ARBORICULTURAL IMPACT ASSESSMENT ON LAND ADJACENT TO WYNGATES, BLOFIELD

Prepared for Wheatman Planning Ltd
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1. Terms of Reference

1.1 The aim of this assessment is to survey trees that may be affected by the construction of 64 dwellings on land off Wyngates, Blofield.

1.2 The assessment addresses the likely impact of the proposed development on surrounding trees and provides recommendations for the protection of the trees during construction work based on BS 5837:2012 “Trees in relation to design demolition and construction—Recommendations”.

1.3 A topographical survey of features on site was provided by the client. All tree positions were accurately marked on the plan. A PDF of the proposed site layout was also provided, and this has been merged with the Topographical survey to form the Tree Constraints Plan (TCP, Appendix 3) and Tree Protection Plan (TPP, Appendix 4).

1.4 According to research on the Broadland District Council website, the site is not part of a Conservation Area. No contact has been made to check with the council as to whether any of the trees have Tree Preservation Orders in place.

1.5 This report is an update of a Preliminary Arboricultural Impact Assessment (AIA) that was written by A.T. Coombes Associates prior to a design being available.

2. Site Description

2.1 The site consists of a large arable field. There are a small number of mature boundary trees, predominantly Oak although one large Sycamore is also present (Fig 1) on the eastern boundary with Wyngates. There are a further three mature boundary Oak trees on the northern edge of the site (Fig 2).

2.2 To the west of the site there is mixed woodland consisting mostly of broadleaves such as Oak, Sycamore and Ash (Fig 3). The boundary between the site and the woodland consists largely of Hawthorn and Myrobalan Plum. Along the southern boundary of the site are residential properties, some with small ornamental trees. The site is currently accessed from Wyngates, and surrounding this entrance are small areas of scrub (Fig 4) including several small self-sown Sycamore.
3. Tree Survey Details

3.1 Appendix 1, the Tree Survey Schedule gives the survey findings in tabular form. The schedule contains all the information specified in section 4.4.2.5 of the British Standard. Appendix 2 gives a full explanation of the survey headings. Please note these are subject to the variations set out in section 3.2 and 3.3.

3.2 The trees were surveyed on 23rd November 2012; they were not climbed, but surveyed from ground level.

3.3 The details recorded during the tree survey have been collected independently of any development proposals, and the categorisation of the quality and amenity value of the trees is made purely on arboricultural grounds.

3.4 No assessment of the soil has taken place as part of this report. The new British Standard states that a soil assessment should be carried out by a competent person to establish the structure, clay content and potential for volume change of the soil. In the case of construction of “No Dig” surfaces the California Bearing Ratio of the soil may also be significant. A survey of this nature is considered outside the scope of this Arboricultural Assessment. For guidance on soil structure in relation to construction advice should be sought from a Structural Engineer. Guidance on foundation depth in relation to building and trees can be found in NHBC Chapter 4.2.

4.0 Assessment of Tree Constraints

4.1 To facilitate the proper assessment of tree constraints a Tree Constraints Plan (TCP) has been prepared and forms Appendix 3 the plan has been produced as a basis for the assessment of the constraints imposed by existing trees on the proposed design.

4.2 Appendix 3 shows the position of trees marked by a coloured dot matching the retention category status and a reference number (as listed in Appendix 1). Heights (Ht) are marked in metres for each tree, together with the predicted ultimate heights (U/Hgt).
The plan deals with constraints that the trees may place on the development in two areas as follows:

4.4 **Below ground Constraints**

The Root Protection Areas (RPA) for the trees are shown as a coloured circle to match the retention category colour. The RPA will be used to help inform the closest positions of any future buildings. The RPA will be protected during any development work with temporary barriers as prescribed by the British Standard.

4.5 **Above Ground Constraints**

The branch spreads were measured at the four cardinal compass points, with a shape drawn around these points to indicate approximate branch spread, represented by green broken lines on the plan. The ultimate crown spread has been shown with an orange dashed line. This is a predicted distance, and is based on personal experience of how far it is likely the crown will grow.

4.6 A shade pattern has been shown for each tree forming an arc from north west to due east. This gives an indication of the patterns of shadows created by the trees around mid day in the summer. This is as recommended in BS5837:2012 (Section 5.2.2) but actual shade patterns throughout the year will vary widely. If shading is likely to be a serious constraint a more detailed analysis of shade pattern using proprietary software may be deemed necessary.

5. **Arboricultural Impact Assessment**

5.1 13 trees have been included in this report in addition to 3 tree groups. Three trees (T9, T10, T12 and T13) and two tree groups (G1, G2) are outside the boundaries of the site and under separate ownership. All other trees included within the report are presumed to be under the control of the client, although with most of the trees situated on the boundary of the site, this must be checked.

5.2 Two Oak (T2, T5) and the neighbouring woodland (G1) have been classified as category A trees. This is because they are felt to be of especially good quality, and they must be retained and protected as per BS5837:2012 during any development.

5.3 A further five trees (T1, T6, T7, T9, T10) have been placed in category B. These trees are worthy of retention, generally providing a role in the surrounding landscape and being in good condition, but not exceptional enough to justify being placed in category A.

5.4 The remaining 8 trees have been classified as C category, and include Sycamore, Oak, Cherry and a Weeping Beech. These trees are not worthy of being placed in a higher category, due to their size, condition or their condition being poorer than their counterparts. These are less important in the landscape, or are in poorer condition. Category C trees are of such quality and value that they are the least suitable category for retention within a development. However, all C category trees that are under separate ownership will be retained. All C category trees, where retained, must be
given the same level of protections as other retained trees during the development.

### 5.5

In order to fully assess tree constraints for each aspect of the development, they are considered separately below:

<table>
<thead>
<tr>
<th>Element</th>
<th>Detail</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plot 1</td>
<td>Plot 1 is in the same position as the C category Sycamore group G3. It will be necessary to remove these trees for development purposes and replaced as set out in section 6 below.</td>
</tr>
<tr>
<td>Plots 2 to 5</td>
<td>No tree constraints</td>
</tr>
<tr>
<td>Plot 6</td>
<td>The main dwelling is outside all tree constraints. However, the garage is within the shade pattern of the Cherry T11. Due to the utilitarian nature of the building this does not form a serious constraint.</td>
</tr>
<tr>
<td>Plot 7</td>
<td>No tree constraints</td>
</tr>
<tr>
<td>Plot 8</td>
<td>The main dwelling is outside all tree constraints. The garage is within the shade pattern of groups G1 and G2.</td>
</tr>
<tr>
<td>Plots 9 to 28</td>
<td>No tree constraints</td>
</tr>
<tr>
<td>Plot 29</td>
<td>This dwelling is within the shade pattern of the woodland G1. This needs to be mitigated by adequate fenestration, light gathering features or placing habitable rooms away from the shaded areas.</td>
</tr>
<tr>
<td>Plots 30 to 35</td>
<td>The dwellings are outside all tree constraints. There will be some shading from the woodland to the west of the tree. This needs to be mitigated by adequate fenestration, light gathering features or placing habitable rooms away from the shaded areas.</td>
</tr>
<tr>
<td>Plots 36 to 37</td>
<td>No tree constraints</td>
</tr>
<tr>
<td>Plot 38</td>
<td>The main dwelling is away from all tree constraints. The garage is within the shade pattern of the woodland G1 to the west. As a utility building this will not form a constraint.</td>
</tr>
<tr>
<td>Plot 39</td>
<td>The main dwelling is outside the major tree constraints, but may receive shading to its rear walls from the woodland G1.</td>
</tr>
</tbody>
</table>
The garage for this dwelling encroaches slightly within the RPA of G1. Therefore pre-emptive root pruning will be carried out to minimise the damage caused to roots, should they be present. This will be carried out by excavating the foundations in the area shown on the TPP using hand tools or an airspade. Any roots found during this excavation will be severed using a sharp handsaw or secateurs. This will ensure that the roots are not ripped or torn, and will have a good point from which to regrow, and will have a chance to occlude and prevent fungal pathogens from entering.

Once the root pruning has taken place, rootbarrier material will be put in place to prevent roots entering the foundation area, or any leachates from the wet concrete affecting the tree roots.

**Plots 40 to 41**

- The main dwelling is away from all tree constraints.
- The garage is within the shade pattern of the woodland G1 to the west. As a utility building this will not form a constraint.

**Plots 42 to 58**

- No tree constraints.

**Plot 58**

- The main dwelling is outside the major tree constraints.
- The garage for this dwelling encroaches slightly within the RPA of T2. Therefore pre-emptive root pruning will be carried out to minimise the damage caused to roots, should they be present. This will be carried out as set out for plot 39 above.

**Plot 59 to 64**

- No tree constraints.

**New Road Access**

- The new access road into the site will be from Wyngates off the Yarmouth Road in Blofield. The access point will require the removal of one of the C category group G3. These trees are low quality and self seeded, but will be replaced as set out in section 6 below.

- The road is largely outside the RPA of all trees on site, other than the car parking area for plots 30, 32 to 34 that are within the RPA of the woodland G1.

- To avoid disturbance to the ground within the RPA of these trees it will be necessary to construct the drive using a “No Dig” surface using “Cellweb” by Geosyn, Geocell by Terram or another proprietary three dimensional cellular confinement system. The areas in question have been marked with purple hatching on the Tree Protection Plan (TPP, Appendices 4). The best source of advice for the design and construction of this surface is the suppliers of
A.T. Coombes Associates Chartered Foresters and Consulting Arboriculturists
Arboricultural Impact Assessment on Land adjacent to Wyngates, Blofield;
Including Tree Survey Data, and a Tree Constraints Plan, all as Prescribed in BS5837:2012

such a system, or engineers experienced in designing no dig surfaces. Any design must be approved by the consulting arborist and the Local Authority Tree Preservation Officer. The construction of the no-dig surface will be supervised by the consulting Arboriculturist.

6. Tree Management and Replacement Planting

6.1 Work to trees has been specified in column 10 of Appendix 1 for arboricultural and health and safety reasons. This, however, does not refer to, and is superseded by, any requirements for tree felling for development purposes as set out in section 5 above. Work required for any trees to be retained must be carried out within 12 months or prior to the commencement of construction, whichever is sooner.

6.2 Any comments on the trees relating to health and safety remain valid for 12 months from the date of this report after which the trees will require re-inspection.
6.3 The development necessitates the removal of one C category group (G3) including three self sown Sycamore. They will be replaced on a one-for-one basis with heavy standards (12 to 14 cm stem diameter) and should include the following species:
   - Field Maple *Acer campestre* ‘Louisa Red Shine’
   - Hornbeam *Carpinus betulus* ‘Frans Fontaine’
   - Hawthorn *Crataegus laevigata* ‘Pauls Scarlet’

6.4 The heavy standard trees will be securely pit planted in a hole which has been excavated to at least 0.3m larger in all dimensions than the rootball of the tree, back-filled with fresh topsoil. The tree will supported with a treated softwood stake inserted at a 45 degree angle to the ground, avoiding the rootball. A rubber tie will secure the tree to the stake. A spiral guard will be wrapped around the lower stem to prevent mammal damage. Mulch will be placed around the tree at a diameter of 1m² to reduce weed growth.

6.5 All trees and new planting will be maintained for a 5 year period. Work will include keeping an area of 1m² around each tree free from weed growth using herbicide or mulch, checking all supports and guards and replacing any failures that occur during the period with trees of the same species and quality.

6.6 This planting will be carried out and incorporated into a wider landscaping scheme across the site.

7. **Further Arboricultural Input into the Design Process, Construction and Aftercare**

7.1 A Tree Protection Plan (TPP), Arboricultural Method Statement (AMS) and Timetable for implementation of Tree Protection Works form Appendices 4, 5 and 6 respectively.

7.2 The AMS contains a timetable for implementation of the tree protection works. No work will commence until the protective fencing is in place.

7.3 If any new designs are produced it will be necessary to revise this AIA and the AMS and TPP.

8. **Permissions and Constraints**

8.1 The site is not within a Conservation Area. It must also be ascertained whether any trees on site are protected by a Tree Preservation Order. If they are, the council must give written permission prior to the commencement of any works that may affect the condition of the trees.

8.2 To assist the planning process the LPA should be provided with a copy of this report and invited to comment on the proposals.
9. Conclusions

9.1 Throughout the course of this development, all A and B category trees will be retained and protected according to BS5837:2012.

9.2 Pre-emptive root pruning will be required where the garages of plots 39, 40, 41 and 58 encroach within the RPA of woodland G1 and Oak T2.

9.3 Shading from the woodland G1 will affect properties along the western edge of the site, and this must be considered when producing the details of the design, ensuring that maximum natural daylight can reach the habitable rooms.

9.4 No dig surfaces will be required to provide the parking spaces for plots 30, 32, 33 and 34.

9.5 One C category group will be removed for development purposes. The removed trees will be replaced with a mixture of trees that will quickly more than replace any lost biomass or visual amenity.

G. G. Robbie, BSc Hons For, Tech Cert Arbor A
A.T. Coombes Associates
19th February 2013
<table>
<thead>
<tr>
<th>Tree No.</th>
<th>Species</th>
<th>Ht (m)</th>
<th>Stem dia (mm)</th>
<th>No of Stems</th>
<th>Branch Spread</th>
<th>Height and Direction of First</th>
<th>Mean Canopy Ht</th>
<th>Life Stage</th>
<th>Physiological Condition</th>
<th>Structural Condition</th>
<th>Preliminary Tree Work</th>
<th>Estimated remaining contribution</th>
<th>Cat grading</th>
<th>Radius of RPA (m)</th>
<th>RPA (sq m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>T1</td>
<td>Sycamore</td>
<td>16.0</td>
<td>850</td>
<td>1</td>
<td>6.9 6.0 6.4 5.6</td>
<td>4.0 E 5.5 M</td>
<td>Good</td>
<td>Good</td>
<td>Good - Minor dead wood</td>
<td>No work required</td>
<td>20+</td>
<td>B1 10.2 326.9</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T2</td>
<td>Oak</td>
<td>14.4</td>
<td>1000</td>
<td>1</td>
<td>6.7 8.0 7.0 7.5</td>
<td>1.8 E 2.5 M</td>
<td>Good</td>
<td>Good</td>
<td>Moderate - minor dead wood. Some torn / broken branch stubs (Tractor damage)</td>
<td>No work required</td>
<td>20+</td>
<td>A2 12.0 452.4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T3</td>
<td>Sycamore</td>
<td>8.4</td>
<td>397</td>
<td>4</td>
<td>3.0 3.2 3.6 3.5</td>
<td>1.0 S 1.5 SM</td>
<td>Good</td>
<td>Moderate</td>
<td>Forked at base.</td>
<td>No work required</td>
<td>20+</td>
<td>C2 4.8 71.2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T4</td>
<td>Oak</td>
<td>5.0</td>
<td>248</td>
<td>2</td>
<td>3.2 2.8 3.0 2.5</td>
<td>1.0 W 1.9 SM</td>
<td>Fair - Has been flailed in past as part of the hedge</td>
<td>Moderate</td>
<td>Forked at base.</td>
<td>No work required</td>
<td>40+</td>
<td>C1 3.0 27.9</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T5</td>
<td>Oak</td>
<td>17.7</td>
<td>1090</td>
<td>1</td>
<td>8.0 8.0 7.9 8.0</td>
<td>0.8 W 2.0 M</td>
<td>Good</td>
<td>Moderate</td>
<td>lots of snags and wounds, East stem has lost limbs and has some rot with big tear</td>
<td>Remove loose and dangerous dead wood</td>
<td>40+</td>
<td>A3 13.1 537.6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T6</td>
<td>Oak</td>
<td>12.6</td>
<td>850</td>
<td>1</td>
<td>6.1 8.1 9.4 7.1</td>
<td>0.9 W 3.0 M</td>
<td>Fair - <em>Inonotus dryadeus</em> fungi at base, East</td>
<td>Moderate</td>
<td>Twigs and dead wood, later into leaf than T12 with some rips and tears</td>
<td>Bi-annual inspection when public open space in use</td>
<td>20+</td>
<td>B1 10.2 326.9</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Surveyed by A.T. Coombes Associates
## TREE SURVEY SCHEDULE

**SITE: LAND OFF WYNGATES, BLOFIELD**

**SURVEY COMPLETED: 22/11/12**

<table>
<thead>
<tr>
<th>Tree No.</th>
<th>Species</th>
<th>Ht (m)</th>
<th>Stem dia (mm)</th>
<th>No of Stems</th>
<th>Branch Spread</th>
<th>Height and Direction of First</th>
<th>Mean Canopy Ht</th>
<th>Life Stage</th>
<th>Physiological Condition</th>
<th>Structural Condition</th>
<th>Preliminary Tree work</th>
<th>Estimated remaining contribution</th>
<th>Cat grading</th>
<th>Radius of RPA (m)</th>
<th>RPA (sq m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>T7</td>
<td>Oak</td>
<td>15</td>
<td>1060</td>
<td>1</td>
<td>6.8 8.5 7.1 7.3</td>
<td>1.0 W</td>
<td>3.0</td>
<td>M</td>
<td>Fair - <em>Grifola frondosa</em> fungi at base, South West + South East, slightly late coming into leaf</td>
<td>Moderate - some deadwood with hanging deadwood, rip on the main stem in crown</td>
<td>Bi-annual inspection when public open space in use</td>
<td>20+</td>
<td>B1</td>
<td>12.7</td>
<td>508.4</td>
</tr>
<tr>
<td>T8</td>
<td>Leyland Cypress</td>
<td>11.5</td>
<td>500</td>
<td>1</td>
<td>3.5 3.8 3.8 3.5</td>
<td>1.9 N</td>
<td>3.0</td>
<td>EM</td>
<td>Good</td>
<td>Good</td>
<td>No work required</td>
<td>20+</td>
<td>C3</td>
<td>6.0</td>
<td>113.1</td>
</tr>
<tr>
<td>T9</td>
<td>Turkey Oak</td>
<td>16.0</td>
<td>650</td>
<td>1</td>
<td>8.0 9.0 8.0 8.0</td>
<td>3.0 E</td>
<td>3.0</td>
<td>M</td>
<td>Good</td>
<td>Good</td>
<td>No work required</td>
<td>20+</td>
<td>B2</td>
<td>7.8</td>
<td>191.2</td>
</tr>
<tr>
<td>T10</td>
<td>Myrobalan Plum</td>
<td>11.2</td>
<td>715</td>
<td>2</td>
<td>5.9 7.1 4.5 3.0</td>
<td>1.0 E</td>
<td>2.5</td>
<td>M</td>
<td>Good</td>
<td>Good</td>
<td>No work required</td>
<td>20+</td>
<td>B2</td>
<td>8.6</td>
<td>231.3</td>
</tr>
<tr>
<td>T11</td>
<td>Cherry</td>
<td>7.7</td>
<td>190</td>
<td>1</td>
<td>3.3 3.0 3.0 3.0</td>
<td>1.0 E</td>
<td>2.0</td>
<td>SM</td>
<td>Good</td>
<td>Good</td>
<td>No work required</td>
<td>20+</td>
<td>C1</td>
<td>2.3</td>
<td>16.3</td>
</tr>
<tr>
<td>T12#</td>
<td>Cherry</td>
<td>6.0</td>
<td>350</td>
<td>1</td>
<td>3.5 3.5 3.5 3.5</td>
<td>3.0 N</td>
<td>3.5</td>
<td>EM</td>
<td>Good</td>
<td>Good</td>
<td>No work required</td>
<td>20+</td>
<td>C1</td>
<td>4.2</td>
<td>55.4</td>
</tr>
<tr>
<td>T13#</td>
<td>Weeping Beech</td>
<td>6.0</td>
<td>212</td>
<td>2</td>
<td>4.0 4.0 4.0 4.0</td>
<td>2.0 E</td>
<td>2.5</td>
<td>EM</td>
<td>Good</td>
<td>Good</td>
<td>No work required</td>
<td>20+</td>
<td>C1</td>
<td>2.5</td>
<td>20.4</td>
</tr>
<tr>
<td>G1</td>
<td>Woodland (Oak, Ash, Syc)</td>
<td>16.0</td>
<td>800</td>
<td>1</td>
<td>5.0 5.0 5.0 5.0</td>
<td>4.0 E</td>
<td>4.0</td>
<td>M</td>
<td>Good</td>
<td>Good</td>
<td>No work required</td>
<td>20+</td>
<td>A3</td>
<td>9.6</td>
<td>289.6</td>
</tr>
<tr>
<td>G2</td>
<td>Leylandii Row</td>
<td>12.0</td>
<td>350</td>
<td>1</td>
<td>5.0 6.0 5.0 5.0</td>
<td>0.0 S</td>
<td>2.0</td>
<td>EM</td>
<td>Good</td>
<td>Good</td>
<td>No work required</td>
<td>20+</td>
<td>C2</td>
<td>4.2</td>
<td>55.4</td>
</tr>
<tr>
<td>G3</td>
<td>Sycamore x 3</td>
<td>7.0</td>
<td>260</td>
<td>3</td>
<td>4.0 4.0 4.0 4.0</td>
<td>2.0 N</td>
<td>3.0</td>
<td>SM</td>
<td>Good</td>
<td>Good</td>
<td>No work required</td>
<td>20+</td>
<td>C1</td>
<td>3.1</td>
<td>30.5</td>
</tr>
</tbody>
</table>

**SURVEYED BY A.T. COOMBES ASSOCIATES**
## APPENDIX 2 - NOTES ON COLUMN HEADINGS IN APPENDIX 1

<table>
<thead>
<tr>
<th>Column No.</th>
<th>Title</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Tree No.</td>
<td>Tree numbers to correspond with those shown on the TCP.</td>
</tr>
<tr>
<td>2</td>
<td>Species</td>
<td>Each tree has been identified and the common name given in each case.</td>
</tr>
<tr>
<td>3</td>
<td>Ht (m)</td>
<td>The tree height in metres to the highest point or tip measured from ground level.</td>
</tr>
<tr>
<td>4</td>
<td>Stem dia (mm)</td>
<td>The stem diameter measured in millimetres at 1.5 metres above ground. For multi-stemmed trees the stem diameter has been calculated according to the formula given in BS 5837:2012: For trees with up to 5 stems, each stem has been measured at 1.5m, squared and added together. The diameter shown is the square root of the total. For Muti-stemmed trees with over 5 stems a sample of five diameters has been taken at 1.5m, averaged and squared, then multiplied by the total number of stems. The square root of this sum gives the stem diameter figure.</td>
</tr>
<tr>
<td>5</td>
<td>Number of Stems</td>
<td>Total number of stems on the tree.</td>
</tr>
<tr>
<td>6</td>
<td>Branch Spread</td>
<td>The branch spread measured in metres from the stem to the tip of the outer branches has been measured in four directions of the compass North, South, East and West.</td>
</tr>
<tr>
<td>7</td>
<td>Height and direction of First Branch spread (m)</td>
<td>First significant branch and direction of growth (relative to the four cardinal compass points).</td>
</tr>
<tr>
<td>8</td>
<td>Canopy Ht</td>
<td>Mean height of the canopy above ground level.</td>
</tr>
<tr>
<td>9</td>
<td>Life Stage</td>
<td>The life stage of the tree has been assessed into one of the following categories: Y =Young, SM = Semi Mature, EM = Early Mature M = Mature, OM = Over mature and V=Veteran.</td>
</tr>
<tr>
<td>10 and 11</td>
<td>Condition</td>
<td>The British Standard recommends that a note is made of the structural and physical condition of the tree.</td>
</tr>
<tr>
<td>12</td>
<td>Preliminary Management Recommendations</td>
<td>This column includes all work considered necessary to, as far as is practicable, ensure health and safety and for the good arboricultural management of the trees. These works are not associated with the development proposals. All work to be carried out to BS 3998: 2010 “Tree Work-Recommendations”.</td>
</tr>
</tbody>
</table>
Recommendations given in respect of Health and Safety remain current for 12 months from the date of this assessment after which further inspection is recommended.

It should be noted that trees are dynamic structures subject to the forces of nature, which can fail without showing external symptoms.

<table>
<thead>
<tr>
<th>13</th>
<th>Estimated remaining contribution (Yrs)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>The estimated remained contribution of each tree in years has been assessed, using personal experience, into the following groupings:</td>
</tr>
<tr>
<td></td>
<td>&lt; 10 = Less than 10 years</td>
</tr>
<tr>
<td></td>
<td>10+ years = More than 10 years</td>
</tr>
<tr>
<td></td>
<td>20+ years = More than 20</td>
</tr>
<tr>
<td></td>
<td>40+ years = More than 40 years</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>14</th>
<th>Category grading</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>U</strong> = Those in such a condition that any existing value would be lost within 10 years and which should in the current context, be removed for reasons of sound arboricultural management.</td>
</tr>
<tr>
<td></td>
<td>(Trees that have serious, irremediable structural defects, such that their early loss is expected due to collapse or ill health including trees that will become at risk due to the loss of other U category trees).</td>
</tr>
<tr>
<td></td>
<td><strong>A</strong> = Those trees of high amenity quality and value in such a condition as to be able to make a substantial contribution (A minimum of 40 years is suggested)</td>
</tr>
<tr>
<td></td>
<td>1. <strong>Trees that are particularly good examples of there species if rare unusual or essential components of groups or formal or semi formal arboricultural features</strong></td>
</tr>
<tr>
<td></td>
<td>2. <strong>Trees, groups or woodlands which provide a definite screening or softening effect to the locality in relation to views in or out of the site, or those of particular visual importance.</strong></td>
</tr>
<tr>
<td></td>
<td>3. <strong>Trees groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran tree or wood pasture)</strong></td>
</tr>
<tr>
<td></td>
<td><strong>B</strong> = Those of Moderate quality and amenity value: those in such a condition as to a significant contribution (a minimum of 20 years is suggested)</td>
</tr>
<tr>
<td></td>
<td>1. <strong>Trees that might be included in the high category but are</strong></td>
</tr>
</tbody>
</table>
14 cont... Category grading Cont. | downgraded because of impaired condition (e.g. remediable defects)
---|---
2. | Trees and woodland that forming distinct landscape features but do not form essential components
3. | Trees with clearly identifiable conservation or other cultural benefits.

C = Those of low quality and amenity value currently in adequate condition to remain until new planting is established (minimum of 10 years is suggested). OR trees under 150 mm stem diameter.

1. | Tree not qualifying in higher categories
2. | Trees present in groups or woodlands but not with a significantly higher landscape value and or offering low or temporary screening benefit.
3. | Trees with very limited conservation or other cultural benefits.

Note: Category C trees are the least suitable for retention, where they would impose a significant constraint on the development their removal for development purposes may be considered acceptable by the LPA. Trees with a stem diameter under 150mm could be considered for relocation.

| 15 | Radius of RPA (m) | The distance that would form the radius of a circular protection zone is given in metres calculated by multiplying the stem diameter given in column 4 by 12. The methods for calculating the stem diameter of multi-stemmed trees are described above in the notes for column 4 above.
---|---|---
| 16 | RPA (sq m) | The area of the RPA is given in square metres calculated by the following formula:

Single Stemmed Trees

\[
RPA \, M^2 = \left( \frac{\text{Stem diameter mm @ 1.5m X 12}}{1000} \right)^2 \times 3.142
\]

The methods for arriving at the stem diameter for multiple stemmed trees are described above in the notes for column 4.
Appendix 4 - Tree Protection Plan

- **T1**: Sycamore
  - Hgt: 16
  - U/Hgt: 20

- **T2**: Oak
  - Hgt: 14.4
  - U/Hgt: 20

- **T3**: Sycamore
  - Hgt: 8.4
  - U/Hgt: 20

- **T4**: Oak
  - Hgt: 5
  - U/Hgt: 20

- **T5**: Oak
  - Hgt: 17.7
  - U/Hgt: 20

- **T6**: Oak
  - Hgt: 12.6
  - U/Hgt: 20

- **T7**: Oak
  - Hgt: 15
  - U/Hgt: 20

- **T8**: Leyland Cypress
  - Hgt: 11.5
  - U/Hgt: 18

- **T9**: Turkey Oak
  - Hgt: 16
  - U/Hgt: 20

- **T10**: Myrobalan Plum
  - Hgt: 11.2
  - U/Hgt: 15

- **T11**: Cherry
  - Hgt: 7.7
  - U/Hgt: 15

- **T12**: Cherry
  - Hgt: 6
  - U/Hgt: 15

- **T13**: Weeping Beech
  - Hgt: 6
  - U/Hgt: 15

- **G2**: Leylandii Row
  - Hgt: 12
  - U/Hgt: 20

- **G3**: Sycamore x 3
  - Hgt: 7
  - U/Hgt: 20

---

**KEY**

- **Construction Exclusion Zone**
- **Line of Temporary Protective Fencing**
- **Temporary Ground Protection**
- **No Dig Surface**
- **Pre-Emptive Root Pruning**
- **Trees to be Removed**

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Appendix 4 - Tree Protection Plan
APPENDIX 5

ARBORICULTURAL METHOD STATEMENT
FOR A PROPOSED DEVELOPMENT ON LAND ADJACENT TO WYNGATES, BLOFIELD

1.0 SCOPE OF THE WORKS

1.1 The document provides a methodology for protection of trees during the construction of 64 new dwellings at the above site, and should be read in conjunction with the Tree Protection Plan Appendix 4 and Timetable for Protection Works Appendix 6.

1.2 The main features in the protection of the retained trees on site are as follows:
- Provision of Temporary Protective Barriers
- Provision of Temporary ground protection
- Use of a No Dig driveway surface
- Use of pre-emptive root pruning
- Audited arboricultural site monitoring.

1.3 A meeting between the site manager/main contractor and a consulting arboriculturist must take place prior to construction work commencing so that the above protection measures set out in this document can be discussed and agreed. At this point a list of contact details for all relevant parties will be produced and circulated including the Tree Officer of the Local Planning Authority.

1.4 Protective measures must be in place prior to any ground or construction works take place.

2.0 TIMING OF WORKS

2.1 Tree protection works will be completed as detailed below according to the attached timetable Appendix 6.

2.2 The exact commencement date is not known however the timetable provided gives the order that the works need to be implemented to ensure the trees are fully protected and states when specific arboricultural input will be required.

3.0 TREE PROTECTION BARRIERS

3.1 Remaining trees will be protected by forming Construction Exclusion Zones (CEZ) as shown on Appendix 4 the Tree Protection Plan (TPP).
3.2 Temporary barriers will be erected as shown by the thick green lines on the TPP to form the CEZ. The barriers will consist of 2m tall welded mesh panels (Heras) supported on rubber or concrete feet. The fence panels should be joined together using a minimum of two anti-tamper couplers installed so they can be removed from the inside of the fence. The distance between couplers should be at least 1m and be uniform throughout the fence.

3.3 Panels should be supported on the inner side by stabilizer struts which should normally be attached to a base plate and secured with ground pins. Where the fence will be erected on hard surfacing or it is otherwise unfeasible to use ground pins the struts should be mounted on a block tray.

3.4 Fig 1 is an extract from BS5837:2012 showing the method of supporting the panels with ground pins and a block mounted tray for use on hard surfaces. Stabiliser struts should be fitted at each panel junction.
3.5 At least two all weather notices should be erected on the barriers forming each stating "Construction Exclusion Zone – No Access ". These should face outwards towards the work area. Signs must be maintained in good condition and remain in place until completion of the works.

3.6 Barriers will be maintained throughout the duration of the works, ensuring that access is denied to the CEZ throughout the process.

3.7 Barriers will be removed only when all construction work is completed.

4.0 TEMPORARY GROUND PROTECTION

4.1 Temporary Ground protection will be required as shown on the TPP with orange crosshatching. The ground protection should be constructed as follows depending on the type of traffic that will use it:

- Pedestrian traffic only – a single thickness of scaffold boards on top of a driven scaffold frame to form a suspended walkway, or on top of a compression resistant layer (100mm woodchip) laid on top of a geotextile membrane.
- Light plant up to a gross weight of 2t, proprietary ground protection boards linked to one another on top of a compression resistant layer (150mm woodchip) laid on a geotextile membrane.
- Plant exceeding gross weight of 2t, a specification devised by an engineer will be designed in conjunction with the arboricultural consultant to support the loading that the ground will be subjected to.

4.2 Compaction of the soil can occur from a single pass of a heavy vehicle, especially in wet conditions, and therefore the ground protection must be put in place before any access is allowed.

5.0 HARD SURFACING WITHIN THE RPA OF RETAINED TREES

5.1 Sections of driveway require a No Dig method of construction; the area where no excavation is allowed is shown cross hatched in purple on the Tree Protection Plan Appendix 4.

5.2 A hard surface should be designed to avoid localized compaction by evenly distributing the load over the path or car parking space. The proper source of advice on a finished design are the structural engineers for the project to ensure it is fit for the intended loading and ground conditions. The design must also take full account of arboricultural advice. Appropriate options include three dimensional cellular confinement systems or in some circumstances engineered solutions. The key element is that there will be no excavation.
5.3 In this situation it is likely that a three dimensional cellular confinement system constructed without excavation will be the best solution. Figure 2 below shows a typical construction method of such a No-dig surface using cell web produced by Geosynthetics. It should be noted that there are other manufacturers of cellular confinement systems.

5.4 It will be important ensure that the surface design merges with the level of the other sections of the road. An appropriate depth of confinement system should be chosen and if necessary ramps to smooth out level changes should be constructed.

5.5 Figure 2 shows a typical construction of a No Dig surface. This example has block paving as the top surface but gravel and a range of other permeable surfaces can be used.

![Figure 2](image_url)

**Fig.2**

5.6 The following methodology should be used for the installation of a No Dig Surface.

5.6.1 The construction of a No Dig surface must be undertaken in dry weather. There will be no machine movement within the RPA of the trees before the ground is protected by a load spreader and sub base.

5.6.2 Any major protrusions such as flints will be removed prior to commencement. Any hollows will be filled with clean sharp sand prior to laying a fibretex F4M separating geotextile.

5.6.3 The Cellweb panels will be extended to the full length and pinned into place with staking pins to anchor the cells open. Adjacent panels will be stapled together to form a continuous mattress. The surface must be located at least 0.5m from the base of the retained trees.
5.6.4 The mattress will be edged with treated softwood edging boards of sufficient width to accommodate the infill material and held in place with pegs at a minimum spacing of 500mm.

5.6.5 The cells will be filled with a minimum of 100mm of no fines angular granular fill (40 to 20mm). The infill material to be piled at the end of the extended web and pushed over the expanded cells working off the infill material. No machinery will encroach on the ground unless supported by the infill material.

5.6.6 It is recommended that the No Dig Section is not used for construction traffic. If it is, a sacrificial layer of stone should be laid on another geotextile membrane and scraped off at the end of the construction to form the final surface.

5.6.7 To lay the final surface a second layer of Fibretex F4M Geotextile separation fabric will be laid over the filled Cellweb sections. Then a layer of sharp sand will be laid and compacted with a vibro-compactor plate prior to laying block paver or concrete blocks dry jointed. A range of other surface finishes can be used. However the final surface must be permeable to allow continued water and gaseous diffusion.

6.0 PRE-EMPTIVE ROOT PRUNING

6.1 Pre-emptive root pruning will take place on the edge of the foundations of garages for plots 38, 40 and 58 to avoid injurious damage to the root system of the neighbouring trees whilst excavating. This will be carried out by a suitably trained Arboriculturist.

6.2 An air spade will be used to excavate a trench along the edge of the proposed edge of the surfaced area. Any roots exposed will be cut back to the edge of the trench using a sharp handsaw or secateurs.

7.0 SITE HUTS AND TEMPORARY BUILDINGS

7.1 All site huts and temporary buildings will be sited outside the CEZ.

9.0 ADDITIONAL PRECAUTIONS

9.1 The movement of plant in proximity to retained trees should be conducted under the supervision of a banksman to ensure adequate clearance from the branches of the trees. Hydraulic cranes, forklifts, excavators or piling rigs (other than small rigs used for mini piling) must be avoided in the immediate vicinity the crown of the trees.
8.2 Cement, oil, bitumen or any other products which spillage would be likely to be detrimental to tree growth should be stored well away from the outer edge of the RPA of retained trees. Precautions should include ensuring all toxic liquids are stored in fully bunded containers. Equipment such as barriers or sandbags must be available on site to deal with any accidental spillages that may occur.

8.3 Lighting of fires on site should be avoided. Where they are unavoidable they must be at such a distance from retained trees that there is no risk of the heat causing fire damage to the trunk or branches. Full account must be taken of wind direction. Fires must be attended at all times until they are completely extinguished.

9.0 SERVICE TRENCHES

9.1 No details of new service runs have been provided at this stage. They should be routed to avoid the RPAs of trees. If this is not possible, special techniques must be employed to place the services within the RPA of the trees. The British Standard suggests a range of trenchless methods suitable for various applications including microtunnelling, surface launched directional drilling, Pipe ramming and Impact Moleing/thrust boring. It is important common ducts should be used where it is not possible to avoid the RPA. Further guidance on installing underground services adjacent to trees can be found in the NJUG Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees (Volume 4 Issue 2). This document outlines a number of techniques that may be used for trenching near trees, including trenchless techniques, discontinuous trenching and hand digging.

9.2 It will be necessary to prepare detailed plans for these services that should be produced in conjunction with an arboriculturist, and include allowance for the space needed for access for the installations, and the levels across the proposed area.

9.3 Any overground services including CCTV must also be positioned to avoid the need for any regular or detrimental pruning to the trees.

10.0 ARBORICULTURAL SUPERVISION AND AFTERCARE

10.1 Arboricultural/site monitoring will be carried out throughout the construction phase by a nominated arborist who will be responsible for consultation with the Local Authority’s Tree Officer.
10.2 The arborist will complete regular site visits to check that the tree protection measures are being carried out. The frequency of the visits will be dictated by the level of activity and degree to which the tree protection measures are being respected. A note of the date of each visit and a summary of the findings will be forwarded to both the Tree Officer and the Main Contractor to provide an audit trail enabling the proper implementation of the tree protection measures to be checked and verified.

10.3 There are three key stages where on-site arboricultural advice will be needed:
   1. Prior to commencement, to review the contents of the AMS, and deal with any queries the main contractor may have.
   2. To confirm that the protective fencing and ground protection is in place.
   3. To supervise pre-emptive root pruning.

10.4 On completion of the works the trees will be inspected by the arborist to check the condition of the tree and advise if any remedial work is necessary.

A.T. Coombes Associates 19th February 2012
**APPENDIX 6 TIMETABLE FOR TREE PROTECTION WORKS AT WYNGATES, BLOFIELD**

<table>
<thead>
<tr>
<th>Item</th>
<th>Operation *</th>
<th>Before Commencing Construction Works</th>
<th>During Construction Works</th>
<th>On Completion</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Carry out tree work as detailed in Appendix 1, and any tree felling as set out in the AIA.</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Erect temporary protective fencing (Thick green line) on edge of the CEZ as specified in the AMS and TPP and put temporary ground protection in place (Orange Hatching)</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Erect warning signs on fencing around each CEZ stating “Construction Exclusion Zone - Keep Out”.</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Maintain Protective fences and signs in good condition.</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>5</td>
<td>Carry out pre-emptive root pruning</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>6</td>
<td>Arboricultural supervision and advice including site visits during the course of the works to check the CEZ and liaison with the Local Authority.</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>7</td>
<td>Put No Dig surface in place</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>8</td>
<td>Remove protective fencing</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>9</td>
<td>Check condition of the protected trees and consider if remedial works are necessary.</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>10</td>
<td>Plant replacement trees.</td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

* All work to comply with the attached Arboricultural Method Statement and BS5837: 2012 Trees in relation to design, demolition and construction - Recommendations*