Tree Survey and Arboricultural Impact Assessment Report.

For Land at Peveril Road, Duston Northampton.

Produced by Dan MacIntyre, Arboricultural Consultant for MacIntyre Trees.
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SUMMARY

This survey focuses on the site of the former Moray Lodge, an assisted living facility on Peveril Road, in Duston, NN5 6JW, (https://goo.gl/maps/12Q7bhcMbN1wuEwV9).

All buildings on site have been demolished, and the only remaining vegetation is a Cypress hedge (H1) and group of Laurel shrubs. Trees are adjacent the site, to the north and east, in neighbouring gardens, but these are mostly smaller shrub-like specimens of limited value to the wider landscape. All have been classed as category C features.

The development proposal is to construct a new assisted living facility. The Cypress hedge and group of laurel shrubs will need removing to facilitate this. Root impacts are negligible although there will be a need for supervised excavation near the trees on the northern boundary. Ground investigations could be undertaken prior to development to investigate for the presence of roots and this will give a clearer picture of construction methods to follow near the trees.

The image below shows the trees to the east side of the site, in the neighbouring garden.
1. INTRODUCTION

1.1. I have been instructed, by Mr William Jacobs, of Northampton Partnership Homes, to carry out a tree survey at the former Moray Lodge, on Peveril Road in the Duston area of Northampton. The survey was carried out in accordance with the British Standard, BS 5837:2012\textsuperscript{1}, and identified all trees within a specified survey area, shown as a red line on the Tree Constraints Plan at Appendix C.

1.2. The tree survey was carried out by Dan MacIntyre - holder of the Arboricultural Associations Technical Certificate, L3 National Certificate in Arboriculture, Lantra Professional Tree Inspector and member of The Institute of Chartered Foresters and Arboricultural Association.

1.3. The purpose of this report is to:
- Record the current condition of the trees found on the site and categorise them using the criteria outlined in BS5837:2012.
- Provide a Tree Constraints Plan that identifies constraints to development presented by the trees and their root protection areas, as described in the British Standard.
- Provide guidance detailing arboricultural constraints to development and factors to be considered during the detailed design of the proposed development.
- Assess and detail any impacts to trees that may occur as part of the proposed development.

1.4. Trees were inspected from ground level only. Prominent and significant tree defects have been identified, and recommendations are given to reduce risk where present. However; detailed hazard assessment, soil analysis and decay mapping are beyond the scope of this report and as such, it should not be viewed as a substitute for an assessment of tree risk on site.

2. SITE

2.1. The site comprises a rectangle area, comprised of rubble and excavated ground. It is within a residential area and common garden trees grow on the neighbouring boundaries to the north and east.

2.2. This link to Google Street View\(^2\) shows the site frontage in July 2015: [Google Street View](#).

2.3. The underlying soil types and their relationship between trees will affect structural foundation depths and designs. An engineer’s advice must be sought in relation to this aspect and the information provided within the survey data tables (*Table 1*) may aid their calculations.

2.4. Although a detailed analysis of soils has not been undertaken, information taken from the British Geological Survey Data web site\(^3\) indicate that the site straddles bedrock layers of Blisworth Limestone formation and Northampton Sand formation with no superficial deposits recorded.

2.5. A detailed habitat analysis has not been undertaken although general observations were made regarding protected species such as bats, owls and nesting birds during the survey. It is understood that a separate ecology survey may be commissioned for the site, which will give further information about protected species.

2.6. Notwithstanding the ecology report, I recommend that further assessment is made prior to any tree removal or works to ensure that nest sites or protected species are not disturbed, damaged or destroyed. In the event that any nest sites or protected species are suspected or found tree works must cease and advice be sought from the project ecologist or Natural England.

2.7. The presence of statutory tree designations (Tree Preservation Orders or Conservation Area) has not been checked as part of this report. However, Northampton Partnership Homes have access to Northampton Borough Council Land Charges datasets and should check for any statutory designations before any tree works on site.

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\(^2\) Map Data © 2018 Google Inc. Image date Mar 2009.

\(^3\) [http://mapapps.bgs.ac.uk/geologyofbritain/home.html](http://mapapps.bgs.ac.uk/geologyofbritain/home.html)
3. TREE SURVEY - BACKGROUND

3.1. This section briefly describes the methodology behind the recording and categorisation of trees.

3.2. All trees and tree groups inspected were categorised using the British Standard, BS5837:2012 and the attached Tree Constraints Plan (Appendix C) shows tree positions, numbers, retention categories and Tree Root Protection Areas (RPA). A schedule of the trees is included in Appendix B, which include species, physiological and structural condition, age, recommendations and quality categories. The survey methodology is described in Appendix A.

3.3. Tree and group locations were recorded using a Trimble T41 Juno GPS-enabled data collector without the aid of a topographical survey. The GPS unit is usually accurate to within 1-2m and whilst this is not as accurate as what is on the ground, it does give a very good indication of tree position. If greater accuracy is required, a topographical survey should be carried out; tree positions can then be placed at the points identified.

3.4. Trees have been recorded as individuals or as groups. The British Standard sets out the description of a group as follows: “The term “group” is intended to identify trees that form cohesive arboricultural features either aerodynamically (e.g. trees that provide companion shelter), visually (e.g. avenues or screens) or culturally including for biodiversity (e.g. parkland or wood pasture), in respect to each of the tree subcategories.”

3.5. Where a tree in a group has characteristics that distinguish it from the rest of the group, it is generally recorded as an individual. Such trees may include but are not limited to, veteran trees, trees with significant defects, and specimen trees of different species that stand out from within the group.

3.6. The trees surveyed were categorised using the method explained in BS5837:2012. This method categorises individual trees, groups and woodlands in a systematic way. Each tree, group or woodland is identified on an attached plan.

3.7. Initially, it is determined if the tree should be regarded as a U category tree. U category trees are those that are of low value, which has little future due to poor physiological and structural condition. There may be instances where retention of a U category tree is appropriate, such as habitat enhancement, but this should be carefully considered and adequate space given to such retained features.

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

3.9. A subcategory is included 1, 2 or 3. This subcategory reflects the type of value the surveyor feels the tree presents in regards its value to 1 – arboricultural, 2 – landscape, 3 – cultural or conservation. Unfortunately, the allocation of two or more subcategories does not increase the quality category but does indicate that it has a broader range of benefits.
The table below reflects the BS:5837 cascade chart.

<table>
<thead>
<tr>
<th>BS5837:2012 Categories</th>
<th>Definitions</th>
<th>Retention implications to a site</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category A (Shown as green on the plans)</td>
<td>Trees of high quality and value able to make a substantial contribution to the site.</td>
<td>Efforts should be made to retain trees and amendments to a proposed scheme should be identified in preference to tree removal.</td>
</tr>
<tr>
<td>Category B (Shown blue on the plans)</td>
<td>Trees of moderate quality and value able to make a significant contribution to the site.</td>
<td>Where possible amendments to a proposed scheme should be considered in preference to tree removal.</td>
</tr>
<tr>
<td>Category C (shown as grey on the plans)</td>
<td>Trees of low quality and value in an adequate condition until new planting can be established, trees with impairments downgrading them from A or B category OR young trees with a stem diameter of less than 150mm.</td>
<td>The retention of trees may be advantageous in the short term, but they should not be seen as a constraint to development.</td>
</tr>
<tr>
<td>Category U (shown as red on the plans)</td>
<td>Trees that have limited condition that will fail or die within ten years and/or should be removed for reasons of arboricultural best practice.</td>
<td>Not a material consideration in the planning process but may have other benefits that should be considered.</td>
</tr>
</tbody>
</table>

3.10. The survey data and tree positions help inform the extent of tree Root Protection Areas (RPA) to ensure that a tree is not harmed by development activities. BS5837 defines the root protection area as ‘the minimum area around a tree deemed to contain sufficient roots and rooting volume to maintain the tree’s viability’. This area is usually enclosed by a construction exclusion zone for the duration of works and is shown on the plans as a purple line.
4. TREE SURVEY - RESULTS

4.1. Five individual trees, two groups of trees, a hedgerow and shrub group were recorded, and the vast majority of these were in adjoining gardens. All features have been classed as category C specimens and further details are shown at Appendix B, Tree Data Table.

4.2. Most of the individual trees grow in the property to the east of the site. These are comprised of mature Purple Plum, Lilac, Hawthorn and Cyprus, along with smaller shrub species, most of these are unremarkable, poor form specimens. A dilapidated post and rail fence runs along this boundary and has collapsed, along with a small number of older trees, in places. The presence of the, now demolished, two storey building so close to the trees, and trees present within the site, may account for the poor asymmetric crown form of most of the trees along this boundary.

4.3. The trees to the north of the site form a useful screen between the residential areas and are comprised of mature Blackthorn and Hawthorn trees. One tree has fallen into the site and it is unclear as to the condition of the remaining trees, as access was restricted, and ivy growth was present on many trees. Because of this a full inspection could not be carried out.

4.4. A large group of Cherry Laurel is present on the north-west corner of the site, near existing parking bays for the adjacent car dealership. A Cypress hedge is also present on the southern boundary, and these are the only features that actually grow within the site. Neither are prominent or valuable features within the landscape.

4.5. The existence of foundations for the former Moray Lodge, other hard surfaces, poor growing conditions and competition from existing trees, is likely to have restricted root growth from the trees along the eastern boundary.

4.6. Root growth from the Blackthorn and Hawthorn trees along the northern boundary is likely to be present under the existing tarmac road, and this has not been removed as part of the demolition works. Because of this, it is plausible that roots are present in this area. Some simple ground investigations would confirm their presence and so would be a worthwhile exercise. The image below shows the existing road and fallen tree from G2.
5. IMPACT ASSESSMENT

5.1. The development proposal is to construct an assisted living facility, and this will largely sit on the footprint of the original building.

TREE REMOVALS

5.2. Only the Cypress hedge, H1, along the southern boundary and the group of Cherry Laurel in the north-west corner will need to be removed to facilitate this. The loss of these features will not have a great impact on the surrounding area.

PRUNING

5.3. The group of Blackthorn and Hawthorn, G2, north of the site will all need to be pruned to the common boundary of 45 Kerrfield Estate. The fallen tree will also need to be removed and I strongly recommend that the tree owner be contacted to inform them of the need to prune and the fact that a tree has fallen. This would give them an opportunity to agree on the extent of pruning, but also to assess their trees to make sure no others are in a poor condition.

POSSIBLE ROOT IMPACTS

5.4. The theoretical root protection area of trees along the eastern boundary is shown as extending within the footprint of the site, just under the proposed building layout. However, the presence of existing foundations, hard surfaces and poor growing conditions is most likely to have restricted root growth to this extent. Furthermore, the demolition works will have removed any roots that may have existed in this area, and so no impacts directly related to the construction of the new building are envisaged.

5.5. The root protection area of trees along the northern boundary also shows as extending into the site, under the existing rear access road to Moray Lodge. The demolition works stopped short of this road, and the profile under the tarmac road appears to be comprised of made ground, sand and rubble. Whilst this is likely to have discouraged root growth, the presence of sand throughout the spoil profile may have provided suitable channels for root growth, and so their presence cannot be ruled out.

5.6. A new footpath and grass is proposed along this area of road, and so the existing road surface will need to be removed. This will need to be carried out under arboricultural supervision and the area shown to the north of the purple fence line on the tree removal and protection plans, will need to be excluded from any construction activity other than the aforementioned supervised excavation.

5.7. It may be prudent to undertake this supervised excavation prior to any other construction on site as this may reveal that roots are not present under the existing road and so no further protection measures may be required.

5.8. If roots are present the proposed footpath should be constructed using a porous surface such a three-dimensional cellular confinement system⁴ layer and loose gravel wearing course, or a permeable resin bound surface. An example specification is shown at Appendix F.

⁴ http://greenfix.co.uk/product/geoweb-porous-pavements/
FUTURE CONSIDERATIONS

5.9. The vegetation and growth from the north and east boundaries will need pruning to ensure they do not overhang greatly. As the trees here are getting towards the end of their lifespan, growth will not be vigorous and so will not be a significant burden on the general maintenance of the site.

5.10. New tree planting is shown on the architectural proposed plans, and I have not had any input into this aspect. Species choice should take into account tree dimensions at maturity, and large, broad spreading trees should be avoided where there would be a need to prune regularly. Equally, foundation design should take into account any proposed species.

5.11. Suitable ground conditions and aftercare are vital to the success of new trees, and the recommendations provided in the British Standard, BS 8545\(^5\) and the Trees and Design Action Group publication – Trees in The Hardscape\(^6\) should be followed. This includes ensuring that soils are not compacted prior to planting and that adequate below-ground space is provided with suitable volume requirements to support mature root growth and withstand compaction. Aftercare in the form of watering and sympathetic formative pruning in the first five years after planting will also help to ensure that the replacement trees thrive. Further advice on species choice, planting specifications and after care can be provided if required.

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6. PROTECTION OF RETAINED TREES & METHODS

6.1. The trees along the northern boundary will need protective fencing erecting to the dimensions shown on the Tree Protection Plan, at Appendix D. Fencing on the northern boundary will need to be removed to facilitate the removal of the existing hard surface, and this should only be carried out under arboricultural supervision. Ideally, this should be carried out before the construction of the main site so that fencing can be re-erected and left in-situ for the duration of the project.

6.2. The trees on the eastern boundary should have site hoarding or tree protection fencing erecting to 1m from the existing fence line.

6.3. A fence specification has been provided at Appendix E, and this must installed prior to any construction works and remain in place until the superstructure is completed.

6.4. The removal of the existing tarmac road at the north of the site should be carried out under arboricultural supervision. A mini-digger (<1.5T) should be used, and the operative must be made aware of the need for care and to stop works on the instruction of the project arboriculturist. Sections should be broken, lifted and stored away from the tree, and the sub-base should be retained where feasible.

6.5. Where roots are encountered, they should be carefully exposed and any roots under 25mm diameter roots should be pruned, by the project arboriculturist, using clean and sharp by-pass loppers, secateurs or a pruning saw. The cut will be horizontal to the parent root and leave a clean straight surface. Larger roots (>25mm diameter) or a mass of smaller roots should be retained.

6.6. Exposed ends of roots and any exposed retained roots will have sharp sand (not builders’ sand) and topsoil backfilled around them immediately. Alternatively, the use of a hydrogel and geotextile wrapped around roots could be used - to avoid desiccation. Exposed roots must not be left exposed, and so it is imperative that backfill material, sand and a water source is available on site.

6.7. A permeable path, using a 75mm depth cellular confinement system, is recommended, and it is understood the area around the path is to be grassed, which will ultimately be beneficial to retained trees.

6.8. All site operatives should be made aware of the need to respect fencing and nearby trees as well as the following precautions which should be observed on site.
   - No fires to be lit within 15m of trees.
   - No materials, fuel or chemicals to be discharged or mixed where they are likely to flow toward trees in the event of spillage.
     Protective fencing and ground protection should not be moved without acceptance of council Tree/Landscape Officer or Appointed Arboricultural Consultant or until construction of the superstructure are complete.

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APPENDIX A

SURVEY METHODOLOGY

On-site, data was recorded with the aid of a Trimble GPS unit handheld data collector without the aid of a topographical survey. The GPS unit is usually accurate to within 1-2m and whilst this is not as accurate as a topographical survey it does give a good estimate, particularly when triangulated with existing ordnance survey data and compared with recent aerial imagery.

The data recorded includes:

- Height - gathered using tru-pulse laser clinometer or estimated in metres.
- Diameter - measurements were taken at 1.5 metres above ground level (complying with requirements for BS5837). Girth data was gathered using a metric diameter tape, callipers or estimated where access was restricted.
- Tree crown spread – estimated measurement of the four cardinal points to provide information to be used with the arboricultural constraints plan
- Age class - estimated from an examination of the tree in question.

Age Classification

The following classification is employed:

- Y - Young: Saplings and young trees under 10 years of age
- EM – Early Mature: Trees older than 10 years but less than one-third of the life expectancy of their species, normally making substantial extension growth.
- SM – Semi Mature: Trees between one third and two-thirds of the life expectancy of their species. More or less full Height and large girth, increasing only slowly.
- V – Veteran: Trees that shows features of biological, cultural or aesthetic value that are characteristic of an individual surviving beyond the typical age range for the species.

Structural Condition

Trees were assessed, from ground level only, for any structural defects including, but not limited to, cracks, cavities, decay, previous wounding and root movement. The categories given for structural condition are:

- Good – No visible significant defects noted;
- Fair – Minor defects noted that can be remedied through tree surgery works;
- Poor – Significant defects noted that predispose the tree to structural failure.
**Physiological Condition**

Trees were assessed for vigour and any signs of stress or ill health including, but not limited to, the presence of pests, diseases or pathogens and expected tree growth rates for species and age of the tree. The categories given for physiological condition are:

- **Good** – Growth rates as expected for species and no signs of pests or disease
- **Fair** – Growth rates appear below average for species and age, presence of minor pest or disease that can be remedied.
- **Poor** – Growth rates well below expected for species and age with the possibility of infestation of pests or pathogen present.
- **Dead** – Little or no live growth. Unlikely tree will survive into following the growing season.

**Tree Condition/Comments.**

Structural condition is also commented on, and this will include such items as the presence of decay and structural defects.

Groups of similar trees were identified and treated in a similar way as the individual trees. Trees are generally plotted as groups where they form cohesive landscape features such as avenues, planting schemes in landscaped beds or shelterbelts.

Trees are living organisms, and their condition can change rapidly in response to environmental variables. Condition remarks refer to the date of the survey and cannot be assumed to remain unchanged. While there is no such thing as a safe tree, regular inspection of trees is recommended to reduce the foreseeable risks associated with trees.

**Estimated Remaining Contribution in Years**

This is an estimate based on currently known factors of the possible remaining life of the tree. Clearly, it is impossible to predict changes in condition which may occur in the future, and this reflects what is considered reasonable under existing circumstances.

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

**Tree Categorisation Using BS 5837 Methodology**

The trees surveyed were categorised using the method explained in BS5837 Trees in Relation to Construction 2012. This method categorises individual trees, groups and woodlands in a systematic way. Each tree, group or woodland is identified on an attached plan. Groups are identified as those trees forming a single arboricultural feature with trees that provide companion shelter, are avenues or screens or cultural.

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

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

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

#### TREE DATA TABLE

**Key to Inspection Report Form**

<table>
<thead>
<tr>
<th>Ref No.</th>
<th>Tree, group or hedge number, to correspond with all tree plans</th>
</tr>
</thead>
<tbody>
<tr>
<td>Species</td>
<td>Genus and variety, common names are given.</td>
</tr>
<tr>
<td>Ht</td>
<td>Height in metres, top height given for group features. Either estimated or measured using Trupulse laser clinometer.</td>
</tr>
<tr>
<td>Dia</td>
<td>Stem diameter at 1.5m from ground level in millimetres. Measured using metric girth tape or callipers or estimated where access is restricted. An average value is presented for group features.</td>
</tr>
<tr>
<td>N,S,E,W</td>
<td>Crown spreads at cardinal points, north, south, east and west. Estimated in metres or measured using loggers tape, trupulse laser rangefinder. Average spread shown for group features</td>
</tr>
<tr>
<td>LcH</td>
<td>Height of lower crown.</td>
</tr>
<tr>
<td>PC, SC</td>
<td>Physiological (PC) and Structural Condition (SC). Based on assessment of tree/group and recorded as Good, Fair, Poor or Dead.</td>
</tr>
<tr>
<td>Cat and Sub Cat</td>
<td>BS 5837:2012 categories and subcategories.</td>
</tr>
<tr>
<td>ULE</td>
<td>Estimated useful life expectancy</td>
</tr>
<tr>
<td>Ref No.</td>
<td>Species</td>
</tr>
<tr>
<td>---------</td>
<td>---------------------------------</td>
</tr>
<tr>
<td>T1</td>
<td>Purple Plum</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>T2</td>
<td>Holly</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>T3</td>
<td>Purple Plum</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>T4</td>
<td>Leyland cypress</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>T5</td>
<td>Leyland cypress</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Groups of Trees and Hedgerows

| G1      | Plum, Holly, Hawthorn, lilac    | 150      | 4      | 0        | 4 |    |    |    | Fair | Fair | M         | M   | Fair   | C             | '10-20        | 1.8       |
|         |                                 |          |        |          |   |   |   |   |      |      |           |      |         |                                   | Boundary trees in adjacent garden. One dead and one partially collapsed. Remaining trees are unremarkable individually but do provide a degree of screening. Limited long term potential. |

Please see Appendix A and B for key of abbreviations and methodology. Average heights, diameters and spreads given for group features. BS5837 stem diameter calculation applied for multi stemmed trees.
<table>
<thead>
<tr>
<th>Ref No.</th>
<th>Species</th>
<th>Dia (mm)</th>
<th>Ht (m)</th>
<th>Lc H (m)</th>
<th>N</th>
<th>S</th>
<th>E</th>
<th>W</th>
<th>SC</th>
<th>PC</th>
<th>Age Class</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>G2</td>
<td>Plum, Hawthorn, Cypress,</td>
<td>350</td>
<td>9</td>
<td>0</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Fair</td>
<td>Boundary trees in adjacent garden to north of site.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Fair</td>
<td>Predominantly plum and hawthorn mix, with small number of cypress at west end. One large stem has recently failed into the site (included union and decay). Some screening value offered but condition, age and form means that contribution to locale is limited.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>M</td>
<td></td>
</tr>
<tr>
<td>H1</td>
<td>Cypress</td>
<td>80</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Fair</td>
<td>Old cypress hedge, trimmed to hard in places leaving dead brown patches.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Poor</td>
<td></td>
</tr>
</tbody>
</table>

Please see Appendix A and B for key of abbreviations and methodology. 
Average heights, diameters and spreads given for group features. 
BS5837 stem diameter calculation applied for multi stemmed trees.
Higher quality trees which should be considered for retention within a design layout. Lower quality trees or smaller trees. Retention of these trees may be desirable in terms of future succession and providing ecological and environmental benefits.
APPENDIX D

TREE REMOVAL AND PROTECTION PLAN
Existing area around trees already subjected to clearance and demolition. Existing building and hard surface likely to have restricted most roots. Excavation during demolition likely to have removed any other trace of roots. No roots likely to remain.

Footpath over existing tarmac surface. Removal of tarmac surface within 2.6m of fence line to be carried out under arboricultural supervision.

Dimensions for fence alignment in metres, from existing (close board) fence

All overhanging trees on north boundary will need to be pruned to clear boundary.

Laurel shrub group will need to be removed.

Cypress hedge to be removed.

Laurel shrub group will need to be pruned.

Key

Individual Trees

- Existing crown spread with BS Category Colour.
- Root Protection Area (RPA)
- Tree trunk
- Tree removal symbol

Tree number:
Red text denotes removal.
Blue = Pruning required.
Black = Retain

Groups of Trees

- Canopy extent of tree group with hatch and outline denoting Category Colour.
- Root protection area of groups as to canopy extent out of characterised with pink outline.

Tree group number
Red text denotes removal.
Blue = Pruning required.
Black = Retain

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T: 07843 564 984
APPENDIX E

SUGGESTED FENCE SPECIFICATION
heras® 151 and 151 steadfast system

Having invented the original concept of temporary fencing back in the 1950’s, Heras is proud of its reputation as a true innovator.

Our latest solution for securing site perimeters and protecting the public has been phenomenally successful since its launch, and offers the ultimate market leading temporary fencing system.

Our latest, most stable and most secure system ever offers you total peace of mind and unrivalled performance.

You can be sure that by installing the Heras® 151 Steadfast System (patent pending), you are conforming fully to the latest HSE Guidelines on “Protecting the Public” from the dangers of construction sites.

Heras has campaigned widely over recent years against faking product standards, and has consulted closely with senior figures across the construction industry to ensure our products meet and exceed your expectations. The latest innovative system means you should never again need to compromise on:

- Value for money
- Quality
- Performance
- Design
- Ease of installation.

All backed up with unbeatable service from our nationwide branch network – deal direct with Heras – your safety first fencing supplier.

151 system

The key components of the Heras 151 system are as listed.

Round Top Panel with Anti-Climb Mesh
- The strongest panel on the market, with 3 sides formed from a continuous length of tube, eliminating the top corner weld, often the weakest point in traditional panel design.

High Visibility Orange Block
- Permanently coloured with a durable UV stabilized “Nato” casing and filled with solid high density concrete.
- Effectively highlights any potential trip hazard.
- Beware of cheap imitations – painted coatings will chip and peel.

Heraslock® Anti-Tamper Coupler
- Providing additional security, these couplers can only be removed with the use of the specialist tool.

151 steadfast system

The Heras 151 steadfast system incorporates all the benefits of the 151 system, with the addition of the patented...

Heras® Steadfast Strut
- The unique design of this struts dramatically increases the stability of the fence.
- The strut fits recessed within the high visibility block allowing a neat and compact solution, and acts as an integrated anti-climb device.
- 2 additional fixing holes incorporated into the design allow for soil pins and入地bolts, dependent on ground conditions.

Optional Extras
- Heras® Steadfast Safety Strips with reflective coating can be fitted in minutes to highlight site dangers.
- Front support brackets allow vastly improved performance on softer ground conditions and fit quickly and easily into the high visibility block.

Our latest solution for securing site perimeters and protecting the public has been phenomenally successful since its launch, and offers the ultimate market leading temporary fencing system.
APPENDIX F

EXAMPLE CELLULAR CONFINEMENT SYSTEM AND TYPICAL DETAIL
Standard/ Generic detail
transition ramp from existing levels

Treated timber edging or similar specified by others.

Final surface & thickness to be confirmed as per client detail

Filling material/ infill concrete or subbase type 1 (overfill Geoweb®: 25 mm)

Greenfix TRP4000, non-woven geotextile

Geoweb® TRP 100mm with infill 4-20mm clean angular stone and overfill (25 mm)

Greenfix TRP4000, non-woven geotextile

Existing sub-grade

Note: 3 or 4 cells filled with concrete or subbase type 1

Adjacent Geoweb units to be joined with Atra-keys.
Geoweb Tree Root Protection Installation Guide

Installation Recommendation

1. Preparation of the subgrade ready for Geoweb tree root protection no dig solution. Whilst inside the tree rooting area, all actions must ensure no detrimental effect on the ground condition. The tree rooting area is the surface which is being protected

   • Removal of surface vegetation using prior agreed methods with local authority. No methods of removal which will cause compaction to the subgrade can be used. This includes the use of plant, vehicles and machinery. Examples of appropriate methods include hand tools or herbicide

   • When creating a level subgrade, do not grade off humps or level off through compaction, as these may contain tree roots. Rather infill hollows with a permeable material such as clean stone or sharp sand to create a level surface.

   • All external debris, such as rocks and waste, should be removed

   • When an existing hard surface is scheduled for removal, care should be taken not to disturb tree roots that may be present beneath. Hand held tools or appropriate machinery should be used to remove the existing surface, working backwards over the area so not trafficking the exposed area

2. TRP4000 Non-woven Geotextile

   • Lay out the TRP4000 over the prepared area, overlapping joins by a minimum of 300mm, dependent on soil conditions

   • When overlapping the TRP4000, ensure the overlap is in the same direction as the Geoweb will be extended. This will ensure the geotextile does not pull up when extending the Geoweb

   • If a site specific solution has been provided by Greenfix which includes a sub-base, this will require installation through non compaction methods

3. Installation of the Geoweb panels

   • Lay out the collapsed Geoweb on the TRP4000 and secure at one end in the middle of the width.

   • Extend the panel to 6.6m length, and secure its length at the other end

   • Extend the width of the Geoweb to 2.6m wide, and secure each corner

   • Ensure the panel is secured at 6.6m x 2.6m, as this will achieve the 259mm by 224mm cell diameter required.

4. Connection of the panels to create one single mattress

   • All panels must be adjoined to one another both side by side and end to end

   • Simply connect the Geoweb with the supplied ATRA® keys, through the aligned slots
1. Infill of the Geoweb for tree root application
   - Compacted, non-porous material, such as M.O.T. Type 1 / crushed stone with fines should not be used for tree root protection
   - Infill Geoweb panel with 4-20mm clean angular stone, ensuring Geoweb is not visible and is overfilled by a minimum 25mm. Plant and tracked vehicles should not drive on exposed Geoweb as this will lead to tearing and damage.
   - Infill towards the tree, using the filled Geoweb cells as the working platform
   - For a stone specification sheet please contact Greenfix ltd go to www.greenfix.co.uk

2. Compaction of the infilled material
   - Compaction of the Geoweb system is not required on generic site conditions, as the infill will secure its own level when trafficked over a short time
   - If on poor / site specific conditions, complete 4 passes of a non-vibrating, smooth wheeled roller over the 25mm overfill. Refill and roller as necessary to ensure a 25mm surcharge remains

3. Edging options
   - Where edging is required for light structures, such as footpaths, above ground peg and treated timber edging may be acceptable. Where areas of hard surface require edge support, the use of pinned sleepers, gabions or non-invasive haunch kerbing can provide appropriate solutions.
   - For recommendations and details (CAD or PDF), please contact Greenfix for assistance

4. Surface options available
   - Geoweb acts as a sub-base to all available surfaces on the market, including asphalt, block-paving, resin bound, grass vegetation or gravel etc.
   - For tree rooting areas, the surface must be porous unless approved otherwise by local authority.
   - For details of surface options please contact Greenfix for assistance

Additional Greenfix services available

For an on-site installation visit on the day of installation on any purchase of Geoweb TRP, please contact Greenfix for recommendations and support.

Site specific calculations and technical recommendations are also available via Greenfix.

Greenfix can offer an on-site visit to recommend correct installation to the calculated recommendation if it has been complete via Greenfix