
For Land at Billing Brook Road, Thorplands, Northampton NN3 8AG.

Produced by Dan MacIntyre, Arboricultural Consultant for MacIntyre Trees.

<table>
<thead>
<tr>
<th>Date</th>
<th>June 2019</th>
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<td>Report Ver.</td>
<td>1795_Fv2</td>
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SUMMARY

This report focuses on an area of open space on Billing Brook Road, opposite Thorplands Primary School. Click [here](#) to be taken to site location on [Google Maps](#).

There are numerous groups of trees around the site and sporadic individuals. The most significant tree is a mature English Oak (T19), which is well-formed, free from any significant defects and would have once stood as part of the original agricultural landscape that existed before the estate was constructed. Because of this, it has high historical value as well as numerous ecological and environmental benefits, along with very strong landscape qualities.

A new sheltered housing scheme is proposed, consisting of a small number of bungalows and landscape areas. A road, off Billing Brook Road, is also required, and part of this will need to be constructed using a cellular confinement system and shallow excavation, using air spades, to minimise damage to the Oak tree, T19.

A small number of trees will need to be removed. These are predominantly category C specimens, and none are prominent or impressive features. Their loss will not be of great detriment to the landscape.

The image below shows the tree T19 in the centre, viewed from south of the site.

![Image of tree T19](#)

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1 Map data © 2019 Google
1. **INTRODUCTION**

1.1. I have been instructed, by Mr W Jacobs, of Northampton Partnership Homes, to carry out a tree survey at an area of open space off Billing Brook Road in Northampton. The survey area was defined by plans provided by the client, and it was carried out in accordance with the British Standard, BS 5837:2012\(^2\).

1.2. I carried out a tree survey in January 2019, and this report was compiled in May 2019. I can confirm that I am a 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 any impacts to trees that may occur as part of the proposed development.
   - Provide mitigation and protection measures to be followed during construction to minimise impacts to trees.

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.

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2. SITE

2.1. The survey focused on trees at an area of open space opposite Thorplands primary school, off Billing Brook Road. The land slopes down from north to south, with the northern portion set on a prominent hillock. Early maturing trees surround much of the site, alongside footpaths and on the main footprint of the open space. Numerous trees have been removed since the survey in January 2019, and these were comprised of trees of a similar age and genus that still surround much of the open space.

2.2. This link to Google Maps\(^3\) shows the site viewed from the southern boundary, on Billing Brook Road: https://goo.gl/maps/jHDmFexLxdCWRbXS8 (image date is June 2018).

2.3. Information taken from the British Geological Survey Data web site indicates that the site straddles Northampton Sand formation and Whitby Mudstone formation, with no superficial deposits recorded. Engineering input may be required to ensure that foundation depths are adequate when considering the adjacent trees and soil types. Proposed trees will also need to be considered as part of this exercise.

2.4. 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.

2.5. 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.

2.6. 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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Map Data © 2019. Google Inc. image date June 2011
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, with the aid of any topographical survey data.

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 trees 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>BSS837:2012 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 10 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 development activities do not harm trees. 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. A total of 28 individual trees and 7 groups of trees were recorded. Details of these are shown at Appendix B, Tree Data Tables.

4.2. The western boundary of the site is bordered by numerous Willow and Maple trees – collectively plotted as group G11. These form a good screen and green element alongside Billing Brook Road, but some of the Willow were noted as being in poor structural condition. I recommend that ongoing tree inspections take place here to ensure that none pose an unacceptable risk to the highway or new development.

4.3. One tree, T29, growing at the southern end of G11, had already suffered failure of a large primary limb and the complete removal of this limb is recommended, irrespective of any development aspirations of the site.

4.4. A footpath borders the northern boundary, and trees grow in the grass open space alongside the path. The majority are small, young trees, including Ash, Maple, Elder, and Holly. One Alder tree (T9) is present on the northern corner, and this is a well-formed specimen that is in good condition and is capable of making a good contribution to the area for a substantial amount of time.

4.5. Tree group G8 borders the southern boundary, and this consists of Lime, Birch, Whitebeam, and Maple species. They grow adjacent to an access footpath and offer good screening from the properties, which lie to the south-east.

4.6. The most prominent tree recorded is a mature English Oak which grows in the southern portion of the site. This is a fine and healthy tree which predates the surrounding estate by many years and is most likely to have been part of a hedgerow within the rural landscape. It grows halfway down the highpoint of the site, which slopes down to the south and is a key feature of the open space.

4.7. Root morphology is difficult to predict without further investigation, but because of the topography, it is likely that the roots of the tree extend further to the south-west, following the favourable moisture flow. The prevailing winds, from the south-west, means that tree roots would have also grown preferentially on the south-west side to provide stability.
5. IMPACT ASSESSMENT

5.1. The proposal is to construct 8no. bungalows and a management suite, to form a sheltered housing scheme in the northern portion of the open space. A new access road will be required, and numerous design iterations were assessed with regard retaining the key arboricultural features on site, while still working with the existing topography and housing requirements. Services will be routed down the slope to the south, to exit onto Billing Brook Road.

TREE REMOVALS

5.2. Five individual trees, and eight smaller trees, from within an existing group, will need to be removed to facilitate the design or because they are in such a poor condition. Tree removals are highlighted red on the Tree Data Table, Appendix B, and with red circles on the Tree Removal Plan, Appendix D. The partial group removal is highlighted orange on the Tree Data Table.

5.3. Three of the individual trees that require removal are category C; this includes tree T10 and T30-32. These are mostly small specimens which need to be removed to enable installation of the boundary security fence and regrading of the main development footprint. Their contribution to the surrounding landscape is currently limited, and so the visual impacts caused by their loss is negligible.

5.4. Two of the individual trees are category U - T29 and T30. This is because they are either dead or in such poor structural condition that they are unlikely to survive beyond the short term. Again, their loss will be of no great detriment to the area.

5.5. Eight trees from the northeastern part of group G11 will need to be removed because a security fence will need erecting, and the surrounding land will be regraded. They are predominantly smaller, self-seeded trees which stand as part of a larger group that offers screening from the western aspect. This screening will remain intact because the larger Willow and Maple trees, which grow closer to Billing Brook Road, can be retained and protected. As such, their removal will not increase views into and out of the site and will not significantly impact the surrounding landscape.

PRUNING

5.6. Some of the lower, drooping, growth from the Oak tree, T19, will need to be pruned on the south side only, where it overhangs the proposed road. Pruning of smaller diameter secondary growth should be carried out, and an elevated platform may be required to do this. Providing this is carried out by competent and suitably qualified arboricultural contractors, then the impacts to tree health and amenity will be negligible.

POSSIBLE ROOT IMPACTS

5.7. The proposed site entrance passes over the root protection area of tree T19 on its southern side. As roots here are likely to be more prevalent and crucial to normal tree function, the impacts of normal road construction would be extremely detrimental to its health. Numerous road layouts were assessed to avoid passing over the rooting area of T19, and to achieve safe and feasible access. The retention of group G8, which provides screening along the southern boundary, was also an important aim and so the most feasible option was to follow the route shown.

5.8. The use of a zero-excitation, three-dimensional cellular confinement system (CCS) road construction was explored with a geo-synthetics manufacturer, and whilst this is possible the existing topography,
and the need to achieve certain falls means that some shallow excavation is likely to be required. The area where CCS is to be used is annotated on the Tree Removal and Protection Plan at Appendix D.

5.9. It is hoped that excavation would only be on the north side of the proposed road and only to around 200mm depth. This could be achieved using compressed air lances, to avoid indiscriminate root damage, and as Oak are known to be a deep rooting species, it is hoped that root loss would be minimal. This is considered preferable to traditional road construction, which would likely cause significant root damage as well as reduce permeability and increase surface water run-off.

5.10. Any roots encountered would need to be pruned, but at this distance from the tree and to relatively shallow depths, this will not affect the stability of the tree. There is potential for some health impacts, depending on the amounts of roots encountered, and so a programme of watering will need to be implemented post-road construction. This will go some way to lessen impacts and, providing roots are pruned sympathetically, will hasten new root growth. Details of how this will be carried out are provided in Section 7.

5.11. Drainage and street lighting can be installed on the south side of the road, and while this will affect two trees in group G8, it would avoid any significant root damage to tree T19, which is considered preferable. The excavation to install services near the group will need to be carried out under arboricultural supervision following the guidance in Section 7.

5.12. The exact specification of CCS depth will need to be confirmed by the manufacturers, and some site investigations will be required to gain a greater understanding of the current soil bearing ratio so that the correct depth of system can be specified and to confirm the need for any excavation. However, initial investigations with the manufacturer lead me to believe that a 200mm deep system would be most appropriate for the site use and construction.

5.13. The development phasing plan and timings of operation have not been released yet, but ideally the road construction would take place first and serve as the main access into the site. If this is not the case, then robust track mats will be required along the course of the road. Ideally, the section of CCS Road would be installed first and then the traditional road constructed to join either end. This will ensure ground conditions around the tree are not unduly affected by additional construction traffic.

5.14. The final surface of the CCS will also need to be confirmed, but there are numerous surface options available that maintain permeability, and these should be considered in preference to traditional road finishes.

5.15. The proposed road also pass within the root protection area on the north side of tree T19. This incursion here is very small (<2m²) and even though it is likely the tree has rooted preferentially to the south and west it does not completely rule out the possibility of roots extending to the north. Given the age of the tree, this is a possible scenario.

5.16. However, the loss of this small area of tree roots is considered to be tolerable when considering the its good health, likely root morphology and the proposed road construction to the south, which will maintain permeability and avoid compaction. A precautionary approach to works in this area should be followed and excavation should be carried out under the supervision of an appointed arboricultural consultant.

5.17. Underground services will be routed from the south of the sheltered housing scheme, down the slope to join existing services on Billing Brook Road. This will not affect any retained trees.
**FUTURE CONSIDERATIONS AND POST DEVELOPMENT PRESSURE**

5.18. There is adequate spatial separation between the proposed dwellings and retained trees, and so no post-development pressure is envisaged.

5.19. Removal of trees along the western flank of the proposed sheltered housing offers an opportunity for replanting in this area. Small to medium-sized trees which offer good seasonal interest and pleasant flowering qualities are recommended, as this will complement the proposed site use. Species such as ornamental Cherry, Whitebeam varieties, Persian Ironwood, Judas tree, ornamental Hawthorn or Pride of India would all make suitable candidates for replacement planting.

5.20. There are also opportunities for replanting alongside the eastern flank, and in the grass space near the turning head, opposite 46 Water Pump Court, and this has been incorporated into the landscape design.

5.21. Suitable ground conditions and aftercare are vital to the success of new trees, and the recommendations provided in the British Standard, BS 8545\(^4\) and the Trees and Design Action Group publication – Trees in The Hardscape\(^5\) 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 aftercare can be provided if required.

**CONCLUSION**

5.22. The proposed development is largely acceptable when considering the adjacent trees. The removal of a section of the small number of trees will not have a great or lasting impact on the surrounding landscape or residential area. The key features, tree T19 and group G8, can be protected but special construction measures and supervision of excavation near trees will be required to ensure root loss is kept to a minimum and carried out sympathetically.

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6. PROTECTION OF RETAINED TREES

6.1. Tree removals and pruning should take place before any site preparation commences.

6.2. Once tree removals and pruning are complete, the tree protection fencing will need to be installed, to the positions as shown at Appendix D - Tree Removal and Protection Plan, and signs fixed to every third panel. No other site preparation or construction work should take place until all fencing is in place. Dimensions are provided on the tree removal and protection plan to enable setting out, and this should be checked by the appointed arboricultural consultant.

6.3. The fencing should consist of a series of heras panels set on concrete feet which have been fixed in position using ground pins. Supporting struts should also be fixed to the backside of the fence to ensure it does not fall in high winds or during impacts. A fence specification has been provided at Appendix E.

6.4. 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 30m 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.
   - Any concrete silos, water stations, or wheel washing stations to have protective bunds constructed around them.
   - 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 superstructures are complete.
7. ARBORICULTURAL METHOD STATEMENT – TIMINGS

7.1. A pre-commencement site meeting should take place before any works. Attendees should include an appointed arboricultural consultant, arboricultural contractor, construction manager, and/or project manager. Tree removals should be marked up, and pruning agreed between all parties, as per approved documents. Tree fence locations should also be marked, or pegged out on site, to enable correct installation.

7.2. Tree removals and pruning should take place before any other site works; Tree works include:

- **T10 Ash, T29 Willow, T30 Dead tree, T31 and T32, both Norway Maple** – Remove all to ground and grind stumps to 200mm depth.
- **Eight trees within group G8** – mostly self-set Ash and Maple and two larger Willow – Remove all to ground and grind stumps to 200mm depth.
- **Prune secondary and drooping growth from tree T19 on the south side only and only where it overhangs the proposed road. Remove any larger deadwood.** A mobile elevated platform may be required for this element.

7.3. Tree protection fencing should then be installed as described in the previous section and shown on the Tree Protection Plan. The fence location and distances should be signed off by the appointed arboricultural consultant.

7.4. Details of each element of arboricultural supervision should be recorded in writing and circulated to all parties if any issues are encountered. An example recording form is provided at Appendix H.

7.5. **No other site works should start until the above elements are complete.**

**Entrance Road**

7.6. Ground protection mats (Appendix I) should be installed around along the course of the proposed road if construction traffic is required prior to the construction of the road.

7.7. Construction of the c. 25m section of road to the south of tree T19 will need to be carried out under the supervision of an appointed arboricultural consultant, using a cellular confinement system, (CCS). A 200mm deep system is assumed, but a site-specific investigation by manufacturers will be required before they confirm this is the case. The system should be infilled with the specified stone as detailed at Appendix F; further details of installation methodology are also provided here. The use of the correct stone is imperative as this achieves permeability and load bearing capability.

7.8. Shallow excavation along the north side of this section of road road will be required, and this should be carried out by arboricultural contractors, or appointed consultant, using compressed air lances (air spade) to expose soil to the depth required (around 200 mm).

7.9. Once roots are exposed, they should be pruned, by the arboricultural consultant, using sharp and clean secateurs or loppers. The cut will leave a clean surface and be perpendicular to the parent root and setback from the trench edge. Any exposed roots should have a c.20mm deep layer of sharp sand (not builders sand) laid over it before they become desiccated. Excavation with the air spade should be carried out in short sections so that roots are not left exposed to the elements for any substantial period of time (> 10 minutes). Adequate water, sand, and geotextile will need to be on site for this element and works should not take place if these materials are not available.
7.10. Once the required depth is achieved, the exposed ground and sand should be lightly watered, and a layer of geotextile be pegged out to receive the CCS in accordance with the manufacturers’ installation instructions.

7.11. A permeable surface can then be installed as wearing course. The exact finish is still to be confirmed. It is recommended that 25mm overfill is achieved on the CCS and that track mats are used as a wearing course during construction.

7.12. Excavation for the drainage and electrical services along the southern part of the road, near group G8, should also be carried out using air spade, to expose roots and allow proper and clean pruning to the south side of the trench. Roots should be pruned as detailed above.

7.13. Excavation on the north side of tree T19 can also be carried out using air spade, as described above.

7.14. A written record should be kept of each of the above excavation elements, detailing locations, quantities, depth, and size of roots encountered. A photographic record is also recommended to be kept.

7.15. On completion of all the excavation and installation of road and drainage a schedule of watering around these areas is recommended, this will be particularly important if works are carried out during dry summer months. Watering frequency and quantities will be dependent on prevailing weather, ground conditions and quantities of roots encountered, but at least three visits are recommended, the first within 5 days after excavation. This will greatly help the pruned roots re-establish and new root growth to become established.

7.16. The remaining road and development can be constructed following traditional methods.

7.17. At least one interim visit from an appointed arboricultural consultant is recommended, to ensure tree protection is in place to correct positions and to assess the surrounding trees. Details and findings of any visit should be recorded on the form provided at Appendix I.
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 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, presence of pests, diseases or pathogens and expected tree growth rates for species and age of 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 possibility of infestation of pests or pathogen present.
- **Dead** – Little or no live growth. Unlikely tree will survive into following 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 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.
### TREE DATA TABLE

#### Key to Inspection Report Form

<table>
<thead>
<tr>
<th>Ref No.</th>
<th>Tree, group or hedge number, to correspond with tree plans</th>
</tr>
</thead>
<tbody>
<tr>
<td>Species</td>
<td>Genus and variety, common names 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>Estimated 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>Age Class</td>
<td>Y – Young    EM – Early mature</td>
</tr>
<tr>
<td></td>
<td>SM – Semi Mature  M –Mature  V – Veteran</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>
</tbody>
</table>
### Tree Survey Data

<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>T1</td>
<td>Black pine</td>
<td>560</td>
<td>15</td>
<td>4</td>
<td>5</td>
<td>3</td>
<td>4</td>
<td>3</td>
<td>Good</td>
<td>Good</td>
<td>SM</td>
<td>No indicators of decay, disease or dysfunction noted. Beyond site boundary, on opposite side of overpass. Part of larger group extending to south along road.</td>
</tr>
<tr>
<td>T2</td>
<td>Common lime</td>
<td>400</td>
<td>15</td>
<td>2</td>
<td>4</td>
<td>4</td>
<td>2</td>
<td>6</td>
<td>Fair</td>
<td>Good</td>
<td>EM</td>
<td>No significant defects noted. Poor form as result of pruning on east side.</td>
</tr>
<tr>
<td>T3</td>
<td>Holly</td>
<td>80</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>Good</td>
<td>Good</td>
<td>EM</td>
<td>Small holly tree.</td>
</tr>
<tr>
<td>T4</td>
<td>Sycamore</td>
<td>100</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>Good</td>
<td>Good</td>
<td>EM</td>
<td>Sycamore self set.</td>
</tr>
<tr>
<td>T5</td>
<td>Whitebeam</td>
<td>340</td>
<td>14</td>
<td>2</td>
<td>4</td>
<td>3</td>
<td>6</td>
<td>0</td>
<td>Fair</td>
<td>Fair</td>
<td>SM</td>
<td>Twin stemmed from around 2m. Asymmetric crown form with bias to east. Numerous pruning wounds and stubs, some developing into small rot holes.</td>
</tr>
<tr>
<td>T6</td>
<td>Whitebeam</td>
<td>340</td>
<td>11</td>
<td>3</td>
<td>5</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>Fair</td>
<td>Fair</td>
<td>SM</td>
<td>Large pruning wound on south side, advanced decay within. Poor shoot extension and form.</td>
</tr>
<tr>
<td>T7</td>
<td>Whitebeam</td>
<td>360</td>
<td>11</td>
<td>2</td>
<td>5</td>
<td>4</td>
<td>5</td>
<td>0</td>
<td>Fair</td>
<td>Fair</td>
<td>SM</td>
<td>Asymmetric crown form with bias to east.</td>
</tr>
<tr>
<td>T8</td>
<td>Elder</td>
<td>150</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>Fair</td>
<td>Fair</td>
<td>M</td>
<td>Some branch breakage through crown. Small pleasant feature but unlikely to thrive.</td>
</tr>
<tr>
<td>T9</td>
<td>Common alder</td>
<td>460</td>
<td>16</td>
<td>4</td>
<td>6</td>
<td>5</td>
<td>4</td>
<td>5</td>
<td>Good</td>
<td>Good</td>
<td>SM</td>
<td>No indicators of decay, disease or dysfunction noted. Well formed individual on mound next to pathway.</td>
</tr>
<tr>
<td>T10</td>
<td>Common ash</td>
<td>120</td>
<td>5</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>Good</td>
<td>Good</td>
<td>EM</td>
<td>Stem has been vandalised with axe or knife in past but most wounds occluding well.</td>
</tr>
<tr>
<td>T11</td>
<td>Norway maple</td>
<td>400</td>
<td>18</td>
<td>7</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>Poor</td>
<td>Good</td>
<td>SM</td>
<td>Poor form slender specimen with large wounds either side of stem from base to around 1m. Limited long term potential. Will not tolerate removal of trees to south.</td>
</tr>
<tr>
<td>T12</td>
<td>Norway maple</td>
<td>420</td>
<td>17</td>
<td>4</td>
<td>8</td>
<td>9</td>
<td>4</td>
<td>4</td>
<td>Good</td>
<td>Good</td>
<td>SM</td>
<td>Good condition tree albeit with somewhat open crown form.</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.

<table>
<thead>
<tr>
<th>Cat</th>
<th>Sub Cat</th>
<th>ULE (years)</th>
<th>Root Protection Radius (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>B 1,2</td>
<td>20-40</td>
<td>6.7</td>
<td></td>
</tr>
<tr>
<td>B 2</td>
<td>40+</td>
<td>4.8</td>
<td></td>
</tr>
<tr>
<td>C 1</td>
<td>20-40</td>
<td>1.0</td>
<td></td>
</tr>
<tr>
<td>C 1</td>
<td>40+</td>
<td>1.2</td>
<td></td>
</tr>
<tr>
<td>C 1</td>
<td>'10-20</td>
<td>4.1</td>
<td></td>
</tr>
<tr>
<td>C 1</td>
<td>'10-20</td>
<td>4.3</td>
<td></td>
</tr>
<tr>
<td>C 1</td>
<td>'10-20</td>
<td>1.8</td>
<td></td>
</tr>
<tr>
<td>A 1</td>
<td>40+</td>
<td>5.5</td>
<td></td>
</tr>
<tr>
<td>C 1</td>
<td>20-40</td>
<td>3.4</td>
<td></td>
</tr>
<tr>
<td>C 1</td>
<td>'10-20</td>
<td>4.8</td>
<td></td>
</tr>
<tr>
<td>B 1</td>
<td>20-40</td>
<td>5.0</td>
<td></td>
</tr>
</tbody>
</table>
### Tree Survey Data

<table>
<thead>
<tr>
<th>Ref No.</th>
<th>Species</th>
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<th>Ht (m)</th>
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<th>W</th>
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<th>PC</th>
<th>Age Class</th>
<th>Comments</th>
<th>Cat</th>
<th>Sub Cat</th>
<th>ULE (years)</th>
<th>Root Protection Radius (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>T13</td>
<td>Norway maple</td>
<td>460</td>
<td>15</td>
<td>4</td>
<td>7</td>
<td>3</td>
<td>5</td>
<td>3</td>
<td>5</td>
<td>Good</td>
<td>SM</td>
<td>Hard pruned on south side to clear building. Poor union also on main southern primary limb.</td>
<td>C</td>
<td>1</td>
<td>20-40</td>
<td>5.5</td>
</tr>
<tr>
<td>T14</td>
<td>Norway maple</td>
<td>380</td>
<td>16</td>
<td>4</td>
<td>6</td>
<td>5</td>
<td>0</td>
<td>5</td>
<td>Fair</td>
<td>Good</td>
<td>SM</td>
<td>Asymmetric crown form due to suppression. Unremarkable individually but does make valid contribution as group feature.</td>
<td>B</td>
<td>1,2</td>
<td>20-40</td>
<td>4.6</td>
</tr>
<tr>
<td>T15</td>
<td>Norway maple</td>
<td>500</td>
<td>15</td>
<td>3</td>
<td>6</td>
<td>3</td>
<td>6</td>
<td>7</td>
<td>Fair</td>
<td>Good</td>
<td>SM</td>
<td>Well formed pleasant tree which unfortunately has been vandalised by an attempt to fell the tree. Wound beginning to occlude though.</td>
<td>B</td>
<td>1,2</td>
<td>20-40</td>
<td>6.0</td>
</tr>
<tr>
<td>T19</td>
<td>English oak</td>
<td>900</td>
<td>15</td>
<td>3</td>
<td>11</td>
<td>11</td>
<td>10</td>
<td>9</td>
<td>Good</td>
<td>Good</td>
<td>M</td>
<td>Prominent and well formed tree with good potential. Growing on sloping area of grassed open space with levels becoming steeper to north. Tree pre-dates surrounding estate so is good historical feature as well as providing good amenity, environmental and ecological value.</td>
<td>A</td>
<td>1,2,3</td>
<td>40+</td>
<td>10.8</td>
</tr>
<tr>
<td>T20</td>
<td>Norway maple</td>
<td>300</td>
<td>14</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td>0</td>
<td>4</td>
<td>Poor</td>
<td>Fair</td>
<td>SM</td>
<td>Tree growing in private garden. Access restricted so dimensions and position estimated. Has been severely and poorly pruned on east side.</td>
<td>C</td>
<td>1</td>
<td>'10-20</td>
<td>3.6</td>
</tr>
<tr>
<td>T21</td>
<td>Norway maple</td>
<td>200</td>
<td>6</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>4</td>
<td>3</td>
<td>Fair</td>
<td>Fair</td>
<td>EM</td>
<td>Access to stem restricted, diameter estimated in private garden.</td>
<td>C</td>
<td>1</td>
<td>20-40</td>
<td>2.4</td>
</tr>
<tr>
<td>T22</td>
<td>Rowan</td>
<td>140</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>Poor</td>
<td>Poor</td>
<td>SM</td>
<td>Almost dead standing tree. No potential.</td>
<td>U</td>
<td></td>
<td>&lt;10</td>
<td>1.7</td>
</tr>
<tr>
<td>T23</td>
<td>Wild cherry</td>
<td>500</td>
<td>15</td>
<td>2</td>
<td>5</td>
<td>7</td>
<td>6</td>
<td>5</td>
<td>Fair</td>
<td>Fair</td>
<td>M</td>
<td>Tree has been poorly pruned on south side to clear garden. Some remedial pruning required and pruning to clear building recommended. Some bleeds on stem but otherwise a good feature which can continue to provide positive amenity if pruned.</td>
<td>B</td>
<td>1</td>
<td>20-40</td>
<td>6.0</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.

MacIntyre Trees
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<tr>
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<th>Comments</th>
<th>Cat</th>
<th>Sub Cat</th>
<th>ULE (years)</th>
<th>Root Protection Radius (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>T24</td>
<td>Silver maple</td>
<td>790</td>
<td>22</td>
<td>2</td>
<td>11</td>
<td>10</td>
<td>12</td>
<td>10</td>
<td>Fair</td>
<td>Good</td>
<td>M</td>
<td>Extremely large and prominent maple in highway verge. Multi stemmed form from around 2.5m. Sunken area of bark on north west side of trunk could be underlying wound. Some further investigation into this would be prudent.</td>
<td>A</td>
<td>1</td>
<td>40+</td>
<td>9.5</td>
</tr>
<tr>
<td>T25</td>
<td>Whitebeam</td>
<td>280</td>
<td>9</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>Fair</td>
<td>Fair</td>
<td>SM</td>
<td>No significant defects noted. Suppressed form</td>
<td>C</td>
<td>1,2</td>
<td>20-40</td>
<td>3.4</td>
</tr>
<tr>
<td>T26</td>
<td>Whitebeam</td>
<td>300</td>
<td>8</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>4</td>
<td>3</td>
<td>Fair</td>
<td>Fair</td>
<td>SM</td>
<td>As previous</td>
<td>C</td>
<td>1</td>
<td>10-20</td>
<td>3.6</td>
</tr>
<tr>
<td>T28</td>
<td>Common lime</td>
<td>310</td>
<td>13</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>Good</td>
<td>Good</td>
<td>EM</td>
<td>Becoming suppressed by willow to north, leading to poor form.</td>
<td>B</td>
<td>1,2</td>
<td>40+</td>
<td>3.7</td>
</tr>
<tr>
<td>T29</td>
<td>White willow</td>
<td>510</td>
<td>21</td>
<td>3</td>
<td>3</td>
<td>7</td>
<td>6</td>
<td>6</td>
<td>Poor</td>
<td>Fair</td>
<td>M</td>
<td>Numerous branch failures. Main southern primary limb has split at union. Recommend removal of this limb from safety aspect within next 6 weeks.</td>
<td>U</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>6.1</td>
</tr>
<tr>
<td>T30</td>
<td>Norway maple</td>
<td>200</td>
<td>7</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>Dead</td>
<td>Dead</td>
<td>M</td>
<td>Dead standing tree. Should be removed.</td>
<td>U</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>2.4</td>
</tr>
<tr>
<td>T31</td>
<td>Norway maple</td>
<td>80</td>
<td>4</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>Good</td>
<td>Good</td>
<td>Y</td>
<td>Small multi stemmed self seeded tree.</td>
<td>C</td>
<td>1</td>
<td>40+</td>
<td>1.0</td>
</tr>
<tr>
<td>T32</td>
<td>Norway maple</td>
<td>50</td>
<td>4</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>Poor</td>
<td>Fair</td>
<td>Y</td>
<td>Small self seeded tree which has been repeatedly cut near base and now forms scrubby looking multi stemmed form.</td>
<td>C</td>
<td>1</td>
<td>20-40</td>
<td>0.6</td>
</tr>
<tr>
<td>T33</td>
<td>Common ash</td>
<td>80</td>
<td>4</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>Good</td>
<td>Good</td>
<td>Y</td>
<td>Small self seeded ash.</td>
<td>C</td>
<td>1</td>
<td>40+</td>
<td>1.0</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.

MacIntyre Trees
# Tree Survey Data

<table>
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<tr>
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<th>S</th>
<th>E</th>
<th>W</th>
<th>SC</th>
<th>PC</th>
<th>Age Class</th>
<th>Comments</th>
<th>Cat</th>
<th>Sub Cat</th>
<th>ULE (years)</th>
<th>Root Protection Radius (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>Small group of pine on steep bank by overpass bridge. Continuation of thematic landscape scheme along edge of open space. Some individuals within group becoming multi stemmed and poorly formed. Selective thinning would benefit group.</strong></td>
<td>B</td>
<td>2</td>
<td>40+</td>
<td>see plan</td>
</tr>
<tr>
<td>G2</td>
<td>Elder</td>
<td>80</td>
<td>3</td>
<td>0</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>Small cluster of elder shrubs.</strong></td>
<td>C</td>
<td>1</td>
<td>20-40</td>
<td>see plan</td>
</tr>
<tr>
<td>G3</td>
<td>Elder, Holly</td>
<td>20</td>
<td>3</td>
<td>0</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>Small cluster of elder and holly self sets. Visually unremarkable.</strong></td>
<td>C</td>
<td>2</td>
<td>20-40</td>
<td>see plan</td>
</tr>
<tr>
<td>G4</td>
<td>Norway maple, common ash</td>
<td>400</td>
<td>17</td>
<td>3</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>Group of two Norway maple and one Ash next to footpaths with crowns that have coalesced. Ash tree (most northerly) has developed a long low lateral limb which extends to the west. This will be prone to failure if trees to south are removed.</strong></td>
<td>B</td>
<td>2</td>
<td>20-40</td>
<td>see plan</td>
</tr>
<tr>
<td>G5</td>
<td>Lawson cypress</td>
<td>130</td>
<td>4</td>
<td>0</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>Small line of four cypress, one of which is in garden, remaining three are in POS on edge of fence line.</strong></td>
<td>C</td>
<td>2</td>
<td>40+</td>
<td>see plan</td>
</tr>
<tr>
<td>G8</td>
<td>Whitebeam, Norway maple, Lime, Birch, London plane.</td>
<td>300</td>
<td>14</td>
<td>2</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>Linear group around park edge.</strong></td>
<td>B</td>
<td>2</td>
<td>20-40</td>
<td>see plan</td>
</tr>
<tr>
<td>G11</td>
<td>White willow, Norway maple, Whitebeam</td>
<td>400</td>
<td>18</td>
<td>2</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>Predominantly Willow group with sporadic Whitebeam and Maple throughout. Some small self sets on north east edge. Many willow in poor structural condition and should be assessed from safety perspective.</strong></td>
<td>B</td>
<td>2</td>
<td>20-40</td>
<td>see plan</td>
</tr>
</tbody>
</table>

Groups of Trees

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.

MacIntyre 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.

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Services to be routed down slope to exit onto Billing Brook Road.

Section of road to south of T19 (orange hatch) to be constructed using 3D cellular confinement system. Shallow excavation necessary, using air spade, to achieve required levels. (see accompanying report).

Excavation and level changes required in small sections shown with orange hatch. Supervised dig required - (see accompanying report).

Excavation for drainage on south side of road will affect two closest trees in G8. Excavation to be supervised by appointed arboricultural consultant. (see accompanying report).

Existing slope restricts construction traffic.

Fence to edge of footpath.

Fence to protect planting area.

Key

Individual Trees
- Existing crown spread with BS Category Colour.
- Root Protection Area (RPA)
- Tree trunk
- Tree removal symbol
Tree number: Red = 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 to canopy extent unless otherwise denoted with pink outline.
- Tree group number
Red = Removal, Blue = Pruning required, Black = Retain
- Tree Protection Fenceline
- Area of RPA incursion

BS 5837 Category Colours
- BS5837 Category A
- BS5837 Category B
- BS5837 Category C
- BS5837 Category U

Map data shown contains Ordnance Survey ® products supplied by Northampton Partnership Homes under a third party sub-contractor agreement. © Crown Copyright and database rights from date shown above for 12 months Ordnance Survey ®.

Plan to be viewed in conjunction with accompanying report

Do not scale from this drawing.

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.

E: dan@macintyre-trees.co.uk
W: www.macintyre-trees.co.uk
T: 07843 564 984
heras® 151 and 151 steadfast system

Having invented the original concept of temporary fencing back in the 1950s, 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 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.

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 stabilised "Nova" 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 thisoster strut dramatically increases the stability of the fence.
- The strut fits neatly within the high visibility block allowing a neat and compact solution, and acts as an integrated anti-tilt device.
- 2 additional fixing points incorporated into the design allow for soil pipe and sandtroughs, 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.
a) Stabiliser strut with base plate secured with ground pins
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. CONTRAVENITION 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 F

CELLULAR CONFINEMENT SYSTEM EXAMPLE AND INSTALLATION METHODOLOGY
Standard/ Generic detail
transition ramp from existing levels

Greenfix TRP4000, non-woven geotextile

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

Greenfix TRP4000, non-woven geotextile

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)

Existing sub-grade

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

Adjacent Geoweb units to be joined with Atra-keys.

Project: Geoweb® transition ramp
Distributor: Greenfix soil stabilisation and erosion control
Date: 12.11.2015

Not to scale
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 hallows 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
APPENDIX H

SITE MONITORING FORM
## Arboricultural Site Monitoring Record

<table>
<thead>
<tr>
<th>Site Address:</th>
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</thead>
<tbody>
<tr>
<td>Planning Permission ref. and relevant conditions:</td>
</tr>
<tr>
<td>Appointed arb consultant details:</td>
</tr>
<tr>
<td>Owner/agent details:</td>
</tr>
<tr>
<td>Site foreman details:</td>
</tr>
<tr>
<td>Council tree officer details:</td>
</tr>
<tr>
<td>Relevant report and plan references:</td>
</tr>
<tr>
<td>Summary of arb supervision required:</td>
</tr>
</tbody>
</table>

Relevant Plan Clips:
## Arboricultural Site Monitoring Record

<table>
<thead>
<tr>
<th>Date of visit</th>
<th>Details of supervision, fence checks or any other tree issues</th>
<th>Issues to rectify</th>
<th>site foreman informed (Y/N)</th>
<th>Date rectified</th>
<th>Pictures or Pic ref.</th>
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<tbody>
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APPENDIX I

TRACK MAT SPECIFICATION
TuffTrack MD4 TrakMat®

- Manufactured from 100% recycled High Density Polyethylene (HDPE)
- Power cylinder tread surface provides impressive grip
- Hand holes for easy manoeuvrability
- Supports loads up to 90 tons*
- Available in black or green
- Smooth surface available
- Connector options available
- Man deployable
- Moulds to the ground due to its flexible construction
- Six-year limited warranty

### Specifications

<table>
<thead>
<tr>
<th>TRAKMAT®</th>
<th>A-WIDTH</th>
<th>B-DEPTH</th>
<th>WEIGHT</th>
<th>COLOUR</th>
</tr>
</thead>
<tbody>
<tr>
<td>TM24606</td>
<td>9’ (2.74m)</td>
<td>44.5” (1.13m)</td>
<td>79 lbs (35 kg)</td>
<td>Black</td>
</tr>
<tr>
<td>TM30606</td>
<td>9’ (2.74m)</td>
<td>53” (1.35m)</td>
<td>64 lbs (29.1 kg)</td>
<td>Black</td>
</tr>
<tr>
<td>TM22206</td>
<td>8’ (2.44m)</td>
<td>22” (0.56m)</td>
<td>30 lbs (13.6 kg)</td>
<td>Black</td>
</tr>
</tbody>
</table>

**Load Capacity**

100,000 lbs (453,597 kg)

Values depending on sub-surface.

TrakMat® has a load bearing capacity of up to 90 tons*. It is designed to allow large vehicles to easily traverse over grass, sidewalks, driveways and more without causing damage. TrakMat® prevents vehicles from getting stuck in muddy, wet, and unstable ground conditions and is ideal for use within construction, landscaping, utilities, events and leisure industries. TrakMat® has a flexible construction allowing the mats to contour along undulating or sloping ground conditions, preventing rutting or damage to turf. TrakMat® features a unique power cylinder tread surface to improve grip and forward motion of vehicles, with connector points on each corner, we can provide two or four-way tough urethane connectors and stay-put u-stakes to prevent mats from moving creating a firm trackway or workpad. The mat can easily be deployed by a two-person team due to its lightweight design weighing just 35 kg at its maximum size and 8.6 kg at its smallest. TrakMat® also features 2 hand holes along each long edge to ensure ease of handling. *Load bearing capacity is subject to ground conditions. Sizing is subject to a manufacturing variance of +/- 5%.
Product Description

TrakMat® has a load bearing capacity of up to 90 tons*. It is designed to allow large vehicles to easily traverse over grass, sidewalks, driveways and more without causing damage. TrakMat® prevents vehicles from getting stuck in muddy, wet, and unstable ground conditions and is ideal for use within construction, landscaping, utilities, events and leisure industries. TrakMat® has a flexible construction allowing the mats to contour along undulating or sloping ground conditions, preventing rutting or damage to turf. TrakMat® features a unique power cylinder tread surface to improve grip and forward motion of vehicles, with connector points on each corner, we can provide two or four-way tough urethane connectors and stay-put u-stakes to prevent mats from moving creating a firm trackway or workpad. The mat can easily be deployed by a two-person team due to its lightweight design weighing just 35 kg at its maximum size and 8.6 kg at its smallest. TrakMat® also features 2 hand holes along each long edge to ensure ease of handling. *Load bearing capacity is subject to ground conditions. Sizing is subject to a manufacturing variance of +/- 5%.