

RBKC ARBORICULTURAL OBSERVATIONS

Address	Application No.	DC Officer	Date of Site Visit	Date of Obs
10 Kensington Palace Gardens	PP/08/1323 (DC OBS 552)	Ian Williams	09/07/08	09/07/08
Development			Obj.	No Obj.
Large Subterranean Structure			No Objection	
Status of Tree(s):				
C.A. No. (if any)	T.P.O. No. & Details (if any)		Tree Work Applications	
7				

Comments:

The latest plan is showing an elliptical underground structure as opposed to the rectangular one previously approved.

Firstly the issue with the trees in the adjacent Indian High Commission are the same as in previous schemes and I am therefore reproducing my previous comments on this:

"This scheme is very similar to a scheme submitted and approved last year (PP/05/0945) although this new proposal is larger in scale. The previous scheme included an Arboricultural Report from Clive Fowler Associates (July 2004) which previous tree officers accepted and I also concur with the contents. The report recommends the loss of several trees none of which are good specimens. Additionally it requires the loss of 2 sycamores in the neighbouring Indian High Commission, which I do not object to, but the applicants must obtain the permission of the owners to do this. This matter was dealt with by a condition in the last approval and I would reprint this condition in any subsequent approval:

"No excavation works pursuant to this permission shall be carried out until written agreement from the owners of No.9 Kensington Palace Gardens (in conjunction with the Crown Estate) has been obtained to remove the two sycamore trees within the curtilage of that property.

Reason - In order to ensure that the development does not result in the destabilising of the trees, to the detriment of their safety."

The Elliptical Underground Structure

Although not an engineer I think that it would be safe to say that this proposal presents significant construction challenges particularly in comparison to the simple 'box' structure previously approved. One of the main difficulties relates to protection of the trees on or near the rear lawn and in particular the fine mature TPO'd lime T18.

I have had extensive discussions with the applicant's arboriculturalist (Marishal Thompson) and their engineers (Jones Lang Lasalle). What has been proposed is quite radical but strikes me as being feasible. Very briefly this will involve containerising the lime tree in a large steel box 16m long by 8m wide by 3m deep and suspending it on piles whilst the elliptical structure is constructed below it. At the end the void between the structure and the tree will be refilled with compacted material and the supports removed. Throughout the process the soil around the tree will be monitored to ensure the moisture content is kept at optimal levels. Lime is a species which tolerates a reasonable degree of disturbance.

Although the trees in adjacent properties are at a lesser risk they will be treated in a similar manner and containerised within these large boxes.

Rather than go into the minutiae of the process here I am attaching the correspondence between RBKC and the arboriculturalists and engineers so hopefully we can demonstrate that we have done our utmost to ensure that the trees will not come to harm.

As I said before this has not to my knowledge been attempted before in the UK and so to some extent this is an experimental process. However, considerable thought has gone into the scheme and I am satisfied with answers the engineers have given to our numerous queries.

The usual 1m of soil has been provided over the subterranean structure.

In summary I do not object to the proposal but request that should the Council be minded to grant consent that the following conditions be attached:

C16a for R17

C18 for R18

C23 for R20

C23c for R20 also please add the following sentence "The arboricultural officer is to be informed 28 days in advance of the commencement of the works on site"

Signed:

Date:



15/9/08

Angus Morrison
Principal Arboricultural Officer.

File



**JONES LANG
LASALLE**

22 Hanover Square London W1A 2BN
tel +44 (0) 20 7493 6040 fax +44 (0) 20 7408 0220

www.joneslanglasalle.co.uk

Angus Morrison
Principal Arboriculture Officer
Planning and Borough Development
Kensington Town Hall
Hornton Street
LONDON
W8 7NX

Your ref PP/08/01322
Our ref 740 / GPB / WEA72311
Direct line 020 7399 5609
Direct fax 020 7399 5649
guy.bransby@eu.jll.com

EX DIR	HDC	TP	CAC	AD	CLU	AO AK
R.B. K.E.		25 JUN 2008			PLANNING	
N	C	S	APP	IO	REC	
HBS			ARB	FPLN	DES	FEES

24 June 2008

Dear Mr Morrison,

Re: 10 Kensington Palace Gardens, PP/08/01322 and LB/08/01323

We understand that you met with our arboriculturist, Peter Wilkins of Marishal Thompson on the 12th June with your colleagues to discuss our proposals for the construction of a basement at the property and the consequential requirement for the retention and protection of 4 mature lime trees on and around the site.

Mr Wilkins has circulated to our design team a number of direct queries that he discussed with you. The purpose of this letter is to co-ordinate a response to answer these queries and enhance the method statements that were enclosed with the planning application.

- 1) Do the steels for the floor of the tree root container get pushed, 'banged', or vibrated along and into the ground under the tree? What impact does this method have on the soil structure and root system of the retained trees above the floor as it is inserted, including around the edges of the rootball?

The pipes are driven into the soil using a percussive pipe ramming mole. The ramming mole would be positioned in a pit outside of the root protection area i.e. at least 8m from the tree at all times. This method of driving pipes is used beneath roads, railways, waterways and footpaths principally because soil displacement or heave are minimal. (Please refer to the photographs contained in section 2.4 of Ruskins methodology).

The pipe ramming will occur at a depth of 2m or greater. It is widely acknowledged that at this depth the presence of significant roots will be negligible. Therefore the risk of damage to the roots through the driving process is minimal.





At this depth our soil investigations have indicated that the soil is of medium density sandy clay gravels. The sides of the root balls will be secured prior to any pipes being driven. The pipes will then be driven adjacent to each other, touching to reduce the opportunity for material to fall between the pipes once the soil is excavated beneath.

- 2) Will the steel floor be sufficiently 'tight' to prevent escape of soils / ballast from inside the container when excavation commences? If it is proposed to seal any gaps as excavation starts what method is used to seal these gaps and is this method tree friendly or involve chemical grouting or some such?

Once the pipes are installed and the excavations are gradually undertaken beneath the root protection zone a fine wire mesh will be installed beneath the pipes and fixed to the pipes. This will prevent material from permeating through gaps in the pipes over time. Beneath the mesh a tray will be installed as indicated in Ruskins methodology to prevent water and material falling into the basement.

The use of a cementitious grout material or other lime based product will be avoided.

- 3) When the structure has been formed beneath the tree container, how is this void backfilled? How do we ensure the container remains supported and does not move i.e. drop or rotate after removal of the sacrificial piles?

For each root protection area the tubes are supported by a steel grille that is in turn supported by a piled foundation. The steel pipes and the steel grille will remain in the ground once the permanent structure has been created. We have now modified the method so that there will be 3 pairs of piles beneath the steel grille so that a cantilever effect can be created enabling the progressive transfer of the load of the tree onto the new permanent structure through the gradual cutting back of the piles once the new structure is completed.

The void will be backfilled with a suitable loadbearing fill material, not dissimilar to that removed which is compacted to a medium density, similar to the existing ground conditions, as it is replaced. This compacted material will then form a bearing for the remainder of the piles and the steel floor that are left. A further raft foundation maybe considered to be constructed at the bottom of the pile if this is deemed necessary.

- 4) Has this structure been designed to withstand the loads and wind-loading associated with the trees?



The temporary structure has been examined for the loading of the trees as well as their wind loading. The container is designed to hold the tree firm preventing the rootball from flexing under windloading. It is likely that the tree will be secured by a series of slack guy cables fixed to the steel of the container or adjacent piles. This will give additional security and prevent the tree from being windblown in extreme weather conditions.

The loading from the trees and the integrity of the rootball will be constantly monitored during the works.

- 5) Can we guarantee work only outside of the root container or on the protected surface of root container ?

Works will only take place outside of the root container. Ruskins method statement states this in sections 2.2 and 2.4.2. It is re-iterated here that there will no access to the top of the root ball other than for inspections and aftercare of the tree i.e. no construction personnel and no material storage. The piling rig and all other machinery will remain outside the root protection area at all times.

- 6) What will be the sizes for the root containers for the other trees This is indicated on scale plan submitted but requires dimensions in clear format. (Minimum dimensions)

The root protection areas for lime trees to the north boundary will be 8m radius and to the lime trees to the south boundary 5m radius.

- 7) Can we provide copies of the site investigation to show soils and underlying strata?

A copy of the Soil Investigation Report is enclosed with this letter.

- 8) How do the long cross beams get installed? (Potentially these are over 16m long, with limited working space laterally to either side of the rootball within gardens of 10 KPG and outside root protection area of adjacent trees?)

We have now revised the proposal to include 3 pairs of piles rather than 2 as shown on the illustration previously submitted all piles are located outside the root protection area. The pairs of piles can be installed to create a cantilever. The piles are installed to the centre first and then work to the outside. The steels will be installed in short lengths and bolted and spliced in-situ before being jacked into position.

We are endeavouring to provide a series of measures that will safeguard the trees against the impact of construction activities. The measures will commence many



**JONES LANG
LASALLE**

months before construction activities start and will continue many years after the building works are complete.

We trust that the content of this letter provides you with the information that you are seeking however should you have any further queries please do not hesitate to contact us.

Yours sincerely

A handwritten signature in cursive script that reads "Guy Bransby".

Guy Bransby
Jones Lang LaSalle Ltd

Enc.

Cc Ian Williams, RBKC
Stuart Adolph, Ocubis Ltd
Peter Wilkins, Marishal Thompson

(File)

PLANNING AND BOROUGH DEVELOPMENT

THE TOWN HALL HORNTON STREET LONDON W8 7NX

**THE ROYAL
BOROUGH OF**

Executive Director David Prout



**KENSINGTON
AND CHELSEA**

Mr Guy Bransby
Jones Lang LaSalle Ltd
22 Hanover Square
London W1A 2BN

Extension: 0207 361 2767
Web: www.rbkc.gov.uk

30th June 2008

My reference:

Your reference:

Please ask for:

Dear Mr Bransby

Re: Trees at 10 Kensington Palace Gardens (PP/08/1322)

Thank you for your letter of 24th June in which you covered our questions most comprehensively. I do however have two queries relating to your responses. This is an unusual application due to its sheer size and complexity and what you are proposing has not, to my knowledge, been tried before and certainly there is no precedent in the Royal Borough of Kensington and Chelsea (RBKC).

Using the numbering in your letter:

Q1. What we are concerned with here is not so much direct damage to the roots which will be few and far between at 2m deep but the effect on the soil structure. A 25m tall lime tree obviously transmits huge forces to its roots in windy conditions and all the roots even down to the finest ones play their part in keeping the tree upright. What worries us if that is the soil is shaken by the vibrations the roots will become detached from the adjacent soil and the tree's stability will be compromised. Perhaps the risks here are greater on a sandy clay gravel than they would be on pure clay. What we really require is some reassurance or proof that the stability will not be impaired. The best way of course is by reference to other projects where similar work has been successfully completed although as I said above I am not aware of any other similar schemes but perhaps you know differently.

Q3. Again we are seeking some reassurance. Our concern is upon completion that when the tree comes to rest on the structure that it doesn't move. Even a tip of a few inches from the vertical could seriously compromise the stability of a tree and may lead to its removal on safety grounds. How will you ensure that the back filled material is sufficiently compacted. At its simplest and as a non engineer I know that when ever I dig a hole in my garden and back fill it, it doesn't matter how hard I try to compact the ground it will subside a few inches in the following months. This must not happen under a big tree as it may simply fall over. Furthermore I am not actually clear as to whether the piles supporting the tree are remaining permanently in place although I would have thought that this is not possible due to the shape of the structure. Perhaps the best way to clarify this might be through a drawing.



INVESTOR IN PEOPLE

As I said before we are Arboriculturalists and obviously do not have the engineering insight you possess but we believe these are legitimate queries. This is a complex scheme and we do appreciate the efforts the applicants are making towards the retention and care of the trees.

Please do not hesitate to contact me.

Yours sincerely

Angus Morrison
Principal Arboricultural Officer

cc Peter Wilkins Marishal Thompson
Ian Williams Case Officer RBKC



**JONES LANG
LASALLE**

22 Hanover Square London W1A 2BN
tel +44 (0) 20 7493 6049 fax +44 (0) 20 7408 0220

www.joneslanglasalle.co.uk

Angus Morrison
Principal Arboricultural Officer
Planning and Borough Development
The Town Hall
Hornton Street
LONDON
W8 7NX

Your ref PP/08/1322
Our ref 740 / RRT / WEA72311
Direct line 020 7399 5409
Direct fax 020 7399 5649
guy.bransby@eu.jll.com

4 July 2008

9

Exd	HDC	HSS	HPD	Poi	Des	ARB	Rec
Reg	PIO	07 JUL 2008				RBKC Planning	APP
DC Nth	DC Cen	DC Sth	Obj	Supp	No Obj	Rev	Other
						Cond	PDA

Dear Mr Morrison

Re: 10 Kensington Palace Gardens, LONDON, W8 4QP (PP/08/1322)

We refer to your letter dated 30 June 2008 relating to your concerns with our methods for the protection and supporting of trees during the construction works. We address your further concerns as follows (continuing the numbering previously used):

1. The pipe ramming method that we are seeking to employ is used extensively in the removal and re-siting of trees and consequently the methods to be adopted in our proposal are used frequently by Ruskins and other tree moving experts.

Essentially the pipes are driven into the soil and the soil fills the pipe causing minimal soil displacement. Should the pipe encounter larger material or resistance, water or air can be introduced via the pipe to assist in the smooth insertion of the pipe. Overall, there is no loss of soil and therefore there can be no significant settlement.

A critical point to make is that the rootball is constrained laterally prior to the insertion of the steel pipes and the supporting structure. In formation, the rootball and the earth around the roots will be secured and this will prevent soil movement within the rootball itself.

With regard to vibrations created during the pipe ramming process, this may have two possible impacts. Firstly, the vibrations could cause materials to be shaken from the roots of the tree, reducing the bearing and possibly the stability of the tree. Secondly, the vibrations could have a compaction influence resulting in a loss of aeration of the soil, which would be detrimental to the growth of the roots during and after construction. These two potential issues are addressed in detail below.





Vibration will occur during the ramming process. Whilst the main vibration will be derived from the position of the ramming machine it is likely that there will be transference via the pipe, albeit at a lesser extent. In tree-moving practices, the whole tree, rootball and supporting structure are lifted onto a low-loader and transported for many miles and are therefore subjected to significant vibration, but this does not result in the collapse of the rootball or significant loss of aeration.

At the depth at which we will be working, our soil investigation has demonstrated that the material is medium-dense, slightly sandy, clayey gravel. The fact that we encounter clay at this depth will allow us to hydrate the soil, which will serve two purposes. The wet material acts to absorb vibrations and secondly, it will allow the pipes to be inserted more easily as other materials will be pushed or absorbed into the clay.

We are confident that there will be no significant risk to the stability of the tree by adopting the pipe ramming method. However, we do have a second solution which would be to utilise horizontal auger boring instead of pipe ramming, which would reduce the vibration considerably. The process would be the same in that we will still excavate around the trees using an airspade, construct the rootball, excavate to a minimum of 2m and then establish a platform for the auger. The auger uses similar technology to bored piles for substructures, albeit horizontally instead of vertically.

We are aware of a significant number of projects where trees are moved by adopting the methods that we have described in our application and subsequent correspondence, and these are well documented. You are quite right that the application is unusual and maybe without precedent, however, we have spent a considerable amount of time investigating these matters with our arboriculturists who, as you, have an interest to ensure the preservation of the tree prior to construction, during construction and after the building works are complete and the ground is reinstated.

3. The piles are temporary to support the steel grillage and the pipes. As the new structure is constructed, the piles will be systematically cut back but the steel grillage and the pipes will remain in place permanently. Concrete walls and slabs sitting on top of the arches of the new structure are to be constructed to directly take the load from the main steel beams supporting the root ball. The three pairs of piles introduced at the start of the process will be designed to create a cantilever and assist in allowing the transfers to occur with the minimum risk of movement.

All of the voids will be filled with a suitable inert, load-bearing material not dissimilar to that removed and compacted to a medium density similar to the existing ground conditions. The remnants of the piles could derive some bearing from the ground materials as well as the new structure. Our engineers have prepared a series of sketches to illustrate the process, which are duly enclosed.



**JONES LANG
LASALLE**

To summarise and to answer your query directly, the support of the tree structure is not dependant on the backfilled material. The new structure will be designed to support the load of the tree structures and the backfill material will provide additional load bearing capacity but it is highly unlikely that this will be utilised.

We hope that the responses above give you the information that you require in order to complete your report, but should you require any further information then please contact us.

Yours sincerely,

Guy Bransby
Jones Lang LaSalle Ltd

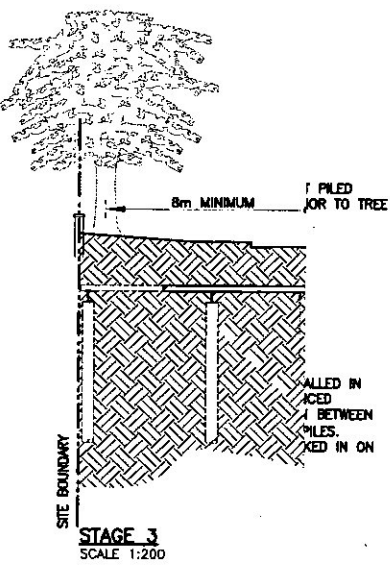
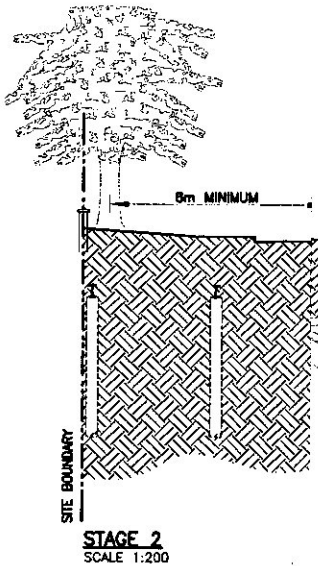
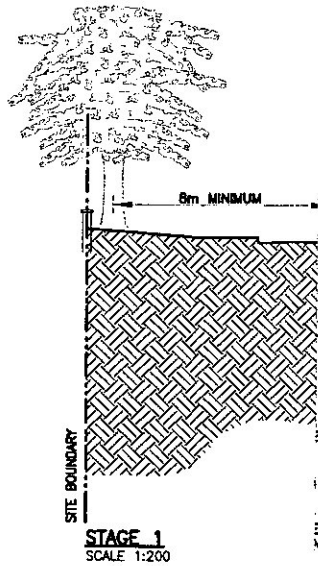
Cc Ian Williams, RBKC
Peter Wilkins, Marishal Thompson

Enc.

NOTES

1. DO NOT SCALE - IF IN DOUBT ASK
2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DRAWINGS AND SPECIFICATIONS

REFER TO RUSKINS
METHOD STATEMENT
FOR FULL DETAILS OF
TREE SUPPORT
CRADLE



Exd	HDC	HSS	HPD	Poi	Des	ARB	Rec
Reg	PIO	07 JUL 2008				RBKC Planning	APP
DC Nth	DC Cen	DC Sth	Obj	Supp	No Obj	Rev Cond	Other

P1 03.07.08 (10) INITIAL PRELIMINARY ISSUE
AMENDMENTS

9 CHARLOTTE STREET, LONDON
W1T 1RG
TEL 020 7637 7870 FAX 020 7637 7880
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JOB TITLE
**10 KENSINGTON
PALACE GARDENS,
LONDON**

OWNING TITLE
TREE ROOT BALL SUPPORT
SEQUENCE DRAWING

DATE DRAWN SCALE
JULY 08' 1.0 1:200 0A1

DRAWING STATUS
PRELIMINARY

JOB/REQ NO. REV
D8394/ 150 P1

PD CONSULTING ENGINEERS LTD

Morrison, Angus: PC-Plan

From: Thakrar, Ricky (UK - England) [Ricky.Thakrar@eu.jll.com]
Sent: 09 July 2008 10:23
To: Morrison, Angus: PC-Plan
Cc: Bransby, Guy (UK - England); Stuart Adolph
Subject: 10 Kensington Palace Gardens: Response to two queries
Attachments: Clarification of Stage 2 sketch.pdf

Dear Angus,

Further to our conversation yesterday, please find attached a sheet clarifying the location of the Section view for the 'Stage 2' sketch.

In response to your concerns regarding the depth of the rootball protection zone, we can confirm that we would be willing to work to a 3m depth. We hope that this additional allowance offers further assurance of the future health of the trees.

Kind Regards,

Ricky Thakrar
Planning
Jones Lang LaSalle Ltd.
Tel +44 (0)207 852 4147
Email ricky.thakrar@eu.jll.com
Web www.joneslanglasalle.co.uk

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