



**BLOSSOM FIELD, COTEFIELD FARM  
BODICOTE  
ARBORICULTURAL IMPACT  
ASSESSMENT**

28 November 2014

**Our Ref: JKK5617**

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## QUALITY MANAGEMENT

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# 1 INTRODUCTION

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- 1.1 RPS were instructed in April 2014, by Mr O Wells, to undertake a Tree Survey and then to prepare an Arboricultural Impact Assessment in relation to proposed development of land at Blossom Fields, Cotefield Farm, Bodicote, Oxfordshire.
- 1.2 The purpose of the statement is to:
- Supply information related to the trees directly affected by the proposed development within the site at Cotefield Farm, Bodicote, Oxfordshire and provide this base information in the form of tree schedules detailing Tree Survey Data, Tree Root Protection Areas and Preliminary Tree Work Recommendations.
  - Provide updated Tree Constraints Plans – (Figures 01.01, 01.02 & 01.03) that identifies constraints to development and indicates the root protection areas for the trees as described in BS5837:2012 - Trees in Relation to Design, Demolition and Construction - Recommendations.
  - Provide Tree Protection Plans – (Figures 02.01, 02.02 & 02.03) that identifies trees to be removed under the proposed sketch layout plan and tree protection that respects the root protection areas for the retained trees as described in BS5837:2012 - Trees in Relation to Design, Demolition and Construction - Recommendations.
  - Assess to what extent the proposed development will impact upon the health and vitality of the trees on site and make recommendations for mitigation where appropriate.
  - Provide guidance detailing with tree protection measures that should be used to allow development and minimise any impact to the trees from the construction of the structures proposed.
- 1.3 The assessment/statement 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, member of the Landscape Institute working for the RPS Group PLC.

## 2 SITE INFORMATION

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- 2.1 The trees surveyed are located on land at Blossom Fields, Cotefield Farm, Bodicote, Oxfordshire.
- 2.2 The site is comprised of an area of agricultural land with further agricultural land to the west and south of the site, Residential land to the north and Cotefield Nursery to the west.
- 2.3 The site has predominately been used for agricultural purposes up till recent times.
- 2.4 Trees across the site are located in the majority around the site boundary within a shelterbelt plantation that forms the west and southern boundary behind a recently planted hedgerows. A section of younger trees are located to the north west adjacent to the nursery.

The following documents have been considered in this statement:-

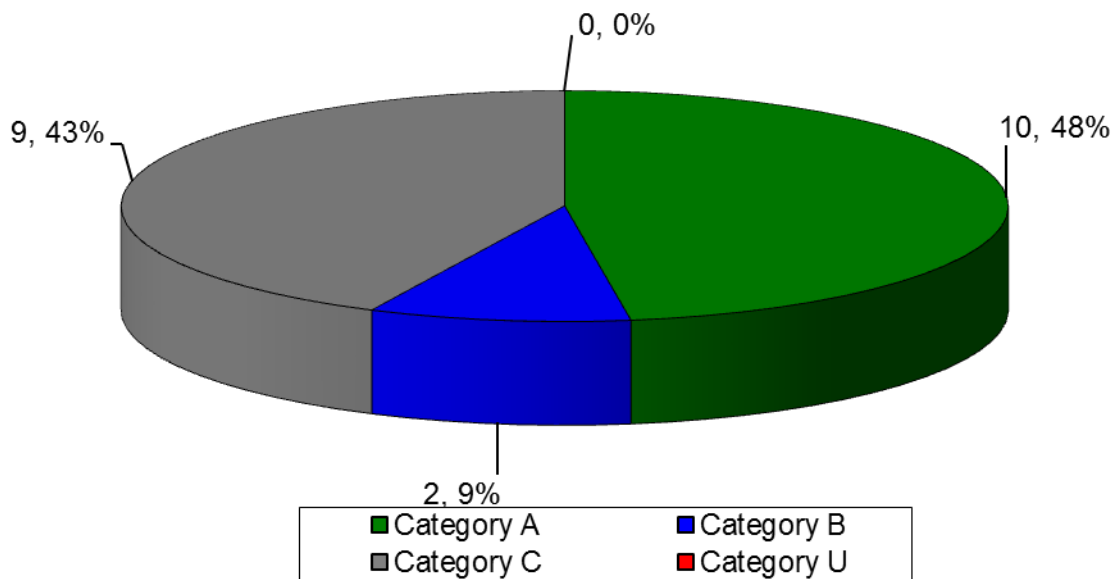
- Site layout plan – Figure no. 7993-0047-01, Nov 14 Blossom Fields, Cotefield Farm. RPS

### 3 TREE QUALITY ASSESSMENT

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- 3.1 All trees inspected were categorised using BS5837:2012 and the attached plans (Figure 01.1 to 01.03) show tree positions, numbers and retention categories. The tree positions are based on a topographical survey undertaken by RPS.
- 3.2 The initial stage of a tree survey in accordance to BS5837:2012 looks at the trees on the site in terms of life expectancy and condition.
- 3.3 Trees are then categorised according to their retention value; category A trees have a high retention value, category B trees have a moderate retention value, category C trees are those of a low retention value which can be retained in the short term and category U trees are those believed to warrant removal as they are likely to fail or die within 10 years. Please refer to Appendix 4 for more detailed definitions of the categories.
- 3.4 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.
- 3.5 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.
- 3.6 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.
- 3.7 Category U trees are those that have been assessed as having no retention value; these trees should not be a material consideration in the planning process.
- 3.8 Category A, B or C trees are those that should be a material consideration in the planning process whilst category U 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.
- 3.9 The charts below give a visual representation of the overall distribution of retention value of the trees surveyed.

### BS5837 Categories



3.10 Six groups were noted during the survey and their retention values were Five A category and one C category.

#### Physiological Condition

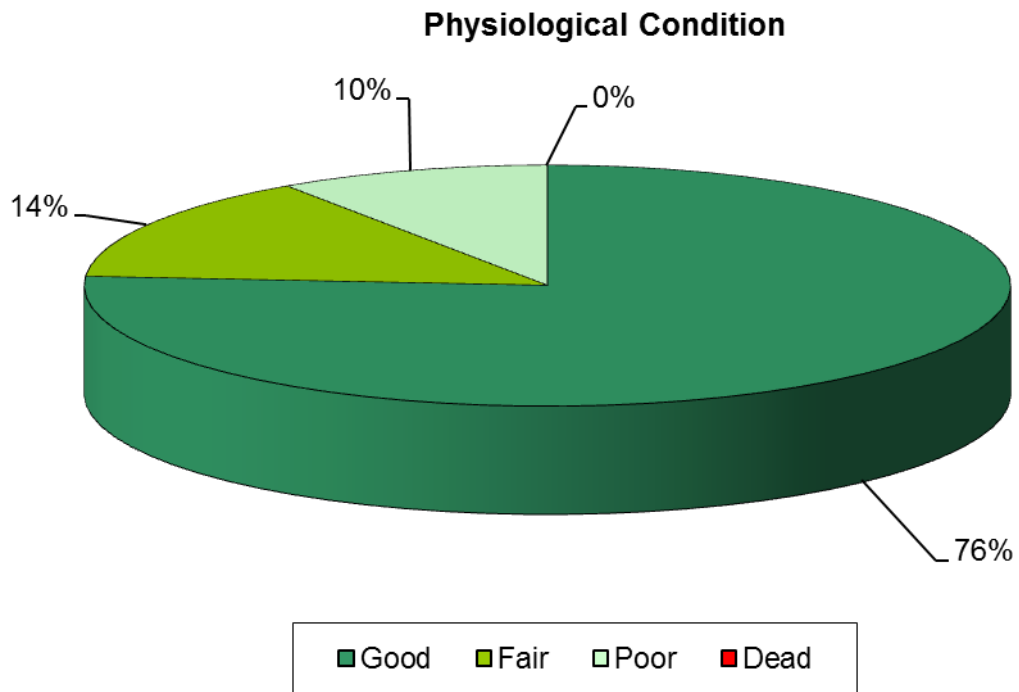
3.11 Sixteen of the trees surveyed were assessed as being of a good physiological condition with crown density and shoot extension growth levels within the expected ranges for their age and species.

3.12 Trees assessed as being in a good physiological condition are more 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.

3.13 A further three trees were considered to be of a fair physiological condition. Typically these specimens are exhibiting lower shoot extension growth and reduced crown density than would typically be expected.

3.14 These specimens typically have a lower life expectancy than those within the good condition class and they will not tolerate significant changes as a result of development as well as those in the good condition class.

3.15 Two trees were considered to be in a poor physiological condition. These specimens have a limited life expectancy and will not tolerate significant changes in their growing environment.



### Structural Condition

- 3.16 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.
- 3.17 Whilst the majority of structural defects that were noted across the tree stock on the site, such as minor deadwood in tree crowns, were not significant and are unlikely to result in the premature failure of trees' stems or primary branches.
- 3.18 The large veteran trees on the southern edge of the site are of importance and have been carefully considered in the layout plans for the new development. No development is proposed within the RPA of these trees. Careful management should be considered going forward so that they are retained for the long term as historic and ecological features.
- 3.19 A schedule of initial tree works was identified during the survey and this can be found as Table 3 in the report. These are just works that should be considered at this early stage of the development process and will need revision at various stages to ensure trees are protected and are not compromised by development.
- 3.20 The influence of ivy through the site should be considered as it is having a detrimental effect on the trees, not only covering the stems but the crowns of some are clothed in it and this is driving them into decline. The control of ivy will be a priority for successful tree establishment and long term sustainability of the existing trees. It is also worth noting that it is having an effect on the ground flora smothering that also.



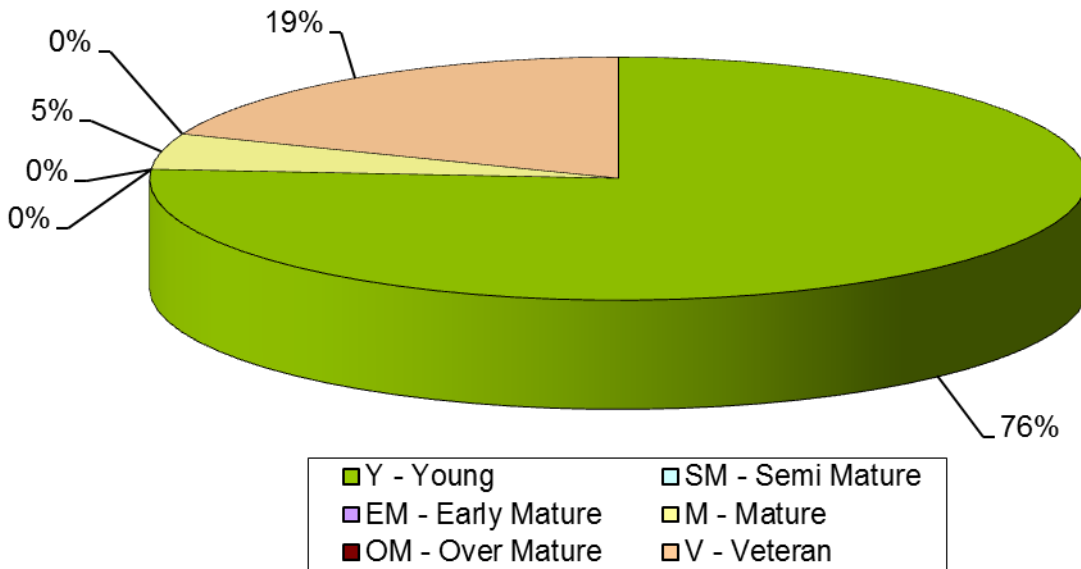
- 3.21 The inspection of some trees was prohibited by canopies, ivy and adjacent vegetation. Tree inspections should be carried out on a regular basis to ensure the safety of people using and working throughout the site.
- 3.22 Management of the woodland belt will be required in the future so that the trees form a long term feature in the local landscape with thinning of the belt to allow better crown development and ensuring species with the best long term potential are retained.

### **Species and Age Distribution**

- 3.23 A schedule of the tree species recorded within the survey is included in this report as Appendix 5.
- 3.24 One of the trees surveyed was considered to be of a mature or over mature age class for their species and location. These trees will generally not respond as well to changes in their growing environment that may occur as a result of development as young and middle-aged trees.
- 3.25 Sixteen of the trees surveyed were considered to be of a young, early mature or semi mature age class for their species and location. These specimens are generally in such a condition that they will adapt well to changes in their growing environment that may occur due to development.
- 3.26 Four trees were considered veteran trees;’ the implications of their presence on the use of the surrounding land should be assessed at the earliest possible stage of the design process. Where such trees are to be retained, particular care should be taken in the design to accommodate them in a setting that aids their long-term retention.

**NOTE** *Whilst veteran trees typically provide a range of niche habitats, they are especially valuable if ancient, due to their scarcity and high habitat values for associated species of fungi, lichens and saproxylic invertebrates, including some which are rare or endangered and occur only where such trees have been continuously present for centuries. These trees will therefore almost always be included in the A3 category.’ – BS5837:2012*

### Age Class



### Visual Amenity

3.1 The trees within the site are of public visual amenity value as they form a distinct feature in the surrounding landscape and have a contribution to the character and appearance of the locality.

## 4 CONSTRUCTION REQUIREMENTS

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- 4.1 The development of the site at Bodicote will not require demolition as it is an open field site.
- 4.2 It is intended to carry out development throughout the site, providing new residential accommodation and improved open space.
- 4.3 Access will be required for equipment to:
- Construction of the road layout
  - Installation of services and utilities
  - Foundation construction will be required
  - Access for scaffolding to be erected
  - Installation of boundary structures
  - Installation of footpaths and access points
  - Development of new landscape features
- 4.4 The construction process will need to be monitored during its progress and this Arboricultural Method Statement should be used as the document provided to guide the construction process.
- 4.5 During the development of the site tree protection will need to be considered and this will form part of this Arboricultural Method Statement. Some tree pruning may be required for access to install tree protection fencing and these, if requirements, should be provided following assessed by the site manager and discussed with the landscape manager before any works are undertaken. All tree works should be completed prior to start of construction work.
- 4.6 The following sections detail the below and above ground constraints concerning trees that will be encountered during the development.

## 5 BELOW GROUND CONSTRAINTS

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- 5.1 Tree roots require moisture and nutrients to grow successfully, if these are not available then they will not be able to colonise the area surrounding the main stem. The tree will form a root system and exploit any water and nutrient resources that are available to them. Roots do not form in hostile environments and the tree will adapt its size and shape if any of these items are in limited supply.
- 5.2 Trees in many urban areas are limited by the harsh conditions that the tree finds itself in. They are woodland species that find themselves severely limited in some urban situations. The older trees within the site have been able to establish themselves and have achieved what should be considered a maximum size for their species and location.
- 5.3 Sealed surfaces and good urban drainage are bad for root and tree growth. The soil becomes desiccated in these situations and available moisture is greatly reduced. This along with the high levels of compaction found associated with hard surfaces restrict rooting.
- 5.4 Although the Root Protection Areas of the trees extend into hard surfaces and under built structures within the site it is clear that little of the root mass that is needed to sustain the trees is located in these areas. The majority of roots are found in soft surfaces adjacent to the trees and the adoption of sensible and considerate construction techniques should be used to minimise any root damage through the development process.
- 5.5 All activities that could directly affect the roots to the trees within the site have been considered and the works to achieve the proposed development considered. Construction method statements should be fully specified before any works adjacent to tree is carried out. Where they are likely to be adjacent to the rootable area supervision by a qualified arboriculturalist should be considered. The specifications should be a combination of current best practice and relevant British Standards relating to demolition and construction adjacent to trees.
- 5.6 The proposed services margin drawing has been considered as this will form the service routes within the site. Due to the position of the trees currently found on the site it is clear that the service provision can be designed away from retained trees.

## 6 ABOVE GROUND CONSTRAINTS

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- 6.1 The above ground constraints that trees provide are largely concerned with their mass (crown and main stem) and these constraints are usually abated by pruning or removal. Pruning is used to allow access and prevent damage to the tree in a site development. Removal is considered when the tree is in a poor condition and would fail in a reasonable time scale or the development could not be achieved with the tree in its current position and its removal is agreed as part of the planning application. The trees assessed as part of this application will be discussed below and their above ground constraints identified.
- 6.2 The trees material to the planning application are located almost exclusive to the boundary and certainly the current layout shows retained trees away from built structures and hard surfacing..
- 6.3 It maybe that a few trees will require crown pruning to allow the erection of tree protection fencing. If pruning is required to erect the fencing this should be carried out with the agreement of the site manager and arboricultural specialist. The pruning requirement may also be used to allow access for site vehicles and works equipment to be used adjacent to tree protection fencing and ensure no physical damage to the crowns of each tree occurs whilst the construction works are being carried out.
- 6.4 All crown pruning works should be carried out to the specifications contained within BS3998:2010 Tree Work – Recommendations and the guidance below. They should be carried out sensitively and maintain or improve the crowns balance and form for each individual tree.

### **Tree Access Pruning Specification**

All works shall be carried out by suitably qualified and professional contractors who are clear in the understanding of the specification below and their requirements.

All works shall be carried out using suitable handsaws and these saws should be sharp and in a serviceable condition. The use of chainsaws shall only be used with the agreement of the supervising officer (SO).

All risk assessments shall be carried out by the contractor prior to works commencing and they should be fully satisfied to the conditions and any hazards within the working area. Any concerns should be reported to the SO.

The clearance height should be agreed and included in the schedule of works.

Works beyond this dimension are not to be part of the works unless it involves additional health and safety works to the tree.

The works are designed to provide access to the working area during the construction period and if the access is to be required beyond this period then a tree management programme with the provision for cyclical pruning be agreed.

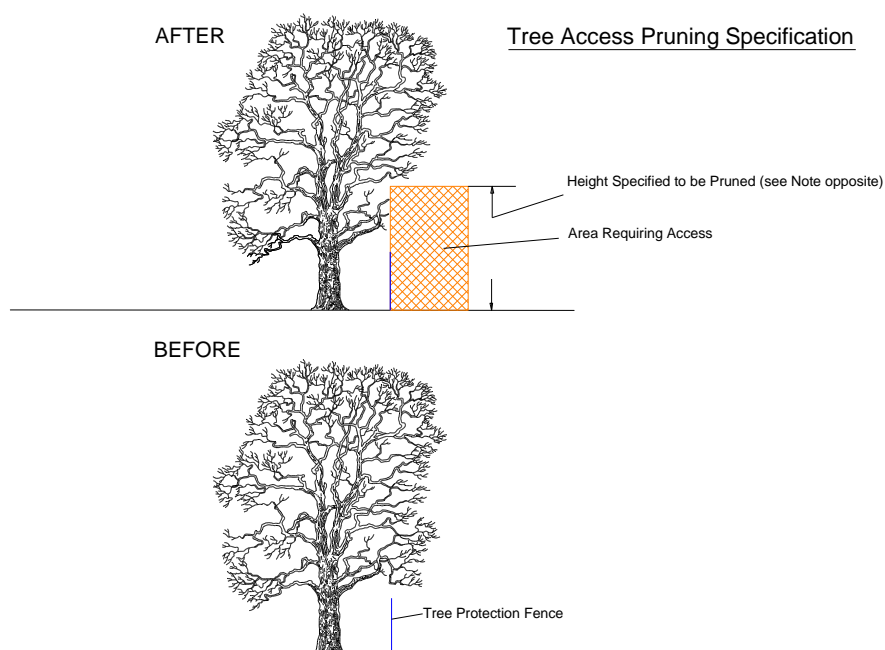
The guidance and main document providing the recommended guidance is BS3998:2010 Tree Work - Recommendations and this should be followed if any doubt exists with the requirements of the work. Particular sections for reference are Section 7 Pruning and related work, and within this

section, 7.2 Minimizing the potentially undesirable effects of pruning, 7.6 Crown lifting, 7.8 Selective pruning and 7.9 Pruning for infrastructure. This is not an exclusive list.

The aim of the pruning should be to provide a natural appearance within the crown and should not be to leave an acute side to the crown of the tree. Final pruning cuts should be considered and where possible to natural target pruning points such as branch unions where branch bark ridges can be used to guide the pruning cuts. Where these points are not available the exposed stub should be as small as possible and an assessment of each individual branch taken by the operative before making the cut.

All cuts should be made so that they do not provide future structural issues such as weak forks and loss of structural integrity. If there is any concerns regarding the above then this shall be raised prior to works commencing. Branch reductions should be used to eliminate bark rips and tears; they will not be accepted by the client.

All debris should be removed from site and disposed of in an environmentally sensitive way agreed with the SO.



## 7 ANALYSIS OF CONSTRAINTS

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- 7.1 The constraints that have been identified in sections 5 and 6 above are the ones that apply to the trees found at Blossom Fields, Cotefield Farm, Bodicote.
- 7.2 The above ground constraints will require professional arboricultural management and specification. Crown lifting and pruning may be required to accommodate some of the tree protection fencing and garden fencing associated with the current layout. Beyond the construction period a programme of regular tree work to reduce the deadwood and control the crown extents will provide adequate management in the future. It would also allow the trees to have their crowns and main stems inspected by the arborist, which would identify structural issues early and reduce the likelihood of major crown failures.
- 7.3 The below ground constraints will be offset by site management during construction. Respect to the current RPA's within the designed layout and supervision through the construction periods will enable all arboricultural impacts to be fully considered.
- 7.4 The Table on page 16 (Table A - Arboricultural Impact Assessment – Works) sets out the impacts to each retained tree and details the recommended control measures to ensure the works to develop the site under the current design layout are achieved with minimal impact on the trees.
- 7.5 The Arboricultural impacts are detailed below and considered specifically for the site and the proposed development.

## 8 ARBORICULTURAL IMPACT ASSESSMENT

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### **Introduction**

- 8.1 Trees have finite energy reserves, developed each year throughout the growing season, which are utilised for biological processes such as growth and defence against pests or diseases throughout the following year.
- 8.2 Any development in proximity to trees has the potential to cause harm to those trees unless control measures are identified and acted upon; as such it is essential to consider the relationship between the proposed development and the retained trees to identify what precautions are necessary, proportionate and appropriate.
- 8.3 Development has the potential to impact upon the above ground and below ground parts of trees.
- 8.4 Whilst some damage that can occur, such as physical damage to the trees stems and branches from machinery movements, is clearly visible the impact from other aspects of work common on development sites which can have a significant effect upon the continued health of trees are not always immediately evident.
- 8.5 Damage that is not immediately evident but which can cause long term harm to retained trees includes things such as damage to the soil structure by compaction causing root damage and levels changes altering the water table and affecting moisture availability.
- 8.6 To minimise the potential for harm to occur to retained trees all works should be carried out with regard to the Tree Protection Measures detailed within this report.
- 8.7 In general it can be seen that, by adopting appropriate methods of working, precautionary and protective measures, significant harm to retained trees can be avoided.
- 8.8 In particular the establishment of a Construction Exclusion Zone (CEZ) by erection of Tree Protection Fencing will minimise the potential for harm to occur to retained trees.

### **Brief Description of Proposed Development**

- 8.9 The proposed development to the site is the construction of new roads, residential properties and associated external works, including hard and soft landscaping.

### **Tree Removals**

- 8.10 Tree removals to achieve the proposed development have been identified. The current proposal will require the removal of ten trees; One A Category, one B category and eight C category trees will require removal along with one C category group and part of an A category group. Tree removals will be mitigated for by tree planting within an approved Landscape Plan.

### **Arboricultural Implications**

- 8.11 To ensure that the trees selected for retention can be successfully integrated within the proposed development the following factors have been considered or require consideration.



- 8.12 The table (Arboricultural Impact Assessment –Table A) set out at the end of this section details the potential implications for each tree identified in the survey.

### **Root Protection Areas**

- 8.13 Root Protection Areas for each tree surveyed have been determined in accordance with BS5837:2012 Section 4.6 Root protection area (RPA) in the Standard and a schedule of Root Protection Areas is attached to this report as Table 3.
- 8.14 Initial Root Protection Areas for the trees were plotted onto the Tree Constraints Plans - (Figure 01.01 to 01.03) and has been used to produce all relevant tree plans in this statement.

### **Existing Canopy Spreads**

- 8.15 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.
- 8.16 To minimise the potential for harm to occur to retained vegetation a Construction Exclusion Zone (CEZ) will be created, by the erection of protective fencing as detailed on the Tree Protection Plans.

### **Level Changes**

- 8.17 The effect of level changes across the site will need to be assessed prior to the start of any works. This will prevent harm occurring to retained trees due to level changes. When this occurs within the Construction Exclusion Zone (CEZ) works should be identified and discussed with the Local Authority Tree Officer prior to commencement.
- 8.18 At this time no such changes are being proposed.

### **Building Foundations**

- 8.19 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.
- 8.20 Appropriate foundation designs should be adopted.
- 8.21 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**

- 8.22 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).
- 8.23 Due to the nature of the site and layout no such issues are envisaged.

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## **Shading**

8.24 Shading has been considered by the proposed layout with all rear gardens located away from the tree belt boundary and it is clear that the woodland belt will not cast shade into the available garden space provided by the development. Therefore the possible adverse effects of shading from trees has been mitigated and does not need to be considered as significant within the proposed development.

**Table A - Arboricultural Impact Assessment – Works**

**Blossom Field, Cotefield Farm**

TREE NUMBER	POTENTIAL CONFLICT	COMMENTS	CONTROL MEASURES	SEVERITY OF IMPACT
T1 – T6	Located to the eastern boundary of the site	Not within the development area	<ul style="list-style-type: none"> <li>• Installation of Site Fencing</li> <li>• Supervision of works</li> </ul>	None
T7 – T10, T12, T14	Access road and construction of built environment impact directly on trees	Mostly small trees, excluding the sycamore T14	<ul style="list-style-type: none"> <li>• Trees to be removed due to construction, mitigation by landscape planting</li> </ul>	Medium
T11	Works adjacent regarding pavement in connection with access road	Works outside of RPA	<ul style="list-style-type: none"> <li>• Installation of Tree Protection Fencing</li> <li>• Supervision of landscape works</li> </ul>	Low
T13	Development adjacent to the retained tree	To be retained and enhanced within open space within the development	<ul style="list-style-type: none"> <li>• Installation of Tree Protection Fencing</li> <li>• Supervision of landscape works</li> </ul>	Medium
T15 to T7	None	Trees located to the boundary away from development	<ul style="list-style-type: none"> <li>• None required</li> </ul>	None
T18 to T21	New internal road and parking bays	Small trees poor form	<ul style="list-style-type: none"> <li>• Trees to be removed due to construction, mitigation by landscape planting</li> </ul>	Low
G1	Access road to be constructed to the western boundary of the group	Thick belt of trees and shrubs	<ul style="list-style-type: none"> <li>• Installation of Tree Protection Fencing</li> <li>• Supervision of works</li> </ul>	Low

TREE NUMBER	POTENTIAL CONFLICT	COMMENTS	CONTROL MEASURES	SEVERITY OF IMPACT
G2	New access road to be constructed through group	One of the trees maybe retained	<ul style="list-style-type: none"> <li>Removal of trees effected by the construction of the road</li> <li>Installation of Tree Protection Fencing</li> <li>Supervision of works</li> </ul>	High
G3	New access road to be constructed through group	Low quality trees assessed as C category	<ul style="list-style-type: none"> <li>Trees to be removed due to construction, mitigation by landscape planting</li> </ul>	Low
G4	Development to the north of the trees	All trees located outside site boundaries	<ul style="list-style-type: none"> <li>Installation of Tree Protection Fencing to development side boundary</li> <li>Supervision of works</li> </ul>	Low
G5	No direct impacts on the belt of trees	Tree Plantation Located to the southern and western boundary of the development,	<ul style="list-style-type: none"> <li>Installation of Tree Protection Fencing to development side boundary</li> <li>Supervision of works</li> </ul>	Low
G6	None	Trees located to the boundary away from development	<ul style="list-style-type: none"> <li>None required</li> </ul>	None

## 9 PRE DEVELOPMENT WORKS

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### **Tree Removal**

9.1 Trees requiring removal to be carried out prior to any development of the site.

### **Predevelopment Tree Pruning Works**

9.2 The specified tree pruning works should be undertaken prior to commencement of the proposed development.

### **Standard of Work**

9.3 All tree works should be carried out in accordance with BS3998:2010 Tree Work - Recommendations and latest arboricultural best practice.

9.4 All tree work should be carried out by suitably qualified, competent and insured arboricultural contractors.

9.5 All green and woody waste generated by the tree works shall be removed from site and disposed of in an environmentally sustainable manner.

### **Timing of Works**

9.6 All tree works shall be completed prior to commencement of any construction works on the site.

9.7 All works shall be timed to have regard to the phenological cycles of protected species that are associated with trees; notably birds and bats.

### **Tree Protection Barriers**

9.8 All tree protection fencing should be erected to its final position during the pre-development periods of construction. Protective fencing shall be erected as shown on Figure 2 – Tree Protection Plans (Figure 02.01 to 02.03). To ensure successful tree protection during this process all operatives should be briefed on the need to pay regard the existing trees and all operations adjacent to trees be properly supervised. This will ensure the works will not affect adversely the trees.

9.9 Once the protective barriers are in place they should remain in situ throughout the course of the development until the completion of all building works.

9.10 Copies of the Tree Protection Plans shall be placed in the site office for reference by all site staff.

9.11 The protective fencing barrier is to be constructed in accordance with the specification detailed at Appendix 3.

9.12 Signs detailing the purpose of the protective fencing shall be attached to the fencing at 10m intervals. Such signs should be weatherproof and shall be substantially in the form of the specimen provided at Appendix 6. Signs must be replaced as necessary should they be removed or become illegible.

9.13 Following erection of the protective fencing and prior to commencement of the development it is recommended that an inspection of the site, by either the Council's Tree Officer or the Arboricultural Consultant, is arranged to confirm fencing has been installed in accordance with the Tree Protection Plan and any relevant conditions that may be attached to a grant of planning consent for the development.

## 10 CONSTRUCTION WORKS

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### **Construction Exclusion Zone**

- 10.1 The Construction Exclusion Zone (CEZ) as defined by the protective fence line shall be regarded as sacrosanct, and the protective fencing shall not be moved or taken down at any time.
- 10.2 Within the Construction Exclusion Zone there must be **No** mechanical digging or scraping, **No** alteration to existing ground levels including soil stripping, **No** earthworks, **No** handling or discharge of any chemical substance, concrete washings or of any fuels.
- 10.3 Furthermore vehicular or pedestrian access and the storage of any materials is prohibited within the Construction Exclusion Zone.
- 10.4 Additionally no materials that may contaminate the soil such as concrete mixings, diesel oil and vehicle washings shall be discharged within 10m of the stem of any tree and no fires shall be lit within 10m of the maximum extent of a trees crown.

### **Tree Protection Barriers**

- 10.5 See sections 9.8 to 9.13 above.

### **Site Compounds and Materials Stores**

- 10.6 Activities related to the establishment of a temporary site compound have the potential to impact upon retained trees by various means. In particular the storage and mixing of chemicals and materials such as concrete can have a damaging effect on tree health if precautions are not taken.
- 10.7 To prevent harm occurring to trees provision for materials storage, site offices, deliveries and other related activities should be made available in areas away from retained trees.
- 10.8 The offices, parking of site and contractor vehicles, along with secure storage will be provided in various area away from retained trees and these areas will be directly controlled by the site manager who will seek advice from the site landscape manager before allocating the area for these purposes.

### **Monitoring**

- 10.9 Following erection of the protective fencing and prior to commencement of the construction phase an inspection of the site, by either the Council's Tree Officer or the Arboricultural Consultant, should be arranged to confirm fencing has been installed in accordance with the Tree Protection Plans and any relevant conditions that may be attached to a grant of planning consent for the development.
- 10.10 Further monitoring visits shall be carried out following implementation of the works on site, ideally on at least a monthly basis.
- 10.11 It is envisaged that following a period of four successive inspections finding no non compliances that the frequency of inspections can be reduced to a bi- monthly basis.

## **Reporting**

- 10.12 The Client Site Landscape Manager will be responsible for providing copies of the tree protection inspection reports to the Council if required and for notifying the Council of any issues with the trees should they occur.
- 10.13 During the construction phase of the development the Site Landscape Manager will be responsible for liaising with the Council Tree Officer on all arboricultural issues.
- 10.14 Should any arboricultural issues become apparent during the works the site manager should immediately contact the Site Landscape Manager or the Council's Tree Officer for advice upon how to proceed.



## 11 CONCLUSIONS

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- 11.1 The development of land at Blossom Fields, Cotefield Farm, Bodicote is being proposed and this statement has been produced to supply all arboricultural information needed to inform the planning process.
- 11.2 Retained trees will need to be protected and considered during the development processes. This statement provides information and identifies areas where these processes will impact on the retained trees and provides guidance as to the tree protection measures that will be required.
- 11.3 A proposed layout has been considered by this statement and an arboricultural impact assessment has been carried out to identify the impacts of the proposed development on the surveyed trees.
- 11.4 All works adjacent to retained trees should be carried out with sensitivity to the well-being of the trees and be supervised to ensure that any possible damage to the above and below ground parts of the tree are avoided and where impacts cannot be mitigated for then appropriate action is taken to minimise these impacts.
- 11.5 All site staff should be made aware of the requirements of this statement and the importance of trees within the development.
- 11.6 Sensitive target pruning to lift the canopies of existing trees within the site will reduce/eliminate above ground constraints and provide a sensible working area for the construction of the development.
- 11.7 Guidelines contained within BS 5837:2012 Trees in Relation to Design, Demolition and 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.
- 11.8 The specific measures for the protection of the retained trees throughout development specified within this report shall be followed throughout the course of the development.

## TABLE 1 –TREE SURVEY DATA

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### Tree/Group/Hedge 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 mms, or estimated, Where multi stemmed guidance on measuring stem diameters in BS5837:2012 have been followed
Spread (m)	Canopy height estimated in metres above ground level
Canopy height (m)	Crown Spread, radius estimated in metres, Height of first branch and direction has been noted.
Physiological Condition	Good, Fair, Poor, Dead
Age Class	Y – Young SM – Maturing (Young to Middle Aged) EM – Early Mature (Middle to mature aged) M – Mature OM – Over mature, V – Veteran
Useful Life Expectancy (years)	10, 10-20, 20-40, 40+
BS Categorisation	Table 1 BS5837:2012

## Table 1: Tree Data Schedule

Tree No.	Species	Diameter (mm)*	Height	Crown Spread				Crown Height above Ground	First Major Branch Direction	Branch Height above Ground	Age Class	Vigour	Life Expectancy	Structural Condition/Comments	BS5837 Category
				N	S	E	W								
1	Quercus robur	170	6	3.0	2.5	3.5	2.5	1.0	SW	1.5	Y	Good	40+	Pruning wounds to Stem and Crown. Deadwood in the crown of Minor extent.	A1
2	Quercus robur	170	4	2.5	2.5	3.5	2.5	1.0	SW	1.5	Y	Good	40+	Pruning wounds to Stem and Crown. Deadwood in the crown of Minor extent.	A1
3	Quercus robur	180	6	3.0	3.0	3.5	3.0	1.5	West	1.5	Y	Good	40+	Pruning wounds to Stem. Deadwood in the crown of Minor extent.	A1
4	Quercus robur	120	4	2.0	1.5	2.0	1.5	1.5	SW	1.5	Y	Poor	40+	Pruning wounds to Stem. Deadwood in the crown of Minor extent. Branch dieback of Minor extent.	C1
5	Quercus robur	160	5	3.0	2.5	3.5	2.5	1.0	South	1.5	Y	Good	40+	Epicormics growth on Stem. Pruning wounds to Stem and Crown. Deadwood in the crown of Minor extent.	A1
6	Fagus sylvatica	160	7	2.5	2.5	2.0	2.5	0.5		1.5	Y	Good	40+		A1

\* Where the tree is multi-stemmed the conventions within BS5837:2012 are applied

Tree No.	Species	Diameter (mm)*	Height	Crown Spread				Crown Height above Ground	First Major Branch Direction	Branch Height above Ground	Age Class	Vigour	Life Expectancy	Structural Condition/Comments	BS5837 Category
				N	S	E	W								
7	Tilia sp.	260	5	2.0	2.5	2.0	2.0	0.5	SW	1.0	Y	Good	40+	Epicormics growth on Base.Included branch union in the crown.	A1
8	Fagus sylvatica	150	5	2.0	2.5	3.0	2.0	1.5	North	1.5	Y	Good	40+	In beech hedge	C1
9	Quercus robur	90	5	1.5	1.0	2.0	1.5	0.5	South	0.5	Y	Good	40+	Bifurcated stem formed at 1.5metres.	C1
10	Quercus robur	90	5	1.5	2.0	2.0	1.5	0.5	North	1.0	Y	Good	40+		C1
11	Quercus robur	170	4	2.5	2.5	3.0	3.5	1.5	East	1.5	Y	Poor	20-40	Pruning wounds to Stem and Crown.Branch dieback of Moderate extent.	B1
12	Quercus robur	110	4	2.0	2.0	2.0	2.0	0.5	South	1.0	Y	Good	40+		C1
13	Quercus robur	1090	20	6.0	7.0	7.5	6.0	0.5	South	2.0	V	Good	40+	Basal Cavity of Minorextent.Epicormics growth on Crown.Pruning wounds to Stem.Deadwood in the crown of Moderate extent.Previous storm damage to tree. Exdation from pruning wound lower main stem	A3

\* Where the tree is multi-stemmed the conventions within BS5837:2012 are applied

Tree No.	Species	Diameter (mm)*	Height	Crown Spread				Crown Height above Ground	First Major Branch Direction	Branch Height above Ground	Age Class	Vigour	Life Expectancy	Structural Condition/Comments	BS5837 Category
				N	S	E	W								
14	Acer pseudoplatanus	830	18	7.0	7.5	5.0	6.0	2.5	North	3.0	M	Good	20-40	Stem cavity of Minorextent.Pruning wounds to Stem.  Decay points in old pruning wounds	B2
15	Castanea sativa	1200	12	6.0	5.0	4.0	8.0	0.0		0.0	V	Fair	40+	Epicormics growth on Base & Stem.Splits and cracks to.Deadwood in the crown of Moderate extent.Branch dieback of Minor extent.Restricted inspection due to Vegetation.	A3
16	Tilia sp.	1190	27	8.0	8.0	10.0	10.0	1.0	SW	3.0	V	Good	40+	Multi stemmed stem formed at 6.0 metres.Deadwood in the crown of Minor extent.Previous branch failures noted.	A3
17	Tilia sp.	1200	27	6.0	7.0	6.0	7.0	2.0	South	2.5	V	Good	40+	Epicormics growth on Base & Stem.Deadwood in the crown of Minor extent.Grey Squirrel damage noted to tree.	A3
18	Quercus robur	70	3	1.0	1.0	1.0	1.0	1.5	West	1.5	Y	Fair	40+	Pruning wounds to Stem.	C1
19	Quercus robur	70	3	1.0	1.0	1.0	1.0	1.0	South	1.0	Y	Fair	20-40	Pruning wounds to Stem.Included branch union in the crown.	C1
20	Quercus robur	80	4	1.5	1.5	1.5	1.5	1.5	North	1.5	Y	Good	40+	Pruning wounds to Stem.	C1

\* Where the tree is multi-stemmed the conventions within BS5837:2012 are applied

Tree No.	Species	Diameter (mm)*	Height	Crown Spread				Crown Height above Ground	First Major Branch Direction	Branch Height above Ground	Age Class	Vigour	Life Expectancy	Structural Condition/Comments	BS5837 Category
				N	S	E	W								
21	Quercus robur	80	5	1.0	1.0	1.0	1.0	2.0	South	1.5	Y	Good	40+	Pruning wounds to Stem. Included branch union in the crown.	C1

\* Where the tree is multi-stemmed the conventions within BS5837:2012 are applied

## Table 1: Group Data Schedule

Group No.	Species	Min/Max Diameter (cm)*	Average Height (m)	Average Crown Spread	Ave. Crown Height	Age Class	Vigour	Life Expectancy	Structural Condition/Comments	BS5837 Category	
1	Acer campestre Quercus robur  Carpinus betulus Salix caprea Betula sp.	10	20	7	3	0	SM	Good	40+	Tight grown group with shrub understorey of dogwood, hazel, laurel, snowberry	A2
2	Betula pendula	12	18	8	3	0	SM	Good	40+		A2
3	Fraxinus excelsior Larix decidua  Quercus robur	10	15	5	2	1	Y	Fair	40+	Individual trees with shrub understorey of hazel, laurel, viburnum elderberry	C2

\* Where the tree is multi-stemmed the conventions within BS5837:2012 are applied

Group No.	Species	Min/Max Diameter (cm)*		Average Height (m)	Average Crown Spread	Ave. Crown Height	Age Class	Vigour	Life Expectancy	Structural Condition/Comments	BS5837 Category
4	Carpinus betulus	30	40	16	4.5	2.5	M	Good	40+	Included stem unions present. Deadwood present of Minor extent, Crossing branches, Off site tree group. Restricted inspection due to No Access.  Planted as hedge, now mature trees	A2
5	Betula sp. Pinus nigra  Fagus sylvatica Larix x eurolepis Prunus avium Quercus robur	10	20	10	2	2	SM	Good	40+	Young plantation, mixed tree and shrub. Trees now dominant, additional species Field maple, alder, holly, ash	A2
6	Tilia sp.	10	20	4	2	1	Y	Fair	40+	Pruning wounds present. Line of recent planted trees	A2

\* Where the tree is multi-stemmed the conventions within BS5837:2012 are applied



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## Table 1: Woody Scrub / Hedge Areas

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Section No.	Species	Height (m)	Comments
1	Salix caprea Crataegus monogyna Corylus avellana Viburnum lantana Ilex aquifolium	4	Tight grown group sides flailed
2	Crataegus monogyna	3	Hedge well maintained

**TABLE 2 – TREE WORKS REQUIREMENTS**

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Tree Works Requirements

## Table 2: Tree Works Required

Tree No.	Species	Diameter (mm)*	Height	Age Class	Vigour	Structural Condition	Life Expectancy	Comments	BS5837 Category	Works Required
13	Quercus robur	1090	20	V	Good	Fair	40+	Basal Cavity of Minorextent.Epicormics growth on Crown.Pruning wounds to Stem.Deadwood in the crown of Moderate extent.Previous storm damage to tree.	A3	Deadwood the tree crown.
15	Castanea sativa	1200	12	V	Fair	Fair	40+	Epicormics growth on Base & Stem.Splits and cracks to.Deadwood in the crown of Moderate extent.Branch dieback of Minor extent.Restricted inspection due to Vegetation.	A3	Conservation deadwood the crown.

## TABLE 3 - ROOT PROTECTION AREA DATA

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### RPA Data

#### Root Protection Areas - Groups

Group Ref Number	Average Maximum Stem Diameter (cms)	BS5837 Category	Root Protection Area Radius from tree stems (m)
G1	20	A2	2.4
G2	18	A2	2.16
G3	15	C2	1.8
G4	40	A2	4.8
G5	20	A2	2.4
G6	20	A2	2.4

## Table 3: Tree Root Protection Areas

Tree No.	Species	BS5837 Category	RPA Radius (m)	RPA Area (m2)	RPA Square Side Length (m)
1	Quercus robur	A1	2.04	13.1	3.6
2	Quercus robur	A1	2.04	13.1	3.6
3	Quercus robur	A1	2.16	14.7	3.8
4	Quercus robur	C1	1.44	6.5	2.5
5	Quercus robur	A1	1.92	11.6	3.4
6	Fagus sylvatica	A1	1.92	11.6	3.4
7	Tilia sp.	A1	3.12	30.6	5.5
8	Fagus sylvatica	C1	1.8	10.2	3.2
9	Quercus robur	C1	1.08	3.7	1.9
10	Quercus robur	C1	1.08	3.7	1.9
11	Quercus robur	B1	2.04	13.1	3.6
12	Quercus robur	C1	1.32	5.5	2.3
13	Quercus robur	A3	13.08	537.5	23.2
14	Acer pseudoplatanus	B2	9.96	311.7	17.7
15	Castanea sativa	A3	14.4	651.4	25.5

Tree No.	Species	BS5837 Category	RPA Radius (m)	RPA Area (m2)	RPA Square Side Length (m)
16	Tilia sp.	A3	14.28	640.6	25.3
17	Tilia sp.	A3	14.4	651.4	25.5
18	Quercus robur	C1	0.84	2.2	1.5
19	Quercus robur	C1	0.84	2.2	1.5
20	Quercus robur	C1	0.96	2.9	1.7
21	Quercus robur	C1	0.96	2.9	1.7


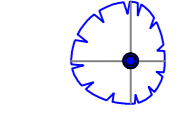
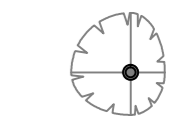
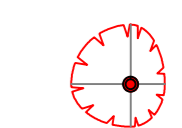

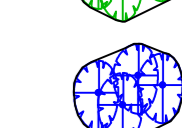
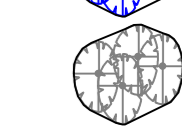
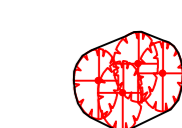
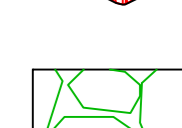
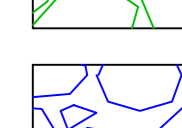
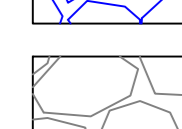
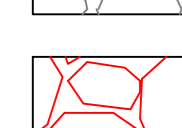

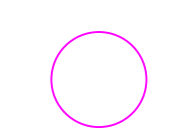
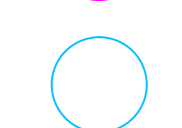

## **FIGURE 1 – TREE CONSTRAINTS PLANS**

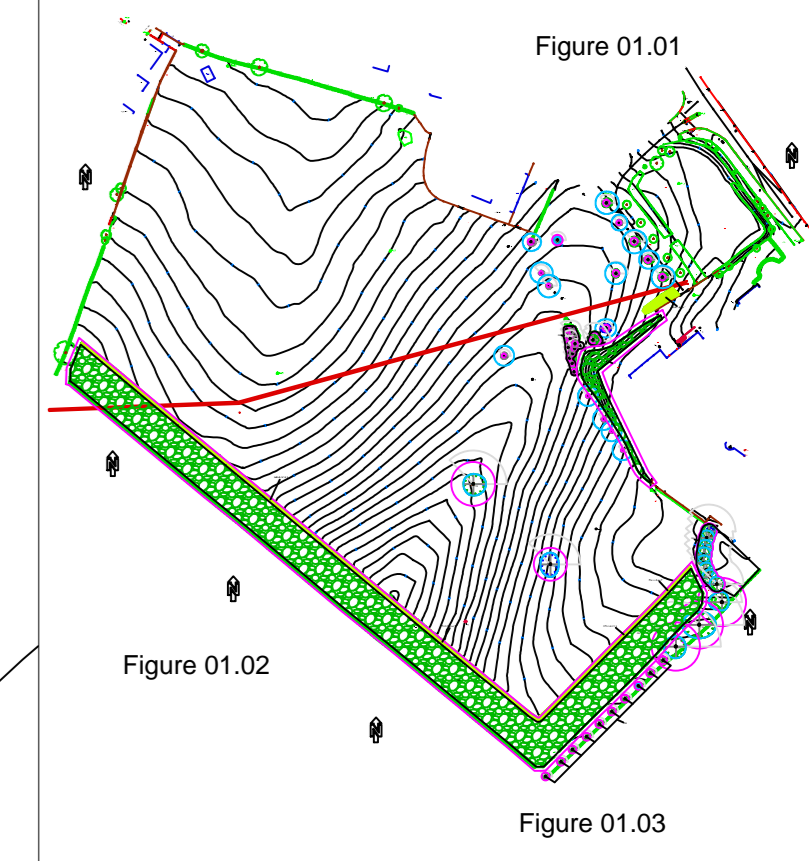
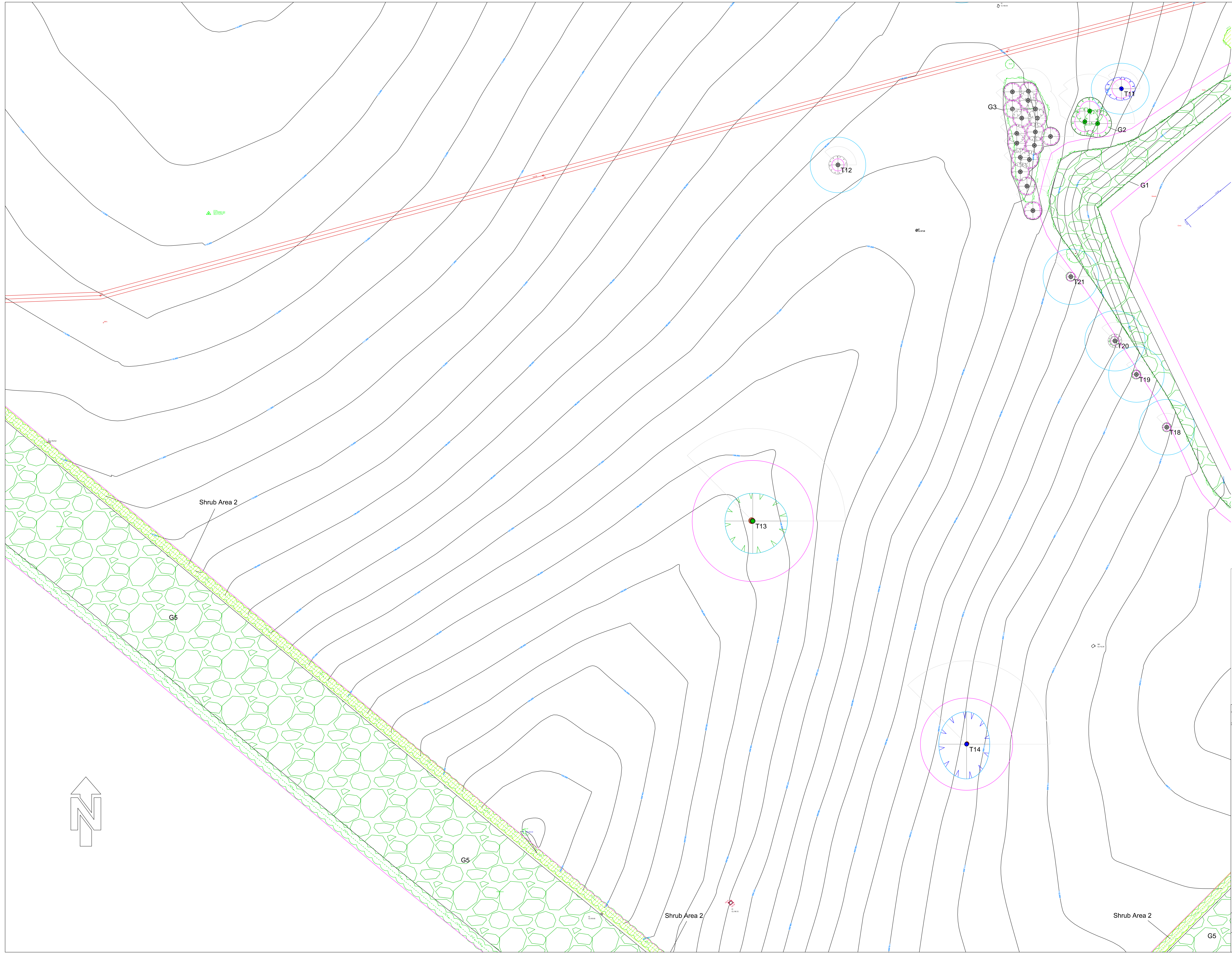
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Tree Constraints Plans

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**Legend**

-  Tree Position with Canopy Spread plus BS5837 Category A1, A2 or A3
-  Tree Position with Canopy Spread plus BS5837 Category B1, B2 or B3
-  Tree Position with Canopy Spread plus BS5837 Category C1, C2 or C3
-  Tree Position with Canopy Spread plus BS5837 Category U
-  Tree Group BS5837 Category A
-  Tree Group BS5837 Category B
-  Tree Group BS5837 Category C
-  Tree Group BS5837 Category U
-  Plantation Tree Group BS5837 Category A
-  Plantation Tree Group BS5837 Category B
-  Plantation Tree Group BS5837 Category C
-  Plantation Tree Group BS5837 Category U
- T/G202** Tree / Group Number
-  Roof Protection Area - Based on Simple Radius from Tree
-  Estimated Mature Canopy Spread
-  Approximate Tree Shadow Extent
-  Shrub Areas on Site - Species and Height Indicated on the Drawing



Rev	Description	By	Chk	Date



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Client

Project **Blossom Fields, Cotefield Farm, Bodicote**

Title **Tree Constraints Plan**

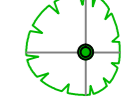
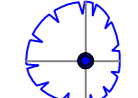

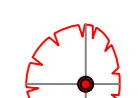

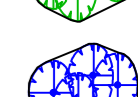
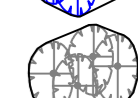


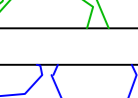


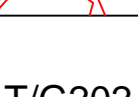



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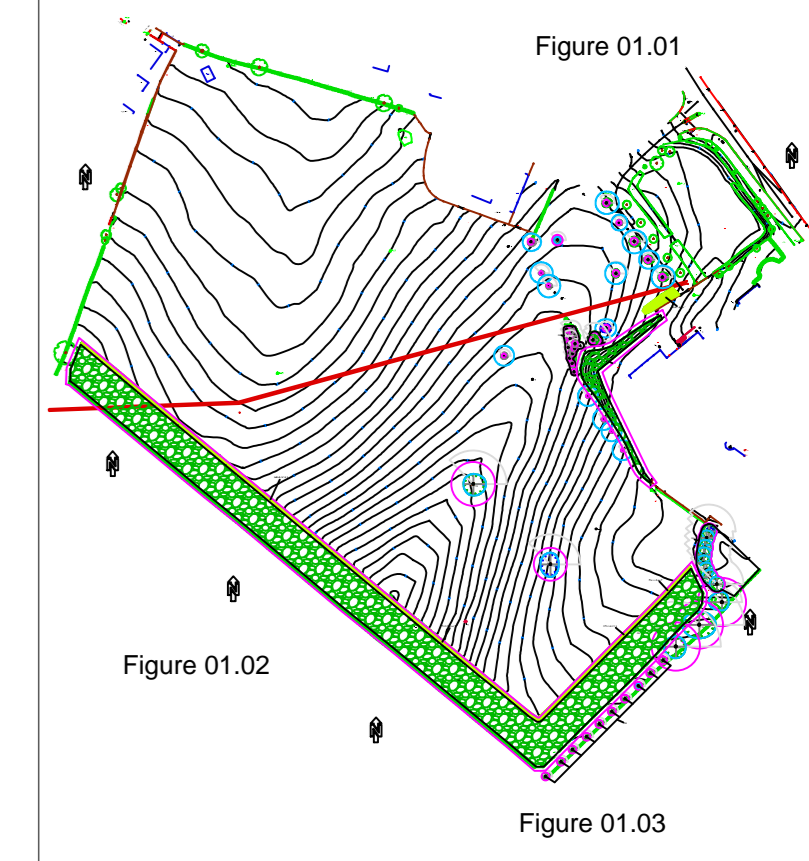
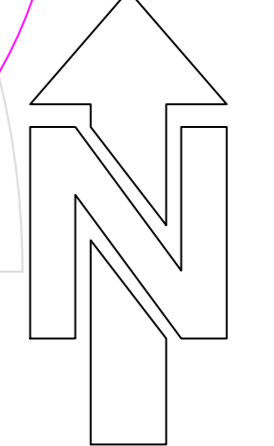
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**Legend**

-  Tree Position with Canopy Spread plus BS5837 Category A1, A2 or A3
-  Tree Position with Canopy Spread plus BS5837 Category B1, B2 or B3
-  Tree Position with Canopy Spread plus BS5837 Category C1, C2 or C3
-  Tree Position with Canopy Spread plus BS5837 Category U
-  Tree Group BS5837 Category A
-  Tree Group BS5837 Category B
-  Tree Group BS5837 Category C
-  Tree Group BS5837 Category U
-  Plantation Tree Group BS5837 Category A
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-  Plantation Tree Group BS5837 Category C
-  Plantation Tree Group BS5837 Category U
- T/G202** Tree / Group Number
-  Roof Protection Area - Based on Simple Radius from Tree
-  Estimated Mature Canopy Spread
-  Approximate Tree Shadow Extent
-  Shrub Areas on Site - Species and Height Indicated on the Drawing



Rev	Description	By	Chk	Date



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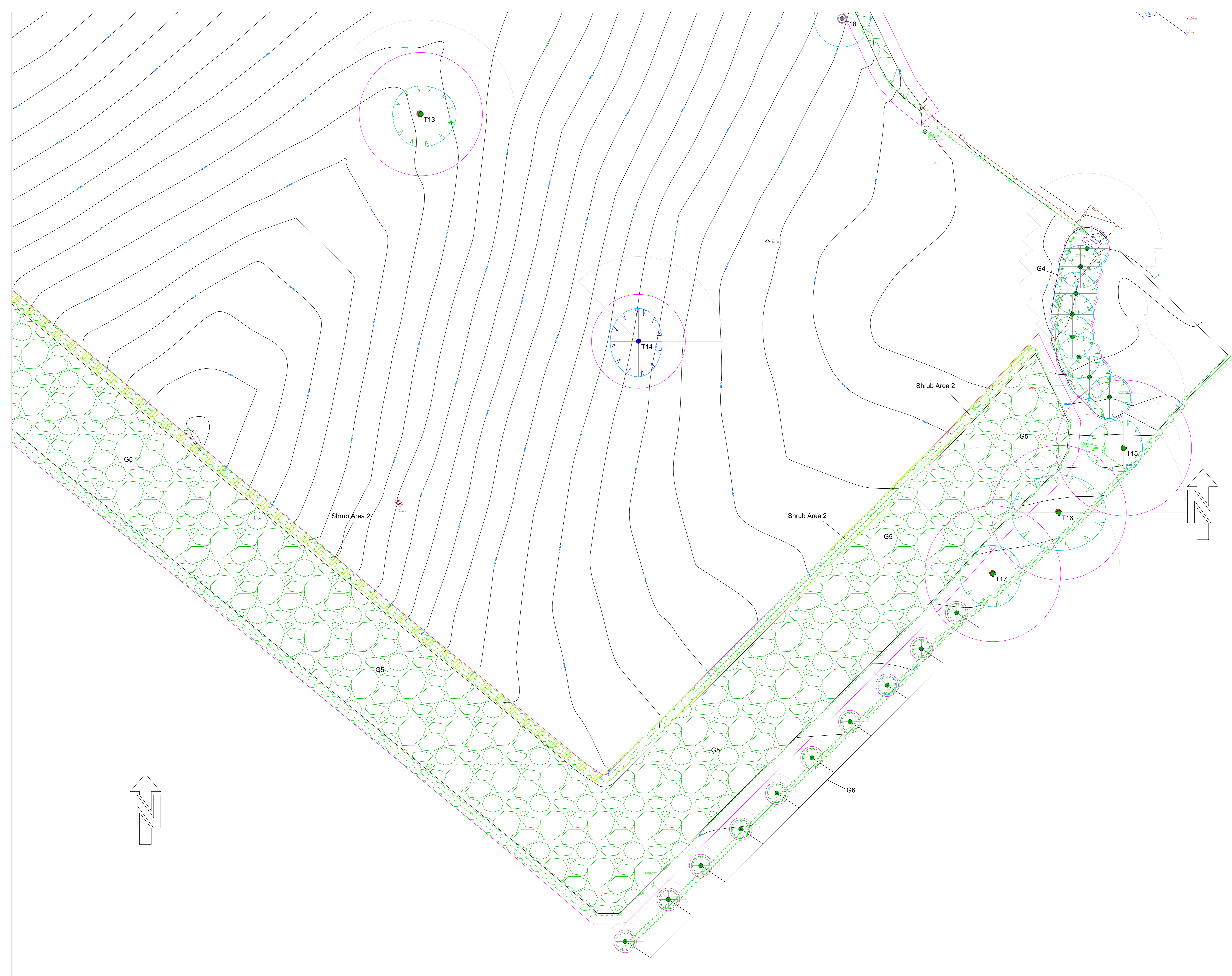
Client

Project **Blossom Fields, Cotefield Farm, Bodicote**

Title **Tree Constraints Plan**

Status Issue Scale 1:250 @ A0 Date Created 23 May 2014  
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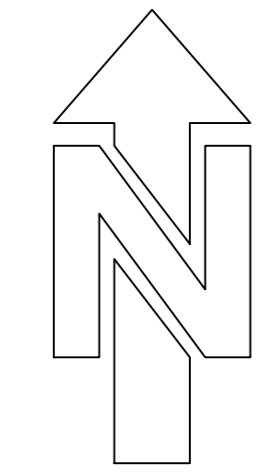


## **FIGURE 2 – TREE PROTECTION PLANS**

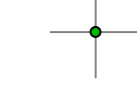
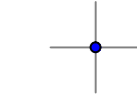
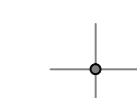
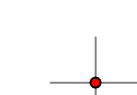


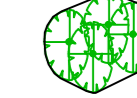


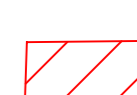

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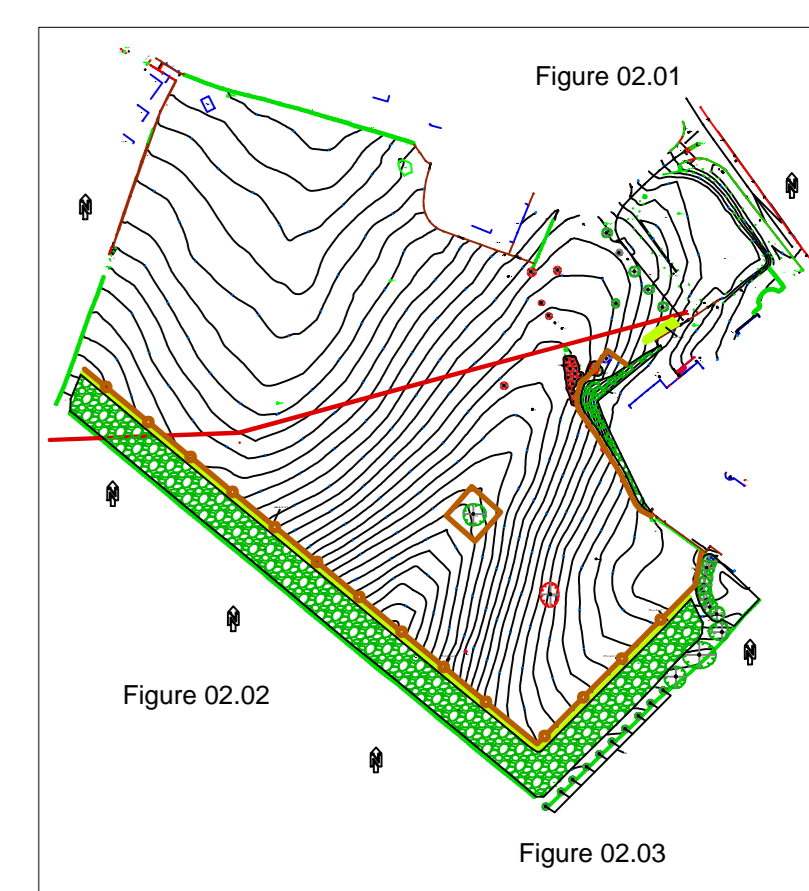
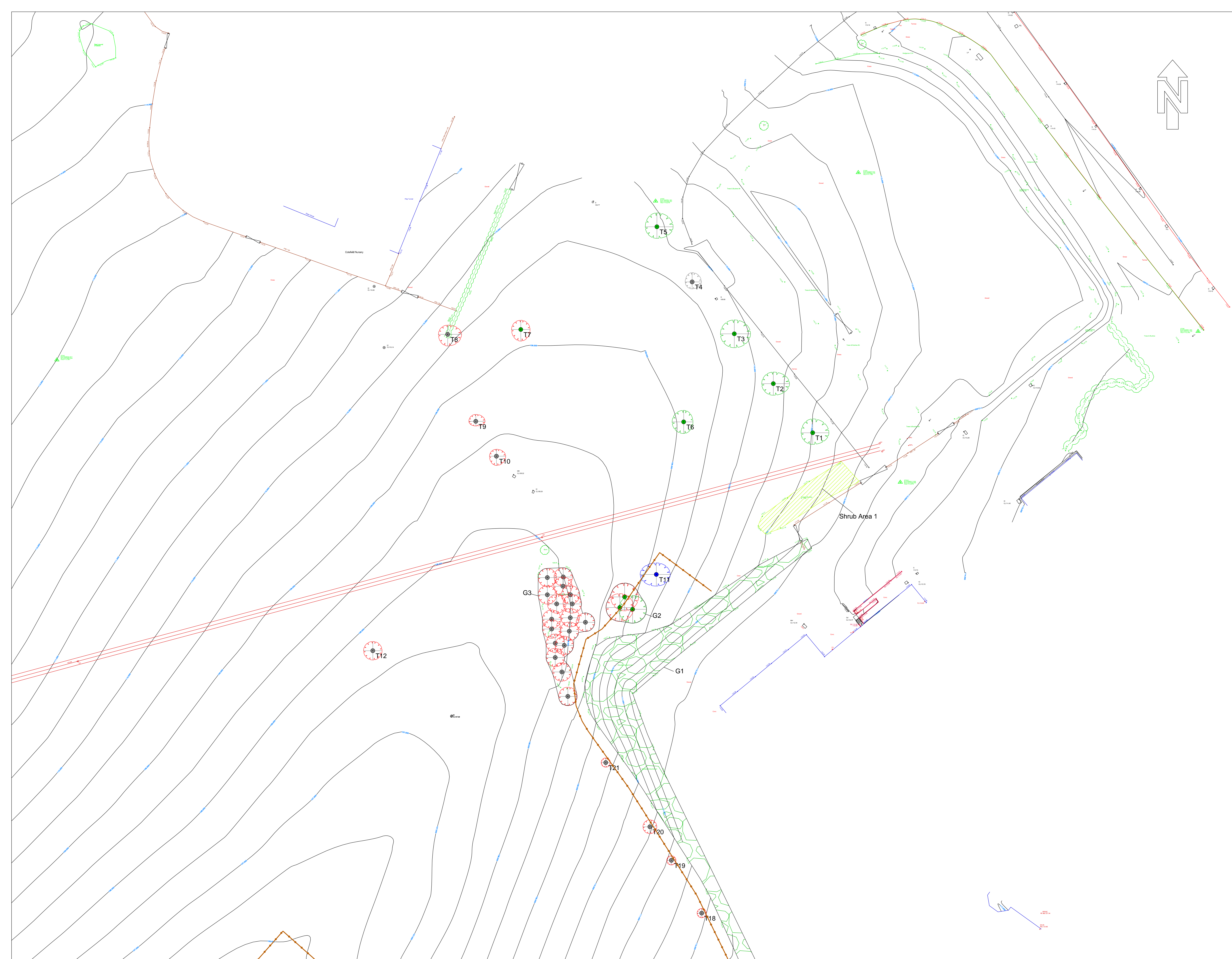
Tree Protection Plans

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**Legend**

-  Tree Position with Centre Circle showing BS5837 Category A1, A2 or A3
-  Tree Position with Centre Circle showing BS5837 Category B1, B2 or B3
-  Tree Position with Centre Circle showing BS5837 Category C1, C2 or C3
-  Tree Position with Centre Circle showing BS5837 Category U
-  Tree to be Retained
-  Tree to be Removed
-  Tree Group to be Retained
-  Tree Group to be Removed
- T/G202** Tree / Group Number
-  Woody Shrub / Hedge Areas on Site Retained
-  Woody Shrub / Hedge Areas on Site Removed
-  Tree Protection Fencing Initial Position



Rev	Description	By	Chk	Date



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Client

Project **Blossom Fields, Cotefield Farm, Bodicote**

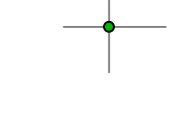
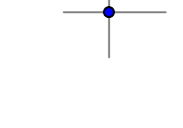


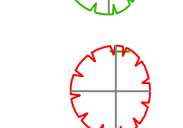



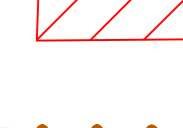



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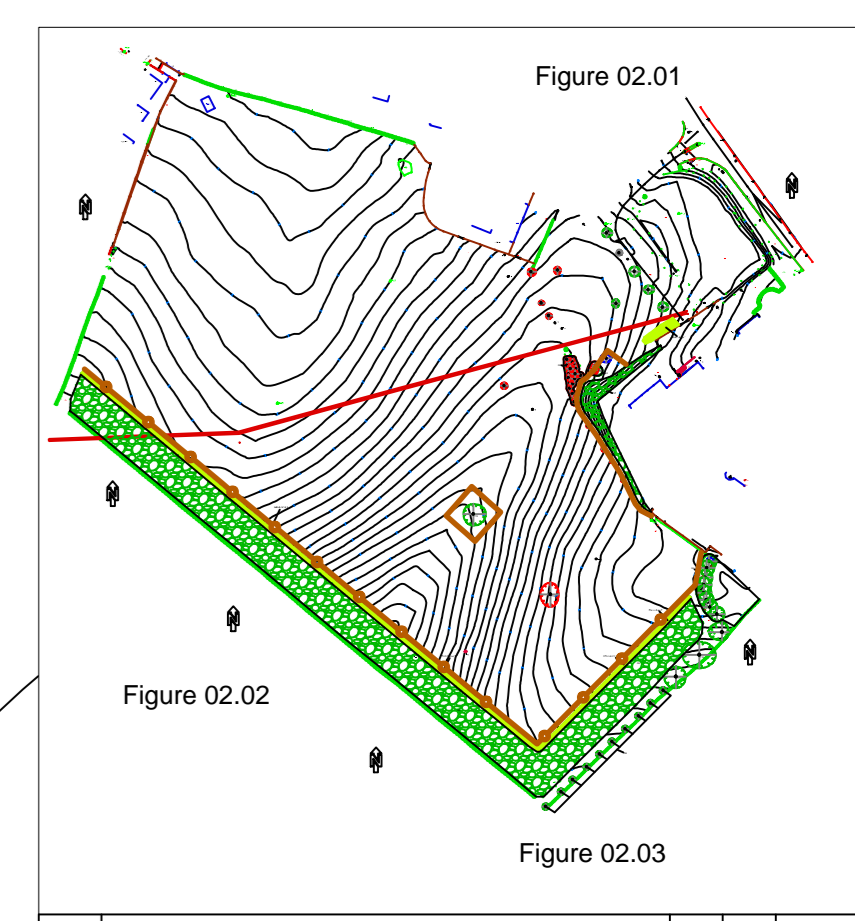
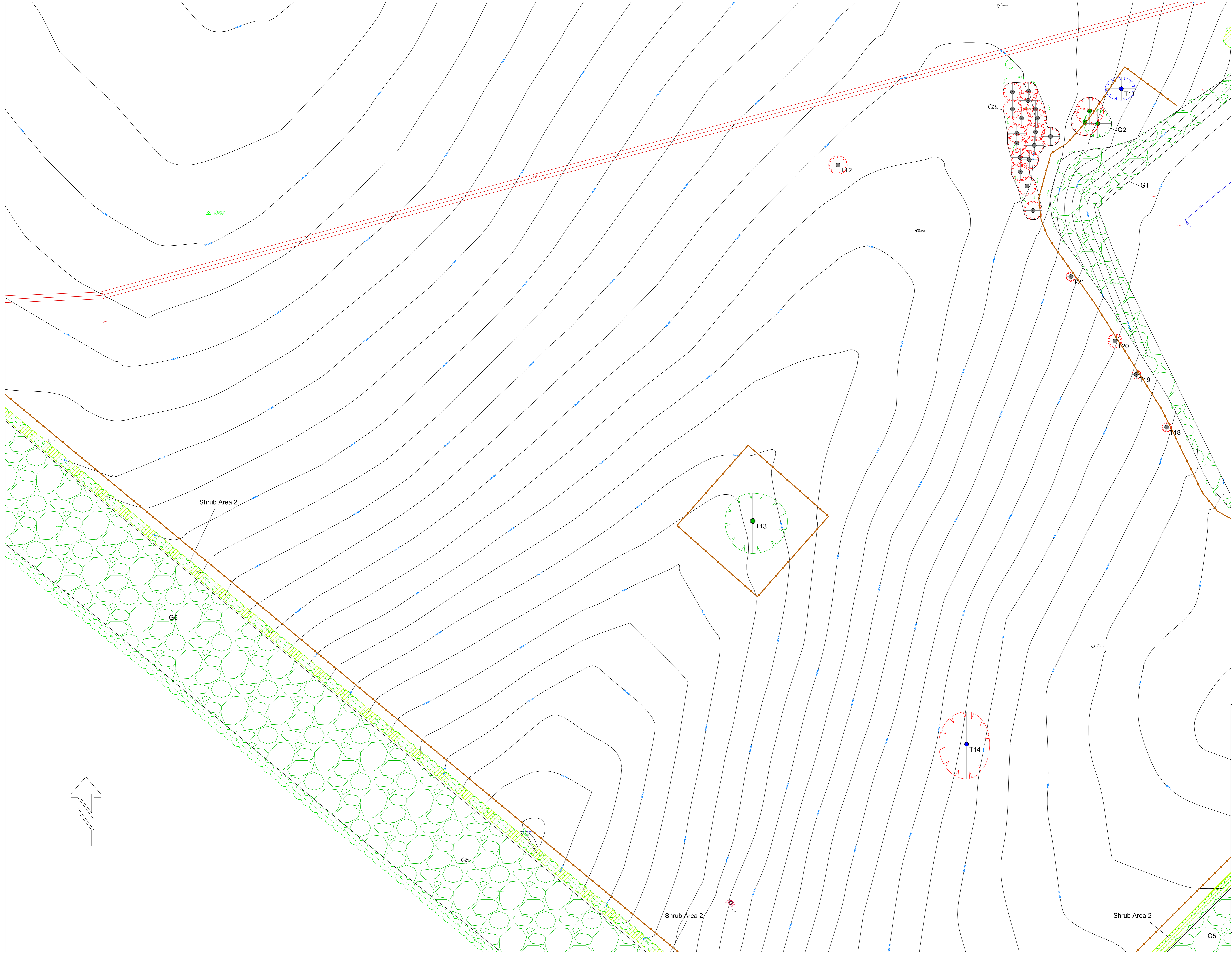
Status	Scale	Date Created
Issue	1:250 @ A0	28 November 2014
Project Leader	Drawn By	Checked by
SG	BW	

Drawing Number	Rev
JKK5617 - Figure 02.01	-

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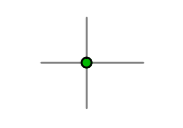
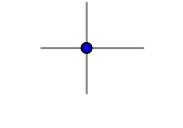
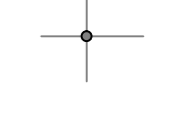
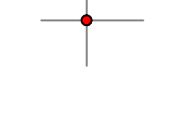
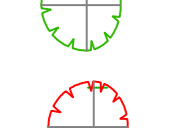
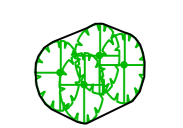

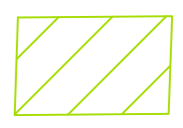




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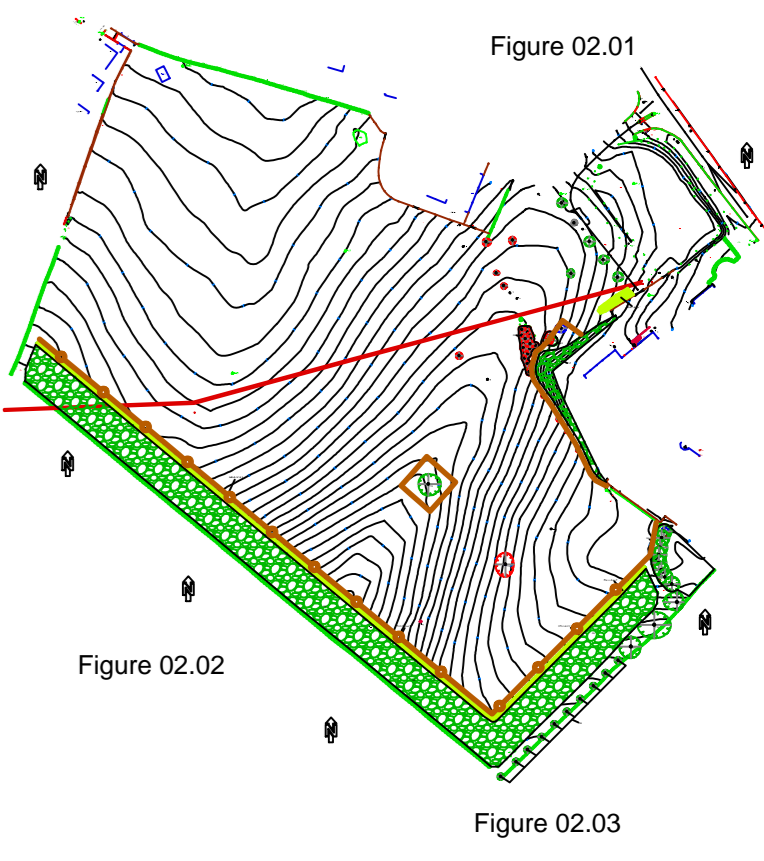
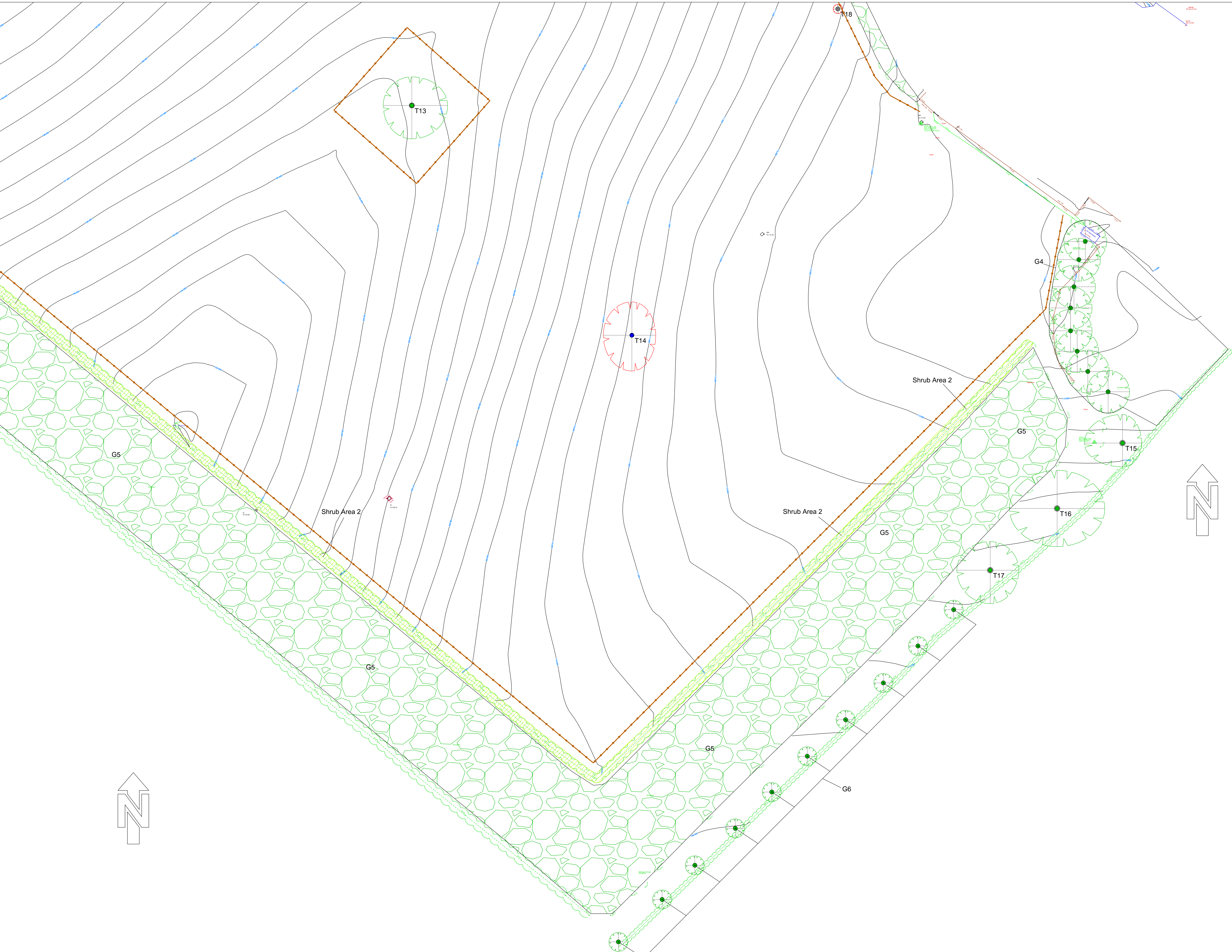
Status	Scale	Date Created
Issue	1:250 @ A0	28 November 2014
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JJK5617 - Figure 02.02	-

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Rev	Description	By	Chk	Date

**RPS**

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Client

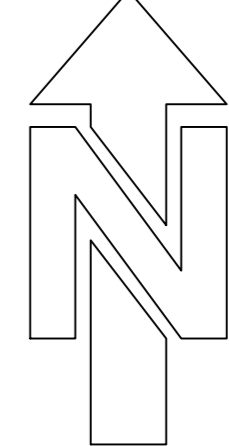
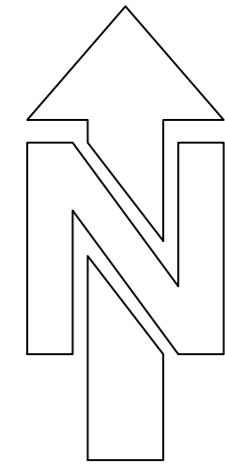
Project **Blossom Fields, Cotefield Farm, Bodicote**

Title **Tree Protection Plan**

Status Issue Scale 1:250 @ A0 Date Created 28 November 2014  
 Project Leader Drawn By Checked by  
 SG BW

Drawing Number JKK5617 -Figure 02.03 Rev -

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# APPENDIX 1 – METHODOLOGY, TREE SURVEY

---

## Methodology – Tree Survey

### General

Trees were inspected from ground level during a site visit. All data was recorded electronically within a ESRI ArcPad project and then upon return to the office it was imported 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 (or where multiple stems exist complying with requirements for BS5837).
- 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
SM – Semi-Mature:	Trees older than 10 years but less than 40% of the life expectancy of their species.
EM – Early-Mature:	Trees between 40% and 70% of the life expectancy of their species.
M - Mature:	Trees between 70% and 100 of the life expectancy of their species.
OM - Overmature:	Trees considered to be beyond the normal life expectancy of their species.
V – Veteran:	Trees that show 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+ years.

Death or removal is likely within 20+ 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 BS5837:2012. 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 a U category tree. U 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 4 of this report.



## APPENDIX 2 - THE TREE CONSTRAINTS PLAN

---

### The Tree Constraints Plan

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.

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.

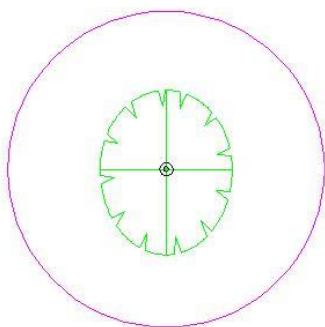
It should be noted that some of the tree positions shown on the plan have been plotted by eye to an Ordnance Survey base map and as such should be considered to be of a provisional nature.

### Below Ground Constraints

#### Root Protection Areas

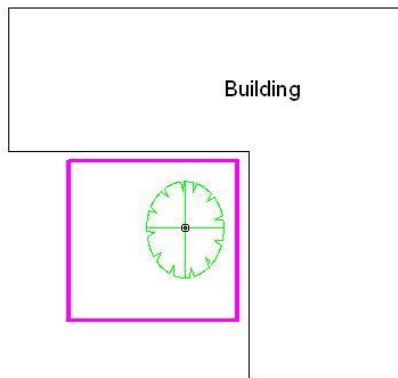
Root Protection Areas for each tree and group of trees surveyed have been determined in accordance with BS5837:2012 and a schedule of Root Protection Areas is attached to this report as Table 2.

As shown below Root Protection Areas (RPA's) for the trees, where no significant constraints to root development are considered to be present, 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.



Where tree root spread is considered to have been influenced by site conditions the trees RPA's have been plotted to the Tree Constraints Plan as a polygon. The plotted polygon is of the same area as it would be as a circle and its shape reflects an arboricultural assessment of likely root distribution.

An example of a polygonal RPA, considered appropriate due to the presence of a building in close proximity to a tree, is shown below.

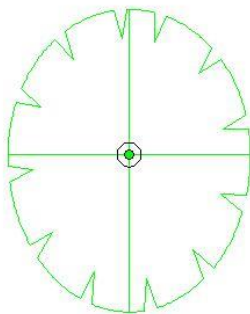


Where possible all development, including new hard landscaping, shall be situated outside of the retained trees designated Root Protection Areas.

### **Above Ground Constraints**

#### **Existing Canopy Spreads**

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



The current spread of the tree is a constraint due to its dominance, size and movement in strong winds.

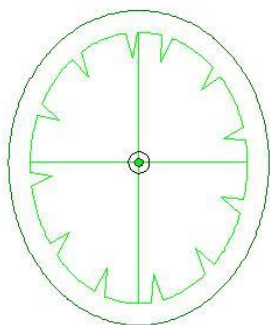
It will typically be unacceptable to design any built development within the current spread of a tree.

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.

#### **Future Tree Growth**

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.

To facilitate assessment of future tree growth maximum expected canopy spreads have been marked on the Tree Constraints Plan (Figure 1) as shown below.



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.

Within the area of maximum branch spread construction activities should be restricted for the long-term health and vigour of the trees.

In this respect it is considered that within the area of maximum branch the construction of utility buildings, such as single storey garages or sheds and the installation of hard surfaces would generally 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.

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.

### **Canopy Height / Clearance**

The height and growth direction of the lowest branch of each tree is recorded in the Tree Data Schedule contained within this report as Table 1. Additionally the vertical clearance of the trees canopy above ground level is recorded within the Tree Data Schedule.

The two figures can be used to inform the extent to which a trees crown may be at risk of damage during development as a result of vehicular or plant movements within the site and to assess the need for additional protective measures to be implemented to protect low branches.

In particular 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.

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.

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.

### **Shading**

It should be appreciated during the design of the development that trees can cause shading and obstruction of daylight and sunlight. 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.

Shading has been shown on the constraints plan, but this is a very basic shade pattern and it should not be considered as a definitive pattern. Shade and its affects/benefits to residential buildings should be considered by the designers within the overall site appraisal for the building layout.

## APPENDIX 3 – TREE PROTECTION BARRIERS

---

### Tree Protection Barriers

#### Root Protection Area Barrier Details

##### **Protective Barrier 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: 2012 Trees in Relation to Design, Demolition and Construction. Barriers should be braced and constructed to resist impacts; see figures 1 & 2 below for barrier specifications. Barriers can be of an alternative specification to that within the BS5837:2012 provided it is approved by the Local Planning Authority Tree Officer.

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: 2012)**

**Figure 1**

**Figure 2 Default specification for protective barrier**

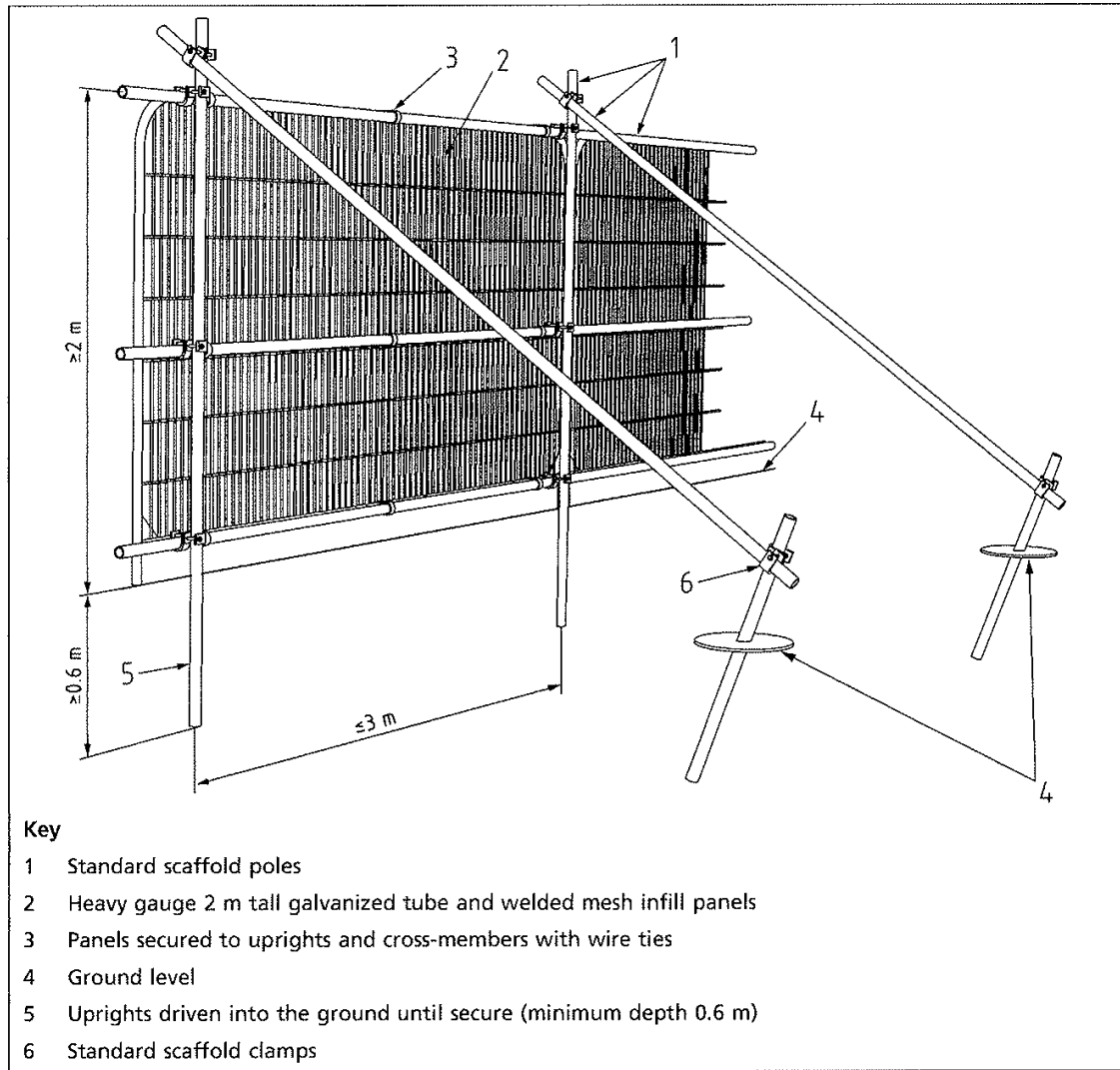
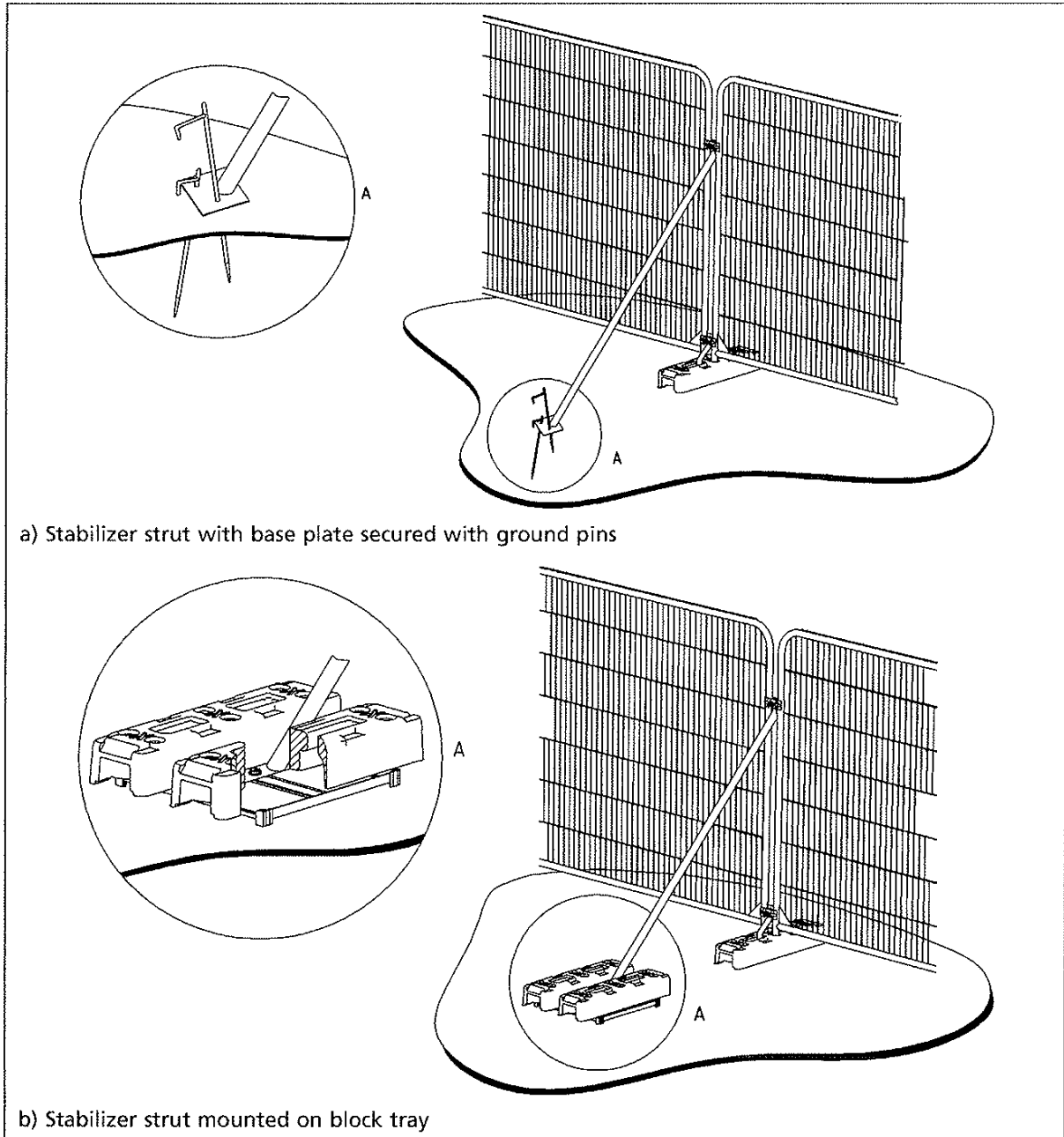


Figure 2

Figure 3 Examples of above-ground stabilizing systems



## **APPENDIX 4 – TABLE 1 BS5837:2012**

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Table 1 BS5837:2012 Cascade Chart for Tree Quality Assessment



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

Category and definition	Criteria (including subcategories where appropriate)			Identification on plan
<b>Trees unsuitable for retention</b> (see Note)				
<p><b>Category U</b></p> <p>Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years</p>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Trees that have a serious, irremediable, structural defect, such that their early loss is expected due to collapse, including those that will become unviable after removal of other category U trees (e.g. where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning)</li> <li><input type="checkbox"/> Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline</li> <li><input type="checkbox"/> Trees infected with pathogens of significance to the health and/or safety of other trees nearby, or very low quality trees suppressing adjacent trees of better quality</li> </ul> <p><i>NOTE Category U trees can have existing or potential conservation value which it might be desirable to preserve; see 4.5.7.</i></p>			Dark Red
	<b>1 Mainly arboricultural qualities</b>	<b>2 Mainly landscape qualities</b>	<b>3 Mainly cultural values, including conservation</b>	
<b>Trees to be considered for retention</b>				
<p><b>Category A</b></p> <p>Trees of high quality with an estimated remaining life expectancy of at least 40 years</p>	Trees that are particularly good examples of their species, especially if rare or unusual; or those that are essential components of groups or formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue)	Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features	Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture)	Light Green
<p><b>Category B</b></p> <p>Trees of moderate quality with an estimated remaining life expectancy of at least 20 years</p>	Trees that might be included in category A, but are downgraded because of impaired condition (e.g. presence of significant though remediable defects, including unsympathetic past management and storm damage), such that they are unlikely to be suitable for retention for beyond 40 years; or trees lacking the special quality necessary to merit the category A designation	Trees present in numbers, usually growing as groups or woodlands, such that they attract a higher collective rating than they might as individuals; or trees occurring as collectives but situated so as to make little visual contribution to the wider locality	Trees with material conservation or other cultural value	Mid Blue
<p><b>Category C</b></p> <p>Trees of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150 mm</p>	Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories	Trees present in groups or woodlands, but without this conferring on them significantly greater collective landscape value; and/or trees offering low or only temporary/transient landscape benefits	Trees with no material conservation or other cultural value	Grey

## APPENDIX 5 - BOTANICAL AND COMMON NAMES OF TREES ON SITE

---

### Botanical and Common Names of Trees on Site

<b><i>BOTANICAL NAME</i></b>	<b>COMMON NAME</b>
Acer campestre	Field Maple
Acer pseudoplatanus	Sycamore
Betula pendula	Birch
Carpinus betulus	Hornbeam
Castanea sativa	Sweet Chestnut
Fagus sylvatica	Beech
Fraxinus excelsior	Ash
Larix decidua	European Larch
Larix x eurolepis	Hybrid Larch
Prunus avium	Cherry
Quercus robur	English Oak
Salix caprea	Goat Willow
Tilia sp.	Lime

# APPENDIX 6 – CONSTRUCTION EXCLUSION ZONE SIGN

---

Construction Exclusion Zone Sign



**PROTECTIVE FENCING. THIS  
FENCING MUST BE  
MAINTAINED IN ACCORDANCE  
WITH THE APPROVED PLANS  
AND DRAWINGS FOR THIS  
DEVELOPMENT.**



**TREE PROTECTION AREA  
KEEP OUT !**

**(TOWN & COUNTRY PLANNING ACT 1990)  
TREES ENCLOSED BY THIS FENCE ARE PROTECTED BY  
PLANNING CONDITIONS AND/OR ARE THE SUBJECTS OF A  
TREE PRESERVATION ORDER.  
CONTRAVENTION OF A TREE PRESERVATION ORDER MAY  
LEAD TO CRIMINAL PROSECUTION**

**ANY INCURSION INTO THE PROTECTED AREA MUST BE  
WITH THE WRITTEN PERMISSION OF THE LOCAL  
PLANNING AUTHORITY**

## APPENDIX 7 – GLOSSARY

---

### 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.

**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.

**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.

**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 (TPP)** – 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.