



**PRE-DEVELOPMENT ARBORICULTURAL SURVEY
AND
ARBORICULTURAL IMPACT ASSESSMENT**

2 Wigan Crescent
Bedhampton, Havant,
Hampshire

A Report to Mr Paul Cole

This report was compiled by
Marco Bartolini *TechArborA, (TE02501) GradCIEEM, FdScWM, Dip Mgmt*



*This report is the responsibility of Arbor Call Ltd.
It should be noted that whilst every effort is made to meet the client's brief,
no site investigation can ensure complete assessment
or prediction of the natural environment.*

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1. INTRODUCTION

1.1 PROJECT BACKGROUND

Mr Paul Cole, commissioned Arbor Call Ltd to carry out a Pre-development Arboricultural Survey of trees and compile an Arboricultural Impact Assessment for a proposed development of land at 2 Wigan Crescent, Bedhampton and within the administrative boundary of Havant Borough Council.

Arbor Call Ltd, Arboricultural Consultancy, carried out an Arboricultural Survey at this site on 1st June 2018 and the results of this survey are shown at Appendix 1 of this report.

This report details the impact that the proposed development will have upon the sites' existing tree stock and sets out recommendations for the subsequent mitigation or avoidance of impact. The study has been completed in accordance with guidance contained within British Standard BS5837:2012 'Trees in relation to design, demolition and construction – Recommendations'.

1.2 SITE DESCRIPTION

The site is located towards the centre of the district of Bedhampton within the town of Havant, Hampshire.

The site was dominated by the existing residential property including. The site includes areas of amenity grassland that have been managed and sections of hard surfacing that served as outdoor space, car parking, a double garage and an access driveway. The trees surveyed were predominantly situated towards the periphery of the site. The most significant tree surveyed was a Monterey Cypress (*Cupressus macrocarpa*) tree located within the rear aspect of the site.

The north of the site is bound by residential properties off Scratchface Lane. The east of the site abuts Wigan Crescent minor trunk road. The western boundary was demarcated by adjacent residential properties accessed off Maylands Road whilst the southern boundary abuts a further property off Wigan Crescent.

The topography of the study area is generally flat with minor terracing from the western boundary towards Wigan Crescent. The site is centred at Ordnance Survey Grid Reference SU 6989 0690.

The location of the Monterey Cypress tree considered within this document can be found on Arbor Call Ltd Drawing Number C061802-01-01, Section 6.

1.3 DEVELOPMENT PROPOSALS

The proposed development of the site includes the construction of a single rear extension and a two-storey side extension along with the relocation and rebuild of a detached garage

1.4 DOCUMENTATION PROVIDED

This assessment is based upon the information provided by the client in addition to information collected by Arbor Call Ltd. The documents and drawings considered are detailed within Table 1.1.

Author	Document	Reference	Date
Paul Cole	Location Plan	-	-
Paul Cole	Ground Floor Plan	04	Feb 2018
Paul Cole	Proposed Elevations	06	Feb 2018
Paul Cole	Proposed Garage Plan and Elevations	07	Mar 2018
Paul Cole	Proposed Block Plan Rev A	-	May 2018

Table 1.1: Documentation Provided

2. METHODOLOGY

2.1 DESK STUDY

A desk study was undertaken to identify if any of the trees present within or in close proximity to the site are covered by Tree Preservation Orders (TPOs) or if the site is situated within a Conservation Area. This involved consultation with the Local Planning Authority.

2.2 CONDITION STATUS

To determine the status of the trees within the site a full arboricultural survey has been undertaken, assessing the species and status of all trees present. This survey has been carried out in accordance with British Standard 5837:2012 'Trees in relation to design, demolition and construction – Recommendations'.

All trees have been assigned a unique reference number. Individual trees above 75 mm in diameter (at 1.5 m above ground level) have had their position plotted to a survey drawing. The trees were visually assessed and a schedule prepared listing: tree number, species, stem diameter at 1.5 m above ground level (or in accordance with Annex C of BS5837:2012), tree height, crown spread (cardinal points), crown clearance (cardinal points), height of first branch and growth direction, age class and estimated remaining life expectancy in years. Measurements for tree height, first branch height, crown clearance and crown spread were taken to an accuracy of 0.5 m. Stem diameter measurements were recorded to the nearest 10 mm. Groups, hedgerows, woodland trees have had their measurements averaged and recorded to the nearest 10 mm. Any specific observations or recommendations with regard to management were also noted. All these observations and measurements are summarised in Appendix 1.

Each tree was assessed and assigned to one of the following categories:

- Category A: Those trees of high quality and value with an estimated remaining life expectancy of at least 40 years.
- Category B: Those trees of moderate quality and value with an estimated remaining life expectancy of at least 20 years.
- Category C: Those trees of low quality and value with an estimated remaining life expectancy of at least 10 years or young trees with a stem diameter below 150 mm.
- Category U: Trees 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.

Categories A, B and C have further sub-categories with regards to the reasons for tree retention:

- 1: Mainly arboricultural qualities.
- 2: Mainly landscape qualities.
- 3: Mainly cultural values, including conservation.

2.3 ROOT PROTECTION AREA (RPA)

In order to avoid damage to the roots or rooting environment of retained trees, the RPA has been calculated for each of the Category A, B and C trees. This is a minimum area around a tree which is deemed to contain sufficient roots and rooting volume to maintain the tree's viability. Protection of the roots and soil structure in this area should be treated as a priority.

These figures have been calculated utilising the formulas within Section 4.6 and Annex D of British Standard 5837:2012.

3. RESULTS

3.1 TREE PRESERVATION ORDER AND CONSERVATION AREA DESIGNATIONS

Examination of an email from Emma Chisnell (2018) Planning Officer, Havant Borough Council confirmed that, at the time of the assessment, the tree surveyed was the subject of Tree Preservation Order. The full details of the TPO can be obtained from the Local Authority.

The Town and Country Planning (Tree Preservation) (England) Regulations 2012, Part 4 – Applications for Consent under Tree Preservation Orders states that an application for consent to the cutting down, topping, lopping or uprooting of any tree in respect of which an order is for the time being in force shall be made in writing to the authority on a form published by the Secretary of State for the purpose of proceedings under these Regulations.

Until such time as the application has been granted no works must be undertaken on the trees identified as being subject to TPOs that contravene the order. Works include pruning, topping, lopping, uprooting or wilfully damaging these trees. Any proposed pruning works will need to be fully specified and agreed within any planning application. If works are not included within the planning application, a separate TPO application will be required to be submitted to the Local Authority for permission to undertake any works (approximately an 8-week process).

Apart from limited exceptions, permission must be sought from the local planning authority by submitting a standard application form. The form is available from the Local Authority Planning Portal. It is important that the information on the form makes clear what the proposed work is and provides adequate information to support the case.

The authority's consent is not required for carrying out work on trees subject to an Order so far as such work is necessary to implement a full planning permission. For example, the Order is overridden if a tree has to be removed to make way for a new building for which full planning permission has been granted. Conditions or information attached to the permission may clarify what work is exempt.

It is understood that the site is not within a Conservation Area. The full details can be obtained from the Local Authority.

3.2 PROTECTED SPECIES

Birds

The Conservation of Habitats and Species Regulations 2010 (as amended) places a duty on public bodies to take measures to preserve, maintain and re-establish habitat for wild birds. Nesting and nest building birds are protected under the Wildlife and Countryside Act WCA 1981 (as amended). Several bird species are Species of Principal Importance for Nature Conservation in England, making them capable of being material considerations in the planning process.

As the trees on, and adjacent, to the site provide potential habitat for nesting birds all tree work should ideally be completed outside the nesting bird season (generally March to August). If this is not possible then the vegetation should be subject to a nesting bird inspection by a suitably experienced ecologist prior to commencement of works. If any active nests are identified then the vegetation, and a defined buffer zone, will need to remain in place until the young have naturally fledged.

Bats

Bats and the places they use for shelter or protection (i.e. roosts) receive European protection under The Conservation of Habitats and Species Regulations 2010, as amended (Habitats Regulations 2010, as amended). They receive further legal protection under the Wildlife and Countryside Act (WCA) 1981, as amended. This protection means that bats, and the places they use for shelter or protection, are capable of being a material consideration in the planning process.

Disturbance of animals includes in particular any disturbance which is likely to impair their ability to survive, to breed or reproduce, or to rear or nurture their young, or in the case of animals of a hibernating or migratory species, to hibernate or migrate; or to affect significantly the local distribution or abundance of the species to which they belong. As bats re-use the same roosts (breeding site or resting place) after periods of vacancy, legal opinion is that roosts are protected whether or not bats are present.

Generally, should the presence of a bat roost be suspected whilst completing works on any trees on site then an appropriately licensed bat worker should be consulted for advice.

3.3 WEATHER CONDITIONS AND PERSONNEL

The survey was completed on 1st June 2018 by Marco Bartolini, Arboricultural Consultant. The weather conditions at the time of the survey are shown in Table 3.1.

Conditions	Result
Temperature (°C)	15
Cloud Cover (%)	Fog
Precipitation	Nil
Wind Speed (Beaufort)	F0-1

Table 3.1: Weather Conditions at Time of Survey

3.4 SPECIES RECORDED

Tree species recorded during the survey are listed in Table 3.2.

Common Name	Scientific Name
Bay Laurel	<i>Laurus nobilis</i>
Buddleia	<i>Buddleia</i>
Holly	<i>Ilex aquifolium</i>
Lawson Cypress	<i>Chamaecyparis lawsoniana</i>
Monterey Cypress	<i>Cupressus macrocarpa</i>

Table 3.2: Tree Species Recorded During Survey

The full results of the Arboricultural Assessment are detailed in Table A1.1 at Appendix 1.

4. ARBORICULTURAL IMPACT ASSESSMENT

4.1 INTRODUCTION

All trees within and closely surrounding the site have been surveyed and each has been identified with a unique number. The locations of the trees are shown on Arbor Call Ltd Drawing Number C061802-01-01 in Section 6. A schedule of the tree surveyed can be found within Appendix 1. The Root Protection Area for the tree in BS5837:2012 Category A, B or C is shown at Appendix 2.

Planning Context

It is important to note that trees are a material consideration in the UK planning system and existing trees are an important factor requiring forethought when assessing the development potential of a site, whether they are within the working area, or within such proximity to it, that they may be affected by construction operations.

4.2 DEVELOPMENT DESIGN AND LONG-TERM IMPACTS

4.2.1 Potential Impact on the Amenity Value of Trees

Impacts

Tree Removal

The proposed development will not require the removal of any of the trees surveyed to permit its successful implementation.

Tree Works

To permit space for the demolition or deconstruction of the existing garage and access route and to provide working space for the hard and soft landscaping improvements it will be necessary to undertake some access facilitation pruning to the trees on and adjacent to this site. Group numbers G1 and G2 will hinder the demolition and it is therefore recommended that both these groups of trees are pruned prior to any works starting at this site.

Until such time as Planning Permission has been granted and the construction works date has been determined, it may be apparent that further tree works will be required due to incremental growth during the summer months of 2018 and subsequent years (should construction be delayed). It is therefore recommended that a Tree Works Schedule is commissioned prior to any construction works being carried out and submitted as an addendum to this report.

Mitigation/Avoidance

All tree works will be carried out in accordance with BS3998:2010 Tree works – Recommendations with the adoption of good working practices.

The Tree Works Schedule should be developed and authorised by the retained arboricultural consultant for the proposed development.

4.2.2 Proximity of Trees to Proposed Structure

Impacts

Branch Spread

It is evident that a moderate tree management regime existed and therefore the trees can be pruned to maintain a distance of vegetation from the new built structure. It will be the owners' responsibility to manage the trees to avoid a nuisance.

Shading

Shading of spaces within the proposed new garage is unlikely to occur due to existing trees as they are situated at such a distance so as not to impact the building. With no living space proposed the lighting will be a matter for the owner to develop.

Leaf Litter, Fruits, Pollen, Sap etc.

Whilst the majority of the retained trees are species associated with limited fruit fall or sap exudate problems, any inconvenience experienced can be managed by implementing good housekeeping.

Mitigation/Avoidance

It is likely that a number of trees will require cyclical pruning as the trees continue to grow. Further works will be required in the future to prevent conflict occurring. However, such works will not be significant as to impact the long-term visual quality of the trees so long as the work is carried out within the realms of good arboricultural management by suitably qualified and experienced arborist contractors.

Any insignificant shading can be overcome by implementing a design of roof-lights, glass roof lanterns, larger windows or additional lighting.

With respect to leaf litter it is noted that the sweeping up of leaves and cleaning of gutters, which may become blocked by falling leaves, is considered to be routine seasonal household maintenance and as such no notable conflict with the proposed development is considered to occur. Nonetheless it may prove appropriate in certain areas to use gutter guards, or otherwise enclosed gutters, to minimise the potential for leaf fall to cause blockage and an ongoing nuisance.

4.3 POTENTIAL IMPACTS FROM CONSTRUCTION PROCESSES OF THE PROPOSED DEVELOPMENT

4.3.1 Potential Root and Canopy Protection

To prevent harm occurring to retained trees during development it is recommended that construction works are excluded from the Root Protection Areas (RPA) of retained trees. Additionally, works should not be undertaken beneath the canopy spread of retained trees where this can be avoided.

The RPA represents the minimum area around trees that must be left undisturbed to ensure their survival. The roots typically occupy the top 600 mm of soil and the fine roots which absorb water, oxygen and nutrients are situated in the top 100 mm of soil. Any incursion into the rooting zone of a tree can cause a notable impact upon a tree's health.

Where existing buildings, underground services and areas of hard surfacing exists within the RPA of retained trees it is very likely that the rooting will have occurred asymmetrically due to the hard structures and the morphology of the roots is such that they are likely to have formed a fan shape with many roots running parallel to the man-made structure rather than being offset so far in to the site. The current RPA is

shown in accordance with the guidance within BS5837 RPA which is effectively a calculation of the extent of a tree's root system that is required to ensure the continued vigour of a tree rather than an attempt at actually identifying the maximum spread of a tree's root system.

Where trees were growing adjacent to the amenity grassland, it is very likely that the roots of these trees will have exploited the water, oxygen and nutrients of the open space. Therefore, it is recommended that traditional strip foundations be avoided and a no-dig pile and raft, or pile and above ground, ground beam configuration be adopted.

The RPA and canopy spread of each tree to be retained is shown on Drawing Number C061802-01-01, Section 6. Additionally, a schedule of the trees surveyed can be found within Appendix 1. The Root Protection Areas for each tree in BS5837:2012 Category A, B or C is shown in Appendix 2.

Impacts

Demolition (or deconstruction) and construction work carried out within the RPAs of the retained trees will cause the greatest damage. 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. Compacted soil will adversely affect drainage, gas exchange, nutrient uptake and organic content, and will seriously impede or restrict root growth. The risk of soil compaction is greatest in soils with a significant clay content and in wet conditions. It can result from temporary or short-term loadings, such as the passage of a single vehicle, or from longer-term construction activities, including materials storage.

Examination of the proposed development plans indicate major works are required within the RPAs of retained trees 1, G1 and G2. However, the condition of G1 and the fact that the demolition of the existing building within the RPA of both G1 and G2 will eventually improve growing conditions then these two groups will no longer be considered during the construction phase of the report.

Consideration should be made for the foundation design or location of the building to reduce impacts to the trees. See Section 4.3.7 for more details.

Overall it is considered that the potential for harm to occur to the root systems of retained trees can be adequately controlled through the adoption of a technical solution, appropriate working practices and erection of protective barriers to exclude access from vulnerable sections of trees RPAs. Additionally, supervision by the retained arboriculturist should be included within the schedule of phased works (See Section 4.1.13 for details).

Mitigation/Avoidance

Construction Exclusion Zones

To minimise the potential for harm to occur to the root systems and canopies of retained trees during the development it will be necessary to implement construction exclusion zones throughout the site. These are areas surrounding the trees' RPAs and canopies in which no construction works, or related activities, will be undertaken.

It is recommended that the exclusion zones are afforded protection at all times through the use of tree protection barriers and ground protection where specified or considered appropriate (specified in accordance with BS5837:2012). Tree protection barriers should be constructed in accordance with the guidance set out within BS5837:2012 and the specification of Section 6.6.2 (BS5837:2012) Figure 3 be adopted (variant) shown at Appendix 4. Signs will be installed on the protective barriers to inform site staff of responsibilities and these will include the headings listed in Appendix 3.

It is considered that ground protection, to prevent damage to the rooting systems of retained trees, will not be required to permit the installation of scaffold and pedestrian access within RPAs of retained trees. It is noteworthy that the site was a garden and it is accepted that pedestrian and light machinery compaction exists across the site. The installation of scaffold and pedestrian access is acceptable and justified. However, at no time must the storage of materials be permitted within the CEZ.

All works within the RPA of a retained tree should be carried out under the supervision of the retained Arboricultural Consultant. All tree protection measures should be confirmed for their position and suitability prior to any construction works being carried out (See Section 4.3.13 for details).

Temporary access in to the construction exclusion zones should only be authorised by the retained Arboricultural Consultant and these works should be included within the schedule of phased works (See Section 4.3.13 for details).

The exact location of boundary features and the methodology for their construction should be considered. Where works to construct the boundary features are within the RPAs of retained trees then all works should be carried out under the supervision of the retained Arboricultural Consultant (See Section 4.3.13 for more details).

A management system for routine inspections of the tree protection measures should be included within the site management plan and routinely audited by the Contracts Manager.

Drawing Number C061802-01-01, in Section 6, provides a Tree Protection Plan indicating the potential location of tree protection measures for the proposed development. The drawing should be made available to all personnel entering the site and an induction briefing provided to all contractual staff and visitors by the Contracts Manager.

4.3.2 Site Construction Access

Impacts

It is understood that the construction site access and traffic flow will utilise the existing highway (Wigan Crescent) and pedestrian access in to the site during the development. The traffic management will be organised and be the responsibility of the Contracts Manager to monitor.

Mitigation/Avoidance

The construction access and the provision of a traffic management system for the site should be an element of routine of inspections and should be included within the site management plan to provide an auditable system available for scrutiny.

4.3.3 Contractors Parking

Impacts

The location of all contractor, sub-contractor and visitors parking during the development will be on the driveway of 2 Wigan Crescent and all parking will be located outside of the RPAs of retained trees and managed by the Contracts Manager.

Mitigation/Avoidance

Installation of barriers to ensure no parking occurs within the exclusion zones. Auditable systems of routine inspections to ensure no parking occurs in proximity to retained trees.

Wheel wash and boot wash facilities should not drain in to the surrounding soil or waterways to avoid contamination of the rooting medium.

It is accepted that once the demolition of the existing garages has been completed additional space on site will be made available.

4.3.4 Site Welfare Facilities

Impacts

The location of the Site Welfare Facilities during the phased development has yet to be decided and will be located outside of the RPAs of retained trees.

Mitigation/Avoidance

Installation of protective barriers and ground protection to ensure that trees are protected from physical damage resulting from works to establish a site compound.

The Contracts Manager should include a series of inspections to ensure that the site welfare facilities do not impact on retained trees. Liquids and waste from the welfare units will not be deposited in to the surrounding soil.

4.3.5 Delivery and Storage of Materials

Impacts

The proposed locations for site deliveries and materials storage during the phased development will be within the driveway of 2 Wigan Crescent and all materials will be located outside of the RPAs of retained trees.

Mitigation/Avoidance

Ensure no storage occurs upon un-surfaced ground within the defined RPAs of the retained trees via the installation of protective barriers and ground protection.

The Contracts Manager should include a series of inspections to ensure that the site storage area is maintained to avoid conflict with retained trees. Spill kits and methods of ensuring that materials such as concrete and builders-sand do not enter the soil and waterways will be made readily available and included within the induction briefing. This includes the washing of tools and equipment.

4.3.6 Demolition of Existing Structures

Impacts

The proposed development will require demolition activities to be concentrated on removing the existing double garage.

The demolition of man made structures has the potential to damage underlying roots and traversing machinery will damage overhanging vegetation.

Mitigation/Avoidance

To reduce the potential for harm to the trees, all machinery and vehicular movement should be carried out under the supervision of a banksman.

A top-down, pull-back technique for the demolition of the garages should be adopted. This will provide further protection for the adjacent trees.

The removal of hard surfacing should be carried out by hand using appropriate hand-tools working in arcs closest to the trees radiating outwards. Retaining hardcore base layers where a new finished surface is proposed is strongly recommended to avoid disturbing underlying roots and reducing the potential for impact to the tree. Section 4.3.8 provides further details on hard surfacing replacement and construction within proximity to retained trees.

4.3.7 Construction of Buildings

Impacts

The proposed construction of the garage will require works within the RPA of retained tree numbers 1. The use of traditional trench footings for the proposed development should be avoided and an alternative foundation considered. The tree is the subject of a Tree Preservation Order and both above and below ground live material must be protected.

It is recognised that the influence of the proposed development within the RPA is calculated to be less than 20% of the permitted area of new hard surfacing (in accordance with Section 7.4.2.3 of BS5837:2012 Trees in relation to design, demolition and construction – Recommendations). This is therefore considered acceptable and permitted works within this guidance. However, to maintain the current growing conditions for this tree, it is recommended that a raft upon ring- beam or pile and above ground, ground beam foundations are investigated.

The highly alkaline leachate produced during the curing process of wet concrete has the potential to render a tree dead or damaged over time.

The locations of the tree protection barriers are shown on Tree Protection Plan Drawing Number C061802-01-01, Section 6.

Mitigation/Avoidance

Tree number 1 is considered to be mature in age and whilst may suffer some short-term damage it is likely that the tree will only show some minor dieback in the crown. It is deemed that the minor dieback will not be so significant as to be detrimental to the long-term health and vitality of this tree. This dieback can be managed by light pruning works to balance the crown.

Whilst the works within the RPA of this tree is considered to be minor, further consideration for the realignment of the foundations for this plot should be considered. Should the garage be relocated further east of tree number 1 and outside the RPA then the tree will not be impacted upon.

Due to the highly alkaline leachate produced during the curing process of wet concrete, the concrete should not be poured within the RPA of a retained tree unless an impermeable liner has been installed.

The potential for direct damage to the stems of the tree will be controlled by the installation of protective barriers as shown on Tree Protection Plan Drawing Number C061802-01-01, Section 6.

All further construction design considerations should be outside of the RPA of a retained tree.

4.3.8 Construction of Areas of Hard Surfacing

Impacts

Areas of new hard surfacing proposed within the RPAs of retained trees, as identified within Section 4.3.1, has the potential to cause damage to tree roots. The potential for significant harm to occur to the retained trees can be controlled through the adoption of appropriate working techniques under the supervision of the retained Arboricultural Consultant (see Section 4.3.13 for contact details).

Mitigation/Avoidance

Wherever it is intended to undertake unplanned construction operations within the Root Protection Areas of trees precautions must be taken to maintain the condition and health of tree's root systems. In addition, works should not begin until authority from the retained Arboricultural Consultant or Local Authority has been sought (see Section 4.3.13 for contact details).

In particular:

- Works shall be conducted in such a manner as to prevent physical damage to roots during demolition or construction, such as soil compaction or root severance.
- Provision for water and oxygen to reach the roots must be made and the soil structure must not be disturbed.
- Provision must be made for future root growth and precautions taken to ensure that such root growth does not cause unacceptable levels of damage to the finished construction.
- The soil must not be compacted and soil bulk density must be maintained at suitable levels for tree root growth and function. In this respect, a soil bulk density of over 1.8g/cm³ is likely to impede root growth and function.

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

- No excavation of bare ground is required for their installation; to ensure that physical root damage does not occur.
- The surface can be installed without compaction of the existing soils; thus, ensuring damage to the soil structure does not occur.
- The surface is permeable; thus, ensuring that oxygen and water can reach the root system and that CO₂ can diffuse vertically out of the soil as high concentrations can cause root suffocation.

Where existing areas of hard surfacing is proposed for renewal then it is recommended that only the surface layer is removed down to the existing hard-core base layer and rebuilt from this point. This will negate the requirement for excavating within the RPA of a retained tree and thus reducing the likelihood of damage to underlying roots.

In summary, mitigation measures shall be to utilise a 'no dig' construction technique to develop all areas of hard surface within the RPAs of the retained trees.

In accordance with BS5837:2012 all areas of construction activity within the RPA of a retained tree should be supervised by a suitably experienced arboriculturist (See Section 4.3.13 for details).

4.3.9 Boundary and Ancillary Structures

Impacts

The exact details of the proposed boundary structures are not known at this time; however, it is considered that there may be retained trees that will have boundary features constructed within their RPAs.

The highly alkaline leachate produced during the curing process of wet concrete has the potential to render a tree dead or damaged over time.

Excavation for post holes or trenching for wall foundations has the potential to sever major structural roots and/or damage the fibrous feeding roots.

Mitigation/Avoidance

The location of any concrete foundations and posts needs to be carefully considered to ensure no damage to the adjacent trees occurs. For example, due to the highly alkaline leachate produced during the curing process of wet concrete, the concrete should not be poured within the RPA of a retained tree unless an impermeable liner has been installed. Foundations for proposed retaining walls should not be of traditional trench style but consideration made for an above ground bridged-lintel to allow for future growth both above and below ground.

Additionally, any new fence posts should not be constructed within 1.0 m of the stem of any retained tree. This will reduce the amount of excavation for post foundations required within the RPAs of the retained trees. Any excavation for fence posts in RPAs will need to occur by hand and under arboricultural supervision to ensure no root damage occurs (See Section 4.3.13 for details). Flexibility to relocate post holes and subsequent fencing should be built in to the design.

4.3.10 Site Gradients and Landscaping

Impacts

The proposed development has been designed so that no reduction in ground level is required within the RPA of any retained tree.

Where uneven ground exists within the RPAs of retained trees the in-filling or augmentation of land can have a detrimental effect on the underlying roots. Adding soils at a depth greater than 75 mm can begin to cause compaction and prevent the percolation of life supporting nutrients, water and oxygen to trees' roots.

The removal of soil to achieve level ground can also be detrimental to the roots of the retained trees. Fibrous feeder roots are normally located at 100 mm below the soils surface and therefore the removal of soils to achieve levels will destroy these roots and ultimately have an effect on the canopy development.

Grass is a hemi-parasitic plant and the covering of soils around a new tree should be avoided as the grasses will out compete a tree for nutrients and eventually cause the death of the tree. Grass around a tree stem has been proven to be the greatest cause of new tree loss.

Mitigation/Avoidance

The areas of new hard surfacing within the RPAs of retained trees are to be built up from existing ground level in accordance with a no-dig methodology.

A progressive soil reduction and increase over a long period would permit the trees to adapt overtime to an increase or decrease in soil levels. Removing soils and ameliorating the ground with mycorrhizal fungi will encourage root growth at lower soil levels. Augmenting levels with a good quality top soil incrementally over a period of time will also encourage new root growth without the immediate compaction results.

4.3.11 Service Requirements

Impacts

There are existing service connections surrounding the site. It is understood that the creation of new service connections will not harm existing trees.

Mitigation/Avoidance

The methodology for the installation, maintenance or removal of any services within an RPA will be in accordance with NJUG Volume 4 'Guidelines for the Planning, Installation and Maintenance of Utility Services in Proximity to Trees'. This will include hand dug "broken" trenches to ensure that maximum protection is given to tree roots.

It is advised that the installation of any new services and drainage occur outside the RPAs of the retained trees. It is also advised that CCTV and lighting columns should not be situated in locations which will place future pressure on trees for crown pruning due to visibility/shadowing.

4.3.12 Pre-construction Recommendations

Auditable systems of site monitoring should be made available to the Local Planning Authority Arboricultural Officer and included within the program of development construction as recommended within BS5837:2012. This should include a schedule of events whereby periods of supervision or input from the Project Arboriculturist is required See Section 4.3.13 for contact details).

A pre-commencement site meeting involving all interested parties should be convened to confirm;

- Tree Works Schedule;
- Tree Protection Measures;
- Temporary Access into RPA Requirements;
- Auditing and Periods of Supervision;
- Post Development Tree Inspection.

4.3.13 Contact Details

Retained arboriculturist for the project is;

Marco Bartolini

Company: Arbor Call Ltd, Belle Vue, West Hill Road North, South Wonston, Winchester, SO21 3HN

Mobile: 07841952196

Principal Tree Officer for the project is;

Jamie Gargett

Local Authority: Havant Borough Council

Address: Public Service Plaza, Civic Centre Road, Havant, PO9 2AX.

Telephone: 02392 446525

5. ARBORICULTURAL METHOD STATEMENT

It is considered that an Arboricultural Method Statement will not be required due to the fact that the proposed construction will not require significant works to be undertaken within the RPAs of retained trees.

Arboricultural Supervision and Auditing will ensure that all site operations can occur with minimal risk of adverse impact upon trees that are to be retained.

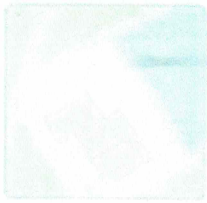
A Pre-commencement Site Meeting will ensure that the following operations are supervised in accordance with the guidelines set out within BS5837:2012 Trees in relation to design, demolition and construction - Recommendations.

In relation to this development a Pre-commencement Site Meeting should address the following:

- Protective barrier and ground protection locations and specifications.
- Tree Works Schedule;
- Exact locations of all Tree Protection Measures;
- Temporary Access into RPA Requirements;
- Post Development Tree Inspection.
- Periods of auditing and supervision.

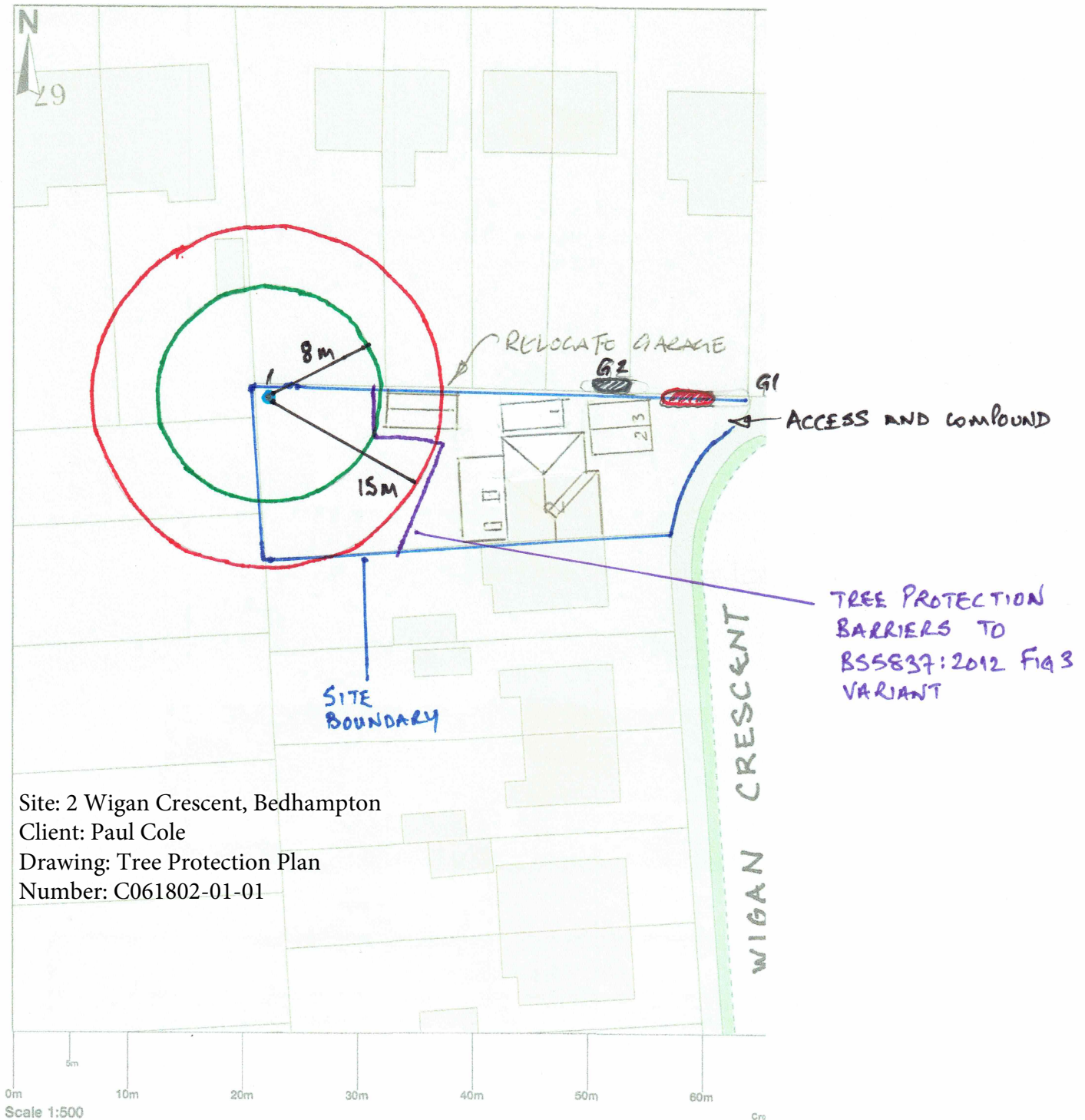
6. DRAWINGS

Drawing Number C061802-01-01 Tree Protection Plan



ARBOR-CALL

ARBORICULTURAL CONSULTANCY



Map area bounded by: 469851,106858 469941,106948. Produced on 28 January 2018 from the OS National Grid. The whole or part is prohibited without the prior permission of Ordnance Survey. © Crown Copyright and the Ordnance Survey. Licensed OS partner (100054135). Unique plan reference: b90buk/218112/298032

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APPENDICES

APPENDIX 1:	Table A1.1 – Tree Survey Schedule
APPENDIX 2:	Table A2.1 – Root Protection Areas of Category A, B and C Trees
APPENDIX 3:	Headings for Protective Barrier Notices and Example Protection Sign
APPENDIX 4:	Details of Protective Barrier

APPENDIX 1

Table A1.1 – Tree Survey Schedule

Tree No.	Species	No. Stems	Diam (mm)	H't (m)	Ht 1 st Branch (m)	Branch Spread (m)				Crown Clearance (m)				Age	Phys Cond	Struc Cond	Est. Remain Contrib (Years)	Cat	Comments	Preliminary Management Recommendations
						N	E	S	W	N	E	S	W							
1	Monterey Cypress	1	1320	16.0	4.5 E	8.0	8.0	8.0	8.0	5.0	6.0	6.0	4.0	M	G	G	20+	B1	- Boundary feature, hard surfacing, underground services and outdoor building within RPA. - Mammal damage to RPA around base of stem. - Clear stem to 4.0 m above ground level.	-
G1	Lawson Cypress	1	<u>210</u>	5.0	2.5 S	2.0	2.0	2.0	2.0	2.5	2.5	2.5	2.5	M	P	F	<10	U	- Boundary feature, outbuilding and hard surfacing within RPA. - Poor past management. - Clear stem to 2.5 m above ground level.	-
G2	Holly Bay Buddleia	1	<u>200</u>	6.0	0.0 N	2.0	2.0	2.0	2.0	0.0	0.0	0.0	0.0	EM	F	F	10+	C3 Int	- Off-site group. - Restricted access limits detailed assessment. - Boundary feature, outbuilding and hard surfacing within RPA. - Canopies touch outbuilding roof and walls.	Side prune and crown lift away from building to boundary.
Key <u>Age Class</u> Y: Young = tree within first third of average life expectancy EM: Early mature = tree within second third of average life expectancy M: Mature = tree within final third of average life expectancy OM: Over mature = tree beyond average life expectancy <u>Physiological Condition</u> G: Good = no health problems F: Fair = symptoms of ill health that may be remedied P: Poor = poor health <u>Structural Condition</u> G: Good = no structural defects F: Fair = remedial structural defects P: Poor = significant structural defects <u>000</u>: Estimated measurement due to access restrictions RPA: Root Protection Area Int: Interim decision due to access restrictions Major deadwood: branches in excess of 50 mm diameter Minor deadwood: branches/twigs less than 50 mm diameter																				

Table A1.1: Tree Survey Schedule

APPENDIX 2

Table A2.1 – Root Protection Areas

Tree No.	Species	Diam (mm)	Approximate Root Protection Radius (m)	Root Protection Area (m ²)
1	Monterey Cypress	1320	15.0	707
G1	Lawson Cypress	<u>210</u>	2.7*	23*
G2	Holly Bay Buddleia	<u>200</u>	2.4*	18*
Key: <u>000</u> : estimated dimensions due to access restrictions. *: Average measurement of stem diameter throughout group.				

Table A2.1: Root Protection Areas

APPENDIX 3

Headings for Protective Barrier Notices

Root Protection Area (RPA) Model Notice

DON'T excavate within this area
DON'T use any form of mechanical plant with this area
DON'T store materials, plant or equipment within this area
DON'T move plant or vehicles within this area

DO contact the Local Authority Arboricultural Officer or owner of the tree if excavation within this area is unavoidable

DO protect any exposed roots uncovered within this area with dry sacking

DO backfill with a suitable inert granular and top soil material mix as soon as possible on completion of work

ANY WORK in this area requires a permit from the Local Authority Arboricultural Officer



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



**TREE PROTECTION AREA
KEEP OUT !**

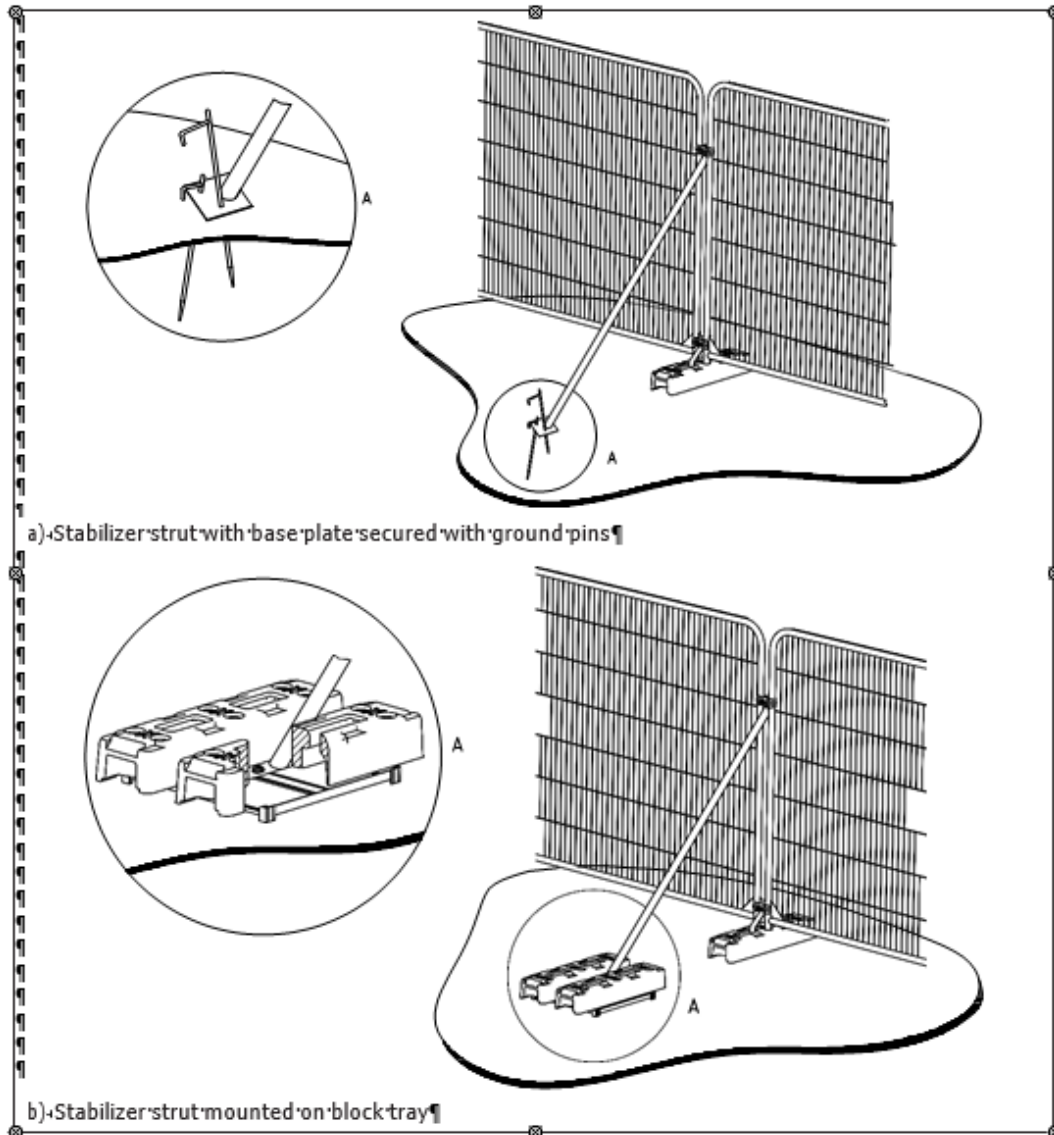
**(TOWN & COUNTRY PLANNING ACT 1990)
TREES ENCLOSED BY THIS FENCE ARE PROTECTED BY
PLANNING CONDITIONS AND/OR ARE THE SUBJECTS OF A
TREE PRESERVATION ORDER.
CONTRAVENTION OF A TREE PRESERVATION ORDER MAY
LEAD TO CRIMINAL PROSECUTION**

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

APPENDIX 4

Details of Protective Barrier

Figure 3 → Examples of above-ground stabilizing systems



6.2.3 → Ground protection during demolition and construction