

CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN



Address:
Development at
70 Woodlands Avenue
Rustington
West Sussex
BN16 3EY

Works:
Demolition of existing dwelling
And erection of two-storey apartment
building comprising 6 no. two-
bedroom apartments

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On behalf of:
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May 2018

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INTRODUCTION

The following Construction Management Plan has been compiled in respect of Planning No. R/65/17/PL for:

“Demolition of existing dwelling & erection of two-storey apartment building (6no two-bedroom apartments)”

This Plan should be read in conjunction with the following Appendices:

- Appendix 1 – Site Plan
- Appendix 2 – Arboricultural Survey, Impact Statement & Method Statement

This Plan should not be construed as either the Pre-Construction Information, or the Construction Phase Plan as required by the Construction (Design & Management) Regulations 2015, although it may form part of either or both of these documents, and the contents of this Plan must be considered and incorporated into plans for the construction phase of the project for the compliance with the CDM Regulations.

Health & Safety, Environment and Waste Management Approach

The applicant will commission competent and trained persons at all times and is committed to management of the site and construction works being in compliance with the Construction (Design & Management) Regulations 2015, encompassing supplementary regulations as applicable to the activities on the site.

The applicant realises the objectives set by environmental legislation and aims to be considerate of the impact the construction site may have on the surrounding environment. The applicant will ensure that all reasonable steps are taken, so far as it is able, to prevent any form of damage, pollution, harm or danger to the environment, and will, where possible, contribute to the protection and enhancement of the environment.

All reasonable measures will be taken to correctly plan, co-ordinate and control all site activities to prevent potentially injurious material and equipment from contaminating any land, water or air. The applicant will use his best endeavours to ensure operations on site have minimal impact on the environment. It is aimed to carefully monitor and review site activities to ensure any matter likely to adversely affect the environment is eliminated or controlled.

The applicant is committed to efficient Waste Management and Site Managers will be required to minimise waste and boost levels of re-use and recycling of goods and materials. Licensed Waste Removal contractors who are dedicated and set up for recycling will be employed on the site. Licenced, experienced and skilled demolition contractor will be used to demolish the existing building, and likewise the removal of any asbestos from the existing building will be by licenced contractors. Waste will be removed from site by skip or muck-away lorries.

OVERVIEW

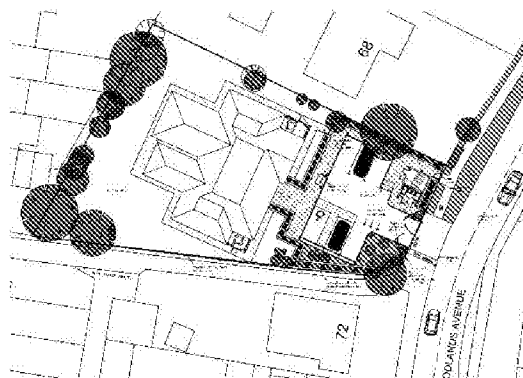
The Existing Site:

The site contains an existing bungalow which will be demolished, by competent specialist demolition contractors.

Prior to any works on site an Asbestos Survey will be carried out and the findings made known to licenced asbestos removal contractor who will be engaged for the removal of all asbestos.

The redundant materials from the bungalow will either be crushed and used as site hardcore, or will be removed from the site by licenced waste management company.

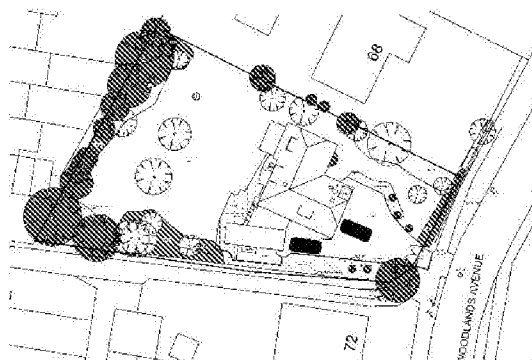
EXISTING SITE



Description of the Work/Proposed Site:

Demolish existing building. Provide foundations, drainage, hard and soft landscaping, utility services to serve the new building. Erect the new two storey building and fit out to provide 6 no. 2 bedroom flats

PROPOSED SITE



Programme:

Anticipated start in July 2018
Expected duration – 9-12 months

Construction Method:

It is proposed to use traditional brick and block cavity construction under traditional trussed and tiled pitched roofs. Foundation type is to be strip or trench fill to a minimum depth of 1M and is not likely to be considerably deeper. Ground conditions will be checked, and structural engineer calculations will be obtained for foundations, if necessary.

Working hours:

8am-4.30pm Monday to Friday. Saturday 8am-1pm (if necessary and sanctioned by Site Manager). No Sunday or Bank Holiday working will be permitted.

Regulatory Compliance:

The following will apply (may not be an exhaustive list).

- Planning Consent
- Building Regulations
- Construction (Design & Management) Regulations 2015
 - o Appointment of Principal Designer
 - o Appointment of Principal Contractor
 - o Pre-Construction Information
 - o Construction Phase Plan
 - o Health & Safety File and Operation & Maintenance Manuals
- Other Regulatory compliance or approvals required
 - o Health & Safety at Work Act 1974
 - o Noise at Work
 - o Environmental legislation
 - o Others as appropriate to site activities

MANAGEMENT OF THE WORKS

The works will be managed by the appointment of a Principal Contractor who will be Cloud 9 Contractors Ltd and will responsible for the day to day safe running of the site. There will be a full time Site Manager during the construction works.

Access to Site:

The site will be accessed via Woodlands Avenue. Vehicles accessing and leaving the site will be controlled by banksmen. All traffic to site will be arranged, managed and monitored by the Site Manager.

Site Boundaries & Security (See Site Plan):

The site has boundaries as follows:

South, North: Existing boundary fences will be maintained as the site boundary for the duration of construction.

West, Existing trees will be retained and form the site boundary for the duration of construction

East: Solid hoarding will be erected on the boundary with Woodlands Avenue, with lockable site entrance gates. The public footpath will be maintained and monitored throughout the works.

Tree Preservation Orders:

There are two trees adjacent to the site on neighbouring property and one on the actual site. See Site Plan. The methods for protection of these trees will be as per the Impact Assessment and Method Statement provided by PJC Consultancy. This report was produced before the Tree Preservation Orders were imposed. However, the Method Statement clearly details the root protection areas of the relevant trees, provides a

specification for protective barriers. It also calls for no-dig method for new surface block paving. See Appendix 2

All recommendations in PJC report will be adhered to during construction.

Neighbouring Properties & Protection of amenity and continuance of enjoyment:

Close liaison will be maintained throughout the construction phases with neighbouring residents. The site will be run by a Principal Contractor who will be responsible for ensuring all operatives and visitors to the site adhere to site rules, parking and access restrictions. Other possible site issues such as noise and dust, etc. will be dealt with in the Construction Phase Plan and applied on site in accordance with best practice. See under 'Control of Noise' and 'Control of Dust'. Protection of trees on neighbouring properties, see 'Tree Preservations Orders' above.

Protection and Safety of General Public:

Site boundaries will be erected and kept in good condition and regularly checked and repaired. Access across the footpath will be monitored and vehicle movements, deliveries and collections will be assisted by banksmen.

Lighting for the Site:

It is not expected, due to the timing of the works that flood lighting will be required. Should this become necessary a full assessment will be done by the Site Manager and Client to ensure that adequate lighting be provided, placed on site with minimum effect on the neighbouring properties. Floodlighting will be kept to a minimum by careful planning of works.

Control of Noise:

Operations involving equipment or activities which may cause a noise nuisance to neighbouring residents and general public will be kept to a minimum by careful planning of work. Noise control and monitoring will be continuous and working on noisy activities will be coordinated with the Site Manager who will assess the impact on neighbours. It is not envisaged that any extraordinary works activities will be necessary on the site which may cause extraordinary noise nuisance above normal construction activities.

Close liaison will be maintained with neighbouring property owners when, and if, such work is unavoidable and mitigating measures undertaken. Such mitigating measures may include:

- Segregating the noise by erecting barriers, or closing doors were possible.
- Dampening machines or tools to reduce noise
- Ensuring silencers are fitted where appropriate to the machinery/tools.

All operatives working on site will be advised of the policies in regard to noise avoidance and the mitigating measures which are appropriate in regard to their own health & safety. Appropriate PPE will be worn by operatives at all times, including ear protection as and when necessary.

Control of Vibration:

Operations involving equipment or activities which may cause risk of vibration injury to operatives will be kept to a minimum by careful planning of work. The Principal Contractor and Site Manager will be required to monitor working methods on such activities and will coordinate safe working methods. Any heavy-duty machinery, such as excavation diggers, causing vibration near boundaries, will be controlled and hand digging implemented, if necessary to avoid nuisance or damage to the neighbouring property.

Mitigating measures may include:

- Use of hand held tools instead of heavy machinery if necessary
- Well maintained equipment will be used at all times
- Machinery and tools fit for purpose to avoid over-working machinery or operatives on the task, will be used.
- Activities causing vibration will be kept to short bursts rather than long continuous periods
- Operatives will be competent and trained in the use of machinery and tools in order that the machinery/tools are used in an effective, efficient way.

All operatives working on site will be advised in regard to vibration avoidance steps and the mitigating measures which are appropriate in regard to their own health & safety.

Appropriate PPE will be worn, and mitigating measures taken as necessary.

Control of Dust:

External works, excavations and brickwork cutting operations may all give rise to dust in the atmosphere. This will be kept to a minimum by undertaking the following measures and precautions:

- Apply water or binding agents to those areas / activities that are likely to produce dust wherever practical to do so.
- Maintain good levels of housekeeping on site during the construction process. This will also include regular reviews of the adjacent public highway / footpaths and cleaning will be undertaken if found necessary.
- Ensure that materials that may generate dust are correctly stored and covered in practical locations.
- Ensure that vehicles entering or leaving the site are covered correctly and that any spillage that occurs is promptly cleaned up.
- Ensure that Sub-contractor Risk Assessments and Method Statements give due consideration to the possibility of creating dust or causing other nuisances. Such Method Statements will be required to address such issues and incorporate the use of appropriate plant and / or tools to minimise any dust arising. Sub-contractor's Risk Assessments and Method Statements will be reviewed by the Principal Contractor and any appropriate amendments deemed necessary during this review will be made.
- Suitable covers will be applied to skips to ensure that emissions of dust and debris from general day to day waste arising from the works will be kept to a minimum.
- Bonfires will not be allowed on site, thus avoiding any dust, soot or other wind

- transported debris arising from burning of materials.
- Suitable screening to be applied where activities likely to cause dust.
- Close liaison with neighbours when activities or conditions where dust may be unavoidable. Discuss timings and additional screening, and any additional cleaning with neighbours.
- Avoid work likely to cause dust during windy weather.

Site Welfare:

Welfare will be provided by either a cabin for site office, wash and refreshments, or, a temporary caravan with same facilities. A fully serviced Portaloo will also be provided. Electric power for hot water and heating will be connected in the cabin and tables and chairs provided. First Aid facilities will be available on site, and Emergency Procedures clearly relayed to all operatives.

These facilities will be maintained in a clean and usable state.

Communications within the site:

All operatives will be encouraged to report to the Site Manager any occurrence, near misses, or hazardous situation or activity which they observe on the site.

Site Drainage, Storm Water and Sediment Control:

Measures will be put in place to prevent the pollution of storm water drainage systems. These will include:

- Minimise excavation and movement of loose materials on site during inclement weather
- Materials will be stored well away from existing drainage systems and in areas designated by Site Manager
- Stock piles will be protected by Silt Fences where there is danger that they will spill into drainage systems.
- Existing storm water drainage systems to be retained on site and kept clear of debris and pollutants
- New drainage runs which are to connect to existing will be cleared of debris prior to connection and commissioning
- Any re-fuelling of plant will be carried out away from drainage systems. Any spillages will be immediately covered with sand and removed to appropriate skip
- Good Housekeeping on site monitored by the Site Manager

Prevention of Mud on Road:

The time of year, weather conditions and site activities will determine the potential for mud on adjacent roads. The Principal Contractor will monitor the situation daily and any dust, debris or mud will be cleaned off the roadways before close of site for the day. In inclement weather a wheel wash system will be employed if necessary.

Traffic Management – Deliveries

The site is close to the entrance to the main car park on Woodlands Avenue and thus general traffic movement at this point on Woodlands Avenue is high.

Site traffic will be controlled, and extra care taken to minimise obstruction to the flow of ordinary traffic on the highway. The guidelines listed below will be followed for all site traffic and activities. All below to be managed by Principal Contractor

- Manage both vehicle movements and pedestrian movements on site
 - Eliminate the need for reversing where possible. Always use at least one banksman when reversing from site and manoeuvring on adjacent roads
 - Ensure public are informed and protected by signage, notices, letters, barriers.
 - Maintain adequate vision and site lines
 - Erect signage and barriers appropriately
 - Strictly control and monitor parking and offloading/storage.
 - Keep offloading from the roadside to an absolute minimum. Any unavoidable offloading from the road will be conducted with close liaison with neighbours to ensure no unacceptable disruption. The time for vehicles on the roadside will be kept to a minimum. Banksmen will be used to direct traffic around the temporary obstruction. The offloading from the highway will be used only as a last resort and only when all other options for offloading on site are exhausted.
 - Pedestrian access will be through the main site gates as indicated on the Site Plan
- Deliveries to Site:
 - Deliveries will be made during normal site working hours.
 - Due to the proximity of surrounding residential properties, the public car park, and the amount of day to day traffic on Woodlands Avenue, the use of articulated lorries for deliveries should be restricted as much as possible. In instances where their use is absolutely essential, clear access to/from the site will be planned in advance and closely monitored by the Site Manager
- Operative/visitor/client parking
 - Parking will be available on site on direction of the Site Manager
 - Other parking may occasionally be on the highway but not obstructing neighbouring properties
- Movement of traffic on Site
 - Movement of traffic on site will be controlled by Site Manager. See Site Plans for general site set up.
- Movement of traffic onto and off Site
 - Vehicles will be encouraged to enter and leave the site by forward gear wherever possible.
 - Banksmen will be employed to see vehicles off the site to protect general public, public footpath and public highway traffic.

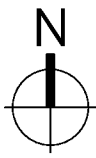
- Vision Splay. It is envisaged that entrance and driveway will allow sufficient vision splay from the site. See Site Plans.

Storage:

Storage of materials on site will be managed by the Site Manger. All materials will be stored within the site compound at the Site Manager's direction. Stock piles will be kept as tidy as possible throughout.

APPENDIX 1 - SITE PLAN - NOT TO SCALE

APPENDIX 2 – ARBORICULTURAL SURVEY, IMPACT STATEMENT & METHOD STATEMENT by PJC Consultancy

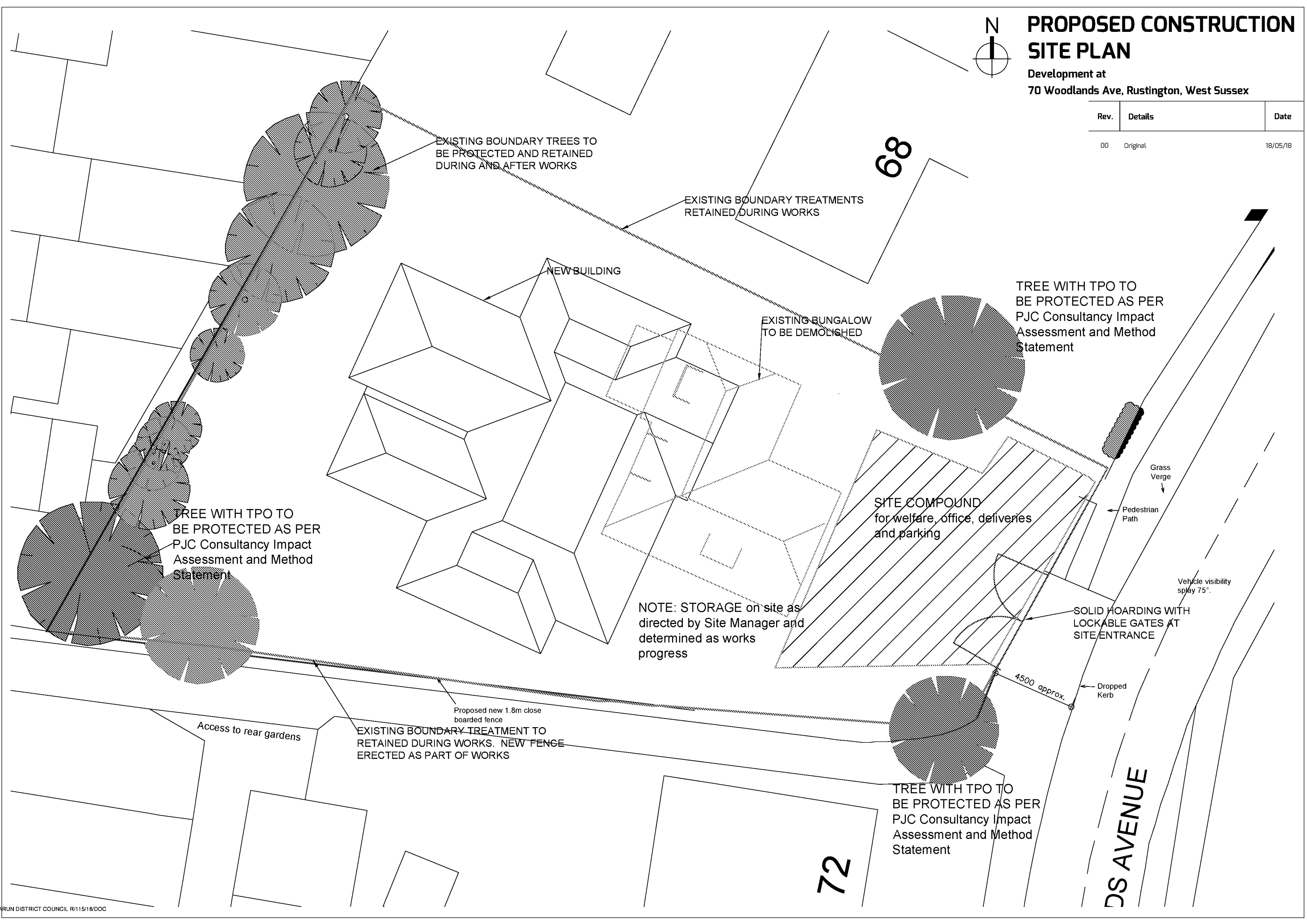


PROPOSED CONSTRUCTION SITE PLAN

Development at
70 Woodlands Ave, Rustington, West Sussex

Rev.	Details	Date
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00	Original	18/05/18
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Initial Arboricultural Survey, Impact Assessment & Method Statement

70 Woodlands Avenue
Rustington
West Sussex

28 February 2017

PJC ref: 4340/17-01

This report has been prepared by
PJC Consultancy Ltd
on behalf of
Peter Leach Investments

Prepared by	Owen Allpress BSc(Hons) M.Arbor.A Owen has received both an FdSc and a BSc (Hons) in Arboriculture and is a professional member of the Arboricultural Association. Working in the industry for nearly 10 years, Owen has extensive experience in arboricultural contracting, consultancy and business management.
Checked by	Peter Davies FdSc Arboriculture M.Arbor.A Peter has a Foundation Degree in Arboriculture and is a professional member of the Arboricultural Association. He has ten years experience in the arboricultural industry, originally working as a groundsman and feller, and progressing into consultancy. He is a Lantra accredited professional tree inspector.

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5 Arboricultural method statement

Appendices:

1. Tree Constraints Plan and Tree Protection Plan
2. Tree Survey Schedule
3. Cascade chart for tree quality assessment
4. Root protection area formulas
5. Tree protection fencing specification
6. Example protective fencing signs

1 EXECUTIVE SUMMARY

1.1 **Proposal:** A proposal has been outlined to re-develop the site creating new accommodation with associated parking and access.

1.2 **Site location:** The site is situated to the south of Rustington in West Sussex. The surrounding land use is comprised primarily of residential with small commercial and retail units to the southeast. The location of the site within its environs is shown in figure 1.



Figure 1: Location of Site and Environs

1.3 **Tree removals:** 5 x trees will be removed to facilitate the proposed development. These are all of lower value and can feasibly be replaced as part of the landscaping stage of the development.

1.4 **Access facilitation pruning:** Trees T10 will require access facilitation pruning to allow high sided vehicles to access the site during construction.

1.5 **Works within root protection areas:** New surfaces will be constructed within the root protection area of T8. The majority of the proposed new surface is a block-paved walkway. This should be constructed above existing ground levels in a 'no-dig' method to preserve roots of the third party tree to the north.

2 INTRODUCTION

2.1 Instruction: PJC Consultancy has been instructed by Peter Leach Investments to provide an arboricultural impact assessment for proposed construction works at 70 Woodlands Ave. The site is proposed to be re-developed removing the existing dwelling.

2.2 Brief: PJC Consultancy has been commissioned to carry out a tree survey and to compile an arboricultural impact assessment in accordance with guidelines set out in BS5837: 2012 '*Trees in relation to design, demolition and construction – Recommendations*'.

2.3 Scope of this report: This report is concerned with all significant trees located within the site boundary and those located around the curtilage of the site with the potential to impact or be impacted by the proposed construction works (in relation to root or crown protection or foundation design).

2.4 Contents of report: This report has been produced to provide a schedule trees to be removed or pruned for the proposed development, as well as to evaluate the implications of the development on retained trees. The report includes the following:

- A schedule of existing trees at the site including an assessment of their condition and value based on the existing land use.
- A schedule of trees to be retained/removed.
- A schedule of access facilitation pruning required for development.
- An assessment of the impact construction works will have on retained trees and mitigation measures to be implemented.
- An assessment of post development pressures on trees.
- Recommendations for post development arboricultural management.
- Tree Constraints Plan and Tree Protection Plan.

2.5 Documents and information provided: The following documents were provided by the client to produce this report:

- Topographical site plan
- Proposed site plan

3 INITIAL TREE SURVEY SUMMARY

3.1 Site visit: A site visit was carried out on 24th February 2016. The weather conditions at the time were dry and bright. The visibility was suitable to carry out a comprehensive tree survey. The initial survey assessed the trees in the context of the existing land use, not in consideration of development proposals.

3.2 Tree information: The following measurements and information were recorded in the Tree Survey Schedule for each tree or tree group:

- Tree reference number. (T=tree, G=group, H=hedgerow, W=woodland block).
- Species (common and scientific name).
- Overall tree height (m).
- Stem diameter (mm) per stem or average diameter for trees with 6 or more stems.
- Branch spread (m) measured to the four cardinal points.
- Existing height (m) above ground level of lowest significant branch and direction of growth.
- Existing height (m) above ground level of canopy.
- Age class (young, semi mature, early mature, mature, over mature or veteran).
- Physiological condition (good, fair, poor).
- Structural condition (good, fair, poor).
- Comments (general description of tree including any notable features).
- Preliminary management recommendations.
- Tree categorisation (see below).
- Root protection area (m²).
- Root protection radius (m).

3.3 Tree categorisation: Each tree or tree group has been awarded either category A, B, C or U and a sub category of either 1,2 or 3 or a combination of the sub categories.

3.4 Tree categorisation summary:

- A – Trees of good condition or high value, with a predicted life span in excess of forty years.
- B – Trees of moderate condition or value, with a predicted life span in excess of twenty years.
- C – Trees of poor condition or low value, with a predicted life span in excess of ten years.
- U – Trees of such impaired condition that they cannot realistically be retained as living trees in the context of the current land use for more than ten years.

3.5 Tree sub categorisation summary:

- 1 – Trees have mainly arboricultural value, e.g. trees of good condition, form and vitality or rare tree species.
- 2 – Trees have mainly landscape value, e.g. trees of landscape prominence, that serve to screen unsightly views or that are required for privacy.
- 3 – Trees with mainly cultural value including conservation, e.g. commemorative trees, trees of historical significance, trees of ecological significance or veteran trees.

3.6 Each tree can only be categorised as A, B or C but may comply with more than one sub category. A cascade chart further explaining how tree categorisation is decided is included in Appendix 3.

3.7 **Root protection areas:** Each tree's stem diameter was recorded, and applied to the formula found in Appendix 4 to establish its root protection area. A root protection area represents a calculation of the minimum area of root growth required to support the tree, not the total rooting area.

3.8 The root protection areas are plotted onto the Tree Constraints Plan in Appendix 1, and recorded in the Tree Survey Schedule in Appendix 2. These are represented as a circle on the plan (unless significant rooting constraints are present), and are colour coded depending on the category the tree has been awarded. Where existing site conditions/features are present that are deemed likely to have affected the root morphology, the root protection areas have represented as a polygon of equivalent size.

3.9 The disturbance of a tree's root system can result in crown dieback and even death of the tree. Roots are used to support the tree structurally and act as transport for water and nutrients. Direct damage such as root severance can lead to ill health, as can compaction of the soil by construction traffic, heavy plant and storage of materials. Changing the nature of the surface above the growing medium, (i.e. from porous to non-porous), can alter the resources available to the tree, which in turn can lead to its decline.

3.10 The root protection areas must be left free from excavation and disturbance, and protected from compaction or contamination during any proposed works. The majority of root growth is usually found within the top meter of soil. As such, even shallow disturbance within root protection areas can potentially have a significant impact on the trees.

3.11 **Limitations of site visit:** The survey methodology was restricted to a visual tree assessment from ground level. No tree climbing or ground investigation was carried out for this report. Where existing site constraints are present such as ivy covered trees, a very dense under-storey, or where trees are located on third party land to which access was not granted, tree dimensions were estimated by eye as accurately as possible.

3.12 **Site layout:** The site consists of a single detached residential property set within front and rear gardens. Mature woody shrubs located around the perimeter of the site make up the majority of the vegetation on site. The rear no significant or note worthy trees are located within the site. G1 to the rear provides screening and is to be retained and a third party Birch, (T8) to the front is noted to be of good form and value.

3.13 **Statutory tree protection:** No information is available regarding Tree Preservation orders at the time of this report. However, any persons proposing to undertake tree works must check the status of these trees with the local authority, and gain necessary consent before works are undertaken.

3.14 Financial penalties and/or criminal proceedings can result if tree works are carried out on a protected tree without consent. The entirety of the tree is protected, both above and below ground.

3.15 **Tree categorisation summary:** The table below summarises the category of trees recorded across the site. Further information can be found about each tree within the Tree Survey Schedule in Appendix 2.

Table 1: Tree categorisation summary

Categorisation	Individual tree	Tree group
A	0	0
B	1	0
C	6	2
U	1	0
Total	8	2

4 ARBORICULTURAL IMPACT ASSESSMENT

4.1 **Tree removals:** Trees to be removed for the proposed development are shown with dashed outlines on the Tree Protection Plan in Appendix 1. These include T4, T5, G6, T7 & T10 all of which are either CAT C or lower.

4.2 **Access facilitation pruning:** T10 a mature Viburnum may require crown lifting to facilitate hi-sided vehicle access during construction phase as the crown overhangs the entrance of the property by approximately 2m.

4.3 All access pruning should be carried out in accordance with BS3998: 2010 '*Tree works – recommendations*'. Any additional

4.4 **Works within Root protection areas:** New surfaces to the northern boundary are proposed to be created within the root protection area of T8 a mature third party birch. Total incursion within the root protection area of this tree equates to 17% of the total area. The tree currently appears of good vitality and should not be adversely affected by the additional surface provided it is constructed to a no dig-permeable specification with provision made to avoid localised compaction post development. The methodology for surfacing within root protection areas is outlined in the arboricultural method statement.

4.5 All proposed buildings will be located outside the root protection areas of retained trees. Provided the exclusion zones and methodologies described in the arboricultural method statement and Tree Protection Plan are followed, trees proposed for retention should not be adversely affected by the construction works.

4.6 **Privacy and screening:** Vegetation has been retained at the rear boundary to maintain screening levels, planting is proposed to be carried out to the frontage of the new development to soften the impact of the proposal when viewed from Woodlands Avenue.

4.7 **Services:** Details of the routing of services for the proposed development are not currently available, however no change in the routed supply of services is expected to change. If details of a change to the routing of new services become available, prior to commencement, these shall be reviewed by the project arboriculturalist. The arboriculturalist shall then confirm to the local authority arboricultural officer either that no works will be carried out within root protection areas, or provide details of the methodology required to ensure the works are carried out in accordance with NJUG10 '*Guidelines for the planning, installation and maintenance of utilities in proximity to trees*' and BS5837: 2012.

4.8 Conclusions: Based on the above assessment, trees recommended for retention in this report can be protected during the proposed construction works and successfully integrated into the site post development.

4.9 Provided the approaches and methodologies and exclusion zones described in the arboricultural method statement are followed, trees proposed for retention in this report should not be adversely affected by the proposed construction works.

5 ARBORICULTURAL METHOD STATEMENT

5.1 **General requirements:** The arboricultural method statement and Tree Protection Plan shall remain on site for the duration of demolition, construction and landscaping works and be available to site operatives at all times. All operatives at the site shall be briefed about tree related factors as part of their site induction.

5.2 Any variation from the methodology described in this method statement shall be discussed with the supervising arboriculturalist and agreed with the local authority arboricultural officer.

5.3 **Initial tree works:** The tree works listed in the management column of the Tree Survey Schedule shall be carried out as the first stage of development. Tree stumps and vegetation located within the root protection areas of retained trees shall be cleared with controlled hand tools (e.g. stump grinder/brush cutter). Plant machinery shall not be used to scrape vegetation within root protection areas or access the site until the tree protection barriers have been installed.

5.4 If bonfires are lit to dispose of arising's from the vegetation or tree clearance works, an assessment of wind direction and strength shall be made to ensure flames cannot extend within 5m of any part of a retained tree, including its root protection area.

5.5 Trees should be checked for protected species before works are undertaken. It is against the law to disturb bats or their roosts under the Conservation of Habitat and Species Regulations. Nesting birds are protected by the Wildlife and Countryside Act. If protected species are discovered, Natural England should be contacted for advice.

5.6 The tree works contractors should carry out all tree works to BS3998: 2010 '*Tree works – recommendations*' as modified by research that is more recent. They should also carry relevant, adequate and up to date insurance.

5.7 It is recommended that an Arboricultural Association approved contractor carry out all tree works. Approved contractors are expected to work to industry best standards. The Arboricultural Association website contains contact details and information on engaging a suitable contractor.

5.8 **Tree protection barriers:** The root protection areas of retained trees must be left free from disturbance, and protected from contamination or compaction during the proposed works.

5.9 The tree protection fencing shall be installed in the locations shown on the Tree Protection Plan. The specification for fencing is included in Appendix 5. Signs shall be affixed to the fencing as shown in Appendix 6 to explain its purpose.

5.10 Tree protection barriers shall be installed following the initial tree works, prior to construction traffic entering the site. They shall remain in place for the duration of construction and hard landscaping works unless otherwise stated in this report.

5.11 The areas protected by fencing or ground protection shall be referred to as the construction exclusion zones. The following actions shall be prohibited within the construction exclusion zones:

- Vehicular access unless on suitable ground protection.
- Regular pedestrian access unless on suitable ground protection.
- Storage of construction materials.
- Storage or handling of harmful chemicals.
- Any change in ground level unless otherwise stated in this report or under supervision of project arboriculturalist.
- Construction activities including hard surfacing unless otherwise stated in this report.

5.12 **Storage and handling of harmful chemicals:** Provision needs to be made to avoid the storage and handling of harmful chemicals in proximity to trees. Harmful chemicals include fuels, oils, builder's sand (which has a high salt content) and cement. Cement mixing shall only occur where there is no potential for cement washings to leech into a root protection area. Provision shall also be made to prevent fuelling or the handling of cement from occurring in areas proposed for further planting.

5.13 **Contractor facilities:** A suitable location for site cabins, contractor parking and site facilities for operatives shall be agreed with the project arboriculturalist during a pre-commencement meeting. These facilities should be located outside the root protection areas of retained trees (unless on retained tarmac surfaces). Provision must also be taken to prevent exhaust fumes or hot air from generators or kitchen facilities from damaging the canopies of retained trees.

5.14 **New permanent surfacing within root protection areas:** Where new permanent surfacing is installed within root protection areas, this shall occur above ground level. The surface vegetation including tree stumps may be removed using controlled hand tools. Plant machinery must not be used to scrape the surface vegetation.

5.15 A minimum buffer of 500mm shall be left between the buttresses of retained trees and the edge of the new surface to minimise post development damage from buttress roots.

5.16 The new surface needs to be permeable to air and water and should be constructed above ground level. This is to allow roots to respire without there being a build up of carbon dioxide, and to ensure the roots continue to receive the moisture and oxygen they require to function.

5.17 Traditional kerbing requires excavation to install and will therefore not be acceptable within the root protection areas of retained trees. As an alternative, haunched kerbing, treated timber edging, aluminium L-shaped edging, galvanised metal edging or no fixed edging shall be used.

5.18 The finished level of the no-dig surface will be higher than the surrounding un-surfaced ground. To mitigate this, clean-screened topsoil may be banked around the edge of the surface. It is recommended that no less than a gradient of 1:3 be used as increasing the ground level within a root protection area can disrupt root function. It is also necessary to avoid banking soil around the buttresses or buttress roots of retained trees.

5.19 If access is required onto the cellular confinement system before the final top surface is installed, a temporary surface (plywood boards or similar) shall be used to prevent soil and other building debris blocking the airspaces in the cellular confinement system, therefore reducing the final porosity of the completed surface.

5.20 Installation of the new surfaces within root protection areas will require access into the construction exclusion zones defined by the tree protection fencing and ground protection. During these works, the standard restrictions to works within the construction exclusion zone will apply (refer to paragraph 5.11). Scaffold board footpaths shall be used to transport materials across the root protection areas.

5.21 **Soft landscaping within root protection areas:** New soft landscaping within the root protection areas of retained trees shall occur as the final phase of development. The final specification for soft landscaping is to be confirmed but may include turfing and tree/shrub planting within root protection areas.

5.22 Where new turf is to be laid within the root protection areas of retained trees, topsoil will likely need to be imported. The existing soil may be lightly tilled by hand but use of rotavators will be prohibited. A maximum increase of 100mm of topsoil may be introduced to avoid suffocating root growth. Care must be taken to prevent soil be piled against tree buttresses or buttress roots. When soil or other materials are transported across a root protection area, scaffold board pathways must be used to prevent compaction of the rooting medium. It should be noted that even light pedestrian use could compact the soil, particularly in wet conditions.

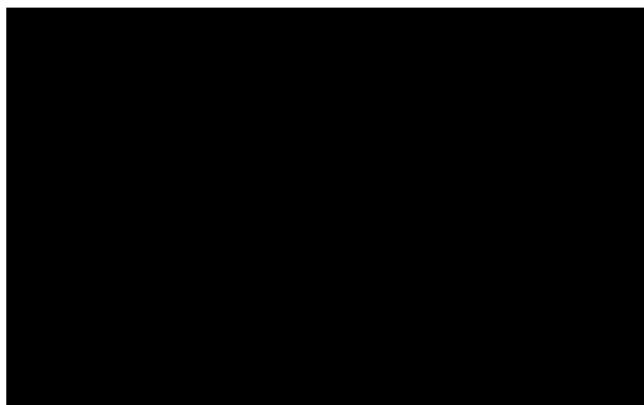
5.23 All planting pits within root protection areas shall be individually hand excavated (no trench planting). Care must be taken to avoid severing or damaging roots with a diameter greater than 25mm.

5.24 If significant root growth is disturbed during construction activities that are not within the scope of this report, the work shall cease until the project arboriculturalist has been consulted. Roots greater than 25mm in diameter or dense/matted fibrous roots shall be considered significant root growth. It should be remembered that whilst root protection areas are part of industry best practice, tree root growth is influenced by a number of factors and may not conform to expected ideals.

5.25 If at anytime during the construction process, damage is inadvertently caused to a tree, the project arboriculturalist shall be notified to assess the likely implications and to prescribe potential remedial measures to be implemented. Damage can be in the form of chemical or fuel spillage, mechanical damage to either the above ground parts of the tree or the roots, fire or any other unforeseen circumstance.

Contact details

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BN26 6QU



Author: Owen Allpress

Date: 28 February 2017

APPENDIX 1

Arboricultural Plans

Key:



RPA for CAT B* tree



RPA for CAT C* tree



RPA for CAT U* tree



Tree canopy

*** Tree categorised in accordance with BS 5837:2012 'Trees in relation to design, demolition and construction - Recommendations'.**

Appendix 2, (Tree Survey Schedule) contained within the arboricultural report ref. no. PJC/4340/17-01 contains further information for each tree.

This drawing should be viewed in colour.



Drawing no: PJC/4340/17/A Rev: 00 Sheet number: 1 of 1

Client and site:
Peter Leach Investments
70 Woodlands Ave
Rustington
West Sussex

Drawing title: Tree Constraints Plan

Date drawn: 28/02/2016

Scale: 1:200 at A3

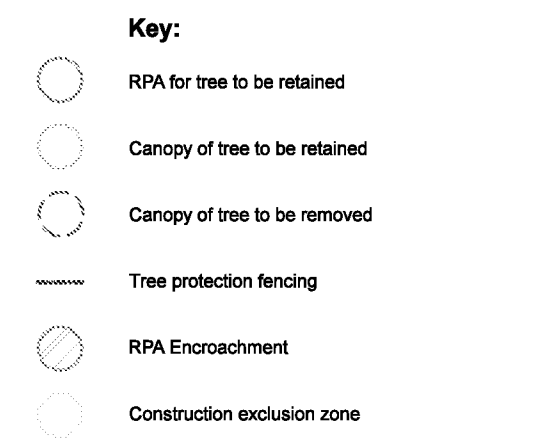
Drawn by: OA

Checked by: PD

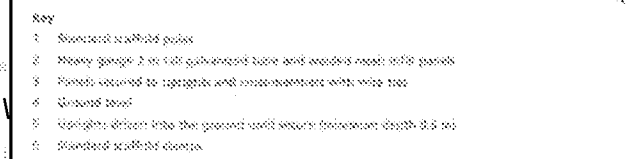


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www.pjcconsultancy.com



This drawing should be viewed in colour.
Specification for Tree Protection Fencing:



Client and site:
Peter Leach Investments
70 Woodlands Ave
Rustington
West Sussex

Drawn by: OA Checked by: PD



APPENDIX 2

Tree Survey Schedule

Tree Survey Schedule

			Client: Peter Leach Site: 70 woodland avg, Rustington. Survey date: 24th February Surveyor: Owen Allpress									T: Individual tree or shrub		
												G: Group of 2 or more trees		
												H: Hedgerow		
												W: Woodland block		
Tree ref. no.	Species	Height (m)	Stem diameter (mm)	Branch spread (m)		Crown clearance (m)	Age class	Physiological condition	Structural condition	Comments	Management recommendations	Category grading	Root Protection Area (m2)	Root Protection Radius (m)
G1	Mixed species cypress	>4	220	N	3	Crown	Mature	Good	Good	Rear boundary mature hedge, previously topped.	None at time of survey	C2	21.9	2.6
				E	3	1e								
			avg est	S	3	Branch								
				W	2	2e								
T2	Common walnut, <i>(Juglans regia)</i>	6	300	N	4	Crown	Mature	Good	Good	Tree located in rear corner boundary, leans into garden of no. 70	None at time of survey	C1	40.8	3.6
				E	4	2e								
			est	S	3	Branch								
				W	3	3e								
T3	Cherry laurel, <i>(Prunus Laurocerasus)</i>	4	190	N	3	Crown	Mature	Good	Good	Mature Cherry Laurel in planting bed	None at time of survey	C1	16.4	2.3
				E	3	2e								
			est	S	3	Branch								
				W	3	2e								
T4	Hazel, <i>(Corylus avellana)</i>	4	200	N	3	Crown	Mature	Good	Good	Multi-stem tree amidst lawn	Remove to facilitate proposal	C1	18.1	2.4
				E	3	1s								
			ms est	S	3	Branch								
				W	3	2s								
T5	Ornamental Apple, <i>(Malus spp)</i>	4	200	N	3	Crown	Mature	Good	Poor	Deadwood and dieback, poor condition	Remove to facilitate proposal	C1	18.1	2.4
				E	3	1s								
				S	3	Branch								
				W	3	1s								
G6	Ornamental woody shrubs	>4	100	N	1	Crown	Semi-mature	Good	Good	Various small woody shrubs on side boundary, includes elm sucker growth to front	Remove to facilitate proposal	C1	4.5	1.2
				E	1	0								
			est avg	S	1	Branch								
				W	1	1								

Tree Survey Schedule

				Client: Peter Leach Site: 70 woodland avg, Rustington. Survey date: 24th February Surveyor: Owen Allpress								T: Individual tree or shrub		
												G: Group of 2 or more trees		
												H: Hedgerow		
												W: Woodland block		
Tree ref. no.	Species	Height (m)	Stem diameter (mm)	Branch spread (m)		Crown clearance (m)	Age class	Physiological condition	Structural condition	Comments	Management recommendations	Category grading	Root Protection Area (m2)	Root Protection Radius (m)
T7	Ornamental Apple, (<i>Malus spp</i>)	4	120	N	2	Crown	Semi-mature	Good	Fair	Stem damage at 2m	Remove to facilitate proposal	C1	6.5	1.4
				E	2	2e								
				S	1	Branch								
				W	2	2e								
T8	Silver birch, (<i>Betula pendula</i>)	9	320	N	5	Crown	Mature	Good	Good	Third-party birch within neighbouring front garden.	None at time of survey	B1	46.4	3.8
				E	5	3s								
			est	S	6	Branch								
				W	5	4s								
T9	Viburnum	4	200	N	3	Crown	Mature	Good	Good	Large third-party viburnum adjacent to front gate. Foliage overhangs access.	Crown lift or reduce to allow high sided vehicles to pass if required during construction.	C1	18.1	2.4
				E	3	3n								
			est	S	3	Branch								
				W	3	3n								
T10	Flowering cherry, (<i>Prunus spp</i>)	3	120	N	2	Crown	Mature	Poor	Poor	poor condition heavily reduced majority of tree without foliage.	Remove to facilitate proposal	U	6.5	1.4
				E	2	2s								
			est	S	2	Branch								
				W	2	2n								

APPENDIX 3

Cascade Chart for Tree Quality Assessment

Cascade chart for tree quality assessment

Category and definition	Criteria (including subcategories where appropriate)			Identification on plan
Trees unsuitable for retention				
Category U Those in such a condition that they cannot realistically be retained as living trees in the context of their current land use for longer than 10 years	• Trees that have a serious, irremediable, structural defect, such that their early loss is expected due to collapse, including those that will become unviable after the removal of other category U trees (e.g. 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, and irreversible overall decline • Trees infected with pathogens of significance to the health and/or safety of other trees nearby, or very low quality trees suppressing adjacent trees of better quality <i>Note Category U trees can have existing or potential conservation value which it might be desirable to preserve</i>			Red
	1 Mainly arboricultural qualities	2 Mainly landscape qualities	3 Mainly cultural values, including conservation	
Trees to be considered for retention				
Category A Trees of high quality with an estimated remaining life expectancy of at least 40 years	Trees that are particularly good examples of their species, especially if rare or unusual; or those that are essential components of groups or formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue)	Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features	Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture)	Green
Category B Trees of moderate quality with an estimated remaining life expectancy of at least 20 years	Trees that might be included in category A, but are downgraded because of impaired condition (e.g. presence of significant though remedial defects, including unsympathetic past management and storm damage), such that they are unlikely to be suitable for retention for beyond 40 years; or trees lacking the special quality necessary to merit the category A designation	Trees present in numbers, usually growing as groups or woodlands, such that they attract a higher value collective rating than they might as individuals; or trees occurring as collectives but situated so as to make little visual contribution to the wider locality	Trees with material conservation or other cultural	Blue
Category C Trees of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150 mm	Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories	Trees present in groups or woodlands, but without this conferring on them significantly greater collective landscape value; and/or trees offering low or only temporary/transient landscape benefits	Trees with no material conservation or other cultural value	Grey

APPENDIX 4

Root Protection Area Formulas

CALCULATING THE RPA

For single stemmed trees

$$\text{RPA(m}^2\text{)} = \frac{(\text{stem diameter (mm)} @ 1.5 \text{ m x } 12)^2 \times 3.142}{1000}$$

For trees with two to five stems, a combined stem diameter is calculated as follows:

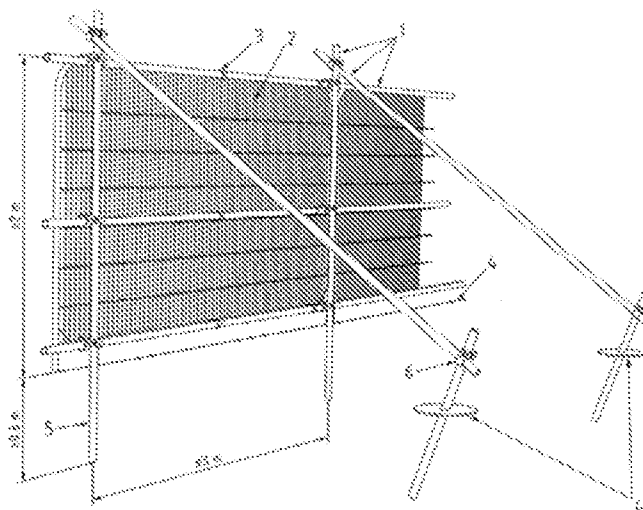
$$\sqrt{(\text{stem diameter } 1)^2 + (\text{stem diameter } 2)^2 \dots + (\text{stem diameter } 5)^2}$$

For trees with more than five stems, the combine stem diameter is calculated as follows:

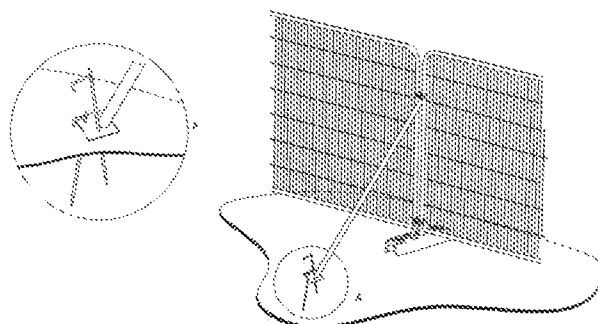
$$\sqrt{(\text{mean stem diameter})^2 \times \text{number of stems}}$$

APPENDIX 5

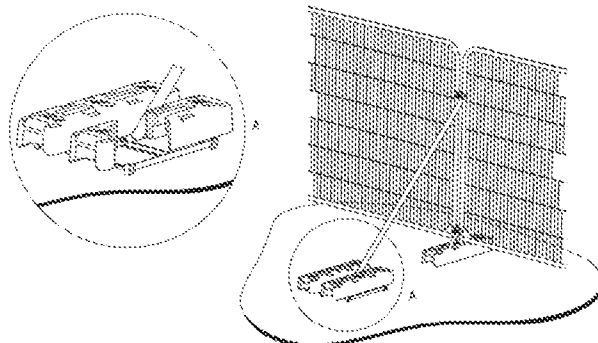
Tree Protection Fencing Specification



- Key**
- 1 Standard scaffold poles
 - 2 Heavy gauge 2 mm tall galvanized iron and welded mesh self panels
 - 3 Panels secured to uprights and cross-members with wire ties
 - 4 Ground level
 - 5 Uprights driven into the ground until secure (minimum depth 0.5 m)
 - 6 Standard scaffold clamps



a) Stabilizer strut with base plate secured with ground pins



b) Stabilizer strut mounted on block tray

APPENDIX 6

Example Protective Fencing Signs

