London Borough of Camden

37 & 39 Rudall Crescent
London, NW3 1RR

ASSESSMENT OF DOCUMENTATION SUBMITTED TO SUPPORT PLANNING APPLICATION 2013/0824/P

November 2013

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1. Introduction

A planning application has been submitted to London Borough of Camden for the creation of a new basement and various other works at 37 & 39 Rudall Crescent, London NW3 1RR. Supporting documentation has been submitted with the application, including a factual geotechnical report, a geotechnical interpretive report, a ground movement assessment report and a Basement Impact Assessment report. Objections to the proposals have been raised by the neighbours / local residents' association, on behalf of whom two technical reports have been prepared and submitted to the planning authority.

London Borough of Camden (LBC) previously commissioned Geotechnical Consulting Group LLP (GCG) to undertake a review of the documentation submitted in support of the planning application to confirm whether it met the requirements of the planning process, and to review the objections raised, to establish whether these were reasonable, and whether the planning applicant had put in place adequate measures to address these issues. GCG's report was completed and submitted to LBC in June 2013.

In response to the GCG report, the applicant submitted further documentation in July 2013. There followed a further period of public consultation, when additional objections were raised, to which the applicant then responded.

GCG have been instructed by LBC to undertake a further review of the documentation supporting the application, and of the objections raised.

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

For a full list of documentation submitted prior to the previous review, refer to the GCG review report dated June 2013. The following additional documentation was supplied by LBC for the additional review presented herein:

- 37 & 39 Rudall Crescent, Response to GCG Review question. (Undated) Authored by RKD, RSK and Edge Structures.

- 37 & 39 Rudall Crescent. Basement Construction Sequence and Methodology. Revision G, produced by Edge Structures Limited. (05 July 2013).

- 37 & 39 Rudall Crescent. Construction Management Plan 03, revision 02 by Webb Architects Ltd. (Undated).

- TTP Transport note, Rudall Crescent. Dated May 2013.

- Planning application 2013/0824/P – Basement Extension of 37 & 39 Rudall Crescent. Letter report to Mrs Rachel Kidd (41 Rudall Crescent). Report reference G1201/13H22RK1. Dated 22 August 2013. Produced by Eldred Geotechnics Ltd.

- "37/39 Rudell Crescent – Response to invitation to comment", letter from Webb Architects Limited to LBC dated 24th September 2013.

Additionally, the drawings submitted to accompany the above documentation, listed in full in section 9, were reviewed.

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.

3. Review Requirements

GCG were instructed to undertake the review of the additional information submitted by the applicant with a view to ascertain:

1. Whether the additional information submitted adequately addresses the concerns raised in the GCG review report dated June 2013.

2. Whether the Eldred geotechnics report raised reasonable concerns that should be addressed prior to planning permission being granted.

3. Whether, taking into account points 1 and 2 above, the application now satisfies the requirements of DP27 that the proposed development "does not cause harm to the built and natural environment and local amenity and does not result in flooding or ground instability". The applicant must demonstrate by "appropriate" methodologies that the scheme will (a) maintain the structural stability of the building and neighbouring properties; (b) that it will avoid adversely affecting drainage and run-off or causing other damage to the water environment; and that (c) it will avoid cumulative impacts upon structural stability or the water environment in the local area.

4. Issues identified to be addressed in June review

The following issues were identified in the June review as needing to be addressed prior to granting of planning permission:

i. Calculations should be provided to demonstrate the stability of the base of the excavation against inflow of groundwater
ii. A method statement indicating how all necessary plant will access the site, in particular how the required piling plant will access the back garden, should be provided.
iii. The discrepancy in the sequence of works should be resolved.

The following additional issues were noted as requiring to be addressed prior to the commencement of construction, and so were recommended as conditions of granting planning permission, but did not require to be fully addressed prior to planning consent being granted:

iv. Monitoring of the groundwater instrumentation installed on site as part of the intrusive ground investigations should be recommenced and continued until at least 1 full years' worth of data is obtained, or until construction is commenced. It is recommended that this be carried out through the use of 'diver' style pressure transducers, providing continuous monitoring data; this would enable concerns regarding potential pulses of groundwater due to rainfall to be more accurately quantified, and thus reduce the probability of the contractor encountering unexpected conditions.
v. Measures to be taken in the event that unexpected ground conditions are encountered should be established.
vi. The method of groundwater control and temporary face support to the excavations that will be used in the event of inflow during underpinning or construction of the kingpost walls should be detailed.
vii. The issue of uplift on the basement slab in its temporary condition during construction should be addressed.
viii. Minor inconsistencies in the proposed construction sequence should be identified and clarified and a final proposed construction sequence established.
ix. Design of the King Post walls, for both ground support and as temporary works foundations for the rear elevation, should be completed.
x. A monitoring regime should be established to determine movement of the surrounding structures, including the public highway, with trigger levels set for movement, and appropriate actions planned for the event that trigger levels are reached.

It was also recommended that a pre-condition survey of the neighbouring properties be undertaken, to form a reliable baseline to establish whether damage has occurred during construction.

5. Developer's response

A full review of the requirements of a Basement Impact Assessment was provided in the GCG June report, and so will not be repeated here. Rather, the response of the developer to each of the points listed in section 4 above will be reviewed.

(i) The applicant's response demonstrates that inflow volumes are likely to be very small, and easily controllable, but does not fully address the issue raised. The applicant has not shown that inflow of water under the underpins and king post wall into the basement excavation will not create an upward hydraulic gradient sufficient to cause instability and uplift of the base of the excavation. **This point has not been adequately addressed.** Additionally, the proposal to pump from sumps in the base of the excavation will likely cause some drawdown of the phreatic surface, so has the potential to cause consolidation settlement of the surrounding ground, and hence potentially damage to the neighbouring structures. There appears to be no evidence that this has been considered by the applicant.

(ii) The applicant has provided details of a typical restricted-access rig, but it is still unclear how access would be achieved to the rear of the property. The details indicate that the rig is likely to be 2m wide in transport mode; from a review of the existing structure Ground Floor plan (Dwg 1168-50-P2, as submitted for the June documentation review) there is no obvious route through the structure, and in particular no opening in the rear wall wide enough to accommodate the machine. It looks like it might be credible to pass through the front façade through either the garage door or the window to the living area, but the largest opening in the rear wall appears to be the double door in the rear of No 37. From the existing ground floor plan, this appears to be about 1.7m wide. The existing rear elevation (dwg 1083-03-03(-)) shows the lintel over this doorway as fractionally wider than the doorway itself (apparently about1.95m), and thus temporary works to support the structure would appear to be required. While it is not anticipated that these would imperil the stability of the existing or neighbouring structure, the onus is on the developer to demonstrate an appropriate methodology to maintain structural stability. Since the proposed methodology depends on a machine accessing the rear of the property, the viability of the scheme as proposed remains questionable until a suitable access route has been proven to exist. **Thus it is not considered that this point has been adequately addressed.**

(iii) In the originally submitted documentation, the Webb Architects Ltd Construction Management Plan 03 (rev 0) stated that underpins were to be constructed to the front, rear and party walls, contradicting the stated intention to use king post walls front and rear (as, for example, stated in the Edge Structures' 'Basement Construction Sequence and Methodology'). A revised Construction Management Plan 03 (rev 02) has been submitted which no longer includes a suggested work sequence, but instead refers to the RKD and Edge Structures documentation. The intended sequence, as given in the revised Edge Structures' 'Basement Construction Sequence and Methodology, Revision G' now appears unambiguous. **It is considered that this point has now been adequately addressed.**

(iv) The recommendation to continue groundwater monitoring up to and throughout basement construction has been accepted. **This point has now been adequately addressed.**

(v) The applicant has not provided details of what measures would be taken in the event of unexpected ground conditions, but has confirmed that the underpins are to be closely boarded. Commencing underpinning works on the central wall should minimise any risk to the neighbouring properties if ground conditions do vary significantly from what is anticipated, and will provide an opportunity for methodology to be reviewed. In practice, it would be very difficult to detail effective measures to deal with any form of unexpected ground conditions that might be encountered, since by definition, they are unexpected. The applicant's response indicates an awareness of the potential for ground conditions to vary, and an understanding that the methodology will need to be reviewed as work progresses, to ensure that it remains appropriate and safe for the conditions encountered on site. **The response to this point is considered to be adequate.**

(vi) The response to point (i) demonstrated how ground water pressure beneath the excavation would be controlled. However, the proposed groundwater controls do not address how lateral ground water flow through the sides of the excavation will be addressed, should this occur. The proposed drainage measures will only prove effective in controlling lateral flow through the excavation sides if significant drawdown of groundwater occurs. The use of close boarding will provide support to the face 'in bulk', but will not stop water flow, nor ensure that if such flow occurs, internal erosion of the soil cannot occur. The application is reliant on the soil profile being as described by the site investigation, from which it is reasonable to expect little if any lateral flow. However, given the known variability of the soil and the potential impact of significant uncontrolled water inflow (as has been demonstrated by a reported failure in similar ground conditions and with an apparently similar scheme), it is appropriate that a contingency plan should be developed to address the possibility of lateral inflow. The measures proposed seem adequate for the probable ground conditions, but the applicant has not provided details of how ground water inflows will be monitored during the course of the works to ensure that they are as expected, nor what actions will be taken in the event that flows are greater than expected. It has thus not been adequately proven that the scheme will not result in ground instability. **The response is thus not considered adequate.**

(vii) The applicant has presented a viable methodology for addressing uplift pressures due to groundwater pressures acting on the base of the basement slab during construction (by using sumps-and-pump to depressurise under the slab during construction. **The response to this point is adequate** (though as noted in point (i) above, the impact on the neighbouring structures of lowering the phreatic surface in this manner has not been established).

(viii) The applicant has addressed some of the inconsistencies, and reasonably notes that final details are determined during final design, to occur after award of planning permission. However, it is noted that the king post adjacent to No 35 has apparently now been deleted from the scheme. It is now unclear how this end of the rear king post wall will be supported. Since this has significant implications for potential ground movements, the applicant should clarify this detail prior to award of planning permission.

(ix) The design of the king post wall needs to be completed prior to construction; this is accepted by the applicant. The response indicates that the applicant has suitable processes in place to complete and check the design. **The response to this point is adequate.**

(x) The applicant accepts the recommendation to establish monitoring; details to be agreed with the adjoining owners' party wall surveyors. **The response to this point is adequate.**

6. Eldred Geotechnics Ltd August 2013 report

The Eldred Geotechnics Ltd report raises a number of issues.

The degree of detail and consistency of the submission is questioned, with respect to the requirements of DP27. Clearly, the applicant must demonstrate a scheme that is credible, and which meets the requirements that it "does not cause harm to the built and natural environment and local amenity and does not result in flooding or ground instability". However, it would seem unreasonable to require an applicant to develop in full a proposed construction scheme prior to seeking planning permission. Therefore, there will inevitably be some aspects of the scheme that are not fully developed at the point that planning permission is sought. Where such details are fundamental to the constructability of the project, or critical to the projected impact of the development on structures, drainage or the water environment, it is correct that they be addressed prior to planning permission. Otherwise, it is not unreasonable that such points be addressed in detailed design post planning approval.

Regarding the specific issue of the Webb Architects Construction Management Plan 03, this appears to have been produced as revision 02 at the end of May 2013, before the GCG review report was issued (though it was the earlier Rev 00 that was supplied to GCG for review). The applicant's response to point 5(iii) listed in the June GCG report (point iv above in this report) suggests that they were referring to the more recent Rev 02 issue of the CMP. While the Rev 00 version of the Construction Management plan did contain a suggested work sequence, this was deleted from the later Rev 02. The June GCG review was undertaken referring to the Rev 00, and it appears that this is also the revision to which the Eldred report of August refers.

Issues from the earlier (March 2013) Eldred Report are clarified regarding potential ground instability and water conditions, to the effect that the applicant should demonstrate an awareness of the possibility that conditions might be worse than expected, and have contingencies in place to deal with this if the situation arises. It seems reasonable that the applicant should propose a scheme appropriate to the ground conditions expected, based on site specific GI, but have a contingency to deal with credible but worse than expected conditions, where such conditions could have a significant negative impact on the stability of adjacent structures.

The Eldred report correctly notes that the applicant's drainage proposal, if implemented, is likely to result in drawdown of the groundwater level, and so have an unassessed impact on surrounding structures. The lack of specific measures identified to control lateral flow, should it occur, is also noted. Both of these aspects have the potential to negatively impact on the structural stability of neighbouring structures.

7. Webb Architects Limited response, September 2013

Much of this document addresses issues other than the Basement Impact Assessment and related matters, so is not considered herein. Only section 5.02 appears to refer to aspects connected with the Basement Impact Assessment and clauses (a) to (c) of DP27. The applicant presents his opinion of the requirements of DP27. This appears to be sensible, and corresponds to the interpretation of the requirements presented herein above.

The specific issues raised by the Eldred report of August 2013 do not appear to have been addressed.

8. Compliance with requirements

The June 2013 GCG report identified three issues that needed to be resolved prior to planning permission being granted, and a further seven issues that would require addressing prior to construction, but which were not considered to be an impediment to granting planning approval.

Of the three main issues, the revised submission has satisfactorily addressed only one.

Of the seven issues that may be addressed following planning permission, adequate responses to all but one have been provided; the response in these cases is generally to provide assurance that actions will be undertaken prior to construction, rather than to provide a definitive answer at this stage. As such, undertaking the requisite actions prior to construction should remain as conditions of planning permission.

Additionally, two further issues have been identified from the revised submission documents that require clarification prior to planning permission being granted.

Outstanding issues to be resolved prior to award of planning permission:

(a) Demonstrate that the base of the excavation is stable against upward hydraulic flow.
(b) Demonstrate a feasible access route for a piling rig through the existing structure such that no demolition of existing structural elements is required, or identify what structural elements will need to be demolished and present a suitable proposed temporary works methodology to accompany this, to demonstrate that structural stability can be maintained. Alternatively, the applicant should provide details of a different methodology for getting suitable equipment to the rear of the existing property.

New issues to be resolved prior to award of planning permission:

(c) Confirm that the newly proposed drainage scheme will not result in ground settlement and unacceptable building damage to the neighbouring structures.
(d) Demonstrate/describe how the stability of the rear wall to the excavation will be maintained if there is no king post adjacent to No35 to ‘anchor’ the end of the wall.

Issues requiring further clarification or development prior to construction:

(e) A system for monitoring groundwater inflow into the basement during construction and a contingency plan for dealing with unexpected water inflow should be developed.

9. Conclusion

GCG were previously appointed by London Borough of Camden to review documentation relating to planning application 2013/0824/P for 37 & 39 Rudall Crescent, to determine compliance with the requirements of CPG4 and DP27, and to identify issues raised in objection to the proposed scheme in expert reports commissioned on behalf of the neighbours that needed to be addressed either prior to the award of planning permission, or as conditions to be attached to such permission being granted. GCG reported this review in June 2013.

Revised submission documents have been submitted by the applicant in response to this earlier GCG report, and London Borough of Camden again appointed GCG to undertake a further review of the updated submission. The purpose of this review was to determine whether the previously identified issues had been adequately addressed, whether the latest Eldred Geotechnics report raised reasonable concerns requiring further submission prior to planning permission, and whether the application satisfies the requirement of DP27 to demonstrate that the development proposed "does not cause harm to the built and natural environment and local amenity and does not result in flooding or ground instability".

The additional information supplied has improved the standard of the submission, but there remain some issues that are still unclear, and which have the potential to result in damage to neighbouring structures, so require further information to provide the positive evidence required to satisfy the requirements of DP27. Two additional issues have been identified, resulting from the revised details submitted.

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.

10. References

The following documentation was reviewed:

Information submitted by the applicant to LBC:

- 37 & 39 Rudall Crescent, Response to GCG Review question. (Undated) Authored by RKD, RSK and Edge Structures.
- 37 & 39 Rudall Crescent. Basement Construction Sequence and Methodology. Revision G, produced by edge structures Limited. (05 July 2013).
- 37 & 39 Rudall Crescent. Construction Management Plan 03, revision 02 by Webb Architects Ltd. (Undated).
- TTP Transport note, Rudall Crescent. Dated May 2013.
- Drawings as follows:

  Drawing 1083.01.41(F). Proposed Construction management plan.

  Drawing 2011-1170-CR-101 Small tipper swept path analysis – Anti-clockwise

  Drawing 2011-1170-CR-102 Small tipper swept path analysis – Clockwise

  Drawing 1168_108 P4 Proposed Refurbishment: Structural Proposals Basement Plan (Option B)

  Drawing 1168_110 P4 Proposed Refurbishment: Structural Proposals Ground Floor Plan

  Drawing SK-ALP 28/06/13. Temporary Drainage Slots

  Webb Architects drawings:

  1083.01.21(G) Proposed Basement Floor Plan

  1083.01.22(F) Proposed Ground Floor Plan

  1083.01.23(F) Proposed First Floor Plan

  1083.01.24(F) Proposed Second Floor Plan

  1083.01.25(D) Proposed Roof Plan

  1083.02.16(-) Proposed Section GG

  1083.04.13(-) Proposed Front Garden Ramp Plan

  1083.02.16(A) Proposed Section GG

  1083.04.13(A) Proposed Front Garden Ramp Plan

Reports submitted in objection to proposed scheme:

- Planning application 2013/0824/P – Basement Extension of 37 & 39 Rudall Crescent. Letter report to Mrs Rachel Kidd (41 Rudall Crescent). Report reference G1201/13H22RK1. Dated 22 August 2013. Produced by Eldred Geotechnics Ltd.

Additional documentation reviewed or referred to:

- Camden geological, hydrogeological and hydrological study; Guidance for subterranean development, Issue01, November 2010 ('The ARUP report').
- Camden Planning Guidance, basements and lightwells, CPG4 (2013)
- Camden Development Policy DP27: Basements and lightwells
- 37 & 39 Rudall Crescent. Assessment of documentation submitted to support planning application 2013/0824/P. GCG. Dated June 2013