

**Consultancy opinion and report regarding construction proposals at F.1 31 Goldhurst Terrace
Swiss Cottage NW6 3HB to ensure accordance with BS5837:2012 'Trees in relation to design,
demolition and construction: Recommendations'**



Photo 1: Trees T.1, T.2 and T.3 in garden of 31 Goldhurst Terrace NW63HB. Photo aspect: East

Prepared by:	Jack Stewart
Current revision	21..5.2017
Survey date:	16.5.2017
Surveyor:	Jack Stewart
Client:	Vivienne Greenaway
Reference	AFRC/js/116
Checked:	ECG

Introduction

I have been asked by Tim Evans of TJ Evans Ltd, acting on behalf of Mrs Vivienne Greenaway of F1, 31 Goldhurst Terrace NW63HB, to give my opinion regarding the construction of a garden room at the rear of the garden to the South of her house, with specific reference to British Standard 5837:2012, 'Trees in relation to design, demolition and construction -Recommendations'.

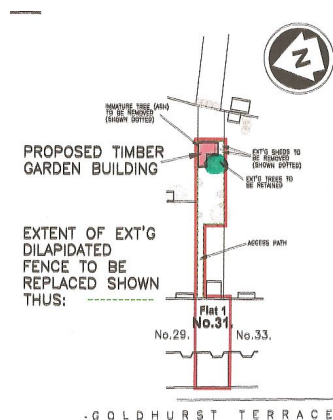
I visited the site on May 16th 2017, surveyed the trees and the proposed site. The survey report and my opinions and recommendations follow below.

The proposed site, structure and foundation

It is intended to position a prefabricated timber building at the East of the garden supported on concrete foundation pads, as shown in the Bakers Drawing 516/032/01 of December 2016. The timber frame forming the flooring joists of the building measure 50mm by 125mm and will be bolted to steel angle encased in cylindrical concrete foundation pads 300mm deep with a radius of 100mm. The timber supporting frame and floor of the building will thus be about 150mm above ground level. Each pad will thus occupy an area of 0.0314m². It is proposed that 12 such pads will be formed to support the building, using a hand post-hole borer.

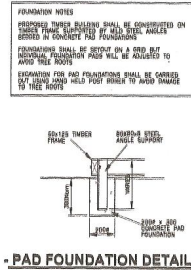
It is understood that the precise location of these excavations is not crucial to the structure and that should roots be encountered during delicate hand digging the hole may be relocated. The total excavated area is therefore intended to be 12 x 0.0314m², or 0.38 square metres.

The location of the proposed building at the East end of the garden is shown in Drawing 1, below



Drawing 1: sketch plan of 31 Goldhurst Terrace showing proposed garden building and existing group of trees

The details of the individual foundation pads are as shown in Drawing 2, below.



Drawing 2: Details of foundation pad and supporting timber frame to garden building

The trees on and around the proposed site

There are three trees immediately adjacent to the site of the proposed building; a Mimosa and two Cordylines. They cast a pleasant half-shade and give an exotic character to the end of the garden. They were planted by the owner and she is keen to retain these trees. The proposed garden room has been precisely located so as to take advantage of the shade provided and yet to do no harm to the trunks or root systems of these trees.

Root Protection Areas (RPAs)

British Standard BS5837 recognises that the great majority of tree roots are to be found in the upper levels of soil surrounding a tree, these being the most vulnerable to damage during the construction process. Thus **Root Protection Areas** are to be determined under BS5837 within which construction activity and soil disturbance is to be avoided. The **RPAs** are zones about the trees with areas equal to a circle of radius 12 times the diameter of the tree trunk at 1.5m from the ground. Thus a tree 1m wide at 1.5m above the ground will require a Root Protection Area of a circle of 12m radius.

The tree data relevant to BS 5837 of the trees in the garden of Goldhurst Terrace are shown below with their RPAs.

a f r i c a

Arboriculture and Forestry: Research and Consultancy

Tree No.	Genus and common name	Height m Approx	Dbh cm	RPA radius m	Crown N m approx	Crown E m approx	Crown S m approx	Crown W m approx	Retention category
T.1	<i>Acacia dealbata</i> Mimosa	9	22	2.7	1	1	4	5	B
T.2	<i>Cordyline australis</i> Cordyline	4.5	21	2.6	1	1	1	1	B
T3	<i>Cordyline australis</i> Cordyline	5.5	11	1.5	0.5	0.5	1	0.5	B

Table 1: Tree data relevant to Planning Application for garden room at 31 Goldhurst Terrace NW63HB

Notes:

Dbh refers to 'Diameter at breast height' ie 1.5m from ground

RPA is 'Root Protection Area' as defined by BS5837, a circle of radius (say 4.5m) centred on tree stem

Retention Category is defined by BS5837: Category A trees are of high quality with an expected remaining life of at least 40 years, Category B trees are of moderate quality with an estimated remaining life expectancy of at least 20 years

RPAs at 31 Goldhurst Road.

The Root Protection Area of the Mimosa tree, with a radius of 2.7m, can be seen to cover almost the whole width of the garden of 31 Goldhurst Terrace. Therefore construction techniques appropriate to BS5837 (2012) are required when undertaking any work within the garden at the East end.

The area of the RPA of T.1 is 23m².

The total area to be excavated for the foundations is 0.38 m².

Thus the percentage of the RPA of T.1 occupied by the proposed excavations is 1.6%.

I believe that if suitable excavation techniques are used, this small invasion of the RPA will not be damaging to the overall health of the trees. (see below: Excavations within the RPA)

Proximity of trees to proposed structure

Trees 1, 2, and 3 are intimately close to the proposed garden building by design.

As the timber frame of the building is supported above ground level by attachment to steel angle protruding from the concrete pads by about 150mm, the building will not inflict on any root buttresses for the foreseeable future. Moisture availability and gaseous exchange at the fine surface roots will not be inhibited.

Excavations within RPAs

BS 5837:2012 provides guidelines for excavation within the RPA in Section 7. This specifies careful hand digging, avoiding damage to protective bark covering larger roots. Exposed roots are to be covered in hessian to protect from desiccation and rapid temperature changes. Small roots less than 25mm in diameter may be pruned back appropriately with secateurs, but larger roots found must be referred to arboricultural professionals. Before backfilling, wrapping is to be removed and roots are to be surrounded with washed sand or other loose granular fill. Soil is to be free of contaminants and potentially injurious objects.

In the case of the proposed works at 31 Goldhurst Terrace, it is suggested that delicate probing with a fine metal rod is undertaken to establish the absence of major roots before using the hand post-hole borer. Once the foundation holes are excavated the pits should be lined with impervious polythene sheet before concrete is poured. Although it is understood that a dry mix of post concrete is to be used with water only applied after placement, the possibility of cement contamination to fine roots around the pits must be eliminated.

Tree Protection during construction

T.1, T.2 and T.3; the Mimosa and the 2 Cordylines are vulnerable to damage during the construction assembly process and should be protected from accidental damage by wrappings of heavy bubble-wrap and hessian secured with gaffer tape for the duration of the works.

Ground Protection during construction

It is understood that all parts of the proposed structure will be man-handled into position. Thus no excessive ground pressure will be exerted on the web of fine roots that the RPA is designed to protect. I suggest that the immediate working area, and the area adjacent to the Pear should be covered with 18mm plywood sheets of appropriate dimensions such that repeated impacts of travel and work may be minimised in the RPA. Full sheets may be too large to be readily moved as work progresses, so a number of sheets of varying sizes should be employed and distributed about the work area as required. Discipline regarding the maintenance of this protection is important as it can be regarded as a chore.

BS 5837:2012 states that

‘Once erected, barriers and ground protection should be regarded as sacrosanct, and should not be removed or altered without prior recommendation by an arboriculturist and approval of the local planning authority’

Conclusion

It is my opinion that if the precautions and techniques specified above are followed, the construction of the garden room at 31 Goldhurst Terrace may be undertaken in accordance with British Standard 5837:2012 'Trees in relation to design, demolition and construction -Recommendations', and without causing any damage to the trees on and around the site.

If any further clarification is required please do not hesitate to contact me by phone or email.