

6 Holly Lodge Gardens, London N6 6AA

BS5837:2012 Tree Survey



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September 2012 as amended

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SUMMARY

There are no notable trees within this garden although some of the specimens do form screen planting between these prestigious detached properties. There is scope for limited tree removal close to the house which would not be detrimental to the character of the garden or surrounding area.

1. Introduction

- 1.1 I have been instructed by Terrain Surveys to carry out a survey of the trees within the boundaries of this property.
- 1.2 The purpose of this report is to assess the condition of the trees, and provide recommendations on the protection of trees during the development of an extension and the trees long term management.
- 1.3 The survey is to take the form of a visual assessment of trees recording their measurement, describing their age, amenity, condition and recommending work. Trees have been plotted on plan and full details of survey work are included in the appendices.
- 1.4 The site was visited on 29 August 2012 and a survey carried out identifying and locating the relevant trees and other vegetation. The trees were inspected from ground level and indicative positions marked on plan.
- 1.5 In the case of building within the vicinity of mature trees the owners must be made aware of their responsibility to maintain these trees in a safe condition. Their insurers should be made aware of the implications of the presence of these trees.
- 2.6 The BS5837:2012 outlines the arboricultural requirements for submission as part of a planning application. This report goes some way to address these requirements, however further details may be required following the design of the proposed extension or alterations.

2. Background

- 2.1 The property is situated within a prestigious early 20th century development of detached houses on the edge of Highgate. The house is orientated facing to the south and is situated along a row of houses overlooking a small park on one of the estate road within this urban area.
- 2.3 According to the British Geological Survey, this property lies on a bedrock of London Clay soils with silts, sand and clays. Superficial deposits have not been recorded. Clay soil are susceptible to compaction if overrun by heavy machinery, and may be subject to seasonal desiccation from tree roots growing close to building

- 2.4 The garden is on sloping ground with the road along the front 6 metres lower than the rear of the garden. This change of levels is taken up by a series of two banks and retaining walls within the rear garden.
- 2.5 A path transects a narrow lawn within the front garden bordered by trees and shrubs. Within the rear garden the paved terrace close to the house with banks, retaining wall and steps leading to a lawn. The garden is enclosed with timber fences and shrubbery and trees have been planted alongside the boundaries to act as a screen to neighbouring gardens.
- 2.7 Several of the trees may have been planted when the house was developed around 1927 and include climbing wisteria (3) the apple tree (4) purple leaved plum (5), cherry plum, the holly (8) and the two Portuguese laurels (9 and 10). Other trees are of more recent origin
- 2.6 The site is within a Conservation Area and as such the Local Authority has an interest in retaining tree cover as part of the character of the area. An application should be made to the council if any tree work is proposed and consent received prior to this working taking place. If poor quality trees are to be removed then adequate provision should be made for replacement planting as part of the design of the proposals.

3.0 Tree Survey

- 3.1 Photographs of many of the trees and full details of this tree survey are included on tree survey sheets. (Appendices A and B) Information recorded complies with BS5837:2012, and is outlined as follows:-
- The species (English names), size and position of the trees within the garden.
 - The majority of large shrubs or trees with stem diameter of less than 150mm have not been surveyed, as according to the British Standard Recommendations these trees can be transplanted or replaced.
 - The dimensions of the trees are the height, and the girth measured at 1.5 metre above ground level. The spread is measured at the four points of the compass, and this is represented on plan. The lowest branch on the trunk and crown height is measured from the lowest point of the foliage.
 - The maturity is recorded and details of this classification are included on the tree survey sheets.
 - A description of the tree's condition includes any visual defects at the time of the survey. As this survey is conducted from ground level; not all defects may be visible, and pathogens may not be apparent because of the season of inspection.
 - General recommendations for each tree are outlined, which may need to be reviewed once development proposals are finalised.

- Estimated remaining contribution in years in view of the existing site conditions are classified as, (less than 10 years; 10 to 20 years, 20 to 40 years or more than 40 years).
- 3.2 Topographical drawings have been provided by Terrain Surveys Ltd drawing number TS12-173T1. Tree survey information has been added to this plan and details amended for the purpose of this report. The tree survey is included on the 'Tree Constraints Plan' which outlines the arboricultural constraints to development. (Appendix F)
- 3.3 It is important to note that the trees are surveyed and their condition evaluated in the current site conditions. If there is a change in the site conditions and within the root protection area the trees may need to be re-surveyed and their potential longevity re-evaluated. In the event of adverse weather conditions the survey should be repeated. Regardless of the development proposals there should be regular inspection and monitoring of trees at a frequency dependent on their condition and age: as such this tree survey is only valid for a 3 year period.
- 4.0 BRITISH STANDARDS: Tree In relation to design, demolition and Construction-recommendations. 5837:2012**
- 4.1 **Assessment of the trees' amenity values** The British Standard Recommendations provide an assessment of trees on development sites and outlines four categories in which trees should be placed for assessment purposes. These assessment categories are reproduced in Appendix C, Table 1, "Cascade Chart for Tree Quality Assessment", and simplified as:-
- A **Trees of high quality** with an estimated remaining life expectancy of at least 40 years
 - B **Trees of moderate quality** with an estimated remaining life expectancy of at least 20 years
 - C **Trees of low quality**, with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter of below 150mm
 - U **Trees which have limited prognosis.** Those in such a conditions that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years.
- 4.2 **Tree root protection** - British Standard Recommendations 5837:2012 provide a formula for calculating the Root Protection Area (RPA) required to be protected for existing trees that are to be retained. The area of the root protection area is calculated by multiplying the girth measured at 1.5 metre by 12. In the case of multi-stem trees the girth of the trunks is measured at 1.5 metres and a formula is outlined in BS5837:2012 (The square root of the combined squares of the girth gives the mean dimension of the girth- with a tree with 5 or more stems the mean girth of all stems is then calculated. The results of both equations are then multiplied by 12 to give the radius). Root protection areas are indicated as a radius on plan. In the event of root restrictions for example deep foundations or a retaining wall,

topography, drainage, soil type or soil structure, or soil disturbance the approximate area is represented by a polygon, as dictated by this British Standard. In this site an assumption would be that the trees may be able to root under car park surface and footpath construction, but road and building foundations would provide a barrier to root formation.

- 4.3 Within development sites the British Standard recommends that trees are fenced off to ensure the root protection area is not damaged by construction works. In compliance with the British Standards, protective fencing should be erected at the edge of the root protection area. If access is required within this area, then the ground should be protected. Construction techniques using geo-web and geo-textile, in accordance with BS recommendations might be used to minimise damage to trees and enable working space for demolition or construction within the root protection area of trees. Indicative details of both protective fencing and ground protection methods are included in the appendices to this report.
- 4.4 Drainage and service runs need to be identified at this stage to ensure that if new service runs are to be excavated they should be located outside the root protection zone of existing trees.
- 4.5 Building foundations can be specifically designed to reduce the impact of a building if there is a minor incursion into the root protection area of tree.
- 4.6 **Other considerations-** In addition, the British Standard takes into account future growth of the crown of the tree, the spatial implications and its effects on light.
- 4.7 Existing levels within the root protection areas of trees should be retained.
- 4.8 Some tree work might be required to ensure that the crowns of trees are cut back from working space and to provide access for construction vehicles.
- 4.9 There are adequate areas within the site to ensure that handling and storage of materials can be accommodated well outside the root protection.

5.0 Synopsis of the tree survey

- 5.1 Within the front garden there is a Lawson's cypress (1) planted near the path which has twin stems and has been reduced; re-growth has subsequently occurred within the upper crown. A small multi-stem Japanese maple (2) is growing on the western shrub border- These trees are of no particular value, although retention of trees within the front garden does contribute to the ambiance of these properties.
- 5.2 In a small planted bed close the house a mature wisteria (3) is secured to the western elevation of this building. If removed there may be scope for planting of new climbing plants on this elevation.
- 5.3 Close to the rear of the house and growing on a bank there is an mature apple tree- it leans over the building with a tight fork at the divided trunk at 500mm. Its crown

overhangs the building but at 4.5 metres in height with decay within the trunk and laterals. Its presence is unlikely to be a constraint to development.

- 5.4 Consistent with early twentieth century planting the mature purple leaved plum (5) has a twisted trunk and decayed branch stubs from branch removal. It has a 4.25 metre radius root protection area however it is noted that its prognosis is limited. It is likely it was a grafted tree on the root stock of a cherry plum. The adjacent single and multi-stemmed cherry plums (6 and 7) could have formed from suckers and the root stock of this or another grafted trees. At 10-12 metres in height they form a low level screen between garden, although they contain defects within their branch structure. All three trees would be assessed as of 'C' quality with limited prognosis.
- 5.5 A 10 metres high variegated holly (8) with a slight lean to the south occupies a more central position along the rear boundary. The two Portuguese laurels (9 and 10) growing at the top of this retaining wall, although with some defects within their structure are important visually in screening this garden from the surrounding properties,
- 5.6 The last tree surveyed is the mature Norway spruce growing within the neighbouring garden of 7 Holly Lodge Gardens, with its root protection area extending into this property and underlying the terrace and part of the boundary shrubbery.

6.0 Arboricultural Impact Assessment

- 6.1 It is indicated by the client that the development plans include a small extension on the south western side of the house; the location of this extension would result in the loss of the apple (4) and possibly the purple leaved plum (5).
- 6.2 Neither tree is significantly visible outside the garden, and given their limited prognosis replacement planting would provide a more sustainable option.
- 6.3 The boundary planting should be retained, and their root protection areas fenced off. Alternatively replacement planting along the boundaries might be considered.
- 6.4 The Norway spruce (11) has surface roots therefore any alterations to the ground within this tree's root protection area should be avoided.

7.0 Tree Surgery

- 7.1 As part of the application for planning permission the following tree surgery is outlined. All works will be carried out by a competent tree surgeon in accordance with BS3998:2005 "Tree Work". The timing of tree surgery should also be carried out in accordance with the Wildlife and Countryside Act and with a view to the nesting season of birds within the site.

The following list is an indication of tree works required- a more detailed list will be drawn up once development proposals have been finalised.

Tree no	. Species	Management recommendations
1	Lawson cypress	Reduce to retain its existing size and control its growth
4	Apple	remove
5	Purple leaved plum	Clean- if removed replace with a small density branched tree or evergreen
6 and 7	Cherry plums	Clean the crown removing dead and defective branches
9 and 10	Portuguese laurels	Clean and remove stubs of trunks and branch stubs

8.0 Recommendations-

- Design any development outside the majority of the trees root protection area and shrubbery between the properties or provide replacement planting as a screen between these houses.
- Carry out tree surgery and monitoring as outlined in this report.
- Removal of 'U' quality trees to address safety issues
- Re-assess some of the prominent "C quality trees in view of the future use of the site
- Fence off trees to be retained
- Provide a method statement for any development of building or structures in vicinity of mature trees outlining protection and construction techniques
- Provide a tree replacement and management program aimed at improving the condition of retained trees and planting new better quality trees
- Follow up management with regular maintenance and monitoring of the new planting to ensure it is established and reaches maturity.
- Carry out regular inspection with maintenance of these trees

9.0 Conclusion

9.1 There are no notable trees within this garden although some of the specimens do form screen planting between these prestigious detached properties. There is scope for limited tree removal close to the house which would not be detrimental to the character of the garden or surrounding area.

- 9.2 With new development proposals there may be an opportunity for replacement planting with the aim of improving the sustainability of the tree resource within the proposed development.
- 9.3 It is suggested recommendations outlined in this report are adopted and development proposals are designed to ensure the retention, and new planting of trees within the boundaries of this site.

Elizabeth Greenwood CMLI FArbor A
September 2012

References

- British Standards 5837: 2012 Trees in relation to Design, Demolition and Construction.
- British Standards 5837: 2005 Tree work
- Tree Preservation Orders - A Guide to Good Practice
- Diagnosis of ill health in trees - R G Sprouts and T G Winter - Forestry Commission Publication ISBN 0-11-753545-1
- Principles of tree hazard management - David Lonsdale - Forestry Commission Publication ISBN 0-11-753355-6
- The body language of trees - Claus Mattheck and Helge Breloer - Forestry Commission Publication ISBN 0-11-753067-0
- Arboriculture research and Information note 12 'Tree Root Systems'.
- Tree Roots and in the Built Environment John Roberts, Nick Jackson and Mark Smith. DCLG ISBN 13-978-0-11-753620-3
- Manual of Wood Decay Fungi- K. Weber and C. Mattheck - -The Arboricultural Association, ISBN 0- 900978
- The Trees of Britain and Northern Europe, Alan Mitchell and John Williamson, Collins ISBN 0-00-219857-6

Appendix A

Photographs of the trees

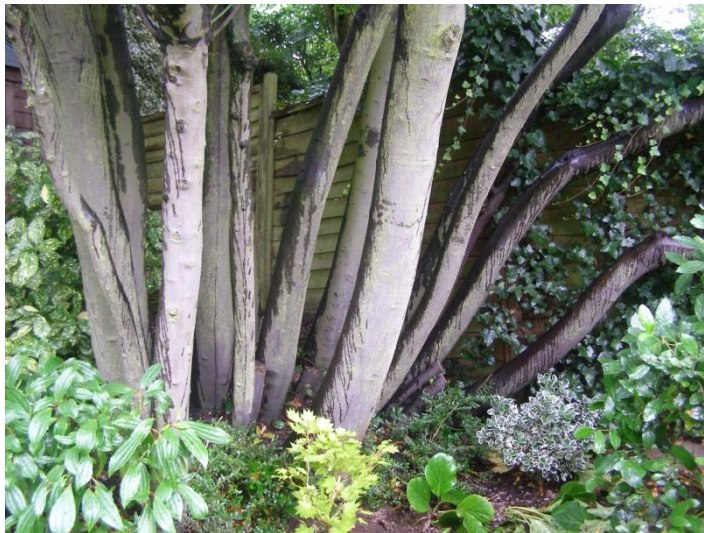


Above left- the cultivar Lawson cypress (1) within the front garden **Above right-** the Japanese maple(2) **Above right** the climbing wisteria notated on this survey(3). **Below left and centre-** the apple (4) leaning over the building with a leaning trunk and enlarge buttress roots. **Below right-** poor structure of the two cherry plans (6 and 7) possibly re-grown from root stock of grafted trees. **Bottom left-** the terraced garden with retaining wall. **Bottom right-** the purple leaved plum (5)





Above left- dense foliage of the cherry plums (6 and7) **Above left-** the rear garden dense evergreen planting with the variegated holly (8) and two multistem Portuguese laurels (9 and 10). **Below left-** the variegated holly (8). **Below left -** the multistem with tight fork of the Portuguese laurels- both tree have some s stubs from removed trunk at the base



Far Left- the Norway spruce (11) within the garden of 7 Holly Lodge Gardens with its root protection area extending into this garden. **Left-** the tree is close to the terrace and the retaining walls-any works within the vicinity of the tree should be carried out by hand.

Appendix B

Tree Survey Data

Tag	Species	Age class	stem diameter at 1.5m	Stems	Height	Lowest branch	Height of crown clearance	Category	North spread	South spread	East spread	West spread	Physiological Condition	Structural condition	Preliminary management recommendations	Estimated contributing years	Root protection area (sq m)
T1,	Lawsons Cypress, <i>Chameacyparis lawsonia</i>	M,	245, 260, 360	MS,	10.3,	2,	1.5,	C2,	2,	1.9,	1.5,	1.4,	Fair,	Tree growing by front on low retaining wall- has been reduced with 3 growing tips	review- and manage at present height	10 to 20	
T2,	Japanese maple, <i>Acer japonica</i>	M,	60, 40, 230	MS,	3.6,	0.5,	0.5,	C2,	1,	1.7,	1.2,	1.8,	Fair,	within hedge- wide spreading Multistem tree with open crown	retain	10 to 20	2.7
T3,	Wisteria, <i>Wisteria sinsensis</i>	OM,	100,	MS,	5.6,	0,	0,	C2,	3,	3,	0.5,	0.5,	Fair,	Climber growing against gable side to the house	if removed due to building work replace	10 to 20	2
T4,	Apple, <i>Malus sp.</i>	OM,	110, 180, 200	MS,	4.5,	2,	2,	C2,	1.1,	3.4,	2.5,	2.5,	Fair,	on bank- tree leaning at 10° with crown overhanging the building, twin stem with tight forks-	Limited- if retained lift over off	10 to 20	2.4
T5,	Purple leaved Plum, <i>Prunus cerasifera 'nigra'</i>	OM,	360,	S,	11,	2,	3,	C2,	4,	4.4,	5.3,	3.7,	Fair,	On the edge of the shrub bed, tight fork at 2metre with twisted trunk, poor structure branch stubs from branch removal	review-	10 to 20	4.2
T6,	Cherry Plum, <i>Prunus cerasifera</i>	OM,	310,	S,	12,	2,	2,	C2,	3.7,	4,	3.8,	3,	Fair,	Possibly sucker developed from ornamental tree- growing as group with twin stemmed P. Cerasifera- some decay within the crown	review	10 to 20	3.75

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BS5837:2012 Tree Survey as amended

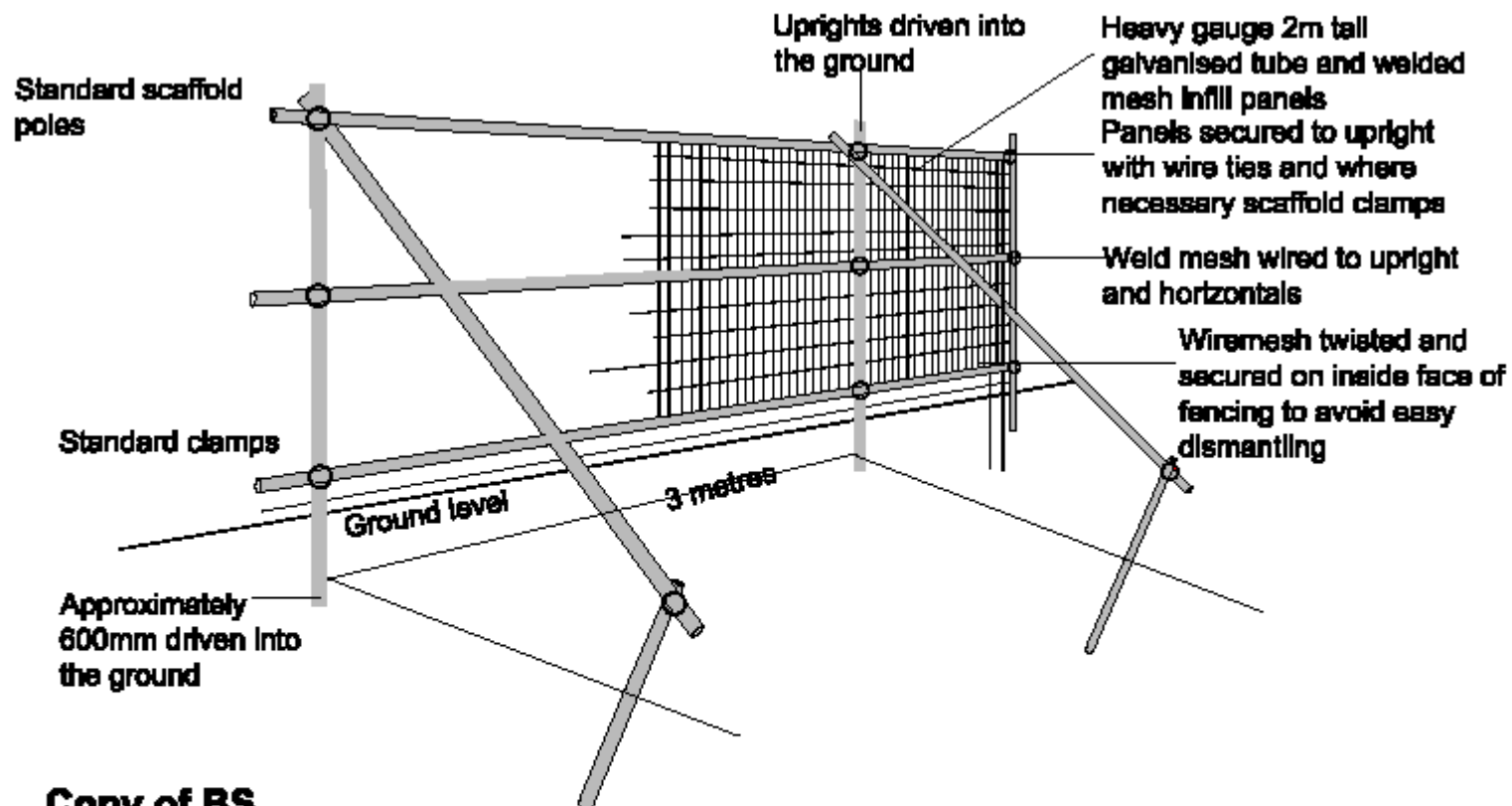
Tag	Species	Age class	stem diameter at 1.5m	Stems	Height	Lowest branch	Height of crown clearance	Category	North spread	South spread	East spread	West spread	Physiological Condition	Structural condition	Preliminary management recommendations	Estimated contributing years	Root protection area (sq m)
T7,	Cherry Plum, <i>Prunus cerasifera</i>	OM,	300, 210, 220, 425	MS,	12,	3	2,	C2,	7.7,	3.4,	3.4,	3.4,	Fair,	As above= twin stemmed poor form with defected within structure- but provided a screen between houses.	review	10 to 20	5.25
T8,	Variegated holly, <i>Ilex aquifolium 'variegata'</i>	M,	280,	S,	10,	2.5,	1,	B2,	2.4,	2.8,	3.1,	2.1,	Fair,	Behind rear retaining wall, slight lean of the trunk, well branched canopy		20 to 40	3.5
T9,	Portuguese laurel. <i>Prunus lusitanica</i>	M,	600,	MS,	12.5,	3,	4,	C2,	4.4,	5.7,	4,	3.4,	Fair,	Multistem by shed with wide spreading tree, slight lean and with tight fork-	crown lift if required	10 to 20	6
T10,	Portuguese laurel. <i>Prunus lusitanica</i>	M,	600,	MS,	12.25,	2,	2,	C2,	1.3,	6.4,	2.4,	4.6,	Fair,	Multistem by retaining wall with wide spreading tree, slight lean and with tight fork-some branch stub from trunk removal	crown lift if required	10 to 20	6
T1, 1	Norway spruce, <i>Picea abies</i>	M,	300,	S,	15.4,	3,	3,	B2,	3.5,	3.3,	3.6,	3.8,	Fair,	within neighbouring garden- well formed with rooting area underlying garden and terraces- above retaining walls	and dig and avoid changes within Rpa to ensure that the tree does not become unstable	20 to 40	3.6

Appendix C

**Extract from BS5837:2005
“Cascade Chart for Tree Quality Assessment”**

TABLE 1				
Cascade Chart for Tree Quality Assessment- BS5837:2012 (copies of table1 and 2)				
Category	Criteria			Identification on plan (RAB subject to legibility of the plan)
Category U (Formerly 'R')				
Those in such a conditions that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years	<p>Trees that have a serious, irremediable, structural defect, such as that their early loss is expected due to collapse including those that will become unviable after removal of other category U trees (e.g. Where for whatever reason, the loss of companion shelter cannot be mitigated by pruning.)</p> <p>Trees that are dead or are showing signs of significant, immediate and irreversible overall decline.</p> <p>Trees infected with pathogens of significance to the health and/or so safety p of other trees nearby, or very low quality trees suppressing adjacent trees of better quality</p> <p>potential conservation value which might be desirable to preserve</p>			Dark red (RAB 127-000-000)
Trees to consider for retention				
	1. Mainly arboricultural qualities	2. Mainly landscape qualities	3. Mainly Conservation qualities	
Category A				
Trees of high quality with an estimated remaining life expectancy of at least 40 years	Trees that are particularly good examples of their species, especially if rare or unusual; those that are essential components of groups or formal or semi formal arboricultural features (e.g. The dominant and/or principal trees within an e avenue	Trees, groups or woodlands or particular visual importance as arboricultural and /or landscape features	Trees, group or woodlands of significant conservation , commemorative or other value (/e.g. Veteran trees or wood pasture)	Light Green (RAB 000-255-000)
Category B				
Trees of moderate quality with an estimated remaining life expectancy of at least 20 years	Trees that might be included in category A, but downgraded because of impaired cons conditions (e.g. Presence of significant though remediable defects, including unsympathetic past management and storm damage) such as that they are unlikely to be suitable for retention beyond 40 years; or trees lacking the special quality necessary to merit category A designation	Tree present in numbers, usually growing in groups or woodlands, such that they attract a higher collective rating than they might as individuals; or trees occurring as collections but situated a so as to make little visual contribution to the wider locality	Trees with materials conservation or other cultural c value	Mid blue (RAB -000-000-255)
Category C				
Trees of low quality , with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter of below 150mm	Unremarkable trees of limited merit such or such impaired condition that they do not qualify in higher categories.	Trees present in groups or woodlands but without this conferring on them significantly great collective landscape value; and/or tree offering low or only temporary/transient landscape benefits	Trees with no materials conservation or other cultural value	Grey (Rab 091-091-091)

Appendix D
Protective Barrier/ Fencing



**Copy of BS
5837:2012 Figure 2
Protective barrier**

Scheme
Copy of BS5837:2012 Tree Protection Details

Date
April 2012

Title
Protective Barrier

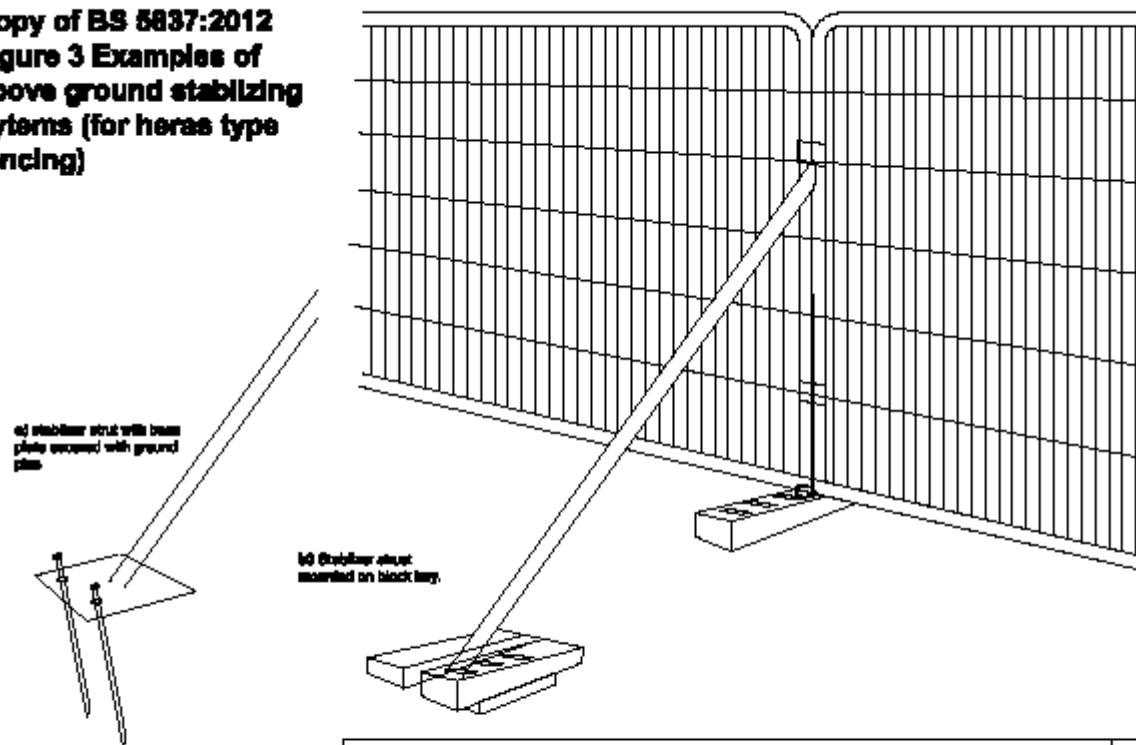
Drawn by
E.J.G
Project no

Scale
A1. Not to scale

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Drawing number

**Copy of BS 5837:2012
 Figure 3 Examples of
 above ground stabilizing
 systems (for heras type
 fencing)**



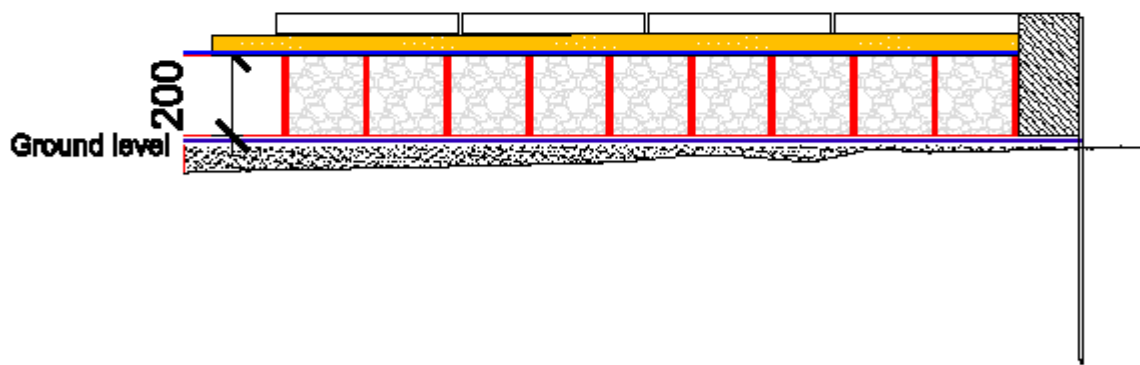
Scheme <i>Copy of BS5837:2012 Tree Protection Details</i>	Date <i>April 2012</i>
Title <i>Protective Barrie-Above Ground Stabilization</i>	Drawn by <i>E.J.G</i> Project no
Scale <i>A4. Not to scale</i>	Drawing number
Elizabeth Greenwood C.M.L.L., F.Arbor.A. 10 Knight Street, Bawtry, Newark, Nottinghamshire, NG21 8AT. Tel 01278 722881 mobile 07746887402, email ezgreenwood@yahoo.co.uk	

Appendix E

Indicative details for Ground Protection

Indicative Paving Detail

Remove turf by hand (50mm depth maximum)
Infill Irregularities with 50mm sharp sand,
Lay heavy duty fibre geotextile (e.g. fibretex FEM)
lay 200mm geoweb. Infill with no fines 20-40mm stone,
Lay wearing course e.g paving laid on 50mm sand with
additional layer of fibre geotextile (e.g.terran) to keep
layers separate. Edge with timber edging and fix with
metal pins. Set edging 50mm from the edge of the path.



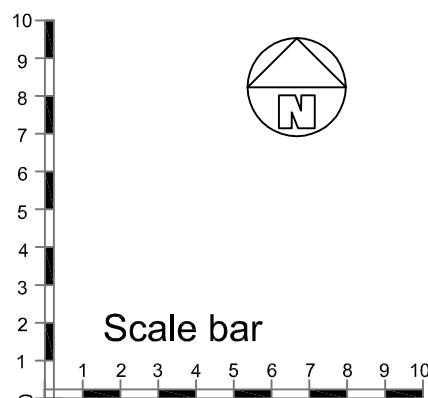
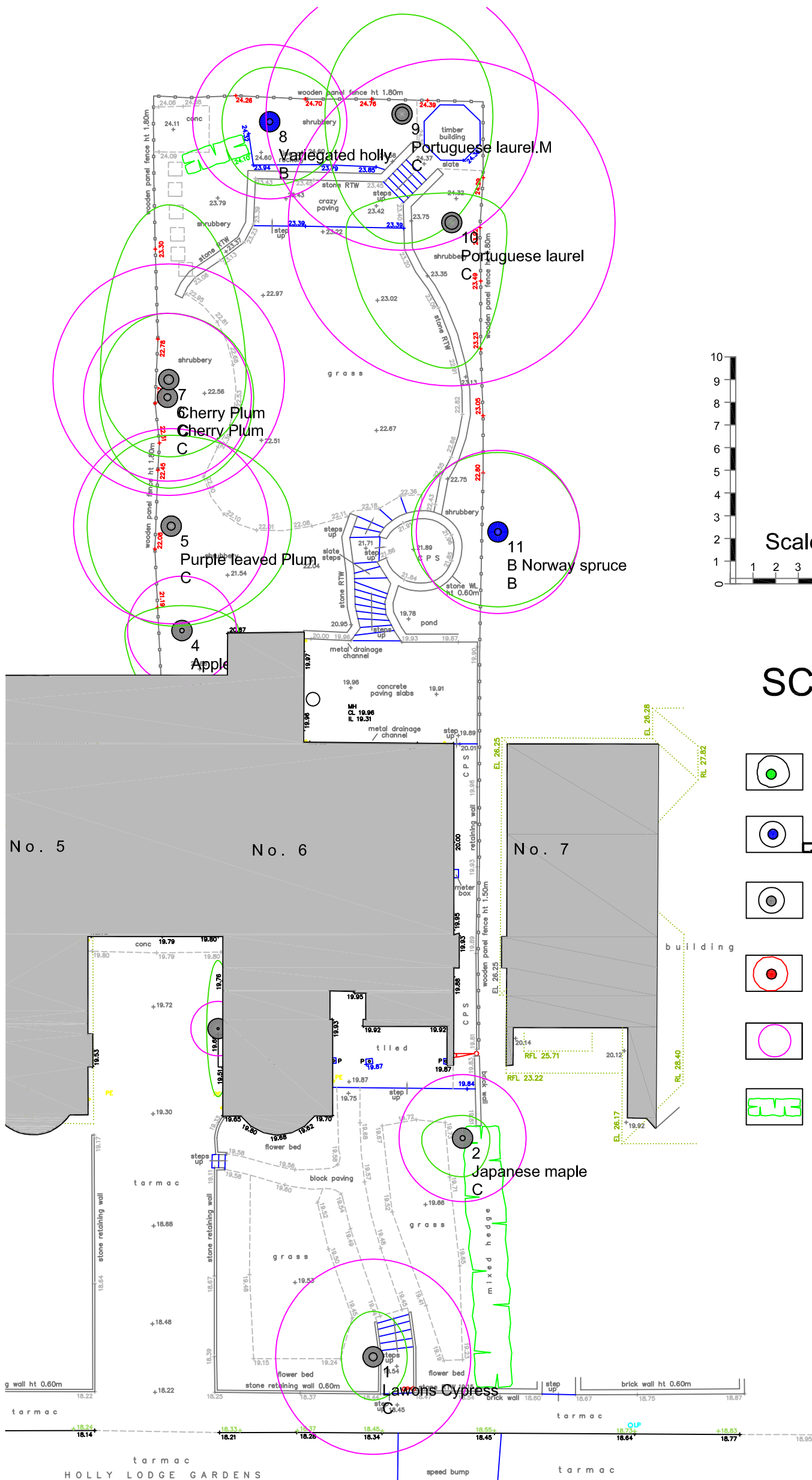
BS5837:2012 Ground Protection

In the vicinity of the temporary unit working space will mainly be confined to existing hard surfacing. Where additional working space is required for construction within the root protection areas of retained trees, the British Standard specifies the following type of ground protection.







- a) For pedestrian movements only, a single thickness of scaffold boards placed either on top of a driven scaffold frame, so as to form a suspended walkway, or on top of a compression-resistant layer (e.g. 100 mm depth of woodchip), laid onto a geo-textile membrane;
- b) For pedestrian-operated plant up to a gross weight of 2 t, proprietary, Inter-linked ground protection boards placed on top of a compression-resistant Layer (e.g. 150 mm depth of woodchip), laid onto a geo-textile membrane;
- c) For wheeled or tracked construction traffic exceeding 2 t gross weight, an alternative system (e.g. proprietary systems or pre-cast reinforced concrete slabs) to an engineering specification designed in conjunction with arboricultural advice, to accommodate the likely loading to which it will be subjected.

Appendix F

Tree Constraints Plan 329.12.1



SCHEDULE

-  A Quality trees
-  B Quality trees
-  C Quality trees.
-  U (R) Tree to remove
-  Root protection Areas
-  Hedges

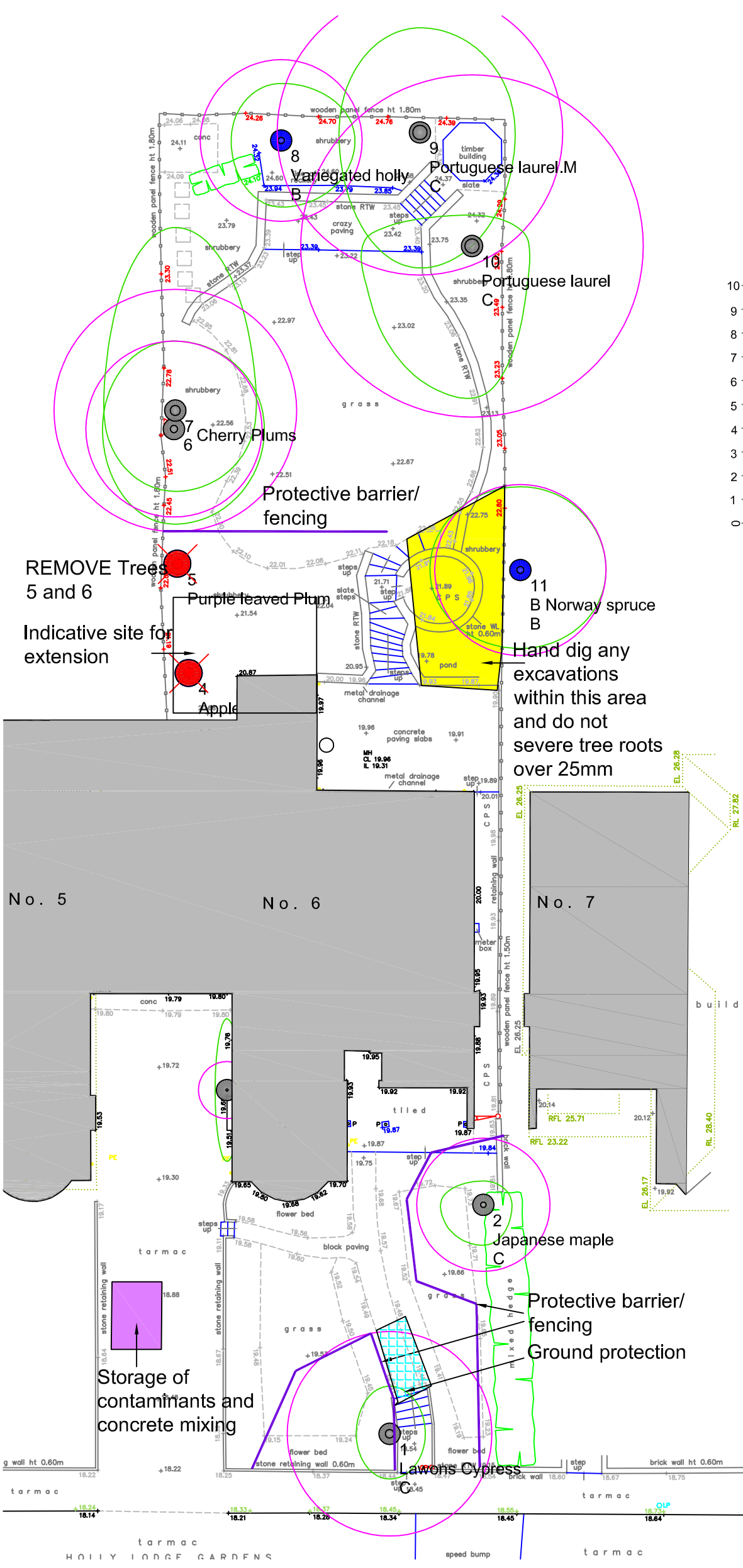
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Scheme <i>6 Holly Lodge Gardens. London N6 6AA</i>	Date <i>September 2012</i>
Title <i>Tree Constraints Plan</i>	Drawn by <i>E.J.G</i>
Scale <i>1:200 @ A3.</i>	Job No <i>329.12</i>
Elizabeth Greenwood C.M.L.I., F.Arbor.A. 10 Knight Street, Sawbridgeworth, Herts, CM21 9AT. Tel 01279 722381 mobile 07746867402, email lzgreenwood@yahoo.co.uk	Drg No <i>329.12.1</i> <i>Appendix F</i>

Appendix G

Indicative Tree Removal and Protection Plan 329.12.1



SCHEDULE

-  Trees to retain
-  Trees to remove
-  Root protection areas
-  Protective /barrier fencing
-  Ground protection
-  Hand dig
-  Concrete mixing & storage of contaminants

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Scheme <i>6 Holly Lodge Gardens. London N6 6AA</i>	Date <i>September 2012</i>
Title <i>Indicative Tree Removal & Protection Plan</i>	Drawn by <i>E.J.G</i>
Scale <i>1:200 @ A3.</i>	Job No <i>329.12</i>
Elizabeth Greenwood C.M.L.I., F.Arbor.A. 10 Knight Street, Sawbridgeworth, Herts, CM21 9AT. Tel 01279 722381 mobile 07746867402, email lzgreenwood@yahoo.co.uk	Drg No <i>329.12.2</i> <i>Appendix G</i>

