



R W Green Limited

R W Green Limited
The Lister Building
Upper Stoneham Farm
Lewes
East Sussex
BN8 5RH

Arboricultural Report



**2 – 4 Broadmark Lane & 18
Vernon Close, Rustington**

On behalf of

Ormond Limited

Undertaken by

Nicholas D Jones *NCH Arb. A I Hort. Tech Arbor A.*

July 2010

N D Jones



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1.1 Formal details – My name is Nicholas Jones I am the principal arboricultural consultant for R W Green Limited based at The Lister Building, Upper Stoneham Farm, Lewes, East Sussex, BN8 5RH. I have 20 years experience in the arboricultural industry with the past 8 years acting as a consultant; I am a Lantra accredited Professional Tree Inspector giving advice to clients on a wide range of arboricultural issues.

1.2 The following arboricultural report has been commissioned by Ormond Limited in order to advise on the following:

- The species, size and position of any trees and other vegetation within the area of the proposed development and within neighbouring and adjoining areas where trees may have some significance to the proposed development.
- The maturity and condition of the trees surveyed with appropriate recommendations for action.
- The impact of the proposed development upon the tree population in and around the site.
- Specific measures required to protect retained trees during the development works and the ongoing monitoring of construction works to ensure that retained trees remain protected effectively.

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2.1 The site was visited on 30th July 2010 and a survey carried out identifying and locating the relevant trees and other vegetation. An assessment of the trees in the vicinity of the proposed development has been made in line with the guidance given in British Standard 5837:2005 'Trees in Relation to Construction Recommendations'.

2.2 The existing site layout has been provided by Ormond Limited showing the existing trees in relation to other site features. The Drawing reference for this is Drg No. RG-NDJ-HVCR 001 Tree Layout **Appendix 4**.

2.3 The extent of any statutory protection afforded to the trees on site has not been verified with the Local Planning Authority.



3.1 British Standard 5837:2005 “Trees in Relation to Construction – Recommendations” provides guidance for the assessment of trees on development sites and suggests four primary categories into which trees should be placed for assessment purposes. These categories are as follows (Table 1):



Trees For Removal				
Category & Definition	Criteria			Identification on Plan
Category R Those in such a condition that any existing value would be lost within 10 years and which should, in the current context, be removed for reasons of sound arboricultural management	• Trees that have a serious, irremediable defect, such that their early loss is expected due to collapse, including those that will become unviable after removal of other R category trees (ie. 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 irreversible overall decline • Trees infected with pathogens of significance to the health and/or safety of other trees nearby (eg. Dutch Elm Disease) or very low quality trees suppressing adjacent trees of better quality NOTE: Habitat reinstatement may be appropriate (eg. R category trees used as bat roost: installation of bat box in nearby tree)			Dark Red
Trees to Be Considered For Retention				
Category & Definition	Criteria - Subcategories			Identification on Plan
	1. Mainly arboricultural values	2. Mainly landscape values	3. Mainly cultural values, including conservation	
Category 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 (eg. 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 (eg. Avenues or other arboricultural features assessed as groups)	Trees, groups or woodlands of significant conservation, historical, Commemorative or other value (eg. Veteran trees or wood-pasture)	Light Green
Category 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 (eg. 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 (eg. 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	Mid Blue
Category 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 higher categories	Trees present on 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	Grey
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				

Table 1

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3.2 Trees surveyed have been categorised according to the above guidelines. The trees have been visually assessed from ground level only using non invasive methods of inspection. Tree height is an estimation, crown spread and height to underside of canopy are measured with a Disto laser measure. Stem diameter is measured with a calibrated diameter tape.

3.3 All trees potentially affected by the proposed development are recorded in the tree schedule (**Appendix 1**) with all key trees plotted onto Drg no RG-NDJ-HVCR 001 Tree Layout (**Appendix 4**), tree colours on the plan and attached schedules (**Appendix 1&2**) are commensurate with the category guidance in table 1 above.

Survey information collated is as follows:

- Tree reference number: As recorded on the site plan
- Tree species: Common name only
- Age class: (J) Juvenile, (SM) Semi mature, (OM) Over mature, (V) Veteran
- Estimated remaining contribution in years eg: Less than 10, 10-20, 20-40, more than 40
- Height: In metres
- Stem diameter in millimetres measured at 1.5m above ground level for single stem trees. Multi stem trees are measured just above the root flare
- Crown Spread: Measured at the four cardinal points (Metres)
- Height to underside of canopy: Measurement from ground level to the lowest branch (Metres)
- Physiological condition: Excellent, Fair, Poor, Dead
- Structural condition: Assessed as previous item on presence of decay and potential structural defects
- Retention category: As detailed in Table 1
- Comments and observations: Information regarded as relevant by the assessing arborist

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- Recommended works: Details of any remedial action required to address significant defects and or facilitate development

3.4 The proposed development site covers the gardens of three separate properties.

3.5 With the exception of the trees located on the northern boundary of number 2 Broadmark Lane the gardens contain trees with minimal amenity value.

3.6 The removal of these trees will result in no significant loss of amenity.

3.7 The trees contained on the northern boundary of the proposed development site contribute to the local amenity and provide an established and effective screen (Plates 1-3 **Appendix 3**).

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4.1 British Standard recommendations provide a formula for calculating the Root Protection Area which indicates a recommended area required to be protected for existing trees that are to be retained. The shape of the root protection area and its exact location will depend upon Arboricultural considerations and the area will normally be represented on a constraints plan as a circle or polygon. The purpose of the Root Protection Area is to prevent physical damage to tree roots during excavation and to prevent damage to the soil structure in which they live by soil compaction, contamination, changes in soil levels or prevention of gaseous exchange to living roots.

Plotting the Root Protection Area (RPA) – Worked examples

4.2 For an individual open-grown tree in satisfactory condition of 600mm stem diameter:

Basic calculation $12 \times 600 = 7.2$ (radius in metres) => root protection area (RPA) of 163m^2 .

As the tree in this example is open grown, the RPA should be centred on the stem at a radius of 7.2m (Figure 1).

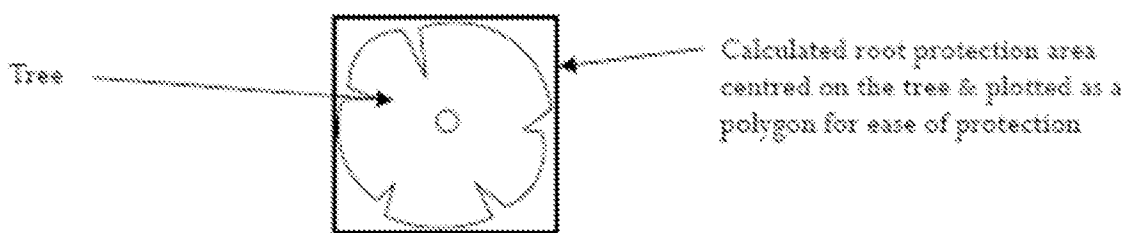


Figure 1

4.3 For individual open grown trees in satisfactory condition, it is generally acceptable to offset the RPA by up to 20% to one side of a tree only (Figure2).

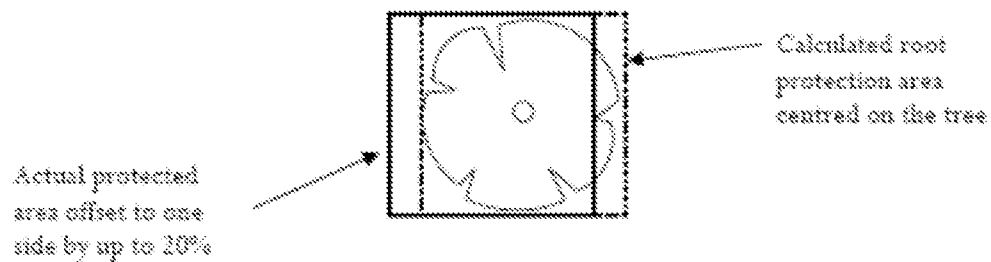


Figure 2

4.4 For a tree of the same size growing next to a pre-existing root barrier such as a watercourse, a carriageway, significant sheer level change and/or where, for whatever reason, the root system would be expected to have developed asymmetrically:

Basic calculation as before $12 \times 600 = 7.2$ (radius in metres) => root protection area of 163m^2

However, it is essential that the root barrier/asymmetry of the root zone be taken into consideration when plotting the RPA, such that the same available square metre area is protected.

The calculated root protection area should be centred on the tree and plotted as a polygon for ease of protection (Figure 3)

The actual protected area extends to the other sides to compensate for the asymmetrical nature of the available rooting area.



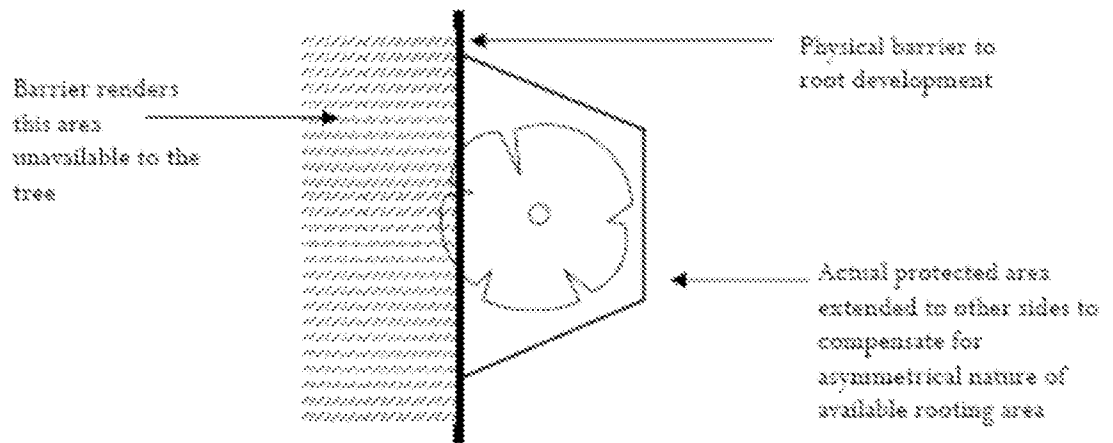


Figure 3

4.5 It must be assumed that on any development site trees may be at risk from a number of construction operations. These include:

- Construction plant access onto the site – Potentially leading to crown, stem and root damage on retention trees. Trees with low canopies over the area of works may require access facilitation pruning and protective fencing will be required to prevent compaction of soil within the Root Protection Area and furthermore to prevent damage to stems and crowns. It is essential that Tree Protection Zones are securely fenced to prevent the access of plant and site operatives to these areas.
- Before plant or equipment is permitted on site, protective fencing should be erected to protect all trees, or groups of trees, which are to be retained.
- It is important that protective fencing is securely fixed to a static fence. The use of mesh fencing without a fixed fence will **not** be acceptable and is not in accordance with British Standard 5837:2005 recommendations.
- The positioning of protective fencing should take into account the size and condition of the individual trees to be protected and the risks to their health posed by the development during and after construction.

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5.1 The Principal purpose of a Tree Protection Method Statement is to ensure the preservation of retained trees through setting out appropriate working practices, construction techniques and tree protection measures that will be adopted when the development is undertaken.

5.2 To ensure that the Local Planning Authority Tree Officer has an opportunity to visit the site, the Local authority will be given 5 days written notice prior to the commencement of the development to check the tree protection measures.

5.3 All tree protective fencing will be positioned as indicated in Drg No. RG-NDJ-HVCR 002 Tree Protection Plan **Appendix 4**.

5.4 In the event that any works are required within the Root Protection Areas of retained trees they will be supervised by the project arborist. It is the responsibility of the client to appoint a suitably qualified project arborist prior to the commencement of works.

5.5 Any damage to protective barriers or accidental damage to retained trees must be reported to the site manager immediately. Works occurring in the vicinity must cease immediately until adequate protection measures are rectified. A record of any damage will be made by the site manager and in consultation with the project arborist any remediation undertaken.

5.6 The following schedule (Table 2) is an overview of the construction phases of arboricultural significance. These may be governed by operational constraints and can be subject to change. The project arborist must be notified immediately of any changes:

Phase 1 – Pre Development Stage
• Pre commencement site meeting between the client, LPA and project arborist • Tree removals, pruning of trees directly impacted by the development • Tree removal, pruning of trees indirectly impacted by the development • Installation of Tree Protection Measures
Phase 2 – Development Stage
• Stage 2 is subject to monthly site monitoring visits by the project arborist • Ensure the site is accessible to construction traffic • Demolition of any existing property • Site compound, WC material storage locations • Ground works and service installations • Development • Completion of Development • Site inspection by project arborist
Phase 3 – Post Development Stage
• Removal of Tree Protection Measures • Landscape contractors briefed by project arborist • Hard and soft landscaping • Boundary installations

Table 2

5.7 Equally as important as the physical protection of retained trees are the links of communication between interested parties. Table 3 below shows the details of all relevant parties and individuals that are important in relation to tree protection. These details will be retained by all relevant parties and made available on site at all times. It is the duty of all relevant parties to advise of any changes to either personnel or contractors during the development process.



	Company	Contact	Telephone	E-mail
Client				
LPA Tree Officer				
Site Manager				
Project Arborist				

Table 3

5.8 On site monitoring - Arboricultural monitoring will involve a schedule of visits, frequency to be agreed with the Local Planning Authority, and completion of a standard form an example of which is given in **Appendix 5** which must be completed by the project arborist and signed by the client, site manager or their representative and the project arborist. A copy is then kept by the client, the project arborist and an additional copy forwarded to the Local Planning Authority.

5.9 The purpose of monitoring visits is to ensure that the method statement and approved tree protection measures are continually adhered to and if remediation is required that it is promptly addressed and notified to all parties immediately.

5.10 Arboricultural supervision is to be carried out at all crucial stages throughout the development process to ensure that tasks are undertaken in accordance with the approved methodology.

5.11 The supervision may require the project arborist to be present throughout the tasks to ensure all of the arboricultural objectives are met.

5.12 If the task is to be prolonged, provided the project arborist is satisfied, the supervision may be reduced to telephone contact between the site manager and the project arborist.



5.13 The Local Authority Arborist shall have free access to the site and pass any recommendations directly to the project arborist.

5.14 A pre-commencement meeting shall be held on site prior to any site clearance or construction works. This will be attended by the contractor's site manager or agent, the Local Authority Tree Officer and the project arborist. The methods of tree protection measures outlined in this statement will be fully discussed at the meeting. Any clarification, alterations or modifications to this statement will be recorded and circulated to all parties in writing. It is advisable that the contractors designated tree surgery or site clearance contractor also attends this meeting.

5.15 Tree Surgery works - Selected individual trees as detailed in the attached schedule **Appendix 1** will be pruned/removed prior to any development work being undertaken.

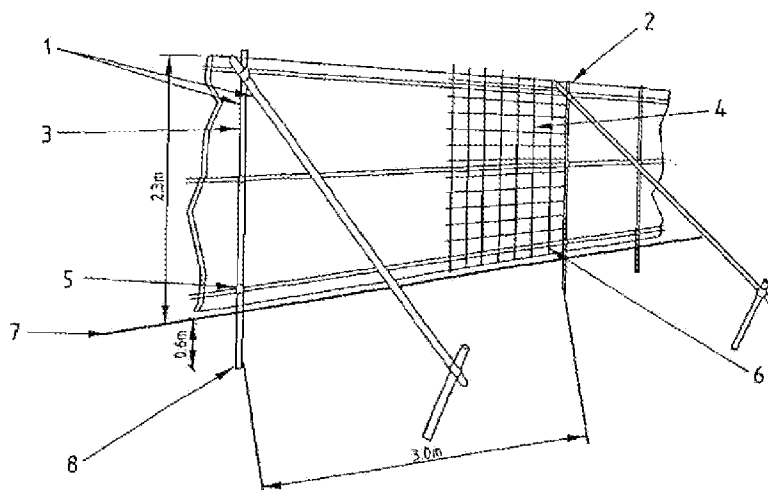
5.16 Tree works undertaken will be in strict accordance with British Standard 3998:1989 Recommendations for Tree Work and current sound arboricultural practice. Works will be undertaken by a qualified and experienced tree contractor.

5.17 The position of the protection measures will be marked out on site and agreed at each stage by the contractor and the project arborist. All protection measures will be installed prior to any construction works on the site including the delivery of any machinery, materials, plant and equipment to the site.

5.18 Tree protection fencing will consist of a scaffold framework comprising of a vertical and horizontal frame braced to withstand impact. Vertical tubes will be spaced at a maximum of 3.0m intervals. The framework will be clad with either weldmesh panels or ply hoarding. See detail below in figure 4 (BS5837: 2005).

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- | | |
|--|---------------------------------------|
| 1 Scaffold poles | 5 Clamp |
| 2 Uprights, to be driven into ground | 6 Wire, twisted and secured |
| 3 Panels, secured to uprights with wire ties and where necessary scaffold clamps | 7 Ground level |
| 4 Weldmesh, wired to the uprights and horizontals | 8 Approx 0.6 m driven into the ground |

Protective barrier

Figure 4

5.19 Once the protection measures are installed and erected in position the fenced area is to be considered sacrosanct and must not be removed or altered in anyway without the prior agreement from the project arborist and the Local Authority Tree Officer.

5.20 Notices will be fixed to the outside of the protective fencing containing wording such as:

TREE PROTECTION AREA – NO ACCESS AND NO STORAGE OF MATERIALS OR WORKING WITHIN THIS AREA

5.21 Tree protection will remain in position until final completion of the site or other time as agreed with the project arborist and the Local Authority Tree Officer. All personnel using the site including managers, agents, supervisors and operatives will be informed as to the role of the protection measures and their importance to the project.

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5.22 If 360° excavators are to be used on site during the construction at no time is the excavating arm to encroach within the tree protection area. Operation must always be in a way that avoids contact with the canopies of retained trees.

5.23 The successful long-term retention of trees on development sites requires some understanding of the ease with which trees may be damaged or killed.

The following general principles should be noted:

- Older trees are generally at greater risk than younger trees and are less able to tolerate changes to soil conditions or canopy pruning.
- Most mature trees have roots that spread beyond the spread of the crown.
- 90% of tree roots are typically found within the top 600mm of soil.
- Raising soil levels around the base of trees will normally result in stem decay.
- Lowering soil levels close to trees will normally result in root death.
- Raising soil levels beneath the crowns of trees will often cause root asphyxiation.
- Physical damage to the bark of trees will often cause decline subsequent decay and ultimate death of the tree.
- Compaction of the soil, caused by vehicular traffic, destroys natural soil structure resulting in poor aeration and loss of water absorption and impeded drainage leading to root death.
- Fires within 10m-20m of trees can cause bark dieback leading to death or structural instability.
- Spillage of chemicals, fuel or cement on ground occupied by tree roots will cause root death.



5.24 In the event that roots are required to be pruned, sharp clean hand pruning tools will be used to ensure a minimum of damage is caused. Any root pruning required will be undertaken by a suitably qualified and experienced arborist.

5.25 All materials for construction purposes will be stored outside of the tree protection area. The storage area is indicated on Drg No. RG-NDJ-HVCR 002 **Appendix 4.**

5.26 In the event of an accident or spillage in any areas adjacent to retained trees work is to cease immediately in that area and the project arborist is to be informed of the event. The project arborist is then to attend site to record the incident and report it in writing to the Local Authority Tree Officer. Any subsequent remedial action is only to be undertaken following the approval of the Local Authority Tree Officer. In the event of a spillage the area is to be secured with sandbags on the line of the tree protection and measures taken to either drain or soak any spillage away from the protected area.

5.27 All post development landscaping will avoid soil re-grading and disturbance within the root protection area where possible. If cultivation is required it will not exceed a depth of 50mm and will be undertaken using hand tools. Both hard and soft landscaping works will be the last stage of the development. Any agreed soil re-profiling required to achieve the finished levels around trees will be carried out by hand using top soil in accordance with British Standard 3882:2007 Specification for Top Soil and Requirements for use. All other landscape works shall be in accordance with British Standard 4428:1989 Code of Practice for General Landscape Operations (Excluding hard surfacing).

5.28 In order to facilitate final surface treatments it may be necessary to remove the tree protection measures. Within the tree protection area as indicated on Drg No. RG-NDJ-HVCR 002 Tree Protection Plan **Appendix 4** all

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works will be in accordance with the guidance given in paragraphs 5.23-5.27 of this document.

5.29 A minimum of seven days notice will be given to the Local Authority Tree Officer prior to the removal of tree protection measures.

5.30 Under no circumstances will the soil levels be altered within root protection area after protection measures have been removed.

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6.1 British Standard 5837: 2005 contains clear and current recommendations for a best practice approach to the assessment, retention and protection of trees on development sites. The proposed development has followed this guidance by:

- a) Seeking arboricultural advice to inform the layout and design of the proposed building
- b) Respecting the constraints posed to development of the site by high or moderate quality trees and taking proactive steps to ensure their protection during development
- c) Continuing to take advice on all aspects to the proposal that may impact upon trees



Appendix one

Tree Schedule

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Broadmark Lane Tree Schedule

Tree number	Tree species	Age class	Estimated remaining contribution	Tree Height (m)	Single or Multi-stemmed	DBH (mm) @ 1.5m	Crown spread (m)				Height to underside of canopy (m)	Physiological condition	Structural condition	Comments and observations	Recommended works	Retention category
							N	E	S	W						
T1	Viburnum	M	<5	3	MS	350	2.4	2.6	2.0	1.5	1.4	Fair	Fair	Fair specimen	Fell to facilitate proposed development	C1
T2	Cotoneaster	OM	<5	3	MS	390	2.2	1.5	1.5	2.0	1.5	Poor	Poor	Poor specimen. Advanced decline with significant die back evident	Fell to ground level	R
T3	Holly	SM	<10	3	MS	200	1.0	1.0	1.0	1.0	0.3	Fair	Fair	Fair specimen located on the eastern boundary	Fell to facilitate proposed development	C1
T4	Bay Laurel	M	<10	3	MS	280	0.9	0.8	0.5	0.8	0.1	Fair	Fair	Located on the boundary of 18 Vernon Close and 2 Broadmark Lane	Fell to facilitate proposed development	C1
T5	Holly	SM	<10	3	S	130	1.2	0.8	0.9	0.7	1.8	Fair	Fair	Fair specimen, boundary tree	Fell to facilitate proposed development	C1
T6	Cherry Laurel	SM	<10	3	S	100	0.7	0.8	1.0	0.5	1.7	Fair	Fair	Fair specimen located on the western boundary	Fell to facilitate proposed development	C1
T7	Apple	M	<15	3	S	200	0.7	1.1	1.2	0.5	1.6	Fair	Fair	Fair specimen	Fell to facilitate proposed development	C1
T8	Hawthorn	M	<15	6	S	300	2.9	2.7	2.8	2.9	2.1	Fair	Fair	Fair specimen located on the western boundary	Fell to facilitate proposed development	C1
T9	Cypress	M	<20	7	MS	Average 300					0.2	Fair	Fair	Group of trees forming an effective boundary hedge	No work required	B1
T10	Cypress	M	<10	2	S	150	0.5	0.5	0.5	0.5	0.2	Fair	Fair	Fair specimen	Fell to facilitate proposed development	C1
T11	Silver Birch	SM	<20	5	S	100	2.2	2.2	1.4	1.5	0.0	Fair	Fair	Fair specimen	Fell to facilitate proposed development	C1
T12	Variegated Sycamore	EM	<20	5	S	360	3.0	3.0	4.5	4.3	1.7	Fair	Fair	Fair specimen located on the northern boundary	No work required	B1
T13	Yew	M	<20	4	MS	300	4.0	4.2	4.0	3.0	0.4	Fair	Fair	Fair specimen, prominent visual feature	No work required	B1

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Appendix two

Root Protection Schedule

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	Root Protection Areas								
	Site Address:		2-4 Broadmark Lane & 18 Vernon Close, Rustington			Date:		30.07.2010	
						Inspector:		N D Jones	
Notes: The following Root Protection Areas (RPA) have been calculated using the formula contained in British Standard 5837:2005 'Trees in Relation to Construction - Recommendations' This is a minimum area in m² that should be left undisturbed around each retained tree. Root Protection Areas have been omitted for category R trees and others proposed for felling as it is assumed they will not be subject to retention. The RPA is capped to 707m² in accordance with British Standard 5837:2005. All RPA figures are rounded to the nearest whole metre².									
Tree Number	Tree Species	BS 5837:2005 Category	Single/Multi Stemmed (S/MS)	Stem Diameter (mm)	Root Protection Radius (m)	Root Protection Area (m ²)	Approximate Distance to Disturbance (m)	Type of Disturbance	Comments
T9	Cypress	B2	MS	Average 300	3.0	28	2.0	Proposed parking area	Acceptable
T12	Sycamore	B1	S	360	4.3	58	3.0	Proposed development	As existing
T13	Yew	B1	MS	300	3.0	28	4.0	Proposed development	As existing

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Appendix three

Photographs

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Plate 1



Plate 2

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Plate 3

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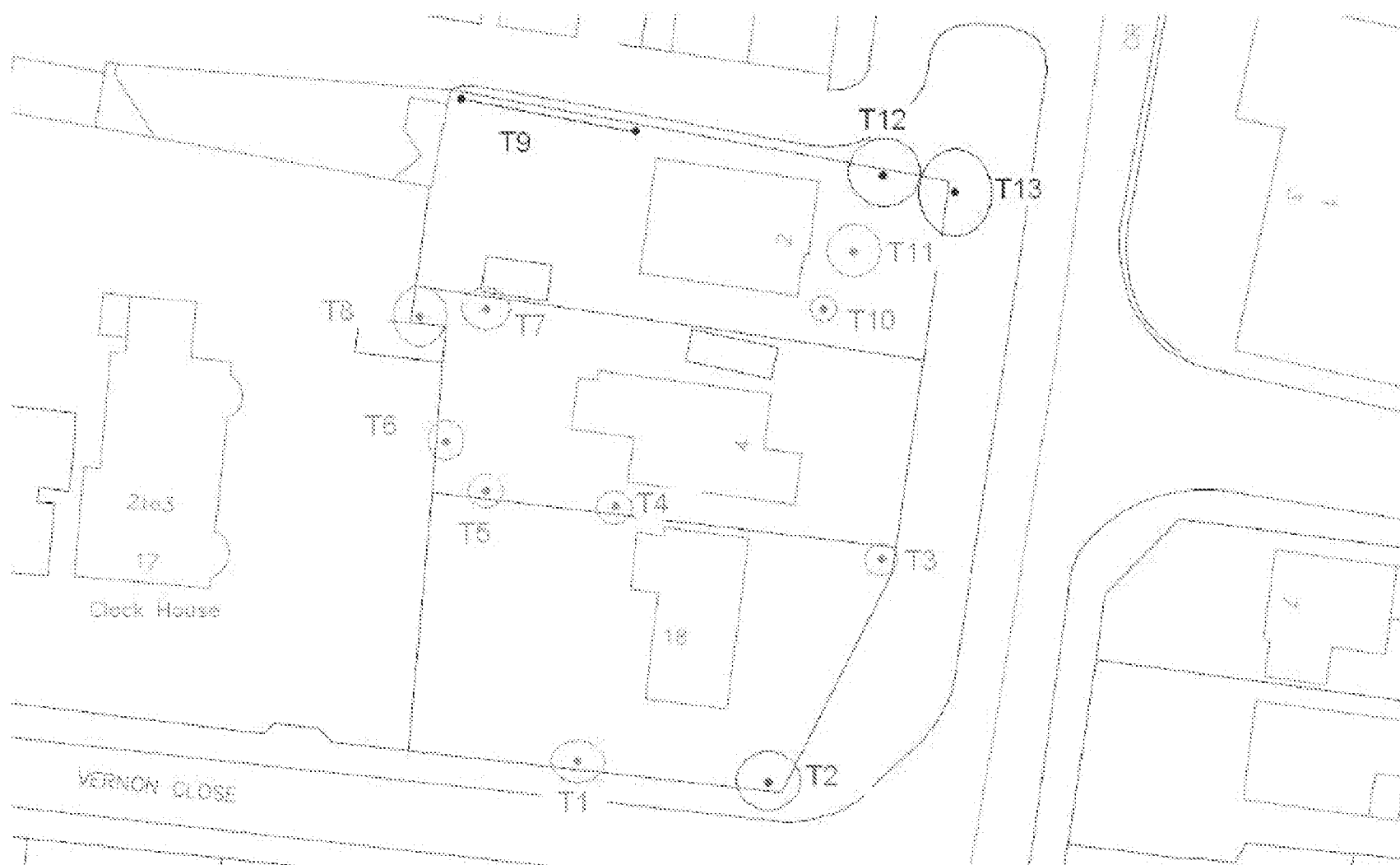


Appendix four

Site Drawings

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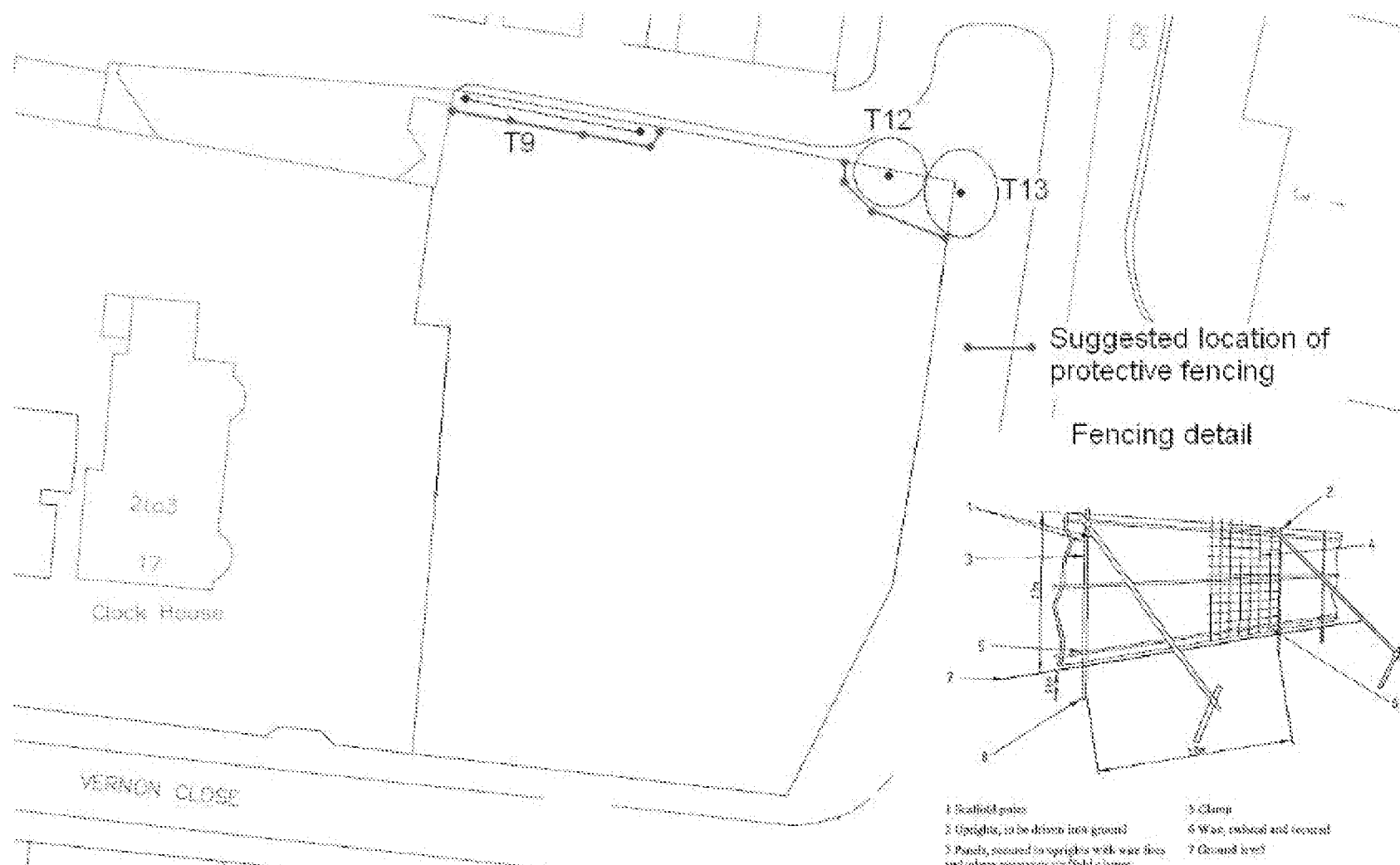




Drg No. RG-NDJ-HVCR 001 Tree Layout

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Drg No. RG-NDJ-HVCR 002 Tree Protection Plan

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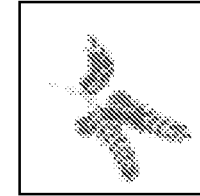
Appendix five

Additional Information

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**R W Green Limited
Construction Site Monitoring Record**



Site Address:

Client:

Date	Activity	Comments	Actions	By whom	Signed (on behalf of R W Green)	Signed (on behalf of client)

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