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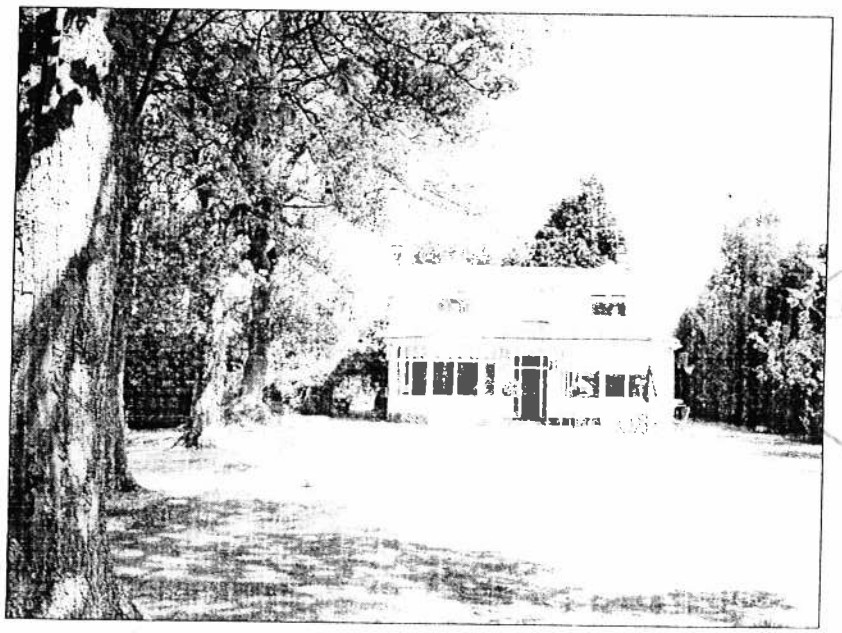
Arboricultural & Ecological Consultancy
Chartered Arboriculturalists & Environmentalists

Arboricultural Implication Assessment

Of Trees At

15 West Park Road,

Cleadon



SOUTH TYNESIDE COUNCIL
18 DEC 2018
AREA PLANNING

For

Mario Minchella Architects

CAS

CERTIFIED ISA ARBORIST

Institute of Chartered Foresters

Document Verification

Document Title	•Arboricultural Implication Assessment Of Trees At 15 West Part Road, Cleadon •For Mario Minchella Architects
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Revision

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Revision

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1. Tree Survey

2. Glossary of Terms

3. Site Plans

   - Existing Trees Shown On Existing Layout
   - Retained Trees Shown On Proposed Layout With Protective Measures Indicated
     -Tree Protection Plan (TPP)

1. Introduction

1.1 We are instructed by Mario Minchella Architects and Mr S Harrison to provide an Arboricultural Implication Assessment (AIA) of the significant trees located at 15 West Park Road, Cleadon.

1.2 This report is produced to evaluate the proposed construction of an extension to the existing dwelling together with a patio extension and associated infrastructure. The developments juxtaposition with the existing trees is considered.

1.3 We were provided with the following documents:

- Existing plan in digital AutoCAD format
- Proposed development plans in digital AutoCAD format

1.4 This assessment is concerned with recording the species, size and condition of the trees. Recommendations are made where appropriate to establish acceptable levels of safety for the site and also to establish a higher level of arboricultural management.

1.5 The trees are also evaluated for the purposes of British Standard 5837 – Trees in relation to construction - 2005, with regard to their quality and value. The type and size of the root protection area is calculated and the position of the protective barriers is determined. The remaining contribution or safe useful life expectancy is estimated as an indication of the trees period of retention.

1.6 All observations were from ground level without detailed investigation.

1.7 Trees are living organisms whose health and condition may change rapidly and all observations are based on the status of the tree at the time of inspection.

2. Protected Status of Trees

2.1 Trees may be legally protected, this may either be in the form of a Tree Preservation Order (TPO) or that the trees are located within a Conservation area.

2.2 Potentially large penalties may be enforced for illegally carrying out works on protected trees. It is recommended that checks are made before any works are undertaken and no work should commence until permission has been granted.

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2.3 AllAboutTrees has been able to ascertain with South Tyneside Council (the Local Planning Authority) on Thursday 9th June 2011 that there are restrictions protecting the trees on the site. The site is within the Cleadon Village Conservation Area and there are two TPO's imposed on trees within the site. Trees are protected by virtue of TPO no. 67 (2001) and TPO no. 128 (2008). Some trees in the neighbouring property to the north (no.11) are also protected by virtue of TPO128. The appropriate applications must be made before any tree works are carried out unless otherwise approved by existing relevant planning permission.

2.4 With regard to the Conservation Area (trees not covered by the above TPOs) 6 week's notice must be supplied to the Local Planning Authority for any proposed tree work not otherwise approved by any existing relevant planning permission.

2.4 It is an offence to carry out any tree work without giving the required notice or making the appropriate applications.

3. Site Visit & Description

Site location – N 54° 57' 00.74 W 01° 24' 20.57
O/S Grid reference- NZ 381 618 GB Grid



Figure 1. The study area indicated by the red boundary

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3.1 A site visit was undertaken on Wednesday 8th June 2011 by Miss C Swinburne. The weather was fine with no visibility constraints.

3.2 The study area consists of the garden area associated with 15 West Park Road, Cleadon.

3.3 South of the property is the main area of the garden which is largely laid out to grass with small trees and shrubs planted on the boundary. Also within this area are five large mature trees that are prominent in the landscape.

3.4 The site is in a residential area with the neighbouring gardens containing a number of large trees and shrubs.

3.5 Vehicle access to the property is at the north western point of the site onto a block paved driveway area adjacent to the house. There is a further pedestrian access also on the western boundary.

3.6 The site is relatively flat with no apparent drainage problems.

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4. Appraisal

The trees have been surveyed on site and plotted on the site plan. Their positions are considered approximate and have been determined using laser distometers and triangulation calculations.

All significant trees have been inspected and some of the smaller specimens have been included for accuracy. Individual recommendations are included within Appendix 1 of this report.

4.1 Root Protection Areas (RPA's)

4.1.1 The British Standard Root Protection Areas (RPA's) are indicated by the red circles surrounding the trunk position of the trees on the associated plans. These indicative circles do not take into consideration site specific conditions such as the presence of buildings, roads, footpaths, topography, underground utility services etc. and are representative of typical root morphology where said structures are not encountered. For this reason in certain areas of the site the RPA's of several trees have been modified to take account of these structures and conditions, the Predicted Site Specific Root Protection Area is shown on the associated plans as a cyan polyline. Although the shape of the RPA has changed, the rooting area to be protected has not decreased and offers superior protection for the tree in this instance.

4.1.2 The above applies to:

- Trees 6-8

4.2 Tree Removals

4.2.1 It will be necessary to remove group 4, a small section of group 5 and a small section of hedge 1 to facilitate the proposed development.

4.2.2 Trees 4 and 5 have been evaluated as being in the removal category due to their limited life expectancy. However, as they are located in the neighbouring property they have been shown as being retained on the proposed layout as the decision to remove them would fall to the tree owner.

4.3 Retained Trees

4.3.1 Protective barriers should be positioned as indicated on the Tree Protection Plan (TPP) by the blue line and be constructed as per section 5.1 of this report.

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4.3.2 The only departure from this requirement is adjacent to trees 7 and 8 where the protective barriers should be positioned as indicated on the TPP by the yellow line during the construction phase until such time that the patio is extended. This will provide maximum protection for the adjacent protected trees.

4.3.3 When the new patio area is to be laid the protective barriers should be realigned to the position indicated by the blue line on the TPP to provide maximum protection for the trees.

4.4 Special 'Tree Friendly' Construction

4.4.1 Some of the trees that are adjacent to the new infrastructure have root protection areas (shown as the red circles or cyan lines on the Tree Protection Plan) which extend into the area where the patio is to be extended.

4.4.2 It is important that no damage is caused to the rooting area, therefore special 'no-dig, tree friendly' methodology as described in section 5.2 of this report should be laid in the areas indicated by the green hatching on the Tree Protection Plan (TPP).

4.4.3 Trees that require the above works are:

- Trees 7 and 8

4.4.4 For this type of construction to be successful it should be installed following the manufacturer's instructions and under the supervision of a suitably experienced Arboriculturalist who can advise and provide site specific details which will deal with addressing level changes and mitigating any existing or perceived compaction damage.

4.5 Ground Protection Measures

4.5.1 It will be necessary to have access within the root protection areas (RPA's) of trees 7 and 8 whilst the extension is constructed and prior to the patio being extended.

4.5.2 To avoid compaction damage to the underlying roots during construction ground protection measures as per section 5.3 of this report will be required in the areas shown as hatched orange on the Tree Protection Plan (TPP) this will provide both a working area and space for scaffolding and allow access around the building. This methodology should be implemented at the time of fence erection, remain in situ throughout the build and only removed when all construction activity has finished.

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4.5.3 *The above prescribed ground protection is suitable for pedestrian traffic only. In the event that vehicular movements are anticipated within these areas this protection must be substituted with a temporary road surface constructed using Cellweb and in accordance with section 5.2 of this report.*

4.6 Pile Foundations

4.6.1 The position of the proposed extensions are within the root protection areas (RPA [as indicated by the red circle on the plan]) of trees 3, 7 and 8 and groups 1 & 2. To avoid damage to the root plate of the trees it will be necessary to construct the building in a more tree friendly manner than in a conventional build (in accordance with section 11.6 of BS 5837: 2005). In essence this means that traditional strip footing foundations cannot be used as they would sever a proportion of the roots and instead the building should be constructed on piles with either a pier beam grid or a cast slab (either pre cast or cast in situ) placed on top of the piles. The grid or slab can be laid at or above ground level but cannot be ground bearing to avoid any compaction of the ground overlying the roots. It may be possible to install a lip on the structure to support the brickwork and camouflage the piled foundation.

4.6.2 By using pile foundations only a limited number of needle piles will be required which will be drilled on site by a specialist mini rig. The holes for the piles will be small in diameter and damage (if any) to underlying tree roots will be extremely localised. The piles should be sheathed to prevent the phytotoxic effects of the concrete contaminating the nearby soil and roots.

4.6.3 The piles will be positioned some distance from the trunk meaning that the larger tension roots will have declined in diameter significantly, intimating that no large structural roots should be encountered. The exact location of the piles would need to be determined by the architect and engineer.

4.6.4 Various piling rigs are available for sites with limited space. A tracked mini pile rig can generally be used in spaces with a 4m overhead clearance with rig weights of <5 tonnes. For even more confined areas small rigs can be used that work with a maximum height of 2.7m and weigh only 500kg. Advice would have to be taken from the pile engineers as to which rig would be most appropriate for this site. The machine should stand on steel plating (or similar) laid on top of a layer of sand or compressible material such as woodchip to adequately spread the load.

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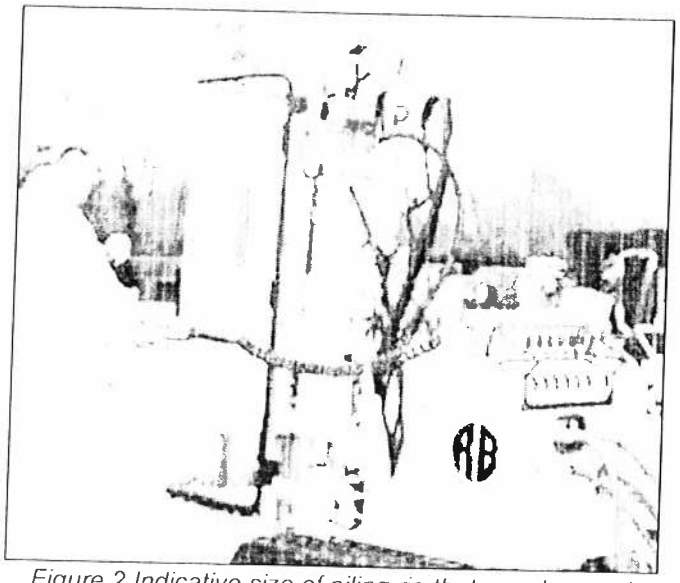


Figure 2.Indicative size of piling rig that may be used

4.6.5 Ground compaction will be absolutely minimal and gaseous exchange will continue to take place unimpeded. The root system of the tree is dynamic in nature producing a mass of new roots throughout the growing season which grow and survive to a varying extent. It is estimated that some species of hardwood trees lose up to 90% of the absorbing roots during winter and produce new rooting during the next season. As the shape and size of the root system is not immutable and is adventitious in form, the root system will adapt to the position of the new building over time and respond to the changing conditions without adversely affecting the tree.

4.7 Trees On Adjacent Property

4.7.1 A number of trees on the neighbouring property to the north of the site have crowns which oversail the subject site and root protection areas which extend into the site (figure 3).

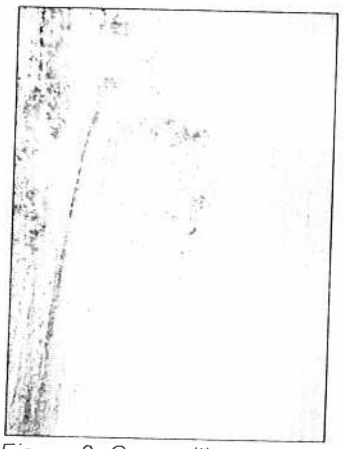


Figure 3. Oversailing crowns

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The roots from the neighbouring trees are causing some disturbance to the block paving as indicated in figures 4, 5 and 6.

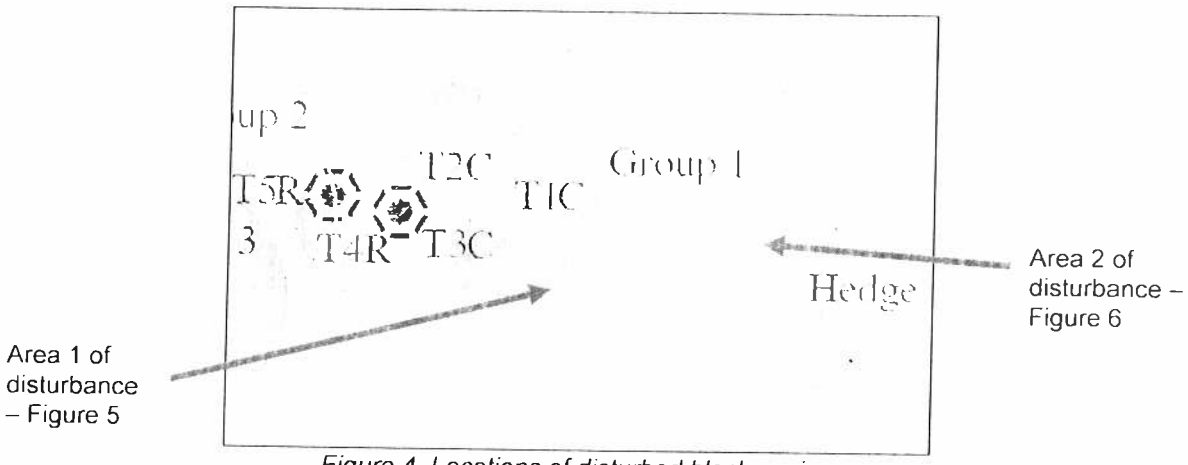


Figure 4. Locations of disturbed block paving

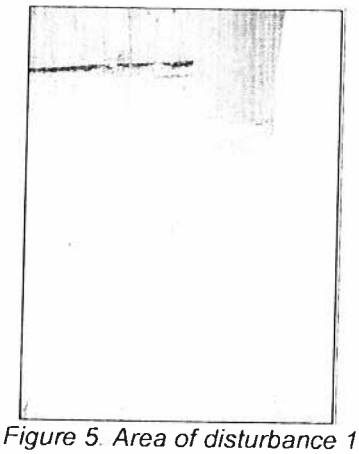


Figure 5. Area of disturbance 1

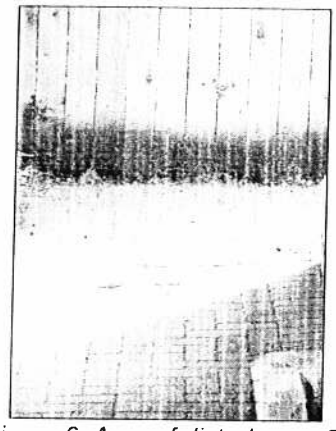


Figure 6. Area of disturbance 2

4.8 Wildlife Habitats

Bats

4.8.1 All UK bats and their roosts are protected by law. The legislation protecting bats are:

- The Wildlife & Countryside Act 1981 (WCA)
- Conservation of Habitats and Species Regulations 2010

4.8.2 For all countries of the UK, the legal protection for bats and their roosts may be summarised as follows:

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4.8.3 You will be committing a criminal offence if you:

1. Deliberately* capture, injure or kill a bat
2. Intentionally or recklessly disturb a bat in its roost or deliberately disturb a group of bats
3. Damage or destroy a bat roosting place (even if bats are not occupying the roost at the time)
4. Possess or advertise/sell/exchange a bat (dead or alive) or any part of a bat
5. Intentionally or recklessly obstruct access to a bat roost

**In a court, 'deliberately' will probably be interpreted as someone who, although not intending to capture/injure or kill a bat, performed the relevant action, being sufficiently informed and aware of the consequence his/her action will most likely have.)*

4.8.4 Penalties on conviction - the maximum fine is £5,000 per incident or per bat (some roosts contain several hundred bats), up to six months in prison, and forfeiture of items used to commit the offence, e.g. vehicles, plant, machinery.

4.8.5 When carrying out tree works it is essential that the contractor or other competent person carriers out a specific 'bats in trees risk assessment' which can be obtained from the 'Arboricultural Association' or the 'Bat Conservation Trust' (BCT). If evidence of bats is found work must stop immediately and Natural England Batline contacted (0845 1300 228). A further inspection may well be required by a licensed bat handler or roost visitor.

Birds

4.8.6 In the UK, all wild birds, their nests and their eggs are protected by law.

4.8.7 In England, Scotland and Wales the legislation that protects wild birds is:

- The Wildlife and Countryside Act 1981
- The Countryside (or CRoW) Act 2000

4.8.8 As with bats the contractor has an obligation to carry out visual checks prior to works. Where possible tree works should be carried out in the period from August to the end of February in order to avoid the bird nesting season.

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5. Tree Protection Measures

5.1 Root Protection Area & Barrier Specification

5.1.1 Trees on development sites are prone to damage during the course of demolition and construction works. Retained trees need to be protected in line with British Standard: 5837:2005 Trees in relation to construction - Recommendations.

5.1.2 This usually involves identifying an area around the tree which should remain undisturbed with appropriate protective barriers preventing access to this Root Protection Area during the course of the construction period.

5.1.3 The minimum root protection areas (measured in a radius from the centre of the tree to the protective barrier) are outlined for each individual tree and the barrier layout is indicated on the plan.

5.1.4 The exact root spread of an individual tree is difficult to quantify, but in general, the bulk of a trees roots are situated in the upper 600mm of the soil with the finer absorbing roots prevalent in the upper 250mm.

5.1.5 Dependant on soil conditions and the species of the tree, the root plate may extend radially for distances in excess of the height of the tree.

5.1.6 In the case of development sites, the root protection area is designed to prevent any significant long term damage to the tree by protecting the root plate and to some extent the lower branches of the tree.

5.1.7 The barriers should be erected prior to work commencing on site and should remain until construction activities have been completed. The root protection area should be considered essential and should not be removed or altered without prior recommendation by an Arboriculturalist and approval of the local planning authority.

5.1.8 The barrier should consist of a vertical and horizontal framework of scaffold tubing which is adequately braced to resist impacts. The vertical scaffold tubes need to be placed at a distance not exceeding 3m apart. The weldmesh or Heras panels need to be 2.3m tall and are securely attached to the scaffold framework with wire or scaffold clamps. The wire or scaffold clamps should be secured on the inside of the barrier to avoid easy dismantling. Panels on rubber or concrete feet are not resistant to impact and should not be used.

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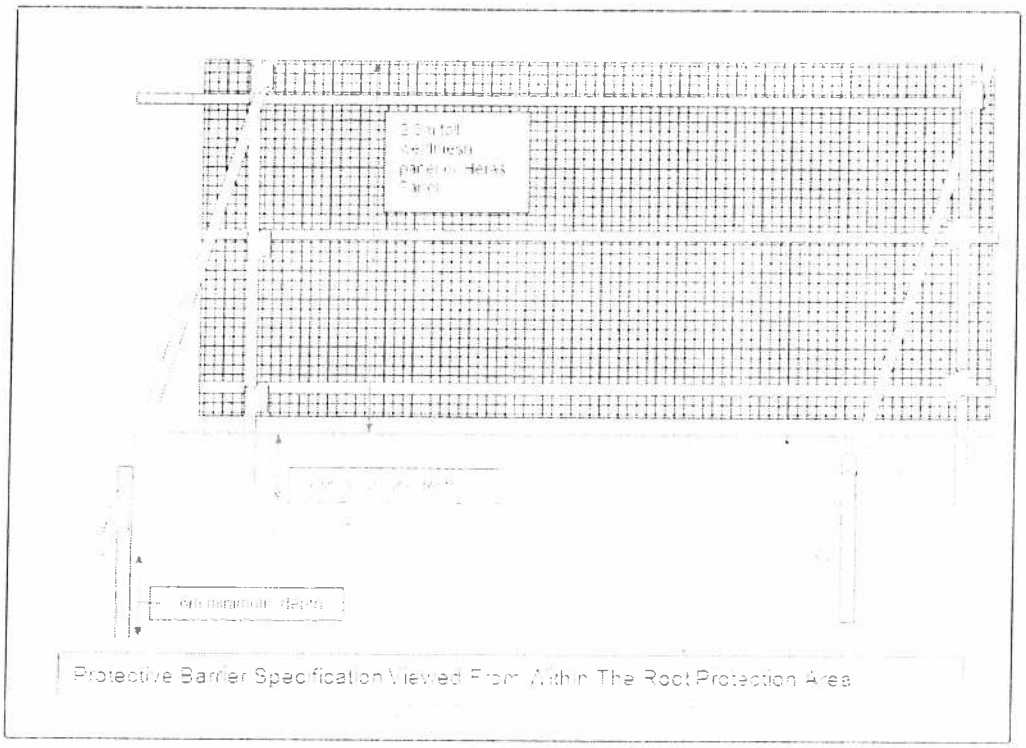


Figure 7 – Protective barrier diagram

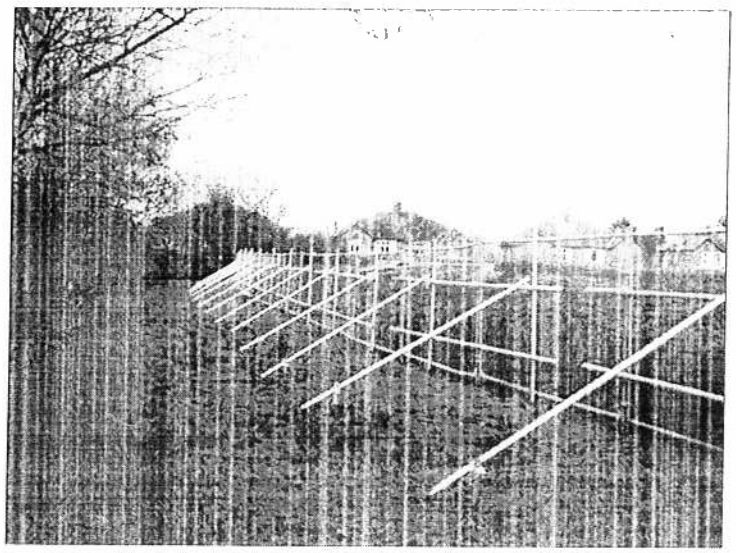


Figure 8 - Actual barrier being erected on site – incorporating Heras type panels

5.1.9 No fixing shall be made to any tree and all possible care must be taken to prevent damage to tree roots when locating the posts.

5.1.10 All types of barriers must be firmly attached to prevent movement by site personnel or vehicles and all weather signs with the wording "Construction exclusion zone- keep out" should be attached.

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5.2 Construction Methodology & Materials Near To Retained Trees

5.2.1 As the site contains a number of trees which will need to be retained as an integral part of the development, it is vital that the trees health and condition is maintained through protective measures and 'tree friendly' construction methods which avoid both short and long term damage to the trees. The areas which require this tree friendly construction are indicated as hatched green on the tree protection plan.

5.2.2 The construction method outlined below is suitable for the construction of permeable patios, footpaths, roads and parking bays. It is not intended as a finished engineering solution but as an outline methodology to allow the construction of the above elements without damaging the nearby tree root system. The photographs show the construction of a road but the principle is the same for the patio construction only the depth of cellweb and fill material is smaller.

5.2.3 If the principles of the 'no dig' construction are followed, no significant permanent damage should occur to the retained trees.

5.2.4 The **principal rules of construction** are as follows:

1) No roots are to be severed (except for hand digging to remove rocks or protrusions taking care not to sever any roots over 2.5cm in diameter).

2) The soil must not be compacted

3) Oxygen and water must be able to diffuse into the soil beneath the engineered surface

4) The construction of the patio will have to be **above existing ground** level and at least 1.5m away from the trunks of the retained trees.

5.2.5 The method of construction is:

1) Ideally construction should be undertaken between the months of May and October when the ground is at its driest and less prone to compaction

2) Ground vegetation should be carefully removed with any organic material being removed from the line of the surfacing to prevent the build up of anaerobic conditions beneath the surfacing which will damage the tree roots.

3) No digging should take place within the protective zone except for the careful removal of organic matter by hand tools. Any hollows

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must be filled with sharp sand, any digging to remove rocks or protrusions must be by hand taking care not to sever any roots over 2.5cm in diameter. Stumps should be ground out rather than excavated to prevent damage to the retained trees roots.

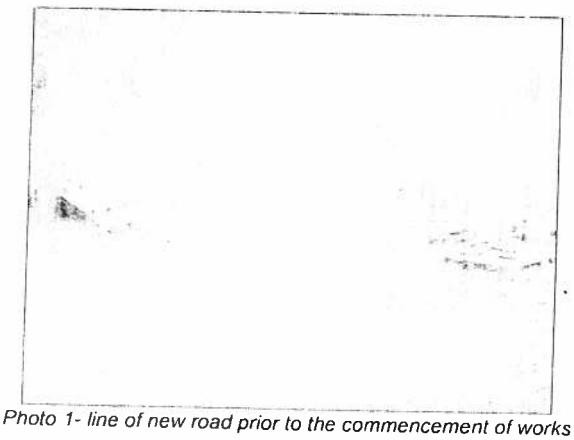


Photo 1- line of new road prior to the commencement of works

5.2.6 The method of providing a permeable surfacing is as follows:

1) Lay a Fibretex F4M non woven geotextile material directly on the existing subgrade. Overlap dry joints by 300mm

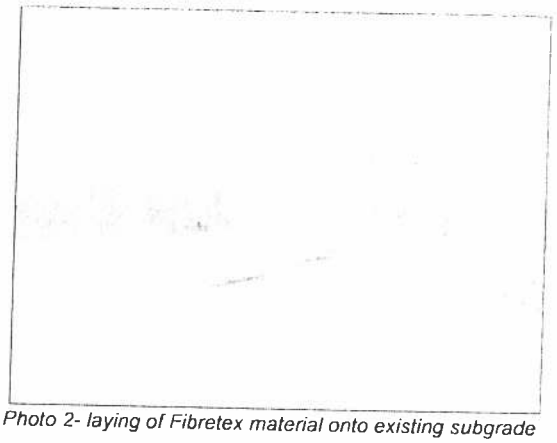


Photo 2- laying of Fibretex material onto existing subgrade

2) Lay and expand the cellular confinement system (e.g. Cellweb by Geosynthetics Ltd) and anchor open during infilling. As a general indication only, a depth of at least 100mm is required for domestic traffic up to approximately 3 tons.

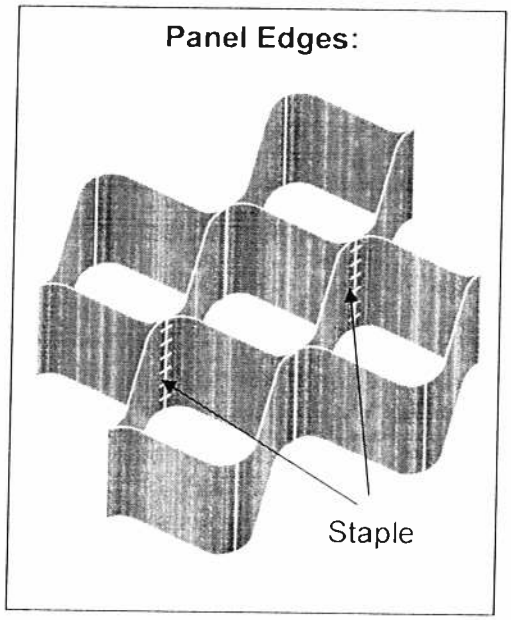
3) The three dimensional cell structure is formed by ultrasonically welding polyethylene (perforated) strips and panels together to create a three dimensional network of interconnecting cells. A high degree of frictional interaction is developed between infill and cell wall, increasing the stiffness of the system. The use of cellular confinement reduces the bearing pressure on the subsoil by stabilising aggregate surfaces against rutting under wheel loads.

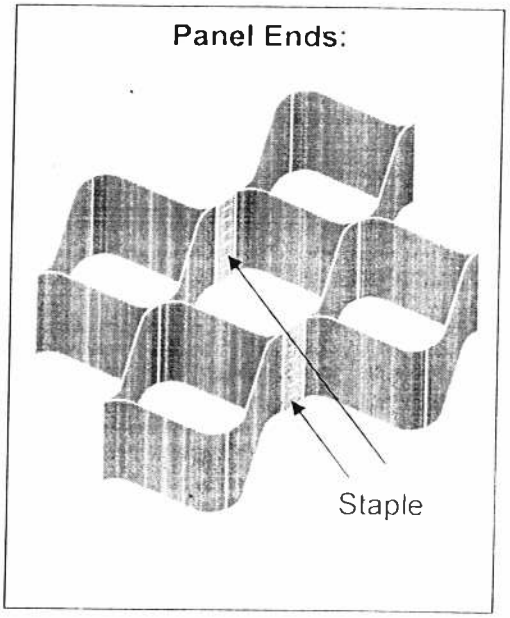
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Comparisons between cellular confinement and traditional aggregate and grid reinforced structures demonstrate a 50% reduction in construction thickness.

Expand the Cellweb 2.56m wide panels to their full 8.1m length and pin with staking pins to anchor the cells open. Staple adjacent panels together to create a continuous mattress.

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





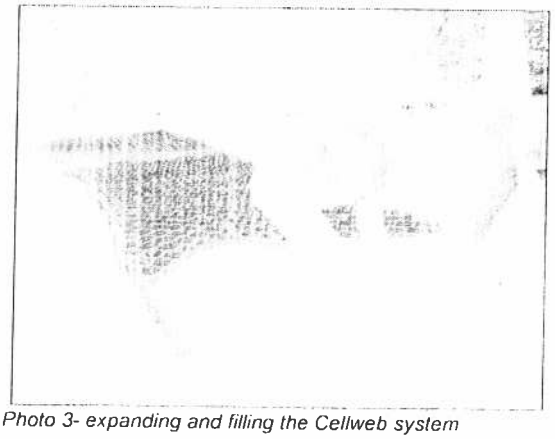


Photo 3- expanding and filling the Cellweb system

4) Fill the cellular confinement system with a minimum of 100mm of aggregate (the amount is dependent on the depth of the Cellweb employed). The aggregate should not contain any fines and be of an inert type material such as whinstone chips rather than any lime based product. The angular particle dimensions should be 20-40mm. As most urban soils are already alkaline in nature, the use of

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dolomite, limestone or crushed concrete is not suitable for this application as it can react with rain water with the potential to change the soil pH and form impenetrable layers which impede water movement and gaseous exchange

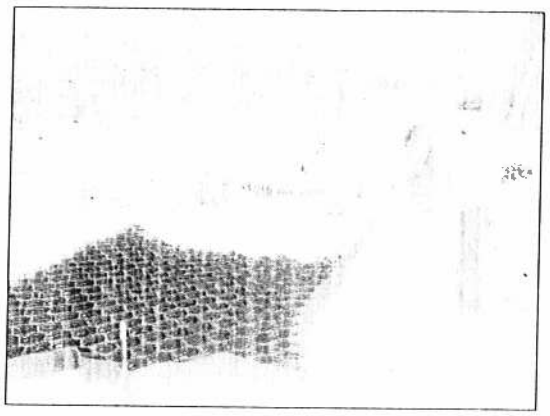


Photo 4- once filled the system can support plant to carry aggregate to the fill area

5.2.7 Final surfacing options

- **Block Paving** –will require the laying of a second layer of Fibrex F4M Geotextile separation fabric over the infilled Cellweb sections. Then lay a sharp sand bedding layer compacted with a vibro compaction plate to the recommended depth. Place paviors as per the manufacturer's instructions using the sand as the jointing material. The use of porous blocks such as 80mm Priora by Marshalls are particularly tree friendly and allow natural rainfall to reach the rooting area.

5.2.8 It is important that the edging material used does not encroach into the protected area and the use of conventional kerbing is not possible as the depth of excavation required for their installation will sever the tree roots.

5.2.9 Edging supports such as angled steel section or pinned edges are advised as shown in the following drawing although there are a number of varying kerbing options available which do not require any excavation and could be used above the existing ground level.

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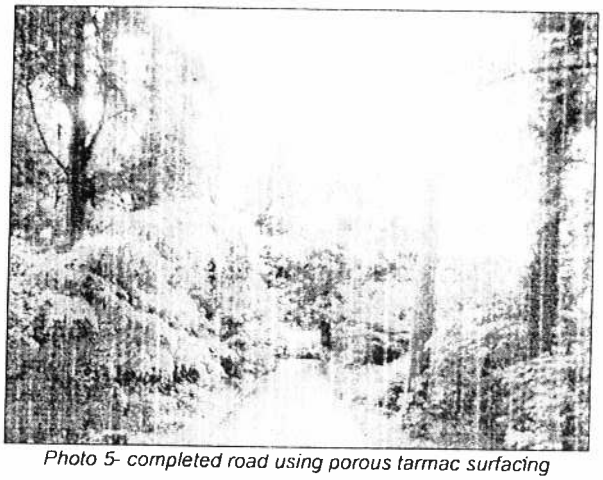
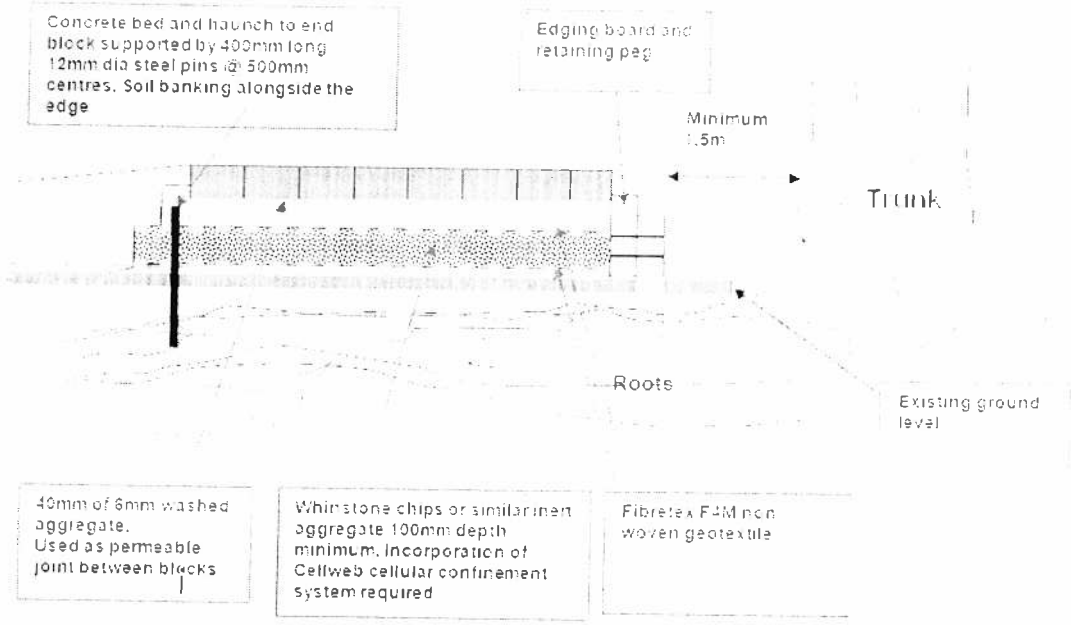


Photo 5- completed road using porous tarmac surfacing

Diagram of no-dig construction method for minimising root damage (not to scale). Alternative edging materials shown on either side of construction. Block paving surfacing option shown



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5.3 Ground Protection Areas & Erection Of Scaffolding Within The Trees Root Protection Areas

5.3.1 In some cases it will be necessary to provide pedestrian access within the root protection area of the trees, or to create space for scaffolding and working areas. To prevent damage occurring to the trees, the following technique should be observed. The areas requiring this protection are marked in hatched orange on the tree protection plan.

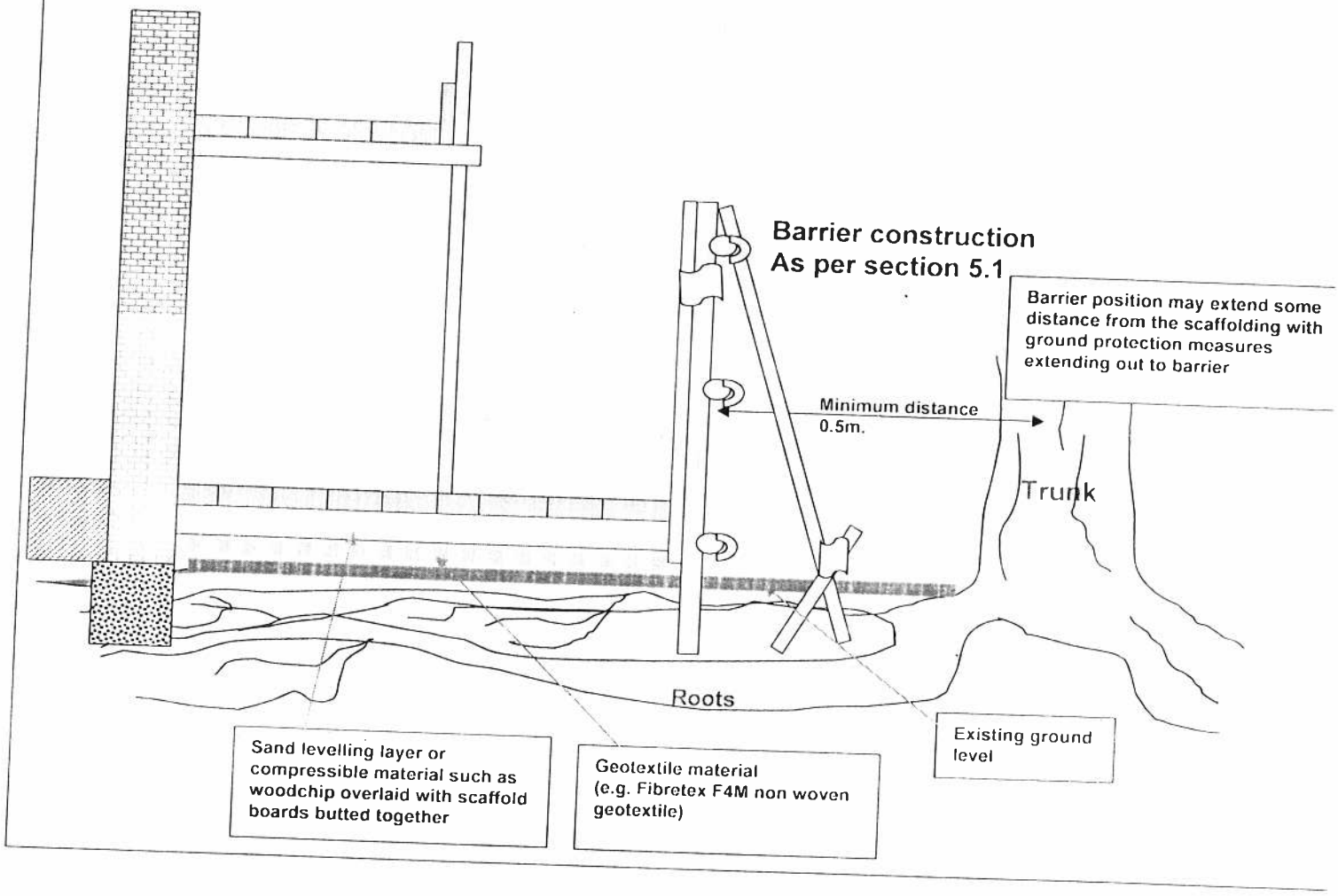
5.3.2 The following diagrams visualise the layout requirements. By sufficiently protecting the rootplate of the tree, the pedestrian access or scaffolding and associated working area can be placed within the root protection area. There is no limitation as to the size of the ground protection area, but we would advise that it is at least 0.5m from the trunk of any tree.

5.3.3 A summary of the requirements for the erection of the scaffolding and working area are detailed below.

- Protective barriers should be erected onto a framework of scaffolding (as per the fencing drawing in section 5.1 to comply with the recommendations of BS 5837).
- The barrier is erected prior to the commencement of work at a suitable distance from the building to allow for the erection of the main scaffolding.
- A porous geotextile fabric should be laid onto the undisturbed ground surface and a layer of sand or compressible material such as woodchip applied to level the area.
- Boards should be laid onto the sand to protect the rootplate. Scaffold boards are usually adequate for pedestrian loads
- The boarding must remain until building works are completed.

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Erection of scaffolding within the root protection area of the tree to BS 5837 (not to scale)



5.3.4 As the building rises, additional scaffolding is erected within the area protected by the boards. The use of supplementary timber sole plates is advised.

5.4 Service Runs

5.4.1 It is assumed that the existing service runs will be exploited where possible, but if new works are required it is important that they comply with the National Joint Utilities Group (NJUG) 'Guidelines for the planning, installation, and maintenance of utility services in proximity to trees' and BS 5837. The excavation of open trenches by machine will be unacceptable within the protective zone of any of the retained trees.

5.4.2 Acceptable techniques (fuller details in the appendices) for the laying of services in order of preference are:

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- **Trenchless-** by using thrust boring or similar techniques
- **Broken Trench-** to be dug by hand
- **Continuous trench-** to be dug by hand

6. Conclusion

6.1 As with any construction exercise near trees, there are potential areas of conflict where damage could be caused to retained trees.

6.2 By using the protective elements dictated by British Standard 5837, no significant damage should take place during the construction phase and the tree cover should flourish in the longer term.

6.3 It is anticipated that all of the retained trees can be incorporated into the site design; however, it is vital that the ultimate size and spread of the trees should be considered when retaining trees near to the building and that shading and light penetration should also be considered when positioning the windows in the building.

6.4 All tree works must conform rigorously to BS 3998 (2010) 'Recommendations for Tree Work'.

For and on behalf of
AllAboutTrees Ltd

Andrew Watson FLS MICFor CBiol MSB FArborA CEnv LCGI
-Chartered Arboriculturalist & Registered Consultant

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Appendix 1

Tree Number	Species Common name *Latin Name*	Height (M)	Crown Spread (M) N	S	E	W	Trunk Dia (MM)	Height Of Crown Clearance (M)	Age	Physiological Condition	Structural Condition	Root Prot Area Radii (M)	Estimate Remaining Contribution (Years)	Tree Quality Assessment	Comments	Maintenance	Bat Roost Potential	Ultimate Size For Species (M) Height	Spread	Priority
1	Hawthorn *Crataegus monogyna*	4.0	0.7	1.0	1.6	0.8	100	1.0	Young	Fair	Fair	1.2	>40	C-Low	Located in neighbouring property. Stem divides below 1.5m Remote assessment. Oversails subject site	No tree works required at the present time. The existing boundary fence will provide adequate protection for the tree; however care must be taken during the development that no damage is caused to the aerial parts of the tree.	None	10	8	-
2 May be included in TPO no.128 (2008)	Hawthorn *Crataegus monogyna*	5.6	3.0	1.3	1.6	1.0	180	1.0	Middle Aged	Fair	Fair	1.8	20-40	C-Low	Located in neighbouring property. Leans to the north. Ivy clad trunk. Multiple stems from ground level. Remote assessment. Oversails subject site	Sever ivy at ground level. The tree is located within the neighbouring property and recommendations are subject to the decision of the tree owner. The existing boundary fence will provide adequate protection for the tree; however care must be taken during the development that no damage is caused to the aerial parts of the tree.	None	10	8	-
3 May be included in TPO no.128 (2008)	Hawthorn *Crataegus monogyna*	7.0	1.0	2.3	2.4	3.1	170	2.0	Middle Aged	Fair	Fair	2.0	10-20	C-Low	Located in neighbouring property. Extensive ivy prohibits a thorough inspection. Remote assessment Torn stub on southern flank.	Sever ivy and re-inspect once the aerial parts have died off. The tree is located within the neighbouring property and recommendations are subject to the decision of the tree owner. The existing boundary fence will provide adequate protection for the tree; however care must be taken during the development that no damage is caused to the aerial parts of the tree.	None	10	8	-
4	Elder *Sambucus nigra*	6.2	1.5	0.8	1.0	1.3	350	2.0	Mature	Poor	Poor	3.5	<10	R-Remove	Located in neighbouring property. In decline. Extensive ivy prohibits a thorough inspection. Deadwood. Remote assessment.	Suggested removal as part of management. The tree is located within the neighbouring property and recommendations are subject to the of the tree owners discretion.	Low	10	8	-

Tree Number	Species Common name *Latin Name*	Height (M)	Crown Spread (M)				Trunk Dia (MM)	Height Of Crown Clearance (M)	Age	Physiological Condition	Structural Condition	Root Prot Area Radii (M)	Estimate Remaining Contribution (Years)	Tree Quality Assessment	Comments	Maintenance	Bat Roost Potential	Ultimate Size For Species (M)		Priority
			N	S	E	W												Height	Spread	
															2x Codominant stems from base. Large wounds on stem with decay present.					
6	Elder *Sambucus nigra*	7.0	1.0	1.2	1.0	0.5	200	3.0	Mature	Poor	Fair	2.4	<10	R-Remove	Located in neighbouring property. Stem divides above 1.5m to form 2x codominant stems. Deadwood. Remote assessment. Small crown.	Remove as part of site management. The tree is located within the neighbouring property and recommendations are subject to the of the tree owners discretion.	None	10	8	-
8 TPO no 128 (2005)	Sycamore *Acer pseudoplatanus*	11.2	3.8	4.1	5.1	3.3	550	2.8	Mature	Fair	Fair	6.6	20-40	B-Moderate	Extensive ivy prohibits a thorough inspection. Deadwood. Overhead cables pass close to the crown, there is evidence that there has been past pruning to clear the lines. Oversails footpath and road.	Crown clean to remove the deadwood. The root protection area of the tree extends into the footprint of the proposed extension therefore a traditional foundation cannot be used and a pile foundation as described in section 4.5 of this report is required. The tree will be protected by the position of the barrier as indicated by the blue line on the TPP. The existing surfacing must remain in place throughout the development.	Low	22	20	A
7 G1 TPO no.87 (2001)	Sycamore *Acer pseudoplatanus*	17.2	4.0	4.8	5.5	3.9	640	4.0	Mature	Fair	Fair	7.7	20-40	B-Moderate	Extensive ivy prohibits a thorough inspection. Wires pass close to the crown	Sever ivy and re-inspect once the aerial parts have died off. The root protection area of the tree extends into the footprint of the proposed extension therefore a traditional foundation cannot be used and a pile foundation as described in section 4.5 of this report is required. The paid area is to be extended over the root protection area of the tree and so as to not cause damage to the	None	22	20	A

Tree Number	Species Common name *Latin Name*	Height (M)	Crown Spread (M) N	S	E	W	Trunk Dia (MM)	Height Of Crown Clearance (M)	Age	Physiological Condition	Structural Condition	Root Prot Area Radii (M)	Estimate Remaining Contribution (Years)	Tree Quality Assessment	Comments	Maintenance	Bat Roost Potential	Ultimate Size For Species (M) Height	Spread	Priority
																roots no-dig tree friendly construction as per section 5.2 of this report will be required in the area indicated by the green hatching on the TPP. It would be prudent to leave a space of 1.0m between the trunk of the tree and the new paving. The tree will be protected by the position of the barrier as indicated by the blue line on the TPP. However until the time that the patio is laid the protective barrier should be placed as indicated by the yellow line on the TPP. To provide a working space and space for scaffolding ground protection measures are required as per section 5.3 of this report in the area as indicated on the TPP by the orange hatching.				
8 G1 TPO no.57 (2001)	Ash *Fraxinus excelsior*	15.4	6.1	6.6	7.4	6.9	750	2.5	Mature	Fair	Fair	9.0	20-40	B-Moderate	Deadwood Occluded pruning wounds. *The home owner has advised that the tree is later to flourish to leaf each year and that the amount of deadwood is increasing. Therefore it would be prudent to monitor the tree's health given its proximity to the existing building and proposed extension.*	Crown clean to remove the deadwood. The root protection area of the tree extends into the footprint of the proposed extension therefore a traditional foundation cannot be used and a pile foundation as described in section 4.5 of this report is required. The patio area is to be extended over the root protection area of the tree and so as to not cause damage to the roots no-dig tree friendly construction as per section 5.2 of this report will be required in the area indicated by the green hatching on the TPP.	None	23	15	A

Tree Number	Species Common name *Latin Name*	Height (M)	Crown Spread (M) N	S	E	W	Trunk Dia (MM)	Height Of Crown Clearance (M)	Age	Physiological Condition	Structural Condition	Root Prot Area Radii (M)	Estimate Remaining Contribution (Years)	Tree Quality Assessment	Comments	Maintenance	Bat Roost Potential	Ultimate Size For Species (M) Height	Spread	Priority
																It would be prudent to leave a space of 1.0m between the trunk of the tree and the new paving. The tree will be protected by the position of the barrier as indicated by the blue line on the TPP. However until the time that the patio is laid the protective barrier should be placed as indicated by the yellow line on the TPP. To provide a working space and space for scaffolding ground protection measures are required as per section 5.3 of this report in the area as indicated on the TPP by the orange hatching.				
9 G1 TPO no.67 (2001)	Sycamore *Acer pseudoplatanus*	13.0	5.0	4.5	7.5*	8.1	590	3.0	Mature	Fair	Fair	7.1	20-40	A-High	Ivy starting to climb the stem. Torn stubs. Deadwood. Holly at base.	Remove holly from base. Crown clean to remove the deadwood. The tree will not be affected by the proposed development and will be adequately protected by the position of the barrier as indicated on the TPP.	None	22	20	A
10 G1 TPO no.67 (2001)	Sycamore *Acer pseudoplatanus*	13.4	3.6	4.6	6.0	4.8	560	2.2	Mature	Fair	Fair	7.0	20-40	A-High	Crossing / rubbing branches. Very slight lean towards the north. Previous pruning evident and some decaying stubs.	No tree works required at the present time. The tree will not be affected by the proposed development.	None	22	20	-
11 G1 TPO no.67 (2001)	Sycamore *Acer pseudoplatanus*	13.0	5.3	5.1	7.6	6.6	600	3.5	Mature	Fair	Fair	7.2	20-40	B-Moderate	Deadwood. Nails in trunk and wooden plank nailed to southern flank. Occluded wound. Slight lean towards the north. On the southern flank from 0.5m to 1.2m there is an occluded wound. There is no indication as to whether there was any decay associated	Remove nails and plank. Crown clean to remove the deadwood. The tree will not be affected by the proposed development.	None	22	20	-

Tree Number	Species Common name *Latin Name*	Height (M)	Crown Spread (M)				Trunk Dia (MM)	Height Of Crown Clearance (M)	Age	Physiological Condition	Structural Condition	Root Prot Area Radii (M)	Estimate Remaining Contribution (Years)	Tree Quality Assessment	Comments	Maintenance	Bat Roost Potential	Ultimate Size For Species (M)		Priority
			N	S	E	W												Height	Spread	
															with this wound.					
Group 1 Includes 1x birch TPO no.128 (2005)	Leylandi Cypress, Silver birch *X Cupressocyparis leylandii, Betula pendula*	15.0	0.0	0.0	0.0	0.0	400	1.0	Mature	Fair	Fair	4.8	20-40	B-Moderate	Row of approximately 12x cypress and 1x birch located on the neighbouring property. Some pruning works have been carried out. Roots appear to be lifting the block paving within the subject site. Remote assessment.	Prune to create a 1.5m clearance between the edge of the crowns of the trees and the edge of the existing building and proposed extension. Tree works should be carried out with the agreement of the tree owner. The root protection area of the trees extends into the footprint of the proposed extension therefore a traditional foundation cannot be used and a pile foundation as described in section 4.5 of this report is required.	None	20	14	A
Group 2	Yew, Cherry Laurel, Lawson Cypress, Holly, Pissards plum *Taxus baccata, Prunus laurocerasus, Chamaecyparis lawsoniana, Ilex aquifolium, Prunus cerasifer Pissardii*	10.0	0.0	0.0	0.0	0.0	250	0.5	Young	Fair	Fair	3.0	20-40	B-Moderate	Located in neighbouring property. Deadwood. Remote assessment. Part of landscaping in neighbouring property to north of subject site.	No works are required at this time. The group will not be affected by the proposed development.	None	15	12	-
Group 3	Privet, Sycamore, Box *Ligustrum ovalifolium, Acer pseudoplatanus, Buxus sempervirens*	4.0	0.0	0.0	0.0	0.0	200	0.0	Middle Aged	Fair	Fair	2.0	20-40	C-Low	Shrub group north of vehicle entrance to site. Provides a screen from the neighbouring property. The young sycamores are self set.	No works are required at this time. The group will be adequately protected by the position of the barrier as indicated on the TPP.	None	22	20	-
Group 4	Privet, Cherry Laurel *Ligustrum ovalifolium, Prunus laurocerasus*	4.0	0.0	0.0	0.0	0.0	350	0.0	Middle Aged	Fair	Fair	3.5	20-40	B-Moderate	Small shrub group, part of landscaping. Diameter estimated.	The group is in conflict with the patio extension and will therefore need to be removed.	None	6	6	A
Group 5	Elm, Leylandi Cypress, Sycamore, Cherry, Apple *Ulmus spp, X Cupressocyparis leylandii, Acer pseudoplatanus, Prunus spp, Malus*	6.0	0.0	0.0	0.0	0.0	220	0.0	Middle Aged	Fair	Fair	2.2	20-40	B-Moderate	Small trees and shrubs contributing to the garden landscaping. Berberis fern photos.	A small section of the group will need to be removed to facilitate the extension of the patio area. The remaining section will not be affected and will be adequately protected by the position of the barrier as indicated on the	None	22	20	A

Tree Number	Species Common name *Latin Name*	Height (M)	Crown Spread (M) N	S	E	W	Trunk Dia (MM)	Height Of Crown Clearance (M)	Age	Physiological Condition	Structural Condition	Root Prot Area Radii (M)	Estimate Remaining Contribution (Years)	Tree Quality Assessment	Comments	Maintenance	Bat Roost Potential	Ultimate Size For Species (M) Height	Spread	Priority
																TPP.				
Hedge 1	Privet *Ligustrum ovalifolium*	2.2	0.0	0.0	0.0	0.0	150	0.0	Mature	Fair	Fair	1.8	20-40	B-Moderate	3x Sections of hedging contributing to the western boundary The hedge reinforces the wooden fencing Screens the garden from the adjacent road.	A small section of the hedge will need to be removed to facilitate the driveway area extension. The remaining hedge will be adequately protected by the position of the barrier as indicated by the blue line on the TPP.	None	5	5	A
Hedge 2	Privet *Ligustrum ovalifolium*	2.0	0.0	0.0	0.0	0.0	150	0.0	Middle Aged	Fair	Fair	1.5	20-40	B-Moderate	Forms part of southern and eastern boundary	No works required at this time. the hedge will be adequately protected by the position of the barrier as indicated by the blue line on the TPP.	None	5	5	

Appendix 2(1)

Glossary of Terms

1 **Reference number:** An individual identifying number

2 **Species:** Species identification is based on visual field observations and lists the common name. In some cases the botanical name will be used where there is no common alternative. On in-depth surveys the botanical name only may be used

3 **Height:** Height is estimated to the nearest metre. On computerised surveys this may be within a range of heights. When measured height is required, a clinometer is used to measure to the nearest metre

4 **Diameter:** Trunk diameter measured at 1.5 metres from ground level to the nearest centimetre. In some surveys this is indicated as a range

5 **Spread:** Measurement of canopy from the trunk to the nearest metre in four directions, North, South, East, and West in metres

6 **Lower crown Clearance:** Height in metres of crown clearance above adjacent ground level

7 **Age:** Either an estimate (or statement if accurately known) of the age of the tree, classified as:

- **Y** = Young tree, established tree usually up to one third of expected ultimate height & spread
- **MA** = middle aged, usually between one third and two thirds of ultimate height & spread
- **M** = Mature, more or less at full height but still increasing in girth & spread
- **OM** = Over mature, grown to full size and becoming senescent.
- **V** = Veteran tree, individuals surviving beyond the typical age range for the species

8 **Physiological Condition:**
Good = Healthy tree with good vitality.
Fair = Moderate health and vitality normal or slightly less for species and age
Poor = Poor shape or form - signs of decline in crown, may have structural weakness
Dead = dead or dying tree

9 **Structural Condition:**
Good = No visible structural defects
Fair = Only minor structural defects
Poor = Defects which may need to be rectified or regularly monitored
Remove = Severe defects which may result in immanent failure or collapse

10 **Management Recommendations:** General comments on the condition of the tree or group and any action required, potential for wildlife habitats

11 **Estimated Remaining Contribution:** Safe Useful Life Expectancy (SULE): in some cases the age ranges are modified
Short 0 - 10years Medium 10– 20 Years
Intermediate 20-40 Long 40 + years

12 **Tree Quality:**

13 **Priority:**
A - Works to achieve an acceptable level of safety or required to facilitate the development
B - Works to achieve higher levels of arboricultural management
C - To improve the aesthetic appearance.

12 **Ultimate Size:** Taken from Arboriculture Research Note 8490/ARB or NHBC Standards Chapter 4.2 as appropriate. The Normal Ultimate Height in an Urban Situation in metres. Ultimate spread of the Crown in metres

13 **Root Protection Area:** The distance at which the protective barrier should be erected measured in a radii from the centre of the trunk in metres.

14 **Pruning:** Pruning shall be defined as the removal of living or dead parts of a plant by the Contractor. Such parts may be soft growth, twigs, branches, limbs or sections of the tree trunk. The cut material may vary from small to large in size

15 **Crown Cleaning:** Cleaning out is defined as the removal of dead, dying or diseased branchwood, broken branches or stubs left from previous tree surgery operations (see also 16 Deadwooding) together with all unwanted objects, which may include ivy (if specified) and/or other climbing plants, nails, redundant cable bracing, rope swings, tree houses and windblown rubbish from the tree, and any such debris from any cavities within the tree

16 **Deadwood Removal:** Dead wooding shall be defined as the removal of all dead and dying branches and limbs from the tree

17 **Crown Lifting:** Crown lifting shall be defined as the removal of all soft growth and branches or parts thereof which are below or which extend below the height specified in the tender documents. It is recognised that the resultant canopy base might not be one single level but might be stepped to allow for different clearances, for example where a tree overhangs both the footway and the road where different height clearances are required.

18 **Crown Reduction:** Crown reduction shall be defined as the reduction of the complete outline dimension of the canopy, from the tips of limbs and branches to the main trunk, by pruning growth to an acceptable branch, twig or but to leave a flowing silhouette

Appendix 2(11) Cascade Chart For Assessing Tree Quality

Cascade chart for assessing tree quality				
Category and definition	Criteria – Subcategories			Identification on plan
	1. Mainly arboricultural values	2. Mainly landscape values	3. Mainly cultural values, including conservation	
Category High = A Those of high quality and value: in such a condition as to be able to make a substantial contribution (a minimum of 40 years is suggested)	Trees that are particularly good examples of their species, especially, if rare or unusual, or essential components of groups or of formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue)	Trees, groups or woodlands which provide a definite screening or softening effect to the locality in relation to views into or out of the site, or those of particular visual importance (e.g. avenues or other arboricultural features assessed as groups)	Trees, groups or woodlands of significant conservation historical, commemoralive or her value (e.g. veteran trees or wood – pasture)	Green
Category Moderate = B Those of moderate quality and value: those in such a condition as to make a significant contribution (a minimum of 20 years is suggested)	Trees that might be included in the high category, but are downgraded because of impaired condition (e.g. presence of remediable defects including unsympathetic past management and minor storm damage)	Trees present in numbers, usually as groups or woodlands, such that they form distinct landscape features, thereby attracting a higher collective rating than they might as individuals but which are not, individually, essential components of formal or semi-formal arboricultural features (e.g. trees of moderate quality within an avenue that includes better, A category specimens), or trees situated mainly internally to the site, therefore individually having little visual impact on the wider locality	Trees with clearly identifiable conservation or other cultural benefits.	Blue
Category Low = C Those of low quality and value currently in adequate condition to remain until new planting could be established (a minimum of 10 years is suggested), or young trees with a stem diameter below 150mm	Trees not qualifying in the higher categories	Trees present in groups or woodlands, but without this conferring on them significantly greater landscape value, and/ or trees offering low or only temporary screening benefit	Trees with very limited conservation or other cultural benefits	Yellow
	NOTE Whilst C category trees will usually not be retained where they would impose a significant constraint on development, young trees with a stem diameter of less than 150mm should be considered for relocation			
Category Remove = R Those of such a condition that any existing value would be lost within 10years and which should, in the current context, removed for reasons of sound arboricultural management	• Trees that have a serious irremediable structural defect such that their early loss is expected due to collapse, including those that will become unviable after removal of other R category trees (i.e. where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning) • Trees that are dead or are showing signs of significant, immediate and irreversible overall decline • Trees infected with pathogens of significance to the health and/or safety of other trees nearby (e.g. Dutch elm disease) or very low quality trees suppressing adjacent trees of better quality • Habitat reinstatement may be appropriate (e.g. R category trees used as a bat roost- installation of bat box in nearby tree)			Red

Appendix 2(III)
Guidelines for the Planning, installation and Maintenance of utility services in proximity to trees- Based on information from National Joint Utilities Group (NJUG)

Ideally all services should be placed outside of the trees root protection area, but in some situations this is not feasible due to the confines of the site. If services must be laid within the root protection area acceptable techniques are detailed below in order of preference.

- **Trenchless**- by use of thrust boring or similar techniques. The pit excavations for starting and receiving the machinery should be located outside of the root protection area.
  To avoid root damage, the mole should run at a depth of at least 600mm.
  Use of external lubricants on the mole other than water (e.g. oil or bentinite) should be avoided.
- **Broken trench**- by using hand dug trench sections together with trenchless techniques. It should be limited to practical access and installation around or below the roots. The trench must be dug by hand (see following comments re continuous trenching) and only be long enough to allow access for linking to the next section. The open sections should be kept as short as possible.
- **Continuous trench**- the trench is excavated by hand and retains as many roots as possible. The surface layer is removed carefully and hand digging of the trench takes place. No roots over 2.5cm diameter or clumps of smaller roots (including fibrous) should be severed. The bark surrounding the roots must be maintained. Cutting of roots over 2.5cm diameter should not be attempted without the advice of a qualified Arboriculturalist.
  If roots have to be cut, a sharp tool (defined as spade, narrow spade, fork, breaker bar, secateurs, handsaw, post hole shoveller, hand trowel) should be used.

Backfilling

Reinstatement of street works must comply with the code of practice New Roads and Streetworks Act 1991 (Specification for the reinstatement of openings in highways), but where tree roots are involved backfilling should be carefully carried out to avoid direct damage to retained roots and excessive compaction of the soil around them.

The backfill should incorporate an inert granular material mixed with top soil or sharp sand (not builders sand) around the retained roots. This will allow a measure of compaction for resurfacing whilst creating an aerated zone around the roots.

Roots and in particular fine roots, are vulnerable to desiccation on exposure to air. The roots are at greatest risk when there are rapid fluctuations in the air temperature around them (especially winter diurnal temperatures). It is vitally important that the roots are covered with sacking whilst the trench is open. The sacking should be removed once the trench is backfilled.

Planning of services

When laying new or replacement services it is wise to plan ahead to prevent future direct damage to the services from root growth by placing the services within a duct.

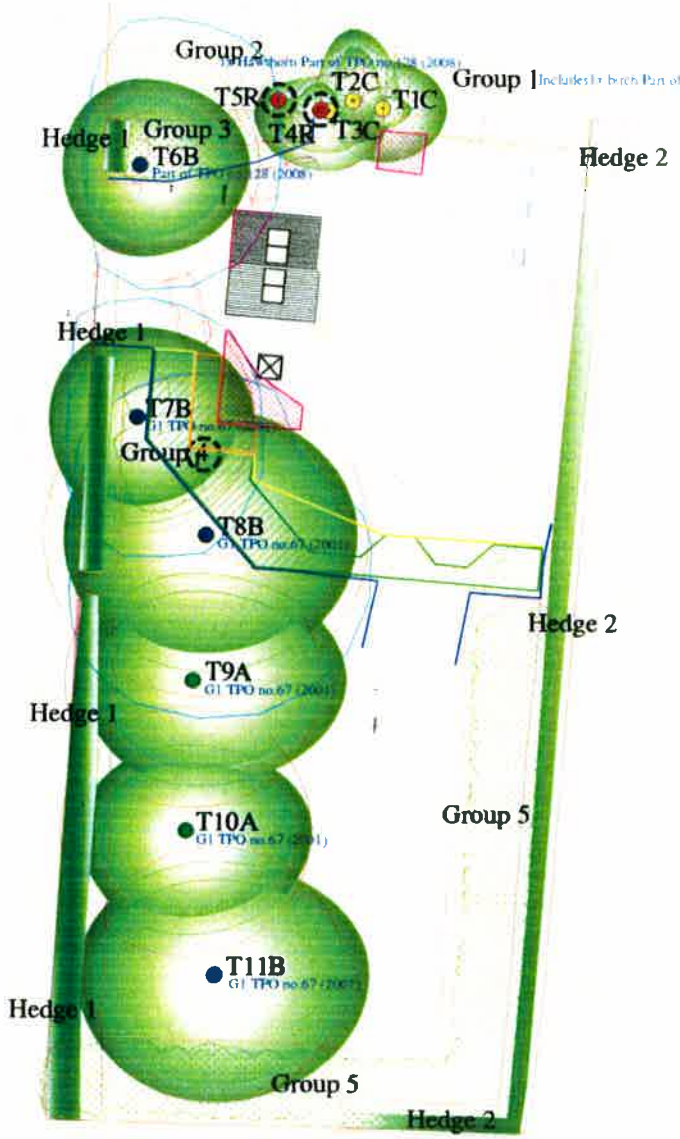
If roots have grown into a drain or duct and proliferated to cause a blockage, removal of the root mass will only have a temporary affect and the root will regrow. The fault is in the pipe or duct, not the tree roots and the only answer is to repair or replace the damaged area. Particular problems occur with old salt glazed pipes where clay has been used to seal the joints and has subsequently dried out leaving a gap for the roots to infiltrate.

A popular myth has arisen that tree roots are attracted to water or nutrients within piped systems, this is not so. Roots are adventitious and grow in all directions proliferating in areas where moisture or nutrients are present. They tend to grow near to the pipe to make use of the condensation or moisture build up on the outside of the pipe but will enter the pipe through any crack or damaged joint. They are not capable of breaking into sound pipes.



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Chartered Arboriculturalists & Environmentalists



Key:

Tree Number

Tree Crown Tree Shape (Shaded Light Green)

Predicted Future Growth Of Canopy (Shaded Dark Green & Surrounding Current Crown Tree Shape)

Trees To Be Removed Broken Black Ring Surrounding Centre

Tree Quality Assessment Centre Colours As Below

Green Centre = High Quality (Denoted by letter A)

Blue Centre = Moderate Quality (Denoted by letter B)

Yellow Centre = Low Quality (Denoted by letter C)

Red Centre = Remove Quality (Denoted by letter R)

BS Root Protection Area As Shown By The Red Circle Around The Tree

Site Specific Root Protection Area (Modified According To Site Conditions. Area Remains The Same As BS Circle Representation Of RPA) Shown By Cyan Polyline

Position Of Protective Barrier (Continuous Blue Line)

Special Construction Methodology Required (Green Hatching)

Pile Foundations Required (Magenta Cross Hatching)

Position Of Protective Barrier Before Scrub Removing (Continuous Yellow Line)

Ground Protection Measures Required (Orange Hatching)

Institute of Chartered Foresters

Arboricultural Implication Assessment
Tree Protection Plan (TPP)

Retained Trees Shown On Proposed Layout With Protective Measures Indicated

15 West Park Road,
Cleadon

For

Mario Minchella Architects

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-Ecological Consultants

Drawing no
TPP-A