






APPENDIX 2


ACS Consulting (London)
Tree Management Consultants
T: 020 8687 1214


Unit: Plans 3
141 London Road
Milton
Chiswick
Tel: 01753 600112
Fax: 01753 600111
Email: info@acs.co.uk

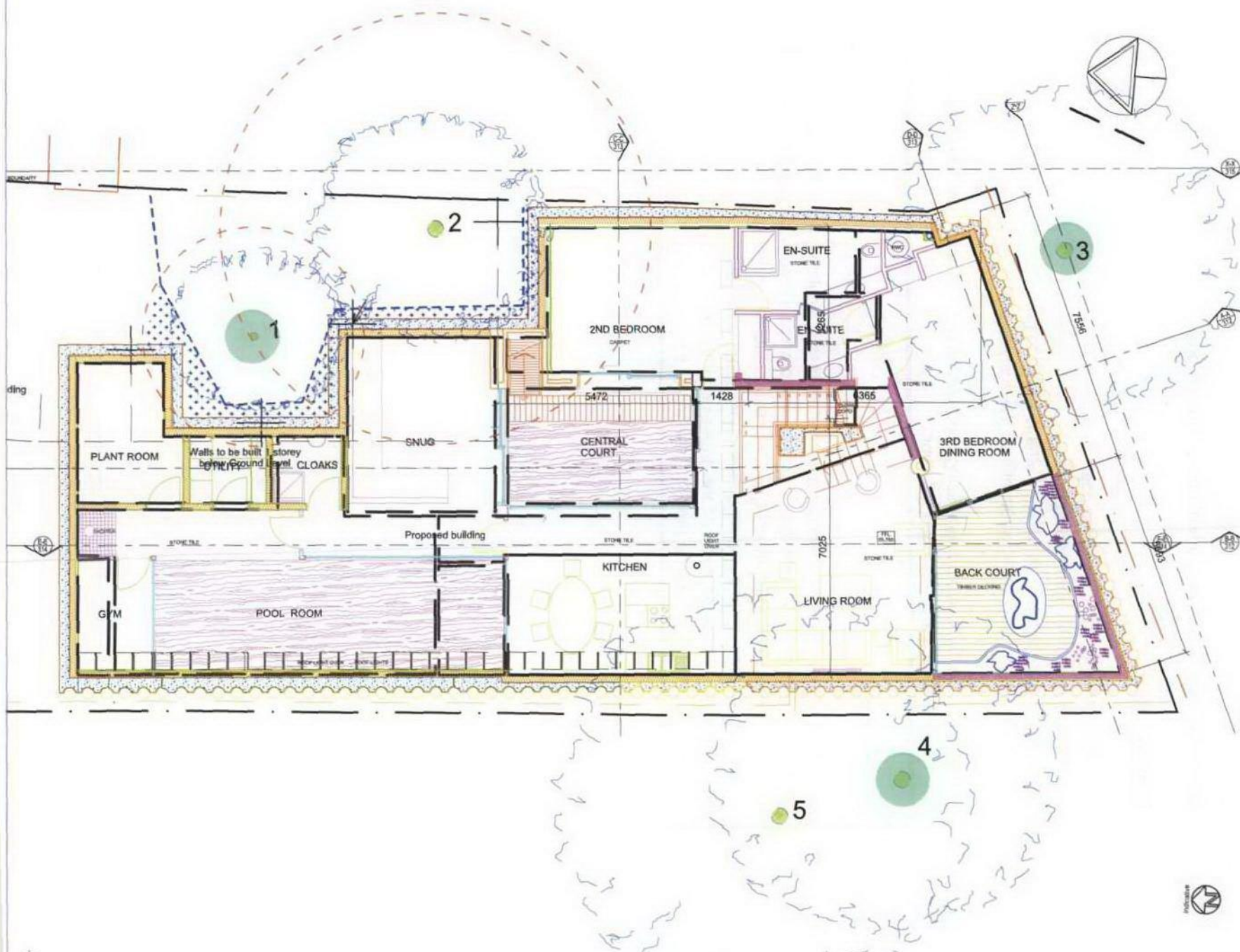
Notes:

-  A grade
-  B grade
-  C grade
-  R grade(remove)

 BS roofing area (shown in blue)
Roofing area may be modified by site features

 Suggested position of Fixed Heras-style fencing

 Suggested position of ground protection



PROJECT:
19 East Heath Road

DRWG. TITLE:
Tree Protection / Site Layout Plan

SCALE: 1:100@A.3 DATE: 20th August 09
DRAWN BY: EB

DRAWING NO: REV:

PROJECT_NO

Tree Protection Fencing

Specifications (specifically identified by outline box)

2.4m Hoarding

3.0m 100 X 100mm square wooden posts

3 X 38 X 87mm wooden rails affixed to posts

2.4m X 1200 outside grade ply panels (12mm) affixed to rails.

50 X 100mm angled supporting struts affixed internally (quantity as required).

(Supporting posts fixed into position using concrete. All post holes to be hand excavated. Post holes to be no larger than 300 X 300mm.)

Heras Fencing

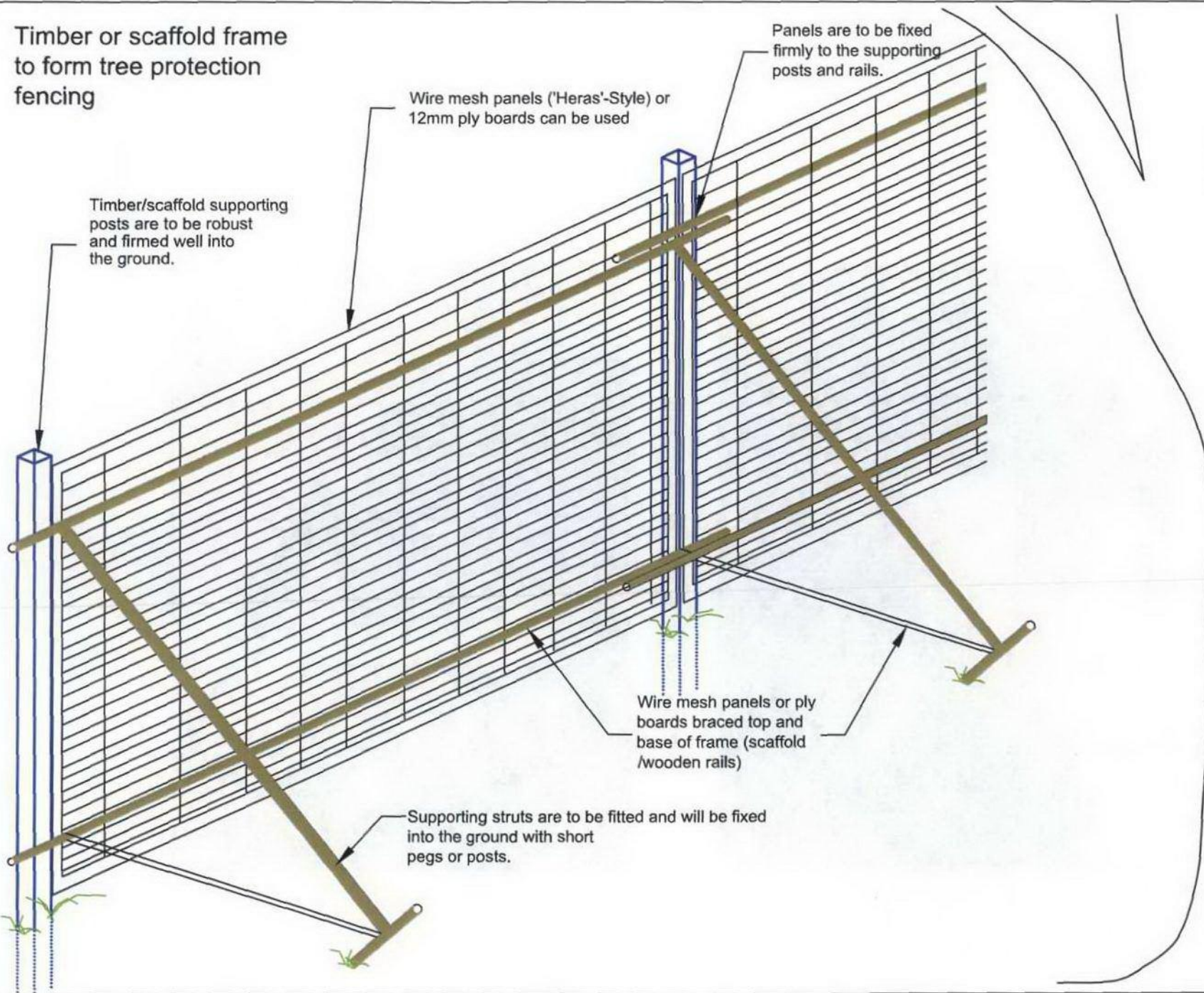
Heras fencing describes the 2.4m galvanised steel mesh panelled fencing normally supplied with pre-cast concrete bases. **Bases are to be replaced with a fixed frame to which panels are clamped/ firmly fixed.** For extra stability, scaffold poles/4x4 wooden posts are to be firmed into the ground as supporting posts and supporting struts are to be attached at a 45 degree angle on the 'tree-side' of the fencing and fixed into the ground. Supporting posts will be braced at the top and base for added support.

Timber or scaffold frame
to form tree protection
fencing

Wire mesh panels ('Heras'-Style) or
12mm ply boards can be used

Panels are to be fixed
firmly to the supporting
posts and rails.

Timber/scaffold supporting
posts are to be robust
and firmed well into
the ground.



Wire mesh panels or ply
boards braced top and
base of frame (scaffold
/wooden rails)

Supporting struts are to be fitted and will be fixed
into the ground with short
pegs or posts.

ACS Consulting (London)

Tree Management
Consultants

Justin Plaza 3
341 London Road
Mitcham
CR4 4BE

T: 020 8687 1214
F: 020 8687 2456
E: info@treebiz.co.uk

Title:

Example of Tree
Protection Fencing

Note:

Steel scaffold or timber can
be used to support boards
or wire mesh panels

Date: Jan. 07

Ref:

Note: Sketch Plan Only - Not to
Scale

Tree Protection Fencing

Scaffold Framework supporting 'Heras' type panels with signs attached.



Wooden Framework with 'Heras' type panels attached.



APPENDIX 3

Low-invasive Surface (LIS) Construction Methodology

The following design criteria for low-invasive surfaces (LIS) will need to be considered when installing new hard surfacing within the BS Root Protection Areas (RPAs) of retained trees:

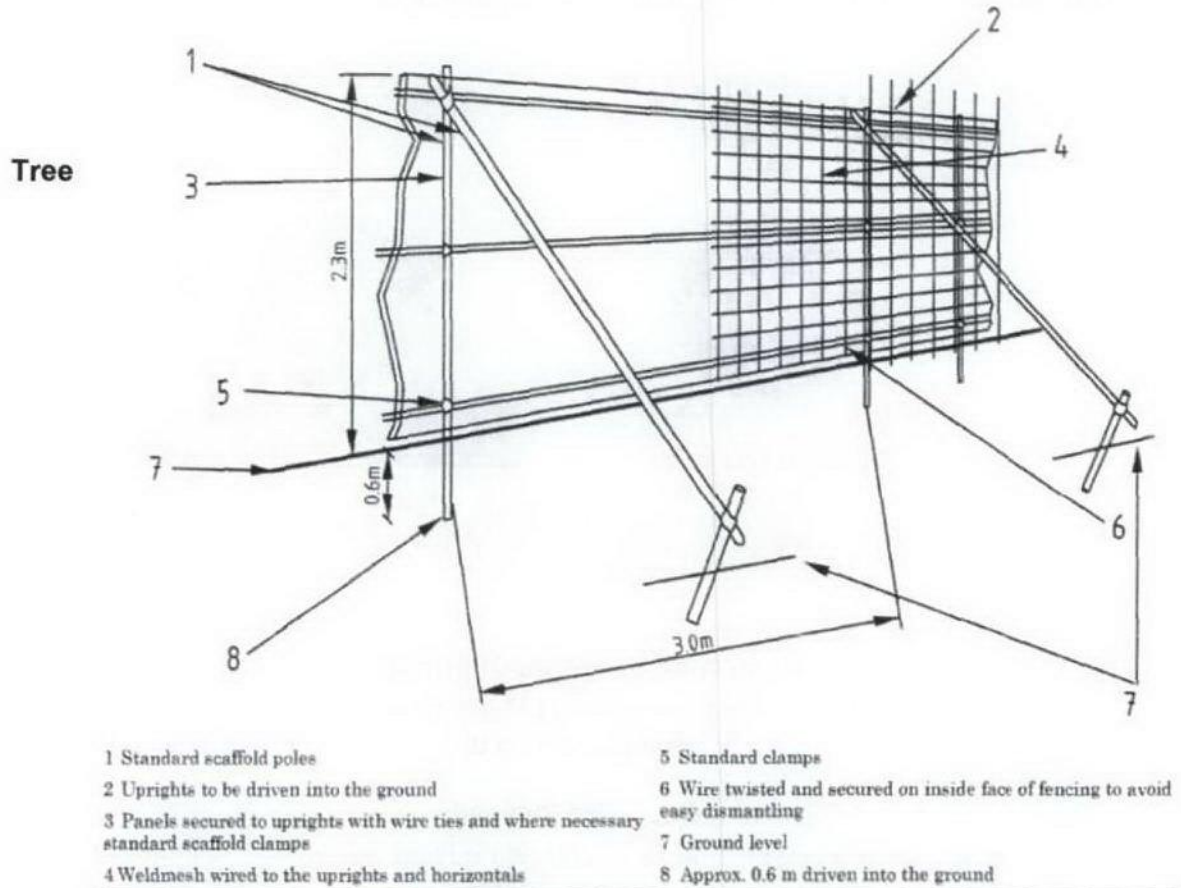
- Maintain oxygen diffusion through new surface to rooting area (3-12% by volume, **Ref 1**)
- Maintain sufficient passage of water to the rooting area (12-40% by volume, **Ref 2**)
- Maintain existing ground levels to avoid unsustainable root damage (severance and/or asphyxiation)
- Avoid compaction by maintaining a soil structure sufficient to sustain root growth (soil bulk density below 1.6g/cc, **Ref 1**)

The above criteria will provide the conditions for continued tree growth and preservation.

Site analysis of the soil type and its Californian Bearing Ratio (CBR) will be required prior to determining the specific depth of products to be adopted for the LIS. For example, footpaths normally require a depth of 100mm and, 150mm to 200mm depths are used for residential driveways, while greater depths may be required for the passage of heavier traffic such as for construction access and delivery vehicles.

1. The use of a three dimensional cellular confinement system within an LIS is an acceptable approach, which aims to fulfil the above design criteria. This system maintains the passage of oxygen and water to root systems; avoids root loss through severance or asphyxiation and minimises the potential for soil compaction. It is achieved by using Geotextile membranes and the introduction of the three dimensional Cellular Confinement System (CCS). The CCS is laid directly onto the unchanged soil levels within the Root Protection Area (RPA) of retained trees.
2. Retained trees must first be protected during all stages of the development including demolition, by the erection of fencing as shown in the diagram below and with reference to specifications and the Tree Protection Plan (TPP). Installing the LIS may require the re-positioning of the tree protection fencing to a secondary location in line with TPP and associated method statement. This follows the recommendations set

out in Section 9 and 11 of the British Standard (BS) 5837:2005 'Trees in Relation to Construction – Recommendations'.



Protective Fencing Detail after Fig. 2 BS 5837 (alternative materials can be used, though all fencing is to be 'fit for purpose')

3. If ground levels are to be raised more than 150mm (**Ref 3**) within the RPA this should be achieved by the use of a granular material, which does not inhibit vertical gaseous diffusion. For example: no-fines gravel, washed aggregate, structural soil (min. 20% sand content) or cobbles.
4. Ideally, the LIS should be installed between May and October when the ground is driest and least prone to compaction. The approved wearing course is to be laid over the CSS. Where the LIS covers in excess of 20% of the RPA or is wider than 3m within the RPA, the new surface should be constructed in a manner to permit infiltration of moisture and gaseous diffusion (pervious). Where the wearing course is in excess of 20% of the RPA or wider than 3m, a specially engineered LIS will need to be designed to meet the above criteria.