Pre-development Arboricultural Survey and Report

Land at Lower Wellside, Well Walk Hampstead NW3

A report to: Webb Architects on behalf of Andrew Morris

Date: 20th November 2015

Report No: WAS 22-2015

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Table of Contents

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Report Verification

This study has been undertaken in accordance with British Standard 5837:2012 “Trees in relation to design, demolition and construction - Recommendations”.

Disclaimer

The contents of this report are the responsibility of Wassells Arboricultural Services Ltd. It should be noted that, whilst every effort is made to meet the client’s brief, no site investigation can ensure complete assessment or prediction of the natural environment.

Wassells Arboricultural Services Ltd accepts no responsibility or liability for any use that is made of this document other than by the client for the purposes for which it was originally commissioned and prepared.

Validity of Data

The findings of this study are valid for a period of 12 months from the date of survey. If works have not commenced by this date, an updated site visit should be carried out by a suitably qualified and experienced arboriculturist to assess any changes to the trees and groups on site and to inform a review of the conclusions and recommendations made.

It should be noted that trees are dynamic living organisms that are subject to natural changes as they age or are influenced by changes in their environment. As such following any significant meteorological event or changes in the growing environment of the trees they should be re-assessed by a suitably qualified and experienced arboriculturist.

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Introduction and Scope of Report

This document has been produced to provide a detailed survey of trees that could be affected by the proposed development and that are within, surrounding and nearby to this report site demise.

The scope of this report follows the recommendations and guidance described within ***BS 5837: 2012 Trees in Relation to Design, Demolition and Construction – Recommendations*** which sets out the principles and procedures to be applied to achieve a harmonious and sustainable relationship between trees and structures.

The report will assess the quality, amenity and landscape value of all surveyed trees as described by the tree category system within BS 5837 (see section below).

The protection of all trees to be retained and where they are likely to be affected by the proposed development construction activities are described as a provisional AMS for information purposes only and shall require a site specific AMS once final plan are agreed.

The report will also indicate, where necessary, the likely impact the proposals may have on those trees in the future.

The report will also recommend any required tree works to enable access and also to mitigate potential damage from construction activity and for the future well being of the trees concerned.

This is intended to support the planning application for development of this site.

The tree survey for the site can be found in Addendum 3 below

Abbreviations:

RPA = root protection area

CEZ = construction exclusion zone

CWA = construction working area (including materials storage)

AMS = arboricultural method statement

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Arboricultural Impact Assessment

Proximity of Proposed Development to existing Trees

Ref: Addendum 1 -Table 1, Addendum 3

All trees in or near the above site have been surveyed and that information is shown in addendum 3 below.

There are two trees, T1 and T2 that are very close together within this small site and that could potentially be impacted by the proposed development of this site. – *see picture gallery in addendum 5 below*

The two trees concerned are both mature Lombardy Poplars (Populus nigra 'Italica') that are a prominent feature in the landscape of Well Walk and the local area. Both trees are protected by a Tree Preservation Order with the L.B. Camden.

The trees are close to the road and are surrounded by hard surfaces / building, which include pavement, concrete drive and Tarmac road covering approximately 60% of the likely RPA of the two trees

The proposed development of this small site has been designed to ensure that there is no damage or impact on the current and future condition of these trees – *see AMS below*

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Arboricultural Method Statement (Provisional)

Ref: Addendum 1 & 2

**** This method statement shall be seen as provisional for planning purposes and subject to a detailed follow up submission and construction plan once proposals are agreed and to conform to any specific planning conditions made ****

Excavation within RPA of Retained Trees

Ref: Addendum 1

* **Please see addendum 1 section on Excavation within RPA of retained trees.**

The only proposed excavation within the RPA of trees T1 and T2 is to carefully hand dig the existing entrance area around the buttress roots of both trees in order to install a new permeable surface treatment as the entrance to the garage.

The proposed specification is a CellWeb system as shown on the drawing

The existing area beneath the 2 trees drops in level by around 200 – 250mm from the entrance of Well Walk. This area is to be excavated carefully by hand down to a depth of no greater than 200mm to ensure there is no damage to the buttress and main roots of the 2 trees concerned, which is to be monitored by the AS when being carried out. – *see picture gallery in addendum 5 below*

No roots of 25mm diameter and greater shall be severed as part of the above process.

The above process is to be carried out prior to the start of the remaining development of the site and up to finish level in order to protect the RPA of the 2 trees during the construction phase.

Tree Protection Barriers & Construction Exclusion Zone

The tree protection shall be a constructed as per figure 2 in addendum 4 apart from proximity, which shall be as far away as achievable given the space available for access. This is to be constructed once the new entrance surface treatment is completed as above and prior to start of the remaining construction on site.

The CEZ is all area within the tree protection barriers.

Ground Protection of Existing Surfaces within Root Protection Area (RPA) of Nearby Trees

Ref: Addendum 1

The ground protection for the RPA of trees T1 and T2 is to be as described above in the first section and as shown on the drawing…

Access Facilitation Pruning & Tree Works

Ref: Addendum 2

Recommended tree works are shown in the end column of addendum 3 below

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Site Access and Construction Working Area (CWA)

Very small site – suitable arrangements to avoid damage to trees shall be organized prior to construction starting on site.

Site Storage and Accommodation

Unknown at time of writing the report

Installation of Services

Arrangements for this element of the development of the site are unknown as at time of writing this report but are likely to remain as existing.

Changes to the service routes will be carefully considered using the AS below to advise on protection of nearby trees prior to commencement on site.

Arboricultural Supervision (AS)

AS shall be required during work within and adjacent to the RPA of retained trees. It must be undertaken at regular intervals with a written record of the meetings maintained with suitable photographic record in support.

The AS must include a pre-construction commencement site visit, to be arranged by the Site Manager under instruction from Architects, and thereafter at specific events that affect the retained trees on site to enable sign-off by the AS. These are typically as follows:

1. Erection of tree protection fencing
2. Installation of ground protection to retained trees whose RPA are affected by the CWA
3. Start of Excavation/piling of foundations within the RPA of retained trees
4. Tree pruning requirements to prevent crown damage from construction activity
5. Start of Excavation/installation of paths, roads and car parking within RPA of retained trees
6. Installation of underground services within the RPA of retained trees
7. Tree condition survey on completion of construction work

Conclusion

Provided the recommendations shown above and the methodology for protection of retained trees T1 and T2 are followed, there will not be an effect on the current or future condition of those trees that are retained as part of the proposed scheme.

Tree Grading Categories

Ref: Grading Category as per BS 5837:2012 Section 4.5 Table 1 & Table 2 – Tree quality assessment chart. Tree Survey Schedule in Addendum3 below for description of trees categorized

The grading categories are based on the following criteria:

A= those trees of high quality and value with an estimated life expectancy of at least 40 years

B= those trees of moderate quality and value with an estimated life expectancy of at least 20 years

C= those trees of high quality with an estimated life expectancy of at least 10 years or with a stem diameter of less than 150mm

U=trees of such a condition that they cannot realistically be retained as living trees in the context of the current land use

Categories A, B and C have further sub-categories with regards to the reasons for tree retention as follows:

1: Mainly arboricultural qualities.
2: Mainly landscape qualities.
3: Mainly cultural values, including conservation.

Trees categorized within this report:

1 Category A trees = T1 & T2

2 Category B trees = none

3 Category C trees = none

4 Category U trees = none

Trees for removal on this site:

None

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Age Categories and Distribution

Those trees assessed as being young (Y) in age can generally be considered to have significant growth potential. Whilst these specimens are not likely to make a substantial contribution to the landscape character of the site at present they will, if retained, provide succession for the eventual removal of mature or over- mature trees as a result of declining physiological or structural condition.

Semi mature trees (SM) will generally make a significant contribution to the landscape character and appearance of the site and their retention will provide more immediate succession. These trees will also have significant growth potential.

Mature trees (M) are not considered to have significant future growth potential and have generally reached their maximum expected size for the location. These trees will generally make the highest contribution to the landscape contribution of the site however a tree stock over dominated by mature trees will require careful management to ensure that continuation of canopy cover can be achieved.

Over-mature trees (OM) do not have the potential to increase in size and may in fact reduce in size as their crowns begin to break up. These trees will often make a significant contribution to the landscape character of the site and are likely to have ecological value. However the retention of these trees within new development must be carefully planned as they are approaching the end of their useful life expectancy and they will often have structural defects. Where over-mature trees are to be retained in new development it is essential that access is available for their eventual removal.

Veteran trees (V) are those that show features of biological, cultural or aesthetic value that are characteristic of an individual surviving beyond the typical age range for the species. These trees have negligible potential to increase in size. Veteran trees are usually of a high ecological value and they will require sensitive management where they are to be retained in new development. As such it is again essential that they are located in areas where access is available to undertake management operations and where there is a reduced risk of harm occurring from failure of the trees.

References

1. BS 5837:2012 Trees in Relation to Design, Demolition and Construction - Recommendations
2. BS3998:2010 Tree Work – Recommendations
3. NJUG Volume 4 Issue2 2007 – Guidelines for the planning, installation and maintenance of utility apparatus in proximity to trees.
4. NHBC Standards – Section 4.2 Building Near Trees
5. British Geological Survey – London & the Thames Valley
6. Principles of Tree Hazard Assessment – Lonsdale 2001
7. Diagnosis of Ill Health in Trees – Stouts & Winter 2004
8. Tree Survey Plan – at end of report
9. Existing and proposed plans – Webb Architects

Declaration

This Tree Survey, Impact Assessment and provisional AMS have been written and checked by Richard Wassell of Wassells Arboricultural Services Ltd. and are provided without prejudice as an objective and professional assessment of the trees described.

Signed: R.J.Wassell Date: 20.11.MMXV

Richard Wassell. Director

MCIHort MArborA NDArb (RFS) Kew Diploma NEBOSHlevel3

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Addendum 1 – Tree Protection

Ref: BS 5837:2012 in Tables C.1 & D.1of annex C & D

Table 1 -Tree protection measurements

Tree Number As per tree survey plan & schedule	Stem Diameter @ 1.5 metres agl. Millimetres	Root Protection Area (RPA) - Radius *measured from centre of stem* Metres	Tree/Root Protection Area (RPA) Sq. Metres	Affect of building proposal on the total RPA
T1	1200	14.4	651	Not affected providing specified AMS is followed
T2	800	9.6	289	Not affected providing specified AMS is followed

Protecting Root Zone of Trees (BS 5837:2012 section 6.2 Figs. 2 & 3):

The Root Protection Area (RPA)

This is the area surrounding a tree that is deemed to contain sufficient roots and rooting volume to maintain the trees viability in the future. The root system is typically concentrated in the uppermost 600 – 1200mm of the soil and is not necessarily symmetrical around the tree, being dependant on a number of factors such as water, nutrients, oxygen, soil penetrability and physical obstructions such as existing foundations or changes in level (terracing).

The RPA is a design layout tool that is deemed to be a minimum area around a tree where the protection of roots and soil structure are treated as a priority. This area is envisaged as and portrayed with a circle around each tree but where there appears to be restrictions to root growth the circle is reshaped to reflect more accurately the likely distribution of the rooting area of the tree concerned.

Key Points

1. AVOID building works within the RPA if at all possible but if not then carefully consider the following: where the RPA is likely to be severely affected because of site design constraints then felling and planting replacement(s) trees in a more suitable location on the site will need to be considered.
2. Where possible do not use strip foundations within the RPA, if absolutely necessary consider using a trenching saw or excavate by hand to avoid ‘shatter damage’ to the root system.
3. Consider using piling techniques for foundations @ maximum 350 mm diameter with ground beams on or above the surface of the root zone.

4. Unless unavoidable, do not exceed entering the root zone by more than one fifth of RPA radius.
5. Do not trench tangentially across the root zone for footings and services unless it cannot be avoided.
6. Consider 'no dig' techniques for services installation, with radial service lines being preferable to tangential across the root zone. Where this is undertaken then boring must be carried out below 600mm deep.
7. Any hard surfacing, paths and roads need to have the same considerations for the RPA and as in the above points. Where possible paths and hard surfacing (patios etc) need to be surface constructed (cellular) and semi-porous to allow water penetration and gaseous exchange into the root system of trees.

Excavation within Root Protection Area of trees

Where trees are to be retained then any proposed foundation, underground services work and hard surfacing such as roads/paths falling within the RPA of trees that are to be retained shall be kept as far away from tree stems as possible(SEE NOTE 1 ABOVE). Where any such works are necessary within the RPA there will be a requirement to dig carefully by hand and ensure any roots encountered of maximum 25mm in diameter shall be exposed and correctly pruned back by a competent Arborist. Where larger roots are encountered of above 25mm in diameter then advice from the Arboricultural Supervisor (AS) for the site must be sought prior to any work being undertaken.

Any roots exposed/ pruned back as part of the above operation shall NOT be left exposed to drying out. All roots exposed/pruned shall be either covered with damp Hessian sacking prior to backfill or backfilled/covered immediately with a suitable open and free draining compost/loam.

Site Hoarding

Site hoarding shall be no closer than 1.5 metres away from the stem of retained trees and consist of 20mm plywood sheets supported by minimum 100mm square posts and 100 x 50mm rails with posts at 2.5 metre centres.

Post holes for site hoarding that are required within the RPA of nearby trees shall be dug by hand and are to be a maximum of 300 x 300mm and 450mm deep

Ground Protection System Specification:

- Level area of RPA concerned by blinding with sharp sand at maximum depth of 50mm
- Lay geo-textile membrane such as 'Terram' to cover area concerned
- Cover geo-textile with maximum of 100mm MOT Type 1 sub-base
- Retain MOT type 1 with edge restraint such as 30 x 100mm edging board pegged every 2 metres to prevent migration of the sub-base

Addendum 2 – Tree Works

Ref: Addendum 3

Schedule of Tree Works

Trees and vegetation recommended for removal:

None

Recommended work for trees being retained:

See recommendations of tree survey information in Addendum 3 below

Tree work to be carried out to the following standards and guidelines:

1. BS 3998:2010 Recommendations for Tree Work

2. Tree pruning cuts will be carried out using the 'Natural Target Pruning' technique as defined by: *BS 3998:2010 section 7.2.5 and Fig. 2 The Pruning of Trees, Shrubs and Conifers: George E. Brown & Tony Kirkham – 2nd edition revised & enlarged 2004 and Section 3.1.27 of The Arboricultural Association Specification for Tree Works June 2008.*
3. Crown clean involves removal of dead, diseased & dying wood from tree crown, thinning of overcrowded crown, and removal of Ivy and all epicormic growth within crown including stem & basal epicormic growth.

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Addendum 3 - Schedule of Tree Survey Information – BS5837:2012 section 4.4

SITE: Lower Wellside, Well Walk NW3 1BY DATE: 19th November 2015

Tree Number	**Species**	**Diameter Class** mm	**RPA radius** metres	**Height** metres	**Crown Spread** metres	**Crown height**	**Age Class**	**Grading Category**	**Estimated Future Lifespan**	**Structure**	**Physiology, Condition & other factors**	**Management recommendation**
T1	Lombardy Poplar	1200	14.4	29	N=3 S=4 E=1 W=3	M	M	A2	20-40	G	AA Some deadwood within crown. No visible signs of past branch breakout within crown. No visible signs of stem decay or decay organisms	Light reduction and thin of crown, removal of deadwood and selective canopy raising proposed as separate application to Camden
T2	Lombardy Poplar	800	9.6	29	N=3 S=3 E=4 W=1	M	M	A2	20-40	G	AA Some deadwood within crown. No visible signs of past branch breakout within crown. No visible signs of stem decay or decay organisms Ivy to 5 metres on stem with wooden boundary fencing either side of stem	Light reduction and thin of crown, removal of deadwood and selective canopy raising proposed as separate application to Camden

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TREE SURVEY KEY:

Tree Number and Species = number of tree on plan and Common Name/botanical name

Height = estimated height of tree from surrounding ground level +/- 3 metres

Diameter Class = diameter of main stem @ 1.5 metres above ground level

Crown Spread = maximum extent of branches measured radially from the base of the tree, trees with asymmetrical crowns are shown with distances in relation to compass points. N = north etc.

Crown Height = height of canopy and/or first major branch above ground level. Low (L) = below 3 metres | Medium (M) = 3 to 6 metres | High (H) = above 6 metres

Age Class = Young(Y): age less than 1/3rd life expectancy | Semi-mature(SM): 1/3rd to 2/3rd life expectancy | Mature (M): Over 2/3rd life expectancy | Over mature (OM): mature and in state of decline | Veteran (V): Surviving beyond typical age range for species

Grading Category: As per BS 5837:2005 Table 1 – Tree quality assessment, which refers to tree quality and landscape/amenity value; A=high, B=moderate, C=low, NG= not graded

Estimated Future Lifespan = estimated useful and remaining contribution to the site in years - <10, 10-20, 20-40 & >40

Structure = structural condition of the tree based on roots, trunk, and major stems/branches along with the presence of any structural defects and decay organisms. Categories are: Very Good (VG); Good (G); Moderate (M); Poor (P); Hazardous (H)

Physiology/Condition = Overall health, condition and function of the tree in comparison to a 'normal' specimen of its species and age. Categories are: Above average (AA); Average (A); Declining (D)

Other factors = any other physical/environmental factors that could influence the tree now/in the future

Management Recommendations: N = no work required**. CC** = removal of dead, diseased & dying wood from tree crown, thinning of overcrowded crown, removal of Ivy from crown & stem and removal of all epicormic growth within crown including stem & basal epicormic growth on Lime trees.**LC** = lift crown. **TC** = thin crown. **RC** = reduce crown. **P** = pollard. **SP** = scaffold pollard. **RE** = remove epicormic and basal growth. **FP** = Formative prune **F** = fell to ground level. **FG** = fell and grind out stump. **R** = carry out replacement planting. **AI** = 3 yearly Arboricultural inspection

RPA radius = radius of typical root protection area, described as a circle and measured around centre of the tree

N/K = not known

 # = estimated data

NDG = Next door garden

g.l. = ground level

Alan Mitchell System = Estimate of tree age based on open grown tree with full crown. Age in years = Girth (circumference) in centimetres measured at 1.5 metres above ground level and divided by 2.5 i.e. Tree of girth 250 cm = 100years old

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Addendum 4 – Tree Protection Barriers and Tree Care Flow Chart

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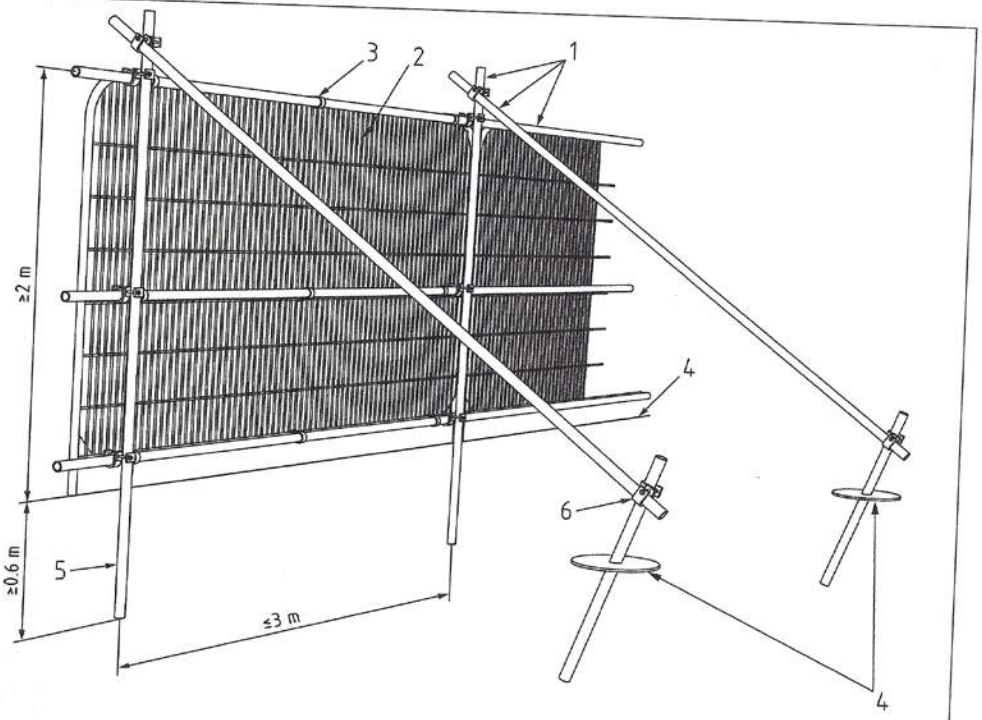
6.2.2.4 All-weather notices should be attached to the barrier with words such as: "CONSTRUCTION EXCLUSION ZONE – NO ACCESS".

Figure 2 **Default specification for 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

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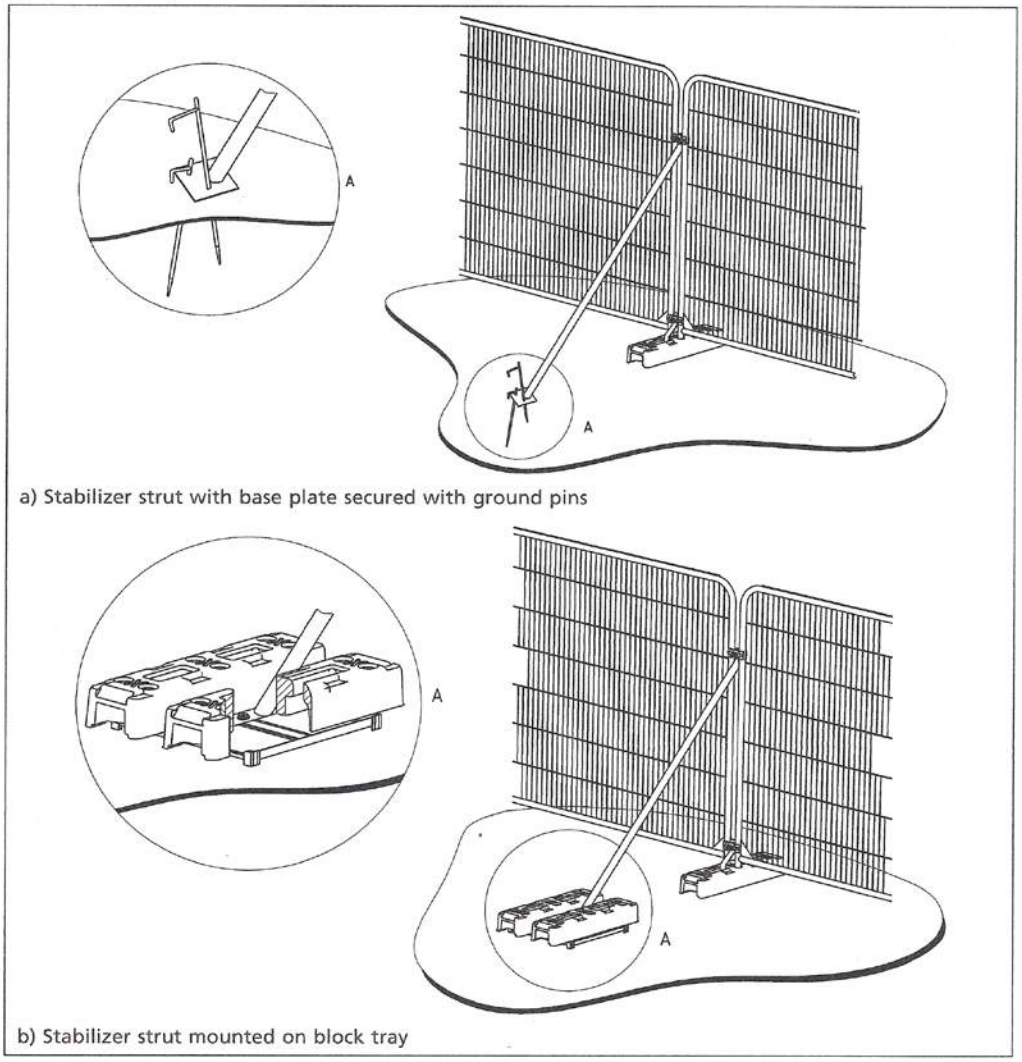
Figure 3 **Examples of above-ground stabilizing systems**



a) Stabilizer strut with base plate secured with ground pins

b) Stabilizer strut mounted on block tray

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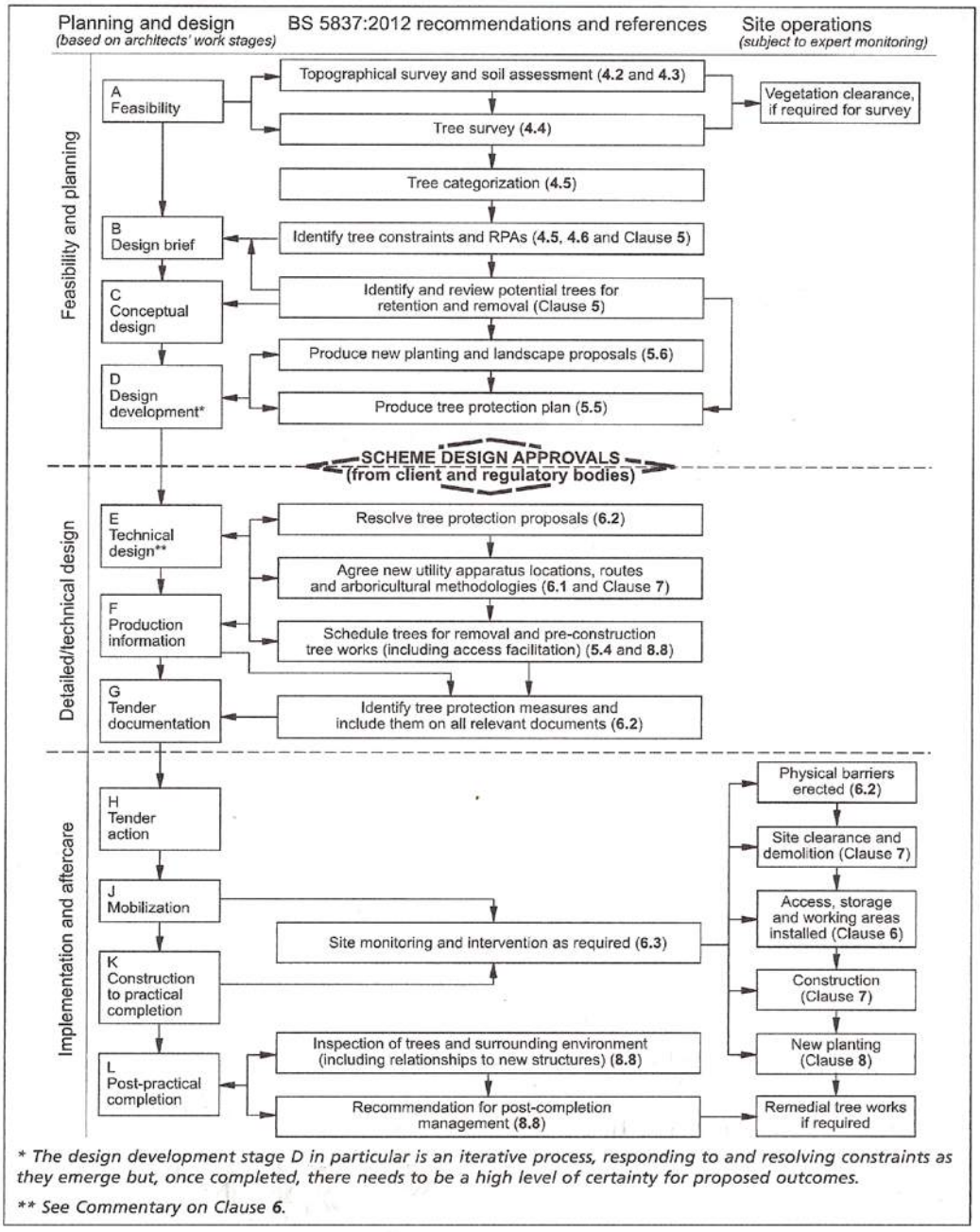
Figure 1 **The design and construction process and tree care**



** The design development stage D in particular is an iterative process, responding to and resolving constraints as they emerge but, once completed, there needs to be a high level of certainty for proposed outcomes.*

*** See Commentary on Clause 6.*

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Addendum 5 – Plans and Picture Gallery

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Base of tree T1 showing butress roots and existing entrance with level change step

Base of tree T2 showing butress roots and existing edge treatment

BOUNDARY LINE

T2

A

A

SOLDIER BRICK
KERB

SLOT DRAINAGE

BOUNDARY LINE

2500

PAVING

WELL WALK
PAVEMENT

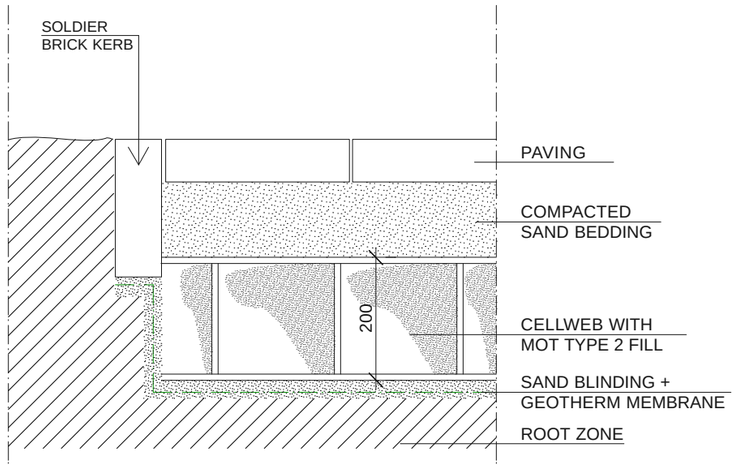
SOLDIER BRICK
KERB

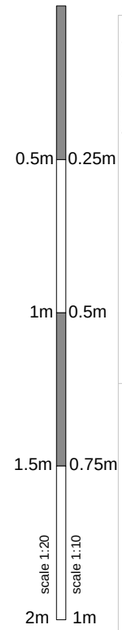
T1

FENCE

LOWER WELLSIDE

SECTION AA, scale 1:10





Drawing to be read in conjunction with consultants information.
Do not scale from drawing.
All dimensions to be checked on site.
Drawing only to be used for purposes indicated.
Notify Architect of any discrepencies.
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LOWER WELLSIDE

DRIVEWAY PLAN

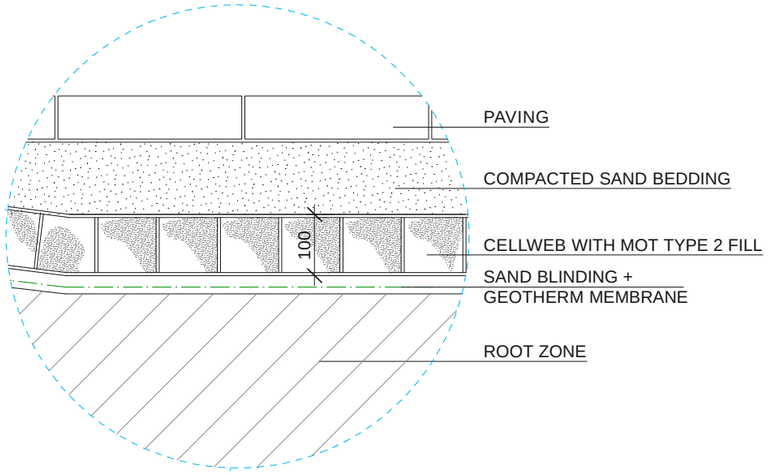
1:20 / A3 & 1:10 / A3

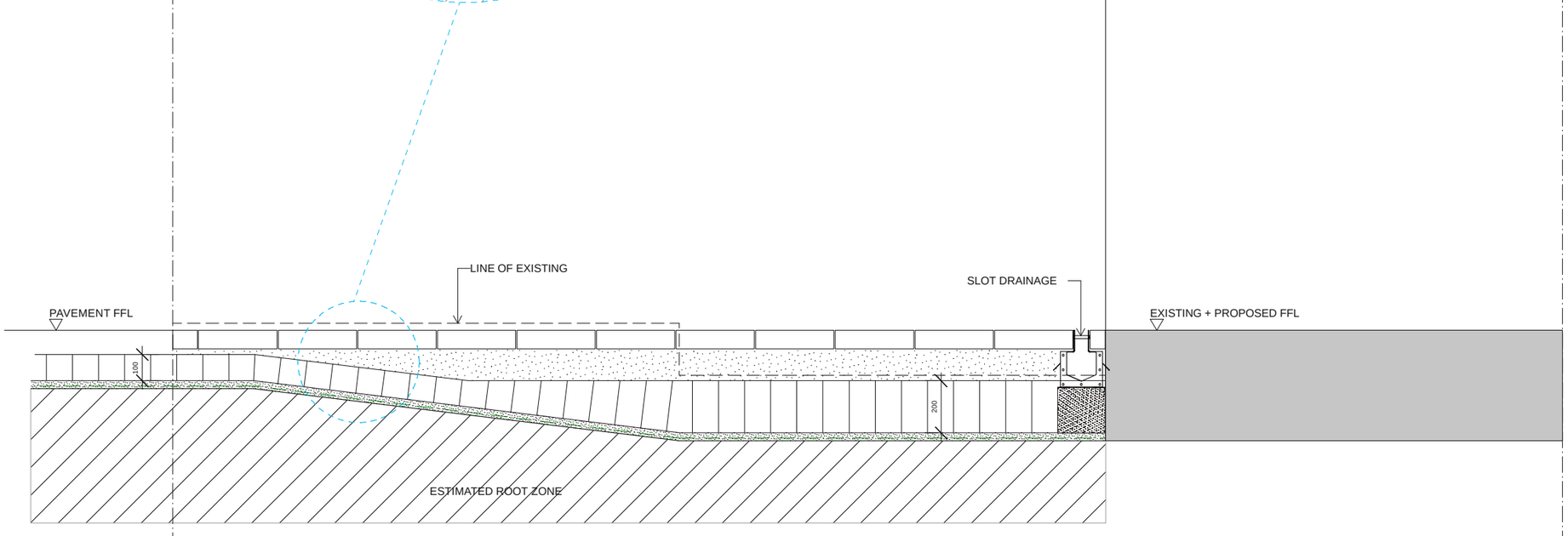
FOR INFORMATION

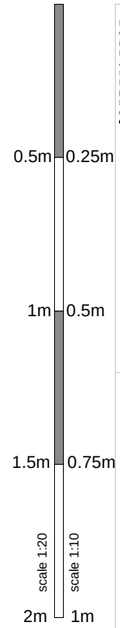
1186.04.01

BOUNDARY LINE

DETAIL, scale 1:10







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LOWER WELLSIDE

DRIVEWAY BUILD-UP

1:20 / A3 & 1:10 / A3

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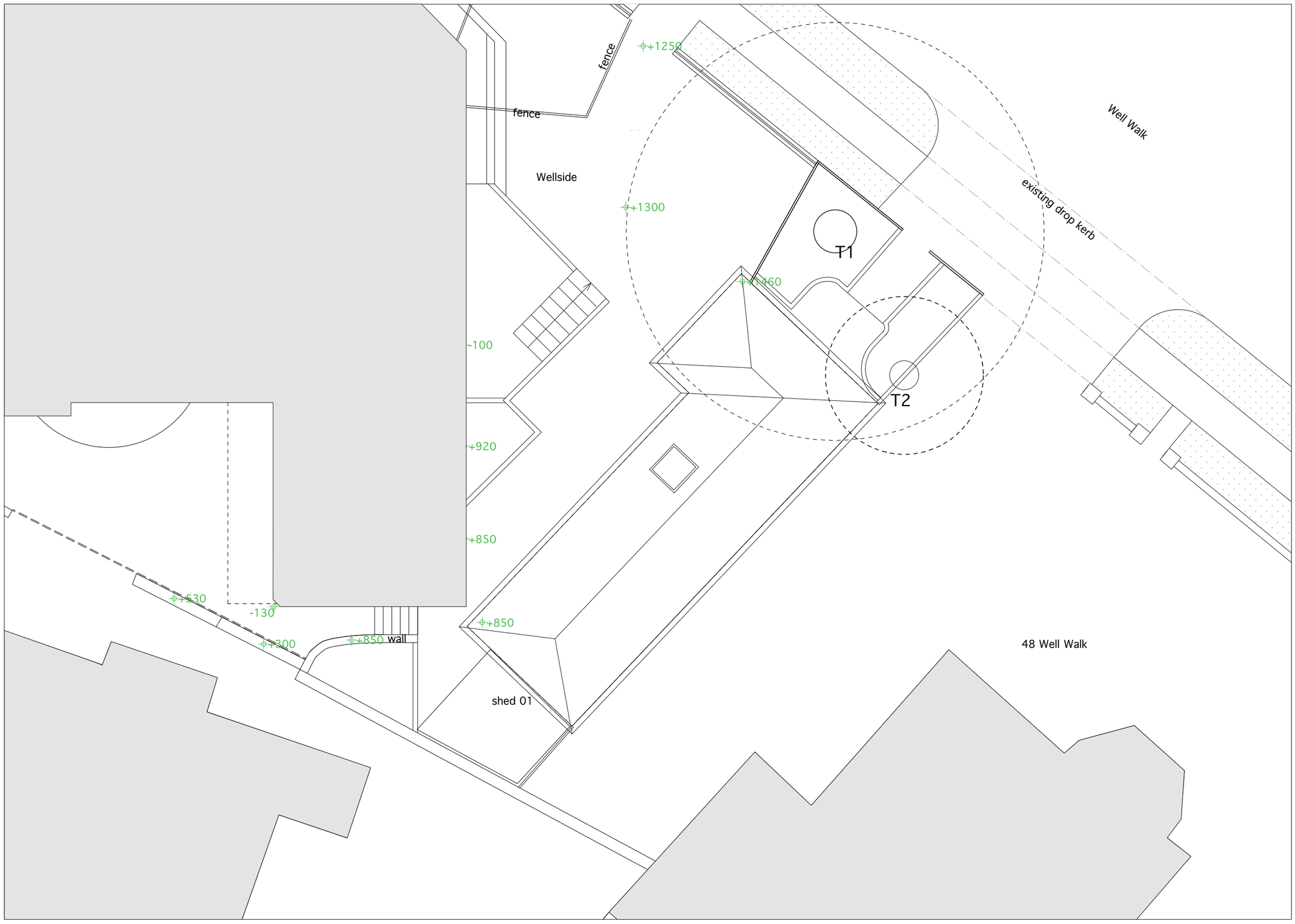
1186.04.02



5m
4m
3m
2m
1m
0m

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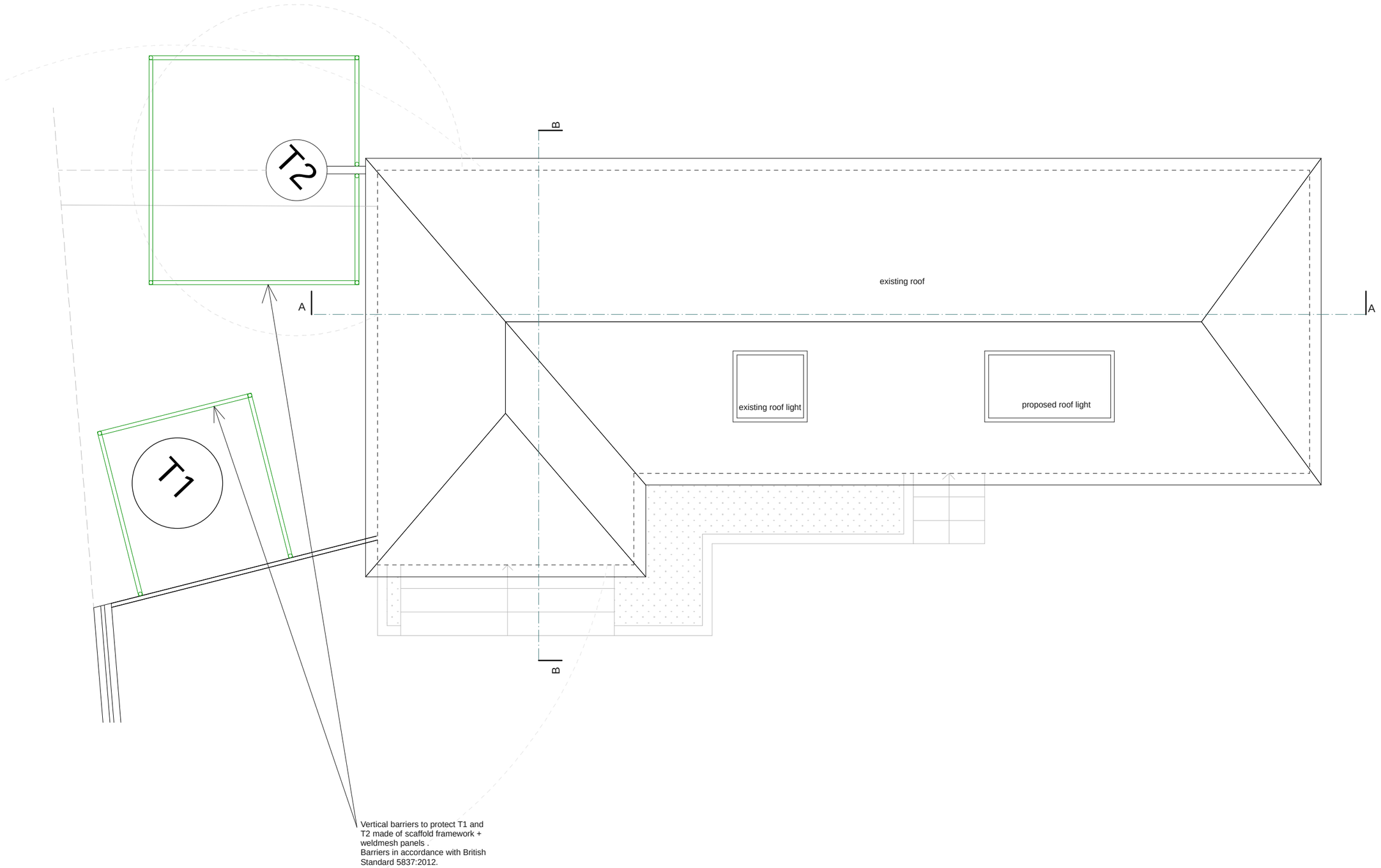
LOWER WELLSIDE

EXISTING SITE PLAN

1:100 / A3

FOR INFORMATION

1186.01.01(-)



Drawing to be read in conjunction with consultants information.
Do not scale from drawing.
All dimensions to be checked on site.
Drawing only to be used for purposes indicated.
Notify Architect of any discrepencies.
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5m
4m
3m
2m
1m
0m

REV

B- Details revised as per case officer request

N

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WEBB ARCHITECTS LIMITED

LOWER WELLSIDE

PROPOSED ROOF PLAN (TREES PROTECTION)

1:50 / A3

FOR PLANNING

1186.01.14(B)