

# ARBORICULTURAL REPORT

Land south of Sundown,  
Littleheath Road, Fontwell,  
Arundel BN18 0SR

Prepared by

Jonathan Podwell Cert Arb L4(ABC): TechArborA

January 2021



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## ARBORICULTURAL METHOD STATEMENT

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### Appendices:

1- Protective barriers. 2- Site visit and arboricultural supervision record. 3 - Arboricultural monitoring record. 4- Barrell Tree Consultancy (2018) Manual for managing trees on development sites v2.1 – site guidance notes 2: Fencing protected trees. 4: Pollution control. , 11: Installing services in root protection areas

## 1.0 INTRODUCTION

1.1 I have received instruction from Mr Richard Brooks to provide arboricultural consultancy services with regard to conditionally permitted planning consent for land to the south of Sundown, Littleheath Road, Fontwell, Arundel BN18 0SR.

1.2 The purpose of the instruction was to:

- **Prepare an arboricultural method statement to discharge conditions at schedule 4 of Appeal Ref: APP/C3810/W/19/3241407**

1.3 **Schedule 4** states that "*Prior to the commencement of the development hereby permitted a scheme for the protection of all retained trees and boundary vegetation shall be submitted to and approved in writing by the Local Planning Authority. The approved tree protection scheme shall be fully implemented prior to the commencement of any other works on site and shall thereafter be maintained for the duration of the construction of the development.*"

## 2.0 DOCUMENTS PROVIDED

2.1 Plans prepared by H J Concepts Ltd:

|                      |                                   |                                  |
|----------------------|-----------------------------------|----------------------------------|
| <b>17-1197 PL001</b> | <b>Location &amp; block plans</b> | <b>1:1250 &amp;<br/>1:500@A1</b> |
| <b>17-1197 PL002</b> | <b>Proposed site plan</b>         | <b>1:100@A1</b>                  |

2.2 Plans prepared by Hampshire Land Surveys Ltd:

|                      |                             |              |
|----------------------|-----------------------------|--------------|
| <b>2195_21_01_01</b> | <b>Site survey existing</b> | <b>1:200</b> |
|----------------------|-----------------------------|--------------|

## 3.0 REPORT FORMAT

3.1 This arboricultural method statement informs on tree protection measures at the site and was prepared with reference to:

- the documents and plans provided;

- the guidelines detailed in BS 5837:2012 "Trees in relation to design, demolition and construction – Recommendations";
- details collated and recorded at my site visit and according to good arboricultural practice.

#### 4.0 STATUTORY CONTROLS

- 4.1 Consultation with the Local Planning Authority confirmed the application site is not within a designated Conservation Area and that trees within influence of the development proposal are not subject to a Tree Preservation Order.
- 4.2 Under Part 1 of the Wildlife and Countryside Act (1981), with only a few exceptions, it is an offence to intentionally take, damage or destroy the nest of any wild bird while the nest is in use or being built. Bat species are protected under Section 39 of the 1994 Conservation (Natural Habitats etc.) Regulations (as amended), the 1981 Wildlife and Countryside Act (as amended) and the 2000 Countryside and Rights of Way Act. It is illegal to damage or destroy any bat roost, whether occupied or not, or disturb or harm a bat. Further specialist investigation may be required before undertaking any recommended works.

#### 5.0 PERMITTED DEVELOPMENT

- 5.1 The planning permission, granted at appeal, is for a new 4-bedroom, detached dwelling with detached 2 bay open carport.

#### 6.0 SITE DESCRIPTION

- 6.1 The land to the south of Sundown (**Fig.1**) extends for around 1750m<sup>2</sup> and is accessed via double gates from Littleheath Road. A narrow, unsurfaced but compacted track slopes down, between the broadly level grassed area outlined for development to the north and a wide laurel hedgerow on the southern boundary, before opening into an open grassed area at the bottom of the bank. An open, predominantly ash woodland then extends to the east before rising steeply to the boundary with properties in Duke's Road. An ornamental border of forsythia, *Leycesteria*, *Peiris*, buddleia and hydrangea extends along the western boundary separating the land from Littleheath Road.



**Fig. 1** – Image courtesy of Google Maps (map data © 2020 Google)

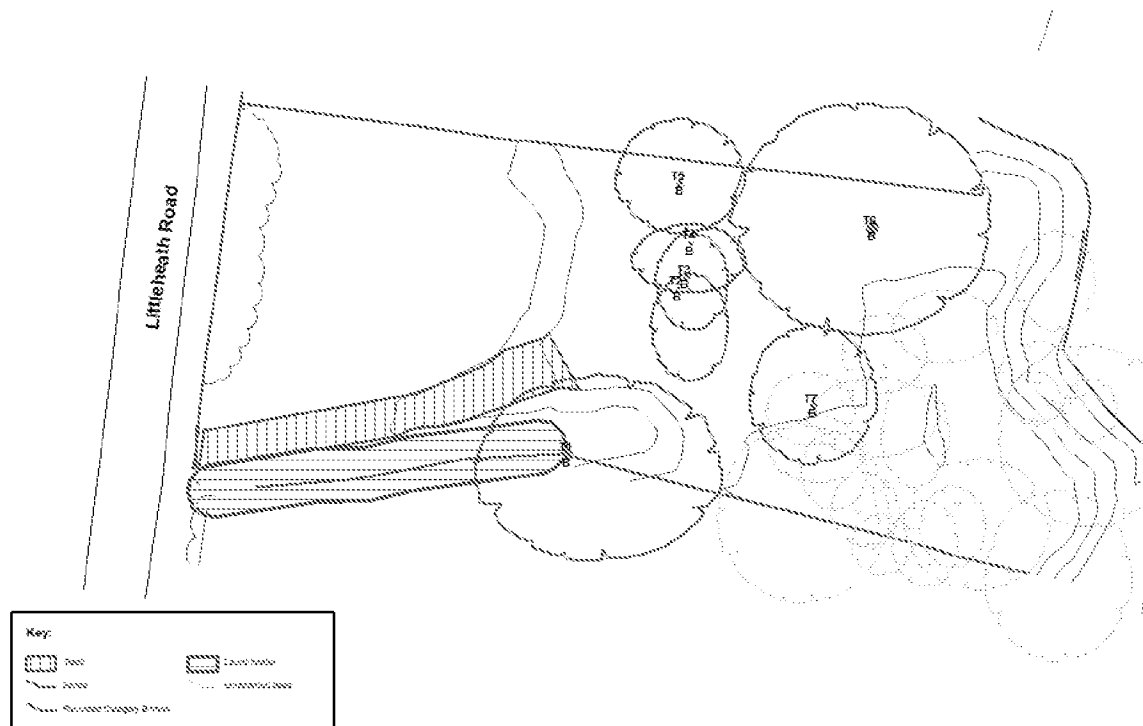
## 7.0 TREE DETAILS

7.1 Trees within potential influence of the development proposal included one mature English oak and six ash. Tree details are noted below and the trees are shown marked at **Fig. 2**.

| Tree No.  | Species            | Stem Ø       | BS Category |
|-----------|--------------------|--------------|-------------|
| <b>T1</b> | <b>English oak</b> | <b>830mm</b> | <b>B</b>    |
| <b>T2</b> | <b>Ash</b>         | <b>210mm</b> | <b>B</b>    |
| <b>T3</b> | <b>Ash</b>         | <b>200mm</b> | <b>B</b>    |

|           |            |                                                      |                                                                                     |
|-----------|------------|------------------------------------------------------|-------------------------------------------------------------------------------------|
| <b>T4</b> | <b>Ash</b> | <b>220mm<br/>190mm</b>                               |  |
| <b>T5</b> | <b>Ash</b> | <b>390mm</b>                                         |  |
| <b>T6</b> | <b>Ash</b> | <b>600mm<br/>450mm<br/>390mm<br/>260mm<br/>260mm</b> |  |
| <b>T7</b> | <b>Ash</b> | <b>430mm</b>                                         |  |

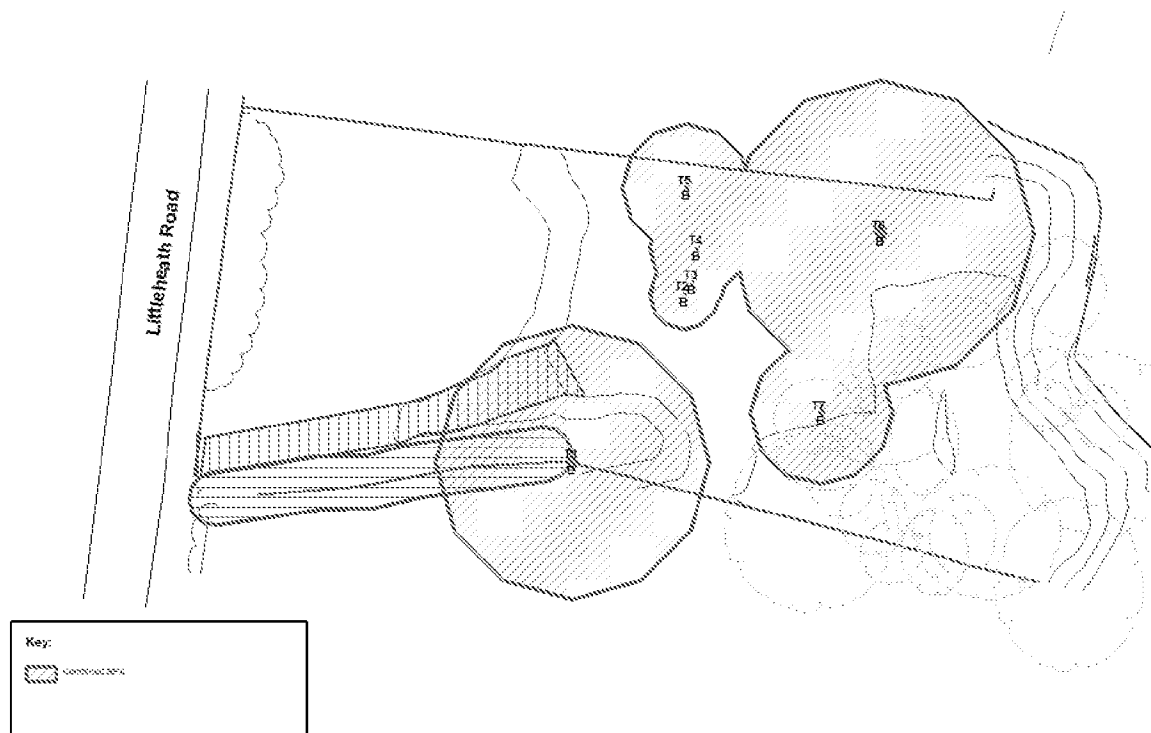
7.2 Trees beyond potential influence were those in the woodland to the east of the recorded trees or on the bank on the southern boundary and included ash, poplar, beech, birch, wild cherry, hazel and elder.



**Fig. 2**

## 8.0 ROOT PROTECTION AREA (RPA)

- 8.1 To establish the level of protection needed I have calculated the root protection area (RPA) of the recorded trees using the information gathered at my site visit and with reference to section 4.6.1 of BS 5837:2012. This indicates the RPA in m<sup>2</sup> and the minimum required all round radial distances for rooting zone protection. The extent of the nominal RPA is indicated at **Fig. 3**.



**Fig. 3**

- 8.2 Tree root morphology can be affected by numerous factors; availability of water, aeration, soil type, temperature and structure, compacted or impervious surfaces and proximity to buildings and other structures all affect the way roots develop and although the RPAs are marked on the plan as uniform polygons the actual root systems will be far more irregular. Root mapping or hand excavation under arboricultural supervision could determine whether significant roots extend beyond the RPAs and require greater protection in relation to construction or whether it may be possible to develop within the RPA without a negative impact on the rooting environment.

- 8.3 The recorded trees are growing in unsurfaced ground and I think it unlikely that their nominal RPAs vary hugely from those indicated at **Fig.3.**

## 9.0 COMMENT

- 9.1 The new dwelling and detached 2 bay open carport occupies the broadly level area at the top of the bank in the north-west corner of the site and construction takes places beyond the RPAs of the recorded trees.
- 9.2 The laurel border on the southern boundary will be cut back to a 2m woody framework, allowed to regenerate and then maintained as a clipped hedge.
- 9.3 The ornamental shrubs on the western boundary will be transplanted and incorporated into a landscaping scheme to the east of the dwelling. An estate fence and mixed species hedgerow will form the new boundary.
- 9.4 With the exception of one unrecorded ash in poor condition all trees within the site are to be retained; however, with the predominance of ash in the wooded area it is quite likely that Chalara dieback of ash - the causal agent of which is the fungus *Hymenoscyphus fraxineus* – could become an issue and may lead to the death of individual trees or colonisation by other pathogens that could result in future tree failures. Regular inspections should identify hazardous trees that need to be removed before they represent a risk. While it is difficult to predict the long-term impact of Chalara on our ash population there is some evidence to suggest that more mature trees may be less prone to infection.

## 10.0 DETAILS

- 10.1 Date of tree survey - 26<sup>th</sup> January 2021
- 10.2 Present at tree survey - Jonathan Rodwell Cert Arb L4(ABC); TechArborA
- 10.3 Date of report - 28<sup>th</sup> January 2021

#### 10.4 Contact details:

| CONTACT                           | NAME                        | DETAILS                                                                                                                        |
|-----------------------------------|-----------------------------|--------------------------------------------------------------------------------------------------------------------------------|
| <b>Local Planning Authority</b>   | Arun District Council       | <b>Tel -</b> 01903 737756<br><b>Email –</b> <a href="mailto:Planning@arun.gov.uk">Planning@arun.gov.uk</a>                     |
| <b>Architects</b>                 | H J Concepts Ltd            | <b>Tel -</b> 01329 288684<br><b>Email –</b> <a href="mailto:office@hiconcepts.co.uk">office@hiconcepts.co.uk</a>               |
| <b>Arboricultural Consultants</b> | Beechdown Arboriculture Ltd | <b>Tel –</b> 01243 814740<br><b>Email –</b> <a href="mailto:jonathan.rodwell@beechdown.com">jonathan.rodwell@beechdown.com</a> |

#### References

**Roberts, J. Jackson, N. Smith, M.** (2006). *Tree Roots in the Built Environment*. The Stationery Office  
**BSI British Standards** (2012) *BS 5837:2012 Trees in relation to demolition and construction – Recommendations, Fourth (Present) Edition*. BSI  
**Barrell Tree Consultancy** (2018) *Manual for managing trees on development sites v2.1 – site guidance notes 2: Fencing protected trees, 4: Pollution control, 11: Installing services in root protection areas*

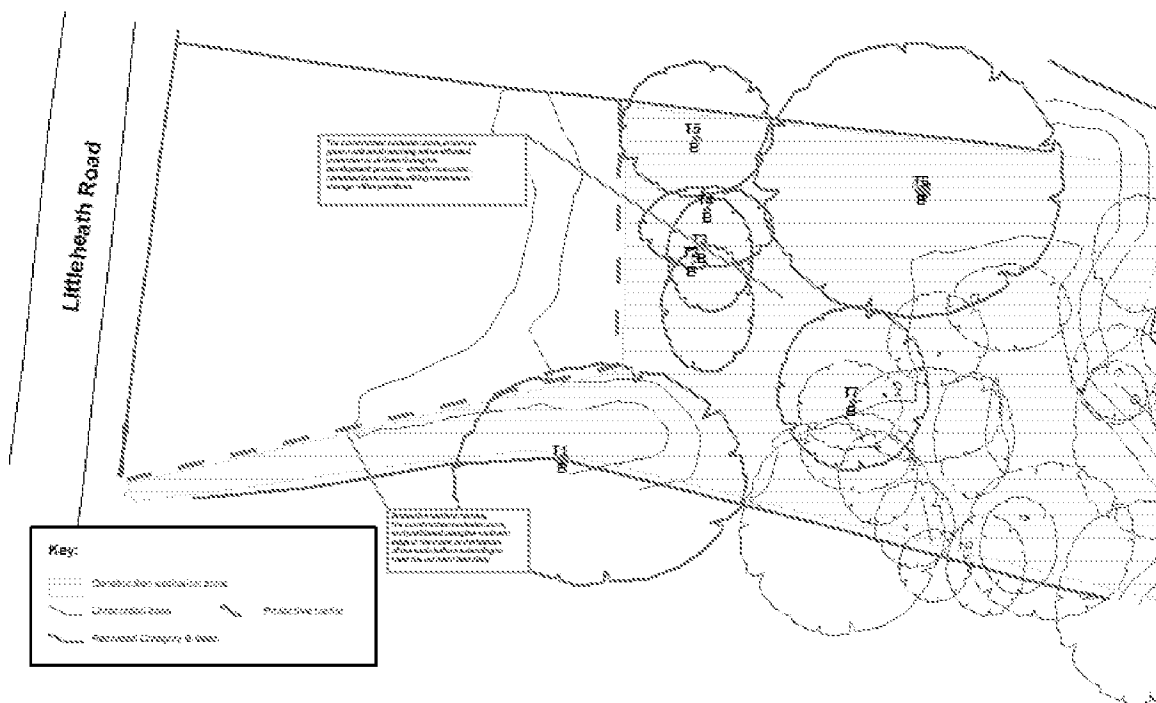
Jonathan Rodwell Cert Arb L4(ABC); TechArborA  
Beechdown Arboriculture Ltd

28<sup>th</sup> January 2021

## ARBORICULTURAL METHOD STATEMENT

### 11.0 PROTECTIVE BARRIERS AND CONSTRUCTION EXCLUSION ZONE.

- 11.1 Prior to the commencement of construction work and before any machinery or materials are brought onto the site, protective barriers, marked as a light purple dotted line (**Fig.4**), must be erected, around the vulnerable RPA to create a construction exclusion zone beyond the working area.



**Fig.4 – tree protection plan**

- 11.2 The construction exclusion zone, shown as light green horizontal hatching at **Fig.4**, will be afforded protection at all times during the development process; strictly no access, construction activities, mixing materials or storage will be allowed.
- 11.3 The barrier will have weather proof signs attached stating that it is protecting a **construction exclusion zone** and that **no works are permitted** beyond the barrier; the protective barrier should remain in place for the duration of the development process and be removed only to allow planting to proceed once all hard landscaping is complete.

- 11.4 The protective barriers should be positioned as shown at **Fig. 4** and should be constructed as per figure 2 of BS 5837:2012 (**Appendix 1**) and consist of a vertical and horizontal scaffold framework, well braced to resist impacts. The vertical tubes should be spaced at a maximum interval of 3m and driven securely into the ground. Onto this, weld mesh panels should be fixed with wire or scaffold clamps. Care should be taken when locating the vertical and bracing poles to avoid roots; if the presence of roots precludes the use of driven poles, above ground stabilising using struts mounted on a block tray, constructed as per figure 3 b) of BS 5837:2012 may be used.
- 11.5 Site guidance notes 2: *Fencing protected trees* provided by Barrell Tree Consultancy and shown at **Appendix 4** details methods for tree protection on construction sites.

## 12.0 FOUNDATION CONSTRUCTION

- 12.1 Excavation and construction of foundations takes place beyond the RPA; however, if roots are encountered during construction work:
- ❖ Careful use of hand tools will avoid bark damage of retained roots at the edge of the foundation if present;
  - ❖ exposed roots or fibrous root masses that are to be retained should be immediately covered – with hessian or similar - to prevent drying;
  - ❖ individual roots less than 25mm diameter that need to be removed should be cleanly severed, with secateurs or a pruning saw, far enough back from the edge of the foundation (>100mm) that the effects of uncured cement do not impact tree health;
  - ❖ the project arboriculturalist will determine whether it is possible to sever roots greater than 25mm diameter.

## 13.0 INFRASTRUCTURE REQUIREMENTS

- 13.1 Undisclosed siting of service runs, above ground services, CCTV cameras, electrical sub-stations, refuse stores, lighting and other infrastructure requirements can lead to unnecessary tree pruning or root loss during or post development. Should any infrastructure requirements become necessary post planning their design should be discussed with the project arboriculturalist and, if necessary, the permission of the local planning authority obtained. Further guidance is given at Site guidance notes 11: *Installing services in root protection areas* provided by Barrell Tree Consultancy and shown at **Appendix 4**.

- 13.2 If service runs impact upon RPAs, installation should be undertaken with reference to section four of the National Joint Utilities Guidance – volume 4 Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees, to reduce the risk of damage to the roots and rooting environment of retained trees.

#### 14.0 ADDITIONAL PRECAUTIONS

- 14.1 No storage or mixing of materials to take place within the construction exclusion zone or in the ground protected RPA.
- 14.2 No storage or mixing of materials will take place in any location where they may leak into the construction exclusion zone or RPA.
- 14.3 Materials which may contaminate the soil will not be discharged within 10m of the tree stems or mixed in any location where gradients allow contaminants to run towards RPAs.
- 14.4 Site guidance note 4: *Pollution control* provided by Barrell Tree Consultancy and shown at *Appendix 4* details several methods for reducing the risk that the mixing, pouring and cleaning of harmful substances may represent to retained trees.

#### 15.0 SUPERVISION AND MONITORING

- 15.1 It will be the responsibility of the main contractor to ensure that any conditions attached to the planning consent are adhered to at all times and that a monitoring regime with regard to tree protection on site is adopted.
- 15.2 An arboriculturalist should be appointed to monitor tree protection measures and address any arboricultural issues that may arise.
- 15.3 The project arboriculturalist should mark the positions of the protective barriers and inspect them once erected and prior to site work commencing.
- 15.4 In addition to the scheduled supervision regular site visits to inspect the protective barriers may be required. Frequency of the visits is dependent on the progress of the development but should take place every two to four weeks of continuous site activity.

- 15.5 A copy of a site visit and arboricultural supervision record is shown at Appendix 2.
- 15.6 A copy of an arboricultural monitoring record is shown at Appendix 3.
- 15.7 The main contractor will be responsible for ensuring subcontractors comply with the arboricultural method statement and do not undertake any operation that is likely to impact adversely upon any tree on site.
- 15.8 The main contractor will ensure that the build sequence is appropriate to ensure that no damage occurs to the trees during the development process.

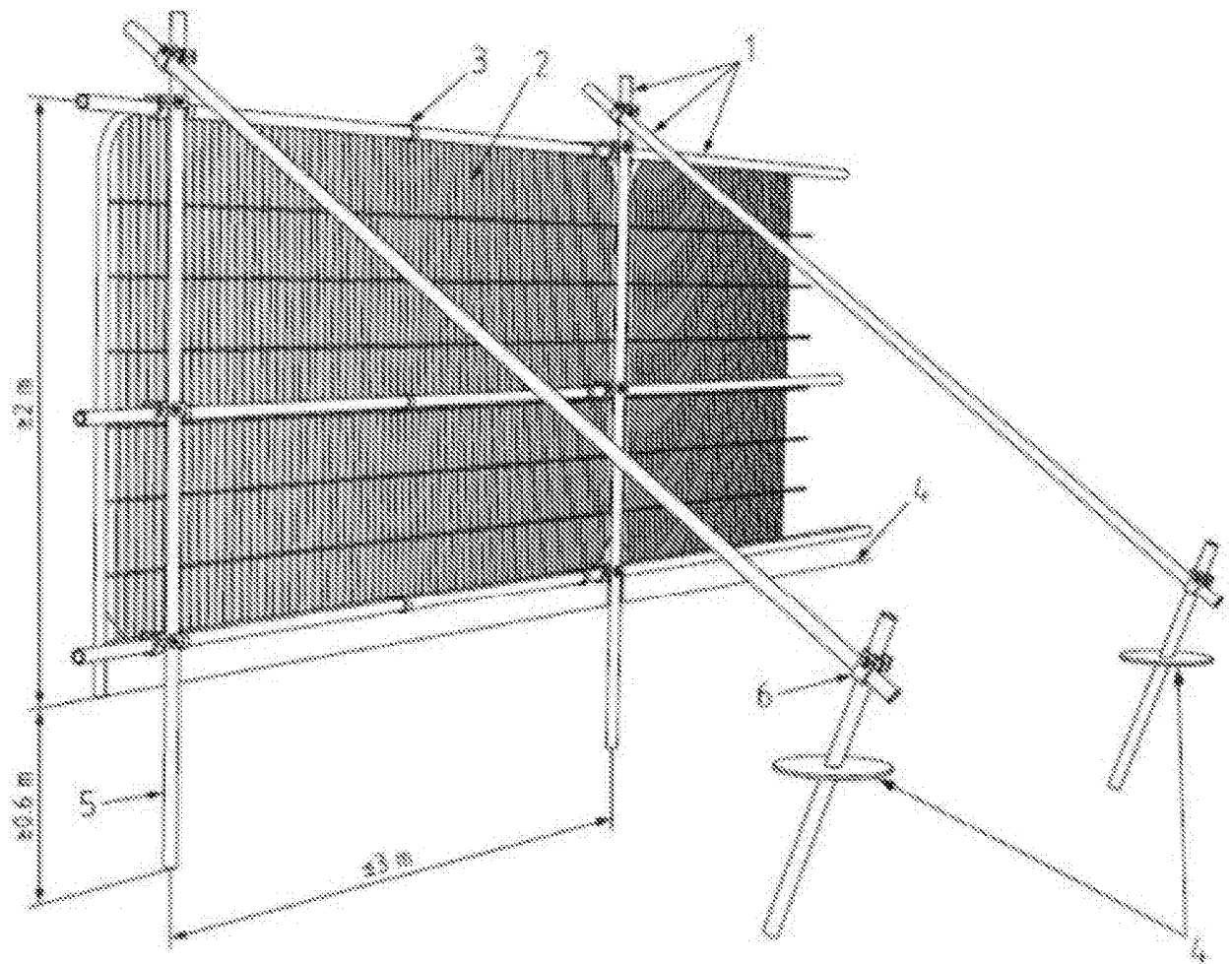
#### 16.0 SEQUENCE OF EVENTS

- 16.1 Sequence of tree protection measures in relation to phases of development.

|                            |                                                                                       |
|----------------------------|---------------------------------------------------------------------------------------|
| <b>Protective barriers</b> | Installation of protective barriers prior to demolition, excavation and construction. |
| <b>Monitoring</b>          | Arboricultural monitoring every two to four weeks of continuous site activity.        |
| <b>Protective barriers</b> | Removal of protective barriers on completion of development proposal.                 |

- 16.2 Should circumstances arise where unscheduled work may impact upon trees or tree protection the work should cease until the project arboriculturalist has been consulted and the local planning authority arboricultural officer informed.

## Appendix 1 – Protective Barrier

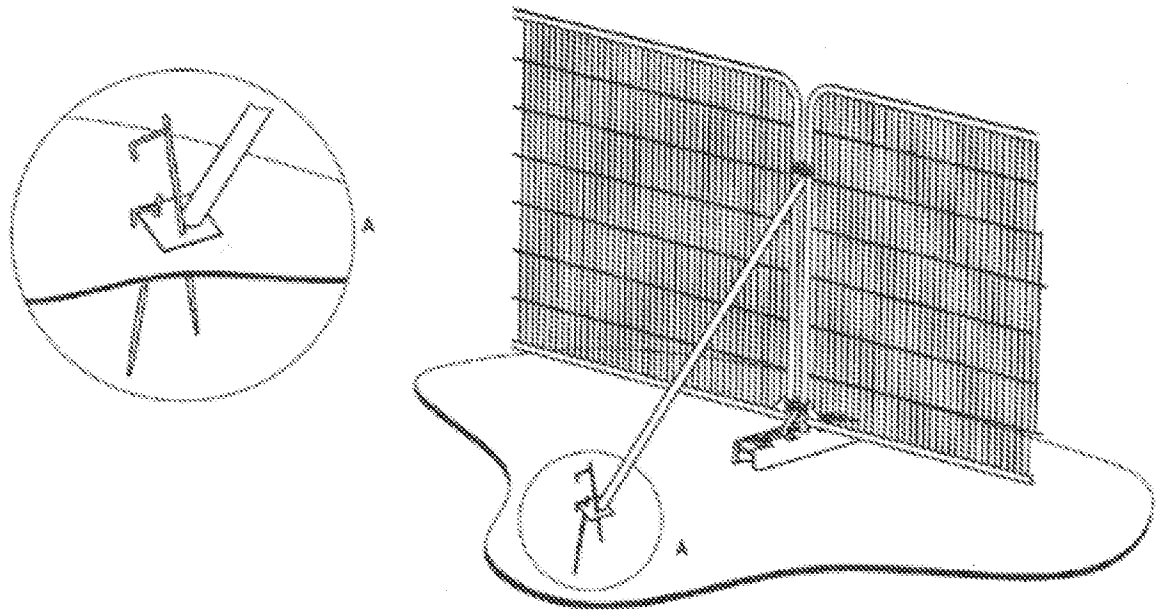


### Key

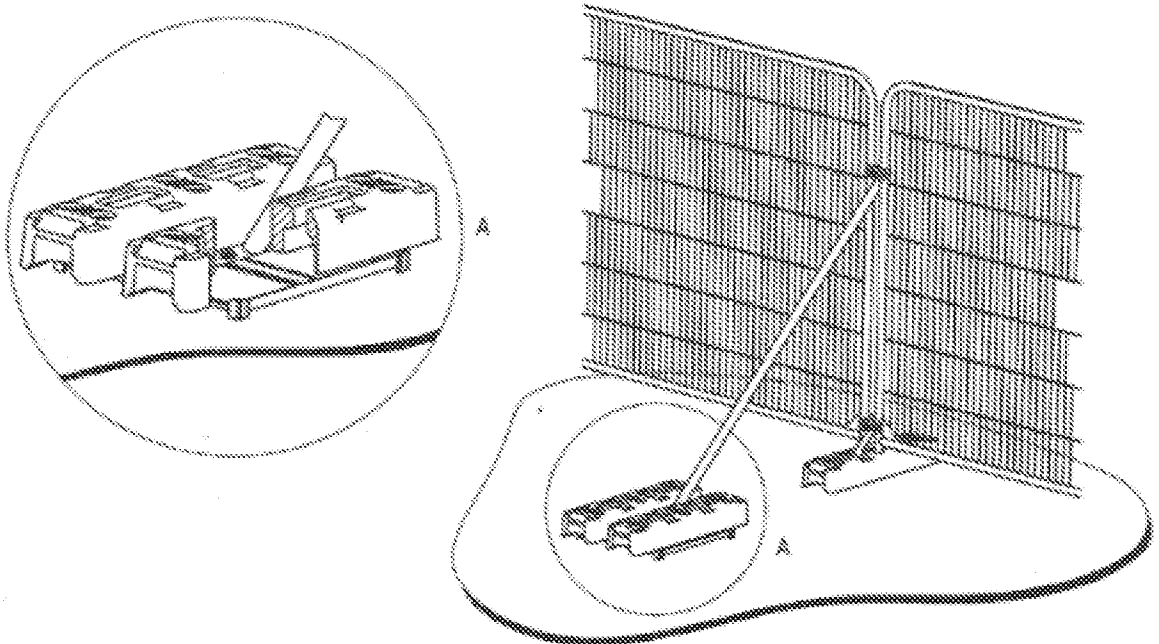
- 1 Standard scaffold poles
- 2 Heavy gauge 2 m tall galvanized tube and welded mesh infill panels
- 3 Panels secured to uprights and cross-members with wire ties
- 4 Ground level
- 5 Uprights driven into the ground until secure (minimum depth 0.6 m)
- 6 Standard scaffold clamps

**Default specification for protective barrier as per Figure 2 of BS 5837:2012 *Trees in relation to demolition and construction – Recommendations, Fourth (Present) Edition*. BSI**

## Appendix 1 – Protective Barrier



a) Stabilizer strut with base plate secured with ground pins



b) Stabilizer strut mounted on block tray

**Examples of above-ground stabilising systems as per Figure 3 of BS 5837:2012 *Trees in relation to demolition and construction – Recommendations, Fourth (Present) Edition*. BSI**

## Appendix 2 – Record of Site Visits and Arboricultural Supervision

|                                 |                                           |                                                                               |  |
|---------------------------------|-------------------------------------------|-------------------------------------------------------------------------------|--|
| <b>Client</b>                   |                                           | <b>Location</b>                                                               |  |
| Mr and Mrs Brooks               |                                           | Land to the south of Sundown, Littleheath Road,<br>Fontwell, Arundel BN18 0SR |  |
| <b>Local planning authority</b> | Arun District Council                     |                                                                               |  |
| <b>Planning application</b>     | Appeal Ref:<br>APP/C3810/W/19/3241407     |                                                                               |  |
| <b>Development</b>              | Construction of new dwelling and carport. |                                                                               |  |

|                             |                                                                          |
|-----------------------------|--------------------------------------------------------------------------|
| <b>Stage of development</b> | <b>Action required</b>                                                   |
| <b>Pre-construction</b>     | Mark position of protective barrier forming construction exclusion zone. |

|              |  |
|--------------|--|
| <b>Notes</b> |  |
|--------------|--|

|                          |  |
|--------------------------|--|
| <b>Arboriculturalist</b> |  |
| <b>Signed</b>            |  |
| <b>Date</b>              |  |

**NOTE - COPY OF COMPLETED FORM TO BE SCANNED AND SENT TO LPA  
ARBORICULTURAL OFFICER**

## Appendix 2 – Record of Site Visits and Arboricultural Supervision

|                                 |                                           |                                                                            |  |
|---------------------------------|-------------------------------------------|----------------------------------------------------------------------------|--|
| <b>Client</b>                   |                                           | <b>Location</b>                                                            |  |
| Mr and Mrs Brooks               |                                           | Land to the south of Sundown, Littleheath Road, Fontwell, Arundel BN18 0SR |  |
| <b>Local planning authority</b> | Arun District Council                     |                                                                            |  |
| <b>Planning application</b>     | Appeal Ref:<br>APP/C3810/W/19/3241407     |                                                                            |  |
| <b>Development</b>              | Construction of new dwelling and carport. |                                                                            |  |

| Stage of development    | Action required                                                                    |
|-------------------------|------------------------------------------------------------------------------------|
| <b>Pre-construction</b> | Site visit to check position of protective barrier prior to construction activity. |

|              |  |
|--------------|--|
| <b>Notes</b> |  |
|--------------|--|

|                          |  |
|--------------------------|--|
| <b>Arboriculturalist</b> |  |
| <b>Signed</b>            |  |
| <b>Date</b>              |  |

**NOTE - COPY OF COMPLETED FORM TO BE SCANNED AND SENT TO LPA ARBORICULTURAL OFFICER**

## Appendix 3 – Arboricultural Monitoring Form

|                                 |                                           |                                                                            |  |
|---------------------------------|-------------------------------------------|----------------------------------------------------------------------------|--|
| <b>Client</b>                   |                                           | <b>Location</b>                                                            |  |
| Mr and Mrs Brooks               |                                           | Land to the south of Sundown, Littleheath Road, Fontwell, Arundel BN18 0SR |  |
| <b>Local planning authority</b> | Arun District Council                     |                                                                            |  |
| <b>Planning application</b>     | Appeal Ref:<br>APP/C3810/W/19/3241407     |                                                                            |  |
| <b>Development</b>              | Construction of new dwelling and carport. |                                                                            |  |

| Area inspected               | Comments | Action required |
|------------------------------|----------|-----------------|
| Protective barriers          |          |                 |
| Construction exclusion zone  |          |                 |
| Site storage/material mixing |          |                 |
| Other                        |          |                 |
| <b>Additional Comments</b>   |          |                 |

|                          |  |
|--------------------------|--|
| <b>Arboriculturalist</b> |  |
| <b>Signed</b>            |  |
| <b>Date</b>              |  |

**NOTE - COPY OF COMPLETED FORM TO BE SCANNED AND SENT TO LPA ARBORICULTURAL OFFICER**

Beechdown ref: B/0301/21  
Land south of Sundown – arboricultural method statement – January 2021



## Site Guidance Note 2: Fencing protected trees

This document is only a summary of its subject matter. You should not rely on this general guidance in isolation, and you should always seek detailed advice from an appropriate expert in relation to specific circumstances before any action is taken or refrained from. The content of these pages is protected by copyright © Barrell Treecare Ltd 2018. You may download and republish (in its full format) and print copies of the guidance – but you must not adapt any guidance.

## SGN 2: Summary guidance for site operatives

### Administration

1. Unauthorised damage to protected trees is a criminal offence and could lead to enforcement action.
2. Work under the normal site risk assessment procedures and comply with the wider site safety rules.
3. Brief operatives entering root protection areas (RPAs) by the supervising arboriculturist before work starts.

### Other relevant SGNs

4. Monitor works in RPAs by the supervising arboriculturist (See SGN 1 Monitoring tree protection).

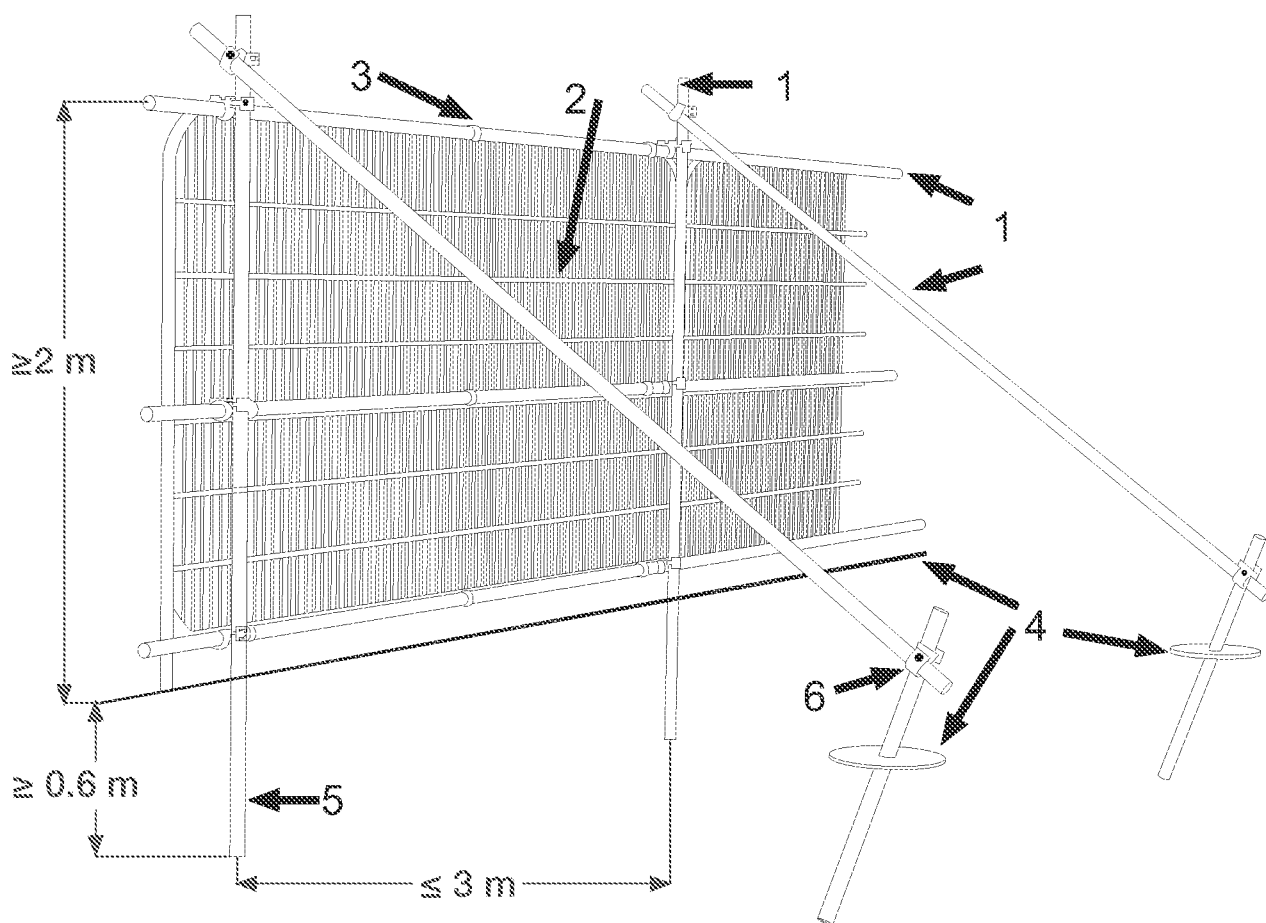
### Important reminders

5. Fencing will be fit for purpose, i.e. prevent unauthorised incursions and activities within RPAs.
6. Fencing will be installed at the locations shown on the tree protection plan.
7. Fencing locations will not be altered without prior approval of the supervising arboriculturist.
8. Fencing will not be removed at the end of the construction activity without prior approval of the supervising arboriculturist.

## SGN 2: Explanatory notes and examples

### Purpose

SGN 2 describes where the temporary protective fencing will be installed, what form it can take and how long it should remain in place to effectively protect the RPAs of trees to be retained, based on the recommendations in BS 5837 (6.2 & 7.3).



1. Standard scaffold poles
2. Heavy gauge 2m tall galvanised tube & welded mesh infill panels
3. Panels secured to uprights & cross-membranes with wire ties
4. Ground level
5. Uprights driven into the ground until secure (minimum 0.6m depth)
6. Standard scaffold clamps

**SGN 2-01** Protective fencing recommendations taken from figure 2 of BS 5837.

## SGN 2: Explanatory notes and examples

### General principles and clarifications

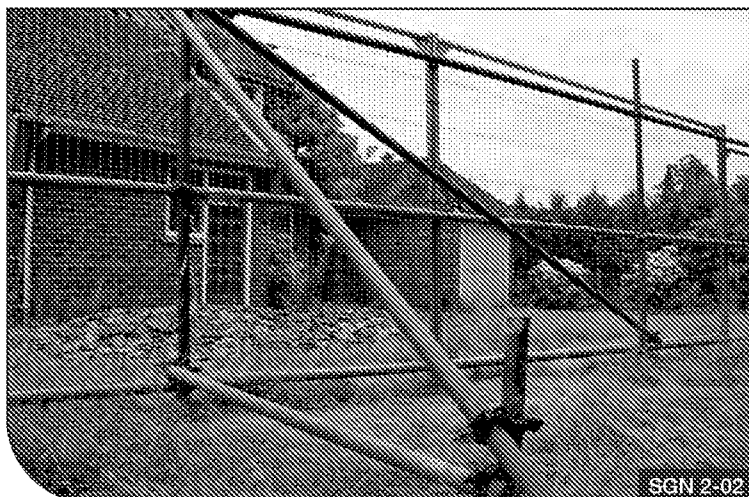
The fencing will be installed at the locations shown on the tree protection plan and agreed by the local planning authority before any construction activity starts on site. It will remain in place until there is no risk of harm from the development activity.

No fencing will be moved from its agreed location, removed, or temporarily dismantled, without consulting the supervising arboriculturist. Furthermore, the condition of the fencing will be regularly monitored by the supervising arboriculturist to ensure it remains fit for purpose, i.e. sufficient to prevent unauthorised access or activities within the RPAs of retained trees.

The minimum specification for the fencing will be as shown in figure 2 of BS

5837, or an equivalent design that effectively restricts access to the RPAs it protects. The precise form of the fencing can vary, provided it is fit for purpose. More specifically, behind the fencing, there will be no unauthorised vehicular access; no repeated pedestrian access; no fires; no storage of excavated debris, building materials, chemicals, or fuels; no mixing of cement; no service installation or excavation; no raising or lowering of soil levels; and no excessive cultivation for landscape planting.

Any variations to these restrictions will be agreed by the supervising arboriculturist.



Heras fencing wired to scaffold braced posts is a robust and effective interpretation of the BS specification.

SGN 2-02

## SGN 2: Explanatory notes and examples

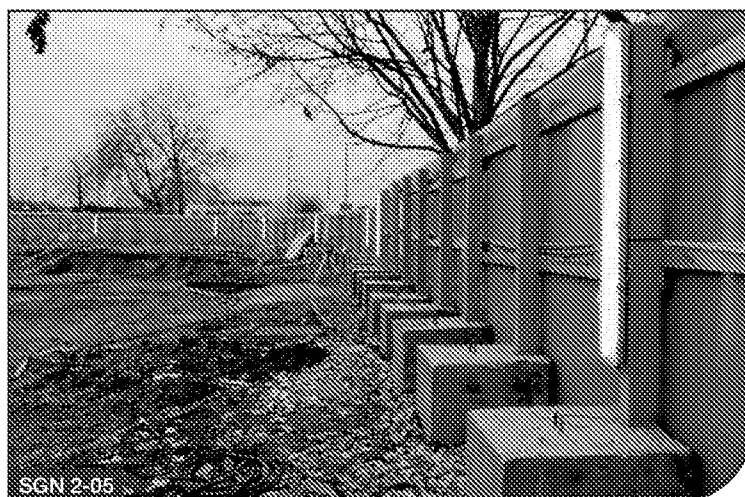
Board specification on secure wooden posts is a suitable alternative to the standard braced scaffold design.



Boards following the line of existing hard standing, enclosing the vulnerable RPA within the fencing.



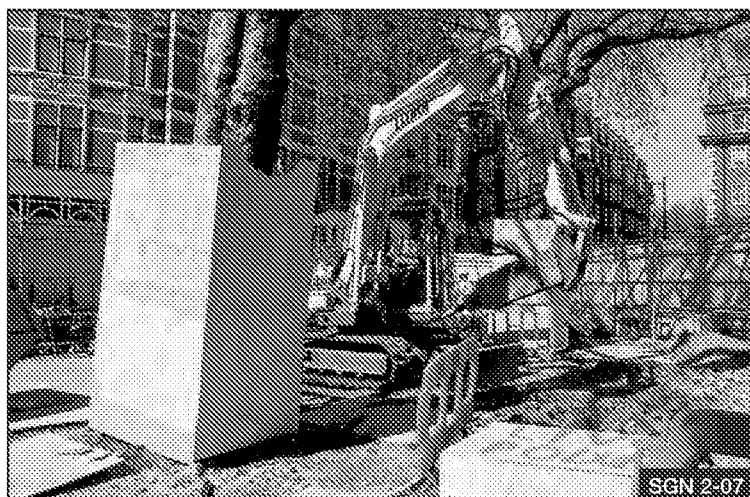
An alternative to dug supports is concrete blocks set outside the RPA.



## SGN 2: Explanatory notes and examples



Improvised use of drainage pipe wrapped around the trunk can provide an added layer of protection beneath a layer of plywood.



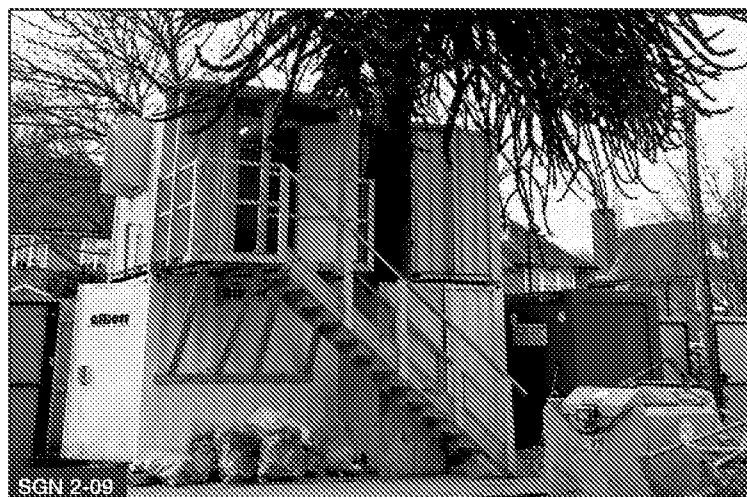
Boards attached to a supporting framework surrounding the trunk reduces the risk of accidental impact.



A wood frame around the trunk can be used to support a plywood surround.

## SGN 2: Explanatory notes and examples

An innovative use of plywood and accommodation cabins to protect the trunk and roots of this retained tree.



Scaffold and boards can be installed around trees that have to be retained within working areas.

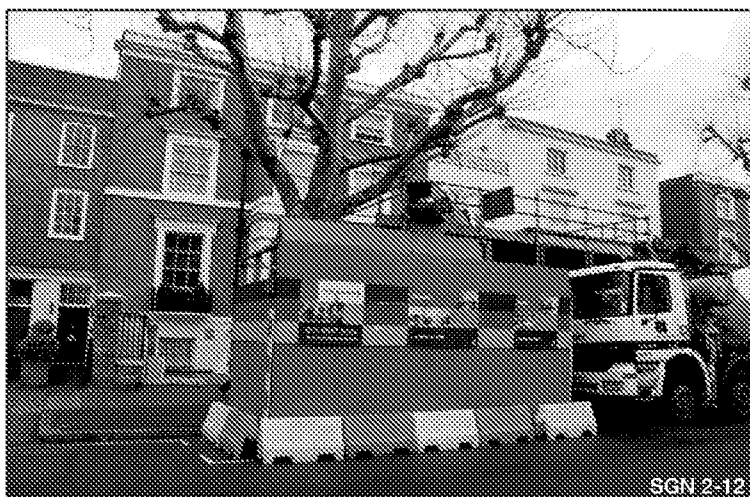


## SGN 2: Explanatory notes and examples



SGN 2-11

Boxing in trunks provides effective protection, even in the tightest of situations, along with the retention of existing hard surfacing to protect the RPA.



SGN 2-12

If street trees could be harmed during development, they should also be protected even though they may be off site.



SGN 2-13

BS 5837 recommends warning signs are attached to fencing as a reminder of the restrictions within the RPA.

## SGN 2: Explanatory notes and examples

### Technical reference

*Due to copyright restrictions, the relevant British Standard clauses are summarised, not quoted, as follows:*

1. **BS 5837 (2012) Trees in relation to design, demolition and construction – Recommendations:**  
*Clauses 6.2 (Barriers and ground protection) and 7.3 (Tree protection during development) recommend:*
  - 6.2.1.1 All retained trees should be protected by fencing and ground protection before any demolition, development or soil stripping starts.
  - 6.2.1.3 The protected area is sacrosanct. Fencing and ground protection should not be removed or altered unless agreed by the supervising arboriculturist.
  - 6.2.1.5 The supervising arboriculturist should confirm that the tree protection has been installed as agreed before any significant site work starts.
  - 6.2.2.1 The tree protection should be fit for purpose, i.e. preventing inappropriate work in the RPAs of retained trees, and be maintained to remain rigid and complete.
  - 7.3.2 Where structures are to be removed from RPAs, fencing and ground protection should be installed up to the edge of the structure to protect the underlying soil.



## Site Guidance Note 4: Pollution control

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## SGN 4: Summary guidance for site operatives

### Administration

1. Unauthorised damage to protected trees is a criminal offence and could lead to enforcement action.
2. Manage pollution control under the normal site risk assessment procedures and comply with the wider site safety rules.
3. Where a significant risk of root protection area (RPA) contamination is identified, put pollution control measures in place to manage that risk.

### Other relevant SGNs

4. Monitor works in RPAs by the supervising arboriculturist (See SGN 1 Monitoring tree protection).

### Important reminders

5. Make provision for emergency spillage clean-up.
6. Mix cement and wash vehicles as far away from RPAs as possible.
7. Use bunding and impermeable membranes to prevent liquid contaminants reaching RPAs.
8. Use impermeable membranes to prevent leachates from poured concrete contaminating RPAs.
9. Keep pollution control measures in place until there is no significant risk of RPA contamination.

## SGN 4: Explanatory notes and examples

### Purpose

SGN 4 describes why pollution control is necessary, what form it will take, and how long it will remain in place to effectively protect retained trees, based on the recommendations in BS 5837 (5.5, 6.2.4, 7.4, 7.5, & A.2).



### General principles and clarifications

Pollution control is intended to prevent pollutants contaminating RPAs and it will be necessary wherever risk assessment identifies a significant risk of harm arising from this cause. Spilt solid or liquid chemicals that reach RPAs can kill existing roots and may prevent new roots growing, so provision will be made to minimise the risk of soil contamination within the normal risk management protocols for the site. If identified as necessary in the risk assessment process, pollution control measures will include physical means of containing spillages and procedures for clearing them up if they occur. All cement mixing and vehicle washing points will be

located outside RPAs, with provision to contain any spillages. Where the contours of the site create a risk of polluted water or toxic liquids running into RPAs, a precautionary measure of bunding or a frame, sealed with heavy-duty plastic sheeting sufficient to prevent contamination, will be used to contain accidental spillages. Where wet concrete is poured within RPAs, an impermeable liner will be used to prevent contamination of the soil from any leachate. Pollution control measures will remain in place until there is no significant risk of RPA contamination.

## SGN 4: Explanatory notes and examples



The storage of fuels or any toxic chemicals is not permitted in RPAs.



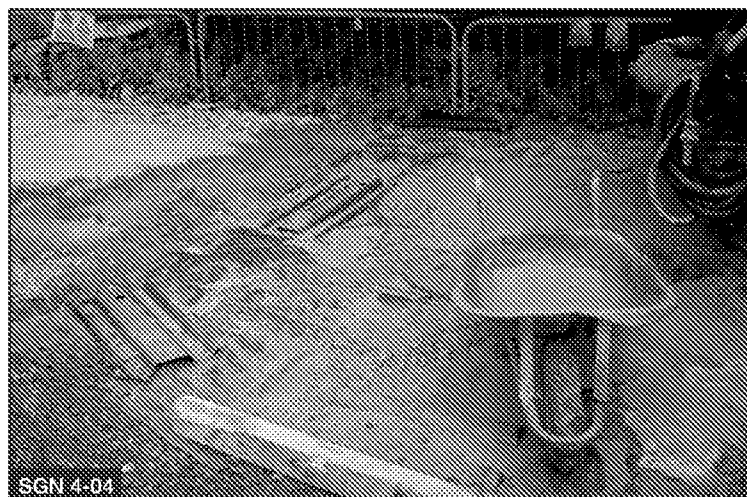
Where fuel or other chemicals are stored on site, risk assessment will be carried out to identify if emergency spillage kits are needed to restrict the environmental impact of accidents.



Soil bunding or a supporting framework covered in heavy-duty plastic sheeting will be installed where there is a risk of spillages contaminating RPAs. This specifically applies to cement mixing areas and vehicle washing facilities.

## SGN 4: Explanatory notes and examples

Cement washings are toxic to plants and must be contained in a way that prevents contamination of adjacent RPAs.



The leachate from poured wet concrete is toxic to plants and must be prevented from contaminating RPAs by using an impermeable membrane to stop any leakage into the soil.



When pouring wet concrete in RPAs, methods must be used to prevent spillage and contamination beyond the installation.



## SGN 4: Explanatory notes and examples

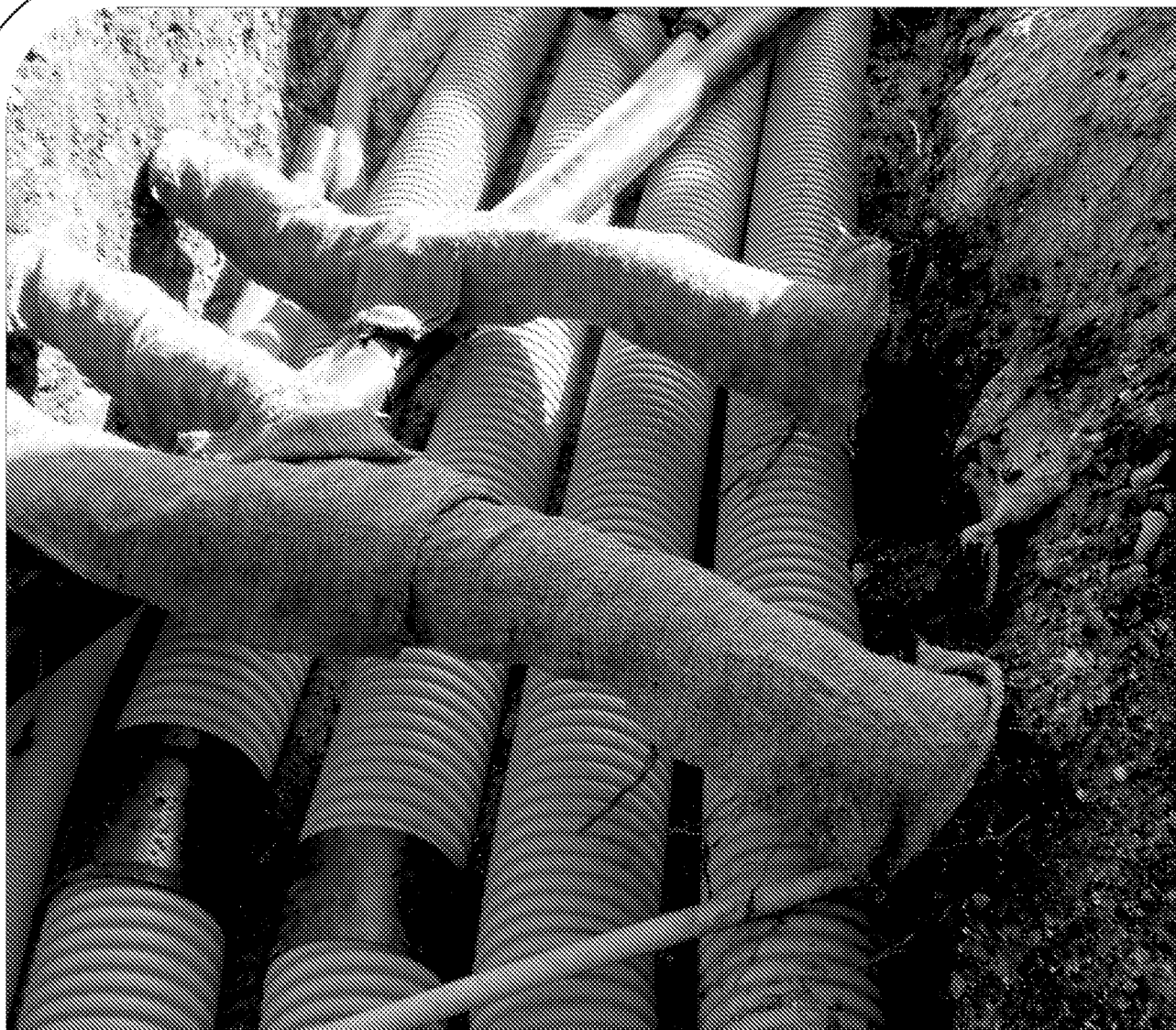


Impermeable liners must be used to prevent contamination of the RPA from the leachate that originates from poured concrete.

### Technical reference

*Due to copyright restrictions, the relevant British Standard clauses are summarised, not quoted, as follows:*

1. **BS 5837 (2012) Trees in relation to design, demolition and construction – Recommendations:** Clauses 5.5 (Tree protection plan), 6.2.4 (Additional precautions outside the exclusion zone), 7.4 (Permanent hard surfacing within the RPA), 7.5 (Special engineering for foundations within the RPA), and A.2 (Avoiding damage to trees), recommend:
  - 5.5.6 To avoid contamination from pollutants, account should be taken of the effects of slope on the movement of potentially harmful liquid spillages towards RPAs.
  - 6.2.4.3 Materials that could harm trees should be stored and handled well away from RPAs.
  - 7.4.4.5 Concrete should not be poured within RPAs unless an impermeable liner has been installed to prevent contamination by the highly alkaline leachate.
  - 7.5.5 Pile type should be selected to minimise the potentially toxic effects of uncured concrete, e.g. sleeved bored pile or screw pile.
  - A.2.1 Care should be taken to avoid accumulating adverse impacts on retained trees from materials such as uncured concrete, diesel oil, and vehicle washings.



## Site Guidance Note 11: Installing services in root protection areas

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## SGN 11: Summary guidance for site operatives

### Administration

1. Unauthorised damage to protected trees is a criminal offence and could lead to enforcement action.
2. Work under the normal site risk assessment procedures and comply with the wider site safety rules.
3. Brief operatives entering root protection areas (RPAs) by the supervising arboriculturist before work starts.

### Other relevant SGNs

4. Monitor works in RPAs by the supervising arboriculturist (See SGN 1 Monitoring tree protection).
5. Design access to avoid soil compaction (See SGN 3 Ground protection).
6. Minimise excavation into original undisturbed soil (See SGN 7 Excavation in root protection areas).

### Important reminders

7. Trenchless installation will be preferred. The fall-back approaches of hand-dug broken trench and then hand-dug continuous trench, will be acceptable if agreed by the supervising arboriculturist.
8. For trenchless installation, the starting and finishing pits will be outside RPAs.

## SGN 11: Explanatory notes and examples

### Purpose

SGN 11 describes the practical requirements for installing new services within RPAs, based on the recommendations in BS 5837 (7) and the guidance in NJUG (4.1).



### General principles and clarifications

Excavation to upgrade existing services or install new services in RPAs may damage retained trees. Where possible, all services will be outside RPAs and installation in RPAs will only be chosen as a last resort. If installation within RPAs is being considered, as advised in 4.1.3 of the NJUG guidance, the decision will be made in consultation with the supervising arboriculturist before any work is carried out. If service installation is agreed within RPAs, the NJUG protocol as set out in 4.1.3 of its guidance will be used to decide the most appropriate method. In summary, this sets out that “Acceptable techniques in

order of preference are; a) trenchless, ... b) Broken trench – hand-dug ... c) Continuous trench – hand-dug”. If trenchless methods are to be used, the starting and finishing pits dug at each end of the service run will be outside RPAs. Where a hand-digging option is agreed, any roots discovered during the excavations will be dealt with as described in SGN 7 (Excavation in root protection areas). Backfilled material around excavated services will not be heavily compacted, observing the specific advice provided in 4.1.5 of the NJUG guidance.

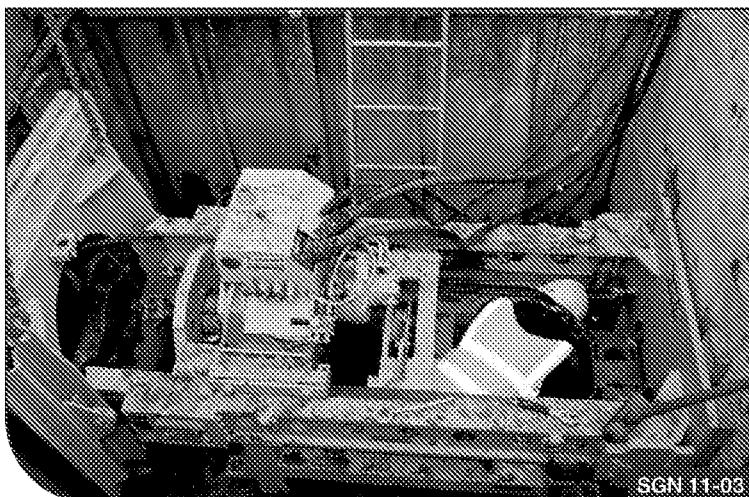
## SGN 11: Explanatory notes and examples



Conventional installation of services digging a trench with a machine is **not permitted** in RPAS.



Trenching with machines to install services close to trees can make them unsafe and cause their premature death.



Thrust boring is the preferred option for installing service routes through the RPAs of retained trees.

## SGN 11: Explanatory notes and examples

The start and finish pits for thrust boring are substantial and must be outside of RPAs.



Alternatives to thrust boring are to hand-dig broken or continuous trenches, so that roots can be retained (with the service ducting threaded beneath). Note the ground protection boards with soil piled on top on the left.



Ducting services that have to be threaded through existing roots is good practice because it reduces the need to excavate in the future. Note the hessian protection over roots while they are temporarily exposed to prevent sunscorch and drying.



## SGN 11: Explanatory notes and examples

### Technical reference

Due to copyright restrictions, the relevant British Standard clauses are summarised, not quoted, as follows:

1. **BS 5837 (2012) Trees in relation to design, demolition and construction – Recommendations:**

Clause 7 (Demolition and construction in proximity to existing trees) recommends:

- 7.1.3 The installation of underground utility apparatus using trenchless technology will be acceptable where entry and retrieval pits can be formed outside the RPA. Even if the utility installation does not require planning permission, the work should still be undertaken in accordance with the guidance in NJUG Volume 4, Issue 2.
- 7.7.1 Care should be taken when routeing underground apparatus because the mechanical trenching can sever roots and change the local soil hydrology, both of which can adversely affect tree health. Wherever possible, underground services should be routed outside RPAs. If services are installed within RPAs, it is preferable to use common ducts, with inspection chambers sited outside the RPA.
- 7.7.2 Underground services within the RPAs should be shown on a plan prepared in conjunction with the project arboriculturist. Trenchless insertion methods should be the preferred option, with entry and retrieval pits outside RPAs, but if roots can be retained and protected, excavation using hand-held tools might be acceptable for shallow service runs.

2. **National Joint Utilities Group (“NJUG”) Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees – Issue 2** ([www.njug.org.uk/wp-content/uploads/2016/09/V4-Trees-Issue-2-16-11-2007.pdf](http://www.njug.org.uk/wp-content/uploads/2016/09/V4-Trees-Issue-2-16-11-2007.pdf)): Section 4.1 (How to avoid damage to trees – Below ground) advises:

“4.1.3 Realignment: Whenever possible apparatus should always be diverted or re-aligned outside the Prohibited or Precautionary Zones. Under no circumstances can machinery be used to excavate open trenches within the Prohibited Zone.

Where works are required for the laying or maintenance of any apparatus within the Prohibited or Precautionary Zones there are various techniques available to minimise damage. Acceptable techniques in order of preference are;

- a) Trenchless: Wherever possible trenchless techniques should be used. The launch and reception pits should be located outside the Prohibited or Precautionary Zones. In order to avoid damage to roots by percussive boring techniques it is recommended that the depth of run should be below 600mm. Techniques involving external lubrication of the equipment with materials other than water (e.g. oil, bentonite, etc.) must not be used when working within the Prohibited Zone. Lubricating materials other than water may be used within the Precautionary Zone following consultation and by agreement.

## SGN 11: Explanatory notes and examples

*b) Broken Trench – Hand-dug: This technique combines hand dug trench sections with trenchless techniques if excavation is unavoidable. Excavation should be limited to where there is clear access around and below the roots. The trench is excavated by hand with precautions taken as for continuous trenching as in (c) below. Open sections of the trench should only be long enough to allow access for linking to the next section. The length of sections will be determined by local conditions, especially soil texture and cohesiveness, as well as the practical needs for access. In all cases the open sections should be kept as short as possible and outside of the Prohibited Zone.*

*c) Continuous Trench – Hand-dug: The use of this method must be considered only as a last resort if works are to be undertaken by agreement within the Prohibited Zone. The objective being to retain as many undamaged roots as possible.”*