounds evident.	C1

\* Where the tree is multi-stemmed below 1.5m the diameter is measured above the stem basal flare.



Tree No.	Species	Diameter (mm)*	Height	Crown Spread				Crown Height above Ground	Age Class	Vigour	Structural Condition	Life Expectancy	Comments	BS5837 Category
				N	S	E	W							
124	Tilia sp.	400	9	3.5	2	2.5	3	1	MA	Fair	Fair	40+	Crossing branches. Included bark at branch union. Previously topped at 3m. Restricted inspection due to Ivy.	A2
125	Tilia sp.	340	10	2.5	3.5	2.5	3.5	1.5	MA	Good	Fair	40+	Crossing branches. Included bark at branch union. Previously topped at 3m. Epicormic growth on Base. Restricted inspection due to Ivy.	A2
126	Acer platanoides	130	8	1	1.5	2.5	2.5	1.5	Y	Fair	Fair	40+	Minor deadwood present. Small branch dead	C2
127	Tilia sp.	350	11	3	2.5	2.5	3.5	1.5	MA	Good	Fair	40+	Minor deadwood present. Crossing branches. Previously topped at 3m. Epicormic growth on Base. Old pruning wounds evident.	A2
128	Tilia sp.	310	11	2.5	3.5	2.5	3	1.5	MA	Good	Fair	40+	Crossing branches. Previous pollarded at 3m, Old pruning wounds evident.	A2
129	Acer platanoides	320	11	0	0	0	0	0	MA	Fair	Good	40+	Bifurcate stem at 1.5m. Minor deadwood present. Included bark at branch union. Included bark at stem unions.	A2
130	Tilia sp.	330	12	3	2	2.5	3	1	MA	Good	Fair	40+	Minor deadwood present. Crossing branches. Included bark at branch union. Previously topped at 2.5m. Epicormic growth on Base.	A2
131	Tilia sp.	320	11	2	2.5	2.5	4.5	1	MA	Fair	Fair	40+	Crossing branches. Included bark at branch union. Previously topped at 3m. Epicormic growth on Base. Old pruning wounds evident.	A2
132	Prunus sp.	400	6	0	0	0	0	0	MA	Poor	Poor	<10	Multi-stemmed. Major deadwood present. Crossing branches. Included bark at branch union. Bark damage. Old pruning wounds evident. Northern limb with advanced decay	R

\* Where the tree is multi-stemmed below 1.5m the diameter is measured above the stem basal flare.

Tree No.	Species	Diameter (mm)*	Height	Crown Spread				Crown Height above Ground	Age Class	Vigour	Structural Condition	Life Expectancy	Comments	BS5837 Category
				N	S	E	W							
133	Tilia sp.	360	11	2.5	0	2.5	4.5	1	MA	Good	Fair	40+	Crossing branches. Included bark at branch union. Previously topped at 3m. Epicormic growth on Base. Old pruning wounds evident.	A2
134	Tilia sp.	320	10	2.5	4	3	4	0.5	MA	Good	Fair	40+	Crossing branches. Included bark at branch union. Previously topped at 3m. Epicormic growth on Base.	A2
135	Tilia sp.	360	11	4	4	4.5	3	0.5	MA	Fair	Fair	40+	Minor deadwood present. Included bark at branch union. Previously topped at 3m. Epicormic growth on Base. Old pruning wounds evident.	A2
136	Tilia sp.	320	11	0	0	0	0	0	MA	Fair	Good	20-40	Minor deadwood present. Included bark at branch union. Previously topped at 3m. Epicormic growth on Base. Old pruning wounds evident.	B2
137	Tilia sp.	270	10	4	2.5	3	2.5	1	MA	Good	Fair	20-40	Minor deadwood present. Crossing branches. Included bark at branch union. Previously topped at 3m. Epicormic growth on Base. Old pruning wounds evident.	B2
138	Tilia sp.	350	11	2.5	4	3	3.5	0.5	MA	Good	Fair	40+	Minor deadwood present. Crossing branches. Included bark at branch union. Previously topped at 3m. Epicormic growth on Base. Old pruning wounds evident.	A2
139	Laburnum anagyroides	230	5	1.5	2	3	2	0	MA	Poor	Poor	<10	Multi-stemmed. Major deadwood present. Stem leaning to North by 20 degrees.	R
140	Tilia sp.	390	12	3	3	3	2.5	0.5	MA	Good	Fair	40+	Minor deadwood present. Crossing branches. Included bark at branch union. Previously topped at 3m. Epicormic growth on Base. Old pruning wounds evident.	A2
141	Tilia sp.	320	11	3	3	2	3.5	0.5	MA	Good	Fair	40+	Minor deadwood present. Crossing branches. Included bark at branch union. Previously topped at 3m. Epicormic growth on Base. Old pruning wounds evident.	A2

\* Where the tree is multi-stemmed below 1.5m the diameter is measured above the stem basal flare.

Tree No.	Species	Diameter (mm)*	Height	Crown Spread				Crown Height above Ground	Age Class	Vigour	Structural Condition	Life Expectancy	Comments	BS5837 Category
				N	S	E	W							
142	Platanus x hispanica	290	5	1	1.5	1.5	1	1.5	MA	Fair	Fair	40+	Previous pollarded at 2.5m,	A2
143	Platanus x hispanica	280	5	1.5	1.5	1.5	1	1.5	MA	Fair	Fair	40+	Previous pollarded at 2.5m,	A2
144	Platanus x hispanica	290	5	1.5	1.5	1	1	1.5	MA	Fair	Fair	40+	Previous pollarded at 2.5m,	A2
145	Platanus x hispanica	300	5	1	1.5	1	1	1.5	MA	Fair	Fair	40+	Previous pollarded at 2.5m,	A2
146	Platanus x hispanica	270	5	1	1.5	1	1	1.5	MA	Fair	Fair	40+	Previous pollarded at 2.5m,	A2
147	Platanus x hispanica	310	5	1.5	1.5	1	1	1.5	MA	Fair	Fair	40+	Previous pollarded at 2.5m, Epicormic growth on Stem.	A2
148	Betula sp.	350	9	4	4	4.5	4.5	0.5	MA	Good	Good	20-40	Multi-stemmed.	B1
149	Eucalyptus gunnii	700	14	5	4.5	6	4	1	MA	Fair	Poor	10-20	Multi-stemmed. Minor deadwood present. Restricted inspection due to Ivy. Estimated Values	C1
150	Prunus sp.	280	3	1.5	1.5	2	2.5	1	M	Poor	Poor	<10	Multi-stemmed. Major deadwood present. Crossing branches. In decline	R
151	Chamaecyparis sp.	350	4	1	1.5	1	1	0	M	Fair	Fair	10-20	Multi-stemmed. Restricted inspection due to branches. Ornamental tree	C1
152	Chamaecyparis lawsoniana 'aurea'	300	5	1	1.5	1.5	0	0	MA	Fair	Fair	10-20	Multi-stemmed. Ornamental tree	C1

\* Where the tree is multi-stemmed below 1.5m the diameter is measured above the stem basal flare.

Tree No.	Species	Diameter (mm)*	Height	Crown Spread				Crown Height above Ground	Age Class	Vigour	Structural Condition	Life Expectancy	Comments	BS5837 Category
				N	S	E	W							
153	Chamaecyparis lawsoniana 'aurea'	300	5	1	1.5	1.5	0	0	MA	Fair	Fair	10-20	Multi-stemmed. Ornamental tree	C1
154	Chamaecyparis sp.	350	5	1	1	0	1	0	MA	Fair	Poor	10-20	Ornamental tree	C1
155	Fagus sylvatica	440	18	1	6	2	4.5	1	MA	Fair	Fair	40+	Minor deadwood present. Hard surfaces within root area. Restricted inspection due to Ivy.	A2
156	Fagus sylvatica	460	17	1.5	6	2.5	2.5	2	MA	Fair	Fair	40+	Minor deadwood present. Hard surfaces within root area. Restricted inspection due to Ivy.	A2
157	Fagus sylvatica	460	17	2.5	5	3	2	1.5	MA	Fair	Fair	40+	Minor deadwood present. Hard surfaces within root area. Restricted inspection due to Ivy. Broken branches in crown.	A2
158	Fagus sylvatica	480	17	1.5	2.5	1.5	3.5	2	MA	Dead	Poor	<10	Major deadwood present. Hard surfaces within root area. Standing dead	R
159	Fagus sylvatica	650	18	3	6	3	3	2.5	MA	Good	Fair	40+	Hard surfaces within root area. Restricted inspection due to Ivy.	A2
160	Cryptomeria japonica var.	250	5	1	1	1	1	0	MA	Fair	Fair	20-40	Ornamental tree	B2
161	Acer rubra	260	4	3	2	3	3	0.5	MA	Fair	Fair	20-40	Multi-stemmed. Crossing branches. Ornamental planting	B2
162	Abies sp. glauca	200	5	0.5	1	1	1	0	MA	Fair	Poor	10-20	Multi-stemmed. Hard surfaces within root area. Restricted inspection due to Vegetation. Pruned back on north side	C2
163	Lireodendron tulipifera	350	18	3.5	3.5	3.5	3.5	1.5	MA	Good	Good	40+	Hard surfaces within root area. Off site tree. Restricted inspection due to No Access. No Access Estimated Value	A2

\* Where the tree is multi-stemmed below 1.5m the diameter is measured above the stem basal flare.

Tree No.	Species	Diameter (mm)*	Height	Crown Spread				Crown Height above Ground	Age Class	Vigour	Structural Condition	Life Expectancy	Comments	BS5837 Category
				N	S	E	W							
164	Liquidambar styraciflua	200	16	1.5	3.5	3.5	3	0	MA	Fair	Fair	40+	Asymmetrical form. Off site tree. Restricted inspection due to No Access. No Access Estimated Value	A2
165	Salix alba	1000	20	10	10	10	10	0	V	Good	Fair	10-20	Off site tree. Restricted inspection due to No Access. Very old tree in manor house garden, No Access Estimated Value	C3
166	Salix alba	1000	20	10	10	10	10	0	V	Good	Fair	10-20	Off site tree. Restricted inspection due to No Access. Very old tree in manor house garden, No Access Estimated Value	C3
167	Tilia sp.	450	11	2.5	4.5	5.5	3.5	0.5	MA	Good	Fair	40+	Minor deadwood present. Crossing branches. Included bark at branch union. Previously topped at 4m. Epicormic growth on Base and Stem. Old pruning wounds evident.	A1
168	Prunus avium	210	6	2.5	1.5	2	1	1.5	MA	Poor	Poor	<10	Stem wounds. Strimmer damage. Off site tree. Old pruning wounds evident. In decline	R
169	Prunus avium	140	4	1.5	1.5	1.5	1.5	1.5	MA	Poor	Poor	<10	Multi-stemmed. Strimmer damage. Off site tree. In verge, In decline	R
170	Prunus cerasifera 'Atropurpurea'	160	6	3	1.5	2	2	1.5	MA	Poor	Poor	10-20	Multi-stemmed. Off site tree. Stem leaning to North by 20 degrees. In verge, In decline	C1
171	Prunus avium	230	8	3	3	3	1.5	1.5	MA	Poor	Poor	10-20	Multi-stemmed. Off site tree. In verge, In decline	C1
172	Prunus cerasifera 'Atropurpurea'	230	8	3	3	3	3	1.5	MA	Fair	Fair	20-40	Off site tree. In verge	B2
173	Prunus cerasifera 'Atropurpurea'	250	8	3	3	3	3	1.5	MA	Fair	Fair	20-40	Off site tree. In verge	B2

\* Where the tree is multi-stemmed below 1.5m the diameter is measured above the stem basal flare.

Tree No.	Species	Diameter (mm)*	Height	Crown Spread				Crown Height above Ground	Age Class	Vigour	Structural Condition	Life Expectancy	Comments	BS5837 Category
				N	S	E	W							
174	Prunus cerasifera 'Atropurpurea'	170	6	2.5	2.5	2.5	2	1.5	MA	Poor	Poor	20-40	Off site tree. Stem leaning to North by 20 degrees. In verge	C2
175	Prunus cerasifera 'Atropurpurea'	240	6	3	2	2	2	1.5	MA	Fair	Fair	20-40	Off site tree. In verge	B2
176	Prunus cerasifera 'Atropurpurea'	240	6	1.5	2.5	2	2	1.5	MA	Fair	Fair	20-40	Off site tree. In verge	B2
177	Prunus cerasifera 'Atropurpurea'	80	4	1	1	1	1	1.5	Y	Fair	Fair	40+	Off site tree. In verge	C1
178	Prunus cerasifera 'Atropurpurea'	140	6	2	1	2	2	1.5	Y	Fair	Fair	20-40	Off site tree. In verge	C2
179	Prunus cerasifera 'Atropurpurea'	180	6	2.5	2	2	2	1.5	MA	Fair	Poor	10-20	Minor deadwood present. Off site tree. Stem leaning to North by 25 degrees. In verge	C2
180	Prunus cerasifera 'Atropurpurea'	90	4	1	1	1	1	1.5	Y	Fair	Fair	20-40	Strimmer damage. Off site tree. In verge	C1
181	Prunus cerasifera 'Atropurpurea'	210	6	2.5	2.5	2.5	2.5	1.5	MA	Fair	Fair	20-40	Multi-stemmed. Off site tree. In verge	B1

\* Where the tree is multi-stemmed below 1.5m the diameter is measured above the stem basal flare.

## Group Data - Bridgwater

Group Number	Dominant Species	Lesser / Individual Species	Diameter at 1.5m (cms)	Ave Height (m)	Age	Average Spread (m)	Physiological Condition	Structural Condition	Condition/Comments	ULE (years)	BS Category
1	X Cupressocyparis leylandii		25	10	MA	1	Fair	Close grown specimens, no clear	Planted as hedge / screen, Consists of 50 Individual specimens	20-40	B2
2	X Cupressocyparis leylandii 'Castlewellan'		25	10	MA	1	Fair	Close linear planting, approx. 0.5m	Planted as hedge / screen, Consists of 78 individual specimens	20-40	B2
3	X Cupressocyparis leylandii		40	19	M	4	Fair	Multi stemmed, in the majority of specimens,	No access to the trees all surveyed from site, Estimated values, Approximately 60 individuals, No access to trees behind buildings (eastern section)	20-40	B2

**TABLE 2**

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Preliminary Management Recommendations



## Table 2: Tree Works Required

Tree No.	Species	Diameter (mm)*	Height	Age Class	Vigour	Structural Condition	Life Expectancy	Comments	BS5837 Category	Works Required
1	Prunus avium	440	5	OM	Poor	Poor	<10	Major deadwood present. Crossing branches. Previous branch failure. Branch dieback of Moderate extent. Cavity of Moderate extent at 2 metres. Previous crown reduction. Bark damage. Stem wounds. Hard surfaces within root area. Old pruning wounds evident. Specimen of poor form. Broken branches in crown.  Large scar main stem with decay	R	Fell
6	Populus nigra 'Italica'	540	22	OM	Poor	Poor	10-20	Major deadwood present. Previously topped at 14m. Epicormic growth on Stem. Restricted inspection due to Vegetation.  Deadwood in crown	C2	Deadwood
8	Populus nigra 'Italica'	460	22	OM	Fair	Fair	10-20	Minor deadwood present. Previously topped at 13m. Epicormic growth on Stem. Restricted inspection due to Vegetation.	C2	Deadwood
9	Populus nigra 'Italica'	420	20	OM	Poor	Poor	<10	Minor deadwood present. Branch dieback of Moderate extent. Previously topped at 14m. Epicormic growth on Stem.	R	Fell
11	Populus nigra 'Italica'	440	21	OM	Fair	Poor	10-20	Minor deadwood present. Branch dieback of Minor extent. Cavity of Major extent at 1.5 metres. Previously topped at 14m. Epicormic growth on Stem.  Cavity in large branch 1m from ground	C2	Remove limb with cavity
12	Populus nigra 'Italica'	520	23	OM	Fair	Poor	10-20	Major deadwood present. Previously topped at 14m. Epicormic growth on Stem.  Large section of dead stem in crown	C2	Deadwood

Tree No.	Species	Diameter (mm)*	Height	Age Class	Vigour	Structural Condition	Life Expectancy	Comments	BS5837 Category	Works Required
13	Populus nigra 'Italica'	500	22	OM	Poor	Poor	10-20	Major deadwood present. Previously topped at 14m. Epicormic growth on Stem. Restricted inspection due to Vegetation. No Access Estimated Value	C2	Deadwood
15	Populus nigra 'Italica'	450	22	OM	Poor	Poor	10-20	Major deadwood present. Branch dieback of Moderate extent. Previously topped at 15m. Epicormic growth on Stem. Restricted inspection due to Vegetation. No Access Estimated Value	C2	Deadwood
16	Populus nigra 'Italica'	360	20	OM	Poor	Poor	<10	Heavily suppressed form. Major deadwood present. Previously topped at 14m. Epicormic growth on Stem. Restricted inspection due to Ivy. In decline	R	Deadwood
17	Populus nigra 'Italica'	500	23	OM	Fair	Fair	10-20	Major deadwood present. Previously topped at 14m. Epicormic growth on Stem. Restricted inspection due to Ivy. Estimated stem value	C2	Deadwood
18	Populus nigra 'Italica'	450	20	OM	Poor	Poor	10-20	Bifurcate stem at 2.5m. Minor deadwood present. Restricted inspection due to Ivy. Estimated Stem Value	C2	Sever ivy & Deadwood
19	Populus nigra 'Italica'	450	21	OM	Poor	Poor	10-20	Major deadwood present. Branch dieback of Moderate extent. Previously topped at 15m. Epicormic growth on Stem. Restricted inspection due to Ivy. Estimated Stem Value	C2	Sever ivy & Deadwood
20	Populus nigra 'Italica'	500	22	OM	Poor	Poor	10-20	Major deadwood present. Branch dieback of Moderate extent. Previously topped at 14m. Epicormic growth on Stem. Restricted inspection due to Vegetation. Ivy on main stem	C2	Deadwood

Tree No.	Species	Diameter (mm)*	Height	Age Class	Vigour	Structural Condition	Life Expectancy	Comments	BS5837 Category	Works Required
21	Populus nigra 'Italica'	450	22	OM	Fair	Poor	10-20	Major deadwood present. Branch dieback of Moderate extent. Previously topped at 14m. Epicormic growth on Stem. Restricted inspection due to Vegetation.  No Access Estimated Value	C2	Sever ivy & Deadwood
24	Populus nigra 'Italica'	390	21	OM	Fair	Poor	10-20	Minor deadwood present. Previously topped at 14m. Epicormic growth on Stem. Restricted inspection due to Vegetation.  Ivy on main stem	C2	Sever ivy
25	Populus nigra 'Italica'	650	23	OM	Fair	Poor	10-20	Major deadwood present. Previously topped at 14m. Previous pollarded at 5m, Epicormic growth on Stem. Restricted inspection due to Vegetation.  Estimated Stem Value, ivy on main stem	C2	Deadwood
27	Populus nigra 'Italica'	400	14	OM	Dead	Poor	<10	Major deadwood present. Previously topped at 14m. Specimen is of no long term potential. Restricted inspection due to Vegetation.  Woodpecker holes upper stem, large section upper crown dead	R	Fell
28	Populus nigra 'Italica'	450	19	OM	Poor	Poor	<10	Major deadwood present. Branch dieback of Major extent. Previously topped at 14m. Epicormic growth on Crown. Specimen is of no long term potential. Restricted inspection due to Vegetation.  In sEstimated Valuesere decline, No Access Estimated Value	R	Fell
29	Populus nigra 'Italica'	430	19	OM	Poor	Poor	<10	Major deadwood present. Previously topped at 14m. Specimen is of no long term potential.  Ivy on main stem	R	Fell
30	Populus nigra 'Italica'	390	19	OM	Poor	Poor	<10	Major deadwood present. Branch dieback of Moderate extent. Previously topped at 14m. Restricted inspection due to Vegetation.  In decline	R	Fell

Tree No.	Species	Diameter (mm)*	Height	Age Class	Vigour	Structural Condition	Life Expectancy	Comments	BS5837 Category	Works Required
32	Populus nigra 'Italica'	430	20	OM	Fair	Poor	10-20	Minor deadwood present. Previously topped at 14m. Epicormic growth on Stem. Restricted inspection due to Ivy.  Woodpecker hole in dead section of stem in crown	C2	Sever ivy
34	Populus nigra 'Italica'	480	22	OM	Fair	Poor	10-20	Major deadwood present. Branch dieback of Moderate extent. Previously topped at 14m. Epicormic growth on Stem. Restricted inspection due to Ivy.  Woodpecker hole in upper dead stem	C2	Deadwood
35	Populus nigra 'Italica'	500	23	OM	Fair	Poor	10-20	Minor deadwood present. Previously topped at 14m. Epicormic growth on Stem. Restricted inspection due to Ivy.	C2	Sever ivy
37	Salix alba	800	19	OM	Fair	Poor	10-20	Asymmetrical form. Multi-stemmed. Major deadwood present. Previous branch failure. Included bark at branch union. Previous pollarded at 1m, Stem wounds. Restricted inspection due to Ivy. Broken branches in crown.	C2	Sever ivy, re pollard
38	Salix alba	650	16	OM	Fair	Poor	10-20	Multi-stemmed. Minor deadwood present. Previous branch failure. Included bark at branch union. Previous pollarded at 1m, Restricted inspection due to Ivy.	C2	Sever ivy and re-inspect, Deadwood
44	Populus x canadensis	190	11	OM	Dead	Poor	<10	Dead standing	R	Fell
48	Populus x canadensis	440	19	OM	Poor	Poor	10-20	Bifurcate stem at 2.5m. Major deadwood present. Branch dieback of Moderate extent. Hard surfaces within root area. Restricted inspection due to Ivy.  In decline	C2	Deadwood

Tree No.	Species	Diameter (mm)*	Height	Age Class	Vigour	Structural Condition	Life Expectancy	Comments	BS5837 Category	Works Required
49	Populus x canadensis	760	23	OM	Poor	Poor	10-20	Bifurcate stem at 4m. Major deadwood present. Branch dieback of Moderate extent. Epicormic growth on Crown. Hard surfaces within root area. Restricted inspection due to Ivy. Stem leaning to East by 20 degrees. In decline	C2	Deadwood
50	Populus x canadensis	950	23	OM	Fair	Poor	10-20	Bifurcate stem at 2m. Multi-stemmed. Hard surfaces within root area. Restricted inspection due to Ivy. Stem leaning to East by 10 degrees. In decline	C2	Deadwood
51	Acer pseudoplatanus	370	17	MA	Fair	Fair	20-40	Major deadwood present. Restricted inspection due to Ivy. Tree hung up in canopy	B2	Deadwood & sever ivy
52	Salix alba	800	17	OM	Poor	Poor	10-20	Asymmetrical form. Major deadwood present. Previous branch failure. Branch dieback of Moderate extent. Previous pollarded at 1.4m, Epicormic growth on Stem. Restricted inspection due to Ivy. Specimen of poor form. Major decline in upper crown	C2	Re-pollard
53	Tilia sp.	180	8	Y	Fair	Fair	10-20	Minor deadwood present. Part of adjacent tree in crown	C1	remove adjacent tree
54	Acer negundo	430	13	MA	Fair	Poor	<10	Asymmetrical form. Bifurcate stem at 2m. Partial root plate failure evident. Stem leaning to South by 30 degrees. leaning into adjacent trees	R	Fell
55	Salix alba	1000	22	OM	Fair	Fair	10-20	Multi-stemmed. Minor deadwood present. Previous branch failure. Included bark at branch union. Previously topped at 15m. Previous pollarded at 1m, Restricted inspection due to Ivy. Broken branches in crown. Multiple decay points in crown	C3	Re pollard as veteran

Tree No.	Species	Diameter (mm)*	Height	Age Class	Vigour	Structural Condition	Life Expectancy	Comments	BS5837 Category	Works Required
83	Prunus avium	280	6	M	Poor	Poor	<10	Major deadwood present. Crossing branches. Old pruning wounds evident. Broken branches in crown. Stem leaning to East by 20 degrees. Decay in mainstem, in decline	R	Fell
90	Prunus sp.	140	3	MA	Dead	Poor	<10		R	Fell
92	Liquidambar styraciflua	160	3	MA	Dead	Poor	<10	Multi-stemmed.	R	Fell
96	Populus nigra 'Italica'	900	30	OM	Fair	Fair	<10	Bifurcate stem at 3m. Minor deadwood present. Epicormic growth on Stem. Ganoderma sp. at base and main stem	R	Fell
97	Populus nigra 'Italica'	600	30	OM	Fair	Poor	10-20	Multi-stemmed. Bark damage. Restricted inspection due to Ivy.	C2	sever ivy and re-inspect
98	Populus nigra 'Italica'	600	30	OM	Fair	Poor	10-20	Minor deadwood present. Bark damage. Epicormic growth on Stem. Restricted inspection due to Vegetation.	C2	sever ivy and re-inspect
99	Populus nigra 'Italica'	800	30	OM	Fair	Poor	10-20	Minor deadwood present. Bark damage. Epicormic growth on Stem. Restricted inspection due to Vegetation.	C2	sever ivy and re-inspect
100	Populus nigra 'Italica'	700	30	OM	Fair	Poor	10-20	Bifurcate stem at 3m. Minor deadwood present. Bark damage. Epicormic growth on Stem. Restricted inspection due to Vegetation.	C2	Clear vegetation, crown lift and re-inspect
101	Populus nigra 'Italica'	750	30	OM	Fair	Poor	10-20	Multi-stemmed. Minor deadwood present. Bark damage. Epicormic growth on Stem. Restricted inspection due to Vegetation.	C2	Clear vegetation, crown lift and re-inspect

Tree No.	Species	Diameter (mm)*	Height	Age Class	Vigour	Structural Condition	Life Expectancy	Comments	BS5837 Category	Works Required
102	Populus nigra 'Italica'	650	30	OM	Fair	Poor	10-20	Multi-stemmed. Minor deadwood present. Bark damage. Epicormic growth on Stem. Restricted inspection due to Vegetation.	C2	Clear vegetation, crown lift and re-inspect
103	Populus nigra 'Italica'	550	30	OM	Fair	Poor	10-20	Multi-stemmed. Minor deadwood present. Bark damage. Epicormic growth on Stem. Restricted inspection due to Vegetation.	C2	Clear vegetation, crown lift and re-inspect
104	Populus nigra 'Italica'	550	28	OM	Fair	Poor	10-20	Multi-stemmed. Major deadwood present. Bark damage. Epicormic growth on Stem. Restricted inspection due to Vegetation.	C2	Clear vegetation, crown lift and re-inspect
105	Populus nigra 'Italica'	750	30	OM	Fair	Poor	10-20	Multi-stemmed. Major deadwood present. Bark damage. Epicormic growth on Stem. Restricted inspection due to Vegetation.	C2	Clear vegetation, crown lift and re-inspect, Deadwood
106	Populus nigra 'Italica'	650	30	OM	Fair	Poor	10-20	Multi-stemmed. Minor deadwood present. Bark damage. Epicormic growth on Stem. Restricted inspection due to Vegetation.	C2	Clear vegetation, crown lift and re-inspect
107	Populus nigra 'Italica'	700	30	OM	Fair	Poor	10-20	Multi-stemmed. Major deadwood present. Bark damage. Epicormic growth on Stem. Restricted inspection due to Vegetation.	C2	Clear vegetation, crown lift and re-inspect, Deadwood
108	Populus nigra 'Italica'	500	24	OM	Fair	Poor	10-20	Multi-stemmed. Major deadwood present. Bark damage. Epicormic growth on Stem. Restricted inspection due to Vegetation. Growing from old stump.	C2	Clear vegetation, crown lift and re-inspect
109	Populus nigra 'Italica'	650	30	OM	Fair	Poor	10-20	Major deadwood present. Bark damage. Epicormic growth on Stem. Restricted inspection due to Vegetation. Growing from old stump.	C2	Clear vegetation and re-inspect, Deadwood

Tree No.	Species	Diameter (mm)*	Height	Age Class	Vigour	Structural Condition	Life Expectancy	Comments	BS5837 Category	Works Required
110	Populus nigra 'Italica'	650	30	OM	Fair	Poor	10-20	Multi-stemmed. Major deadwood present. Bark damage. Epicormic growth on Stem. Restricted inspection due to Vegetation. Old pruning wounds evident. Growing from old stump. Stem leaning to East by 10 degrees.	C2	Clear vegetation, crown lift and re-inspect
111	Populus nigra 'Italica'	600	30	OM	Fair	Poor	10-20	Major deadwood present. Bark damage. Epicormic growth on Stem. Restricted inspection due to Vegetation. Growing from old stump.	C2	Clear vegetation and re-inspect, Deadwood
112	Populus nigra 'Italica'	700	30	OM	Fair	Poor	10-20	Major deadwood present. Bark damage. Epicormic growth on Stem. Restricted inspection due to Vegetation. Growing from old stump.	C2	Clear vegetation and re-inspect, Deadwood
113	Populus nigra 'Italica'	650	30	OM	Fair	Poor	10-20	Major deadwood present. Bark damage. Epicormic growth on Stem. Restricted inspection due to Vegetation. Growing from old stump.	C2	Clear vegetation and re-inspect, Deadwood
114	Populus nigra 'Italica'	650	30	OM	Fair	Poor	10-20	Major deadwood present. Bark damage. Epicormic growth on Stem. Restricted inspection due to Vegetation. Growing from old stump.	C2	Clear vegetation and re-inspect, Deadwood
115	Populus nigra 'Italica'	650	30	OM	Fair	Poor	10-20	Major deadwood present. Bark damage. Epicormic growth on Stem. Restricted inspection due to Ivy. Growing from old stump.	C2	Clear vegetation/ivy and re-inspect, Deadwood
116	Populus nigra 'Italica'	700	30	OM	Fair	Poor	10-20	Major deadwood present. Bark damage. Epicormic growth on Stem. Restricted inspection due to Vegetation. Growing from old stump.	C2	Clear vegetation and re-inspect, Deadwood



Tree No.	Species	Diameter (mm)*	Height	Age Class	Vigour	Structural Condition	Life Expectancy	Comments	BS5837 Category	Works Required
117	Populus nigra 'Italica'	550	30	OM	Fair	Poor	10-20	Major deadwood present. Bark damage. Epicormic growth on Stem. Restricted inspection due to Vegetation. Growing from old stump.	C2	Clear vegetation and re-inspect, Deadwood
118	Populus nigra 'Italica'	650	30	OM	Fair	Poor	10-20	Major deadwood present. Bark damage. Epicormic growth on Stem. Restricted inspection due to Vegetation. Growing from old stump.	C2	Clear vegetation and re-inspect, Deadwood
119	Populus nigra 'Italica'	650	30	OM	Fair	Poor	10-20	Bifurcate stem at 3m. Major deadwood present. Bark damage. Epicormic growth on Stem. Restricted inspection due to Vegetation. Growing from old stump.	C2	Clear vegetation and re-inspect, Deadwood
120	Populus nigra 'Italica'	650	30	OM	Fair	Poor	10-20	Bifurcate stem at 3m. Major deadwood present. Bark damage. Epicormic growth on Stem. Restricted inspection due to Vegetation. Growing from old stump.	C2	Clear vegetation and re-inspect, Deadwood
121	Populus nigra 'Italica'	800	30	OM	Fair	Poor	10-20	Major deadwood present. Bark damage. Epicormic growth on Stem. Restricted inspection due to Vegetation. Growing from old stump.	C2	Clear vegetation and re-inspect, Deadwood
139	Laburnum anagyroides	230	5	MA	Poor	Poor	<10	Multi-stemmed. Major deadwood present. Stem leaning to North by 20 degrees.	R	Fell
149	Eucalyptus gunnii	700	14	MA	Fair	Poor	10-20	Multi-stemmed. Minor deadwood present. Restricted inspection due to Ivy.  Estimated Values	C1	Sever ivy and re-inspect
150	Prunus sp.	280	3	M	Poor	Poor	<10	Multi-stemmed. Major deadwood present. Crossing branches.  In decline	R	Fell

Tree No.	Species	Diameter (mm)*	Height	Age Class	Vigour	Structural Condition	Life Expectancy	Comments	BS5837 Category	Works Required
155	Fagus sylvatica	440	18	MA	Fair	Fair	40+	Minor deadwood present. Hard surfaces within root area. Restricted inspection due to Ivy.	A2	Deadwood
156	Fagus sylvatica	460	17	MA	Fair	Fair	40+	Minor deadwood present. Hard surfaces within root area. Restricted inspection due to Ivy.	A2	Deadwood
158	Fagus sylvatica	480	17	MA	Dead	Poor	<10	Major deadwood present. Hard surfaces within root area. Standing dead	R	Fell
167	Tilia sp.	450	11	MA	Good	Fair	40+	Minor deadwood present. Crossing branches. Included bark at branch union. Previously topped at 4m. Epicormic growth on Base and Stem. Old pruning wounds evident.	A1	Deadwood

**TABLE 3**

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Root Protection Areas

### Table 3: Tree Root Protection Areas

Tree No.	Species	BS5837 Category	RPA Radius (m)	RPA Area (m2)	RPA Square Side Length (m)
2	Populus nigra 'Italica'	C2	5.76	104.2	10.2
3	Populus nigra 'Italica'	C2	4.8	72.4	8.5
4	Populus nigra 'Italica'	C2	6.24	122.3	11.1
5	Populus nigra 'Italica'	C2	5.76	104.2	10.2
6	Populus nigra 'Italica'	C2	6.48	131.9	11.5
7	Populus nigra 'Italica'	C2	5.76	104.2	10.2
8	Populus nigra 'Italica'	C2	5.52	95.7	9.8
10	Populus nigra 'Italica'	C2	6	113.1	10.6
11	Populus nigra 'Italica'	C2	5.28	87.6	9.4
12	Populus nigra 'Italica'	C2	6.24	122.3	11.1
13	Populus nigra 'Italica'	C2	6	113.1	10.6
14	Populus nigra 'Italica'	C2	5.4	91.6	9.6
15	Populus nigra 'Italica'	C2	5.4	91.6	9.6
17	Populus nigra 'Italica'	C2	6	113.1	10.6
18	Populus nigra 'Italica'	C2	5.4	91.6	9.6
19	Populus nigra 'Italica'	C2	5.4	91.6	9.6
20	Populus nigra 'Italica'	C2	6	113.1	10.6
21	Populus nigra 'Italica'	C2	5.4	91.6	9.6
22	Populus nigra 'Italica'	C2	6.6	136.8	11.7
23	Populus nigra 'Italica'	C2	6	113.1	10.6
24	Populus nigra 'Italica'	C2	4.68	68.8	8.3
25	Populus nigra 'Italica'	C2	7.8	191.1	13.8
26	Populus nigra 'Italica'	C2	5.4	91.6	9.6
32	Populus nigra 'Italica'	C2	5.16	83.6	9.1

NB: Highlighted rows indicate trees with built elements in their RPA's that may have restricted root development.

Tree No.	Species	BS5837 Category	RPA Radius (m)	RPA Area (m2)	RPA Square Side Length (m)
34	Populus nigra 'Italica'	C2	5.76	104.2	10.2
35	Populus nigra 'Italica'	C2	6	113.1	10.6
36	Crataegus monogyna	C1	3	28.3	5.3
37	Salix alba	C2	8	201.1	14.2
38	Salix alba	C2	7.8	191.1	13.8
45	Populus canescens	C2	5.76	104.2	10.2
46	Populus canescens	C2	5.76	104.2	10.2
47	Populus canescens	C2	5.76	104.2	10.2
48	Populus canescens	C2	5.28	87.6	9.4
49	Populus canescens	C2	9.12	261.3	16.2
50	Populus canescens	C2	11.4	408.3	20.2
51	Acer pseudoplatanus	B2	4.44	61.9	7.9
52	Salix alba	C2	8	201.1	14.2
53	Tilia sp.	C1	2.16	14.7	3.8
55	Salix alba	C3	10	314.2	17.7
56	Acer pseudoplatanus	C2	2.04	13.1	3.6
57	Acer pseudoplatanus	B2	5.52	95.7	9.8
58	Prunus avium	C2	2.64	21.9	4.7
59	Prunus cerasifera	C2	1.2	4.5	2.1
60	Acer pseudoplatanus	A2	3	28.3	5.3
61	Malus tschonoskii	C1	2.4	18.1	4.3
62	Liquidamber styraciflua	B2	3.6	40.7	6.4
64	Sorbus aucuparia	C1	1.2	4.5	2.1
65	Crataegus monogyna	B1	3.72	43.5	6.6
67	Sorbus aucuparia	C2	3.6	40.7	6.4

NB: Highlighted rows indicate trees with built elements in their RPA's that may have restricted root development.

Tree No.	Species	BS5837 Category	RPA Radius (m)	RPA Area (m2)	RPA Square Side Length (m)
68	Malus tschonoskii	C2	2.64	21.9	4.7
70	Crataegus monogyna	C2	4.08	52.3	7.2
72	Crataegus crus-galli	B2	3	28.3	5.3
74	Malus tschonoskii	C2	3	28.3	5.3
77	Malus tschonoskii	C2	1.92	11.6	3.4
78	Malus tschonoskii	C2	3.12	30.6	5.5
81	Prunus avium	C2	3.12	30.6	5.5
82	Malus tschonoskii	C2	2.04	13.1	3.6
85	Malus tschonoskii	C2	3.84	46.3	6.8
86	Acer pseudoplatanus	B2	4.56	65.3	8.1
87	Crataegus monogyna	B2	2.88	26.1	5.1
88	Prunus avium	C2	3.84	46.3	6.8
89	Prunus cerasifera 'Atropurpurea'	C2	2.4	18.1	4.3
91	Prunus cerasifera 'Atropurpurea'	C2	2.5	19.6	4.4
94	Acer platanoides	B2	5.64	99.9	10
97	Populus nigra 'Italica'	C2	7.2	162.9	12.8
98	Populus nigra 'Italica'	C2	7.2	162.9	12.8
99	Populus nigra 'Italica'	C2	9.6	289.5	17
100	Populus nigra 'Italica'	C2	8.4	221.7	14.9
101	Populus nigra 'Italica'	C2	9	254.5	16
102	Populus nigra 'Italica'	C2	7.8	191.1	13.8
103	Populus nigra 'Italica'	C2	6.6	136.8	11.7
104	Populus nigra 'Italica'	C2	6.6	136.8	11.7
105	Populus nigra 'Italica'	C2	9	254.5	16
106	Populus nigra 'Italica'	C2	7.8	191.1	13.8

NB: Highlighted rows indicate trees with built elements in their RPA's that may have restricted root development.

Tree No.	Species	BS5837 Category	RPA Radius (m)	RPA Area (m2)	RPA Square Side Length (m)
107	Populus nigra 'Italica'	C2	8.4	221.7	14.9
108	Populus nigra 'Italica'	C2	5	78.5	8.9
109	Populus nigra 'Italica'	C2	7.8	191.1	13.8
110	Populus nigra 'Italica'	C2	7.8	191.1	13.8
111	Populus nigra 'Italica'	C2	7.2	162.9	12.8
112	Populus nigra 'Italica'	C2	8.4	221.7	14.9
113	Populus nigra 'Italica'	C2	7.8	191.1	13.8
114	Populus nigra 'Italica'	C2	7.8	191.1	13.8
115	Populus nigra 'Italica'	C2	7.8	191.1	13.8
116	Populus nigra 'Italica'	C2	8.4	221.7	14.9
117	Populus nigra 'Italica'	C2	6.6	136.8	11.7
118	Populus nigra 'Italica'	C2	7.8	191.1	13.8
119	Populus nigra 'Italica'	C2	7.8	191.1	13.8
120	Populus nigra 'Italica'	C2	7.8	191.1	13.8
121	Populus nigra 'Italica'	C2	9.6	289.5	17
122	Acer pseudoplatanus	C1	1.32	5.5	2.3
123	Malus sylvestris	C1	3	28.3	5.3
124	Tilia sp.	A2	4.8	72.4	8.5
125	Tilia sp.	A2	4.08	52.3	7.2
126	Acer platanoides	C2	1.56	7.6	2.8
127	Tilia sp.	A2	4.2	55.4	7.4
128	Tilia sp.	A2	3.72	43.5	6.6
129	Acer platanoides	A2	3.84	46.3	6.8
130	Tilia sp.	A2	3.96	49.3	7
131	Tilia sp.	A2	3.84	46.3	6.8

NB: Highlighted rows indicate trees with built elements in their RPA's that may have restricted root development.

Tree No.	Species	BS5837 Category	RPA Radius (m)	RPA Area (m2)	RPA Square Side Length (m)
133	Tilia sp.	A2	4.32	58.6	7.7
134	Tilia sp.	A2	3.84	46.3	6.8
135	Tilia sp.	A2	4.32	58.6	7.7
136	Tilia sp.	B2	3.84	46.3	6.8
137	Tilia sp.	B2	3.24	33	5.7
138	Tilia sp.	A2	4.2	55.4	7.4
140	Tilia sp.	A2	4.68	68.8	8.3
141	Tilia sp.	A2	3.84	46.3	6.8
142	Platanus x hispanica	A2	3.48	38	6.2
143	Platanus x hispanica	A2	3.36	35.5	6
144	Platanus x hispanica	A2	3.48	38	6.2
145	Platanus x hispanica	A2	3.6	40.7	6.4
146	Platanus x hispanica	A2	3.24	33	5.7
147	Platanus x hispanica	A2	3.72	43.5	6.6
148	Betula sp.	B1	3.5	38.5	6.2
149	Eucalyptus gunnii	C1	7	153.9	12.4
151	Chamaecyparis sp.	C1	3.5	38.5	6.2
152	Chamaecyparis lawsoniana 'aurea'	C1	3	28.3	5.3
153	Chamaecyparis lawsoniana 'aurea'	C1	3	28.3	5.3
154	Chamaecyparis sp.	C1	3.5	38.5	6.2
155	Fagus sylvatica	A2	5.28	87.6	9.4
156	Fagus sylvatica	A2	5.52	95.7	9.8
157	Fagus sylvatica	A2	5.52	95.7	9.8
159	Fagus sylvatica	A2	7.8	191.1	13.8
160	Crytomeria japonica var.	B2	3	28.3	5.3

NB: Highlighted rows indicate trees with built elements in their RPA's that may have restricted root development.



Tree No.	Species	BS5837 Category	RPA Radius (m)	RPA Area (m2)	RPA Square Side Length (m)
161	Acer rubra	B2	2.6	21.2	4.6
162	Abies sp. glauca	C2	2	12.6	3.5
163	Lireodendron tulipifera	A2	4.2	55.4	7.4
164	Liquidambar styraciflua	A2	2.4	18.1	4.3
165	Salix alba	C3	12	452.4	21.3
166	Salix alba	C3	12	452.4	21.3
167	Tilia sp.	A1	5.4	91.6	9.6
170	Prunus cerasifera 'Atropurpurea'	C1	1.6	8	2.8
171	Prunus avium	C1	2.3	16.6	4.1
172	Prunus cerasifera 'Atropurpurea'	B2	2.76	23.9	4.9
173	Prunus cerasifera 'Atropurpurea'	B2	2.5	19.6	4.4
174	Prunus cerasifera 'Atropurpurea'	C2	2.04	13.1	3.6
175	Prunus cerasifera 'Atropurpurea'	B2	2.88	26.1	5.1
176	Prunus cerasifera 'Atropurpurea'	B2	2.88	26.1	5.1
177	Prunus cerasifera 'Atropurpurea'	C1	0.96	2.9	1.7
178	Prunus cerasifera 'Atropurpurea'	C2	1.68	8.9	3
179	Prunus cerasifera 'Atropurpurea'	C2	1.8	10.2	3.2
180	Prunus cerasifera 'Atropurpurea'	C1	1.08	3.7	1.9
181	Prunus cerasifera 'Atropurpurea'	B1	2.52	20	4.5

## FIGURE

---

Figure 1: Tree Constraints Plan

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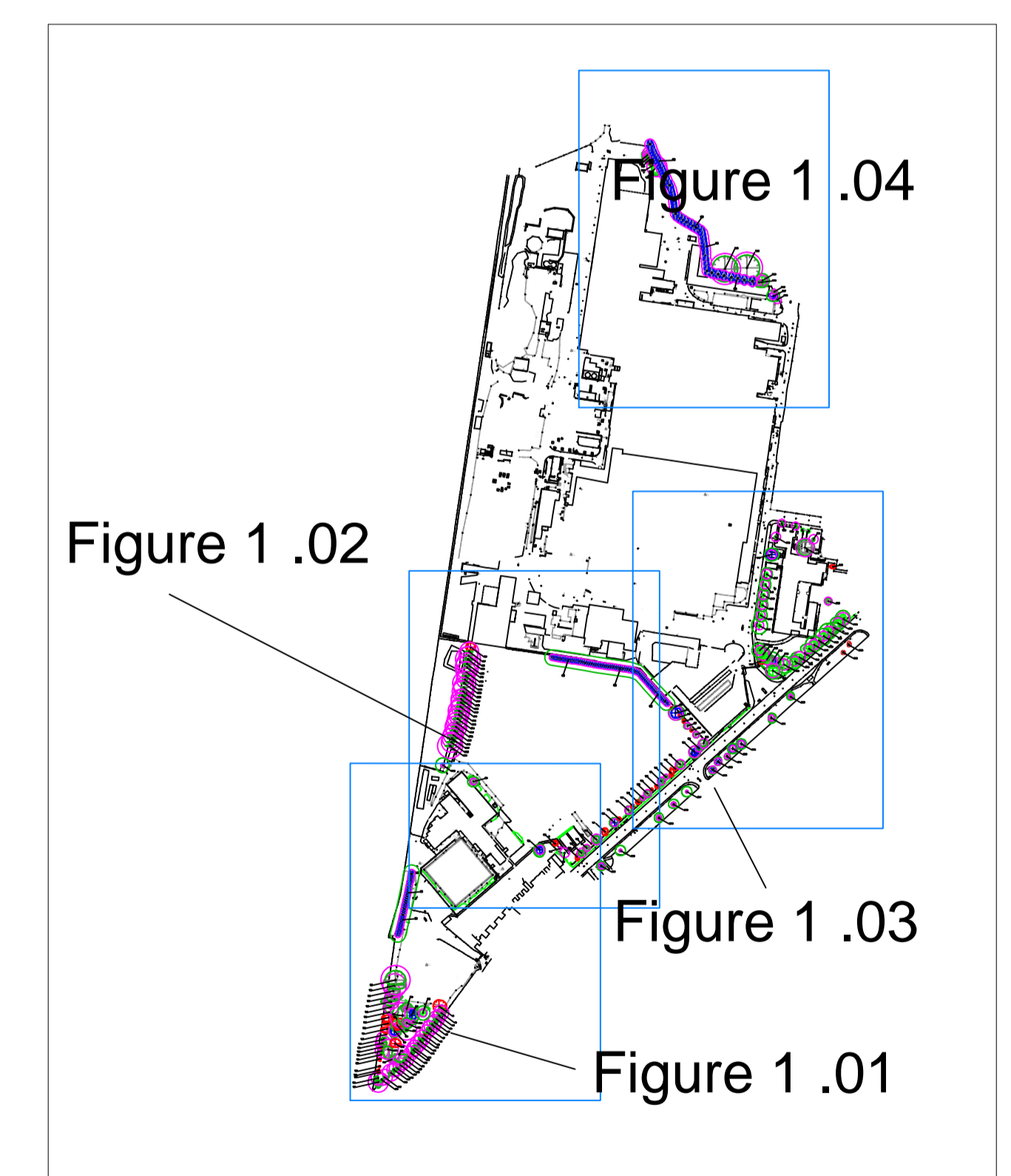
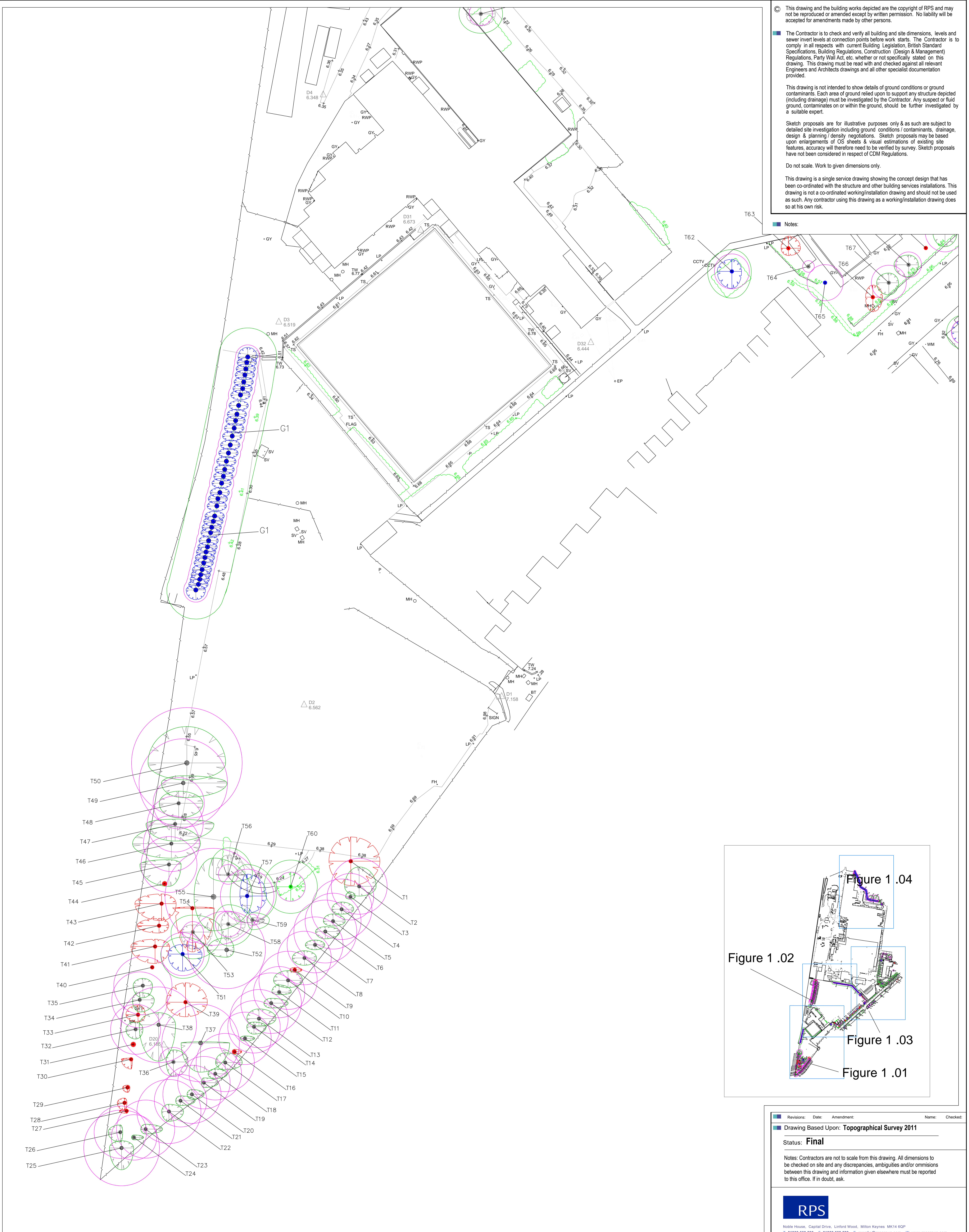
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Client: **Mace Group, EDF Energy**  
 Project: **Bridgwater-A Associated Development**

Title: **Tree Constraints Plan**

Date: **04/08/2011** Scale: **1:250** Original Paper Size: **A0**

Drawn: **BW** Checked: **EL** Job No: **JMK6834**

Drg No: **Figure 1.01** Rev: **-**

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Legend

- |  |  |        |   |  |                              |
|--|--|--------|---|--|------------------------------|
|  | Tree Position with Canopy Spread plus BS5837 Category A1, A2 or A3 | T/G202 | Tree / Group Number                                     |  | Tree Group BS5837 Category A |
|  | Tree Position with Canopy Spread plus BS5837 Category B1, B2 or B3 |        | Root Protection Area - Based on Simple Radius from Tree |  | Tree Group BS5837 Category B |
|  | Tree Position with Canopy Spread plus BS5837 Category C1, C2 or C3 |        | Tree canopy Ultimate Spread                             |  | Tree Group BS5837 Category C |
|  | Tree Position with Canopy Spread plus BS5837 Category R            |        |   |  | Tree Group BS5837 Category R |

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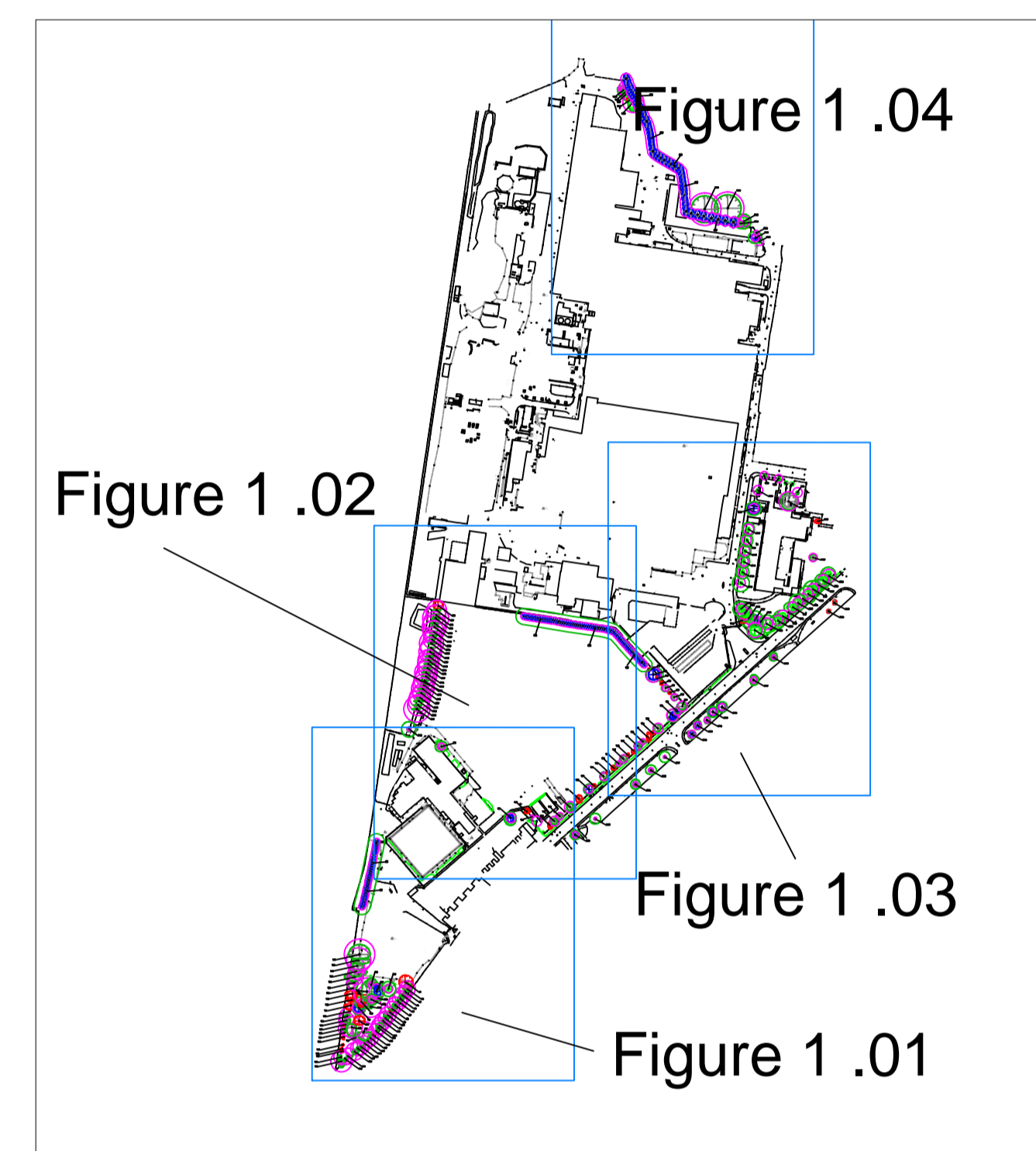
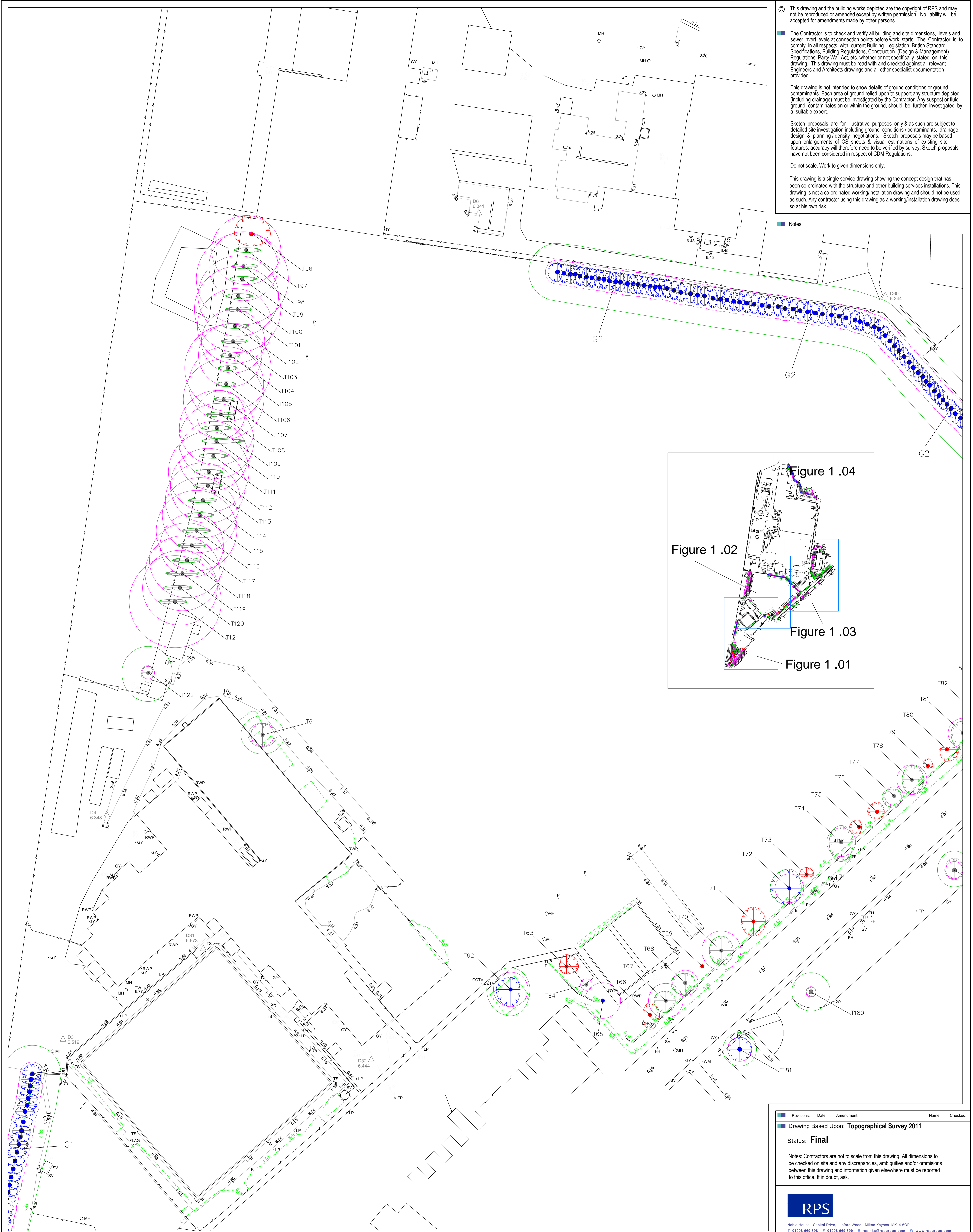
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Notes:



**Legend**

- |  |  |        |   |  |                              |
|--|--|--------|---|--|------------------------------|
|  | Tree Position with Canopy Spread plus BS5837 Category A1, A2 or A3 | T/G202 | Tree / Group Number                                     |  | Tree Group BS5837 Category A |
|  | Tree Position with Canopy Spread plus BS5837 Category B1, B2 or B3 |        | Root Protection Area - Based on Simple Radius from Tree |  | Tree Group BS5837 Category B |
|  | Tree Position with Canopy Spread plus BS5837 Category C1, C2 or C3 |        | Tree canopy Ultimate Spread                             |  | Tree Group BS5837 Category C |
|  | Tree Position with Canopy Spread plus BS5837 Category R            |        |   |  | Tree Group BS5837 Category R |

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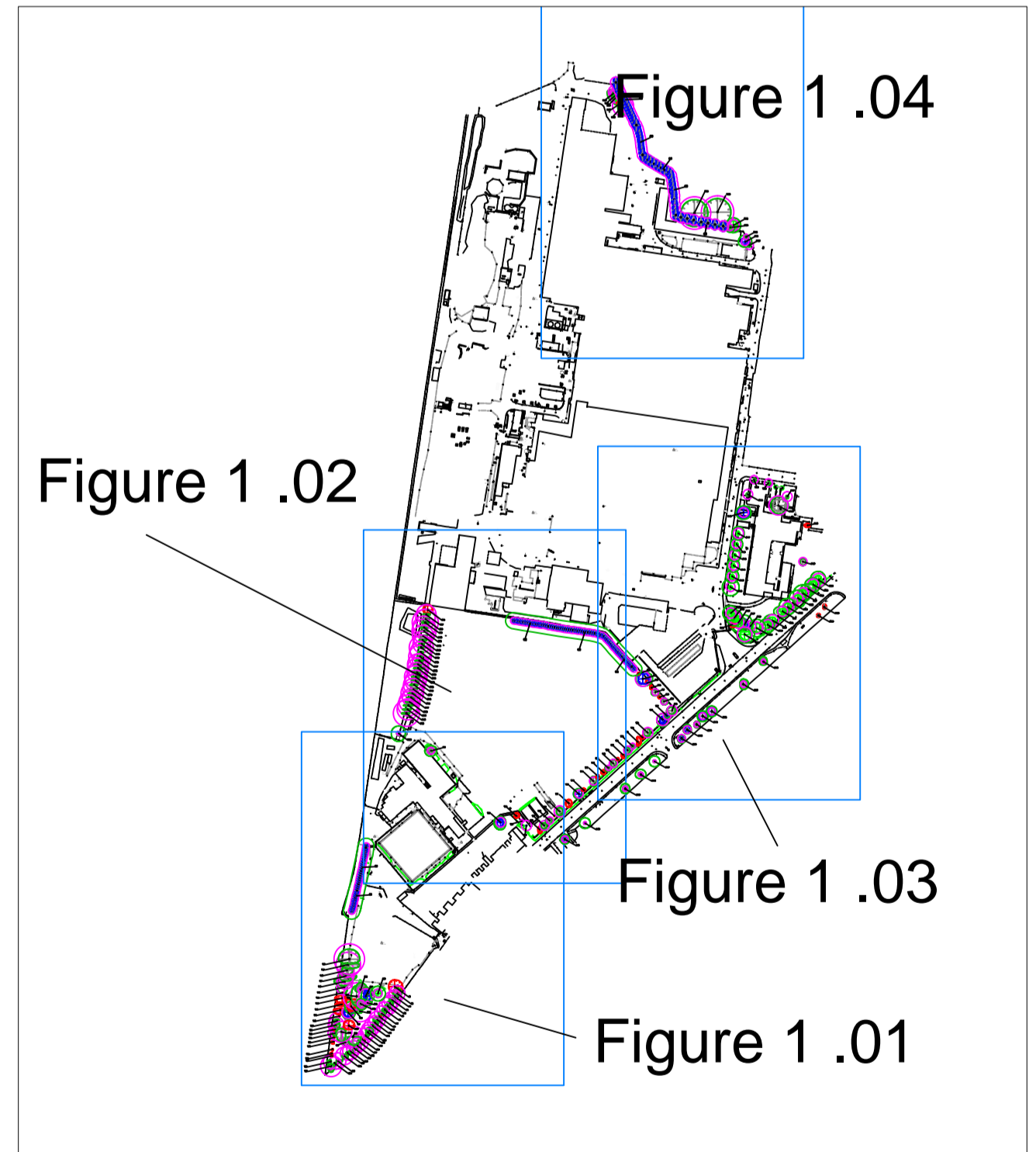
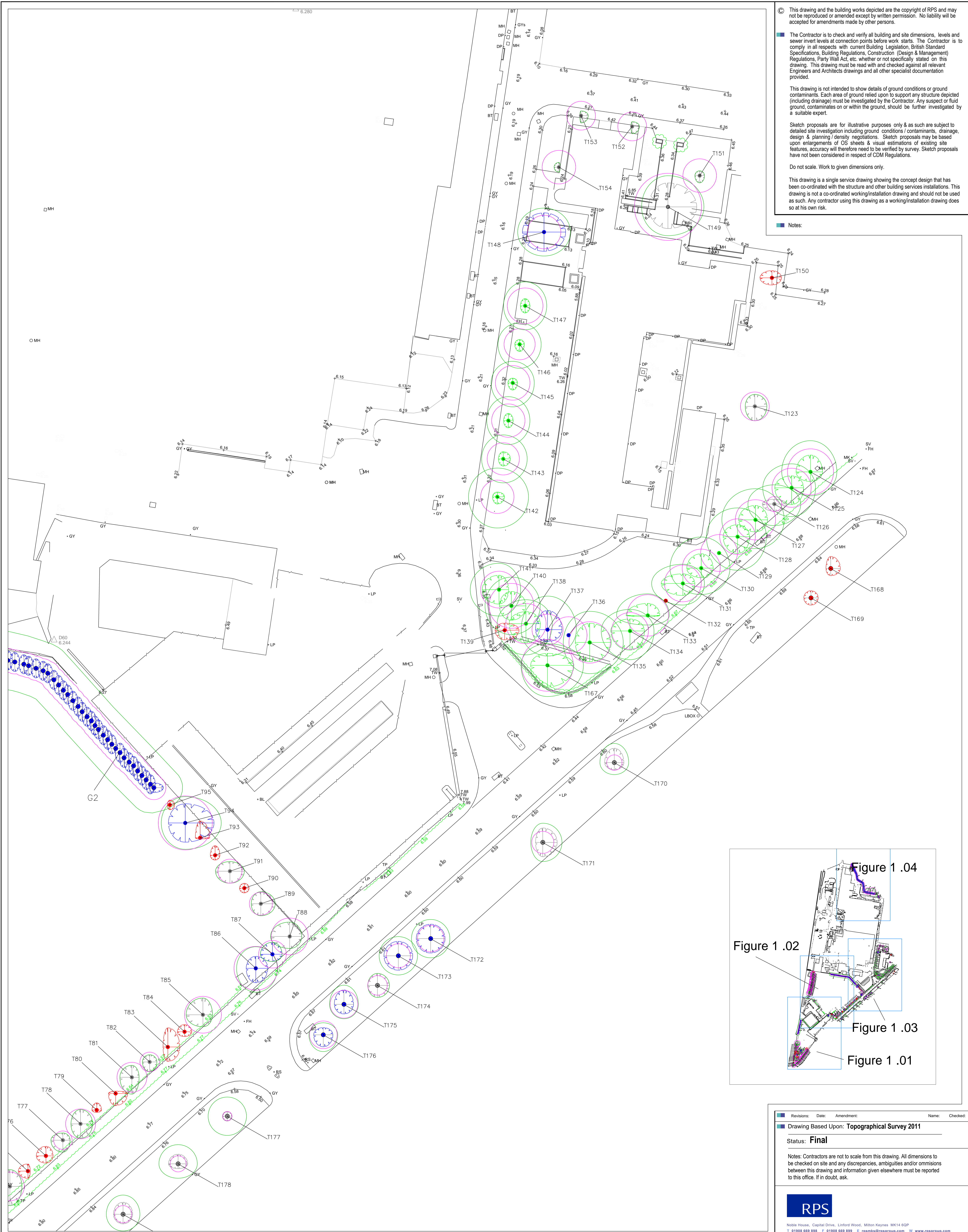
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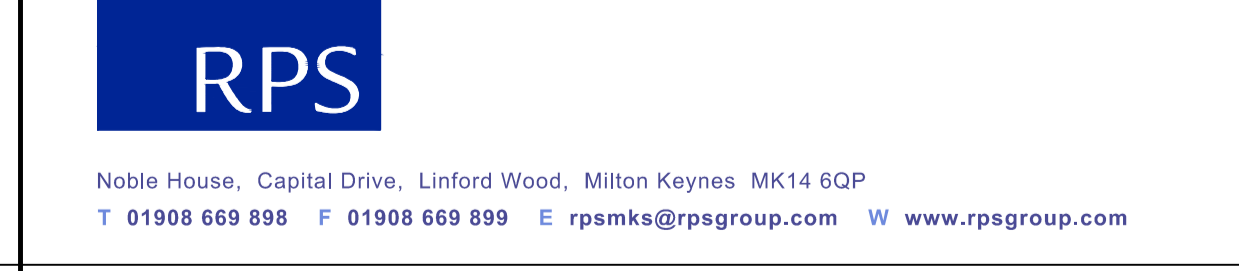


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**Legend**

- |  |  |               |   |  |                              |
|--|--|---------------|---|--|------------------------------|
|  | Tree Position with Canopy Spread plus BS5837 Category A1, A2 or A3 | <b>T/G202</b> | Tree / Group Number                                     |  | Tree Group BS5837 Category A |
|  | Tree Position with Canopy Spread plus BS5837 Category B1, B2 or B3 |               | Root Protection Area - Based on Simple Radius from Tree |  | Tree Group BS5837 Category B |
|  | Tree Position with Canopy Spread plus BS5837 Category C1, C2 or C3 |               | Tree canopy Ultimate Spread                             |  | Tree Group BS5837 Category C |
|  | Tree Position with Canopy Spread plus BS5837 Category R            |               |   |  | Tree Group BS5837 Category R |

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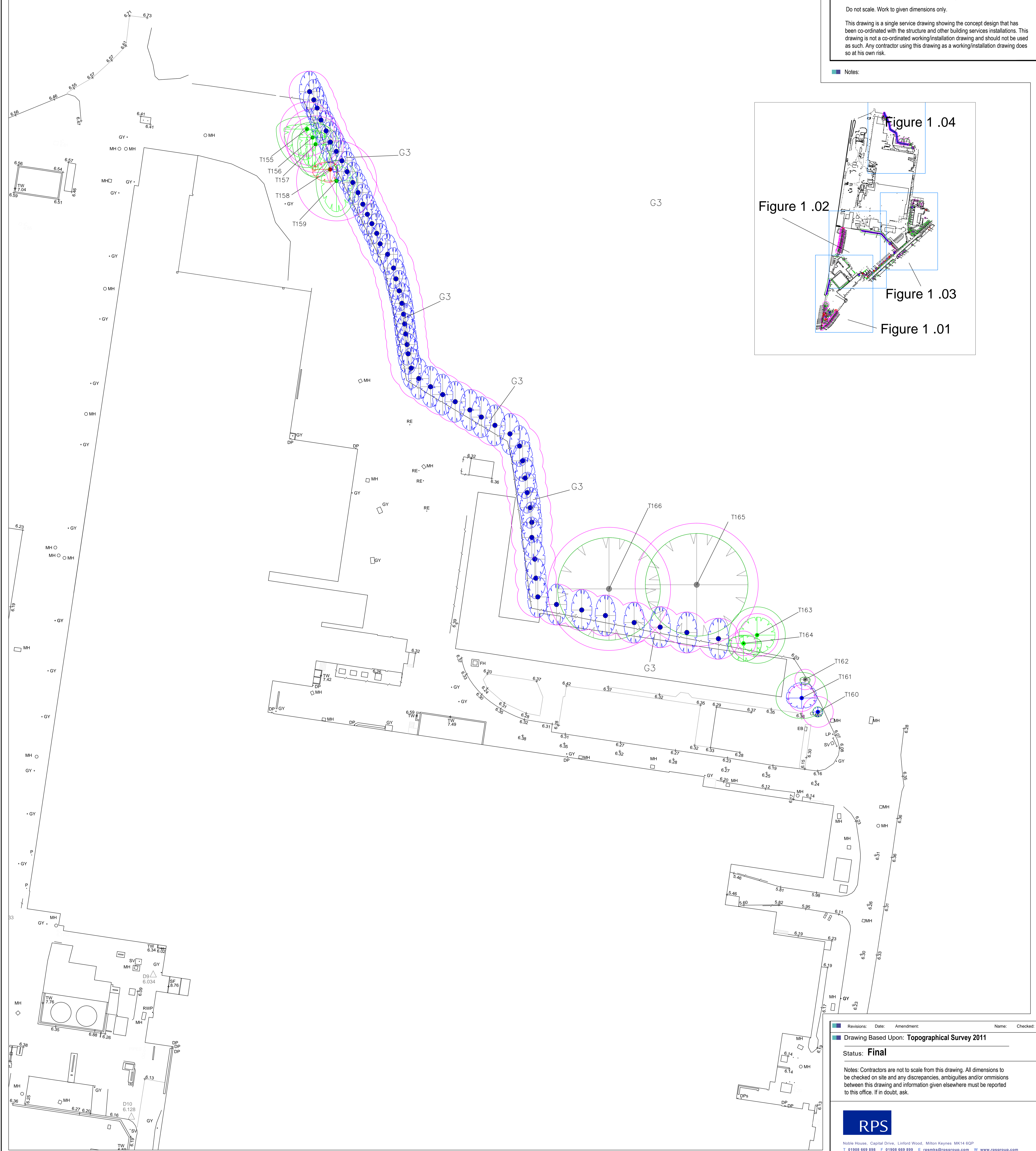
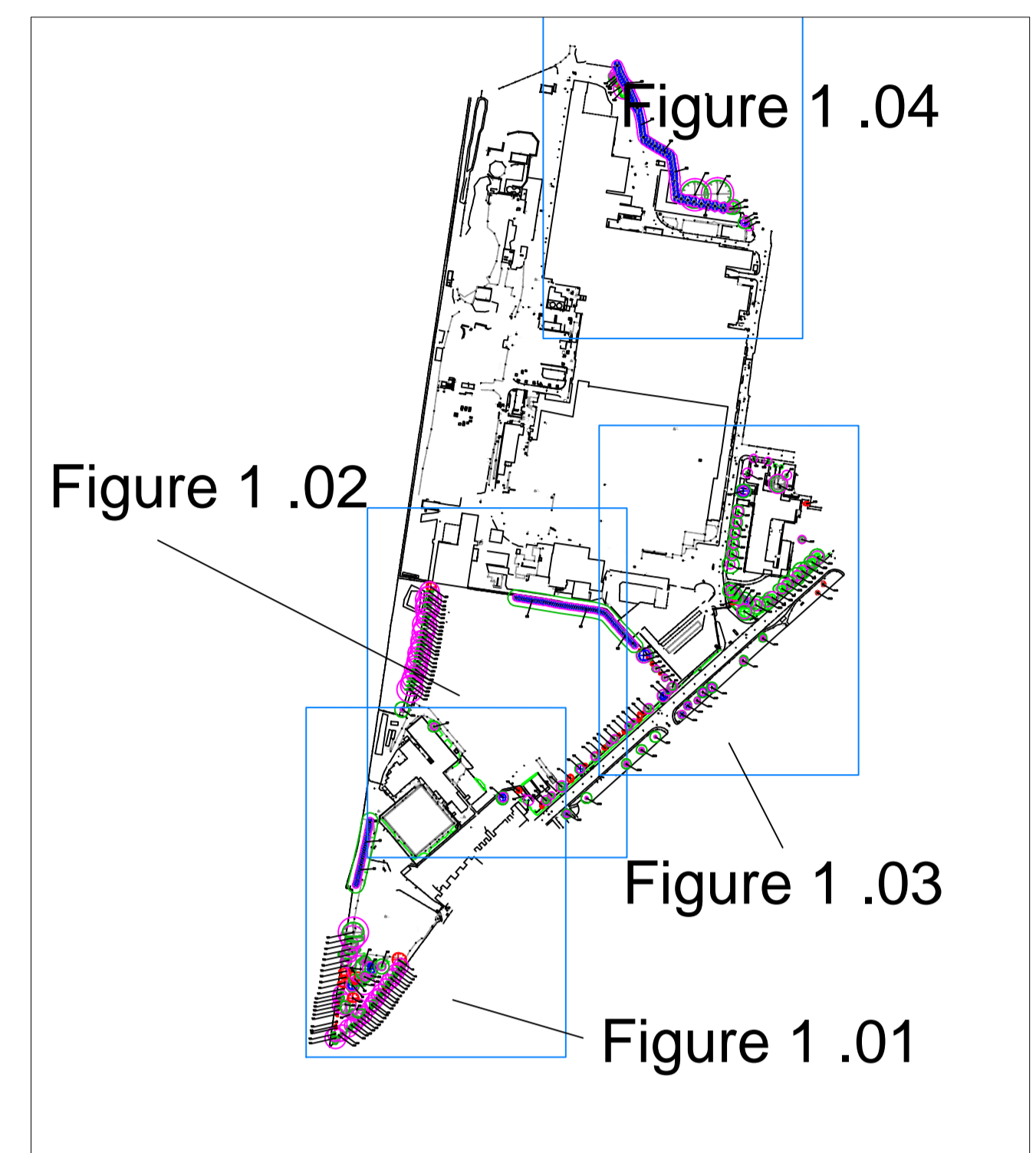
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**Legend**

- |  |  |        |   |  |                              |
|--|--|--------|---|--|------------------------------|
|  | Tree Position with Canopy Spread plus BS5837 Category A1, A2 or A3 | T/G202 | Tree / Group Number                                     |  | Tree Group BS5837 Category A |
|  | Tree Position with Canopy Spread plus BS5837 Category B1, B2 or B3 |        | Root Protection Area - Based on Simple Radius from Tree |  | Tree Group BS5837 Category B |
|  | Tree Position with Canopy Spread plus BS5837 Category C1, C2 or C3 |        | Tree canopy Ultimate Spread                             |  | Tree Group BS5837 Category C |
|  | Tree Position with Canopy Spread plus BS5837 Category R            |        |   |  | Tree Group BS5837 Category R |

## APPENDIX 1

---

### Methodology

#### General

On site data was recorded onto site copies of forms.

The site data was transposed in the office into an MS Access database. Individual tree numbers and locations were plotted by eye on to a drawing at the time of the survey. Tree positions were then related to a Topographical survey of the site provided, where not shown on the topographical survey tree positions have been plotted by eye only and require confirmation. Colour coded versions of the drawings form part of this report. (Figure 1).

The data recorded includes:

- Height - data gathered using a Suunto optical clinometer PM - 5/1520. Where access to the tree was not possible the Heights were estimated.
- Diameter - measurements taken at 1.5 metres above ground level (complying with requirements for BS5837). Where multiple stems occurred below 1.5m the measurement was take as the point immediately above the root flare. Girth data was gathered using a metric diameter tape, callipers or estimated when no access.
- Tree crown spread – estimated measurement of the four cardinal points to provide information to be used with the arboricultural constraints plan
- Tree Crown Clearance – crown height above ground level
- Tree condition - judged visually using the guidelines produced in the report. The condition is indicated with the appropriate colour on the map found in the report. (see Figure 1)
- Age class - estimated from an examination of the tree in question.

### Age Classification

The following classification is employed:

Y - Young:	Saplings and young trees under 10 years of age
MA – Middle Aged / Maturing:	Trees older than 10 years but less than one third of the life expectancy of their species, normally making substantial extension growth.
M - Mature:	Trees between one third and two thirds of the life expectancy of their species. More or less full height and large girth, increasing only slowly.
OM- Overmature:	Trees beyond two thirds of the life expectancy of their species. No significant extension growth. Crown starting to break up and decrease in size.
V – Veteran:	tree that shows features of biological, cultural or aesthetic value that are characteristic of an individual surviving beyond the typical age range for the species.

### Estimated Remaining Contribution in Years

The estimated remaining contribution in years is an estimate based on currently known factors of the possible remaining life of the tree as an asset. Clearly, it is impossible to predict changes in condition which may occur in the future and this reflects what is considered reasonable under existing circumstances, The following classification is employed:

Death or removal is likely within less than 10 years

Death or removal is likely within 10-20 years.

Death or removal is likely within 20-40 years.

Death or removal is likely beyond 40 years

The estimated remaining contribution in years will be dependent on the interaction of the typical longevity of the species, its current age and condition with prevailing environmental factors. The estimated remaining contribution in years also dependent on future tree management that can extend useful life in some instances.



### **Tree Condition.**

The tree survey assessed the individual condition of all trees identified on the site. The assessment of condition is based on a visual and professional view.

The categories considered for Physiological Condition are good, fair, poor and dead.

Structural Condition is also commented on and this will include such items of presence of decay and physical defects.

Trees are living organisms and their condition can change rapidly in response to environmental variables. Condition remarks refer to the date of survey and cannot be assumed to remain unchanged. While there is no such thing as a safe tree, regular inspection of trees is recommended to reduce the foreseeable risks associated with trees. There is currently no published guidance from the UK insurance industry on the frequency of tree inspections. In the German courts a bi-annual routine inspection is normally expected for older street trees, giving an indication of the rapidity of change in condition that can occur.

### **Preliminary Management Recommendations**

Recommendations are given where it is felt by the arborist that further investigations are required due to suspected defects and work recommendations for pre construction tree work.

### **Tree Categorisation Using BS 5837 Methodology**

The trees surveyed were categorised using the method explained in BS5837 Trees in Relation to Construction 2005. This method categorizes individual trees, groups and woodlands in a systematic way. Each tree, group or woodland is identified on an attached plan.

Groups are identified as those trees forming a single arboricultural feature with trees that provide companion shelter, are avenues or screens or cultural.

Initially the surveyor will determine if the tree should be regarded as an R category tree. R category trees are those that are low value trees that have little future due to physiological and structural condition.

Other trees are graded A, B or C. The initial category should reflex the trees value in making an important contribution to the amenity of the site over a period of time. The higher the category the longer the perceived time period.

A sub category is included 1, 2 or 3. This sub category reflects the type of value the surveyor feels the tree presents in regards its value to 1 – arboricultural, 2 – landscape, 3 – cultural or conservation.

The cascade chart used is included as Appendix 2 of this report.

## APPENDIX 2

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### BS5837 Table 1 – Cascade Chart for Tree Quality Assessment

<b>TREES FOR REMOVAL</b>				
<b>Category and definition</b>	<b>Criteria</b>			<b>Identification on plan</b>
<p><b>Category R</b> Those in such a condition that any existing value would be lost within 10 years and which should, in the current context, be removed for reasons of sound arboricultural management</p>	<ul style="list-style-type: none"> <li>• 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 R category trees (i.e. where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning)</li> <li>• Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline</li> <li>• Trees infected with pathogens of significance to the health and/or safety of other trees nearby (e.g. Dutch elm disease), or very low quality trees suppressing adjacent trees of better quality</li> </ul> <p>NOTE Habitat reinstatement may be appropriate (e.g. R category tree used as a bat roost: installation of bat box in nearby tree).</p>			DARK RED
<b>TREES TO BE CONSIDERED FOR RETENTION</b>				
<b>Category and definition</b>	<b>Criteria — Subcategories</b>			<b>Identification on plan</b>
	<b>1 Mainly arboricultural values</b>	<b>2 Mainly landscape values</b>	<b>3 Mainly cultural values, including conservation</b>	
<p><b>Category A</b> Those of high quality and value: in such a condition as to be able to make a substantial contribution (a minimum of 40 years is suggested)</p>	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 principal trees within an avenue)	Trees, groups or woodlands which provide a definite screening or softening effect to the locality in relation to views into or out of the site, or those of particular visual importance (e.g. avenues or other arboricultural features assessed as groups)	Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture)	LIGHT GREEN
<p><b>Category B</b> Those of moderate quality and value: those in such a condition as to make a significant contribution (a minimum of 20 years is suggested)</p>	Trees that might be included in the high category, but are downgraded because of impaired condition (e.g. presence of remediable defects including unsympathetic past management and minor storm damage)	Trees present in numbers, usually as groups or woodlands, such that they form distinct landscape features, thereby attracting a higher collective rating than they might as individuals but which are not, individually, essential components of formal or semi-formal arboricultural features (e.g. trees of moderate quality within an avenue that includes better, A category specimens), or trees situated mainly internally to the site, therefore individually having little visual impact on the wider locality	Trees with clearly identifiable conservation or other cultural benefits	MID BLUE
<p><b>Category C</b> Those of low quality and value: currently in adequate condition to remain until new planting could be established (a minimum of 10 years is suggested), or young trees with a stem diameter below 150 mm</p>	Trees not qualifying in higher categories	Trees present in groups or woodlands, but without this conferring on them significantly greater landscape value, and/or trees offering low or only temporary screening benefit	Trees with very limited conservation or other cultural benefits	GREY
	NOTE Whilst C category trees will usually not be retained where they would impose a significant constraint on development, young trees with a stem diameter of less than 150 mm should be considered for relocation.			

## APPENDIX 3

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### Botanical and Common Names of Trees on Site

<b>BOTANICAL NAME</b>	<b>COMMON NAME</b>
<i>Abies sp. glauca</i>	Blue Fir
<i>Acer negundo</i>	Box Elder
<i>Acer platanoides</i>	Norway Maple
<i>Acer pseudoplatanus</i>	Sycamore
<i>Acer rubra</i>	Red Maple
<i>Betula sp.</i>	Birch
<i>Chamaecyparis lawsoniana 'aurea'</i>	Lawson's Cypress cultivar
<i>Chamaecyparis sp.</i>	Lawson Cypress
<i>Crataegus crus-galli</i>	Hybrid Cockspur Thorn
<i>Crataegus monogyna</i>	Hawthorn
<i>Cryptomeria japonica var.</i>	Japanese Cedar
<i>Eucalyptus gunnii</i>	Eucalyptus
<i>Fagus sylvatica</i>	Beech
<i>Laburnum anagyroides</i>	Laburnum
<i>Liquidambar styraciflua</i>	Sweet Gum
<i>Lireodendron tulipifera</i>	Tulip Tree
<i>Malus sylvestris</i>	Apple
<i>Malus tschonoskii</i>	Flowering Apple
<i>Platanus x hispanica</i>	London Plane
<i>Populus x canadensis</i>	Hybrid Black Poplar
<i>Populus nigra 'Italica'</i>	Lombardy Poplar
<i>Prunus avium</i>	Wild Cherry
<i>Prunus cerasifera</i>	Plum
<i>Prunus cerasifera 'Atropurpurea'</i>	Purple Leafed Plum

## Not Protectively Marked

<i>Prunus sp.</i>	Cherry in variety
<i>Salix alba</i>	White Willow
<i>Sorbus aucuparia</i>	Rowan
<i>Tilia sp.</i>	Lime

## APPENDIX 4

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### Root Protection Area Fencing Details

#### Protective Fencing Specifications

Since trees are living organisms which interact with their immediate environment any changes made to their surroundings may have a bearing on that trees future. Developing a site will undoubtedly place any trees within close proximity under some level of stress, which could predispose them to infection. The aim of this method statement is to limit the amount of stress induced by introducing protection measures.

The most effective way of offering protection is by erecting protective barriers set at a distance from the tree stem using the methods given within BS 5837: 2005 Trees in Relation to Construction. Barriers should be braced and constructed to resist impacts; see figures 1 & 2 below for barrier specifications.

Barriers should be erected before any works commence on site with the exception of recommended tree work. Areas of retained and future structure planting should be similarly protected.

All personnel should be made aware of the protected areas and instructed to keep them free of materials, waste and excess soil. Soil disturbance should be prohibited and travel of any kind, including foot traffic should also be excluded within the root protection area (RPA) unless previously agreed and adequate ground protection has been installed. Where foot traffic is agreed within the RPA, single thickness scaffold boards laid over a compressible material on a geotextile, or supported by scaffold should suffice. Where vehicular access through the RPA is agreed an engineer should be consulted to design adequate ground protection methods.

Suggested Barrier Specification (as per BS5837: 2005)

Figure 1

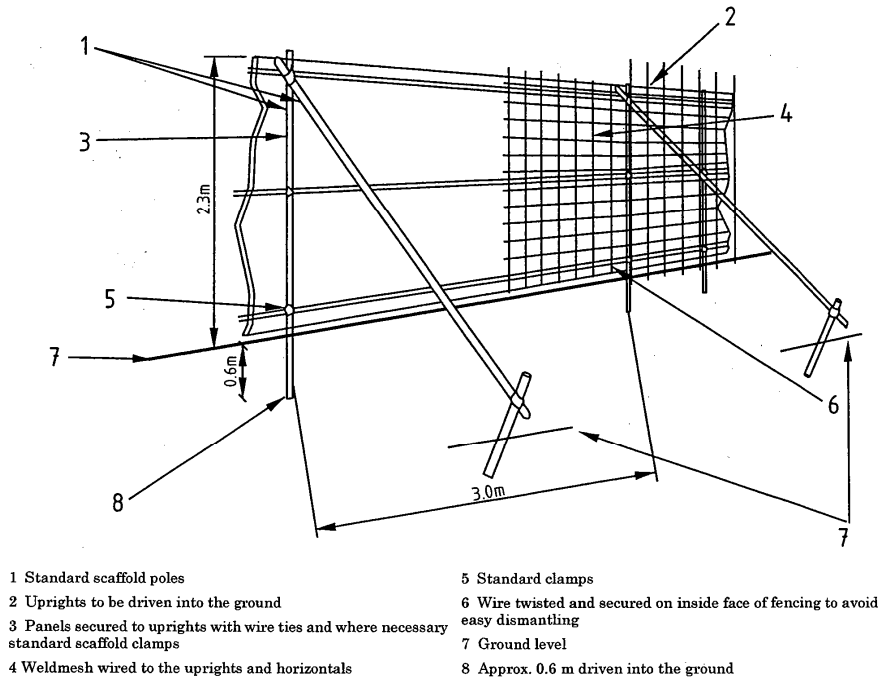
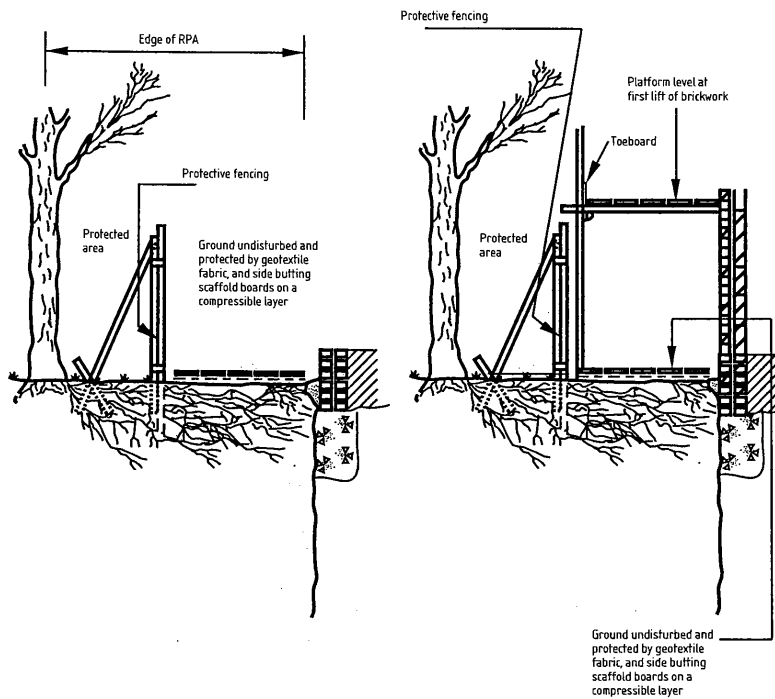


Figure 2



## APPENDIX 5

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### Arboricultural Glossary

**Abiotic Factors** - Nonliving factors of the environment, including temperature & wind.

**Age-class** - A general classification of the tree into either - young, semi-mature/maturing, mature, over-mature, or senescent.

**Apical Bud/Shoot** – The apical bud, also known as the leading shoot, is responsible for shoot extension and is dominant.

**Apical Dominance** – A singular, leading shoot remains dominant.

**Arboreal** - In connection with, or in relation to, trees.

**Arboriculturalist** – Person who has, through relevant education, training and experience, gained recognised qualifications and expertise in the field of trees in relation to construction.

**Arboricultural Implications Assessment (AIA)** – Study, undertaken by an arboriculturalist, to identify, evaluate and possibly mitigate the extent of direct and indirect impacts on existing trees that may arise as a result of the implementation of any site layout proposal.

**Arboricultural Method Statement (AMS)** – Methodology for the implementation of any aspect of development that has the potential to result in the loss of or damage to a tree. Note The AMS is likely to include details of an on-site tree protection monitoring regime.

**Biotic factors** - Living factors. For example, animals and pathogens.

**Bottle Butt** – Term used to describe shape of stem base, usually associated with an internal defect – refer to 'Reaction Wood' below.

**Branch union/junction** - The point at which a branch joins a larger stem. Can be a point of weakness, especially in certain species.

**Cambium** - A lateral meristem (see below) in vascular plants located just beneath the bark responsible for secondary growth, e.g. production of annual growth rings.

**Canker** – A clearly defined area of dead and sunken or malformed bark, caused by bacteria or fungi. Can have a bearing on structural integrity of infected limb(s) depending on size and location.

**Chlorosis/Chlorotic** – Abnormal yellow or yellow-green coloration of usually green leaves. Essentially a reduction of chlorophyll levels often as a result disease or nutrient deficiency.

**Co-dominant stems** - A growth characteristic, where two or more stems of similar size grow from the same point. Can create an inherent weakness.



## Not Protectively Marked

**Compaction** - The compressing & hardening of soil around tree root systems, due to vehicular/pedestrian use etc. Loss of pore space between soil granules limits water movement and gaseous exchange, and inhibits root growth.

**Competent person** – Person who has training and experience relevant to the matter being addressed and an understanding of the requirements of the particular task being approached

Note 1 A competent person understands the hazards and the methods to be implemented to eliminate or reduce the risks that can arise. For example, when on site, a competent person is able to recognise at all times whether it is safe to proceed.

Note 2 A competent person is able to advise on the best means by which the recommendations of this British Standard may be implemented.

**Condition** – Assessment based on a visual and professional view giving consideration to many factors such as tree health, structural integrity and suitability of its position.

**Construction Exclusion Zone** – Area based on the RPA (in m<sup>2</sup>), identified by an arboriculturalist, to be protected by development, including demolition and construction work, by the use of barriers and/or ground protection fit for purpose to ensure the successful long-term retention of a tree.

**Coppice** - The method of managing trees by cutting the stems at between 1.0 inch and 1.0 foot from the ground level on a regular cycle, the cut stumps of the trees or shrubs are allowed to re-grow many new stems.

**Crown spread** - Gives distances between extreme limits of the crown and the stem, usually along the four compass points. Helps to show crown symmetry.

**Crown Reduction** – The removal of branch ends to reduce the extreme limits of a trees branch spread and height.

**Crown Thin** – The removal of selected branches within the crown to thin the internal branch structure.

**D.B.H.** - 'Diameter at Breast Height', an industry standard to gauge tree stem size and development. Within arboriculture, breast height is taken to be 1.5m above ground level.

**Dieback** - The reduction in crown vigour and extension growth progressing to death of distal parts; often associated with decline.

**Epicormic/adventitious growth** - New growth from dormant buds that can often form tenuous attachments. Although some species readily form such shoots, it can be an indication of stress.

**Feathered Whip** – Size of tree for planting, usually ranging from 1.25m to 2.5m in height.

**Form** - A general assessment of the shape and position of the tree within its' environment.

**Frass** – Debris such as bore dust left by wood boring insects.

**Hanger** – Term used to describe a branch that has become detached and is being supported by other branches. Can be a hazard to persons and property below.

## Not Protectively Marked

**Hazard Beam** – After the loss of a distal part, a limb concentrates growth upwards creating adverse end weights that can render the limb susceptible to failure.

**Heavy Standard** – Size of tree for planting, usually above 3.5m in height.

**Included bark** – Growth characteristic usually caused when two or more stems/branches growing in close proximity 'fuse' together entrapping the bark from when the parts were separate in the middle, creating a structural weakness.

**Meristem** - The undifferentiated plant tissue from which new cells are formed, such as that at the tip of a stem or root.

**Meristematic Disorder** – A growth disorder caused by a disruption of the meristem (see above) from any of a number of biotic factors (see above). Manifests as growths such as 'Witches Brooms' & 'Galls'.

**Necrosis/Necrotic** – Death of tissues usually characterised by a blackening in colour.

**Occlusion/Occluded** – Normally used to describe the overgrowth of a wound. Also, immovable foreign objects in contact with a tree part can become encased or 'occluded' by the tree as it grows incrementally.

**Pathogen** - An agent that causes disease, especially a living microorganism such as a bacterium or fungus.

**Plasticity index** - The table used to calibrate the shrinkability of a clay soil.

**Pollard** – The removal and subsequent regular re-removal of the crown of a tree above animal browsing height. Can be an effective method of controlling the size of trees in urban areas. This is ideally begun in the trees early stages and maintained throughout its life.

**Reaction wood** - Essentially additional wood laid down by the tree to compensate for structural defects such as cavities.

**Ring barking/Girdling** – the removal of bark around the entire circumference of a stem or branch, causing the death of all distal parts.

**Root Protection Area (RPA)** – Layout design tool indicating the area surrounding a tree that contains sufficient rooting volume to ensure the survival of the tree, shown in plan form in m<sup>2</sup>.

**Saprophyte** – An organism which exists on dead plant material.

**Scaffold branches** - The main structural branches within the crown.

**Services** – Any above ground and piped and/or ducted underground infrastructure including water main, electricity supply, gas supply, fibre optic utilities, telecommunications cabling, storm and foul water drainage, including temporary storage for run-off, pumping stations, interceptors and other allied buried structures.

**Shrinkable clay** – Clay soil which alters in volume depending on moisture content. Property sited on shrinkable clay can suffer subsidence damage due to soil desiccation; this can be due to the water uptake of nearby vegetation, including trees.

## Not Protectively Marked

**Special engineering** – design of a structure with the physiological requirements of trees as the priority.

**Standard** – Size of tree for planting, usually ranging from 2m to 3.5m in height.

**Structure** – Man-made object, such as a building, carriageway, path, wall, services, and built and excavated earthworks.

**Transplant** – (1) size of tree for planting, usually ranges from 0.2m to 0.9m in height (2) the relocation of a tree or shrub including a given portion of the root system.

**Tree Constraints Plan (TCP)** – Plan prepared by an arboriculturalist for the purposes of layout design showing the RPA and representing the effect that the mature height and spread of retained trees will have on layouts through shade, dominance, etc.

**Tree protection plan** – scale drawing prepared by an arboriculturalist showing the finalised layout proposals, tree retention and tree and landscape protection measures detailed within the arboricultural method statement (AMS), which can be shown graphically.

**U.L.E** – ‘Useful Life Expectancy’ is an estimate based on currently known factors of the possible remaining life of the tree as an asset.

**Veteran tree** – Tree that, by recognised criteria, shows features of biological, cultural or aesthetic value that are characteristic of, but not exclusive to, individuals surviving beyond the typical age range for the species concerned.

**Vigour** - A general classification, as to the present and future potential growth and development of a tree. A comment regarding the health status of the tree specific to its species.

**Water Demand** - A generic classification of the water demand of specific species as outlined by the NHBC (National House Building Council).

**Whip** – Size of tree for planting, usually ranging from 1m to 1.75m in height.

## APPENDIX 6

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### Hard Surface Installation Methodology

The following methodology sets out the requirements and stages in construction of new hard surfaces in relation to existing trees.

This methodology is not meant to be considered as a specification and whilst examples of products that meet the arboricultural requirements for the installation of hard surfacing adjacent to trees are given the final construction detail must be designed by a suitably qualified and experienced engineer, whilst ensuring the arboricultural requirements are met, to ensure that the finished surface is fit for purpose.

In this respect it should be noted that Geosynthetics Limited, who supply cellular confinement systems, offer a design service to develop site specific solutions.

#### Arboricultural Requirements

Wherever it is intended to undertake demolition or construction operations within the Root Protection Areas of trees precautions must be taken to maintain the condition and health of trees root systems.

In particular:

- Works shall be conducted in such a manner as to prevent physical damage to roots during demolition or construction, such as soil compaction or root severance.
- Provision for water and oxygen to reach the roots must be made and the soil structure must not be disturbed.
- Provision must be made for future root growth and precautions taken to ensure that such root growth does not cause unacceptable levels of damage to the finished construction.
- The soil must not be compacted and soil bulk density must be maintained at suitable levels for tree root growth and function. In this respect a soil bulk density of over  $1.8\text{g/cm}^3$  will impede root growth and function.

To achieve the above requirements for tree root growth and function the surface shall be designed so that:

- No excavation is required for their installation; to ensure that physical root damage does not occur.
- The surface can be installed without compaction of the existing soils; thus ensuring damage to the soil structure does not occur.
- The surface is permeable; thus ensuring that oxygen and water can reach the root system and that  $\text{CO}_2$  can diffuse vertically out of the soil as high concentrations can cause root suffocation.

There are various methods of creating such a surface however one that is commonly in use and is therefore recommended here is the use of a three dimensional cellular confinement system to provide for load suspension above the existing soil grade and reducing vertical loads on the underlying soils. One such product is CellWeb produced by Geosynthetics.

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Prior to installation of any new surfacing the following factors shall be considered:

- The exact location of the area to receive the special surfacing shall be determined.
- The area should be investigated to identify any existing services.
- The area shall be fenced off with tree protection fencing until installation of the special surfacing is to take place. Such installation should generally be phased to occur following substantial completion of the development.
- The final surface shall be decided upon, the surface must be permeable and several options for final surfacing are considered in the following section.

### **Methodology for Surface Installation**

Prior to the installation of the new surface, existing ground cover and surface vegetation should be killed using an appropriate herbicide.

Specialist advice should be sought in order to determine the most appropriate herbicide to use due to the potential for leaching through soils and the potential impacts that this will have on retained vegetation.

As an alternative or addition to herbicide treatment the existing surface vegetation may be carefully removed by using hand tools.

All dead organic matter is to be removed by hand following herbicide treatment to prevent anaerobic conditions, as a result of the decomposition of dead vegetation, occurring.

All major protrusions such as rocks shall be removed by hand and all tree or shrub stumps from removed vegetation shall be ground out to minimise ground disturbance.

The soil surface **must not** be skimmed or stripped to achieve a level surface and where necessary major hollows shall be filled using a granular fill, such as no-fines gravel, washed aggregate or cobbles, to achieve a level surface.

In some cases it may be appropriate to consider the removal of the top layers of soil by non mechanical means to achieve desired levels, establish rooting patterns and potentially provide for some embedding of the new surface into the existing ground level. Such works shall be completed using pneumatic soil excavation techniques and the works must be supervised by an Arboricultural consultant. The need for such works to occur shall be considered during the detailed design of the surface.

Following surface preparation the soil shall be covered by a permeable geotextile to prevent the cellular confinement fill from migrating into the existing soils.

The geotextile layer shall be laid with overlaps of 300mm beyond the edge of the proposed construction and shall be temporarily retained with pins, stakes or weights.

The cellular confinement system shall then be installed and fixed in position in accordance with the manufacturer's recommendations.

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The cellular confinement system shall then be filled with the specified aggregate in accordance with the manufacturer's recommendations. All works involved in the filling of the system with aggregate must be completed by hand and be supervised by the site supervisor.

The infill aggregate shall then be rolled or whacked to ensure cohesion of the granular fill with the cellular confinement system.

The desired finished surface shall then be installed. This shall be permeable and gas porous. Options for the type of finished surface are:

- Washed gravel – This retains porosity unless excessively consolidated and will be particularly useful where the final surface is not level. However it may not be suitable in areas with high pedestrian and vehicular passage. If gravel is used, this shall be distributed in a 75mm layer over the exposed infill aggregate.
- Paving slabs / brick paviours – These shall be laid dry jointed on a bed of sharp sand to allow air and moisture to permeate. Specialist slabs and paviours with inbuilt infiltration holes may be used.
- Tarmacadam – This shall not be used where it will cover over 20% of a trees Root Protection Area.

Following completion of the hard surface protective fencing shall be erected around the trees until the completion of development.