LONGMORVALLEY TREE PARTNERSHIP

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14/01844

ARBORICULTURAL REPORT

PJ Construction
Oakdene
Oaklands Road
Bromley

Prepared by:
Daniel Morris
Mor Consultancy

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1.0 Tree Appraisal & Protection Method Statement To BS5837:2012.

Oakdene, Oaklands Road, Bromley, Kent

Introduction and Scope

This report has been commissioned by PJ Construction to; i) Assess the trees in accordance with BS 5837:2012 'Trees in relation to construction-recommendations' (The BS); ii) detail the aboricultural consequences of the proposed project, iii) set out the tree protection measures considered appropriate for the scale and type of construction; iv) develop a tree protection strategy for the duration of the construction including any demolition works.

Reference to 'the proposed scheme' below, will mean either the approved scheme for planning consent has been granted, or the scheme under consideration by the Local Planning Authority (LPA).

This Method Statement sets out the protection measures that will be adopted to ensure effective tree preservation. The basic principles are that the established fences and ground protected areas are exclusion zones for the duration of the construction and; excavations within the BS root protection areas (RPA) will be subject to professional assessment.

1.1 All work is to conform to BS 3998:2010 'Tree Work' (with amendments) and to current aboricultural best practice. Tree works are to be undertaken by a professional and specialist arboricultural contractor, who has the appropriate experience and insurance cover. Commencement of all or some of the proposed works may be subject to written authorisation from the Local Planning Authority (LPA) should planning consent be obtained. We strongly advise that authorisation for any tree works is obtained from the LPA prior to commencement.

1.2 **General Site Overview:** The above address fall within quite a large garden and is surrounded by converted houses (into flats) and purpose built multi property buildings.

I have categorised the trees on site as follows:
Category 'U' 1 Tree
Category 'C' 6 Trees

Trees T3, and T4, may be affected by the proposed build area, however are low grade self seeded trees not worthy of retention. For this reason I feel that it would be beneficial to fell both trees and replace with better native specimens at the point of landscaping. Tree T7 may be affected by the proposed parking area. Where the RPA of T7 extends into the new proposed parking area, (hatched in orange on the TPP) I would advise that excavations are made by hand only and that no machinery be used within this area. **See Appendix 4**. For the construction of the driveway area, it would also be a requirement that a geotextile cellular confinement system is used where the hardstanding is within the RPA. **See Appendix 3**

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Tree T2 has a proposed bin store within its RPA. During construction I have recommended that a compressible material is laid on the exposed area of RPA (hatched in blue) and that geotextile CCS is to be used under the proposed hardstanding area (hatched in orange). **See Appendix 3**

2.0 Tree Protection

2.1 A tree's BS root protection area (RPA) is based upon a radius measurement taken from the trunk centre and is included with reference to Table 2 of the BS (See **Appendix 2**). Works within a tree's assessed RPA will be subject to guidance set out here, particularly where construction is required within this area but beyond the position of tree protection fencing.

2.2 Effective tree protection will be afforded subject to following a logical sequence of events, which **will follow a pre-commencement site meeting** (see 4.0) **with the LPA representatives and the site agents and specialist supervisors:**

('S' refers to stage in order)

S1 Undertake any agreed and or necessary tree works.

S2 Erect protective fencing.

S3 Lay ground Protection where RPAs are exposed.

S4 Demolish existing structures

S5 Carry out ground works including excavations for foundations.

S6 Erect scaffolding and complete construction works.

S7 Remove protective fencing and complete porous hard surfacing areas and landscaping works.

2.3 The protection fencing will be erected in position indicated in blue on the Tree Protection Plan (TPP) utilising existing outbuildings at **Appendix 2.**

2.4 The type of fencing and its recommended specification is attached at **Appendix 2** also. In this case fixed Heras fencing will be effective. The pre-commencement site meeting should be used to address this issue.

2.5 The protection fencing will remain in position for the duration of the construction phases for the building, including the removal of existing structures. Clear signs will be attached to the fencing once erected – suggest wording will be **'Protected Trees – No Access'**

2.6 Where, for construction purposes, it is necessary to position tree protection fencing within the assessed RPA of a tree(s), ground protection will be installed to prevent undue soil

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compaction from pedestrian and vehicular traffic. The type of ground protection will be suitable for the type of proposed traffic. **See Appendix 2**

2.7 Hand excavations, which are required and agreed to occur within the RPA's of retained trees may encounter roots. **See Appendix 4**. Specifically in this case however, the treatment of roots will be undertaken in the following ways:

1 Hand excavate a trial trench along the line of the proposed footings/pile excavations in the regions identified on the TPP.

2 Roots <25mm Ø will be pruned using sharp pruning tools. Roots will be pruned back to a side shoot or suitable position, ensuring the exposed face is kept to a minimum.

3 Roots >25mm Ø will be retained where possible and void-formers will be installed and/or construction will be designed to retain roots 50mm Ø or more.

3.0 Site Supervision – Arboricultural Specialist

3.1 It is important to recognise that the Local Planning Authority Officers (Enforcement Sections) have stringent powers to serve a **Temporary Stop Notice** through recent changes in the legislation governing planning and development. Circular 02/2005. It is therefore important that works, which may impact upon trees and amenity, are suitably controlled by competent personnel. Identified below are details of a site monitoring process designed to minimise potential risks to retained trees on or off site.

3.2 So as to ensure that the tree protection measures are implemented, an arboricultural specialist will be appointed to record the condition of the trees to be retained and the position and type of tree protection erected and/or installed. The specialist will make a record of visits and which will be retained by the contractor/developer and/or left on site for inspection (see **appendix 5**)

3.3 Key times for site supervision include:

1. Completion of agreed/necessary tree works
2. Erection of tree protection fencing
3. Works within RPA's of retained trees

3.4 Site monitoring will be at regular intervals, (beyond that stated above) and at minimum three-week intervals (subject to development scale).

Contact List **(to be completed PRIOR to commencement)**

Interested Party	Name	Company/LPA	Contact Number(s)	Comment
Site Agent	TBA	TBA	TBA	

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Arb Supervisor	Daniel Morris	Mor Consultancy	07932038953	
LPA Tree Officer	Coral Gibson	LB Bromley	020 8313 4516	
Site Engineer	TBA	TBA	TBA	
Other	TBA	TBA	TBA	

TBA – to be advised

4.0 General Site Care

4.1 No fires will be lit on site.

4.2 No access will be permitted to within the fenced areas (unless it is used for site accommodation) at any stage during construction.

4.3 No materials, equipment or debris will be stored within the fenced areas unless agreed with the aboricultural supervisor.

4.4 A copy of this Method Statement and Tree Protection Plan is to remain on site at all times.

Note 2. The Circular 02/2005 gives guidance on the temporary stop notice provisions in part 4 of the planning and Compulsory Purchase Act 2004 which inserted sections 171E to 171H to the Town and Country Planning Act 1990.

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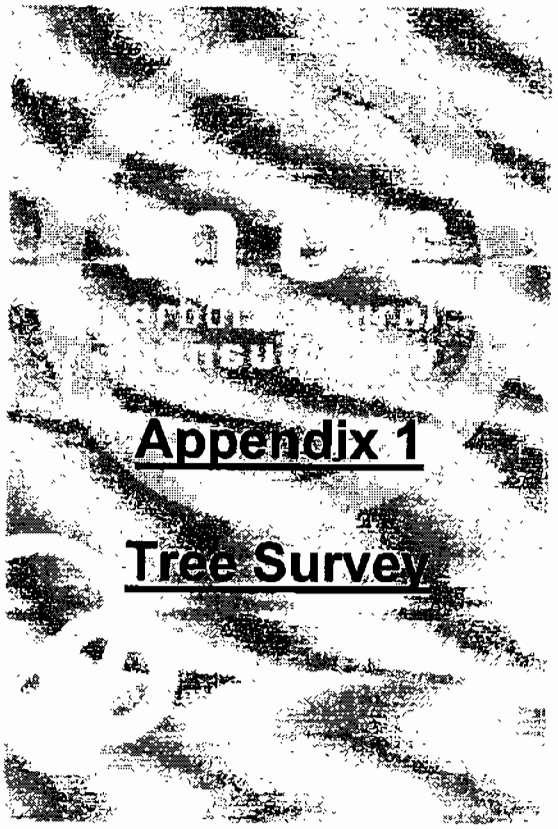

Tree Survey Schedule BS5837

Tree ref. No.	Species	Height (m)	Stem diameter (mm)	Branch spread (m)		Height of crown clearance (m)	R of RPA (m)	Age class	Structural and Physiological condition	Preliminary Management recommendations	Estimated Remaining contribution (years)	Category grading	Consent	Nett Price
T1	Ash	17	0.26	N	7.5	2.5	3.12	M	Very poor - Bad lean over the road and foot paths. Heart wood decay in the upper canopy. Exposed root plate	Fell	< 10	U		
				E	-									
				S	3									
				W	8									
T2	Horse Chestnut	17	0.49	N	6.5	1.5	5.88	MA	Multi steam at 1.7m and evidence of first signs of heart wood decay - Poor form.	Reduce laterals towards buildings.	10-20	C		
				E	5.5									
				S	8.5									
				W	4.5									
T3	Twin stem Sycamore	18	0.25 0.26	N	2	4.5	4.32	M	Codominate steams creating unbalanced growth. Low grade self-seeded tree.	Fell to accomidate building and replant.	10-20	C		
				E	3									
				S	3									
				W	2									
T4	Twin stem Sycamore	18	0.24 0.26	N	4	4.5	4.3	M	Codominate steams creating unbalanced growth. Low grade self-seeded tree.	Fell to accomidate building and replant.	10-20	C		
				E	4									
				S	3									
				W	2									
T5	Yew	5	0.1	N	3	-	1.2	Y	Poor form - Self-seeding tree.	-	< 10	C		
				E	1									
				S	3									
				W	1									
T6	Ivy choked twin stem Sycamore	19	0.19 0.25	N	5	3	3.2	MA	Ivy choked - Difficult to view.	Remove ivy and deadwood.	10-20	C		
				E	3									
				S	5									
				W	3.5									
T7	Holm Oak	17	0.36	N	6	0	4.32	0	Unbalanced growth and Ivy.	Remove Ivy, lift, thin and balance.	20-30	C		
				E	7.5									
				S	4									
				W	0									

Age class: Y-young, M-middle age, MA-mature, O-over mature, V-veteran
Pysiological condition: G-good, F-fair, P-poor, D-dead
Category grading: R-remove, A-high quality, B-moderate quality, C-low quality

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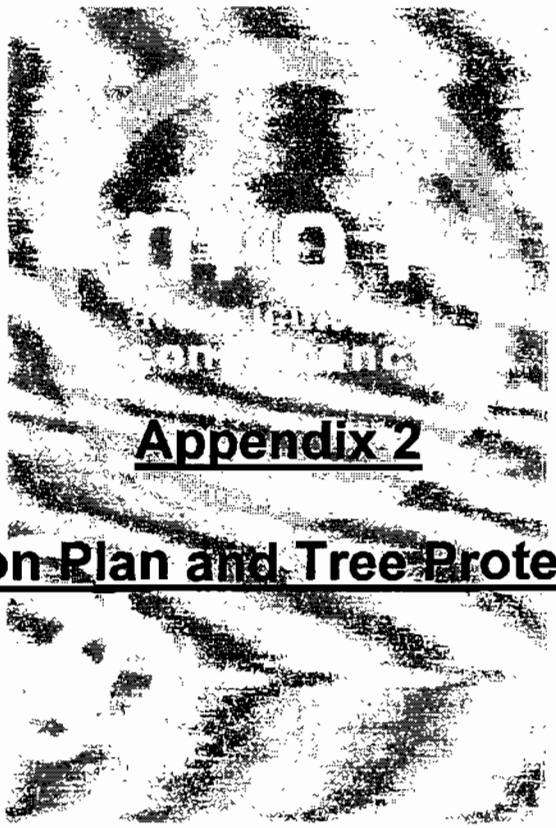

Appendix 2

Tree Protection Plan and Tree Protection Fencing

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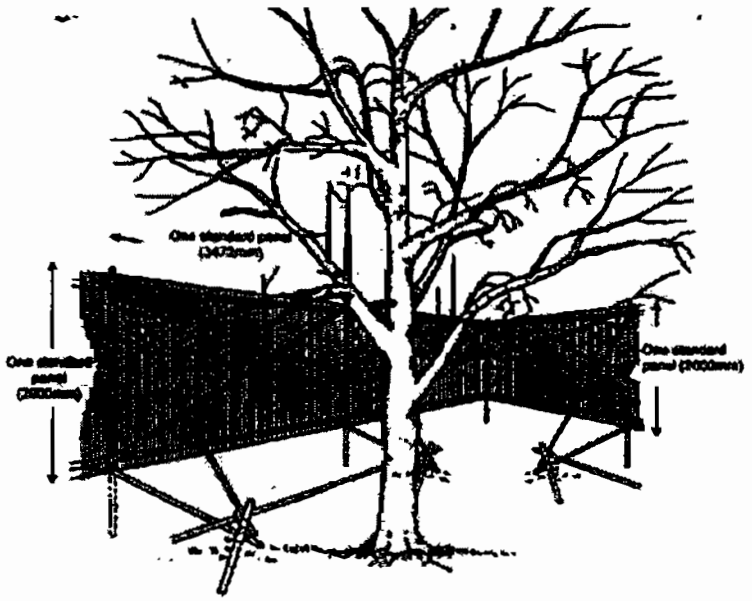
Construction and Maintenance of Tree Protection Fencing

1.0 Construction of Tree Protection Fencing shall comprise weldmesh/herras panels or close boarding supported on a framework of both vertical and horizontal steel scaffolding which is braced to resist impacts. A sample specification is given below.



SCAFFOLD FRAMEWORK REQUIRED TO BRACE HERAS TYPE PANELS

Unless otherwise agreed in writing with the Local Planning Authority (LPA), the fencing shall be positioned at a distance from the trunk of at least:

- **12 times the diameter of the trunk measured at 1.5m for a single stemmed tree or**

Notices should be fixed to the fencing displaying words such as 'Construction Exclusion Zone – Keep Out '.

All fencing shall be retained and maintained in good condition for the full duration of the construction period and considered sacrosanct unless otherwise agreed in writing with the LPA.

Within the fenced area, during the construction period:-

(a) No spoil, vehicles, fuel, materials, temporary buildings or ancillary equipment shall be stored.

(b) Existing ground levels shall not be raised or lowered.

(c) No services shall be laid without the written consent of the Local Planning Authority.

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(d) Materials likely to be injurious to trees, such as the mixing of cement or the discharge of cement, oil, bitumen or other should not be permitted outside the fence where contaminated fluids could drain towards the tree.

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Appendix 3

Guidance for a Low-Invasive Construction Method.

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1. The construction of all hard surfaces can have considerable impact on the surface roots of trees. It is essential that the design of such areas take into consideration the requirements of nearby trees. The following information has been provided as guidance, using the Arboricultural Practice Note 1 (APN-1) 'Driveways Close to Trees' and BS5837:2005 as reference.

2. For the roots to be retained undamaged there must be no excavation, soil stripping or grading within the RPA or in close proximity to the tree. This will therefore require the adoption of a 'no dig' method of installation.

3. It is not sufficient just to adopt a no-dig construction technique, because the compacted sub-base and hard surface must be porous allowing water and oxygen to diffuse through it.

4. Damage to trees can only be avoided if the construction embraces the three basic principles, listed below, and is restricted to a maximum width of 3m and situated tangentially to one side of a tree only or confined to an area no greater than 20% of the root protection area, whichever is smaller:

- ❖ Roots must not be severed
- ❖ Soil must not be compacted
- ❖ Oxygen must be able to diffuse into the soil beneath the engineering surface

5. Construction will/must incorporate two main components: a cellular confinement system such as 'Cell Web' and an aggregate sub-base. Cellular confinement systems (CCS) are high tensile strength synthetic grids designed to support roads on soft ground. When placed in the cellular confinement system, appropriate (no fines) granular sub-base material penetrated the mesh, but is unable to pass through it, forming a 'positive interlock'.

6. The interlock between aggregate and the cellular confinement system provides a reinforced platform and efficient load spread into the underlying ground. A suitable geogrid/aggregate combination will prevent rutting of the ground beneath the construction.

7. The granular infill material must be clean, angular stone with no fines graded between 20mm and 40mm in size with single size being the most appropriate. The stone must be land derived as marine derived gravel contains a high proportion of rounded materials which do not interlock the 'Cell Webb'.

8. Temporary hard surfaces will be installed if there is a delay in installing permanent hard surfaces and for vehicular and pedestrian traffic over regions of RPA outside the construction exclusion zone. Portable roadways, installed on an appropriate layer of wood mulch will be used as the temporary hard surface.

9. Ideally, the CCS should be installed between May and October when the ground is driest and least prone to compaction. The approved wearing course is to be laid over the CCS. Where the new surface covers in excess of 20% of the RPA or is wider than 3m within the RPA, the new surface should be constructed in a manner to permit infiltration of moisture and gaseous diffusion.

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Stages for Installation of Low-Invasive Hard Standing Surfaces.

Stage 1 **Erection of tree protection fencing** and mark out area of exposed proportion of the RPAs.

Stage 2 **Remove surface vegetation** by using a specific herbicide (as advised by a specialist) or manual removal with hand tools. Light machinery operating from beyond the RPA and tree canopy of retained trees could, under specialist supervision, be used to carefully remove existing wearing surfaces, (the sub base of existing surfaces or foundations should be left in situ where possible). If the existing soil level is to be lowered, material is to be cleared away manually. Roots over 25mm in dia, which are found in the construction area, should not be severed but be left in situ and covered immediately with soil or sharp sand to prevent desiccation.

Stage 3 **Carry out final clearance under the canopies of retained trees.** This should be completed using hand forks (not spades) and any roots exposed should be cleanly cut and covered on soil/sharp sand immediately. Any delay to this process will require irrigation of any exposed roots and subsequent protection with dampened hessian sacking for example. Final top soiling shall be carried out manually. Agreed removal of shrubs, saplings or trees, within the RPA's of retained trees are to be cut to, or just below ground level rather than pulled out, which can damage entwined roots.

Stage 4 **Install the non-woven Geotextile** directly over subgrade at soil grade level and fix in place.

Stage 5 **Lay out over the Geotextile the CCS** and ensure the edges are anchored open during the infill process with steel staples or wooden pegs.

Stage 6 **Fill the CCS** ensuring the machinery works only on already filled areas and not on the sub grade. Typical infill consists of no fines angular granular material 20-40mm.

Stage 7 **Install kerbs and edgings** directly on top of existing soil grade level. For light structures, a treated peg and board may be acceptable and for more substancial structures, railway sleepers, drilled kerbstones of gabians, held in place with track or road pins.

Stage 8 **Install temporary porous surfaces if necessary.**

Stage 9 **Install final gas permeable surfaces.**

Stage 10 **Tree protection fencing** will remain intact in its original location until all construction works are completed.

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Surfacing Options

Small Block Paving

Lay a second layer of Geotextile separation fabric over the infill CCS.
Lay a sharp sand bedding layer compacted with a vibro compaction plate to recommended depth.
Place block paviors as per manufacturer's instructions.

Loose Gravel

Place second layer of Geotextile separation fabric over the infill CCS.
Place pea shingle/gravel or hoggin aggregate to required depth.

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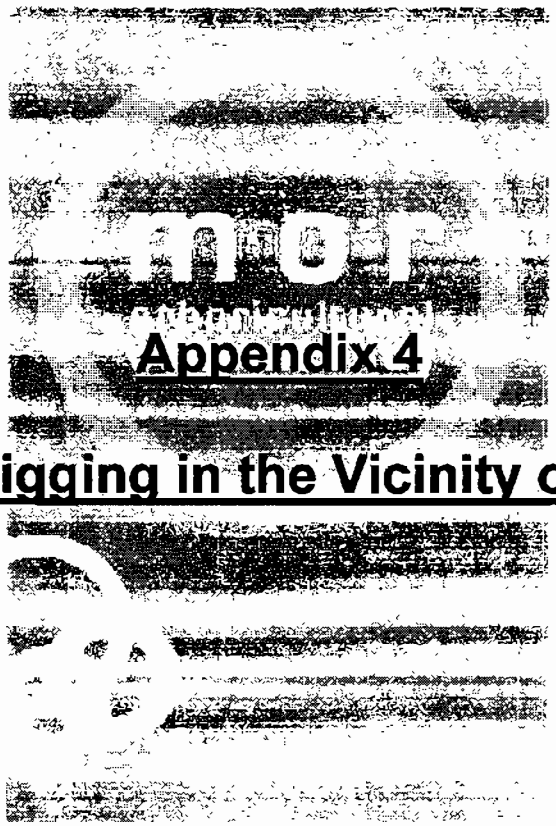

Appendix 4

Hand Digging in the Vicinity of Trees

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Hand Digging In the Vicinity of Trees

Method Statement

1.0 Introduction

1.1 Within and Adjacent to area of construction, trees valued as important landscape assets may exist. It is possible that such trees are protected by legislation in the form of a Tree Preservation Order, conservation area of by planning conditions. In either case, disregard of the tree's well being causing damaged to the roots, trunk or branches may be an offence. Consent from the Local Planning Authority may be required to undertake works may have an impact on the tree prior to commencement.

1.2 Whilst the trunk and branches of a tree can be seen and therefore more easily avoided, tree roots are concealed beneath the ground. Their hidden nature can lead to inadvertent damage from construction processes. Dependent upon the extent of any root damage, the whole tree can be adversely affected. It is for this reason that it is necessary to ensure adequate precautions are adopted when considering construction in the vicinity of trees.

1.3 Hand digging rather than excavation by mechanical means has proven to be an effective way of limiting the effects of construction on nearby trees. It is often considered impractical, time consuming and costly to excavate by hand when machinery exists specifically for the purpose of digging. However, avoidance of unsustainable damage being caused to important trees through hand digging may far out weigh subsequent costs associated with legal penalties and loss of amenity.

1.4 Below are detailed the basic principles to acknowledge in respect of tree roots and the steps that can be taken to effectively avoid causing unsustainable damage to trees.

2.0 Tree/Root Damage – How it can occur

2.1 The Majority of tree roots exist in the upper **600mm to 1000mm** of soil. Excavations of the soil in the vicinity of trees, to this depth can be harmful to the tree roots and consequently the tree.

2.2 Tree root systems comprise two main root types, those that anchor the tree in the ground and those that supply the tree with water and elements. Roots that support the tree are woody and those that are involved with the **conduction** of water and nutrients are non-woody and fibrous. Both types of roots can be damaged directly by severing or crushing. Fibrous roots can die from asphyxiation by **soil compaction** and/or soil contamination. Trees differ in their tolerance of root loss of disturbance, according to their species and condition or both.

2.3 The larger the root damaged, the greater the impact on the tree.

3.0 Hand Digging in the Vicinity of Trees – The Process

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3.1 First it is necessary to consider all available options to construct beyond the likely range of influence on the tree's condition – this can be calculated by multiplying the distance of the tree trunks circumference (at 1.5m above ground level) by 4 (NJUG 10) or by referring the Table 1 of BS 5837:2012 'Trees in Relation to Construction Recommendations'. This area is called the Precautionary Zone or Root Protection Area. **When it is established that no options are available other than to construct within this zone, hand digging will be needed.** When considering hand digging, an appointed specialist supervisor/consultant will be able to advise during construction and must be on site at the commencement of works.

3.2 Before beginning to dig, mark out the precautionary area with ground marker pain, clearly on the ground. This will identify the area within which hand digging must take place. **For safety, ensure there are no underground services that may cause injury if damaged.** Any existing protection fencing is to be located to the nearest position of construction and fixed in placed, between the tree and area of construction. It will visible to operators thereafter where hand digging will need to be undertaken. The use of mechanical digging equipment to remove the top surface layer (50-100mm) is to be avoided and tools are required for the exercise too.

3.3 When hand digging, using typical hand tools, carefully work around roots, retaining as many as possible. Using a brush will expose roots cleanly before deciding whether it will be necessary to prune. Care must be taken not to damage roots including root's bark.

3.4 Retain all roots with a diameter greater than 25mm. Where such roots must be removed, after consulting a trained arboriculturalist (e.g. Local Authority Tree Officer or the appointed Consultant), these roots must pruned with sharp cutting tools such as a handsaw, secateurs or pruners. The cut must leave the smallest wound possible and the root must be left as long as practically possible. Roots in excess of 50mm diameter are to be retained and protected by surrounding the roots with uncompacted sharp sand, void-formers or other compressible materials.

3.5 Where roots do not exist e.g. beyond the depth of the rooting area, mechanical excavation should not be considered without specialist supervision.

3.6 All spoil is to be deposited beyond the precautionary zone. Soil build-up can cause roots to die.

3.7 As soon as practicable, exposed roots are to be covered with loose backfill material such as soil/sand mix to offer immediate protection. When excavation for the introduction of posts, pads, or piles, the sides of the pits should be lined with a geotextile material to prevent the potential for lime scorching of smaller diameter roots.

3.8 Where it is possible to avoid completing the construction in one day for example, any exposed roots or their cut ends are to be covered with sacking material over night to prevent drying out and to add protection. This is particularly important in winter months, where frost can cause further damage to the roots.

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3.9 Upon completion of the hand digging, where appropriate, protection fences are to be re-located and fixed in their original position.

Before considering hand digging and determining precautionary zones or root protection areas, specialist arboricultural advice should be sought.

In the Precautionary Area:

(2)

- ☐ **Don't** excavate with machinery. Use trenchless techniques where possible. Otherwise dig only by hand.
- ☐ When hand digging, carefully work around roots, retaining as many as possible.
- ☐ **Don't** cut roots over 25mm in diameter, unless the council's Tree Officer agrees beforehand.
- ☐ Prune roots which have to be removed using a sharp tool (e.g. secateurs or handsaw). Make a clean cut and leave as small a wound as possible.
- ☐ Backfill the trench with an inert granular material and top-soil mix. Compact the backfill with care around the retained roots. On non-highway sites backfill only with excavated soil.
- ☐ **Don't** repeatedly move/use heavy mechanical plant except on hard standing.
- ☐ **Don't** store spoil or building material, including chemicals and fuels.

(3) Frost can damage exposed roots. If trenches are to be left open overnight, cover the roots with dry sacking. Remember to remove the sacking before backfilling.

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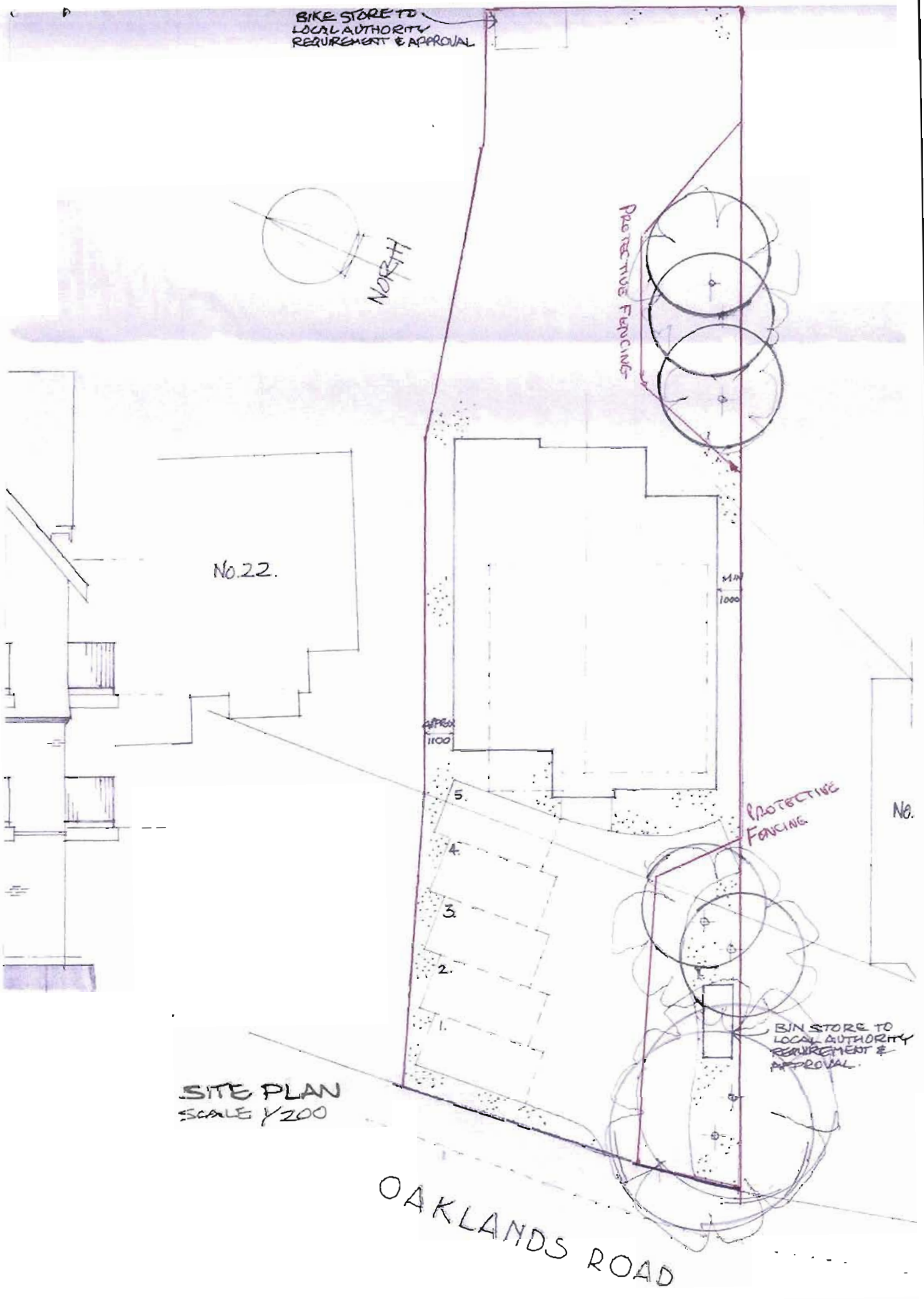

PROPOSED REDEVELOPMENT OF