

Winking Hill Farm

British Standards 5837:2012 Tree
Survey: Arboricultural Impact
Assessment, Method Statement and
Tree Protection Plan



Client:

Renewable Energy Systems
Limited

Report Reference:

RSE_7396_R1_V2_ARB

Issue Date:

October 2024

East Midlands:	West Midlands:	Yorkshire:	
Oban House	Cabin 53	SUM Studios	info@rammsanderson.com
8 Chilwell Road,	Dunston Business Village	Studio 11	www.rammsanderson.com
Beeston,	Stafford Road	1 Hartley Street	
Nottinghamshire	Stafford	Heeley	
NE9 1EJ	Staffordshire	Sheffield	
[T] 0115 930 2493	ST18 9AB	S2 3DJ	
	[T] 01785 711 575		

Project Details

Client:	Renewable Energy Systems Limited
Project:	Winking Hill Farm
Reference	RSE_7396_R1_V2_ARB
Report Title	BS 5837:2012 Tree Survey, Arboricultural Impact Assessment (AIA), Arboricultural Method Statement (AMS) & Tree Protection Plan (TPP)

DISCLOSURE:

The information provided within this report has been prepared and provided as true and in accordance with the Chartered Institute of Ecology and Environmental Management's (CIEEM) Code of Professional Conduct and in line with the Arboricultural Association Code of Conduct and Ethics version 1 (2018). It is intended for the sole use of the Client and their agents in accordance with the agreement under which our services were performed. Unauthorised communication, reproduction or usage of this report by any party other than the aforementioned is prohibited. No warranty, express or implied, is made as to the advice in this report or any other service provided by RammSanderson Ecology Ltd. This report has been prepared by an ecological specialist and does not purport to provide legal advice. RammSanderson is a trading name of RammSanderson Ecology Limited, as registered in England & Wales (Company No.: 8999992).



Document Control

Originated:	Andy Leese MSc, MArborA	Arboriculturist	<i>AP Leese</i>	16/10/2024
Technical Reviewed:	Jake Mellor BA (Hons) FdSc, MArborA	Principal Arboriculturist	<i>J. Mellor</i>	21/10/2024
Issued to Client:	Andy Leese MSc, MArborA	Arboriculturist	<i>AP Leese</i>	23/10/2024
Revisions: V2	Andy Leese MSc, MArborA	Arboriculturist	<i>AP Leese</i>	25/10/2024

1 EXECUTIVE SUMMARY

- i RammSanderson Ecology Ltd was instructed by Renewable Energy Systems Limited to carry out an assessment of trees at Winking Hill Farm which follows the guidance of British Standards 5837:2012 'Trees in relation to design, demolition and construction – Recommendations', and to provide a report on the arboricultural implications to the proposed development of the site.
- ii The current development proposals are for energy storage infrastructure.
- iii A current topographical survey of the site in AutoCAD format has been provided and this formed the basis for the Tree Constraints Plan.
- iv Following consultation with the project Client regarding the arboricultural constraints, a site layout plan has been produced which is considered represent the most appropriate integration between the proposals and existing trees. A provided AutoCAD copy of this proposed site plan (Drawing Reference: 04875-RES-LAY-DR-PT-001) has been considered during the Arboricultural Impact Assessment and used to produce Tree Protection Plan.
- v The content and scope of this report is listed below:
 - BS 5837:2012 Tree Survey and Categorisation
 - Arboricultural Impact Assessment
 - Arboricultural Method Statement
 - Tree Protection Plan

1.1 Findings and Recommendations

- i The survey assessed a total of 21 individual trees, 6 tree groups and 9 hedgerows. There was a moderate amount of tree cover mainly confined to the site edges, and also located within gardens just to the west of the site. There was a general mix of moderate quality (category B) and low quality (category C) trees.
- ii There are currently no tree preservation orders (TPO) at this location and the site is not situated within a conservation area. Therefore, none of the trees detailed within this report were subject to statutory protection at the time of the survey.
- iii There were no category U trees on the site that were considered unsuitable for retention in their current form. However, standing dead trees were observed in an offsite group (G3) and so it is recommended to notify the landowners of the presence of standing dead trees so that they can be managed appropriately where possible. The proposed development will require the removal of a section of hedgerow (H8) only. There is therefore considered to be negligible reduction with regards to arboricultural value and amenity on the site. It is nevertheless recommended to undertake replacement planting on the site for the loss of the hedgerow section within the landscape design of the scheme. There is considered adequate room on the site to conduct this given the small sum of removals proposed.
- iv It is recommended that temporary protective fencing is erected in order to create a construction exclusion zone which adequately protects the retained trees from damage during the construction works. This fencing should be erected at the outset of the development before any activities are carried out or materials/ plant is brought onto the site. For full details see the Tree Protection Plan (Appendix D).
- v It is recommended that a single site monitoring visit should be arranged to check that the tree protection fencing has been installed as per the locations within Appendix D prior to works starting.

CONTENTS

1	EXECUTIVE SUMMARY	3
1.1	FINDINGS AND RECOMMENDATIONS	3
2	INTRODUCTION AND BACKGROUND	6
2.1	PURPOSE AND SCOPE OF THIS REPORT	6
2.2	REGULATORY AND POLICY FRAMEWORK	6
2.3	SITE LOCATION AND CONTEXT	6
3	SURVEY METHODOLOGY	8
3.1	SURVEY METHODS	8
4	LIMITATIONS	9
4.1	SURVEY	9
5	RESULTS	10
5.1	SURVEYORS	10
5.2	STATUTORY TREE PROTECTION	10
5.3	TREE SURVEY	10
6	ARBORICULTURAL IMPACT ASSESSMENT	12
6.1	INTRODUCTION	12
6.2	TREES SUITABLE FOR RETENTION	12
6.3	ROOT PROTECTION AREAS (RPAs)	12
6.4	RECOMMENDATIONS FOR TREE REMOVALS	13
6.5	TREE LOSS EVALUATION	13
6.6	RECOMMENDATIONS FOR TREE PRUNING	13
6.7	TREE PROTECTION PLAN	13
6.8	SHADING	14
6.9	DIRECT DAMAGE	14
6.10	TEMPORARY GROUND PROTECTION	15
6.11	EXCAVATION/GROUND WORKS	15
6.12	CONSTRUCTION WITHIN THE ROOT PROTECTION AREA	15
6.13	HARD SURFACING WITHIN THE ROOT PROTECTION AREA	16
6.14	CONSTRUCTION ACTIVITY	17
6.15	FUTURE PRESSURE FOR TREE PRUNING/REMOVAL	17
6.16	SEASONAL NUISANCE	17
6.17	INFRASTRUCTURE	17
6.18	LANDSCAPING	18

6.19	ISSUES TO BE ADDRESSED BY AN ARBORICULTURAL METHOD STATEMENT	18
------	--	----

7 ARBORICULTURAL METHOD STATEMENT 19

7.1	RECOMMENDED TREE WORKS/REMOVALS	19
7.2	SUMMARY OF MITIGATION	19
7.3	ERECTION OF PROTECTIVE FENCING	20
7.4	ADDITIONAL GENERAL PRECAUTIONS OUTSIDE OF THE EXCLUSION ZONE	22
7.5	SITE MONITORING	22
7.6	GROUND WORKS, DEMOLITION & CONSTRUCTION WORKS	22
7.7	SOIL COMPACTION AND REMEDIATION MEASURES	22
7.8	CONTRACTORS STORAGE, PARKING & ACCESS	23
7.9	COMPLETION	23
7.10	TREE PLANTING & AFTER CARE	23
7.11	CONTACTS	24

FIGURES

FIGURE 1:	SITE LOCATION PLAN	7
FIGURE 2:	CROSS SECTION ILLUSTRATING A PERMEABLE TARMAC SURFACE FINISH	17
FIGURE 3:	DEFAULT SPECIFICATION FOR PROTECTIVE BARRIER © BRITISH STANDARDS INSTITUTE	21
FIGURE 4:	ALTERNATIVE SPECIFICATION FOR PROTECTIVE FENCING © BRITISH STANDARDS INSTITUTE	21

TABLES

TABLE 1:	SUMMARY OF CONDITIONS DURING SURVEY	10
TABLE 2:	SURVEY RESULTS	11
TABLE 3:	MINIMUM DISTANCE BETWEEN YOUNG TREES OR NEW PLANTING AND STRUCTURE TO AVOID DIRECT DAMAGE TO A STRUCTURE FROM FUTURE TREE GROWTH	14
TABLE 4:	TRENCHLESS SOLUTIONS FOR DIFFERING UTILITY APPARATUS INSTALLATION REQUIREMENTS	18
TABLE 5:	SUMMARY OF RECOMMENDED TREE WORKS	19
TABLE 6:	SUMMARY OF MITIGATION REQUIREMENTS	20

APPENDICES

APPENDIX A:	TREE SCHEDULE	25
APPENDIX B:	KEY TO SPECIES SCIENTIFIC NAMES	32
APPENDIX C:	TREE CONSTRAINTS PLAN - RSE_7396_TCP_V1	33
APPENDIX D:	TREE PROTECTION PLAN - RSE_7391_TPP_V1	35

2 INTRODUCTION AND BACKGROUND

2.1 Purpose and Scope of this Report

- i This report has been prepared following the guidance within BS 5837:2012 'Trees in relation to design, demolition and construction – Recommendations' Its purpose is to assess the likely arboricultural implications to the development proposals for the site and to be submitted in support of a planning application to the Local Planning Authority seeking consent for these proposals. It also provides arboricultural guidance on how the proposed development can be achieved while minimising any potential detrimental impacts to retained trees.
- ii In preparing this report, consideration has been given to the proposed layout, the condition of the trees, and the final use of the site with a focus on providing a harmonious, balanced environment between the trees, buildings, and the end users of the site.
- iii Whilst not definitive, the findings and any associated recommendations detailed within this report are considered reasonable, practicable, sustainable, and in the interests of promoting good arboricultural management.
- iv Recommendations included within this report are the professional opinion of an experienced Arboriculturist and are the view of RammSanderson Ecology Ltd. This is based on a review of the information provided by the Client, the brief, and a survey of the site. This report pertains to these results only.
- v This report and the survey(s) on which it depends have been carried out by a competent Arboriculturist.

2.2 Regulatory and Policy Framework

- i Part VIII of the Town and Country Planning Act 1990 (as amended) and the Town and Country Planning (Tree Preservation) (England) Regulations 2012 enable a local planning authority to make a Tree Preservation Order (TPO) to protect specific trees, groups of trees, or woodlands in the interests of amenity. A TPO prohibits the cutting down, toppling, lopping, uprooting, wilful damage, and wilful destruction of protected trees without the local planning authority's written consent.
- ii Section 211 of the Town and Country Planning Act 1990 makes provisions to protect trees which are within a conservation area, but not the subject of a TPO. These provisions require anyone intending to carry out works to a tree within a conservation area to give the local planning authority 6 weeks' notice before carrying out certain works unless an exemption applies.
- iii The Forestry Act (1967) requires that a Felling Licence, issued by the Forestry Commission, is obtained before felling trees, unless an exemption applies; such exemptions include felling small quantities of trees (less than 5m³ of timber in any calendar quarter) or felling in specific areas (e.g. gardens).

2.3 Site Location and Context

- i The site comprised an open field compartment, buildings, hard standing and amenity grassland garden lawn areas with bordering tree and hedgerow cover. The site was located close to the A453, Ratcliffe-on-Soar, Rushcliffe, Nottingham with the approximate central grid reference: SK 51088 29840.

Figure 1: Site Location Plan



© Google 2022, Image reproduced under licence from Google EarthPro

3 SURVEY METHODOLOGY

3.1 Survey Methods

- i The site was visited on the 21st September 2023 to carry out an assessment in accordance with BS 5837:2012 – Trees in relation to Design, Demolition and Construction - Recommendations.
- ii The weather at the time was dry, bright, clear and still and considered to be adequate for conducting the survey during which, the following information was collected:

- Sequential reference number (recorded on the tree survey plan), including reference to type (tree, group, woodland, or hedgerow).
- Species, listed by common name (a key to scientific names is provided at Appendix B).
- Height.
- Stem diameter measured @ 1.5m height (for trees with more than one stem, the combined stem diameter is recorded as per BS5837:2012 Section 4.6).
- Branch spread (measured at the four cardinal points).
- Existing height above ground level of first significant branch.
- Life stage:

Y – Young,

SM – Semi Mature,

EM – Early Mature,

M – Mature,

OM – Over Mature.

- General observations, particularly of structural and/or physiological condition, and/or preliminary management recommendations as appropriate.
- Estimated remaining contribution (future life expectancy) in years (<10, 10+, 20+, 40+);
- Tree quality assessment category grading as per Section 4.5 and Table 1 of BS5837:2012. 'U' or 'A' to 'C' grading with the subcategory 1, 2 or 3 reflecting arboricultural, landscape or cultural values, respectively.

Notes: Only individual trees with a stem diameter of 75mm or greater are included in the survey. It is not always practical or necessary to record individual details for every tree within a group or woodland. Only basic details (height and species) for domestic hedgerows and significant shrubs were recorded. More substantial hedgerows (including evergreen screens) are generally recorded in a similar manner to groups of trees.

- iii The measurement conventions used were as follows:
 - Height, crown spread, and crown clearance was recorded to the nearest half metre for dimensions up to 10m and to the nearest whole metre for dimensions over 10m.
 - Stem diameter was recorded in millimetres, rounded to the nearest 10mm.
 - Any estimated dimensions (for offsite or otherwise inaccessible trees where accurate measurements cannot be taken) were clearly identified as such in the tree schedule (Appendix A).
- iv The survey includes all trees plotted on the provided topographical survey. Should any relevant trees on or adjacent to the site have been missed on the topographical survey, these have been included where appropriate. However, the positions indicated on any plans included within this report for all trees not included on the provided topographical survey have been approximated for the purposes of identification only, and if accurate locations are required these should be confirmed on site.

4 LIMITATIONS

4.1 Survey

- i Each of the surveyed trees has been plotted and recorded as an individual tree or a tree group in accordance with the criteria detailed in section 4.4.2.5 of BS 5837:2012.
- ii The information contained within this report is based on the author's knowledge and experience in respect of tree related issues. Whilst the appropriate level of skill and care have been used, no investigative method can eliminate the possibility of obtaining partially imprecise, incomplete, or not fully representative information.
- iii Any survey work undertaken will have been subject to natural limitations, including seasonal and phenological aspects.
- iv Trees were assessed from ground level using the Visual Tree Assessment (VTA) method. The trees included in the survey were not climbed, no samples were removed, and no detailed internal investigation of decay was made.
- v Where other vegetation (e.g. ivy or dense ground cover) prevented full access to any tree, this is noted in the tree survey schedule (Appendix A). Dense ivy cover can prevent full access to a tree and so obscure the presence of cavities or other defects. Any such situations are noted in the tree survey schedule with, where appropriate, recommendations for the ivy to be removed and a re-inspection carried out. No ivy was removed from any tree during the survey.
- vi No liability can be accepted by RammSanderson Ecology Ltd. in respect of the trees unless the recommendations of this report are carried out under their supervision and within their recommended timescales. Acceptance of this report represents an agreement with the guiding principles and the terms listed.
- vii The findings and recommendations contained within this report are, assuming its recommendations are observed, valid for a period of eighteen months from the date of survey. Trees are living organisms and their condition can change significantly over a relatively short period of time – good practice dictates they are inspected on a regular basis for reasons of safety.
- viii Any hedgerows within the survey area were assessed solely for their general arboricultural condition and value. Further detailed assessment, following the Hedgerow Regulations 1997, is outside the scope of this report and no attempt has been made during this assessment to classify any hedgerow under the criteria within those Regulations.
- ix Tree rooting characteristics and soils are both enormously variable as are their interactions. This makes any attempts to quantify tree related subsidence risk assessment impossible. No attempt has been made to assess subsidence risk potential nor should any be construed.
- x The report relates only to the trees included within the Tree Schedule (Appendix A).

5 RESULTS

5.1 Surveyors

- i The survey was carried out by:
 - Andy Leese BSc (Hons) MSc, MA ArborA, is experienced within the arboricultural sector and has also completed the LANTRA Professional Tree Inspection assessment examination
- ii The survey was completed during suitable conditions as detailed in the table below.

Table 1: Summary of conditions during survey

Abiotic Factor	Survey 1
Survey type	BS 5837:2012 Tree Survey
Date completed	21/09/2023
Temperature	18 °C
Wind speed (Beaufort Scale)	2
Cloud cover	10%
Precipitation	None

5.2 Statutory Tree Protection

- i Rushcliffe Borough Council confirmed, by email on the 19th of September 2023, that the site is not within a conservation area and that none of the trees detailed within this report are covered by a tree preservation order (TPO).
- ii The trees on the site are therefore not currently subject to any statutory protection and there are no restrictions on tree works being carried out at this location. However, it is recommended that immediately prior to carrying out any future tree works, further confirmation is obtained from Rushcliffe Borough Council that the trees remain unprotected.

5.3 Tree Survey

- i The survey assessed 21 individual trees, 6 tree groups and 9 hedgerows the quality and value of which are summarised in the table below whilst full results of the tree survey are provided in the Tree Schedule (Appendix A).
- ii There was a moderate amount of tree cover mainly confined to the site edges, and also located within gardens just to the west of the site. There was a general mix of moderate quality (category B) and low quality (category C) trees.

Table 2: Survey Results

BS5837:2012 Tree Quality Assessment Category		Trees	Groups	Hedgerows	Total
A	Trees of high quality which are healthy and attractive with high visibility and no significant defects, and which can make a substantial contribution for a minimum of 40 years	0	0	0	0
B	Trees of moderate quality which are healthy and attractive but with some remediable defects such that they are in a condition to be able to make a significant contribution for a minimum of 20 years	8	3	0	11
C	Trees of low quality which are unremarkable, of limited merit and that are easily replaced, small-growing, young species which have a relatively low potential amenity value, and low landscape benefits. These trees typically include self-seeded trees of limited life span, small (below 150mm stem diameter) and young trees and trees of poor form and limited amenity value.	13	3	9	25
U	Trees which are 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 and/or are considered to be unsuitable for retention in the proximity of new dwellings or areas of public open space.	0	0	0	0
Total		21	6	9	36

6 ARBORICULTURAL IMPACT ASSESSMENT

6.1 Introduction

- i The arboricultural constraints, both above and below ground, identified during the tree survey (Section 5) and illustrated on the Tree Constraints Plan (Appendix A), have been used, through consultation with the project Design Team, to inform the proposed site layout design.
- ii The following arboricultural impact assessment evaluates the direct and indirect effects of the proposed design, with recommendations for appropriate mitigation where necessary. It takes account of the effects of any tree loss required to implement the design and any proposed construction activities which may have the potential to damage retained trees.

6.2 Trees Suitable for Retention

- i Where possible, it is generally considered desirable for any Category 'A' and Category 'B' trees to be retained and appropriately integrated within the layout for new developments. Category 'U' trees are unsuitable for retention other than for the very short-term or exceptionally for their conservation value and therefore should not be considered to be a constraint to development.
- ii In assessing the probable impact of the proposed development on the trees and vice versa, and therefore identifying which trees are suitable for retention and integration within the context of the proposed layout, the following factors have all been considered:
 - Root Protection Areas for Retained Trees
 - Shading
 - Direct Damage
 - Construction Activity
 - Demolition/Ground Works
 - Future Pressure for Tree Removal and Pruning
 - Seasonal Nuisance
 - Infrastructure
 - Future Management

6.3 Root Protection Areas (RPAs)

- i Recommended Root Protection Areas (RPA) for all individual trees on or immediately adjacent to the survey area are detailed within the Tree Schedule (Appendix A) and illustrated on the Tree Constraints Plan (Appendix C).
- ii These RPAs have been calculated following the recommendations within BS5837:2012 Section 4.6 and are represented on the Tree Constraints Plan as a circle centred on the base of the tree's stem. Should any deviation from this circular RPA be considered appropriate, for example where previous site conditions (the presence of roads, structures, and underground apparatus), topography, or soil type/structure will have influenced root growth, any modifications to the RPA will be clearly explained and reflect a soundly based arboricultural assessment of the likely root distribution for the individual tree. Any such modified RPA will be of an overall area which is equivalent to the BS5837:2012 recommendation.
- iii Recommendations for RPAs for any groups of trees, woodlands, or hedgerows, where the positions of individual trees are not included on the provided topographical survey, also reflect a soundly based arboricultural assessment of the likely collective root distribution of the constituent trees.

6.4 Recommendations for Tree Removals

- i The survey identified no onsite trees which are unsuitable for retention due to their condition. However, standing dead trees were observed in an offsite group (G3) and so it is recommended to notify the landowners of the presence of standing dead trees where possible so that they can be managed appropriately.
- ii A section of hedgerow H8 has been identified as requiring removal solely to accommodate the proposed new site layout.
- iii Table 5 (section 7.1) below provides a summary of all recommended tree works (pruning and removals).
- iv All Arboricultural work should be carried out by qualified and competent Arborists working to BS 3998:2010 'Tree Work – Recommendations'.

6.5 Tree Loss Evaluation

- i There is considered to be negligible reduction with regards to arboricultural value and amenity on the site with just the removal of the hedgerow section required. It is nevertheless recommended to undertake replacement planting on the site for the loss of the hedgerow within the landscape design of the scheme. There is considered ample room on the site to conduct this given the small amount of removals required.
- ii Any arboricultural and amenity losses should be balanced against the overall benefits of the development and mitigated against/compensated for through appropriate new tree planting, as part of the overall landscaping scheme for the development with the aim of maintaining an appropriate amount of tree cover whilst improving the long-term arboricultural value of the site.

6.6 Recommendations for Tree Pruning

- i Any recommendations within the Tree Survey Schedule (Appendix A) details pruning works **solely** in the context of the current use of the site that are recommended in the interest of good arboricultural management of the trees irrespective of any changes in use of the site. These recommendations should not be considered as necessary to implement or facilitate the proposed development.
- ii Any additional pruning which is recommended solely to accommodate the proposed site layout (e.g. access facilitation pruning) is detailed within Table 5 (section 7.1).
- iii All Arboricultural work should be carried out by qualified and competent Arborists working to BS 3998:2010 'Tree Work – Recommendations'.

6.7 Tree Protection Plan

- i The Tree Protection Plan (Appendix D), when read in conjunction with this report, details the required tree protection and mitigation measures for all trees proposed to be retained and integrated within the proposed layout.
- ii The Tree Protection Plan is superimposed on the proposed layout and includes details of;
 - Trees selected for retention and trees proposed for removal.
 - The precise location and specification of protective barriers to form a construction exclusion zone around the retained trees.
 - The extent and type of any temporary ground protection, and/or any additional physical measures, that are recommended in association with any temporary access or other activities which are permitted within the construction exclusion zone.
 - The position, extent and general construction specification of any new permanent new hard surfacing within the RPA.

6.8 Shading

- i Although there are circumstances where shade from trees could be considered beneficial, excessive shading of buildings by trees can be a problem, particularly where it affects rooms which require natural light. Similarly, it is often considered that open spaces such as gardens and sitting areas benefit from direct sunlight, for at least part of the day, and therefore that excessive shading of these areas by trees is undesirable. Shading can also impact solar power generation projects.
- ii In this instance, no further investigation, illustration or mitigation is considered necessary due to the generally favourable layout orientation which means that the development is not considered likely to be subjected to an unreasonable level of shading from trees. The proposals as a whole are located well away from the retained trees for the most part.

6.9 Direct Damage

- i All new developments should consider the likelihood of direct damage occurring to any new structures, hard surfacing or associated utilities from incremental tree stem/root growth or mechanical damage resulting from encroachment of branches.
- ii The proposed layout locates all new structures and services outside of the recommended RPAs.
- iii For any proposed new planting, Table 3 below, taken from Annex A of BS 5837:2012, provides recommendations that are advised as minimum distances from structures and services for new tree plantings.

Table 3: Minimum distance between young trees or new planting and structure to avoid direct damage to a structure from future tree growth

Type of structure	Minimum distance between young trees or new planting and structure, in metres (m)		
	Stem dia. ≤300mm ^{A)}	Stem dia. 300mm to 600mm ^{A)}	Stem dia. ≥600mm ^{A)}
Building and heavily loaded structures	—	0.5	1.2
Lightly loaded structures such as garages, porches etc.	—	0.7	1.5
Services			
≤1m deep	0.5	1.5	3.0
≥1m deep	—	1.0	2.0
Masonry boundary walls	—	1.0	2.0
In-situ concrete paths and drives	0.5	1.0	2.5
Paths and drives with flexible surfaces or paving slabs	0.7	1.5	3.0

A) Diameter of stem at 1.5m above ground level at maturity.

©The British Standards Institution 2012

6.10 Temporary Ground Protection

- i The proposed site layout does not include any conflict between the necessary construction working space and retained trees. Therefore, it is not considered that any temporary ground protection will be required to implement the development.
- ii Suitable existing hard surfacing that is not proposed for re-use as part of the finished design should be retained to act as temporary ground protection during the construction and, development rather than being removed.
- iii British Standard 5837:2012 advises that temporary ground protection should be capable of supporting any traffic entering or using the site without being distorted or causing compaction to underlying soil and further provides the following note:

The ground protection might comprise one of the following:

a) for pedestrian movements only, a single thickness of scaffold boards placed either on top of a driven scaffold frame, so as to form a suspended walkway, or on top of a compression-resistant layer (e.g. 100 mm depth of woodchip), laid onto a geotextile membrane;

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

c) for wheeled or tracked construction traffic exceeding 2 t gross weight, an alternative system (e.g. proprietary systems or pre-cast reinforced concrete slabs) to an engineering specification designed in conjunction with arboricultural advice, to accommodate the likely loading to which it will be subjected.

- iv Final on-site measurements should be taken to ascertain the extent of any tree protection measures and provide an indication of whether incursions, which have not been anticipated, into the RPAs of retained trees might prove necessary.

6.11 Excavation/Ground Works

- i The installation of any protective mitigation measures, if necessary, prior to the commencement of any works on site, will allow excavations and ground works to take place whilst minimising any anticipated adverse effect and/or impact on the retained trees.
- ii All plant and vehicles engaged in ground works should either operate outside the RPAs, or run on appropriate ground protection, if necessary, in the proximity of retained trees.
- iii Where trees stand adjacent to hard surfaces and/or buildings to be removed, excavation should be undertaken inwards, from within the footprint of the existing hard surfacing, or outside of the RPAs.

6.12 Construction Within the Root Protection Area

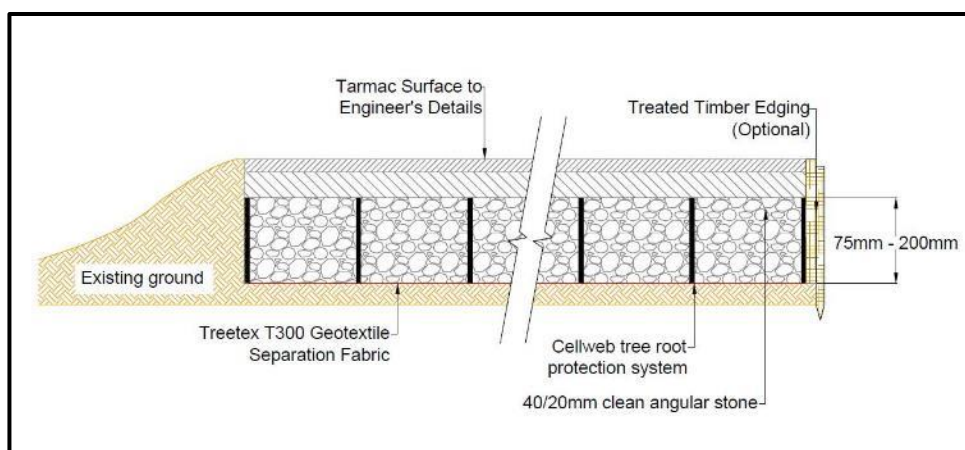
- i The use of traditional strip foundations can result in extensive root loss and should be avoided. However, BS5837:2012 recommends that the insertion of specially engineered structures within RPAs may be justified if it enables the retention of a good quality tree (usually category A or B) that would otherwise be lost.
- ii The foundation design should minimise any adverse impact on the trees and should take into consideration all relevant site-specific constraints. In order to arrive at a suitable solution, the combined advice of the project arboriculturist and an engineer will be required.

- iii BS5837:2012 recommends that root damage can be minimised by using piles, located optimally to avoid any structural roots, by means of hand tools or compressed air soil displacement, to a minimum depth of 600mm, or beams laid at or above ground level to avoid tree roots.
- iv Where piling is to be installed near to trees, the smallest practical pile diameter should be used to reduce the possibility of striking major tree roots. Temporary ground protection, appropriate to the size of the piling rig in use, should be used as detailed above in section 6.6.
- v It may be appropriate for slabs for minor structures (e.g. a shed base) to be formed within the RPA. It should however be placed on the existing ground level with no new excavation and should not exceed an area greater than 20% of the unsurfaced ground within the RPA.
- vi The proposed layout does not include any construction within the RPA and so there is no requirement for any specially engineered structures in this instance.

6.13 Hard Surfacing Within the Root Protection Area

- i It is not anticipated that the installation of any specially engineered hard surfaces to protect the roots of retained trees will be necessary in this instance. However, general guidance on such surfacing is provided below should a subsequent need arise.
- ii BS5837:2012 recommends that three-dimensional cellular confinement systems, incorporating geotextile or impermeable barriers as necessary, may be appropriate sub-base options for new hard surfacing within the RPA.
- iii A 'no-dig' design should be used which does not require excavation into the soil other than the removal, using hand tools, of any turf layer or other surface vegetation. The structure of the hard surface should be designed to avoid localised compaction and, in all cases, the advice of a structural engineer should be sought to ensure that the design is suitable for the anticipated vehicle loads it will be subjected to.
- iv The new hard surfacing should be resistant to deformation by tree roots and should be set back from the tree's stem and above ground buttresses by a minimum distance of 500mm to allow for growth and movement. Where no-dig installations are proposed to be located particularly close to the main stems of retained trees then it is recommended that consideration is given to realigning the hard surfacing in order to reduce the total area (m²) of RPAs affected in order to reduce the likelihood for future pruning pressure and minimise the potential for any detrimental impact on the retained trees.
- v It is recommended that the total area for all new permanent hard surfacing should not exceed 20% of any existing unsurfaced ground within the RPA.
- vi Indicative cross-sectional drawings of a suitable three-dimensional cellular confinement system (CellWeb™) are shown below (Figure 2).

Figure 2: Cross section illustrating a permeable tarmac surface finish



6.14 Construction Activity

- i The installation of any recommended protective or mitigation measures prior to the commencement of any works on site will allow the development to take place whilst minimising any anticipated adverse effect and/or impact on the retained trees.
- ii All plant and vehicles engaged in construction works should either operate outside the RPA, and/or run-on appropriate ground protection.

6.15 Future Pressure for Tree Pruning/Removal

- i Whilst the presence of retained trees can often enhance the immediate environment upon completion, any proposed layout should provide sufficient space that will allow for future tree growth and to provide a subsequently reduced need for future, frequent remedial pruning.
- ii The tree works detailed in Table 5 are considered, in this instance, to provide an environment and layout juxtaposition that will allow for the future growth of the retained trees whilst minimising any immediate future pruning pressures.

6.16 Seasonal Nuisance

- i Foliage, fruit, and cone fall can be considered by some to be a nuisance and requests to Local Planning Authorities to carry out pruning works to negate these issues are often refused due in part to their brief, seasonal nature of the problem.
- ii Providing a suitable juxtaposition when considering new layouts will help in minimising issues experienced by people living in proximity to trees.
- iii A certain level of leaf fall in the autumn will be inevitable due to the generally deciduous nature of the existing trees on the site. This it is however not considered to be unreasonable in the context of the site's use.

6.17 Infrastructure

- i Infrastructure requirements have been considered and there is no evidence to suggest that retained trees will have an impact on lighting, signage, CCTV sightlines or visibility splays.
- ii Where the installation of any underground apparatus and drainage is considered necessary then particular care should be taken in its routing and methods of installation and wherever possible be routed outside RPAs.

- iii Where routeing services outside RPAs is not possible then detailed plans showing the proposed routeing should be drawn up in conjunction with the project Arboriculturist. Trenchless insertion methods are considered appropriate for this purpose and British Standards 5837:2012 details solutions for differing utility apparatus requirements (see table 4 below).
- iv British Standards 5837:2012, Section 7.7.2 suggests that in the event roots can be retained and appropriately protected during exposure, then excavation using hand-held tools might be acceptable for shallow service runs. The National Joint Utilities Group's publication 'NJUG Volume 4' contains further guidelines on the installation of new underground services in proximity to trees.

Table 4: Trenchless solutions for differing utility apparatus installation requirements

Method	Accuracy	Bore dia. ^{A)}	Max sub. ^{B)} length	Applications	Not suitable for
Micro tunnelling	≤20	100 to 300	40	Gravity-fall pipes, deep apparatus, watercourse/roadway undercrossing	Low-cost projects due to relative expense
Surface-launched directional drilling	≈100	25 to 1,200	150	Pressure pipes, cables including fibre optic	Gravity-fall pipes, e.g. drains and sewers ^{C)}
Pipe ramming	≈150	150 to 2,000	70	Any large-bore pipes and ducts	Rocky and other heavily obstructed soils
Impact moling ^{D)}	≈50 ^{E)}	30 to 180 ^{F)}	40	Gas, water and cable connections, e.g. from street to property	Any application that requires accuracy over distances in excess of 5m

A) *Dependent on strata encountered.*

B) *Maximum subterranean length.*

C) *Pit-launched directional drilling can be used for gravity fall pipes up to 20m subterranean length.*

D) *Impact moling (also known as thrust-bore) generally requires soft, cohesive soils.*

E) *Substantial inverse relationship between accuracy and distance.*

F) *Figures given relate to single pass up to 300mm bore achievable with multiple passes.*

©The British Standards Institution 2012

6.18 Landscaping

- i BS 5837:2012 advises that any new tree planting and associated landscaping proposals should consider the ultimate height and spread, form, habit and colour, density of foliage, and maintenance implications, in relation to both the built form of the new development, and the retained landscape features.
- ii Consideration should also be given to the advice detailed in section 6.4 in respect of distances of newly planted trees in relation to new structures.
- iii For all new tree planting, the guidance within BS 8545:2014 'Trees: from nursery to independence in the landscape – Recommendations' should be followed.

6.19 Issues to be addressed by an Arboricultural Method Statement

- i The Arboricultural Method Statement (Section 7) details the general methodology for the implementation of those aspects of the proposed development that have the potential to result in damage to the retained trees.

7 ARBORICULTURAL METHOD STATEMENT

7.1 Recommended Tree Works/Removals

- i Tree works tabled below (Table 5) have been identified as a result of one or more of the following reasons:
- to directly implement the proposal,
 - to facilitate the implementation and construction of the proposals,
 - to assist in the creation of a balanced and desirable layout juxtaposition and
 - in the interests of reasonable arboricultural management.
- ii All tree works should be carried out by qualified and competent Arborists working to BS 3998:2010 'Tree Work – Recommendations'.

Table 5: Summary of Recommended Tree Works

Tree No.	Species	BS5837:2012 Category	Recommended Works
G3	Sycamore	C2	Where possible, notify owners of offsite group condition due to presence of standing dead trees within the group.
H8	Various	C2	Section required for removal - to accommodate the proposed access route for the development.
T1	Wild cherry	C2	Monitor in light of condition or previous excavation work. See Tree Schedule for further specific details. To be undertaken at tree owner's discretion.
T2	Wild cherry	C2	
T4	Common lilac	C2	
T10	Apple	B2	
T11	Apple	C2	
T12	Apple	B2	
T13	Apple	B2	
T14	Apple	C2	
T15	Apple	C2	
T16	Apple	B2	
H4	Various	C2	
G1	Various	B2	Recommended to move stored items out of RPA to avoid ground compression.

7.2 Summary of Mitigation

- i The table below summaries the mitigation methods required for the site, specific to any trees where their RPA may be subject to impact by the proposed development.
- ii Each specific requirement is detailed further in the subsequent sections of this report.

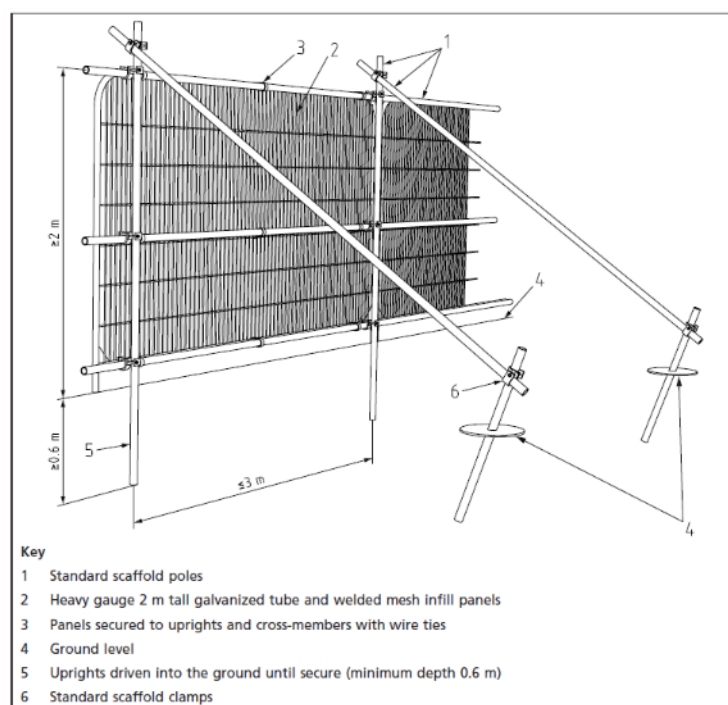
Table 6: Summary of Mitigation Requirements

Tree No.	Species	Works effecting	Mitigation Required
Throughout the site		Retained trees in general proximity to the proposed construction works	Create a construction exclusion zone, by erecting and maintaining temporary tree protection fencing for the duration of the construction works. The tree protection fencing should be installed as detailed on the Tree Protection Plan (Appendix D).
G6	Various	A percentage of the RPA is within the existing hard standing.	Existing hard surfacing within the RPA should be retained throughout the construction works on site. This will act as suitable ground protection for the trees. Temporary protective fencing should be installed at the edge of the new hardstanding for the duration of the construction works, as shown in the Tree Protection Plan (Appendix D). The areas enclosed by the protective should be maintained as a total exclusion zone to all construction activity. No working activity, storage of materials, ground level changes, excavations or vehicular access is permitted within the protected area.

7.3 Erection of Protective Fencing

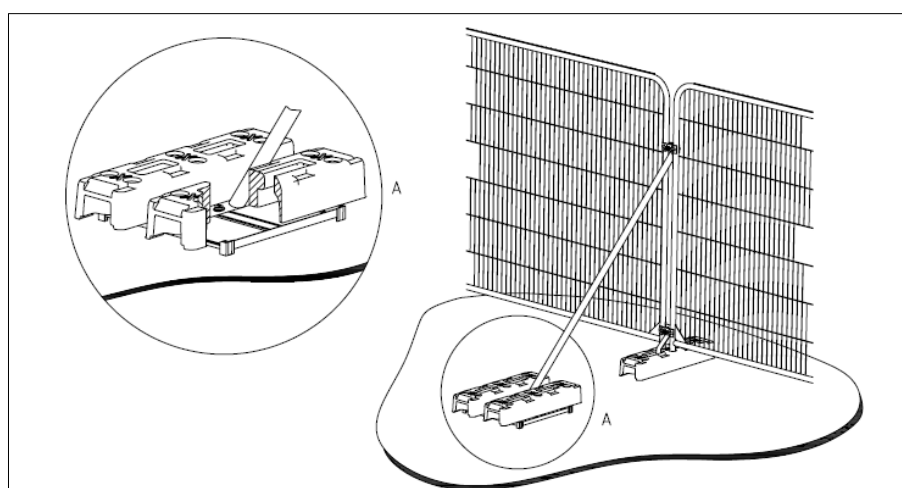
- i It is recommended that temporary protective fencing should be erected in order to create a construction exclusion zone which adequately protects the retained trees from damage during the construction works. This fencing should be erected at the outset of the development works before any activities (including demolition and ground works) are carried out and materials/ plant are brought onto site.
- ii The recommended position for protective fencing is detailed on the Tree Protection Plan (Appendix D).
- iii The fencing should consist of a vertical and horizontal scaffold framework which is well braced to resist impacts as seen below in Figure 3.

Figure 3: Default specification for protective barrier © British Standards Institute



- iv All-weather warning notices should be attached to the fencing to clearly identify the area as a tree protection exclusion zone into which access is not permitted
- v Once erected, the protected area should be regarded as sacrosanct and the fencing should not be removed or altered unless recommended by the project Arboriculturist and, where necessary, approval from the local planning authority.
- vi Where the site circumstances and associated risk of damaging incursion into the RPAs do not necessitate the default level of protection, an alternative specification may be considered to be appropriate. For example, 2m tall-welded mesh panels on rubber or concrete feet as illustrated below in Figure 4.

Figure 4: Alternative Specification for Protective Fencing © British Standards Institute



- vii In this instance, it is considered that the associated risks to trees from the proposed development do not necessitate the default specification and therefore that use of the alternative specification will be appropriate.

7.4 Additional General Precautions Outside of the Exclusion Zone

- i Fires on site should be avoided wherever possible. Where they are unavoidable, they should be kept well away from the exclusion zone, and only lit in positions where heat will not affect foliage or branches. The potential size of a fire and wind direction should be taken into account, and it should be attended at all times until safe to leave.
- ii Any materials, fuel, or chemicals whose accidental spillage would cause damage to a tree should be stored and handled well away from the exclusion zone.

7.5 Site Monitoring

- i In this instance, it is considered necessary for the proposed works to be monitored as a number of retained trees could potentially be impacted by construction activities.
- ii A single-stage visit must be arranged with the Arboricultural Consultant at:
 - **Phase one:** prior to any works.
A visit should be arranged to check that the tree protection fencing has been installed as per the locations within Appendix D.
- iii Random site monitoring can take place throughout the duration of the construction to check that all guidelines are being adhered to.

7.6 Ground Works, Demolition & Construction Works

- i Installation of all recommended protective mitigation measures prior to the commencement of any works, combined with use of temporary ground protection and/or the retention of existing hard surfacing within the RPAs, will allow the ground works to take place whilst minimising any adverse effect or impact on the retained trees.
- ii All plant and vehicles engaged in ground works should either operate outside the RPA or run-on temporary ground protection or existing hard standing, where appropriate.
- iii During ground works and demolition, the utmost caution should be used to not sever any roots, especially those measuring $\geq 25\text{mm}$ in diameter. Any roots uncovered roots should be wrapped/covered to prevent them from desiccation and rapid temperature changes (any wrapping should be removed prior to backfilling).
- iv In the case where plant or wide/tall loads are being used, it must be ensured that all parts of the equipment remain outside of the RPAs, in order that they can operate without coming into contact with any of the on-site or adjacent trees. All works must have appropriate supervision by a banksman, to ensure that adequate clearance from trees is maintained at all times.
- v Access facilitation pruning should not be necessary on site but if it does become necessary to maintain a safe clearance. All work must be approved by the project Arboriculturist and carried out by a qualified and competent Arborist working to BS 3998:2010.
- vi If damage occurs to part of a tree during the works, the project Arboriculturist must be contacted without delay.

7.7 Soil Compaction and Remediation Measures

- i Soil that has been compacted will not provide suitable conditions for the survival and growth of vegetation, whether existing or new, and is a common cause of post-construction tree loss on development sites.

- ii Compacted soil will adversely affect drainage, gas exchange, nutrient uptake, and organic content, and will seriously impede or restrict root growth.
- iii Soil compaction should be avoided around existing vegetation, including trees, and in areas where new planting or seeding is proposed.
- iv Where soil compaction has occurred near to existing trees, remedial works might include sub-soil aeration using compressed air, and the addition of other materials, preferably of a bulky, organic nature (but excluding peat), to improve structure.
- v Heavy mechanical cultivation such as ploughing or rotavating should not occur within the RPA.
- vi Any cultivation operations should be undertaken carefully by hand to minimize damage to the tree, particularly the roots.
- vii Decompaction measures include forking, spiking, soil augering and tilled radial trenching. Care should be taken during such operations to minimize the risk of further damage of tree roots.

7.8 Contractors Storage, Parking & Access

- i Provision should be made for welfare facilities, the site office, contractor parking, storage for materials, plant and spoil, and space for mixing, all outside of the RPAs of retained trees.
- ii In this instance, it is considered that there is sufficient space for provision of the above, without placing significant constraints on the working space available for the construction and its associated activities.

7.9 Completion

- i At the completion of the construction works, before removal of any of the tree protection measure at the completion of the project, it is recommended that the advice of the project Arboriculturist is sought regarding whether a re-survey of the retained trees is necessary for signs or symptoms of damage and/or stress that the construction may have caused.
- ii The protective fencing and ground protection measures should remain in position until its use is considered unnecessary and any risk of damage to the retained trees and/or their respective RPAs e.g. soil compaction from vehicular plant or machinery, has completely passed.

7.10 Tree Planting & After Care

- i When planning or implementing any new tree planting scheme, it is recommended that the guidance within BS 8545:2014 'Trees: from nursery to independence in the landscape – Recommendations' is followed.
- ii The following points summarise good after care for newly planted trees with an additional consideration to any necessary formative, corrective and maintenance pruning:
- iii Water the trees immediately after planting and weekly throughout the first growing season by allowing 10 – 20 litres of water for each tree. This is especially important during prolonged periods of dry weather in which case the frequency of watering may need to be increased.
- iv Do not allow weeds or grass to grow within a 500mm radius of the stem.
- v Maintain an organic mulch (e.g. composted woodchip or bark) to a minimum depth of 75mm for a radius of 500mm around the base of new trees.
- vi At the end of each growing season, check that tree-ties are not damaging the tree stems and loosen if necessary.
- vii Ensure that the tree stakes remain firm while the new planting becomes established and only remove when the tree can support itself, usually after a period of 2 -3 years.
- viii Carry out formative pruning to the young trees by removing dead, weak, and crossing branches, epicormic growth, and suckers arising from the roots.

7.11 Contacts

i RammSanderson Ltd. 0115 930 2493, info@rammsanderson.com

Appendix A: Tree Schedule

Appendix A: Tree Schedule

Tree N°	Species	Age	Height (m)	Dia (mm)	Crown Spread (m)				Life Exp	Cat	Cond	General Observations	Preliminary Management Recommendations	RPA (m²)	RPA Radius (m)
					N	E	S	W							
T1	Wild Cherry	EM	6	270	3	4	3	3	10+	C2	Poor	Heavy lean east and appears to have had root ball movement. Some self- correction for lean and fair vitality.	Monitor in light of condition	32	3.2
T2	Wild Cherry	EM	6	200	3	3	3	3	10+	C2	Poor	Large area of bark wounding to main stem on South side.	Monitor in light of bark wound.	18	2.4
T3	Common lilac	Y	2	70	1	1	1	1	10+	C2	Fair	Multi-stem shrub form	No work recommended at time of survey	2	0.8
T4	Common lilac	Y	2	70	1	1	1	1	10+	C2	Poor	Multi-stem shrub form. General poor vitality.	Monitor in light of condition	2	0.8
T5	Deodar Cedar	SM	5	210	3	3	3	3	10+	C2	Fair	Larger individual on edge of planted linear group.	No work recommended at time of survey	20	2.5
T6	Apple	M	4	540	3	3	3	4	20+	B2	Fair	Previously topped apple at 4m in height.	No work recommended at time of survey	133	6.5
T7	Apple	SM	4	160	3	3	3	3	10+	C2	Fair	Apple with metal guarding.	No work recommended at time of survey	11	1.9
T8	Apple	M	6	453	4	4	4	4	20+	B2	Fair	Apple with metal guarding. Multi-stem from 1m. Amenity value considered.	No work recommended at time of survey	92	5.4
T9	Apple	M	6	360	4	4	4	4	20+	B2	Fair	Apple with metal guarding. Amenity value considered.	No work recommended at time of survey	58	4.3

Tree N°	Species	Age	Height (m)	Dia (mm)	Crown Spread (m)				Life Exp	Cat	Cond	General Observations	Preliminary Management Recommendations	RPA (m²)	RPA Radius (m)
					N	E	S	W							
												Occasional small cavities typical for species.			
T10	Apple	M	6	354	4	4	4	4	20+	B2	Fair	Apple with metal guarding. Amenity value considered. Occasional rot holes and cavities in main stem	Monitor in light of cavities	55	4.2
T11	Apple	M	4	300	3	3	3	3	10+	C2	Fair	Bark wounding with decay near base. Occasional rot holes and cavities in main stem.	Monitor in light of cavities	41	3.6
T12	Apple	M	6	350	4	4	4	4	20+	B2	Fair	Apple with metal guarding. Amenity value considered. Occasional rot holes and cavities in main stem.	Monitor in light of cavities	55	4.2
T13	Apple	M	5	450	4	4	4	4	20+	B2	Fair	Apple with metal guarding. Amenity value considered. Occasional rot holes and cavities in main stem. Previously topped at 4m in height. Note, has had a recent excavated trench c 2m to the west of tree within RPA.	Monitor in light of previous trench excavation and likely root severance within RPA.	92	5.4
T14	Apple	M	5	390	4	4	4	4	10+	C2	Poor	Apple with metal guarding to base. Occasional rot holes and cavities in main stem and large extending cavity from base to 2m in height. Previously topped at 4m. Note, has had a recently excavated trench c 2m to the west of tree within RPA.	Monitor in light of previous trench excavation and likely root severance within RPA and general condition.	69	4.7
T15	Apple	EM	3	200	2	2	2	2	10+	C2	Fair	Apple with metal guarding in place. Occasional rot holes and	Monitor in light of previous trench	18	2.4

Tree N°	Species	Age	Height (m)	Dia (mm)	Crown Spread (m)				Life Exp	Cat	Cond	General Observations	Preliminary Management Recommendations	RPA (m²)	RPA Radius (m)
					N	E	S	W							
												cavities in main stem. Previously topped at 3m. Note, has had a recently excavated trench c 2m to the west of tree within RPA.	excavation and likely root severance within RPA and general condition.		
T16	Apple	M	5	430	4	4	4	4	20+	B2	Fair	Apple with metal guarding. Amenity value considered. Occasional rot holes and cavities in main stem. Note, has had a recently excavated trench c 2m to the west of tree within RPA.	Monitor in light of previous trench excavation and likely outer root severance within RPA.	85	5.2
T17	Silver Birch	SM	7	100	2	2	2	2	10+	C2	Fair	No direct access, located over hedgerow.	No work recommended at time of survey	5	1.2
T18	Ash	SM	7	100	2	2	2	2	10+	C2	Fair	No direct access, located over hedgerow.	No work recommended at time of survey	5	1.2
T19	Apple	SM	3	128	2	2	2	2	10+	C2	Fair	Apple with metal guarding in place to base.	No work recommended at time of survey	7	1.5
T20	Ash	M	6	200	3	3	3	3	10+	C2	Fair	No direct access located within hedgerow. Multi-stem part of hedgerow.	No work recommended at time of survey	18	2.4
T21	Ash	M	12	439	5	5	5	5	20+	B2	Fair	No direct access located within hedgerow over ditch. Limited VTA. Multi-stem from base. Occasional minor deadwood.	No work recommended at time of survey	88	5.3

Tree N°	Species	Age	Height (m)	Dia (mm)	Crown Spread (m)				Life Exp	Cat	Cond	General Observations	Preliminary Management Recommendations	RPA (m²)	RPA Radius (m)
					N	E	S	W							
G1	Wild Cherry, Ash, Sycamore, Common Lime	EM	7 (Est avg)	250 (Est avg)	/	/	/	/	20+	B2	Fair	Linear boundary tree line. Frequent stored items including bricks within RPA.	Recommended to move stored items out of RPA to avoid ground compression.	/	3
G2	Ash, Common Lime, Norway Maple	SM	7 (Est avg)	150 (Est avg)	/	/	/	/	10+	C2	Fair	Linear boundary tree line adjacent hedgerow	No work recommended at time of survey	/	1.8
G3	Sycamore	EM	15 (Est avg)	300 (Est avg)	/	/	/	/	10+	C2	Poor	Offsite tree group with no direct access. Frequent standing dead within the group with potential service line targets.	Notify owners of condition to remove standing dead within the group.	/	3.6
G4	Holly, Lawson Cypress	Y	3 (Est avg)	50 (Est avg)	/	/	/	/	10+	C2	Fair	No direct access. Planted small diameter ornamental shrub group plotted for reference.	No work recommended at time of survey	/	0.6
G5	Ash	EM	7 (Est avg)	250 (Est avg)	/	/	/	/	20+	B2	Fair	No direct access, Ash tree group located over hedgerow.	No work recommended at time of survey	/	3
G6	Common Lime, Wild Cherry	EM	8 (Est avg)	250 (Est avg)	/	/	/	/	20+	B2	Fair	Linear tree group. Amenity value considered.	No work recommended at time of survey	/	3
H1	Lawson cypress.	EM	3 (Est avg)	100 (Est avg)	/	/	/	/	10+	C2	Fair	Lawson cypress. Managed boundary hedgerow with guards still on to base.	No work recommended at time of survey	/	1.2
H2	Lawson cypress. Hawthorn	EM	4 (Est avg)	110 (Est avg)	/	/	/	/	10+	C2	Fair	Hawthorn dominated hedgerow with occasional Lawson cypress. Managed boundary hedgerow.	No work recommended at time of survey	/	1.3

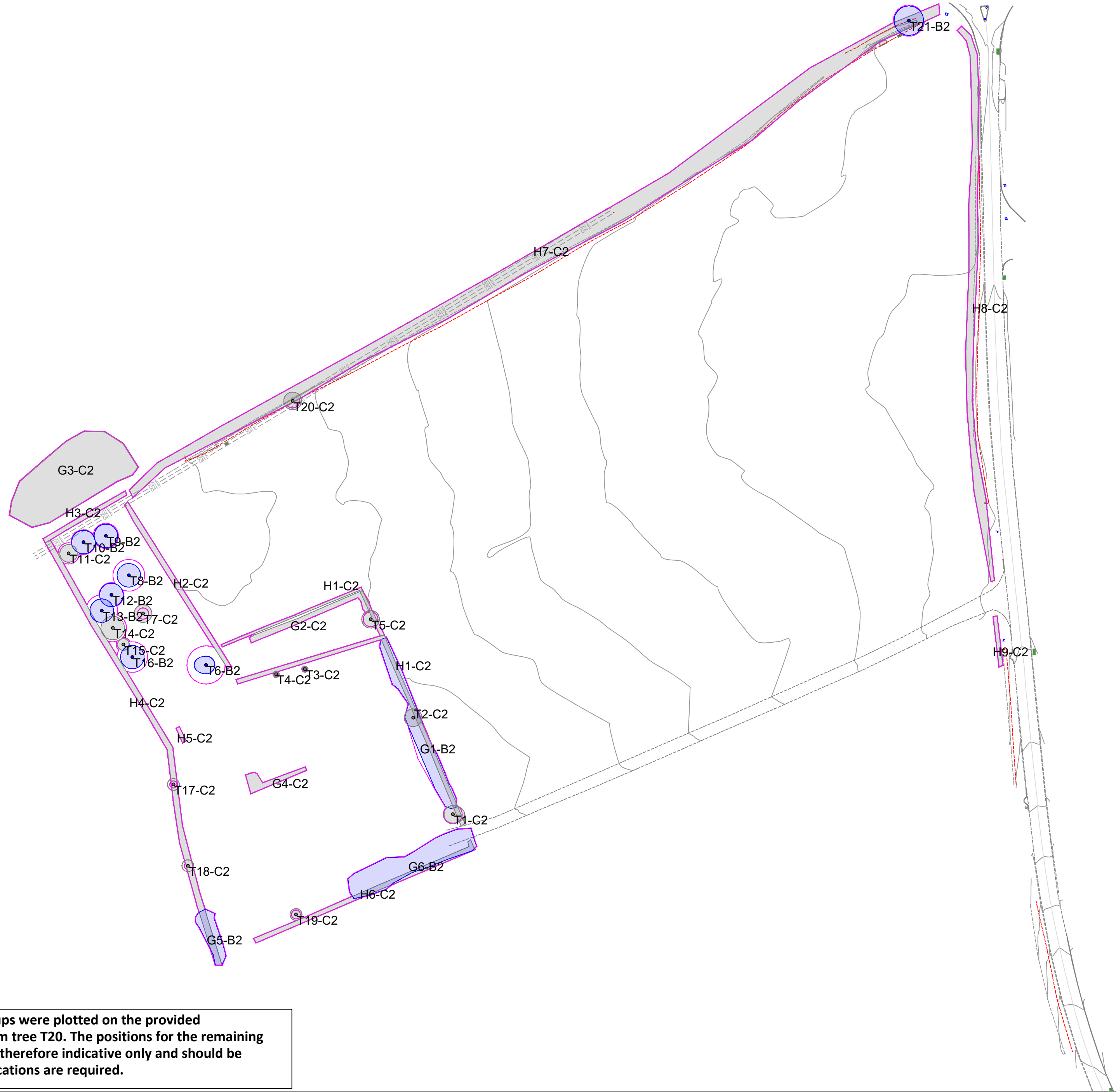
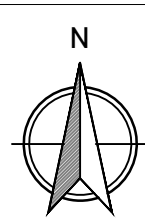
Tree N°	Species	Age	Height (m)	Dia (mm)	Crown Spread (m)				Life Exp	Cat	Cond	General Observations	Preliminary Management Recommendations	RPA (m²)	RPA Radius (m)
					N	E	S	W							
H3	Lawson cypress	EM	4 (Est avg)	100 (Est avg)	/	/	/	/	10+	C2	Fair	Managed boundary hedgerow.	No work recommended at time of survey	/	1.2
H4	Lawson cypress, Apple, Hawthorn	EM	3 (Est avg)	100 (Est avg)	/	/	/	/	10+	C2	Fair	Managed boundary hedgerow. Has had a recent trench dug on East Side potentially within RPA towards the north end of hedgerow.	Monitor for decline after previous trench excavation to manage accordingly.	/	1.2
H5	Lawson cypress	EM	3 (Est avg)	100 (Est avg)	/	/	/	/	10+	C2	Fair	Lawson cypress. Managed boundary hedgerow section.	No work recommended at time of survey	/	1.2
H6	Lawson cypress	EM	4 (Est avg)	100 (Est avg)	/	/	/	/	10+	C2	Fair	Managed boundary hedgerow.	No work recommended at time of survey	/	1.2
H7	Goat Willow, Hawthorn, Hazel, Field Maple, Crab Apple, Elder, Wych Elm, Blackthorn	EM	5 (Est avg)	100 (Est avg)	/	/	/	/	10+	C2	Fair	Managed boundary hedgerow.	No work recommended at time of survey	/	1.2
H8	Hawthorn, Field Maple, Hazel, Blackthorn, Ash, Elder	EM	4 (Est avg)	100 (Est avg)	/	/	/	/	10+	C2	Fair	Boundary hedgerow, partially managed	No work recommended at time of survey	/	1.2
H9	Hawthorn	EM	4 (Est avg)	100 (Est avg)	/	/	/	/	10+	C2	Fair	Hawthorn hedge section, partially managed	No work recommended at time of survey	/	1.2

Note, none of the trees or groups were plotted on the topographical plan apart from tree T20. The remaining trees as shown on the plan are therefore indicative only and should be confirmed on site if accurate locations are required.

Appendix B: Key to Species Scientific Names

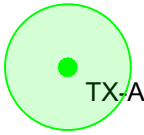
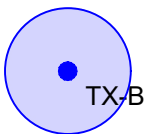
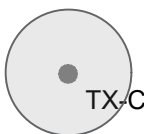
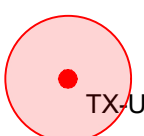
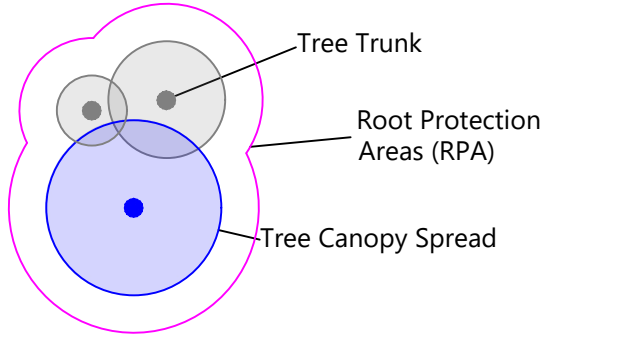
Common Name	Scientific Name
Apple	<i>Malus domestica</i>
Ash	<i>Fraxinus excelsior</i>
Blackthorn	<i>Prunus spinosa</i>
Common lilac	<i>Syringa vulgaris</i>
Common lime	<i>Tilia X europaea</i>
Crab apple	<i>Malus sylvestris</i>
Crack willow	<i>Salix fragilis</i>
Deodar Cedar	<i>Cedrus deodara</i>
Elder	<i>Sambucus nigra</i>
Field maple	<i>Acer campestre</i>
Goat willow	<i>Salix caprea</i>
Hawthorn	<i>Crataegus monogyna</i>
Hazel	<i>Corylus avellana</i>
Holly	<i>Ilex aquifolium</i>
Lawson cypress	<i>Chamaecyparis lawsoniana</i>
Norway maple	<i>Acer platanoides</i>
Silver birch	<i>Betula pendula</i>
Sycamore	<i>Acer pseudoplatanus</i>
Wild cherry	<i>Prunus avium</i>
Wych elm	<i>Ulmus glabra</i>

Appendix C: Tree Constraints Plan – RSE_7396_TCP_V1



Note: None of the trees or groups were plotted on the provided topographical survey, apart from tree T20. The positions for the remaining trees as shown on this plan are therefore indicative only and should be confirmed on site if accurate locations are required.

LEGEND:

-  Category A - Trees of High Quality
-  Category B - Trees of Moderate Quality
-  Category C - Trees of Low Quality
-  Category U - Trees Unsuitable for Retention
- 



Client :
Renewable Energy Systems Limited

Project:
Winking Hill Farm

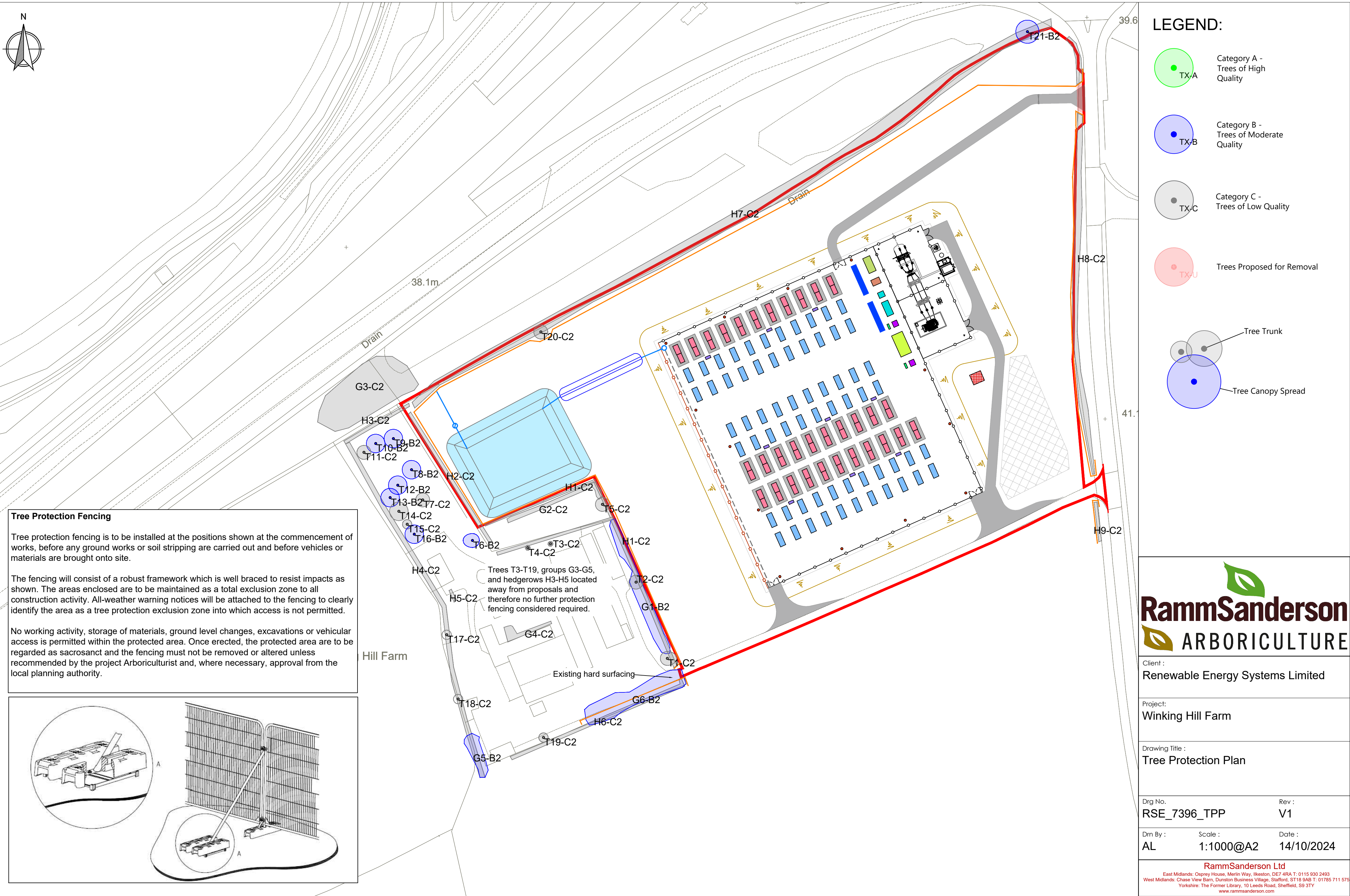
Drawing Title :
Tree Constraints Plan

Drg No.	Rev :
RSE_7396_TCP	V1

Drn By :	Scale :	Date :
AL	1:1000@A2	22/09/2023

RammSanderson Ltd
East Midlands: Osprey House, Merlin Way, Ilkeston, DE7 4RA T: 0115 930 2493
West Midlands: Chase View Barn, Dunston Business Village, Stafford, ST18 9AB T: 01785 711 575
Yorkshire: The Former Library, 10 Leeds Road, Sheffield, S9 3TY
www.rrammSanderson.com

Appendix D: Tree Protection Plan - RSE_7391_TPP_V1

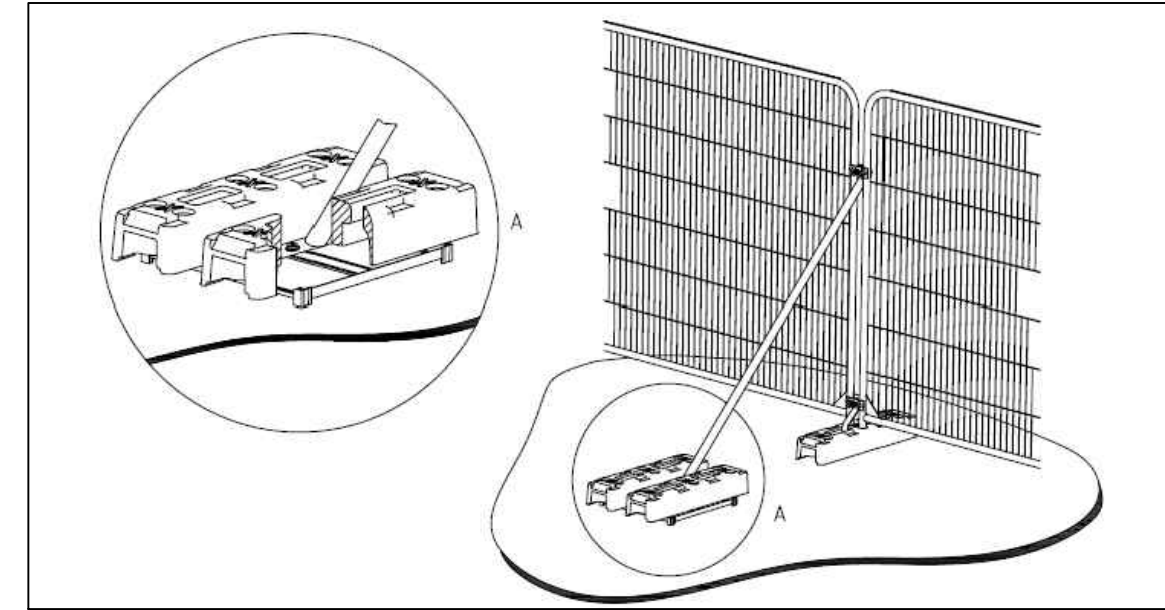


Tree Protection Fencing

Tree protection fencing is to be installed at the positions shown at the commencement of works, before any ground works or soil stripping are carried out and before vehicles or materials are brought onto site.

The fencing will consist of a robust framework which is well braced to resist impacts as shown. The areas enclosed are to be maintained as a total exclusion zone to all construction activity. All-weather warning notices will be attached to the fencing to clearly identify the area as a tree protection exclusion zone into which access is not permitted.

No working activity, storage of materials, ground level changes, excavations or vehicular access is permitted within the protected area. Once erected, the protected area are to be regarded as sacrosanct and the fencing must not be removed or altered unless recommended by the project Arboriculturist and, where necessary, approval from the local planning authority.



LEGEND:

TX-A

Category A -
Trees of High
Quality

TX-B

Category B -
Trees of Moderate
Quality

TX-C

Category C -
Trees of Low Quality

TX-U

Trees Proposed for Removal

Tree Trunk

Tree Canopy Spread

Client :
Renewable Energy Systems Limited

Project:
Winking Hill Farm

Drawing Title :
Tree Protection Plan

Drg No.
RSE_7396_TPP

Rev :
V1

Drm By :
AL

Scale :
1:1000@A2

Date :
14/10/2024

RammSanderson Ltd

East Midlands: Osprey House, Merlin Way, Ilkeston, DE7 4RA T: 0115 930 2493
West Midlands: Chase View Barn, Dunston Business Village, Stafford, ST18 9AB T: 01785 711 575
Yorkshire: The Former Library, 10 Leeds Road, Sheffield, S9 3TY
www.ramm sanderson.com