ABORICULTURAL IMPACT ASSESSMENT

(BS5837:2005 'Trees in relation to construction – Recommendations' Tree Report)

For Development at

Rochford Hundred Golf Course - Greenkeepers Workshop & Office, Rochford, Essex

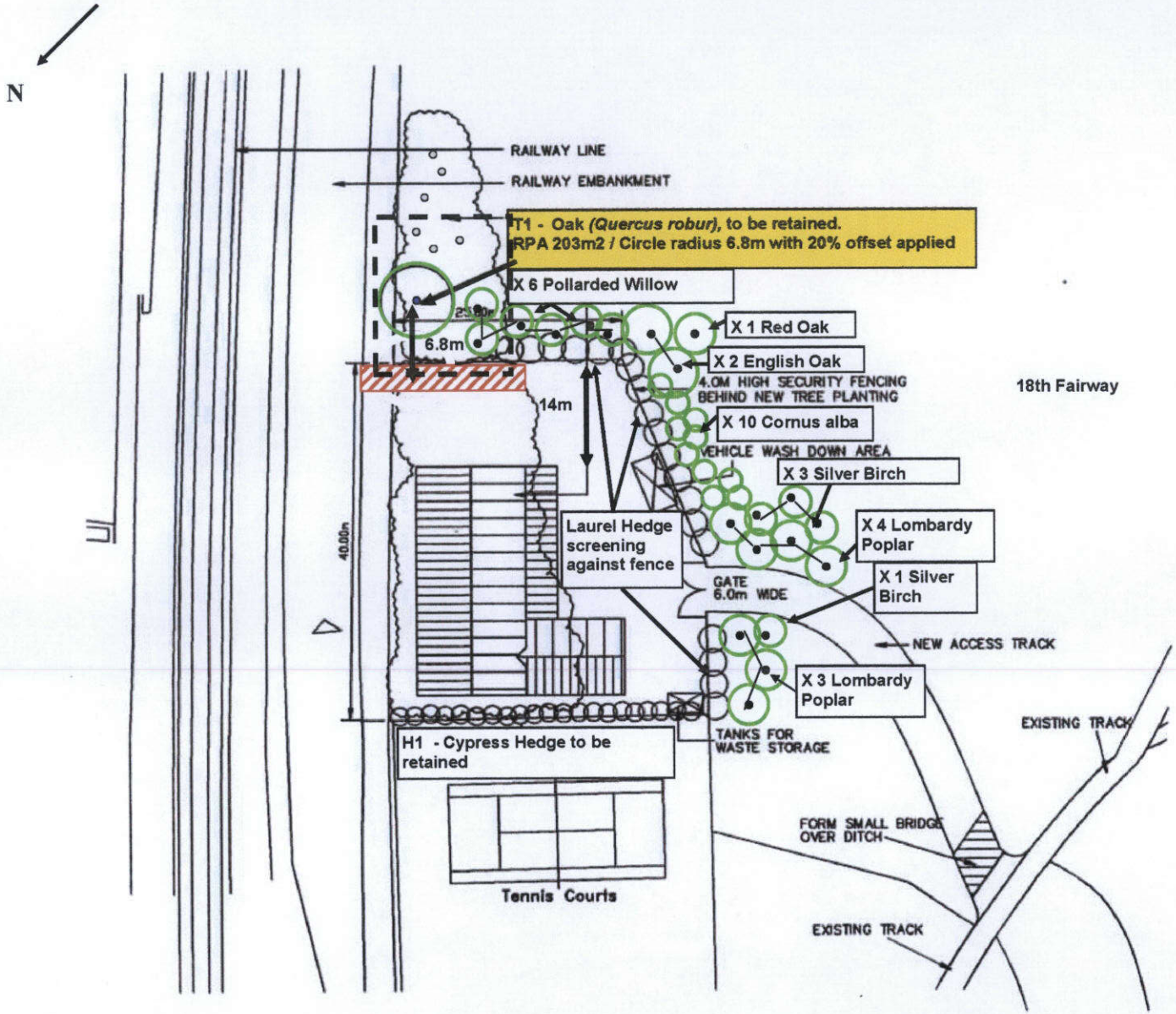
Presented to

The Secretary of Rochford Hundred Golf Course

DF Clark Bionomique Ltd
Andrews Farm, Burnham Road, Althorne, Essex, CM3 6DS
Tel: 01621 740876, Fax: 01621 742242, E mail: paul.allen@dfclark.co.uk

13th March 2008

Paul Allen MICFor Dip Arb(RFS) M.Arbor.A



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Key:

- B Category Oak tree to be retained
- Tree Protective Fencing
- Replacement trees / shrubs
- 'No-Dig' Grass—crete strip 1m wide

Notes: TCP in accordance with the principles of BS5837:2005 'Trees in relation to construction — Recommendations"

Revisions:

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Client:
Rochford Golf Course
Hall Road
Rochford
Essex
SS4 1NW

Drawing Title:
Tree Protection Plan

Date: 13.03.08

Drawn By: PJA

Scale: NTS

Drg. No: DFC 154.2

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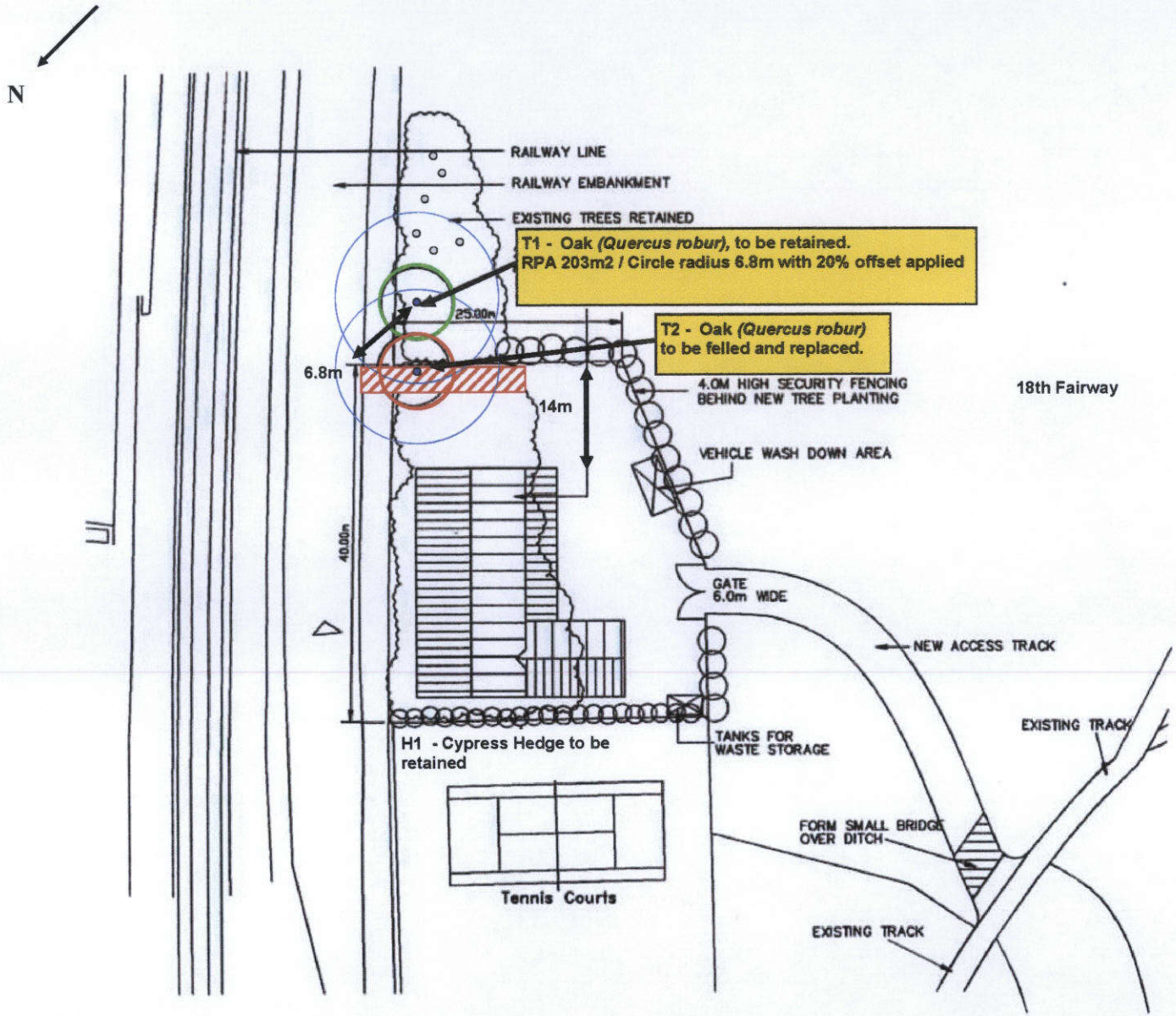

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Key:

- Trees of Moderate Quality and Value
- Trees with Low Quality and Value
- Root Protection Area (RPA)
- Area designated as a 'No—Dig' Zone, 1m wide

Notes: TCP in accordance with the principles of BS5837:2005 'Trees in relation to construction — Recommendations"

Revisions:

DF Clark Bionomique Ltd
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Tel: 01621 740876, Fax: 01621 742242, E mail: paul.allen@dfclark.co.uk

Client:

Rochford Golf Course
Hall Road
Rochford
Essex
SS4 1NW

Drawing Title:

Tree Constraints Plan

Date: 13.03.08

Drawn By: PJA

Scale: NTS

Drg. No: DFC 154.1

D F Clark Bionomique Ltd

Client & Site Address:	Rochford Hundred Golf Course, Hall Road, Rochford, Essex, SS4 1NW

Job Number:	DFC 154

Date Instructed:	11th March 2008

Delivery Date:	14th March 2008

Project Manager:	Paul Allen MICFor Dip Arb(RFS) M.Arbor.A

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APPENDICES

CONTACTS

NAME	COMPANY	POSITION	Tel. No.
Mr Jackson	John RA Jackson LLP	Architect	01702 203030
Mr Paul Allen	DF Clark Bionomique Ltd	Consultant Arboriculturist	01621 740876 07930 760028
Mr James Choat	Rochford District Council	Tree Officer	01702 546366

1.0 Executive Summary:

The development site is located within the outskirts of Rochford, more specifically Rochford Hundred Golf Club off the 18th fairway. The development proposal is to construct a new, single storey, Groundsmans workshop & garage on what is currently a small parcel of derelict scrub land adjacent to the embankment of the railway line and behind an earth / compost bund.

A small number of trees are located on the site with this report specifically commenting on two Oak trees numbered T1 & T2. Some other seedling young Oak & Goat Willow trees / scrub is also on the site of little significance. A line of Cypress trees growing as a Hedge, H1, is located on the northern boundary of the plot screening the development from the adjacent Tennis Courts.

The immediate landscape character is one of a rural countryside / golf course setting with views out of the site restricted to glimpses of the surrounding golf course and railway line. A neighbouring property can be viewed across the 18th fairway, which the workshop will require screening from. The two individual Oak trees are located within the boundary of the site with a small Willow copse / 18th fairway.

The key tree species for the immediate area are predominantly standard Oak, Willow, Poplar, Silver Birch, however other native and non– native planted and pioneer species are present including, Hawthorn, Blackthorn, Horse Chestnut, various Maple species within the fringes and as obstacles on the golf course. Only the closest Oak tree, T2, will be affected by the proposed development and mitigating tree protection precautions can be made to minimise the risk of damage to the remaining Oak, T1, to be retained trees. Consultation and a site visit with the Council tree officer will be required to confirm T2 can be removed and replaced, as part of the extensive replanting around the workshop, with T1 retained.

The primary tree related constraints to the development window therefore are:

- To fell and remove stumps completely OakT1 & pioneer seedling scrub
- To protect the Oak tree, T1, and H1 during the construction build phase of the development.
- To prevent soil compaction and root damage to the retained trees, T1 & H1, during the construction phase of the development by construction activities and excavations for service trenches.
- To specifically protect T1, Oak, with due consideration given to tree root protection during the site clearance phase and construction of the adjacent proposed hard standing.
- To protect the root systems of H1 during construction of the new workshop so as not to affect its health or stability.

It is recommended that due to the constraints identified in this report the following is undertaken:

- Tree pruning & felling works are carried out to the trees as described in the tree surgery works schedule at Appendix 8.
- Replacement native specimen trees are planted, as described, as part of a landscaping scheme for the site, to be agreed with Council Officers. (see suggested planting and locations on the tree protection plan)
- No excavations are undertaken within the RPA of the retained Oak, T1.
- Tree protective fencing is installed along the line of the RPA of H1 & T1, as specified and described in this report.
- Site supervision, if required.

If the works and recommendations contained within this report are undertaken we believe that this will fully discharge Colchester Borough Councils tree protection policies.

2.0 Scope Of Client Brief:

1 To carry out a tree survey on the trees at and immediately adjacent to the site, identifying any hazard trees and making recommendations for those trees to be retained and / or re placed.

2 To undertake the tree survey in accordance with the principles of BS5837:2005 'Trees in relation to construction – Recommendations'.

3 To produce a Tree Constraints Plan (TCP) and Tree Protection Plan (TPP) showing the location of tree protection features including the location of tree protective fencing.

4 To carry out an Arboricultural Impact Assessment on the effect of the approved new Development at the site identifying the root protection areas (RPA) shown on the TPP

5 To make recommendations for the most suitable tree protection for the retained trees.

6 To make recommendations for further workstages that may be required.

3.0 Special Instructions:
To produce an arboricultural report and supporting plans to inform the proposed site layout design and be suitable for submission to the Council as supporting documentation to a planning application.

4.0 Terms of Reference

4.1 Reference Documents:
-BS5837:2005 'Trees in relation to construction – recommendations'
-BS3998:89 'Tree work – recommendations'
-NJUG 10 – National Joint Utilities Group "Guidelines for the planning, installation and maintenance of utility services in proximity to trees"
- 'Tree roots in the built environment' *(J. Roberts, N.Jackson & M. Smith)*
- Colchester Borough Council local plan

5.0 Constraint Search

Trees/Woodland		X			Ecology	X
Landscape Sensitivities		X			Change of use	X
Statutory Controls	CA	X		NA	Policy Sensitivity	X
Date Constraints checked carried out:	11.01.08				Demolition	NA
High Public interest likely		U				
Other		X	Ecology	X		

Key: X = Yes (*Note: Any box marked 'Yes' MUST be discussed with the client)*
U = Unknown
NA = Not Applicable

NOTE:
Information supplied by Rochford District Council to the client that a conservation area applies for that part of the golf course.

6.0 Specific Report Caveats:

1 The survey was undertaken by Paul Allen, who had worked to a site plan issued by John Jackson Architect LLP.

2 The tree numbering is based upon numbers chosen by the surveyor, Paul Allen and make no reference to any other documentation.

3 The site boundary is clear around the entire perimeter of the site and the client is in full ownership and management control of all the trees.

4 No work should take place on trees outside of the ownership of the client or without any necessary planning consent from the local authority.

5 The trees were inspected from ground level only using the Visual Tree Assessment method (Mattheck)

6 No internal diagnostic equipment were used.

7 All measurements were taken with the use of hand held DBH tapes / loggers tapes.

8 The survey is concerned solely with arboricultural issues.

9 The survey was undertaken in accordance with the principles of BS5837:2005 "Trees in relation to construction—Recommendations"

10 Any required pruning works will be carried out in accordance with BS3998:1989 'Recommendations for treework'

11 Any work on the trees will be subject to inspection in order to discharge the due diligence requirements of all relevant Wildlife & Countryside legislation.

12 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.

13 This report is valid for 12 months

7.0 Specific Tree Description & Assessment:

Trees	Description	Constraint Identification
T1	English Oak *(Quercus robur)*	This is an average to good specimen with a dense crown and very low branches, some touching the ground as in their natural park-land form. The trunk and lower crown is heavily ivy clad and moderate amounts of crown deadwood is prevalent. The crown is also slightly asymmetric towards the adjacent 18th fairway. This tree is to be retained and protected due to its high amenity value. It will however, require some crown management, crown cleaning and crown lifting to 3m at crown break.
T2	English Oak *(Quercus robur)*	This specimen has a very low crown but no discernable crown break making lifting to 3m inappropriate as very little crown would remain. It would be very close to the proposed location of the new workshop if retained, so therefore has been recommended to be felled and replaced. Numerous native tree and shrub planting will be required as part of the landscaping scheme to screen the workshop.
H1	Lawson's Cypress *(Chamaecyparis lawsoniana)*	Located on the northern boundary with the tennis courts. It provides valuable screening to and from the golf course, even if the species choice is out of landscape character. The proposed workshop is close and care will need to be taken so as not to cut to many roots rendering the closest specimens unstable.

8.0 TREE CONSTRAINTS TABLES

Constraints Item	Description Of Constraint	Protection Method
Tree works operations	The tree works necessary are primarily: • Felling of the closest Oak tree to the development, T1. • Crown cleaning of the remaining retained Oak tree with moderate to high crown dead wood . • Crown Lifting of Oak, T1, to crown break @ 3m. • Height reduction & pruning / trimming of the Cypress hedge.	The preliminary treeworks recommended are highlighted within the tree tables in Appendix 2 and in more detail in the tree surgery schedules in Appendix 8. The treeworks will be undertaken by qualified and insured contractors, who will make provision for working within the site, taking into account the site conditions. Treeworks will be undertaken in accordance with BS3998:1989 'Recommendations for treeworks' and where necessary under the supervision of a competent arboriculturist. The contractor will be responsible for their own method statements and site specific risk assessments. Tree operations must take into account the Wildlife due diligence inspections, in respect of nesting birds and roosting bats. Treeworks recommended will be undertaken as part of the site vegetation clearance operations prior to installation of the tree protective fencing.
Establishment & Protection of Root Protection Areas (RPA) for retained trees	To prevent the damage to retained tree roots, on or adjacent to the site, an RPA is plotted around the subject tree to be retained. These should be held as sacrosanct and protected from intrusion by construction activities, except by agreement with the Council Tree Officer.	The RPAs for the retained tree is determined according to the calculation in Table 2 from the British Standard, based upon the stem diameter at 1.5m, and plotted on the tree protection plan (TPP) at plan 1. The shape, but not its area, may be changed in specific circumstances, as assessed by an arboriculturist. It can be offset by the max. 20% allowed, in this instance reducing the RPA in the site from 8m by 1.2m to 6.8m circle radius, as the tree is 'open grown'. No excavations should be undertaken or structures erected within the RPA, without the situation being assessed by the consultant arboriculturist. Protective fencing will be located at the outer edge of the RPA as indicated on the tree protection plan (TPP), or as close to it as possible, by agreement with the Council tree officer.

Constraints Item	Description Of Constraint	Protection Method
Changes in soil levels in close proximity to retained trees	No topsoil should be stripped within the RPA's of retained trees. Retained tree root damage / death can occur due to excavation, levelling or compaction from raising of the original soil level.	Cambium damage at the base of tree trunks and damage to tree roots can be avoided if no levelling activities are undertaken within the RPA's of those trees to be retained. However, when the soil level is lowered it can be undertaken by hand held compressed air lance to avoid damage to tree roots, permeable hard surfaces can be laid and special measures taken to minimise damage to any significant roots that may be encountered. Roots 25mm and below can be cut cleanly with a sharp hand saw to the closest root node. Adequate fencing should be installed as previously described as close to the outer edge of the RPA's as possible.
Foundation type and design	The soil type across the site is often variable, but shrinkable clay soil, prevalent in the south-east of England, can be a considerable constraint.	Where trees are being removed, declining or heavily pruned, soil shrinkage (subsidence) and re-hydration (Heave), is likely. When this occurs within the influencing zone of adjacent buildings, foundation movement is possible, depending on a number of other factors, causing structural damage. Pile and Beam foundations are traditionally used in close proximity to trees, which should cause less damage to retained tree roots. However, the mode and method of constructing the piles still causes damage to the trees, not just their roots but also their canopies by the access required and operation of piling rigs that undertake the excavations. Exact details of foundation type and the constraints they present will be presented in the AMS as a condition of any consent received. Careful planning of the construction operations will be necessary, method statements will need to be produced and checked and the specifications for the foundation construction will need to be reviewed by the arboriculturist, to ensure that the existing trees affected will not be damaged during the construction build phase.
Site access for construction vehicles and avoidance of compaction to the RPA of retained trees	Site access required prior to the installation of protective fencing for; • The site clearance phase • Tree felling / pruning works can cause compaction within retained trees RPA's.	The site access for vegetation clearance will be by light or hand operated machinery only once t1 has been felled, the tree protective fencing can be installed around T1 as directed on the tree protection plan. Areas within the site for topsoil storage is available and should not be within tree root protection areas. The tree protective fencing should be installed prior to any construction activities commencing.

Constraints Item	Description Of Constraint	Protection Method
Excavation of services trenches in close proximity to retained trees	Excavations within the RPA of retained trees are to be avoided, due to the potential root damage likely to occur either rendering the subject trees unstable or detrimentally affecting their health & condition. Prior written agreement will be required with the Council tree officer in order to undertake such works, usually as part of an Arboricultural Method Statement (AMS).	Where possible services should be re-directed away from the trees to be retained, ie. Outside of their RPA's. Where excavation of trenches within RPA's is unavoidable, and where the Council tree officer is in agreement, excavation should be undertaken by hand, hand held compressed air lance equipment and / or in conjunction with a mini-excavator supervised by a competent arboriculturist. As an alternative, trenchless excavation techniques are an option, but the depth of excavations, soil type and species of the subject trees are all limiting factors.
Protection and prevention of damage to retained tree canopies during construction	High sided delivery vehicles, piling rigs and excavators also have the potential to cause damage to tree branches. Trees not specifically protected by a TPO or in a CA are still considered a 'material constraint' when part of a planning application.	The tree protective fencing will be securely positioned to resist intrusion into the RPA of retained trees at ground level, but damage can still occur to the aerial parts of the tree as discussed. Any remedial pruning required as a result of accidental crown damage should be specified by the consultant arboriculturist and implemented by a competent arborist contractor, under their supervision if necessary.
Prevention of compaction damage to retained trees RPA's during the construction build phase.	Tree roots can be asphyxiated and will die if the tree rooting zone becomes compacted. This can easily occur by the passage of even light pedestrian / vehicular traffic. The retained tree is at risk from this, T1, Oak.	Special 'No-Dig' materials canl be used to minimise soil compaction within or close to tree rooting zones. A Cellular confinement sub—base couldl be used to construct the new hard standing around the workshop, especially if part of it falls within the RPA. (See Appendix 4)

Constraints Item	Description Of Constraint	Protection Method
Generic construction site constraints: **1 Site hut location** **2 Temporary toilets** **3 Siting of bonfires** **4 Location of contaminant storage and washout areas** **5 Location of stripped topsoil**	Points 1 – 5 are often conditioned as part of any planning consent, in accordance with the British Standard. These are detailed opposite. The protection recommendations listed opposite will also often discharge the general requirements of tree protection planning policies to 'protect existing trees' These measures are in accordance with the principles contained within the BS5837:2005 'Trees in relation to construction – Recommendations'.	The need for protective fencing securely installed. No builders debris to be stored beneath the crown spread or within the RPA's of retained trees. No changes in surface level within the RPA's without specialist mitigation measures undertaken. No fires to be lit within 20 metres of existing trees and shrubs to be planted. Replanting should be undertaken to mitigate the loss of removed trees. Site hut location and temporary toilets can be used to help define the outer edge of the RPAs indicated on the constraints plan. Contaminant storage and washout areas eg. For cement / concrete and fuel / chemicals should be located well away, a minimum of 10m, from retained trees outside of their RPA's. Locate topsoil away from the RPA's of retained trees so as not to compact tree rooting zones. Where fencing needs to be inside the RPA to facilitate a 2m wide working zone, the ground should be protected by a layer of woven geotextile membrane, overlaid with sharp sand, overlaid with scaffold boards, See Appendix 9. Notice boards, telephone site cables and other temporary services should not be attached to retained trees.
Site Supervision required	This is required to ensure that the protection recommendations made in this report are adhered too during the construction build phase. Supervision and inspections should be provided by a competent, experienced arboricultural consultant for the key operations listed opposite. See the site supervision schedule at Appendix 10.	Tree pruning & felling operations recommended. Installation of secured tree protective fencing with warning signs. The use of cellular confinement as a sub- base, if required to be used, close to retained tree for the construction of the hardstanding area around the workshop. Excavations for services trenches within the RPA's of retained trees if necessary. Monitoring of the construction build phase.

9.0 Recommendations and Conclusions

1 The preliminary treeworks recommended are included in the tree tables contained within this report in Appendix 2 and within the tree surgery schedule at Appendix 8. The works can be categorised into three specific areas;

- Works to remove the pioneer scrub vegetation within the site of low amenity value and significance.
- Works to fell the closest Oak, T2, incompatible with the proposed workshop location.
- Works to bring the retained trees, T1 Oak & H1, into best practice arboricultural management located mainly around the southern site boundary.

2 That during the construction phase, following current consultation with the arboriculturist, adequate provision is made for the protection of the existing trees on site and the areas to be planted with new native trees shrubs , particularly in relation to screening the work shop, see suggested planting on the tree protection plan (TPP).

3 That by liaison with the Council Tree Officer, agreement will be sought regarding the Oak tree removal & pruning required, tree replacements suggested as mitigation and tree protection methods employed to protect retained trees. These will include:

- Tree Protective Fencing as shown on the Tree Protective Plan
- No ground excavations within tree RPA's, unless approved by the tree officer.
- Anti-compaction measures taken for installation of the new hardstanding area within the RPA, installation of a suitable no-dig 'grass—crete' surface.
- The specific location of services where possible to avoid excavations within RPA's, or if necessary to be undertaken by 'hand-dig' only.

4 To agree a native planting tree & shrub replacement scheme to screen the workshop, particularly from views of the residential property across the 18th fairway, see TPP.

5 To produce an Arboricultural Method Statement (AMS) detailing the following:

- Specific build techniques for any special 'no-dig' road / footpath surfaces required within retained tree RPA's.
- Excavation of service trenches necessary within any retained tree RPA.
- Detailed site supervision schedule for monitoring construction work during the build phase of the development.
- Any special foundation works close to retained trees that may be necessary
- Any further tree felling / pruning works not previously specified.

It is Concluded that:

Although the site is located within a golf course rural landscape setting, no real good quality key tree species exist on this part of the site. The best Oak tree is to be retained with the poorer form tree closest to the development area proposed to be felled and replaced.

The development of the site will bring an opportunity for best practice tree management of the existing trees and an opportunity for further native tree & shrub planting on the site.

All tree works and landscape replacement tree planting will undergo consultation with the council tree officer. A suitable tree and shrub palette will be agreed at this meeting, although a suggested planting scheme has been suggested as shown on the tree protection plan..

If all the recommended works are undertaken within this report then the tree protection policies of Rochford District Council will be successfully discharged during the development of the new groundsmans workshop.

Rochford Hundred Golf Course

Greenkeepers Workshop & Office

ARBORICULTURAL IMPLICATION ASSESSMENT

10.0 APPENDICES

APPENDIX ONE – KEY TO TREE SURVEY SHEETS

APPENDIX 1:

Key to Survey Sheets

The classifications adhere to the principles of the British Standard 5837:2005 " Trees in Relation to Construction – Recommendations". However, explanations for the terms have been changed to reflect the approach of this company to the practical aspects of categorising trees in the field.

Age Class	Tests
NP	Trees newly planted
Y	Trees from seedling, up to Advanced Nursery Stock size (14/16cm girth) Less than a third life expectancy.
SM	More than 10 years post-establishment but capable of being moved using a large tree spade (up to 22/24cm diameter).
EM	Early indicators of maturity in bark tissue, reproductive tissue, leaf and crown morphology may be present. (Notably, excurrent shoot growth, not readily transplantable and still likely to increase significantly in size.)
M	Strong indicators of maturity in bark tissue, reproductive tissue, leaf and crown morphology will be present. Shoot growth decurrent. (Middle aged phase of growth when the tree has effectively reached up to 90% of its ultimate size for the species & location.)
FM	Bark tissue, reproductive tissue, leaf and crown morphology will all exhibit mature characteristics. Strongly decurrent shoot growth and reduced shoot extension). No specific signs of senescence. (A tree that has now achieved over 90% of its ultimate size for the species and location).
OM	Trees in senescence. NPO in decline from disease, decay, root death, structural or stability problems resulting primarily from old age. (Senescence is an ageing related category, i.e. a young tree subject to disease and decay because of say an impact injury would not be senescent. Characteristically, senescent trees are likely to be reducing in mass due to the shedding of branches.)
V	Veteran Tree (a tree older than typical age of the species and of great ecological, cultural and aesthetic value

BS5837:2005 Tree Categorisation based upon Table 1	
Category	**Description**
A **Green**	**Trees of High Quality and Value** A1 - Mainly arboricultural values A2 - Mainly landscape values A3 - Mainly cultural values, including conservation
B **Blue**	**Trees of Moderate Quality and Value** B1 - Mainly arboricultural values B2 - Mainly landscape values B3 - Mainly cultural values, including conservation
C **Grey**	**Trees with Low Quality and Value** C1 - Mainly arboricultural values C2 - Mainly landscape values C3 - Mainly cultural values, including conservation
R **Red**	**Trees in such a poor condition, both / or physiological and structural, 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.**

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APPENDIX TWO – TREE SURVEY SHEET

Trees recorded at: Rochford Hundred Golf Course, Site for proposed New Greenkeepers Workshop & Office
Surveyor Name: Paul Allen **Weather:** Windy, Rain, Cold
Date: 11th March 2008 **Client:** Rochford Hundred Golf Club

Sheet No. 1

D F Clark Bionomique Ltd

Site Specific Risk Assessment completed: Yes

TREE SURVEY TABLE

Tree No	Tree Common Name (Genus / species)	Tree Ht (M)	Stem Dia. at 1.5m / RPA& radius	Crown Spread (m)	Age Class	Physiological Condition	Est. Years	BS Cat.	Crown Clear. (m from GL)	Structural Condition / Comments	Preliminary Recommendations
T1	Oak (*Quercus robur*)	15	670 203/6.8 (offset)	7	SM	Good	150	B	1	-Heavily ivy clad -Asymmetric crown towards the fairway -Dense crown -Low crown deadwood	-Crown lift to 3m -Crown clean
T2	Oak (*Quercus robur*)	15	610 168/7.3	6	SM	Average	150	B	1	-Very low branches -Low crown break -Dense lower crown -Moderate crown deadwood	-Fell and replace -Remove stump completely by grinding

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APPENDIX THREE – TREE PROTECTIVE FENCING SPECIFICATION

Design of Weldmesh Type Tree Protection Fence

Specifications: Fence shall be 2m high x 3m in length

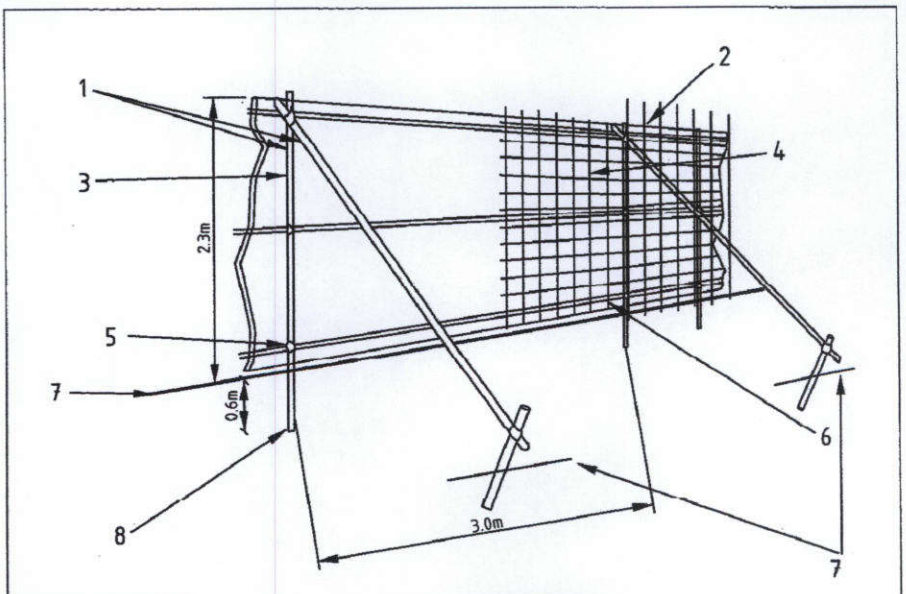
As 'Heras' type fencing can be easily moved, it must therefore be staked into the ground and tied in order to provide semi-permanent protection using 1.8m driven tanalised softwood stakes, or driven scaffold poles, and secured by tying wire or using 'U' bolts / clamps.

The fencing will be further identified by 'Tree Protection' warning signs.

Location: Fencing shall be positioned on the perimeter of the Root Protection Area (RPA) to define the Construction Exclusion Zone.

Example of Heras Fence Design (secured)

Example of the new BS 5837:2005 Protective Barrier design



1 Standard scaffold poles
2 Uprights to be driven into the ground
3 Panels secured to uprights with wire ties and where necessary standard scaffold clamps
4 Weldmesh wired to the uprights and horizontals
5 Standard clamps
6 Wire twisted and secured on inside face of fencing to avoid easy dismantling
7 Ground level
8 Approx. 0.6 m driven into the ground

Figure 2 — Protective barrier

It may be appropriate on some sites to use temporary site office buildings / toilet blocks etc. as components of the tree protection barriers

Suggested protective fencing warning sign format

TREE PROTECTION AREA

KEEP OUT !

(TOWN & COUNTRY PLANNING ACT 1990)
TREES ENCLOSED BY THIS FENCE ARE PROTECTED BY PLANNING CONDITIONS AND/OR ARE THE SUBJECTS OF A TREE PRESERVATION ORDER.
CONTRAVENTION OF A TREE PRESERVATION ORDER MAY LEAD TO CRIMINAL PROSECUTION

ANY INCURSION INTO THE PROTECTED AREA MUST BE WITH THE WRITTEN PERMISSION OF THE **PROJECT ARBORICULTURIST**

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APPENDIX FOUR – CELLULAR CONFINEMENT INFORMATIVE

Insert Terram Geocell informative—Page 1

Insert Terram Geocell informative—Page 2

Insert Terram Geocell informative—Page 3

Insert Terram Geocell informative—Page 4

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APPENDIX FIVE – TREE CONSTRAINTS PLAN

INSERT TCP

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APPENDIX SIX – TREE PROTECTION PLAN

INSERT TPP

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APPENDIX SEVEN– ANNOTATED PHOTOGRAPHS

T1 - Oak to be retained. Some low branches to be lifted to 3m from ground level.

T2 - Oak to be felled and replaced due to poor form and condition with very low crown break.

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APPENDIX EIGHT – TREE SURGERY SCHEDULE

APPENDIX 8 **Tree Surgery Recommendations:**

NOTE: ALL TREE WORKS TO BE UNDERTAKEN IN ACCORDANCE WITH BS 3998:1989 ' RECOMMENDATIONS FOR TREE WORKS'. 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
T1	Oak	Southern boundary of the site	Crown Clean Crown Lift to 3m from ground level to crown break Severe 2m section of ivy carefully by hand and remove	Moderate amounts of crown dead-wood present in the tree. Heavily ivy clad Dense crown Low branches Asymmetric crown towards golf fairway.
T2	Oak	Southern boundary of the site	Section Fell to ground level Remove stump completely by grinding	Very low branches & crown break. Dense lower crown, sparse upper crown. Poor form for retention Moderate crown deadwood.
H1	Cypress Hedge	Around the Northern boundary with the tennis club	To reduce height of the hedge when ultimate height reached. Prune / trim sides as necessary to tidy.	EM specimens, in good condition, although non—native they do provide an effective screen to and from the tennis courts.

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ARBORICULTURAL IMPLICATION ASSESSMENT

APPENDIX NINE – SCAFFOLDING & GROUND PROTECTION WITHIN THE RPA

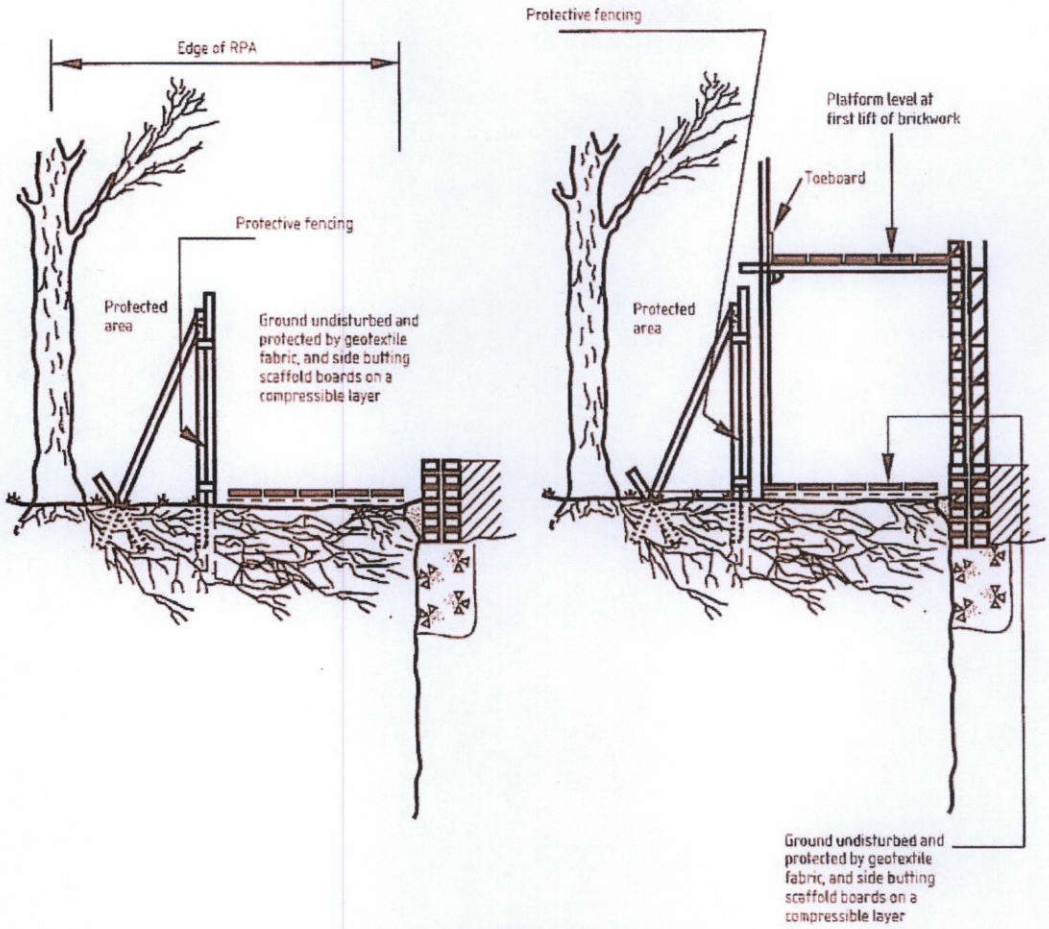

Figure 3 — Scaffolding within the RPA

9.3 Ground Protection

9.3.1 Where it has been agreed during the design stage, ans shown on the tree protection plan, that vehicular or pedestrian access for the construction operation may take place within the root protection area (RPA), the possible effects of construction activity should be addressed by a combination of barriers and ground protection. The position of the barrier may be shown within the RPA at the edge of the agreed working zone but the soil structure beyond the barrier to the edge of the RPA should be protected with ground protection.

9.3.2 For pedestrian movements within the RPA the installation of ground protection in the form of a single thickness of scaffold boards on top of a compressible layer laid onto a geotextile, or supported by scaffold, may be acceptable. (See Figure 3)

9.3.3 For wheeled or tracked construction traffic movements within the RPA the ground protection should be designed by an engineer to accommodate the likely loading and may involve the use of proprietary systems or reinforced concrete slabs.

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APPENDIX TEN – SITE SUPERVISION SCHEDULE

10.0 Site Supervision Schedule

Constraints Item	Site Supervision required	Number of Visits Expected	Timing of Site Visits	Actual Visit Date
Tree works operations	Optional	Visit 1	Prior to construction	
Pre-commencement meeting between relevant parties informing Council of development start date	Yes	Visit 2	Prior to site clearance	
Establishment & Protection of Root Protection Areas (RPA) for retained trees	Yes	Visit 2	Prior to site clearance	
Changes in soil levels in close proximity to retained trees	No major change	0	/	/
Foundation type and design	No			
Protection and prevention of damage to retained tree canopies during construction	Yes	Visit 3	post site clearance, During construction phase	
Site access for construction vehicles and avoidance of compaction to the RPA of retained tree	Yes	Visit 3	During construction phase	
Generic construction site constraints: **1 Site hut location** **2 Temporary toilets** **3 Siting of bonfires** **4 Location of contaminant storage and washout areas** **5 Location of stripped topsoil**	Yes	Visit 4	During construction phase	
Replacement Tree Planting conforms with NHBC Ch. 4.2	Yes	Visit 5	Post construction	

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ABORICULTURAL IMPACT ASSESSMENT

(BS5837:2005 'Trees in relation to construction – Recommendations' Tree Report)

For Development at

Rochford Hundred Golf Course
Greenkeepers Workshop & Office

Presented to

The Secretary

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