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**Tree Survey
And
Arboricultural Implications Assessment
at
36 Lower Church Road,
Gurnard,
Isle of Wight,
PO31 8JG.
By
Mick Jones CERT ARB RFS**

*AC-TS-LCR
May 2023.
Client: Mr. S. Cornwell.*

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INFORMATION.

DAMAGE TO TREES.

A. General:

1. Trees that have good health and stability are well adapted to their surroundings. Any development activity which affects the adaptation of trees to a site could be detrimental to their health, further growth and safety. Tree species differ in their ability to tolerate change but all tend to become less tolerant after they have reached maturity or suffered previous damage or stress.
2. The part of a tree most susceptible to damage is the root system, which, because it is not immediately visible, is frequently ignored. Damage to, or death of the root system affects the health, growth, life expectancy and safety of the entire tree. The effects of such damage may only become evident several years later. Damage may be the result of a number of insignificant but compounding factors that can accumulate over time.

B. Extent and Form of the Root System.

1. **The root system is typically concentrated within the uppermost 600mm of the soil** although it may be deeper within the dense mass of roots and soil close to the base of the tree. Within a short distance of the stem the roots are highly branched, so as to form a network of small diameter woody roots, which typically extend radially for a distance much greater than the height of the tree, except when impeded by unfavorable conditions. All parts of this system bear a mass of fine, non-woody absorptive roots.
2. The root system does not generally show the symmetry seen in the branch system. The development of all roots is influenced by the availability of water, nutrients, oxygen, and soil penetrability. As far as these conditions allow, the root system tends to develop sufficient volume and area to provide physical stability.
3. **The uptake of water and nutrients by the root system takes place via the fine roots, typically less than 0.5mm in diameter. Their survival and functioning – which are essential for the health of the tree as a whole – depend on the maintenance of favorable soil conditions.** The fine roots are short – lived, with the majority dying each winter and with fresh ones developing in response to the needs of the tree.
4. **All parts of the root system, but especially the fine roots, are vulnerable to damage.** Once roots are damaged, water and nutrient uptake is restricted until new ones have grown. Depending on the time this may take, if at all, and the volume of roots able to grow back due to changed soil conditions, such damage may result in decline or ultimately the death of the tree. Mature and over-mature trees respond slowly, if at all, to damage to their woody roots.
5. Damage to the stem and branches of a tree is not usually sufficient to kill the tree directly but may make it unsafe by affecting the weight distribution of the crown or by facilitating decay in the long term. Such damage may also be disfiguring.

1 INTRODUCTION

1.1. **Brief:** I am instructed by Arid Architecture on behalf of their client Mr. S. Cornwell, to survey significant trees within and adjacent to the property of 36 Lower Church Road, Gurnard, Isle of Wight, in anticipation of a Planning Application for the demolition of the existing property and the construction of a new dwelling in a similar position.

I am to provide a report in accordance with the specification in BS 5837:20012 *Trees in relation to design, demolition and construction: Recommendations* indicating the possible constraints which may be associated with the trees.

1.2. **Purpose of this report:** The primary purpose of this report is for the architect and council to review the tree information pertaining to the site so as to inform and support both the design development and the outline planning application process. The report can be used as the basis for issuing a planning consent or engaging in further discussions towards that end. Within this planning process, it will be available for inspection by people other than tree experts so the information is presented in a way to be understood and helpful to those without a detailed knowledge of the subject.

1.3. **Qualifications and experience:** I have based this report on my site observations and the provided information, and I have come to conclusions in the light of my 40+ years arboricultural experience. I hold the Royal Forestry Society's certificate in Arboriculture and the LANTRA Professional Certificate for Tree Inspection.

1.4. **Documents and information provided:** I was provided with the site plans. Site Survey, Existing & Proposed Site Plans. Elevations. These were provided by Arid as a DWG and PDF electronic format.

1.5. **Scope of this report:** This report is only concerned with the trees which may have an effect on or be affected by the proposed development. This will also include any trees in surrounding areas or properties which may be relevant to a proposed development.

1.6. **Ecological constraints:** The Wildlife and Countryside Act 1981, as amended by the Countryside and Rights of Way Act 2000, provides statutory protection to birds, bats and other species that inhabit or nest in trees. Although the presence or relevance of such wildlife may be noted within this report these issues are beyond my area of expertise, so advice from an ecologist must be sought to check if any relevant constraints may apply to this site.

1.7. **Limitations of use and copyright:** All rights in this report are reserved. No part of it may be reproduced or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, or stored in any retrieval system of any nature without our written permission. Its contents and format are for the exclusive use of the addressee in dealing with this site. It may not be sold, lent, hired out or divulged to any third party not directly involved in this site without the written consent of M. Jones Arborist Consultancy Ltd. This report is valid for one year from the date of inspection.

2 SITE VISIT and OBSERVATIONS

2.1. **Site visit:** I carried out a site visit in February 2023 for tree recording purposes and to assess the site and trees and a further site visit in April 2023 to inspect root inspection trenches that had been excavated within the development area.

All observations were from ground level and did not involve any climbing or detailed investigations beyond what was visible from accessible points at ground level. All dimensions were estimated unless otherwise indicated. The weather at the time of the inspections was bright, calm and dry.

2.2. **Brief site description:** The site is a detached timber bungalow within a suburban area of the village of Gurnard

The site and grounds of the property are on sloping ground from the east to west.

The grounds are primarily set to lawn with boundary hedgerows and has one significant tree within the neighboring property garden to the north of the property.

2.3. **Identification and location of the trees:** The trees in question are plotted as individuals on the site plans included as *appendices* with details recorded in the tree schedule. Dead trees, trees of below 75mm trunk diameter at 1.5m height or trees and large shrubs that have little or no landscape or amenity value either now or in the future have not been included within this survey.

2.4. **Restrictions:** A search of the I.O.W. Council GIS Mapping web site in February 2023 indicated that the tree within the neighboring garden and indicated within this report as T1 is subject to a Tree Preservation Order (TPO). TPO reference number: TPO/1993/13.

The site is not within a Conservation Area.

Explanatory Notes

- **Species:** I base the species identification on visual observations and list the common English name of what the tree appeared to be first, with the botanical name after in italics. In some instances, it may be difficult to quickly and accurately identify a particular tree without further detailed investigations. If I am unsure of the precise species of tree, I indicate the botanical name followed by the abbreviation sp indicating only the genus is known, in order to avoid delay in the production of the report. The species listed for groups and hedges represent the main component and there may be other minor species not listed.
- **Measurements/estimates:** All height and branch spread measurements are estimates unless otherwise indicated. A diameter tape is used to calculate the stem diameter. In cases where the tree is inaccessible when the diameter is estimated. This will be indicated by a * before the measurement. Any other measurements specific to a site or a particular tree will be indicated by ** and referred to as *additional observations*.
- **Height:** I estimate height to the nearest meter.
- **Stem diameter:** These figures relate to 1.5m above ground level and I record them in millimeters rounded up to the nearest five millimeters. Where a tree branches into two or more stems below 1.5m the measurement is taken immediately above the root flare. 'M' indicates trees or shrubs with multiple stems.
- **Branch spread:** I pace out to the measurement from the centre of the trunk to the tips of the live lateral branches to the four compass points.
- **Crown height:** This is the height of crown clearance from ground level to the lowest branches.
- **Age Class:** I estimate age from visual indicators and I assess the grades of maturity as follows. Young = less than one third life expectancy. Middle aged = one third to two thirds life expectancy. Mature = trees within their last third of normal life expectancy. Overmature = trees towards the end of their last third of normal life expectancy that are in an obvious state of decline. Veteran = notably old or ancient tree of a particular species that, by recognized criteria, shows features of biological, cultural or aesthetic value that are characteristic of, but not exclusive to, individuals surviving the typical age range for the species concerned.
- **Health:** This refers to the physiological condition of the tree and is categorized as follows. Poor = obviously in poor health. Fair = some visible evidence of decline or lack of vigor. Good = Appears to be healthy and vigorous.
- **Structural condition:** Poor = obviously in a dangerous, or potentially dangerous condition. Fair = some visible defects, but no significant hazards. Good = sound, healthy condition.
- **Remaining contribution:** Estimated remaining contribution in years (e.g. less than 10, 10-20, 20-40, more than 40).
- **Grading:** Category U = trees of very limited arboricultural value due to condition. Category A = trees of high quality and value. Category B = Trees of moderate quality and value. Category C = trees of low quality and value. *Trees are further graded into subcategories 1-3 in compliance with the cascade chart for quality assessment in BS 5837:2012.*

3 TREE SCHEDULE.

Tree Survey: The results of the survey are recorded in the table below.
 N.B. *This table should be read in conjunction with the explanatory notes*

Tree No.	Species	Height	Stem Dia.	Branch Spread	Crown Height	Age Class	Health	Structural Condition	Preliminary Recommendations	Remaining Contribution	Grade
T1 Off site	Monterey Pine <i>Pinus radiata</i>	13M	* Above 1250mm	N=5m S=4.5m E=10m W=9m	8m Above the site area	Mature	Good	Good / Fair Wind stunted.	Requires an estimated Root Protection Area (RPA) radius from the tree centre of 15m as the maximum allowance for a tree recommended within BS: 5837 2012.	>20yrs	A2
T2 Off site	Mulberry <i>Morus nigra</i>	6.5M	*M 500mm	N=4.5m S=4.5m E=4.5m W=5m	Base	Middle	Good	Good / Fair	Requires an estimated Root Protection Area (RPA) radius from the tree centre of 5m	>20yrs	C2 Future B grade

4. ARBORICULTURAL IMPLICATIONS ASSESSMENT (AIA)

A study was carried out to consider, identify, evaluate and possibly mitigate the extent of direct and indirect impact on or from the trees that may occur as a result of any proposed new development being constructed on the site.

4.1 Tree Constraints.

- **Tree Categorizing:** The trees have been categorized using the BS 5837:2012 Cascade Chart for tree quality and assessment and these have been given in the Tree Schedule and are shown on the plans included in the *appendix* and represented as a shape and a color.

- Light Green = Category A trees: trees of high quality and value.
- ◆ Mid Blue = Category B trees: trees of moderate quality and value.
- Grey = Category C trees: trees of low quality and value.
- U Red = Category U trees: trees unsuitable for retention.

Subcategory Criteria: 1. Mainly arboricultural values.
2. Mainly landscape values.
3. Mainly cultural values including conservation.

- **Root protection areas:** The root protection areas (RPA) for all the significant trees in the vicinity of the development have been plotted in accordance with the formula given in BS 5837:2012 and are shown along with the circle radius for the area on the plan included in the *appendix*. The BS 5837 recognizes that an RPA is influenced by other on site factors and states in **5.2.4** that it *'may change shape but not reduce its area whilst still providing adequate protection for the root system'*. This can be due to, *'b) The morphology and disposition of the roots, when known to be influenced by past or existing site conditions (e.g. the presence of roads, structures and underground services)*.
- **Tree shadow/ shade:** The proposed development is on the similar footprint as the existing dwelling which has not been negatively impacted by the shading of the adjacent trees, therefore as the impact will remain the same and in the future from the main shade bearing tree which is to the north of the development. Shade and shadow will be not considered as a possible constraint towards this development and has not been represented further within this report.
- **Crown Spreads:** The indicative crown spreads of the trees surveyed are shown on the *Tree Constraints Plans* included in the *appendix*. Any proposed development design must consider the proximity and possible nuisance or damage to the fabric of the building from the crowns and branching system. The future crown spreads of younger retained trees must also be taken into consideration but have not been represented graphically within the scope of this survey report.

4.2 Tree Constraint Considerations: *General*;

On measuring and plotting the constraints of these trees, any development design and construction will need to consider any tree constraints. Any implications of this, from or to the trees must be considered and addressed. Possible solutions for this within BS 5873 may be:

A) Removal of the tree. This may be acceptable for category 'C' trees as BS 5837 states that "C category trees will not usually be retained where they would impose a significant constraint on development," however this may not be reasonable for higher category trees or 'C' grade trees or groups which may be retained for other reasons e.g. screening.

B) The re- positioning of the proposed development to outside the constraint.

C) To use construction methods which minimize the impact to the rooting system, this may be in the form of footings more radial to the tree roots, or a pile system with footings- beams, slabs, suspended floors laid at or above ground level and cantilevered as necessary to avoid major tree roots.

These conditions should also applied to kerb edges, driveways and hard landscaping, by using a three dimensional cellular confinement system, e.g. 'Celweb' to minimize compaction and maintain porosity to both water and gasses. Any impervious surface or covering (construction) to be installed over a RPA must cover no more than 20% of any tree total RPA area and in a tangential strip no wider than 3 meters. If this is exceeded then a system of irrigation to the covered area is to be provided, to compensate for the loss of 'open' root feeding area.

Any trenching for underground services will need to comply with National Joint Utilities Group (NJUG). *Guidelines for the planning, installation and maintenance of utility services in proximity to trees.*

Soil level changes, both lowering, or raising within a RPA should be kept to a minimum with any infill generally kept light and un-compacted.

D) To include within the development design elements which will minimize the affects of a current or future tree constraint, which may put future pressure on the tree to either be removed or pruned beyond what would be considered reasonable to maintain its amenity value and health, for example, to position windows or areas of high occupancy away from heavy shade or long periods of shadow.

NOTE i). With all the given current information and considering the longer term prospects of a tree in conjunction with the development the Planning Authorities may agree it suitable to remove a tree and replant with a species more suited or in a position more acceptable to the development.

ii). The retained trees and areas identified for re-planting will require protection during the works on the site, both above and below ground and shall be detailed in an Arboricultural Method Statement.

4.3 Tree Considerations: *Items*;

The Town & Country Planning Act 1990 requires trees on or near development sites to be part

of the material considerations within the planning process. The Local Planning Authority (LPA) is also **obliged**, to take steps, through the use of TPO's and Planning Conditions, and where it is considered appropriate, to retain and protect trees on development sites and to ensure the planting of new trees if considered necessary.

The removal of 'C' grade tree is unlikely to be objected to by the LPA, and shall not be seen as a material constraint to a development, however if significant numbers of 'C' grade trees are to be removed then the LPA are likely to request additional re-planting to compensate for the collective loss of these trees. It may also be considered that close growing 'C' grade trees will collectively qualify for a higher grade, and therefore more worthy of retention.

If any proposed development design of this site requires the removal of higher grade 'B' trees it must be shown that the loss of the public amenity benefits and value of the tree(s) can be suitably mitigated, if necessary by new planting.

- **Tree Removals:**

1. The proposed development will not require the removal any of the trees surveyed.
2. Tree removals will not be considered as a constraint towards this development.

- **Crown Spreads:**

1. The current crown spread of the neighboring tree T1 will encroach over the northern edge of the development footprint.
2. The crown height of the tree over the proposed development position is at a sufficient height that it will not conflict with the development and will be a similar association that exists with the current property.
3. Previous sensitive and selected branch pruning of this tree in the past was allowed to provide a suitable juxtaposition between the existing property and the tree and therefore I see no reason that this cannot be maintained again in the future if branches again grow towards the new property to any degree of a nuisance.
4. The crown spreads of the trees shall not be considered as a constraint towards this development.

- **Root Protection Areas:**

The root protection areas (RPA) for the surveyed trees has been calculated and determined using the formulae provided in BS 5837:20012 and shown graphically on the *Tree Constraints Plan*.

1. The root protection area (RPA) for the surveyed trees has been calculated and determined using the formulae provided in BS 5837; 2012. The due to the size of the trunk of T1, this tree has been awarded the maximum RPA recommended for a tree within BS: 5873 2012.
2. The RPA of this tree is considered as the primary constraint to be addressed in conjunction with this development and to gain further information about the root structure of this tree root inspection trenches were dug in several position around the site locality.

Appraisal of root inspection trenches.

Root inspection trenches were at the indicated position shown above to consider and assess the adjacent tree and its roots and the impact that the development excavations and foundations may have towards the tree.

The findings from the inspection trenches are also to assist towards a suitable, and if required, a 'root friendly' foundation design.

Excavations.

1. Four trenches were excavated using hand tools. This work was carried out by the site owner, any roots found were protected, photo's taken and these trenches were inspected after excavating by myself and further notes and photo's taken.
2. The inspection trenches were excavated within existing the sunken patio area to see if roots had colonized under and across the retaining wall and patio paths and to the far side of the building to see if roots had gone across and under the whole building. A further trench was dug (T4) within the lawn area opposite the tree to see the size and density of any roots at the proposed.
3. Following my inspection of the trenches and any roots, the trenches were back-filled.
4. **Findings:**
 - **Trench P1.** This had the most and largest living roots uncovered, the largest being a pair of 3 and 4 cm in diameter. These were found in the top 30cm of soil layer and below that was a running water table / layer with no roots evident below those found.





- **Trench P2.** This had less roots in, all below 2.5cm in diameter and after the first 2m of the trench length from the tree, there reduced to just small fibrous root hairs. The roots were all found within the upper 30cm soil layer and below that was again the running water table / layer ,(which rapidly filled the trench) with no roots evident below that.



- **Trench P3.** This had just one large root within it, (apart from a few small hair roots), however this root was dead and starting to decay. The root was found within the upper 30cm soil layer and below that was again the water table / layer was evident.



- **Trench P4.** No roots were found, just a hard inhospitable rooting environment of built up and compacted ground with underground services.



Conclusions:

- 1 Any significant roots that were uncovered were all at within a depth of 150 - 200mm from the surrounding ground level. The largest root uncovered in trench P3 was at 250mm in depth, but this was dead.
- 2 An amount of smaller feeding roots were uncovered (hair roots), however the roots of this size and amount were not considered as significant either structurally or for any long term health of the trees as many of these will naturally die back seasonally and then re-grow or will readily grow back and re-colonize an area if they are pruned off.
- 3 Although no roots were removed for further identification, it is reasonable to presume that the roots uncovered within the trenches were all from the adjacent Monterey Pine tree.
- 4 I consider that the high water table in the area excavated has contributed to the living roots being found in the more aerobic soils in the top 300mm within the patio area.
- 5 It would appear that roots from the tree have not significantly migrated across the site to the southern side of the garden, nor have they spread fully under the existing building.
- 6 The lawn area of trench P3 to the east of the property has not been colonized by roots to the extent that was initially assumed, a possible reason for this could be that the top soils for the existing property and patio may have been placed above the retaining wall to help reduce the garden slope and disposal, this may have then resulted in the burial of the larger root, hence found at a deeper depth and contributing to killing it off. New root re-colonization does not appear to have occurred to any great degree, mainly small roots hairs. The water table below that soil depth further inhibiting new roots at a greater depth.
- 7 Regarding a foundation design, my recommendation is to consider a 'root friendly' design that will still allow roots to remain in place and any pruned roots to re-colonize the area beneath the ground floor extension structures of the development.
- 8 I consider that this can be achieved by using a ground pile system, either a screw pile or a concrete pile, sheathed to prevent cement contamination to any adjacent roots or soils. These piles can be located to avoid the larger roots uncovered by the inspection pits.
- 9 Regarding some soil level excavations to facilitate the positioning of the new building, I consider that it would be acceptable to excavate within the upper garden area opposite the tree and within the 300mm top soil depth where only the large dead root was found in trench P3.
- 10 If required by the structural engineer designing the foundations, a structural 'ring beam' is required then this can be formed within the ground as stated in item 9. This will still allow the colonization of roots below these beam depths as they colonize the site further to the west below the existing retaining wall and patio.
- 11 The greater majority of the RPA of T1 is untouched within the adjacent garden or away from the construction area and it has been shown from the root inspection trenches that there will continue to be an adequate water source available to the tree even with a larger hard surface area covering the RPA than is already covered, that may exclude some direct rainfall onto the ground.

12 Considering the findings from the inspection trenches, I do not consider that a pile / suspended foundation construction for the development will be detrimental towards either the stability or the overall health of the adjacent trees.

6. CONCLUSIONS:

1. After considering the constraints of these trees, the area available for a development design and the reasonable solutions available to the known constraints, I consider it is perfectly feasible to construct the new dwelling within this site whilst adequately providing for the wellbeing of the adjacent trees.
2. If adequate precautions to protect and manage the retained tree is further detailed and specified within an Arboricultural Method Statement and implemented in conjunction with the construction of the development, it will have no adverse impact to the local landscape amenity in the future.

A handwritten signature in black ink, appearing to read 'Mick Jones', written over a light blue grid background.

Mick Jones. Cert Arb. RFS.

Appendices

TREE CONSTRAINTS PLANS 1:200@A3

**Tree Categories, Root Protection Areas,
Crown Spreads.**

EXISTING SITE PLAN

PROPOSED SITE PLAN

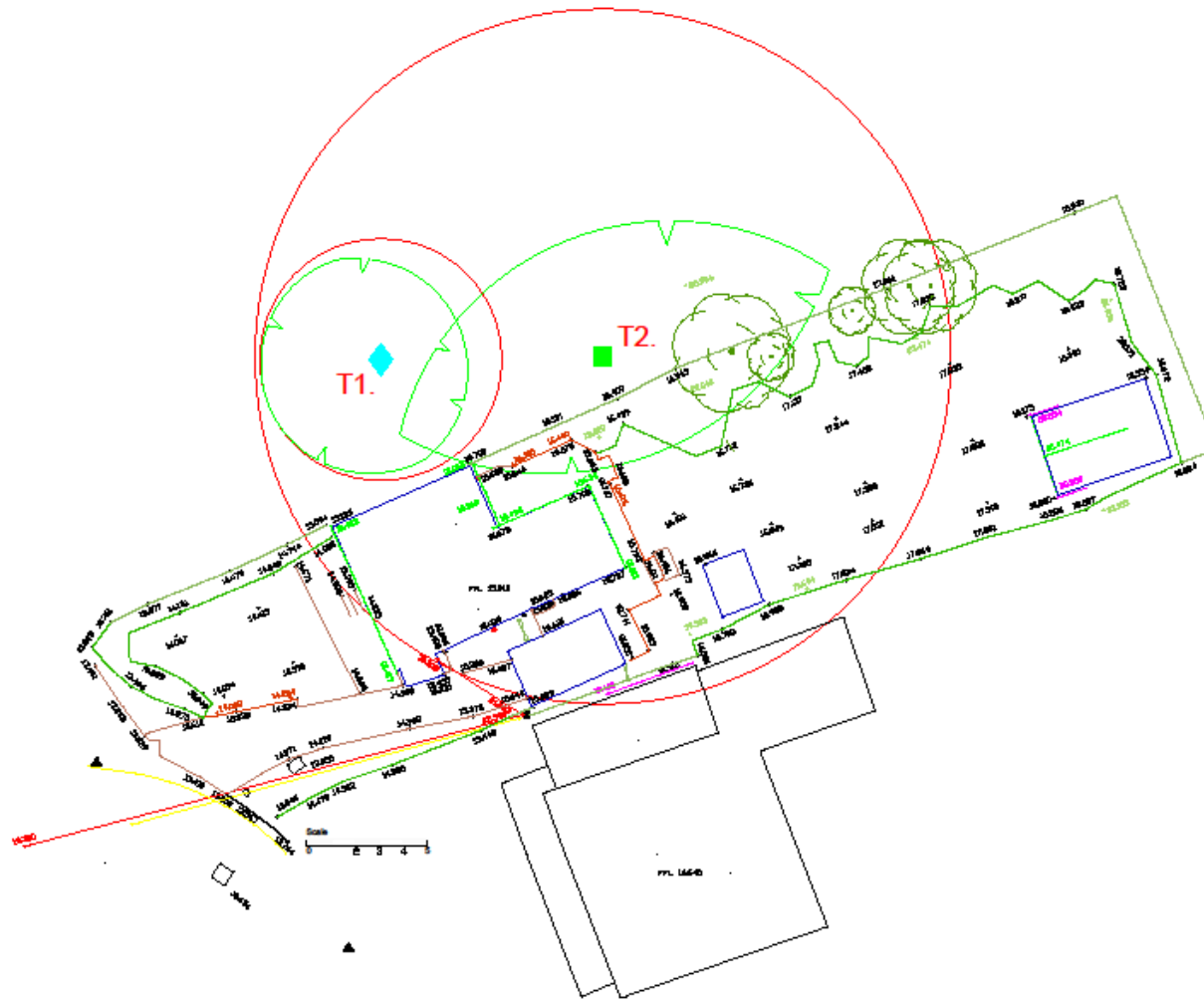
SITE SECTIONS

NOTES.

1, Tree Root Protection Areas have been added to survey drawing as supplied.

2, This drawing should be read in conjunction with the written Tree Report and associated Schedules

Please note this drawing has been produced from map data and all content and dimensions should be checked first.



KEY.

- GRADE "A" TREE (HIGH GRADE TREES)
- ◆ GRADE "B" TREE (MEDIUM GRADE TREES)
- GRADE "C" TREE (LOW GRADE TREES)
- ⊕ GRADE "R" TREE (NOT SUITABLE FOR RETENTION)
- ROOT PROTECTION AREA
- ⊗ INDICATIVE CROWN SPREAD

Issue	Amendment	Date
Contractors must verify all Dimensions on site before commencing any works or making any shop drawings.		

M Jones Arborist IW LTD.
The Professional Tree Services for the Isle of Wight
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Contract **36 Lower Church Road
Gurnard
Isle of Wight**

Title **TREE CONSTRAINTS PLAN
SHOWING EXISTING LAYOUT**

Scale 1:200	Dwg No TCP/S/01.
Date May 2023	

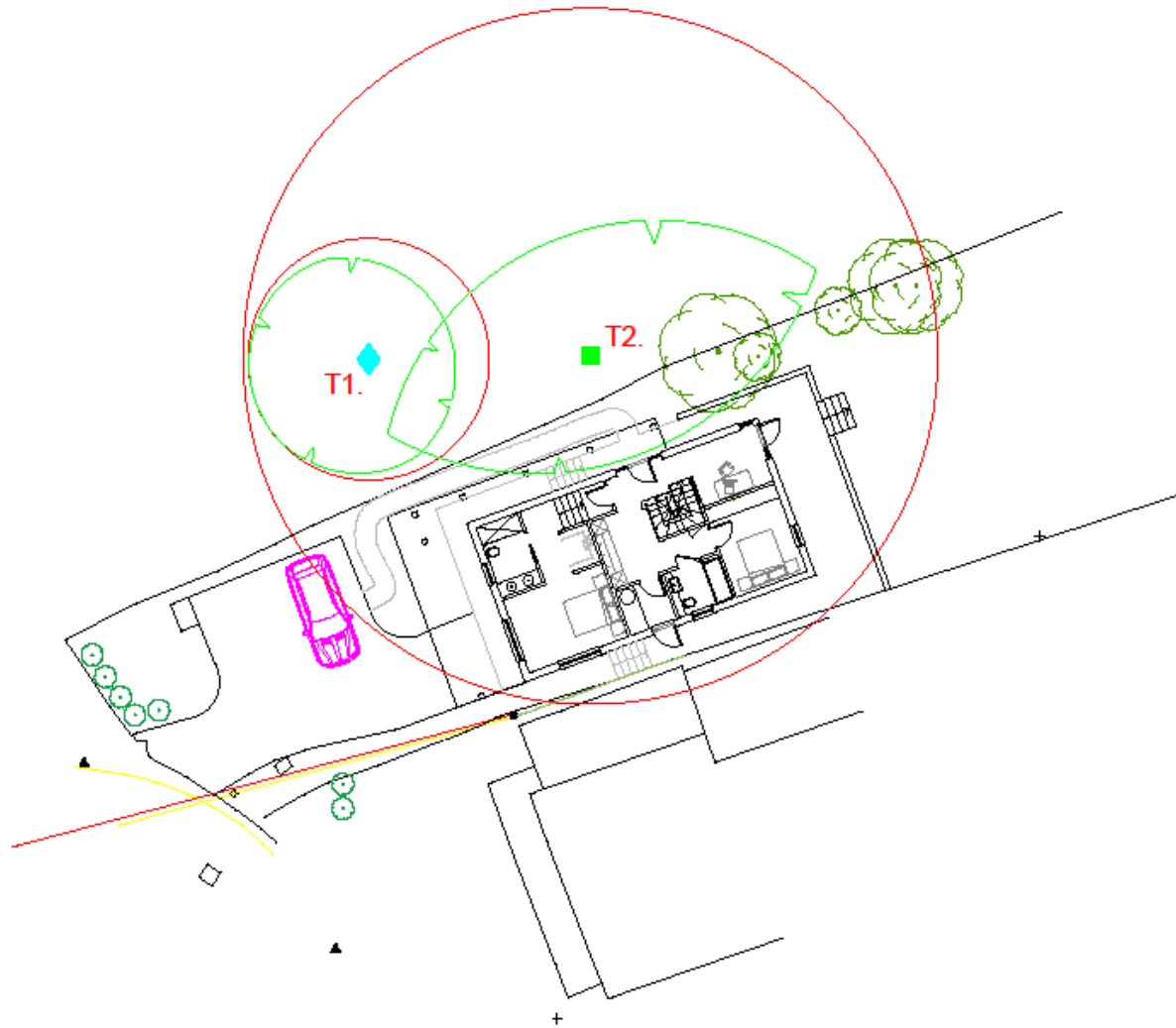
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