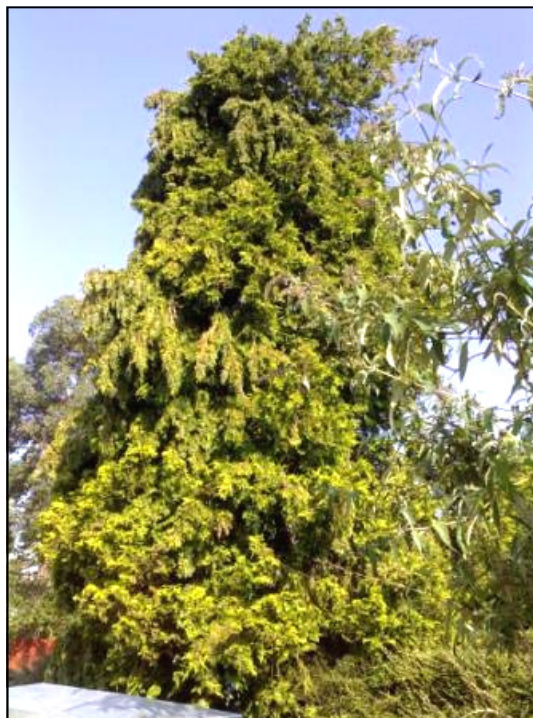




Arboricultural Method Statement

Warblington Footbridge, Havant

Client: Generator Group LLP



Sharon Hosegood MIC For F Arbor A BSc (Hons) Tech Cert (Arbor A)

20 August 2012

Our reference DFC 1340

Executive Summary:

This report provides information on how a Lawson cypress tree will be protected and cared for during the construction of a new footbridge across Network Railway land at Warblington. I have provided all information in accordance with the British Standard, BS 5837:2012 'Trees in relation to demolition, design and construction – recommendations' (referred to as BS).

The tree is a Lawson cypress in early maturity growing in the side garden of 43 Southleigh Road, very close to the boundary of the land adjacent to Network Railway land. It is currently 8m high and appears to be in good health. The crown and the root protection area overhang the site boundary slightly and therefore this report recommends works to keep the tree and build the footbridge including:

- Tree surgery
- Tree protection
- Hand digging of the pad base
- Other general construction issues pertinent to tree care

This report is for the design team and also to submit to Havant Borough Council with the planning application.

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1.0 Scope of client brief:

We have been commissioned by Ardent Consulting Engineers on behalf of Generator Group LLP to:

- 1.1 visit the site and carry out a tree survey in accordance with BS 5837:2012
- 1.2 produce a tree protection plan, which shows the location and specification of the protective fencing in accordance with the British Standard.
- 1.3 provide a tree surgery schedule which includes work to facilitate construction, based on the layout and works to trees due to their condition or previous management.
- 1.4 provide arboricultural method statements to be useful on site and provide information for the construction team.

2.0 The site:

2.1 Location and site description:

The tree is growing in a domestic front garden of 43 Southleigh Road, Havant. The tree is very close to the southern boundary of the garden and slightly overhangs Network Railway land. There are a number of shrubs along the boundary that contribute to the informal green appearance of the boundary. The tree can be seen from Southleigh Road.

3.0 The trees and shrubs:

- 3.1 T1 is a small holly tree growing in the front garden which has been regularly managed. T2 is a golden Lawson cypress in early maturity. It is 8m high and has a typical pyramidal crown, and from observing from the road, it does not appear to have been actively managed. There are no notable defects visible from the survey point of Southleigh Road, and this species does not usually suffer from naturally occurring structural faults. It has a small crown spread of a radius of 2m reaching down to ground level. This is a very commonly planted tree and provides some visual interest to Southleigh Road. No doubt it is appreciated by the owner as screening between the garden and Network Railway land. Golden Lawson cypress potentially can grow up to 18m tall in good growing conditions, but retains its pyramidal form.

3.0 The trees:

- 3.1 (continued) can be cut back, but only within the live foliage. If the branches are cut beyond this there will be no re-growth and the cut ends will be bare and unattractive. The tree has a root protection area¹ of 43.5 square metres, shown as a circle with a radius of 3.7m. This is shown on the plan as a blue circle, which has been slightly offset to the north to reflect the fact that there is competition for rooting space due to the shrubs. Lawson cypress trees tend to have a very dense and compact fibrous rooting area and this practice has observed that the actual rooting zone is often smaller than the calculated RPA.

¹Root protection area (RPA) - A layout design tool indicating the minimum area surrounding the tree that contains sufficient rooting volume to maintain the tree's viability, and where the protection of the roots and soil structure is treated as a priority. Assessed according to the recommendations set out in clause 4.6 of BS 5837. It is calculated by multiplying the radius squared by 3.142. Clause 4.6.2 of BS 5837 states that the RPA may be changed in shape, taking into account local site factors, species tolerance, condition and root morphology.

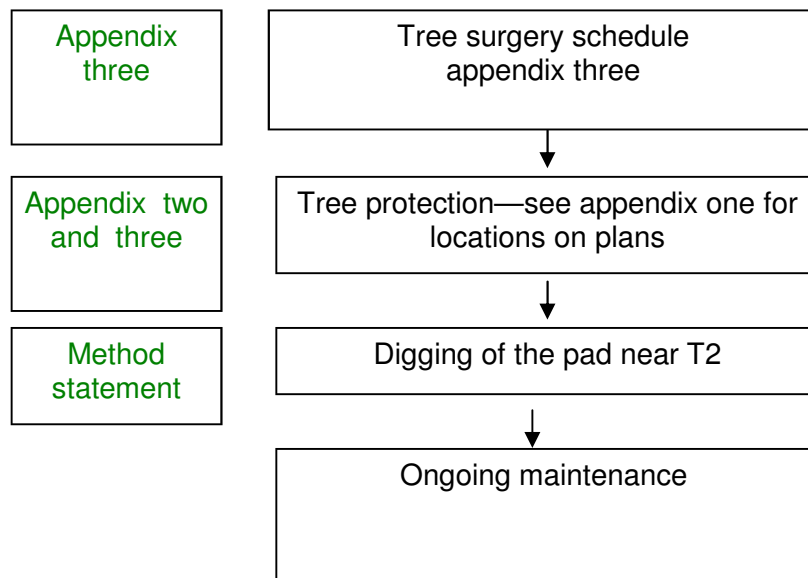
- 3.2 Shrubs: there are five groups of shrubs along the boundary including buddleia , privet and boxleaf honeysuckle. These add to the general softening of the boundary.
- 3.3 Full details of the trees are found at appendix one and their location at appendix 2.
- 3.4 Law: it is understood that the tree is not protected by a Tree Preservation Order or within a Conservation Area, however, the tree condition can change and the contractor must check before carrying out works. Common Law allows the pruning back of overhanging branches and roots, however the work should be reasonable and not cause harm. It is courteous to inform the owner before carrying out the work.

4.0 The proposal:

- 4.1 The proposal is for a new footbridge over Network Railway land , starting at the level crossing, climbing up in a easterly direction, then turning south at the highest point to cross the line and returning on the other side in a westerly direction. There are strict guidelines for the construction, slope, angle and size of the footbridge and there is no flexibility for design. The footbridge is supported by deep piles. At the point that the footbridge is south of the tree, the height of the sloping path will be between 3—4.5m from ground level. There is no excavation immediately south of the tree, but the pad will be dug to the south-east.

5.0 Arboricultural Method Statement:

This has been produced following team discussion and receipt of the latest drawings.



5.1 General principles

Development can adversely impact on trees by causing them to be removed to facilitate the development, or in the future, by adversely affecting their potential for retention through disturbance in root protection areas (RPAs) or through post development pressures to prune or remove. Tree roots can be asphyxiated and die if the rooting zone becomes compacted and soil structure damaged which can easily occur, particularly on clay soils, even with the passage of light vehicles. We have considered the construction activity such as demolition, including removal of existing hard surfaces, changing soil levels and the provision of services where within RPAs.

5.2 Tree work recommendations:

Recommendation for tree works can be found in the tree surgery schedule in Appendix 3. All works shall be in accordance with British Standard *BS 3998:2010* 'Tree work: Recommendations', or in accordance with current best practice. The use of a competent tree surgery contractor is necessary to comply with this. In this case all that is needed is a very light trimming back of the crown at a height of about 3—4.5m on the site side, facing back slightly within live vegetation. S1 will need to be cut back hard, or removed.

5.2 Tree work recommendations:

The main contractor and tree surgery contractor must ensure that any necessary consents have been received from the local authority and that no protected species are harmed whilst carrying out site clearance or tree surgery works. Where poisoning of stumps is specified, this must be carried out by trained and qualified operatives. Only chemicals approved for this purpose and used in accordance with the manufacturer's instructions will be used.

5.3 Tree protection plan (TPP):

The plan found at Appendix 2 is based on provided information and all measurements and site boundaries must be checked against the submitted plans. This plan should only be used for dealing with the tree issues. Trees to be retained have black centres and green outlines whilst trees to be removed have red centres and a red, dashed, outline. Tree protection is shown as barriers and/or ground protection and any areas requiring non-standard methods of demolition or construction are shown.

5.4 Tree protection during works:

The tree will be protected by Heras panels which will be braced. The specification for the fencing is found at appendix three and the locations are found on the plan at appendix two.

5.5 Foundation digging:

The area shown hatched with orange cross hatching is partially within the theoretical RPA of T2. This area will be piled with and there will be a deep pad. The area will be marked out and all surface vegetation lifted with a spade, cutting horizontally under the sward. The area will then be dug by hand and any roots found will be cut cleanly with bypass secateurs. This method is to continue for a depth of 600mm (the likely maximum rooting depth for this species). The sides of the hole should then be immediately lined with damp hessian (to prevent root desiccation) and impermeable plastic to prevent the alkalinity of the concrete scorching the end of the roots. This method will ensure that roots are cut cleanly, enabling them to re-grow. The new root shoots will be deflected away from the pad back towards the garden and along the strip of land between the garden and Network Railway land

5.6 Site and fuel storage, cement mixing and washing points:

All site storage areas, cement mixing and washing points for equipment and vehicles and fuel storage areas should be outside RPAs unless otherwise agreed with the Local Planning Authority. No discharge of potential contaminants should occur within 10 m of a retained tree stem or where there is a risk of run off into RPAs.

5.7 Protection of tree canopies:

Piling rigs and cranes are often used close to trees. Where protective fencing does not entirely protect the canopies of trees from potential damage from high vehicles and plant, care must be taken to ensure no damage is caused. Work must be carefully planned and a banksman used to guide the operator. Arboricultural supervision may be required.

6.0 Conclusions:

6.1 I have provided all information required in BS 5837:2012.

6.2 T1 is entirely unaffected. S2—S5 are unaffected. S1 will need to be removed. T2 will need to be slightly cut back mid crown on the southern side, within the green foliage. At this point, the bridge slopes up at about 3-4m in height and will be encased with 1.5m solid sides. This will leave a 'cut out' section at this height on the southern side of the tree. The absolute minimum will be cut back, and it seems likely that all cuts will be within live foliage. The tree's crown will need to be cut back annually in this zone, but can continue above it.

6.3 The pad is within the theoretical root protection area of the tree. Most Lawson cypress trees have a small fibrous root system, and in this case, the root morphology may be directed away from the Network Railway land side due to the influence of shrub and perennial vegetation and due to the fact that good growing conditions are found in the garden. The area of the rooting concerned is to the south east of the tree and the remainder of the rooting area will be unaffected and protected (on the site side) during works. The careful hand digging will ensure that any roots that are found are cut cleanly and that new shoots can exploit the area around the pad and beyond to the east and west.

6.3 The tree will in fact outgrow its situation as it is so close to the house, and most house holders remove this type of tree once it gets beyond 8m when near the house. However, this is a private matter for the owner to consider and I have assumed the tree will stay for the purposes of the report.

7.0 Recommendations:

- 7.1 That a copy of the report, including the site specific method statements and tree protection plan is kept on site at all times and is part of the site induction and is sent to the contractor.
- 7.2 That the tree protection is installed after tree surgery and before commencement of construction, and remains in situ until the end of works.
- 7.3 That the foundation design for the extension takes into account the trees to be removed and trees to be retained.
- 7.4 That after construction the tree T2 is regularly inspected by a competent person and that a reasonable clearance is maintained between the edge of the footbridge and the branches.

Sharon Hosegood MICFor F Arbor A BSc (Hons) Tech Cert (Arbor A)
Managing Director—DF Clark Bionomique

I have a degree in Geography and Landscape Studies and a distinction in the Arboricultural Association's Technicians Certificate (top student). I am a Fellow of the Arboricultural Association and a Chartered Arboriculturalist. I have eleven years experience as a tree and landscape officer. I have been in private practice since 2005 and a director of a multi disciplinary consultancy since 2007.

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Appendix one –

Tree survey sheet

TREE SURVEY SCHEDULE

Key:

- **Ht** = Height estimated in metres.
- **Stem Diam** = Stem or trunk diameter, measured and calculated in accordance with Annex C and section 4.6 of BS5837:2012.
- **oi** = Measurement taken over ivy, which is likely to produce an exaggerated figure.
- **Crown Spread** = Crown spread to the cardinal points in metres, measured by pacing.
- **1st significant branch ht' & direction** = First significant branch height and direction of growth.
- **Crown base ht'** = Distance between surrounding ground level and the base of the main crown estimated in metres.
- **Life stage** is chosen from the four following and self explanatory categories;
 - Young;
 - Semi mature;
 - Early mature;
 - Mature;
 - Over Mature.
- **General observations** = Particularly of structural and/or physiological condition, significant features and defects, and the effect these may have on the health, stability and safe retention of the tree.
- **Preliminary management recommendations** = any significant works identified as necessary in the current context, and not taking into account any development of the site..
- **Rem' cont'** = an estimate, in years, of the remaining period over which the tree can be retained at an acceptable level of risk whilst still providing significant amenity benefits.
- **Reten' Cat'** = Desirability for retention category. Refers to BS5837:2012 which categorises trees on development sites into one of four categories – A, B, C or U, A being very good and U meaning that felling is appropriate regardless of any proposals. The suffix 1, 2 or 3 refers to a subcategory relating to tree, landscape or cultural/ecological values respectively.
- **AGL** = Above ground level
- **#** = Estimated dimension.
- **TYP** = Typical dimension where several are present.

Ref no	Species	Ht (m)	Stem diam (mm)	No. of stems	Crown spread (m)				1 st sig' branch ht' (m)	Direction of 1 st sig branch	Crown base ht' (m)	Life stage	General observations	Preliminary management recommendations	Rem' cont' (years)	Reten' Cat	
T1	Holly <i>Ilex aquifolium</i>	3.5	150	1	1	1	1	1	1.5	1.6	East	1.6	Early Mature	- The tree was inaccessible in private land and therefore all assessments and measurements used were made from a distance. - The tree was an attractive roadside feature although somewhat diminutive in stature. (Cont'd)	- No works currently identified. - RPA area = 10.2 square metres (radius = 1.8 metre)	10-20	C2

Ref no	Species	Ht (m)	Stem diam (mm)	No. of stems	Crown spread (m)				1 st sig' branch ht' (m)	Direction of 1 st sig branch	Crown base ht' (m)	Life stage	General observations	Preliminary management recommendations	Rem' cont' (years)	Reten' Cat
T1	Holly <i>Ilex aquifolium</i> (contd)				N	E	S	W					(Contd) - The crown had been lifted repeatedly in the past creating a number of small diameter limb removal wounds and two very large limb removal wounds, the first on the south eastern side of the trunk at approximately 200 mm above ground level and the second on the north western side at approximately 600 mm above ground level. - The wood exposed in these wounds was discoloured and there was a small amount of callous growth present around the periphery. - Several epicormic shoots were emerging from the clear stem along with a number of basal suckers. - The tree was located in a raised grass verge at the side of the road retained by a brick wall. - The base of the trunk was approximately 200 mm from the top of this wall at its closest point. - It was also considered likely that this damage would increase in the future hence the trees reduced grading. (contd)			

Ref no	Species	Ht (m)	Stem diam (mm)	No. of stems	Crown spread (m)				1 st sig ⁺ branch ht' (m)	Direction of 1 st sig branch	Crown base ht' (m)	Life stage	General observations	Preliminary management recommendations	Rem ⁺ cont' (years)	Reten ⁺ Cat
T1	Holly <i>Ilex aquifolium</i> (contd)				N	E	S	W					(Contd) The wall in this vicinity contained a small number of cracks and it was considered a possibility that the tree was exerting direct loads on this structure and thereby causing it damage.			
T2	Lawson Cypress <i>Chamaecyparis lawsoniana</i>	8	310	1	1.5	2	2	2	1.7	West	0.75	Early Mature	- The tree was inaccessible in private land and therefore all assessments and measurements used were made from a distance. - The tree was an attractive boundary feature that contributed to boundary screening between the station and the neighbouring property. - The tree had significant potential for future growth. However as it was located in a front garden close to a drive it was considered likely that this future growth would bring it into increasing conflict with the neighbouring property as the quantity of tree related debris dropped on the drive and on the parked cars increased with the size of the tree.	- No works currently identified. - RPA area = 43.5 square metres (radius = 3.7 metre)	20-40	B2

General comments – DF Clark Bionomique 10 08 12

Shrub identification

S1	Privet	<i>Ligustrum</i>
S2	Boxleaf Honeysuckle	<i>Lonicera nitida</i>
S3	“ “	“ “
S2 & S3 had occasionally been clipped to form a hedge.		
S4	Buddleia	<i>Buddhleia davidii</i>
S5	Buddleia	<i>Buddhleia davidii</i>

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Appendix two –

DFC 1340 TPP

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Appendix three – Tree protection specification

Design of welded mesh, Heras type tree protection barriers

Barriers should be fit for the purpose of excluding construction activity and appropriate to the degree and proximity of work taking place. The default specification should be in accordance with 6.2.2.2 of BS 5837, as set out below.

Specifications: Barrier shall be a minimum 2 m high. It shall consist of a vertical and horizontal scaffold framework, well braced to resist impacts, as illustrated below. The vertical tubes should be spaced at a minimum interval of 3 m and driven securely into the ground. Onto this framework, welded mesh panels should be securely fixed. See Figure 2 overleaf.

Where site circumstances and associated risk of damaging incursions into the RPA do not necessitate the default level of protection, an alternative specification may be used if agreed with the local authority. An example would be 'Heras' type welded mesh panels on rubber or concrete feet. The panels should be joined together using a minimum of two anti-tamper couplers, installed so that they can only be removed from inside the fence. The panels should be supported on the inner side by stabiliser struts. See Figure 3 overleaf. All-weather notices should be attached to the barrier with words such as 'CONSTRUCTION EXCLUSION ZONE - NO ACCESS.

Location: Fencing shall be positioned on the perimeter of the Root Protection Area to define the Construction Exclusion Zone or as specified in the Tree Protection Plan.

The existing walls will remain in place during construction and will act as tree protection (shown by the thick black line on the tree protection plan).

Design of Weldmesh Type Tree Protection Fence

Figure 2 Default specification for protective barrier

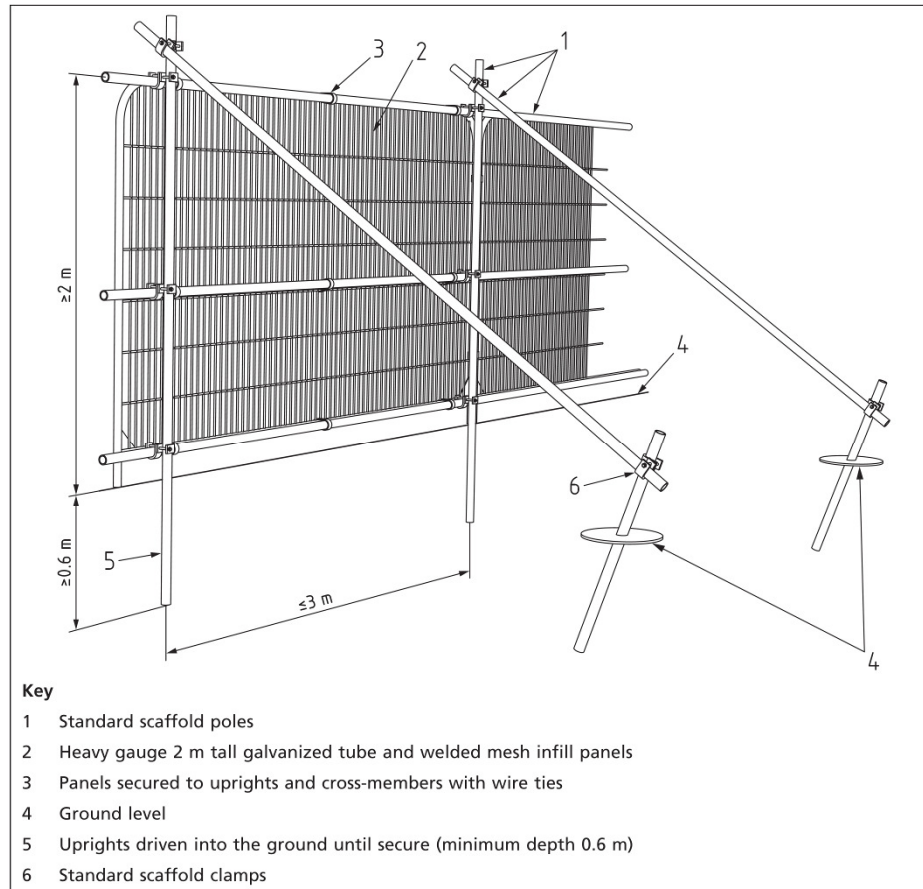
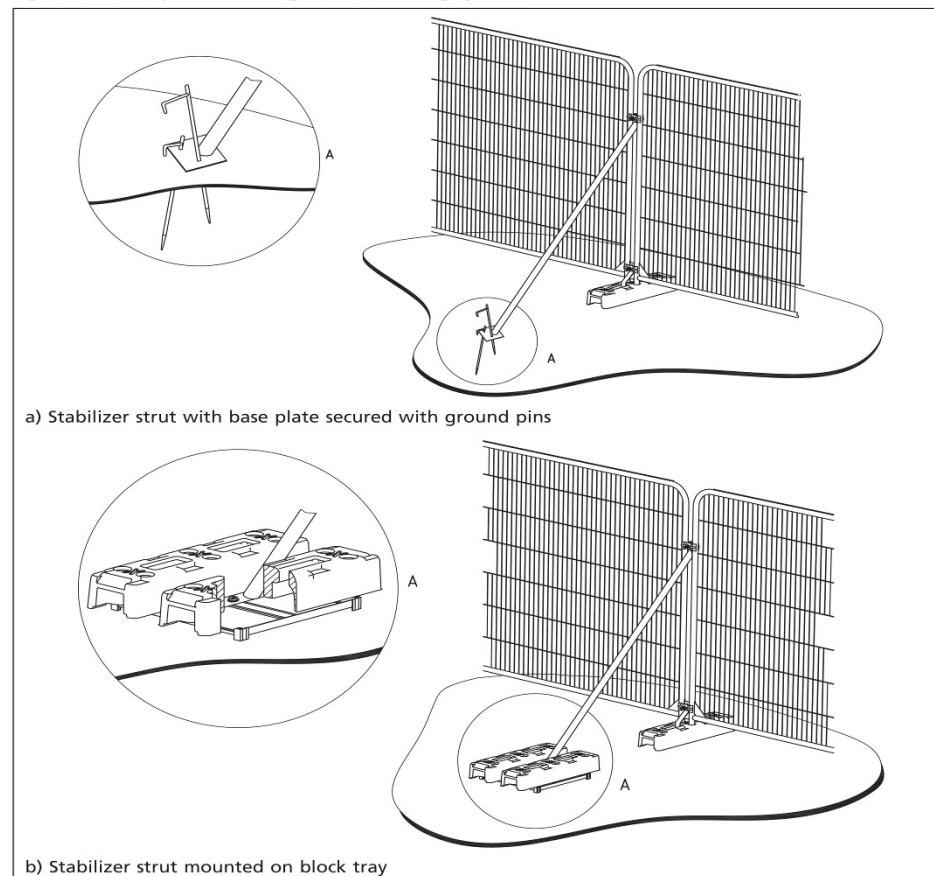


Figure 3 Examples of above-ground stabilizing systems



Suggested protective fencing warning sign format



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Appendix four – Tree surgery schedule

Tree surgery schedule: All tree works to be undertaken in accordance with BS 3998:2010 'Tree works—Recommendations'. All pruning cuts to be made at suitable growing points in line with the principles of 'Natural target pruning'.

Tree no.	Species	Location	Proposed works	Reason
T2	Golden Lawson cypress	In 43 Southleigh Road, Havant, very close to the southern boundary with Network Railway Line	On the southern side of the crown, cut back the minimum necessary live foliage at a height between 3—4.5m. This work will need to be repeated annually	To achieve a reasonable clearance for construction and use of the sloping bridge To maintain the distance

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Appendix five –
Terms of reference and contact information

Terms of Reference

Reference Documents:

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

BS3998:2010 'Tree work – recommendations'

'Tree Roots in the built environment' (*DCLG - Jack Roberts, Nick Jackson & Mark Smith*)

'Principles of Tree Hazard Assessment and Management' (*DTLR—David Lonsdale*)

Received information:

Drawing number M740-001 Rev D from Ardent consulting engineers

Methodology:

The site was surveyed on 10 August 2012 by Mark Carter (Chartered arboriculturist) from ground level. Observations were made from safe points and dimensions and condition recorded. Photos were taken. Discussion with Ben Brooks (Ardent) about the construction details.

Contacts Table

Name	Company	Position	Telephone number
Edward Orr	Generator Group LLP	Client	Care of Ardent
Ben Brooks	Ardent Consulting Engineers	Principal Engineer	020 74301209
Jamie Garget	Havant Borough Council	Arboricultural officer	023 9247 4174
Sharon Hosegood	DF Clark Bionomique Ltd	Arboricultural consultant	01621 740876 07930 760104

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Appendix six – Caveats

Specific Report Caveats:

- 1 At the time of writing this report, the protected tree status is correct. However, this can change. Therefore I advise that the tree contractor makes a further check with the Havant Borough Council just before carrying out any works.
- 2 No internal diagnostic equipment was used other than a sounding mallet and probe and all inspections were from ground level only, with the aid of binoculars where necessary.
- 3 The survey is concerned solely with arboricultural issues.
- 4 Any changes in ground level, or excavations near to tree roots not discussed within this report may change the stability and condition of the trees and a further examination would be required.
- 5 As trees are a dynamic living organism this report is only valid for a period of 12 months, in respect to their health and condition.
- 6 Only trees listed in this report have been examined.
- 7 Observations were made from the road and level crossing, therefore there may be defects not visible from this point.

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Appendix seven – Photographs



T1 holly



T2 Lawson cypress



T5 Buddleia



T2 Lawson cypress with S5



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Client: Generator Group LLP

Sharon Hosegood MIC For F Arbor A BSc (Hons) Tech Cert (Arbor A)

20 August 2012

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