ARBORICULTURAL IMPLICATIONS ASSESSMENT and METHOD STATEMENTS

SITE OF SURVEY
Plas y Coed, Cambridge Gardens, Ebbw Vale, Gwent NP23 5HF

CLIENT
Mr D. Parry Director
R & M Williams, Williams House, West Point Industrial Estate, Penarth Road Cardiff

SURVEYED BY:
G.M. Ayres BSc (Hons) M Arbor ADip Biol
T.A. Seymour BA Hons M Arbor A Dip Geog ND Arb
Arboricultural Consultants
Cardiff Treescape
17 Ravenscourt Close
Penylan
Cardiff CF23 5EN
02920 481284
07831 109904

DATE
27th May 2015
# CONTENTS

1. **Introduction**
   1.1 Assignment
   1.2 Qualifications
   1.3 Documents provided
   1.4 Limitations and use of copyright

2. **The Site**
   2.1 Identification and location of trees

3. **Supplementary Arboricultural Implications Assessment**
   3.1 DIRECT LOSS OF TREES
   3.2 FACILITATION PRUNING
   3.3 TREEWORK AND ECOLOGY
   3.4 TREE PROTECTIVE BARRIERS
   3.5 Trees to be protected in accordance with default specifications
   3.6 DAMAGE TO TREES FROM DEMOLITION
   3.7 REMOVAL OF HARD SURFACING AND LIGHT STRUCTURES
   3.8 POSITIONING OF TEMPORARY SITE FACILITIES
   3.9 ON SITE STORAGE OF SPOIL, BUILDING AND TOXIC MATERIALS
   3.10 CHANGES IN GROUND LEVEL
   3.11 INSTALLATION OF SERVICES
   3.12 LANDSCAPING
   3.13 FUTURE CONSIDERATIONS
   3.14 ROOT SEVERANCE
   3.15 GROUND COMPACTION
   3.16 CONSTRUCTION WITHIN ROOT ZONES
   3.17 CONSTRUCTION OF ACCESS ROADS
   3.18 CONSTRUCTION OF HARD SURFACES
   3.19 GENERAL CONSTRUCTION OUTSIDE RPA

4. **Site Monitoring**

5. **Chronology of Events for Arboricultural Work**

6. **Conclusion**

**Appendices**

Method Statements

1. GENERAL TREE PROTECTION OUTSIDE THE EXCLUSION ZONE

2. ‘NO DIG’ CONSTRUCTION OF A POROUS ROAD WITHIN THE ROOT PROTECTION AREA OF TREES IN TABLE 6
1. INTRODUCTION

1.1 ASSIGNMENT

I have previously prepared a pre-development tree survey and constraints plan 20\textsuperscript{th} May 2015

I have now been instructed by Mr. D. Parry to prepare the following documents

a) Arboricultural implications assessment

b) Schedule of works for tree pruning and maintenance to be carried out prior to construction operations.

c) Chronology of events

d) Site specific arboricultural method statements for:
   - The construction of tree exclusion zones and erection of protective fencing.
   - General tree protection outside the exclusion zone.

e) Tree protection plan indicating the position of protective fencing.

1.2 ARBORICULTURAL IMPLICATIONS ASSESSMENT

An arboricultural implications assessment is a type of tree survey that considers how a proposed development will impact on the existing trees. This report follows the pre-development tree survey which is a site survey containing data on the existing trees. The pre-development tree survey reports on the trees’ positions, dimensions, condition and suitability for retention.

The arboricultural implications assessment adds to the information gathered in the pre-development survey and considers the tree losses, damage, protection, future issues and mitigation of the proposed development site.

1.3 QUALIFICATIONS AND EXPERIENCE

I have based this report on my site observations and I have come to conclusions in the light of my experience. I have qualifications and experience in arboriculture and list the details in Appendix 1.

1.4 DOCUMENTS AND INFORMATION PROVIDED

I have recently been provided with a 1:500 @ A1 plan showing the footprint of the proposed development (drawing number LTS1411.04.04. Site Plan and Tree Survey) May 2015.
1.5 LIMITATIONS AND USE OF COPYRIGHT

All rights in this report are reserved. No part of it may be reproduced or transmitted, in any form or by any means without our written permission. Its contents and format are for the exclusive use Mr. D. Parry and his associates. It may not be sold, lent out or divulged to any third party not directly involved in this situation without the written consent of Cardiff Treescapes.

I have no connection with any of the parties involved in this situation that could influence the opinions expressed in this report.

2. THE SITE

2.1 IDENTIFICATION LOCATION OF TREES

The trees have been illustrated on the Tree Protection Plan.

2.2 DESIGNATION RELATING TO THE SITE

It is understood that there is a tree preservation order affecting this site dating back to 1972 with 65 individual trees listed. Although we have details of these trees and an indicative location map identification of the protected trees is difficult and it seems many of these trees have either been removed or have died. Below is a list of trees that we believe are subject to the tree preservation order and a list of trees we believe to have either died or been removed. This should be checked with the the Local Planning Authority before any tree work commences.

29 Trees Removed:
19 no. Wych Elms (TPO Schedule numbers: 1,4, 9,10,12,13,14,15,17,19,20,32,33,34,35,40,41,52,53 (probably due to dutch elm disease)
1 No. Field Maple (TPO Schedule number 12)
5 No. Beech trees (TPO Schedule numbers 27, 28,29,30, 31.)
2 no. Ash (TPO Schedule numbers 47, 65)
2 No. Sycamore (TPO Schedule numbers 48 51)

36 Protected Trees Remain

<table>
<thead>
<tr>
<th>SPECIES</th>
<th>TPO Number</th>
<th>TAG NUMBERS</th>
<th>SCHEDULE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sycamore (17)</td>
<td>2, 5, 6, 16,21,22,23,24,26,37,38,44,45,48,51,54,55,56,63</td>
<td>00908, 00919, 00923,00927, 00929, 00930,00931, 00933, 00934,00935,00947, 00963,00964, 00965, 00971</td>
<td>28,G36(6 trees) 37,38,39,51,67,68,69,75</td>
</tr>
<tr>
<td>Ash(13)</td>
<td>3, 36, 42,46,47,49,50,58,59,60,61,62,64</td>
<td>00916, 00917, 00918, 00920,00921,00924, 00925,00926,00932,</td>
<td>8 trees within G36 50, 77,78,79</td>
</tr>
<tr>
<td>Thorn(Hawthorn) (4)</td>
<td>7,18,25,57</td>
<td>00891,00894, 00922, 00961.</td>
<td>11,14,65,in G36</td>
</tr>
<tr>
<td>Birch (1)</td>
<td>43</td>
<td>00976</td>
<td>80</td>
</tr>
<tr>
<td>Wych Elm(1)</td>
<td>8</td>
<td>00969</td>
<td>73</td>
</tr>
</tbody>
</table>
3. ARBORICULTURAL IMPLICATIONS ASSESSMENT

3.1 DIRECT LOSS OF TREES

In order to construct the proposed 10 residential buildings, with detached garages, levelled hard surfaced areas, gardens and access roads as specified in the outlined proposal the following trees will have to be removed.

<table>
<thead>
<tr>
<th>Type/No</th>
<th>Species</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part of group 40</td>
<td>Ash, Sycamore, Elm, Holly, Hawthorn</td>
<td>B2</td>
</tr>
<tr>
<td>41</td>
<td>Willow</td>
<td>U</td>
</tr>
<tr>
<td>42</td>
<td>Cherry</td>
<td>C2</td>
</tr>
<tr>
<td>43</td>
<td>Ash</td>
<td>C2</td>
</tr>
<tr>
<td>44</td>
<td>Cherry</td>
<td>C2</td>
</tr>
<tr>
<td>Group 45</td>
<td>Ash, Sycamore, Elm</td>
<td>C2</td>
</tr>
<tr>
<td>Group 46</td>
<td>Goat Willow</td>
<td>C2</td>
</tr>
<tr>
<td>47</td>
<td>Ash</td>
<td>C2</td>
</tr>
<tr>
<td>54</td>
<td>Bird Cherry</td>
<td>B2</td>
</tr>
<tr>
<td>55</td>
<td>Beech</td>
<td>U</td>
</tr>
<tr>
<td>56</td>
<td>Norway Maple</td>
<td>C2</td>
</tr>
<tr>
<td>57</td>
<td>Sycamore</td>
<td>C2</td>
</tr>
<tr>
<td>Group 59</td>
<td>Ash, Sycamore, Hawthorn, Elm, Blackthorn</td>
<td>C1</td>
</tr>
<tr>
<td>73</td>
<td>Elm</td>
<td>C2</td>
</tr>
<tr>
<td>74</td>
<td>Ash</td>
<td>B2</td>
</tr>
<tr>
<td>75</td>
<td>Sycamore</td>
<td>B2</td>
</tr>
<tr>
<td>77</td>
<td>Ash</td>
<td>C2</td>
</tr>
<tr>
<td>Group 78</td>
<td>Ash</td>
<td>C2</td>
</tr>
<tr>
<td>79</td>
<td>Ash</td>
<td>C2</td>
</tr>
<tr>
<td>103</td>
<td>Ash</td>
<td>B2</td>
</tr>
<tr>
<td>104</td>
<td>Elm</td>
<td>C2</td>
</tr>
<tr>
<td>107/987 Part of</td>
<td>Ash, Hawthorn, Sycamore, Birch, Mountain Ash</td>
<td>B2</td>
</tr>
</tbody>
</table>
3.2 FACILITATION PRUNING
In order to ensure adequate clearance from low limbs over the proposed access road and to reduce back limbs that are liable to affect the proposed buildings.

### TABLE 3

<table>
<thead>
<tr>
<th>Tree/Tag number</th>
<th>Species</th>
<th>Works required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group 29 /00909</td>
<td>5 x Western Red Cedar, 3 x Cherry</td>
<td>Reduce back limbs over site and crown lift to 5m over road</td>
</tr>
<tr>
<td>T 69 00965</td>
<td>Sycamore</td>
<td>Remove significant deadwood over site area, reduce end loading of vulnerable limbs, reduce back limbs over roof of proposed building and crown lift to 5m over road</td>
</tr>
<tr>
<td>T99 00979</td>
<td>Oak</td>
<td>Remove significant deadwood over site area, reduce end loading of vulnerable limbs and crown lift to 5m over road</td>
</tr>
<tr>
<td>T105 00985</td>
<td>Sycamore</td>
<td>Remove significant deadwood over site area, reduce end loading of vulnerable limbs and crown lift to 5m over road</td>
</tr>
<tr>
<td>T 106 00986</td>
<td>Hawthorn</td>
<td>Remove significant deadwood over site area, reduce end loading of vulnerable limbs and crown lift to 5m over road</td>
</tr>
</tbody>
</table>

**NB** Other works required to the trees around

### TABLE 4

<table>
<thead>
<tr>
<th>Tree/Tag number</th>
<th>Species</th>
<th>Works required</th>
</tr>
</thead>
<tbody>
<tr>
<td>10/890</td>
<td>Cherry</td>
<td>Fell</td>
</tr>
<tr>
<td>16/890</td>
<td>Hawthorn</td>
<td>Reduce crown by 50%. Monitor for decline.</td>
</tr>
<tr>
<td>18 Group/ 898</td>
<td>Sycamore, Ash, Cherry</td>
<td>Probable removal to clear waterfall feature.</td>
</tr>
<tr>
<td>26/906</td>
<td>Norway Maple</td>
<td>Fell</td>
</tr>
<tr>
<td>29 (Group) 909</td>
<td>5 x Western Red Cedar, 3 x Cherry</td>
<td>Fell cherry trees within group. Monitor future growth of retained trees.</td>
</tr>
<tr>
<td>30/910</td>
<td>Norway Maple</td>
<td>Fell</td>
</tr>
<tr>
<td>35 (Group)/915</td>
<td>Ash, Hawthorn, Sycamore, Sycamore, Buddleia, Western Red Cedar, Birch</td>
<td>Carry out selective thinning, and sever ivy where appropriate.</td>
</tr>
<tr>
<td>36/920</td>
<td>Ash</td>
<td>Remove failed limb and significant deadwood.</td>
</tr>
<tr>
<td>36/921</td>
<td>Ash</td>
<td>Reduce height by 40% and remove significant deadwood.</td>
</tr>
<tr>
<td>36/925</td>
<td>Ash</td>
<td>Reduce end loading of vulnerable limb by 3m.</td>
</tr>
<tr>
<td>36/926</td>
<td>Ash</td>
<td>Reduce end loading of vulnerable limb by 3m.</td>
</tr>
<tr>
<td>41/937</td>
<td>Willow</td>
<td>Fell or coppice at 1m.</td>
</tr>
<tr>
<td>49/945</td>
<td>Goat Willow</td>
<td>Pollard at 1m.</td>
</tr>
<tr>
<td>52 (Group) approx 40 trees/948</td>
<td>Norway Maple, Ash</td>
<td>Carry out selective thinning to remove vulnerable stems and limbs likely to affect footpath.</td>
</tr>
<tr>
<td>60/956 61/957/958</td>
<td>Beech</td>
<td>Fell</td>
</tr>
<tr>
<td>67/963</td>
<td>Sycamore</td>
<td>Fell</td>
</tr>
<tr>
<td>78 (Group)/974</td>
<td>Ash</td>
<td>Re coppice group.</td>
</tr>
<tr>
<td>80/976</td>
<td>Birch</td>
<td>Fell</td>
</tr>
<tr>
<td>98 (Group)/978</td>
<td>Leyland Cypress, Portugal Laurel, Ash</td>
<td>Prune back limbs encroaching on site area where applicable.</td>
</tr>
<tr>
<td>99/979</td>
<td>Oak</td>
<td>Prune to remove dead and damaged limbs over access road. Monitor for decline</td>
</tr>
</tbody>
</table>
3.3 TREEWORK AND ECOLOGY

Bats, nesting birds and some mammals are protected under the Conservation of Habitats and Species Regulations 2010, Wildlife and Countryside Act 1981 and (as amended) Wildlife and Countryside Act 2000. A risk assessment will be required prior to commencement of any tree work or felling to assess the likelihood of disturbing or endangering any protected wildlife or habitat. If any protected species are present in any of the trees, or if the tree has a known bird or bat roost, then consultation with the Statutory Nature Conservation Organisation (SNCO) must be undertaken prior to commencement of work.

3.4 TREE PROTECTIVE BARRIERS

Trees are often damaged both above and below ground level and soils compacted as a result of construction activity. In order to minimise this risk, tree protective barriers will be erected to prevent construction activities that may have a detrimental affect on any retained trees within influential distance of the construction area.

The barriers will be erected prior to the start of any construction or demolition activities and remain in place until all construction works are complete.

The area protected by barriers will be considered sacrosanct and will not be entered into by construction contractors without consultation with the commissioned Arboriculturalist and Local Authority Tree Officer.

Barriers will be erected in accordance with both the default specifications detailed in figure 2 of BS5837:2012 ‘Trees in relation to design, demolition and construction - recommendations’ and in accordance with the specification in figure 3 of the British Standard.

The protective barriers will enclose the root protection areas of the following trees as detailed on the Tree Protection Plan (Draft) which will be updated:
3.5 Trees to be protected in accordance with default specifications, Figure 2 of BS5837: 2012

Trees in proximity to plots 9 and 10

**TABLE(S) 5**

<table>
<thead>
<tr>
<th>Trees</th>
<th>PROTECTION TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>54,56,58,64, 68</td>
<td>Fence</td>
</tr>
<tr>
<td>69,70, 76 99</td>
<td></td>
</tr>
<tr>
<td>100 101 102</td>
<td></td>
</tr>
<tr>
<td>105,106,107(G)</td>
<td></td>
</tr>
</tbody>
</table>

**INDICATIVE POSITION OF PROTECTIVE FENCE**, actual position to be agreed on site prior to commencement of works

**TREES IN PROXIMITY TO PLOT 8**

<table>
<thead>
<tr>
<th>Trees/</th>
<th>PROTECTION TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>81/977</td>
<td>Fence</td>
</tr>
</tbody>
</table>

**INDICATIVE POSITION OF PROTECTIVE FENCE**, actual position to be agreed on site prior to commencement of works
The default specification should consist of a vertical and horizontal scaffold framework, well braced to resist impacts, as illustrated in figure 2 below. The vertical tubes should be spaced at a maximum interval of 3m and driven securely into the ground. Onto this framework, welded mesh panels should be securely fixed. Care should be taken when locating the vertical poles to avoid underground services and, in the case of bracing poles, also to avoid contact with structural tree roots.

If the presence of underground services precludes the use of driven poles, an alternative specification should be prepared in conjunction with the project arboriculturalist that provides an equal level of protection. Such alternatives could include the attachment of the panels to a free standing scaffold support framework.
All weather notices will be attached to all protective tree barriers with the words:
“CONSTRUCTION EXCLUSION ZONE – NO ACCESS”

Where the site circumstances and associated risk of damaging incursion into the root protection area do not necessitate the default level of protection, an alternative specification such as Heras site fence panels can be used.

These weldmesh panels should be 2m tall and mounted on rubber or concrete feet. The panels should be joined together using a minimum of two anti-tamper couplers, installed so as they can only be removed from the inside of the fence. The distance between the couplers should be at least 1m and should be uniform throughout the fence. The panels should be supported on the inside by stabiliser struts, which should normally be attached to a base plate secured with ground pins (figure 3a). Where the fencing is to be erected on retained hard surfacing or it is otherwise unfeasible to use ground pins, e.g. due to the presence of underground services, the stabiliser struts should be mounted on a block tray (figure 3b).
All weather notices will be attached to all protective tree barriers with the words:

“CONSTRUCTION EXCLUSION ZONE – NO ACCESS”
3.6 **DAMAGE TO TREES FROM DEMOLITION**

n/a

3.7 **REMOVAL OF HARD SURFACING AND LIGHT STRUCTURES**

It is understood that the hard surfacing in place around the site will remain.

3.8 **POSITIONING OF TEMPORARY SITE FACILITIES**

The siting of temporary site facilities has not been identified on the existing site plans. Any temporary site facilities such as site huts, offices, toilets and car parking must be positioned outside the root protection areas and construction exclusion zones of any retained trees.

If possible, any vehicle or pedestrian access required to and from the site facilities must be positioned outside the root protection area of any retained trees. If access has to be positioned within any root protection areas, a site specific Arboricultural Method Statement detailing ground protection measures will be needed.

3.9 **ON SITE STORAGE OF SPOIL, BUILDING AND TOXIC MATERIALS**

Prior to and during construction works on site, no spoil or construction materials will be stored within the root protection area of any tree on site or within the adjacent land.

Any facilities for the storage of oils, fuels or chemicals will have to be sited on impervious bases and surrounded by impervious bund walls. The volume of the bund compound will have to be at least equivalent to the capacity of the tank plus 10%. In case of accidental leakage, the compound will have to be at least equivalent to the capacity of the largest tank, or the combined capacity of interconnected tanks plus 10%. All filling points, vents, gauges and sight glasses will have to be located within the bund. The drainage system of the bund will have to be sealed with no discharge to any watercourse, land or underground strata. Associated pipe-work will have to be located above ground and protected from accidental damage. All filling points and tank overflow pipe outlets will have to be detailed to discharge downwards into the bund.

3.10 **CHANGES IN GROUND LEVEL**

The creation of level plots will necessitate the lowering of ground levels particularly around plots 1-10. In many cases the existing trees have been advised for removal due to the likely impact of this but there may be other trees affected where access roads are to be constructed.

3.11 **INSTALLATION OF SERVICES**

In general all new underground services will need to be sited outside of the root protection area of all retained trees and where excavations are required to join existing service runs excavation methods will need to conform to methods outlined in the NJUG guidelines Volume 4 on the planning installation and maintenance of utility apparatus in proximity to trees.
3.12 **LANDSCAPING**
Trees being removed should be replaced as part of an overall landscape scheme and there is a lot of open space for tree planting around the site. It has been estimated that approximately 35 trees will be removed either individually or as part of groups and provision will be need to replace at least this number. Details of replacement trees will need to be specified and a planting plan drawn up to show the location for new plantings. In addition a soft and hard landscaping scheme will be required.

3.13 **FUTURE CONSIDERATIONS**

a) Trees are mechanical structures and can be subject to structural failure, particularly in high winds and if they have faults or are under stress. This has obvious health and safety implications and a structured method of hazard risk assessment should be in place particularly as there may be some public use of this area.

3.14 **ROOT SEVERANCE**
It is anticipated that there may be some minor incursion into root protection zones although areas affected are not considered to be significant. Please refer to method statements for working within root protection zones.

3.15 **GROUND COMPACTION**
Surface soils are often compacted on construction sites as a consequence of heavy equipment moving over the surface. Soil structure can be affected to some depth. Compaction reduces air and moisture content and increases the likelihood of erosion.
Trees can be affected by physical damage to roots leading to decay and roots are unable to penetrate the soil. The results are poor vitality and stress.
It should be made clear that the root protection zones are minimum distances and more protection should be given where possible. Root protection zones are not guarantees against damage.
3.16 CONSTRUCTION WITHIN ROOT ZONES

The residential units have been placed in such a way as to avoid root protection areas wherever possible.

3.17 CONSTRUCTION OF ACCESS ROADS

Access roads are to be widened around the site which will impact on root protection zones of the following trees TABLE 6

<table>
<thead>
<tr>
<th>Tree/Tag number</th>
<th>Species</th>
<th>Cat.</th>
<th>WORK WITHIN RPA</th>
</tr>
</thead>
<tbody>
<tr>
<td>40 (Group)</td>
<td>Mixed</td>
<td>B2</td>
<td>Construction of new wider access road and driveway</td>
</tr>
<tr>
<td>T68</td>
<td>Sycamore</td>
<td>B2</td>
<td>Construction of new wider access road and driveway</td>
</tr>
<tr>
<td>T69</td>
<td>Sycamore</td>
<td>B2</td>
<td>Construction of new wider access road and parking</td>
</tr>
<tr>
<td>T106</td>
<td>Hawthorn</td>
<td>C2</td>
<td>Construction of new wider access road</td>
</tr>
<tr>
<td>T105</td>
<td>Sycamore</td>
<td>B2</td>
<td>Construction of new wider access road</td>
</tr>
</tbody>
</table>

To avoid severance and damage to tree roots form these trees the construction of the access drive will need to be of a no dig construction as detailed in the method statement below.

3.18 CONSTRUCTION OF HARD SURFACES

Parking bays to be constructed are either within already hard surfaced areas or are located outside of root protection areas.

3.19 GENERAL CONSTRUCTION OUTSIDE RPA

a) Care should be taken when planning site operations to ensure that wide or tall loads, or plant with booms, jibs and counterweights can operate without coming into contact with retained trees. Such contact can results in serious damage to them and might make their safe retention impossible. Consequently, any transit or traverse of plant in close proximity to trees should be conducted under the supervision of a banksman to ensure that adequate clearance from trees is maintained at all times.

b) Material which will contaminate the soil, eg concrete mixings, diesel oil and vehicle washings should not be discharged with 10m of the tree root protection area..

c) Fires should not be lit in a position where their flames can extend to within 5m of foliage, branches or trunk. This will depend on the size of the fire and wind direction.

d) Notice boards, telephone cables or other services should not be attached to any part of the tree.

e) It is essential that allowances should be made for the slope of the ground so that damaging materials such as concrete washings, mortar or diesel oil cannot run towards the trees.
4. **SITE MONITORING**

Once planning permission has been granted it is important that an open line of communication is maintained between the Contractors, the appointed Arboriculturalist (Tom Seymour and or Gareth Ayres of Cardiff Treescapes Consulting Arboriculturalists) and the Local Planning Authority.

The Arboriculturalist must be called upon to give advice and act as a watching brief where the trees are likely to be impacted by construction operations. Protective tree barriers will be inspected by the Arboriculturalist before the start of any demolition or construction operations and the site inspected prior to the removal of the barriers following construction.

During the period of intensive construction, it is advisable that regular two weekly random site visits are carried out by the Arboriculturalist to ensure tree protection has not been contravened and to provide general advice. Site visit inspection sheets should be completed and made available to the developer, tree officer and contractors.
5. **CHRONOLOGY OF EVENTS FOR ARBORICULTURAL WORK**

**PLANNING STAGE**
1. Tree Survey – completed.

2. Arboricultural Impact Assessment, Method Statements and Tree Protection Plan – completed revisions may be required.

Preparation of further site specific method statements, if required.

**PRE-CONSTRUCTION PHASE**
Supply all main contractors with a copy of the Tree Survey report including the Arboricultural Impact Assessment, Arboricultural Method Statement and the Tree protection Plan.

Inform all site staff and contractors of tree protection implications and restrictions, within the site induction system.

Carry out tree work once planning permission has been granted.

Initial meeting between Construction Contractors, Developers and the appointed Arboriculturalist to clarify tree issues.

Prepare any further site specific Arboricultural Method Statements that may be required, eg installation of services.

Erect protective fencing and install ground protection as detailed on the Tree protection Plan and in 3.5 and 3.6 of the Arboricultural Impact Assessment and Method Statement.

Site inspection by the Arboriculturalist before construction begins.

**CONSTRUCTION PERIOD**
Inspection of tree protective barriers and ground protection prior to start of demolition and construction.

Carry out an auditable system of arboricultural site monitoring on a regular basis during periods of intensive construction near to retained trees.

Carry out specialist work such as root pruning or excavation within root protection zone.

Site inspection by appointed the Arboriculturalist following completion of construction and prior to the removal of tree protective barriers.

On completion of the main construction period remove protective fencing and ground protection.

Carry out landscaping, replanting and light construction work and ameliorate any soil root area compaction.

**POST CONSTRUCTION**
Regularly inspect the trees every 2.5 years to monitor condition and assess for hazard risk.
6. CONCLUSION
The Tree Survey, and Tree constraints Plan have been completed.

From plans supplied to us it is clear that the main bulk of the woodland trees will be retained and a good screen maintained. There may be concerns over light and proximity where retained trees are close to proposed buildings and although a lot of trees have been advised for removal it may be that retained trees will require additional works to reduce limbs when the properties are built. Correct use of all methods of protection and construction can be made in a Arboricultural Impact Assessment and Method Statement but the following guidelines should be followed

- Tree protective fence barriers will be erected around and to enclose the calculated root protection areas of any trees within influential distance of the construction area, as identified on the tree constraints plan.

- Tree protective barriers will be erected to create a construction exclusion zone in order to prevent construction activities that may have a detrimental effect on any retained trees within influential distance of the construction area.

- Construction vehicles will be of a size to enable them to access the site, without causing damage to any parts of the retained trees both above and below ground level.

- All site facilities and storage materials will be positioned outside any root protection area of any retained trees unless the ground is protected by existing hard surfaces or suitable ground protection measures.

- There will be no ground level changes within any root protection area or construction exclusion zone

- No vehicles, machinery or plant will be parked within any root protection area of any retained trees on site.

- It is recommended that all underground services are routed outside the Root Protection Area of any retained trees. Where routing of services through Root Protection Areas cannot be avoided, methods to minimise the potential for root damage will be employed.

- The preparation of any ground for landscaping purposes within the root protection areas will be carried out in conjunction with site specific Arboricultural Method Statements, prepared by the appointed Arboriculturalist.

- An appointed Arboriculturalist will carry out monthly site inspections to ensure tree protection has not been compromised and to give any necessary advice. These visits will be logged and made available to the local authority conservation officer and planning department.

- An Arboriculturalist will be appointed and called upon to give advice and act as a watching brief where the trees are likely to be impacted by construction operations. The appointed person will inspect the protective barriers prior to construction and inspect the site following completion. Site monitoring sheets will be supplied to all relevant parties.
APPENDIX I

SITE SPECIFIC ARBORICULTURAL METHOD

STATEMENT

GENERAL TREE PROTECTION OUTSIDE THE EXCLUSION ZONE

| CLIENT       | Mr D. Parry Director  
|              | R & M Williams,       |
|              | Williams House,       |
|              | West Point Industrial Estate, |
|              | Penarth Road          |
|              | Cardiff               |

| THE SITE     | Plas y Coed, Cambridge Gardens, Ebbw Vale, Gwent NP23 5HF |

1. **INTRODUCTION**

Trees that have been protected by constructing an exclusion zone, erecting protective fencing and ground protection can still be detrimentally effected from activities outside these areas. The following additional precautions should be taken outside the exclusion zone.

2. **METHODOLOGY**

   f) Care should be taken when planning site operations to ensure that wide or tall loads, or plant with booms, jibs and counterweights can operate without coming into contact with retained trees. Such contact can result in serious damage to them and might make their safe retention impossible. Consequently, any transit or traverse of plant in close proximity to trees should be conducted under the supervision of a banksman to ensure that adequate clearance from trees is maintained at all times.

   g) Material which will contaminate the soil, e.g. concrete mixings, diesel oil and vehicle washings should not be discharged with 10m of tree stems.

   h) Fires should not be lit in a position where their flames can extend to within 5m of foliage, branches or trunk. This will depend on the size of the fire and wind direction.

   i) Notice boards, telephone cables or other services should not be attached to any part of the tree.

   j) It is essential that allowances should be made for the slope of the ground so that damaging materials such as concrete washings, mortar or diesel oil cannot run towards the trees.
APPENDIX 2-

ARBORICULTURAL METHOD STATEMENTS

SITE SPECIFIC ARBORICULTURAL METHOD STATEMENT

‘NO DIG’ CONSTRUCTION OF A POROUS ROAD WITHIN THE ROOT PROTECTION AREA OF TREES IN TABLE 6

1. INTRODUCTION

1.1 This method statement describes the procedure required to undertake the NO DIG construction of a driveway whilst minimising any adverse affects on underlying tree roots. The proprietary cellular confinement system, Cellweb 100, is formed by ultrasonically welding polyethylene (perforated) strips / panels together to create a three dimensional network of interconnecting cells. A high degree of frictional interaction is developed between infill and the cell wall, increasing the stiffness of the system product. It is employed to create a structurally sound layer which confines the aggregate particles allowing free drainage, permeability and efficient dissipation of loading. An appropriate specialist should be employed to design and install the surface this method statement is indicative only.

1.2 This method statement must be read in conjunction with the manufacturer’s installation instructions and an appropriate site specific risk assessment.

1.3 Conventional methods of the construction of hard surfacing involve the scraping and removal of top soil and compaction of the sub base materials onto the sub soil in order to stabilise the structure. This conventional method is detrimental to tree roots, in that it causes root severance and prevents the penetration of water and oxygen to the underlying soils.

Although the prescribed Cellweb system is designed to dissipate surface loading, it is laid on non compacted soils and therefore distortion of the surface make-up can occur from continual heavy vehicular traffic movement. It may be necessary to repair or re-lay this system in the future if major distortion occurs.
When looking at site conditions and use, the following information should be considered to enable a load bearing structure capable of supporting traffic to be proposed:

- Depth of engineered infill material
- Californian Bearing ratio (CBR) – Standard test method for measuring soil strength
- Soil types
- Water table
- Maximum load (vehicles)
- Acceptable rut depth
- Reinforcement type
- Type and Depth of engineered infill material

2. METHODOLOGY

2.1 Construction of the road will preferably be undertaken when the ground is reasonably dry with no water logging of the underlying soils.

2.2 Kill surface ground vegetation using a translocated herbicide. Care should be taken in the selection of herbicide so that desirable vegetation is not affected. This will be carried out by a suitably qualified and competent person.

2.3 All dead organic material will be removed using hand tools to prevent severe oxygen depletion in the soil during the process of decomposition.

2.4 All major protrusions such as rocks, large stones etc will be removed from the root protection area by hand.

2.5 Fill major hollows using clean sharp sand – **DO NOT COMPACT OR SCRAPE THE SURFACE TO GRADE OFF HIGH SPOTS.**

2.6 The use of no-dig construction methods and materials, elevates the structure above the existing ground level. Protective edging is therefore required to contain and support the construction materials. Timber edgings are an ideal support and are installed by:

- Carefully hammering treated softwood stakes into the ground at suitable distances to enable the support required for edging boards. If it is apparent that the pegs are coming into contact or are likely to contact roots, the installer must **STOP** immediately and re-position the peg or seek advice from the Arboricultural Consultant

- The final levels of the stakes shall be positioned lower than the edging boards to accommodate the finishing surface.

- Treated softwood edging rails shall be fixed to the outside edge of the timber pegs. The rails will be of an appropriate size as to leave a finished height equal to or above that of the finished surface level of the driveway.
- The timber rails must be seated directly onto the existing ground level without any surface excavation or soil scraping to enable leveling.

The dimensions and positioning of the support stakes and edging rails will be specified by the Project Engineer.

2.7 If service cables are to be incorporated into the sub base structure, they can be installed at this stage, along the inside edge of the timber rails above ground level.

2.8 Lay a non-woven geotextile separation fabric over the prepared surface between the edgings, making sure it is taut and that there are no folds.

2.9 Overlap the adjoining geotextile, as to the manufacturer’s instructions and taking into account the soil strength (CBR) and temporarily retain it with weights. This overlap must be a minimum of 300mm on dry soils.

2.10 Expand the Cellweb 2.56m wide panels to the full 8.1m length.

2.11 Pin the Cellweb panels with the staking pins to anchor open the cells.

2.12 Staple the adjacent Cellweb panels together to create a continuous mattress. This will be carried out to the manufacturer’s instructions.

Below are illustrations of the correct stapling procedure for joining both edges and ends of panels together:

![Panel Edges](image1)

![Panel Ends](image2)
Where necessary, cut the Cellweb panels to size using a sharp craft knife.

The infill material and its placement will be to the following method:

**Infill the expanded Cellweb panels with a 40/20mm, no fines, clean angular aggregate.**

The specified infill material shall be placed into the expanded cells, making sure that each individual cell is filled to its full depth.

The filling of the Cellweb cells must be carried out by working in a direction from previously filled panels, so as to prevent any ground compaction and distortion of the unfilled panels. The maximum drop height of the specified infill into the cells will be limited to 1m to avoid damage or displacement of the cell walls. The gross weight of any machinery or vehicles used to infill the panels will not exceed the load bearing capacities of the Cellweb structure, as specified by the manufacturer.

The finished surfacing will be of a porous material to allow moisture and gas filtration to the underlying soils and tree roots. If using concrete block pavers or slabs, the joints will be filled with a porous material or left open.

The finishing surfacing will be laid to the following specifications:

**Surfacing Options**

**Block Paving:**
- Lay second layer of Fibretex F4M Geotextile separation fabric over the infilled Cellweb sections
- Lay sharp sand bedding layer compacted with a vibro compaction plate to recommended depth.
- Place block paviors as per manufacturers instructions.

**Tarmac (porous):**
- Place 25mm surcharge of the granular material above the Cellweb system and lay the bitumen base and wearing courses.
- **Both the wearing surface course and the underlying binder course must be porous,** in order to allow both surface water and oxygen to penetrate through to the underlying sub base materials.
Loose Gravel:
- Place second layer of Fibretex F4M Geotextile separation fabric over the infilled Cellweb sections
- Place decorative aggregate to required depth
- NOTE: A treated timber edge should be provided to restrict gravel movement. A gravel confinement system can also be incorporated to retain the gravel.

Grass Blocks:
- Place second layer of Fibretex F4M Geotextile separation fabric over the infilled Cellweb sections
- Place 50/50 rootzone bedding layer to the required depth
- Lay recycled Duo Block 500 Grass Protection System infilled with 50/50 rootzone mix.
- Seed as per architects instructions.
- (Alternatively the Grass Blocks may be infilled with gravel.)

2.17 The edges of the trackway can be banked from the top of the edging boards to existing ground levels using a good quality top soil to recommendations in BS3882 “Specifications for Top Soil” 1994.
3. **MATERIALS**

Cellweb 100 Cellular Confinement System and Treetex T300 Geotextile Separation Layer

<table>
<thead>
<tr>
<th>Contact:</th>
<th>Geosynthetics Ltd</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Fleming Road</td>
</tr>
<tr>
<td></td>
<td>Harrowbrook</td>
</tr>
<tr>
<td></td>
<td>Industrial Estate</td>
</tr>
<tr>
<td></td>
<td>Hinckly</td>
</tr>
<tr>
<td></td>
<td>Leicestershire</td>
</tr>
<tr>
<td></td>
<td>LE10 3DU</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tel:</th>
<th>01455 617139</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fax:</td>
<td>01455 617140</td>
</tr>
<tr>
<td>Web Address</td>
<td><a href="http://www.geosyn.co.uk">www.geosyn.co.uk</a></td>
</tr>
<tr>
<td>Email:</td>
<td><a href="mailto:sales@geosyn.co.uk">sales@geosyn.co.uk</a></td>
</tr>
</tbody>
</table>