London Borough of Camden

22 Thurlow Road
London, NW3 5PP

ASSESSMENT OF DOCUMENTATION SUBMITTED TO SUPPORT PLANNING APPLICATION 2014/4264/P

October 2014

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1. Introduction

A planning application has been submitted to London Borough of Camden for the redevelopment of 22 Thurlow Road, NW3 5PP, to include enlargement of the existing basement, such that it is extended under a portion of the existing rear garden. Supporting documentation has been submitted with the application, including a Basement Impact Assessment (BIA) report.

London Borough of Camden (LBC) has commissioned Geotechnical Consulting Group LLP (GCG) to undertake a review of the documentation submitted in support of the planning application to confirm whether it meets the requirements of the planning process, and of the objections raised against the scheme by local residents and the Heath and Hampstead Society.

All information and documentation has been provided by LBC, either directly, or by reference to LBC documentation and application details available from the Council's website.

2. Documentation

The principal documentation submitted as part of the planning application and subject to review includes the following:

- 22 Thurlow Road. Basement Impact Assessment. Job number 234937. Document reference: REP-GEO-001. By Arup. Revision 1. Dated 10 July 2014.

The full list of documents supporting the BIA submission reviewed is provided in the reference list at the end of this report.

The following LBC documents were referred to, to form the basis of the review of the planning submission documents:

- Camden geological, hydrogeological and hydrological study; Guidance for subterranean development, Issue 01, November 2010 ('The Arup report').

- Camden Planning Guidance, basements and lightwells, CPG4, 2013.

- Camden Development Policy DP27: Basements and lightwells.

It should be noted that the BIA produced for 22 Thurlow Road was produced by Arup, and is referred to herein as the BIA; reference to the 'Arup report' refers specifically to the Camden geological, hydrogeological and hydrological study produced for LBC.

3. Review Requirements

The review requirements were defined in the instruction issued by LBC as to determine whether:

1. the submission contains a Basement Impact Assessment, which has been prepared in accordance with the processes and procedures set out in CPG4.

2. the methodologies have been appropriate to the scale of the proposals and the nature of the site;

3. the conclusions have been arrived at based on all necessary and reasonable evidence and considerations, in a reliable, transparent manner, by suitably qualified professionals, with sufficient attention paid to risk assessment and use of conservative engineering values/estimates;

4. the conclusions are sufficiently robust and accurate and are accompanied by sufficiently detailed amelioration/mitigation measures to ensure that the grant of planning permission would accord with DP27, in respect of

    a. maintaining the structural stability of the building and any neighbouring properties;

    b. avoiding adverse impact on drainage and run-off or causing other damage to the water environment; and

    c. avoiding cumulative impacts on structural stability or the water environment in the local area.

5. the criticisms made by the neighbours and local society (The Heath and Hampstead Society) raise reasonable concerns about the technical content or considerations of the submission which should be addressed by the applicant by way of further submission, prior to planning permission being granted.

6. the criticisms made by the neighbours and local society raise any relevant and reasonable considerations in respect of the structural integrity or condition of the road and the neighbouring properties which may be unknown or unaccounted for by the submission or which would benefit from particular construction measures or methodologies in respect of the development following a grant of permission for the development.

4. Basement Impact Assessment (BIA)

The requirements of a BIA are set out in CPG4 and fully detailed in Section 6 of the 'Arup Report'. A BIA requires five Stages, as follows:

- Stage 1 – Screening
- Stage 2 – Scoping
- Stage 3 – Site Investigation and study
- Stage 4 – Impact assessment
- Stage 5 – Review and decision making (undertaken by LBC).

Stage 1 of the BIA methodology is screening, where matters of concern are investigated and the requirement for a full BIA is established. Three main issues are required to be considered: surface flow and flooding, slope stability, and subterranean flow. Each of these issues is covered by a separate screening flowchart (included as Figures 1 to 3 in CPG4), to assist the screening process, whereby a series of questions are posed regarding the site and the proposed development.

The BIA produced includes the three screening flowcharts from CPG4. These are used to identify those areas that require further investigation. The subterranean (groundwater) flow assessment identifies one issue of concern, that the site is on a secondary aquifer and the proposed secant walls will extend below groundwater level.

The surface flow and flooding assessment similarly identifies one issue, this being that changes in the area of impermeable surfacing may result in changes to the existing surface water flow.

From the ground stability screening chart, four issues are identified, related to trees, impact on the secondary aquifer, differential foundation depths and the potential impact on the Network Rail tunnel that passes under the site.

It is concluded that the screening Stage of the BIA is present, and it is considered that it has been undertaken in a comprehensive and conservative manner.

Stage 2 requires that the potential impacts of each of the matters of concern from Stage 1 be identified.

This stage is included within the BIA, with potential impacts identified for the issues identified in Stage 1.

From the subterranean flow screening flowchart, a single potential impact to be considered is identified as whether the basement works will impact on the groundwater level locally, and whether this will impact on neighbouring properties, structures and services.

The surface flow and flooding screening identifies as a potential impact possible changes in the rate of surface water received by the existing combined sewer.

The Stage 2 scoping lists four issues from the slope stability screening, these being the potential for damage to neighbouring buildings, possible impact on the Network Rail tunnel, impact on the aquifer and groundwater flow regime, and potential damage to trees.

CPG4 suggests that a conceptual ground model be established as part of Stage 2; the BIA does include a ground model, but it is provided in Stage 3.

Each of the issues identified in Stage 1 for further assessment are addressed in Stage 2 of the BIA; hence the stage is present and meets the requirements of CPG4.

Stage 3 of the BIA process requires site investigation and study. The 'Arup report' provides guidelines on the scope of the site investigation, with the recommendation that it follows a multi-stage approach of Desk Study, intrusive investigation, monitoring, reporting and interpretation.

It is evident from the discussions within the BIA that the current BIA document supersedes a previous BIA, produced for a previous planning application. Reference within the BIA is made to a desk study and ground investigation report and a supplementary ground investigation report, both produced by GEA in 2011. However, these reports do not appear to be appended to the BIA, nor included within the supporting documents available from LBC's online planning portal. Additional groundwater monitoring is reported to have been undertaken by Arup in June 2014, though again, the factual report is not included within the planning submission documentation.

From the BIA, it is apparent that the earlier intrusive investigation works were not surveyed to Ordnance Survey datum, but an attempt is made within the BIA to establish the ground level at each of the investigation points, by reference to a current site survey.

The BIA refers to groundwater readings spanning in excess of two years, with readings from August/September 2011 and June 2014.

The 'Arup report' provides guidance on monitoring, stating that "…if the matter of concern is the potential for groundwater flooding, measurements should be taken during the period of the year when groundwater levels are naturally at their highest (March or April)". The potential for ground water issues in the Claygate Member is well known, so groundwater levels are reasonably 'a matter of concern', and the identification in the subterranean flow screening assessment of an aquifer on the site means that they were identified as such within the BIA. As noted, the date of the groundwater monitoring does not correspond well to the period of the year when the 'Arup report' indicates groundwater should be expected to be at its highest. However, the readings do show the groundwater to be significantly below the proposed basement formation level, and hence it is not considered that seasonal variation of the groundwater level would undermine the conclusions of the BIA.

A full geotechnical interpretation of the ground conditions, based on the data available to Arup, is appended to the BIA. It is noted that Arup recommend further ground investigations be undertaken to validate conclusions of the BIA.

The BIA does contain a Stage 3 – Site investigation and study stage. While it is apparent that the site investigation works were undertaken prior to the (current) BIA being undertaken and not following Stages 1 and 2 of the BIA process, and it is noted that the

factual reports of the site investigation works have apparently not been submitted as supporting documents, it is considered that the Stage 3 of the BIA is sufficiently comprehensive and meets the requirements of CPG4.

Stage 4 of the BIA process requires an impact assessment, whereby the direct and indirect implications of the proposed project are evaluated. This is intended to address those issues identified in the scoping stage.

The BIA does include a Stage 4 impact assessment, in which each of the issues that were identified in Stage 1 of the assessment are specifically addressed, and in each case, the impacts are shown to be tolerable.

In the assessment of ground movement, there is a minor inconsistency in the value of drained stiffness value recommended for the made ground, with section C6.1 giving a value of 5MPa, while elsewhere, a value of 10MPa is stated. However, it is not considered that this will have materially affected the results of the analysis.

It is considered that a BIA Stage 4 is present, and addresses the issues identified in the earlier stages of the process in an adequate manner.

Each of the required Stages of the BIA is present, and addresses the relevant issues. It is hence considered that the submission does contain a Basement Impact Assessment which has been prepared in accordance with the processes and procedures set out in CPG4.

5. Assessment of methodology

The proposed works involve the formation of the new basement through the installation of a contiguous piled retaining wall around three sides of the proposed basement footprint to form the new perimeter walls, with the excavation linked to the lower ground floor level of the rear light well to the existing structure via a battered slope.

High level propping is proposed to be installed early in the construction process, with permanent propping of the retaining wall achieved by the base slab and top slab. The proposed methodology demonstrates a practical route for the proposed piling equipment to access the work site.

It is considered that the methodology is appropriate to the form and scale of the proposed development and the nature of the ground conditions.

6. Basis of BIA conclusions

The conclusions of the BIA are based on a previous ground investigation (including a desk top study), though the ground investigation report is not included within the documents submitted as part of the application. The BIA states that “preliminary trial digs /pits to confirm all founding levels” are needed, and that the BIA was written with the expectation that further site investigation would be undertake to confirm the assumptions and conclusions within the BIA.

The interpretation of the data from the investigation appears to have been undertaken sensibly, such that the conclusions are generally reliable, and the assessment has been undertaken with an appropriate degree of conservatism.

The BIA has been jointly authored by staff from Arup; however, while the individual authors, the checker and approver are identified, the professional qualifications of each are not listed, so it is not proven that the BIA was prepared by individuals holding the professional qualifications required by CPG4.

7. Requirements of DP27

Camden Development Policy DP27 refers to "larger schemes, where the basement development extends beyond the footprint of the original building or is deeper than one full storey below ground level (approximately 3 metres in depth)". Since the proposal extends beyond the footprint of the existing structure, the requirements of 'larger schemes' apply.

The requirement of DP27 for "larger schemes" is that evidence is provided that the development will "not harm the built and natural environment or local amenity". The information to be provided is not fixed, but should be in scale with the nature and size of the development. However, it is clear that evidence must be provided to address points (a) to (h) of policy DP27. Points (a) to (c) are specifically relevant; the developer is required to demonstrate "by methodologies appropriate to the site that schemes:

a) Maintain the structural stability of the building and neighbouring properties;
b) Avoid adversely affecting drainage and run-off or causing other damage to the water environment;
c) Avoid cumulative impacts upon structural stability or the water environment in the local area;"

The impact of potential ground movements resulting from the scheme on the structure of 22 Thurlow Road and on the neighbouring buildings is shown to be limited, and at a level that is generally considered to be tolerable. It is thus considered that maintenance of structural stability has been demonstrated.

Similarly, the impact of the scheme on ground water and surface water flow is shown to be negligible, and hence it is considered that it has been demonstrated that there will be no adverse effect on the water environment.

The potential for cumulative impacts is not expressly considered. However, since there is no basis to anticipate any adverse effects on the water environment, there is no basis to anticipate cumulative effects on the water environment. Some (tolerable) impact is predicted for the neighbouring structures, and hence there is the potential for cumulative impact. This is not specifically addressed, but it is considered that given the limited impact the proposed works are shown to have there is no practical possibility of cumulative impact on structural stability reaching an intolerable level.

Considerations (d) to (h) in DP27 address issues on amenity, landscaping, including loss of trees "of townscape or amenity value" and archaeology. Such issues are outside the scope of a geotechnical review of the BIA.

8. Neighbours' concerns

A number of objections to the scheme have been raised by neighbours and the local Society (The Heath and Hampstead Society). The majority of these relate to issues of the character of the development, and are therefore not relevant to the issues covered by the BIA.

Non-specific concerns are raised regarding the proposed basement construction having the potential to damage neighbouring properties. It is considered that these have been adequately addressed by the ground movement assessment undertaken by Arup in the BIA.

One respondent notes that the property to the rear of the applicant site (4A Lyndhurst Road: identified as 4 Lyndhurst Road in the BIA) is closer than shown in the BIA, following an extension (planning permission stated as having been granted in 2012). It is noted both in the BIA and by the respondent that the Lyndhurst Road property is at a lower ground level than the site at Thurlow Road. Given also the distance between the two properties, it is clear from the data within the BIA that there is no likelihood of significant ground movements affecting the Lyndhurst Road property (whether the main structure or the garden wall). Since the impact of the proposed works on the groundwater are in general negligible, there is similar no basis to anticipate harmful impact on the groundwater or surface water regime at the Lyndhurst Road site. It is therefore concluded that the concerns of the respondent for the impact on the Lyndhurst property are unjustified.

It is concluded that the neighbours' concerns identify no specific issues that have not been adequately addressed within the BIA

9. Recommendations

As noted, the submitted BIA is generally comprehensive, and appears to address all the issues required by CPG4/DP27. There are two deficiencies requiring attention before the application can progress through the planning process. There are a number of other points which it is suggested should be addressed prior to construction, but which are not considered to be an obstruction to the award of planning permission.

9.1. Issues to be addressed prior to planning permission being granted

The BIA submitted to support the application for 22 Thurlow Road is comprehensive and adequately addresses all required issues. The objections presented against the scheme raise no issues that required further submissions before planning permission might be granted (in respect of the BIA process and CPG4/DP27).

However, CPG4 has a clear requirement for minimum professional qualifications for the individuals responsible for producing a BIA. While the submitted BIA identifies the individual authors and others associated with its production, their professional qualifications are not listed. It is therefore recommended that the applicant be asked to provide these details, such that compliance with CPG4 can be confirmed, prior to any planning permission being granted.

The BIA makes reference to an existing ground investigation, but while there is some interpretation of the ground investigation data presented within the BIA, the investigation report is not amongst the documents submitted in support of the application. Since the conclusions of the BIA are based on information from the site investigation, the investigation reports are integral to the BIA, and it is therefore recommended that the applicant be required to submit these before the application progresses further.

9.2. Issues to be addressed following planning permission being granted

The BIA identifies three issues where it is recommended that additional works should be undertaken:

- Network Rail should be contacted to discuss their requirements in respect of impact of the proposed scheme on the NR tunnel.
- Additional ground investigation works should be undertaken to confirm the interpretation of the ground conditions presented in the BIA.
- Pitting should be undertaken at the start of the construction process, to confirm existing foundation depths.

It is considered that the assumptions made within the BIA in respect of the above points are all reasonable, showing appropriate conservatism and engineering judgement, and that therefore the BIA is sufficiently reliable to enable the application to progress. However, it is recommended that all the above points should be made conditions of the award of any planning permission.

Specifically, the applicant should provide evidence that the additional ground investigations have been carried out and that they have confirmed that the ground conditions are as the BIA assumes.

It is suggested that, as far as is practical, the pitting works should be undertaken prior to construction, as part of the suggested additional investigation works.

10. Conclusion

GCG were appointed by London Borough of Camden to review Basement Impact Assessment documentation relating to planning application 2014/4264/P for 22 Thurlow Road NW3 5PP, to determine compliance with the requirements of CPG4 and DP27.

Geotechnically, the proposed scheme appears viable, with an appropriate methodology for construction having been selected.

The submitted BIA documentation is comprehensive and addresses the issues required. It is considered that the submission is compliant with CPG4 and the requirements of DP27 (a to c), except for evidence that the authors of the BIA have the appropriate professional qualifications is required. The ground investigation reports on which the BIA is based should also be submitted by the applicant.

The BIA included recommendations for additional works, and it is suggested that these should be included as conditions of any award of planning permission.

This report was completed by Dr Phil Smith on behalf of GCG LLP; the report was peer reviewed by Dr Felix Schroeder and Dr Jackie Skipper, both of GCG.

The author's and reviewers' technical and professional qualifications are as follows:

Phil Smith: BEng, MSc, PhD, DIC

Felix Schroeder: MEng, PhD, DIC, CEng, MICE

Jackie Skipper: BSc, PhD, DIC, CGeol, FGS.

11. References

The following documentation was reviewed:

Information submitted by the applicant to LBC, and downloaded from the LBC 'planning portal' website or provided directly by LBC to GCG:

- 22 Thurlow Road. Basement Impact Assessment. Job number 234937. Document reference: REP-GEO-001. By Arup. Revision 1. Dated 10 July 2014.
- 22 Thurlow Road. Design and Access Statement. June 2014.
- Tree constraints plan. 22 Thurlow Road, London, NW3 5PP. By Barnaby Gunning Architecture. Dated 14 July 2014.
- Tree protection measures. 22 Thurlow Road, London, NW3 5PP. By Barnaby Gunning Architecture. Dated 18 June 2014.

List of drawings reviewed:

- 266_G_010 Rev A: Lower Ground Floor, Existing (dated 18 June 2014)
- 266_G_011 Rev A: Upper Ground Floor, Existing (dated 18 June 2014)
- 266_G_012 Rev A: First Floor, Existing (dated 18 June 2014)
- 266_G_013 Rev A: Second Floor, Existing (dated 18 June 2014)
- 266_G_014 Rev A: Roof Plan, Existing (dated 18 June 2014)
- 266_G_015 Rev A: Elevation to Thurlow Road, Existing (dated 18 June 2014)
- 266_G_016 Rev A: South Elevation, Existing (dated 18 June 2014)
- 266_G_017 Rev A: West Elevation, Existing (dated 18 June 2014)
- 266_G_018 Rev A: East Elevation, Existing (dated 18 June 2014)
- 266_G_020 Rev A: Cross Section BB, Existing (dated 18 June 2014)
- 266_G_022 Rev A: North Elevation, Existing (dated 18 June 2014)
- 266_G_110 Rev A: Proposed Lower Ground Floor Plan (dated 23 June 2014)
- 266_G_111 Rev A: Proposed Upper Ground Floor Plan (dated 23 June 2014)
- 266_G_112 Rev A: Proposed First Floor Plan (dated 23 June 2014)
- 266_G_113 Rev A: Proposed Second Floor Plan (dated 23 June 2014)

- 266_G_114 Rev A: Proposed Roof Plan (dated 23 June 2014)
- 266_G_115 Rev A: Elevation to Thurlow Road, Proposed (dated 23 June 2014)
- 266_G_116 Rev A: South Elevation, Proposed (dated 23 June 2014)
- 266_G_117 Rev A: West Elevation Proposed (dated 23 June 2014)
- 266_G_122 Rev A: North Elevation Proposed (dated 23 June 2014)
- 266_G_118 Rev A: East Elevation Proposed (dated 23 June 2014)
- 266_G_120 Rev A: Cross Section BB Proposed (dated 23 June 2014)
- 266_V_130 Rev A: Perspective View (dated 18 June 2014)
- 266_V_131 Rev A: Perspective View (dated 18 June 2014)

Objections to the scheme:

The consultation responses present on the 'planning portal' website were reviewed; these included comments from private individuals and the Heath and Hampstead Society.

Additional documentation reviewed:

- Camden geological, hydrogeological and hydrological study; Guidance for subterranean development, Issue 01, November 2010 ('The Arup report').
- Camden Planning Guidance, basements and lightwells, CPG4, 2013.
- Camden Development Policy DP27: Basements and lightwells. (Camden Development Policies 2010-2025).