AMENDED

ARBORICULTURAL REPORT

G H DEAN AND CO LTD

GREAT GROVEHURST FARM
GROVEHURST ROAD
KEMSLEY
KENT

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Position change for G10 (offsite)

lloydbore landscape ecology arboriculture

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EXECUTIVE SUMMARY

S.1 This report is intended to provide guidance for the designs of any development on land at Great Grovehurst Farm, Grovehurst Road, Kemsley, Kent.

S.2 3 individual trees, 15 groups and 1 shrubby area are the subject of this report which has been written in accordance with British Standard, BS 5837:2012 'Trees in relation to demolition, design and construction – Recommendations'.

S.3 All of the individual trees, groups and the shrubby area have been categorised as C grade trees of low quality and value. Due to the low quality of the trees the on-site trees should not pose a constraint to development, providing suitable replacement planting is incorporated into the landscape designs of any scheme.

S.4 Off-site trees are outside the site ownership and control and as such these trees must be retained and fully protected throughout the works of any scheme. They also have the potential to cast shade to properties and gardens. It is therefore essential to take into account not only the current size of the trees as well as their future height and spread.

S.5 The site is bounded on all sides by intermittent off-site vegetation, providing visual and acoustic screening from the neighbouring properties, as well as the main roads and railway line. This boundary line screening should be supplemented with additional on-site planting.

1. INTRODUCTION

1.1. **Brief:** Lloyd Bore have been instructed by G H Dean and Co Ltd. to carry out a survey of significant trees on land at Great Grovehurst Farm, Grovehurst Road, Kemsley, Kent in accordance with the principles of British Standard BS 5837:2012, 'Trees in relation to design, demolition *and construction – Recommendations'* (The BS) and to prepare the following information to accompany a planning application:

- details of significant trees including an assessment of condition using BS 5837 categorisation.
- a plan showing tree survey information, categorisation and root protection areas.

1.2. **Site description:** The site is a plot of agricultural land, with associated, residential property, commercial units and hard standing located to the north of the village of Kemsley. To the north west of the site is a roundabout leading onto the A249 slip road, while Grovehurst road runs south from the roundabout along the western boundary of the site, for 3/4 of its length. The remaining length of the western boundary and all of the southern boundary abut residential gardens. The eastern boundary backs onto a railway cutting, with residential properties beyond while the northern boundary curves round following the line of Swale Way until it meets the roundabout. The northern and part of the western boundaries have extensive screen planting beyond the fence line, with banks leading up to the road.

1.3. **Scope of this report:** This report covers trees on and adjacent to the site. It is concerned with the impact the development may have on nearby trees and the effect retained trees may have on the development. Its purpose is to allow the architects and designers to assess the potential impacts and constraints presented by the trees and inform their designs for any potential development.

1.4. **Summary of the general impact of development on trees:** Development can adversely impact upon trees in a number of different ways, if arboricultural issues are not considered at an early stage of the development process. Considered and careful planning will prevent valuable trees being to development, damaged during the demolition and construction phases, or lost following completion of development from pressures to prune or remove.

1.5. Damage to the branches or trunk may be quite obvious, but it is damage caused to the below ground portion of the tree which is less obvious and may have the most devastating long term effect on the future health and safe retention of a tree. Tree roots can be asphyxiated and die if the rooting environment becomes compacted or soil structure damaged or contaminated. This can easily occur, particularly on clay soils, even with the passage of light vehicles or pedestrians. It is important, therefore, that the root protection area (RPA)[1] is left undisturbed. Where this is unavoidable the disturbance can be minimised by following a strict working methodology and through innovative engineering design. Building lines should be at least 2m outside the RPA to allow the movement of materials, the erection of scaffolding around the new structure and the installation of new services.

1.6. Trees are long lived organisms, which take time to mature, and if their protection is considered at an early stage, they can complement and increase the value of a development. Construction and demolition activities, including removal of existing hard surfaces, changes of land levels and services routes, must be considered at the design stage to achieve an appropriate relationship between existing trees and new structures.

1.7. **Legislation:** According to information available on Swale Borough Council's website it is understood that none of the trees on or adjacent to the site are the subject of a tree preservation order (TPO) and that the site is not located within a conservation area. The tree protection status is correct at the time of report production but can be subject to change. It is therefore the responsibility of any persons undertaking tree works operations to the trees which are the subject of this report and in accordance with our recommendations, to undertake their own statutory checks.

1.8. The Occupiers Liability Act (1957 and 1984) places a duty of care upon tree owners to ensure that no reasonably foreseeable harm takes place due to tree defects. Therefore this report recommends works for safety reasons as well as work required to facilitate the proposal.

1.9. Common law allows pruning back to the property boundary line, the overhanging branches and roots as long as this does not contravene any statutory protection. However if the work is not carried out in accordance with best practice and the tree(s) becomes unbalanced and/or diseased as a result of the work, the owner may take civil action. Whilst common law does not require the tree owner to be consulted, it is courteous to inform him/her of the proposed works.

1.10. **Ecological constraints:** The Wildlife and Countryside Act 1981, as amended, The Conservation of Habitats and Species Regulations 2010 and the Countryside and Rights of Way Act 2000, provide statutory protection to species of flora and fauna including birds, bats and other species that are associated with trees. These could impose significant constraints on the use and timing of access to the site. It is the responsibility of the main contractor and tree surgery contractor to ensure that no protected species are harmed whilst carrying out site clearance or tree surgery works. Unless competent to do so, the advice of an ecologist must be sought.

[1] Root 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.

2. SITE VISIT AND OBSERVATIONS

2.1. **Site visit:** A site visit was undertaken on 14th January 2016. The weather was cloudy with intermittent showers.

2.2. **Methodology:** The trees are inspected from ground level only. Whilst every effort is made to ensure that the comments relating to the trees surveyed are accurate it must be noted that no climbing of trees, internal inspections or excavations of the root areas have been undertaken. All trees with a trunk diameter of 75mm or above are surveyed. All dimensions are accurately measured on-site unless otherwise indicated.

2.3. Obvious hedges and shrub masses were identified where appropriate. Information collected is in accordance with recommendations in subsection 4.4.2.5 of BS 5837 and includes species, height, diameter, branch spread, crown clearance, age class, physiological condition, structural condition and remaining contribution. Each tree was then allocated one of four categories (U, A, B or C) to reflect its suitability as a material constraint on development. Surveyed trees are identified with a prefix 'T' and a unique number on Tree Survey Plan 2488_DR_001. Groups of trees are identified with the prefix 'G' and hedges with the prefix 'H'. The tree canopies and their spread are shown with green shapes and Root Protection Areas (RPAs) are indicated by a solid blue line. The label attached to each tree shows the individual tree number and the grading of the tree

2.4. **Tree survey plan:** Tree Survey Plan 2488_DR_001 is based on a topographical survey supplied by the client. The Tree Survey Plan can only be used for dealing with the tree issues in relation to design. This can be found at Appendix 3. Below ground constraints are represented by the RPA (shown as a dashed blue line). Above ground constraints consist of the existing crown spreads of the trees and are represented by the solid outlines.

2.5. **Soil type:** An assessment of soils on-site was carried out by a desktop analysis using the National Soil Resources Institute website which identified the soils as likely to be loamy soils with naturally high ground water. This is a guide only and detailed on-site soil analysis should be undertaken by the project engineer to inform the foundation design.

2.6. **The subject trees:** A total of 3 individual trees, 12 groups and 1 shrub bed are the subject of this report which has been written in accordance with BS 5837. All of the trees surveyed have been classified as 'C' grade trees of low quality and value. The categories are explained in Appendix 1.

2.7. **Species and age distribution:** The most common tree species within those surveyed is Leyland cypress which features as mainly site screening groups. Other species surveyed consist of oak, cherry plum, hawthorn, elder ash, field maple and dogwood. The most common age group of the trees found on site are early-mature followed by semi-mature and young. There are no over mature trees on site.

3. CONSIDERATIONS FOR DESIGN

3.1. **Root protection areas:** The root protection areas shown on the tree survey plan show the theoretical root protection areas based on the ideal circular rooting area. The British standard allows for the shape of the RPA of retained trees to be altered under certain circumstances (see below), but not reduce its area whilst still providing adequate protection for the root system:

a. The likely tolerance of the tree to root disturbance or damage, based on factors such as species, age and condition and presence of other trees.

b. The morphology and disposition of the roots, when known to be influenced by past or existing site conditions (e.g. the presence of roads, structures and underground services).

c. The soil type and structure.

d. Topography and drainage.

e. Where any significant part of a tree's crown overhangs the provisional position of tree protection barriers, these parts may sustain damage during the construction period. In such cases, it may be necessary to increase the extent of tree protection barriers to contain and thereby protect the spread of the crown. Protection may also be achieved by access facilitation pruning.

3.2. Trees have the potential to intercept light into windows and cast shade onto external landscape areas. The design of any new development must take into account existing and proposed tree positions. It should be borne in mind that up to half the light received through a window is from ambient or non-directional scattered light that is reflected from other surfaces and not directly from the sun.

3.3. Proposed landscape treatment should be designed with growth of trees and shrubs in mind, relative to buildings, window positions and gardens. Tree and vegetation cover does have the benefit of providing shelter from the wind and shade in the summer months.

3.4. Some of the CEZ of retained trees is covered with hard surfacing. The removal of this surfacing has the potential to cause significant damage to the structure of soils and to tree roots directly and requires special working methods.

3.5. Where hard surfacing is to be installed within the CEZ the excavations and disturbance to the tree roots must be kept to a minimum to avoid long term health issues for the tree. To avoid damage to tree roots from compaction or mechanical damage a no dig construction method such as a cellular confinement system should be used. This spreads the surface pressure beneath the surface and helps prevent compaction of the soil. This no dig system should be topped with a porous surface to permit gaseous and water diffusion between the surface and the soil beneath. When non-permeable materials are present above roots, the gas cannot diffuse out and is trapped in the soil around the roots. When concentrated, carbon dioxide is detrimental to the development and function of tree roots and consequently the whole tree. It is also essential that the tree roots are able to maintain an adequate supply of water and oxygen from the soil around it, which non-porous materials hinder. The use of bitumen along with the use of other non-permeable materials within the CEZ is therefore prohibited.

3.6. It is important that all aspects of the development process are considered with respect to protection of trees and their root zones, and proposed tree positions. This includes for the design of underground services, which often occurs independent of initial planning design and can escape scrutiny at the development control stage.

3.7. All services should be designed so as not to cause damage to retained trees. In this respect reference should be made to the current NJUG Regulations (Guidelines for the Planning, Installation and Maintenance of Utility Services in Proximity to Trees).

3.8. Roots of existing and newly planted trees have the potential to cause damage to structures, foundations and services. This should be taken into consideration by the project engineer and Landscape team when designing these elements.

4. CONCLUSIONS

4.1. All trees on the site were categorised as C grade trees of low quality and value which under guidance in BS 5837:2012 should not pose a constraint to construction.

4.2. Off-site trees are outside the site ownership and control and as such these trees must be retained and fully protected throughout the works of any scheme. They also have the potential to cast shade to properties and gardens. It is therefore essential to take into account not only the current size of the trees as well as their future height and spread.

4.3. The site is bounded on all sides by intermittent off-site vegetation, providing visual and acoustic screening from the neighbouring properties, as well as the main roads and railway line. This boundary line screening should be supplemented with additional on-site planting.

4.4. Prior to any works being carried out on site an Arboricultural Impact Assessment should be undertaken to assess which trees should be retained, which should be removed and where special construction measures are required. This will also detail any pruning works required to retained trees.

4.5. Where archaeological or contaminated land reports and hard and soft landscape design plans are prepared for the site, these should be cross referenced with the Arboricultural Impact Assessment to ensure there are no conflicts in land treatments, recommendations or retention plans.

4.6. Where trees are to be removed to facilitate any development, replacement planting should be considered and included in any landscape designs to minimize the impact of the development.

4.7. The routes of any proposed services must be assessed by the arboriculturist and a detailed arboricultural method statement written where the services run through the RPA of any retained tree.

5. APPENDIX 1 - TREE SURVEY KEY

The schedule tree survey lists the trees and groups included in the survey and details the following:

- Species;
- Height (m);
- Trunk diameter generally at 1.5 m above ground level (mm);
- Branch spread (m);
- Height of crown clearance and height and compass direction of first significant branch(m);
- Age class (newly planted, Y , SM , M , over-mature, veteran);
- Physiological condition (good, fair, poor, dead);
- Structural condition (as determined from the ground);
- Estimated years remaining (<10, 10-20, 20-40, >40);
- Category grading (U or A to C).

Species: Species of tree with both common and botanical names.

Ht: Height in metres.

Ult ht: Ultimate height likely to be achieved for this tree in this location.

Dia: Diameter of stem in millimetres at 1.5m above ground level for single-stemmed trees or in accordance with Annex C of BS 5837 for multi-stemmed trees or trees with low forks or irregular stems.

NSEW: Crown spread at the four cardinal points. Ø = average crown radius.

Cr ht 1: Height of first significant branch above ground level and direction of growth.

Cr ht 2: Height of canopy above ground level.

Cond: Physiological and structural condition. G = good; F = fair; P = poor; D = dead.

Life exp: Estimated remaining contribution in years.

Age Class:

NP = Newly planted.

Y = Young - an establishing tree that could be easily transplanted.

SM = Semi-mature - an established tree still to reach its ultimate height and spread and with considerable growth potential.

EM = Early mature - a tree reaching its ultimate height and whose growth is slowing, however it will still increase considerably in stem diameter and crown spread.

M = Mature - a tree with limited potential for further significant increase in size although likely to have a considerable safe useful life expectancy.

OM = Over mature - a senescent or moribund tree with a limited useful life expectancy.

The report includes the following categories as indicated in BS 5837:2012.

To be assessed in respect of arboricultural, landscape and/or cultural (incl. conservation), values.

Category A: Those of high quality and value, those in such a condition as to be able to make a substantial contribution (a minimum of 40 years is suggested).

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).

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 150 mm.

Category U: Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years.

Criteria (subcategories):

1. mainly arboricultural value.
2. mainly landscape value.
3. mainly cultural value.

6. APPENDIX 2 - TREE SURVEY SHEETS

Tree Ref No.	Common Name	Botanical Name	Height (m)	No. of Stems	Stem diam.(mm)	Canopy Spread N (m)	Canopy Spread E (m)	Canopy Spread S (m)	Canopy Spread W (m)	Height of crown clearance (m)	Age class	Phys. Cond.	Stru. Cond.	Comments	Est. Rem. Contr. (Yrs)	Cat. Grading
T1	Oak	Quercus robur	9.0	1.0	600.0	5.0	6.0	7.0	7.0	2.0	EM	F	F	Off-site tree growing behind fence line. Dense ivy coverage preventing full inspection. Provides screening to the site.	10+	C2
T2	Oak	Quercus robur	11.0	1.0	650.0	7.0	7.0	8.0	8.0	3.5	EM	F	F	Off-site tree growing approximately 4m behind boundary fence between site and railway line. Ground drops away immediately to east of base. Highest quality tree in survey. Dense ivy coverage.	20+	C2
T3	Leyland cypress	Cupressus × leylandii	12.0	1.0	400.0	4.0	4.0	4.0	4.0	2.0	EM	F	F	Off-site tree growing behind fence line. Part of screening along boundary line when viewed as part of G11.	20+	C2
G1	Mixed group	Mixed group	2-5	1.0	150.0	2.5	2.5	2.5	2.5	0.0	SM/EM	F	F/P	Scrubby group of cherry plum, hawthorn and elder growing on edge of field area next to hardstanding. Majority multi-stemmed and covered in ivy. Some stems growing against base of brick wall creating likelihood of future damage. Low amenity.	10+	C2
G2	Mixed group	Mixed group	2-4	1.0	100.0	2.0	2.0	2.0	2.0	0.0	Y-SM	F	F	Boundary line group of hazel, ash, field maple and hawthorn forming short hedge. Some limited screening, reduced by low height. Majority multi-stemmed and topped.	10+	C2
G3	Mixed group	Mixed group	2-7	1.0	150.0	4.0	4.0	4.0	4.0	0.0	SM/EM	F	F	Off-site boundary line group of hazel, ash, hawthorn, field maple and blackthorn growing behind fence line on bank leading up to main road. Trees from good screen.	20+	C2
G4	Crack willow x 5	Salix fragilis x 5	4-7	1.0	150.0	4.0	4.0	4.0	4.0	1.0	SM	F	F	Off-site trees growing on bank next to road. Trees growing above shrubby area. Providing some screening. Multi-stemmed trees. Does not overhang site	10+	C2
G5	Crack willow and goat willow	Salix fragilis and Salix caprea	3.5-8	1.0	150.0	5.0	5.0	5.0	5.0	1.0	SM	F	F	Multi-stemmed trees growing on bank behind fence screening the main road. Overhangs site by up to 1.5m. Self-set goat willow growing just inside boundary line. Low quality trees.	10+	C2
G6	Mixed group	Mixed group	2-9	1.0	200.0	4.0	4.0	4.0	4.0	0.0	SM-EM	F	F	Mixed group of buddleia, ash, aspen, hawthorn and blackthorn Growing beyond site boundary on bank leading up to main road. Provides screening to the site. Some self-set trees growing within site boundary - these are low value and can be removed. Multi-stemmed.	10+	C2
G7	Hawthorn and blackthorn	Crataegus monogyna and Prunus spinosa	4-6	1.0	150.0	2.0	2.0	2.0	2.0	0.0	SM	F	F	Off-site trees growing behind fence providing screening from neighbouring railway cutting and properties beyond. Low aesthetic value.	20+	C2

Tree Ref No.	Common Name	Botanical Name	Height (m)	No. of Stems	Stem diam.(mm)	Canopy Spread N (m)	Canopy Spread E (m)	Canopy Spread S (m)	Canopy Spread W (m)	Height of crown clearance (m)	Age class	Phys. Cond.	Stru. Cond.	Comments	Est. Rem. Contr. (Yrs)	Cat. Grading
G8	Hawthorn	Crataegus monogyna	4-8	1.0	300.0	4.0	4.0	4.0	4.0	0.0	EM	F	F	Off-site trees growing behind fence providing screening from neighbouring railway cutting and properties beyond. Ground drops away to east of trees.	10+	C2
G9	Mixed group	Mixed group	4-6	1.0	200.0	3.0	3.0	3.0	3.0	0.0	SM-EM	F	F	Group of cherry, ash and elder growing along boundary line and providing some screening from adjacent gardens. Low quality trees, easily replaced. Ground ploughed within 2m of base of trees.	10+	C2
G10	Mixed group	Mixed group	3- 12	1.0	300.0	5.0	5.0	5.0	5.0	0.0	SM-EM	F	F	Line of Leyland cypress with ash and elder growing beneath. Trees growing off-site providing screening. Some stems lean into site by up to 6m. Ash and elder mostly growing inside fence and easily removed.	20+	C2
G11	Leyland cypress	Cupressus × leylandii	12	1.0	400.0	4.0	4.0	4.0	4.0	0.0	SM-EM	F	F/P	Line of trees growing along boundary inside fence line proving screening from adjacent pond and workshop hardstanding.	10+	C2
G12	Leyland cypress	Cupressus × leylandii	12	1.0	400.0	6.0	6.0	6.0	6.0	0.0	EM	F	F	Line of trees growing along boundary inside fence line proving screening from adjacent garden. Multiple stems have failed falling into site, some subsequently have started to re-grow upwards from the uprooted stem. Poor form. Good screen.	20+	C2
G13	Hawthorn and elder	Crataegus monogyna and Sambucus nigra	4-6	1.0	150.0	2.0	2.0	2.0	2.0	0.0	SM	F	F/P	Area of self-set trees growing in corner of the site between cypress groups and spoil mound. Poor form with low quality and amenity	10+	C2
G14	Leyland cypress	Cupressus × leylandii	3-12	1.0	300.0	3.0	3.0	3.0	3.0	0.0	SM-EM	F	F	Boundary line group growing between work shop hard standing area and pond with hawthorn and elder growing beneath. Trees growing in strip of raised earth 4m wide with retaining wall to north limiting root growth. Overhangs hard standing by up to 3m. Some trees leaning. Good screening but poor form. Western section of group reduced in height to 3m.	10+	C2
G15	Leyland cypress	Cupressus × leylandii	5-6	1.0	250.0	2.0	2.0	2.0	2.0	0.0	SM-EM	F	F	Boundary line trees growing between palisade fence around workshop and wire boundary fence line crating hedge line screening. Topped at current height. Good screen.	20+	C2
S1	Dogwood	Cornus sanguinea	1.5	1.0	50.0	1.0	1.0	1.0	1.0	0.0	SM	F	F	Off-site shrubby bed growing on bank leading to road. Low screening but some amenity value.	10+	C2

7. APPENDIX 3 - TREE SURVEY PLAN

Please see attached plan - 2488_DR_001