2014/01238/FUL
Received 8 December 2014

ARBORICULTURAL REPORT

BS5837: 2012 'Trees in relation to design, demolition and construction - recommendations'

SITE OF SURVEY

Brynheulog
Welsh St Donats, Cowbridge, Vale of Glamorgan, CF71 7SS

CLIENTS

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DATE SURVEYED

September 2/12/2014
Report valid for 60 months*

- **Comments on tree health valid 12 months**

SUMMARY

- The Tree Survey, Arboricultural Impact Assessment Method Statements and Tree Protection Plan have been completed

- It is our opinion that this development can be constructed with negligible detrimental affect upon the majority of the existing trees identified in the tree survey. There will be some tree and hedgerow loss (see table 1) but these are not considered significant. A landscape schedule has been included to compensate for this loss and notes on the management of tree group 1 have been included.
- Protection of the retained trees will require the correct use of all methods of protection and construction as recommended in the attached Arboricultural Impact Assessment and Method Statement.

- A chronology of events for arboricultural issues has been detailed in section 5 of this report and an Arboriculturalist will need to be appointed to act as a watching brief before the commencement of any construction work.

CONTENTS

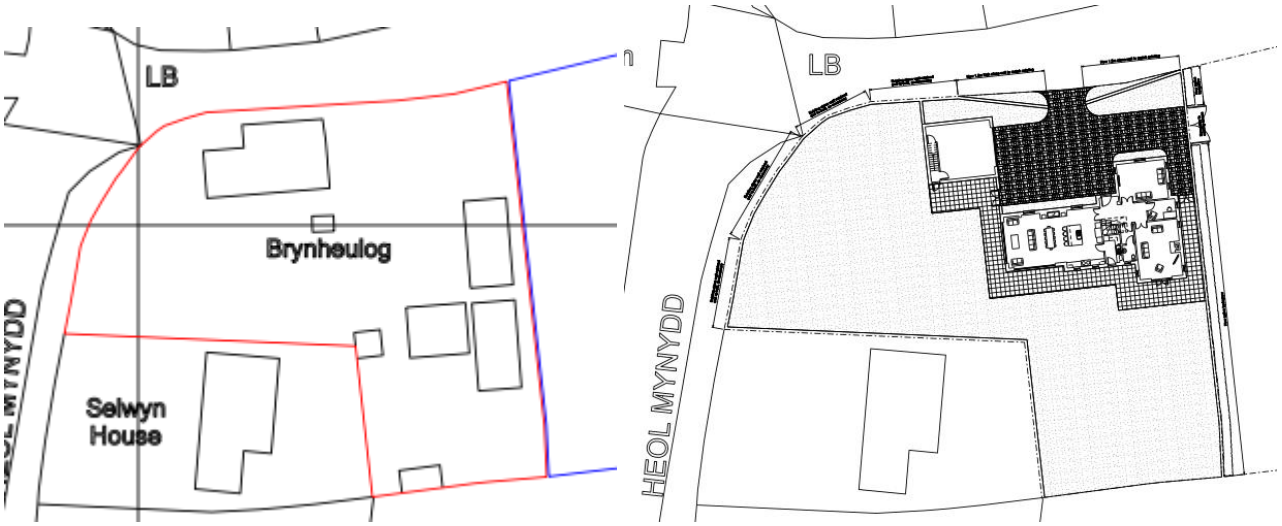
1. INTRODUCTION

1.1 ASSIGNMENT

We have been instructed by Mr England to carry out an Arboricultural Impact Assessment and Method Statement and Tree Protection Plan for development purposes in accordance with BS5837:2012 'Trees in relation to design, demolition and construction - recommendations'. This report is being prepared in order to support a planning application to demolish the existing house and associated outbuildings.

1.2 THE DEVELOPMENT PROPOSALS

It is proposed to demolish the existing existing house and construct a new dwelling with double detached garage.



Extracts from existing site location plan and proposed site plan (ref Job 2276 Dwg DP 100 & DP110 REV A)

1.3 REPORT METHODOLOGY

The methodology for preparing this report is in accordance with BS5837:2012 'Trees in relation to design, demolition and construction - recommendations' is as follows:-

Tree Survey Plan

The purpose of the Tree Survey is to identify all trees on site that may be within influential distance of any proposed development. The plan will record the condition of the trees, their quality and benefits within the context of the development and their above and below ground constraints in relation to both the site and any proposed development.

Arboricultural Impact Assessment and Method Statement

The purpose of this part of the report is to identify, evaluate and possibly mitigate the extent of any direct and indirect impacts on the trees. It will also identify any potential impacts of the trees on the proposed development.

Tree Protection Plan

The Tree Protection Plan shows all necessary aspects of tree protection that is required during the development process.

1.4 DOCUMENTS AND INFORMATION PROVIDED

We were provided with electronic scale plans of the site by Jonathan N Williams of Robertson Francis Partnership which did not show the tree positions. The significant trees, groups of trees, shrubs and hedgerows have been plotted onto these plans their position approximated using triangulation from the existing building.

1.5 LIMITATIONS AND DISCLAIMER

Trees are living organisms whose health and condition can change rapidly. The conclusions and recommendations in this report are only valid for one year. Any changes carried out to the site as it stands at present, prior to planning approval, eg building of extensions, excavation works, importing of soils, extreme weather events etc will invalidate this report.

Visual tree assessment has been undertaken from ground level utilising aids such as binoculars, sounding hammer and probes where necessary. We 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 SITE VISIT

We carried out a site visit on Tuesday 2nd December 2014. The weather at the time of inspection was cloudy with little wind.

2.2 SITE DESCRIPTION

The trees are mainly situated around the perimeter of the site adjacent to, or just outside of the boundary line. There are some individual trees within the interior of the site notably a Deodar Cedar and a less significant Norway Spruce. On the western side of the site bordering the road is an overgrown formerly laid hedgerow comprising Sycamore and Ash which forms a significant screen but requires attention. The surrounding area is mainly comprised of detached properties and open pasture and arable land. There are numerous outbuildings a large garden area and adjoining hedgerows.

2.3 PHOTOGRAPHS

On the western side of the site bordering the road is an overgrown formerly laid hedgerow comprising Sycamore and Ash which forms a significant screen but requires attention.

2.4 LEGAL CONSTRAINTS

It is not known if the trees are located in a Conservation area or are designated with a Tree Preservation Order. This should be confirmed by contacting the Local Authority.

Conservation Area
In Conservation Areas, trees of a diameter greater than 75mm, measured at 1.5m from ground level are automatically protected (except in certain circumstances) under the Town and Country Planning Act 1990. Notice of intent is required to be given to the Local Planning Authority (LPA) before work is carried out. An application form can be downloaded from the LPA website. The LPA has six weeks to decide whether the tree should be made subject to a Tree Preservation Order. If the LPA do not respond within the six week period, then the tree work that has been applied for may proceed.

If an application for work is refused and a Tree Preservation Order is designated to the trees, the applicant has a right of appeal to the Secretary of State under the provisions of section 78 of the Town and Country Planning Act 1990 (as amended).

Tree Preservation Order (TPO)
A Tree Preservation Order is made by the Local Planning Authority which in general makes it an offence under the Town & Country Planning Act 1990, to cut down, top, lop, uproot, willfully damage of willfully destroy a tree without the planning authority's permission.

It will be necessary to apply to the Local Planning Authority (LPA) for permission to carry out any work on these trees. The LPA has eight weeks to respond to the application to either refuse or permit the work applied for. The LPA can also make alternative work recommendations.

If an application for work is refused, or allowed subject to conditions, or if the council fails to decide the application within 8 weeks, the applicant has a right of appeal to the Secretary of State under the provisions of section 78 of the Town and Country Planning Act 1990 (as amended)

Carrying out work on protected trees without permission from the LPA can result in fines of up to £20,000 per tree, if convicted in a magistrate's court and you have destroyed the tree or up to £2,500 for other offences.

3. ARBORICULTURAL IMPACT ASSESSMENT AND METHOD STATEMENT

3.1 DIRECT LOSS OF TREES

In order to construct the detached property and double garage with access roads as detailed in the design layout proposal the following trees shrub and hedgerow group will require removal.

TABLE 1 TREES REQUIRING REMOVAL

Tree No.	Species	Category	Sub Category
Group 4 of (3 Trees)	Sawara Cypress	C	2
Tree 5	Apple	U	
Shrub 6	Lilac	U	
Hedgerow 7	Privet	C	2
Tree 8	Norway Spruce	B	2

3.2 FACILITATION PRUNING

No other tree require works in relation to the development proposal.

3.3 TREEWORK AND ECOLOGY

Trees within group 1 are considered to be overgrown and may present a problem to future residents, these trees could either be thinned out to remove larger stems retaining the smaller ones for furture thinning or re cut to layed coppice stools as they may become hazardous.
Trees in group 9 (Leyland Cypress belong to an adjoining property owner and may require cutting back over site by up to 2.5m.
All tree work should be carried out to BS 3998:2010 'Tree work - Recommendations'.

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 at the edge of the root protection area of group 1 tree 2 and tree 3 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 all the surveyed trees as detailed on the Tree Protection Plan

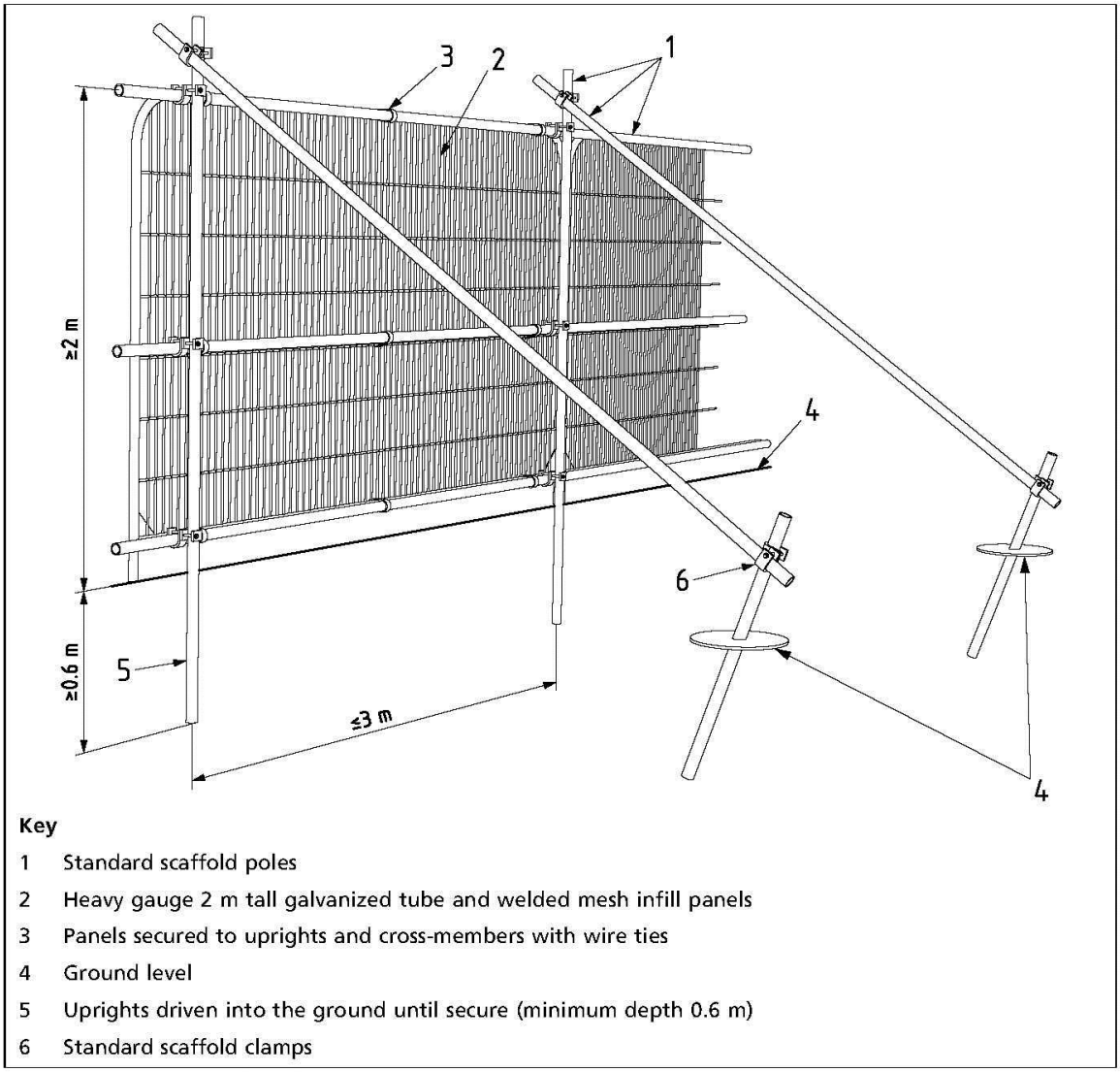
The default specification should consist of a vertical and horizontal scaffold framework, well braced to resist impacts, as illustrated in figure 2 below. The vertical tubes should be spaced at a maximum interval of 3m and driven securely into the ground. Onto this framework, welded mesh panels should 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.

TABLE 2 TREES REQUIRING PROTECTION DURING CONSTRUCTION PHASE

Tree No.	Species	Radius of Root protection area
Group 1	Sycamore and Ash	4.6m(5m to fence)
Tree 2	Cedar	5.2m (5m to fence)
Shrub 3	Hazel and camellia	2-5m to fence

Figure 2 **Default specification for protective barrier**



Key

1 Standard scaffold poles
2 Heavy gauge 2 m tall galvanized tube and welded mesh infill panels
3 Panels secured to uprights and cross-members with wire ties
4 Ground level
5 Uprights driven into the ground until secure (minimum depth 0.6 m)
6 Standard scaffold clamps

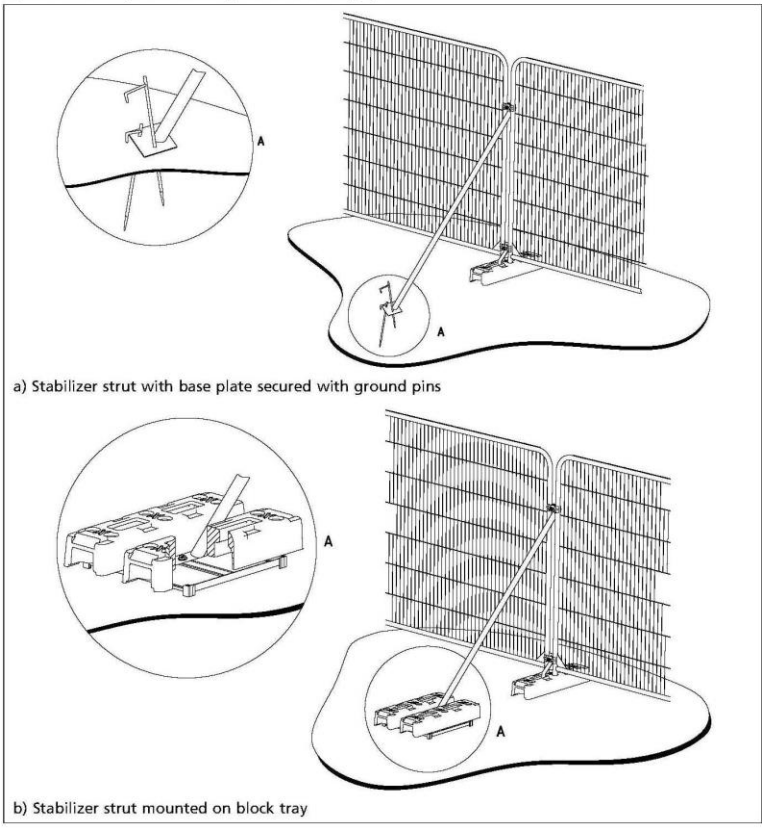
All weather notices will be attached to all protective tree barriers with the words:
"CONSTRUCTION EXCLUSION ZONE – NO ACCESS"

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. This should only apply if agreed with the Local Authority Tree Officer.

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).

Figure 3 **Examples of above-ground stabilizing systems**



a) Stabilizer strut with base plate secured with ground pins

b) Stabilizer strut mounted on block tray

All weather notices will be attached to all protective tree barriers with the words:
"CONSTRUCTION EXCLUSION ZONE – NO ACCESS"

3.5 DAMAGE TO TREES FROM DEMOLITION

It is proposed to demolish the existing building and out buildings. Trees are often damaged as a result of demolition works prior to the actual construction phase.

Causes of tree related damage from demolition works are:

- Root severance from excavation of below ground infrastructure.
- Compaction of surrounding soils as a result of heavy machinery and plant working within and near to the rooting zones.
- Damage to the stem and branch structure as a result of impact from demolition plant and demolished building infrastructure.
- Fire damage from the burning of demolished flammable materials within close proximity to trees.
- Soil contamination from the leakage of toxic materials, such as fuel and oil into the surrounding tree root zones.

The present building is situated within the calculated root protection areas of Tree group 4 tree 5 and shrub 6, none of which are considered to be of significant amenity and are advised to be removed as part of the development plan. Mitigation for tree loss will be made within the planting schedule which will form part of the overall planning application.
There are also some outbuildings which require demolition which may affect group 9 (Leyland Cypress) and the contractor responsible for the removal of the buildings will need to produce a method statement that allows for the protection of thess trees during demolition.

In order to minimise the risk of damage to the tree during demolition operations the following measures should be taken:

- Tree protective barriers will be installed in accordance with the above specification and as detailed on the Tree Protection Plan.

- The existing hard surfacing will be retained within the segments of root protection areas to provide ground protection.

- Where the building abuts the root protection area of the trees, the demolition should be undertaken inwards within the footprint of the building.

3.6 REMOVAL OF HARD SURFACING AND LIGHT STRUCTURES

Trees in group 9 may be affected by the removal of hardstanding beneath outbuildings adjacent although this is unlikely to be of major significance attention must be paid to the method statement attached to the report as appendix 3.

3.7 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.

The installation of temporary services such as water and electricity must be installed and routed in such a way so as not to damage any part of the retained trees. If installation of services is required inside the identified root protection area, a site specific Arboricultural Method Statement will be required prior to the start of any installation work.

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.

3.8 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.

3.9 CHANGES IN GROUND LEVEL

There will be no significant ground level changes within any identified root protection areas or construction exclusion zones, which are identified on the Tree Protection Plan. .

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3.10 INSTALLATION OF SERVICES

Service runs have not been indicated on the proposed plan but it is not expected that there will be the need for any service runs within the root protection areas of any retained trees on site.

If there is a need to install services within the root protection area of any trees on site, specialist measures would have to be employed to minimise damage to trees. An Arboriculturalist will be employed to prepare a site specific method statement and carry out a watching brief.

The following methods will minimise the potential for root damage, although it should be considered that some root disturbance and minor damage may occur:

The preferred method of installing the services through Root Protection Areas is to employ trenchless techniques in the form of guided thrust boring. This system uses a steerable drilling head and above ground detector to bore a pathway below ground for ducts and pipes. The following tree protection methods shall be adhered to when employing this system:

- Pits will be required to insert and retrieve the boring equipment. If these pits are to be located within a Root Protection Area, they must be excavated with the use of hand tools and an air spade under the supervision of a competent Arboriculturalist. Where possible all roots over 25mm in diameter will be retained. The Arboriculturalist will be consulted if roots over 25mm require removal and will, if agreed, prune these roots using proprietary tools.

- The thrust boring will take place at a depth of below 650mm from the surface level, to avoid the principal rooting horizon.

- In order to avoid contamination of the soils, it is recommended that water is used for lubrication of the drilling head and boring equipment. No toxic substances will be used for lubrication.

Where boring is not possible, incursions into the Root Protection Areas for the provision of services installation may be achieved by careful excavation techniques. This will involve excavating the service trenches with the use of an air spade and hand tools to minimise any damage to significant tree roots.

Where it is necessary to excavate service trenches within the Root Protection Area of any trees, the following procedures will be employed:

- The trench will be excavated using an air spade and hand tools by a suitably qualified operator experienced in ground excavations around tree roots. Care must be taken to avoid any form of damage to any retained tree roots.

- All tree roots 25mm in diameter and over will be retained. An attempt must be made to retain all tree roots below 25mm in diameter but where this cannot be achieved these smaller roots can be pruned by the Arboriculturalist using sharp secateurs.

- The service pipes, cables or ducts will be installed into the trench using a method that will prevent any damage to the retained tree roots.

- An Arboriculturalist will be employed to carry out a watching brief of all trenching operations within the Root Protection Area of any trees.

It should be noted that there may be restrictions in the use of both these services installation methods due to poor compacted soil conditions, density of roots and the presence of underground debris and structures. The feasibility of using these methods, in relation to the site conditions, should be fully assessed prior to any work taking place.

A site specific Arboricultural Method Statement will be prepared by the Arboriculturalist and approved by the Local Planning Authority prior to any installation of underground services within a tree root protection area.

3.11 LANDSCAPING

We have prepared a planting schedule to compensate for tree losses and to enhance the site. 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. All Construction Exclusion Zones will remain sacrosanct, with tree protection retained in place, until landscaping detail has been approved and any relevant method statements have been prepared.

3.12 FUTURE CONSIDERATIONS

Some of the retained trees are going to be in close proximity to the proposed structures. None of these trees are fully grown or have reached their full mature dimensions. There are several factors that should be considered by having trees close to buildings, particularly if they are for residential purposes.

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.

3.13 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.

In order to minimise impact on the trees, it will be necessary to either:

a) Have an Arboriculturalist present as a ‘watching brief’ whilst the initial footings are excavated and to carry out root pruning.

b) Have an Arboriculturalist carry out initial trial excavations by means of an air pick to assess the area for tree roots prior to digging the footings.

3.14 CONSTRUCTION OF ACCESS ROADS

The proposed access road will not affect any of the retained trees.

3.15 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 and the Local Planning Authority.

The Arboriculturalist should 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.

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 Arboricultural Impact Assessment, Method Statements – completed.

2 Tree Protection Plan – completed.
3 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 sit specific Arboricultural Method Statements that may be required, eg installation of services.
Erect protective fencing as detailed on the Tree protection Plan.

SUPERVISE/SITE MONITOR
Demolition of outbuildings

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 weekly 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.

POST CONSTRUCTION

Regularly inspect the trees every 2.5 years to monitor condition and assess for hazard risk.

6. CONCLUSION

The Tree Survey, Arboricultural Impact Assessment and Method Statement and Tree Protection Plan have been completed.

It is our opinion that this development can be constructed with minimal detrimental affect upon the retained trees identified in the tree survey. This is however dependent on the correct use of all methods of protection and construction as recommended in the attached Arboricultural Impact Assessment and Method Statement.

- Tree/stem protective barriers will be installed around retained Trees and a suitable method statement for the demolition works will be provided where this affects tree 7.

- All construction exclusion zones, as identified on the Tree Protection Plan, are classified as sacrosanct areas and must not be entered or utilized for any construction purposes, unless suitable tree protection is in place and the Arboriculturalist has been consulted beforehand.

- 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

- 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 proposed residential housing is positioned outside the root protection areas in order to minimise impact on the trees,

- 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 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 1 – TREE SCHEDULE

Tree Number	Tag number	Type	Age	Tree Name (Common name)	Tree name (Botanical)	Condition	Crown height	Height	Trunk Dia. (mm)	Single stem (1) or multi-stem (m) *	North (m)	South (m)	East (m)	West (m)	BS Cat.	RPA Radius (m)	RPA Area (m2)	Comments	Action
1	941	hedge	EM	Sycamore & Ash	*Acer pseudoplatanus & Fraxinus excelsior*	Good	0.5E	11	460	m	See plan	see plan	5	5	B2	4.60	66.5	Hedgerow group, formerly laid and now overgrown with branches touching overhead wires	Advise re establishing as a laid hedgerow
2	942	T	EM	Deodar cedar	*Cedrus deodara*	Good	1.5n	9	300	1	4	4	5	2	B2	5.28	87.6	Open grown tree adjacent to boundary wall with some ivy on stem supporting well balanced crown	Sever Ivy at the base of the main stem.
3	943	Group of 3 shrubs	EM	Hazel and Camellia	2 *Corylus avellana & Camellia sp.*	Good	2.2n	4.5	500	m	3.5	3	4	4	C2	5.00	78.5	Multi stemmed tree	No action

4	944	Group of 3 trees	EM	Sawara Cypress	*Chamaecyparis pisifera*	Good	1.8n	4	170	1	2	2	2.5	2	C2	2.04	13.1	Group of 3 ornamental conifers near side of existing house	No action	
5	945	T	EM	Apple	*Malus sp*	Poor	2s	3	120	1	3	1.5	1.5	1.5	U	1.40	6.2	Tree of poor health	No action	
6	946	Shrub	EM	Lilac	*Syringa vulgaris*	Poor	1n	3	300	m	3	1.5	1.5	3	u	3.00	28.3	Partially collapsed overgrown shrub	No action	

7	947	hedge	EM	Privet	*Ligustrum ovalifolium*	Poor	2e	5	300	m	5.5	5.5	3.5	4	C2	3.00	28.3	Overgrown hedgerow with sparse lower foliage	No action	
8	948	T	EM	Norway spruce	*Picea abies*	Good	1.5e	9	380	1	4.5	4.5	3.5	4	B2	4.56	65.3	Group tree growing in hedgerow with healthy crown	No action	
9	949	Group	EM	Leyland Cypress,	*X Cupressocyparis leylandii*	Good	3.5e	10	300	1	11	11	6.5	5est	B2	3.60	40.7	Overgrown conifer screen with tightly forked stem unions and heavily weighted lower limbs contacting and damaging boundary wall	Reduce back limbs over site	

APPENDIX 2
TREE SCHEDULE KEY

The trees and groups of trees at the site have been assessed as per the recommendations set out in BS 5837 2012.

Type	Represents the type of vegetation being assessed. These are Tree (**T**), Group (**G**), Stump (**S**), Woodland (**W**)
Tag No	No tags have been used at this site
Common Name **Botanical Name**	The tree species have been identified and both common and botanical names are given.
Age	**Young** – (Shown as **Y** in the schedule) juvenile tree with dominant leading shoot growth and short side branches. Vigorous growth and often of conical form. **Semi-mature** – (Shown as **SM** in the schedule) young adult tree, leading shoot growth may not always be dominant but side branches are usually ascending. Vigorous growth, flower and seed production. Minimal deadwood. **Early maturity** – (Shown as **EM** in the schedule) adult tree with the main framework of the crown formed. Not yet at full dimensions. Vigorous growth and some shedding of inner branches and deadwood. Horizontal side branches. **Mature** – (Shown as **M** in the schedule) adult tree at full crown volume and dimensions. Maximum flower and seed production. Dead wood likely within the crown and reiteration growth in the lower canopy. **Over mature** – (Shown as **OM** in the schedule) loss of overall vigor and reduction of full dimensions due to limb loss and branch tip die back. Major dead wood within the crown and possible hollowing and cavities. Retrenchment of the crown through increased reiteration growth on the lower branches. **Veteran / Ancient** – (Shown as **V** in the schedule) a tree that has passed beyond maturity and is old in comparison with other trees of the same species. They often have decayed or hollow stems and branches and abundant deadwood. They are important for heritage, landscape and ecological value.

Height (m)	Where site lines allow, tree height has been calculated by means of a laser clinometer and recorded in metres. If the use of a laser clinometer is restricted due to confined space or obscuring vegetation, the height of the tree may be estimated based on the surveyor's experience. Adjacent trees or buildings with a clear view may be measured and used as a height scale. Where several trees are located in close proximity, one tree may be measured and the other trees estimated using the measured tree as a reference.
Diameter (mm)	The stem diameter is measured in millimetres in accordance with Annex C of BS5837 2012.
Stems	The number of stems are recorded, eg 1 or m multi stemmed
Crown Height (m)	Is the distance from the lowest point of the crown from ground level.
FSB Height (m) /Direction	The height of the First Significant Branch (FSB) is recorded in metres and the direction of growth is in relation to the cardinal points of the compass.
North (m) **South (m)** **East (m)** **West (m)** **(Crown Spread)**	As it is rare that a tree's crown is asymmetric, the crown spread is measured at the four cardinal points of the compass to give an estimated representation of the crown spread which is then recorded on the tree survey plan.

Condition	Physiological Condition Each tree has undergone a brief preliminary visual inspection from ground level. This information is only relevant at the time of inspection because circumstances influencing a tree's condition can change rapidly. This section is divided into two separate sections: **G = Good** – fully foliaged/twigged canopy for the tree's situation with an indication of natural vigor from shoot extension growth and signs of good vitality throughout the tree's system. **F = Fair** – signs of adequate vigour and vitality up to 70% canopy coverage. May show signs of slight stress such as branch tip die back, slightly sparse foliage, yellow or small foliage. Stress may be alleviated by prescribed maintenance. **P = Poor** – obvious signs of advance stress including less than 70% canopy coverage, crown die back, significant deadwood. Sparse and discoloured foliage. **D = Dead** – moribund or dead trees
Comments	Structural Condition Any structural defects are noted such as splits, cracks, tight forks, rubbing branches, cavities, decay and the presence of pests or diseases. These may compromise the mechanical integrity of the tree's structure. (Veteran trees may pose many physiological and structural faults yet still be considered in good condition for their age.)
Recommendations	Following visual inspection preliminary recommended action, further detailed inspection, or maintenance may be prescribed.
RPR (m) **Root Protection Radius**	This is calculated from Annex D of BS 5837 2012 'Trees in relation to construction - Recommendations'.
RPA (m) **Root Protection Area**	This measurement is the total area of root protection. This can be modified if necessary by the Arboriculturalist.

Category	The tree's overall value is categorised in accordance to the cascade chart (table 1) of BS 5837 2005, see Appendix 2 of this report. In brief, the purpose of the tree categorisation is to identify and quantify the value of the existing tree stock. This will allow informed decisions to be made concerning which trees should be removed or retained should the development occur.
Category A	Trees of high quality and value that make a substantial contribution. Marked in light green on the tree survey plan.
Category B	Trees of moderate quality and value that make a significant contribution. Marked in mid blue on the tree survey plan.
Category C	Trees of low quality and value that provide only an adequate contribution. Marked in grey on the tree survey plan.
Category U	Trees in such a condition that any existing value would be lost within ten years. This includes trees that should be removed for good arboricultural reasons. Marked in dark red on the tree survey plan.

APPENDIX 3

SITE SPECIFIC ARBORICULTURAL METHOD STATEMENT

REMOVAL OF TARMAC SURFACING AND TREATMENT OF UNDERLYING GROUND BY SOIL AMELIORATION WITHIN THE ROOT PROTECTION

1. INTRODUCTION

1.1 This method statement describes the procedure to remove tarmac surfacing whilst exerting no adverse affects on underlying tree roots. It also includes a method of amelioration and de-compaction of the underlying soil.

1.2 This method statement must be read in conjunction with an appropriate site specific risk assessment.

2. METHODOLOGY

2.1 All vehicles, machinery or plant will remain outside the root protection area. The tarmac roadway adjacent to the tree may be used as access for light plant such as dumpers and compressors.

2.2 Materials which will contaminate the soil, eg diesel oil and petrol, will not be discharged within 10m of the tree stem or stored within the root protection area.

2.3 The existing tarmac surface will be broken up with extreme care using light machinery such as a hand held breaker. The chisel end of the breaker must not enter the underlying base material or soil

2.4 The broken tarmac surface may be carefully loosened with hand tools such as a mattock. The loosened sections can then be lifted by hand and disposed of accordingly to an area outside of the root protection area.

2.5 The sub surface base material will be broken up with the use of a specialised soil pick. This is designed to use high pressure air to loosen and remove soil and granular sub base material from around tree roots whilst avoiding physical damage to these roots. This will be carried out by an arboriculturalist experienced in below ground tree practices.

2.6 An experienced arboriculturalist will then remove as much of the sub base material as possible using small light weight hand tools.

2.7 Any small damaged roots below 10mm in diameter will be pruned using appropriate sharp secateurs by an experienced arboriculturalist.

2.8 The excavated sub base material will be disposed of accordingly outside the root protection area.

2.9 Any exposed fine surface roots will be covered immediately with damp Hessian to avoid drying out.

2.10 Any surface roots will be covered to a depth of no more than 10mm with a good quality graded top soil. This will be to recommendations in BS 3882 'specifications for top soil' 1994 such as NL10 Norfolk Sandy Loam or similar with the same specifications.

2.11 This soil will be spread by hand without tramping on exposed roots.

2.12 The area will then be aerated by an experienced arboriculturalist using a high air pressure soil pick designed for the purpose. These air injections will be at a distance of 1m apart on a grid pattern and to a depth of 40-60cms

2.13 Prior to carrying out the soil aeration, the client will inform the operator of any underground services located in the treatment area. Service plans will be made available to the operator by the client.

2.14 The operator will plan the works so as to avoid re-entering the previously treated area and establish an exit point prior to completion.

2.15 When aeration is completed, the area may be treated with a slow release nitrogen fertiliser to the Landscape Architect's specifications. A mulch may also be used such as well composted woodchips to a depth of no more than 3cms.

2.16 Further soil compaction of the prepared area from foot traffic, vehicles or machinery shall be avoided.

3. MATERIALS

3.1 Topsoil Backfill