



Broxwood View Limited

**Barrie House, 29 St
Edmund's Terrace, London**
*Comparative Review of CGL BIA
Revision 2 and Revision 4*

April, 2024

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Dear Charlotte,

Barrie House, 29 St Edmund's Terrace, London – Comparative Review of CGL BIA Revision 2 and BIA Revision 4

Card Geotechnics Limited (CGL) has been commissioned by Broxwood View Limited to provide a comparative review of CGL Basement Impact Assessment (BIA) Report Revision 2¹ issued in May 2018 and Revision 4² issued in April 2023.

The latest Campbell Reith BIA audit report on the Camden planning portal for planning application no. 2018/0645/P is revision F1 dated July 2018³. This considers Parmarbrook BIA report Revision 2 which appends the CGL BIA Revision 2¹ issued in May 2018. The Campbell Reith audit concludes that the proposal conforms to the requirements of CPG Basements. Therefore, it is understood that the CGL BIA Revision 2 has been accepted by Camden for the scheme. The proposed development has since progressed and CGL BIA Revision 4² (issued in April 2023) reflects what is currently proposed to be built on site. This report provides a comparative review of CGL BIA Revision 2¹ and Revision 4² and commentary on the impact of these changes.

For context, Barrie House comprises an eight storey T-shaped apartment block with a one storey structure to the east. A two storey Porter's lodge was located in the north-west corner of the site. A car park was located north of Barrie House as shown in Plate 1 below.

Plate 1: Original site layout.



¹ CGL (May 2018) *Barrie House. Basement Impact Assessment Revision 2* CG/28408B

² CGL (April 2023) *Barrie House, 29 St Edmund's Terrace, London. Basement Impact Assessment – Revision 4* CG/28408B

³ Campbell Reith (July 2018) *29 Barrie House, St Edmund's Terrace, London NW8 7QH. Basement Impact Assessment Audit. Ref. 12727-47 Revision F1*

The proposed development comprises a four to five storey extension including one basement level in the north of the site over the historical car park and one basement level beneath a limited area of Barrie House. Proposed basement plans are shown in Plate 2 and Plate 3 below.

Plate 2. Proposed basement beneath extension in Revision 4.

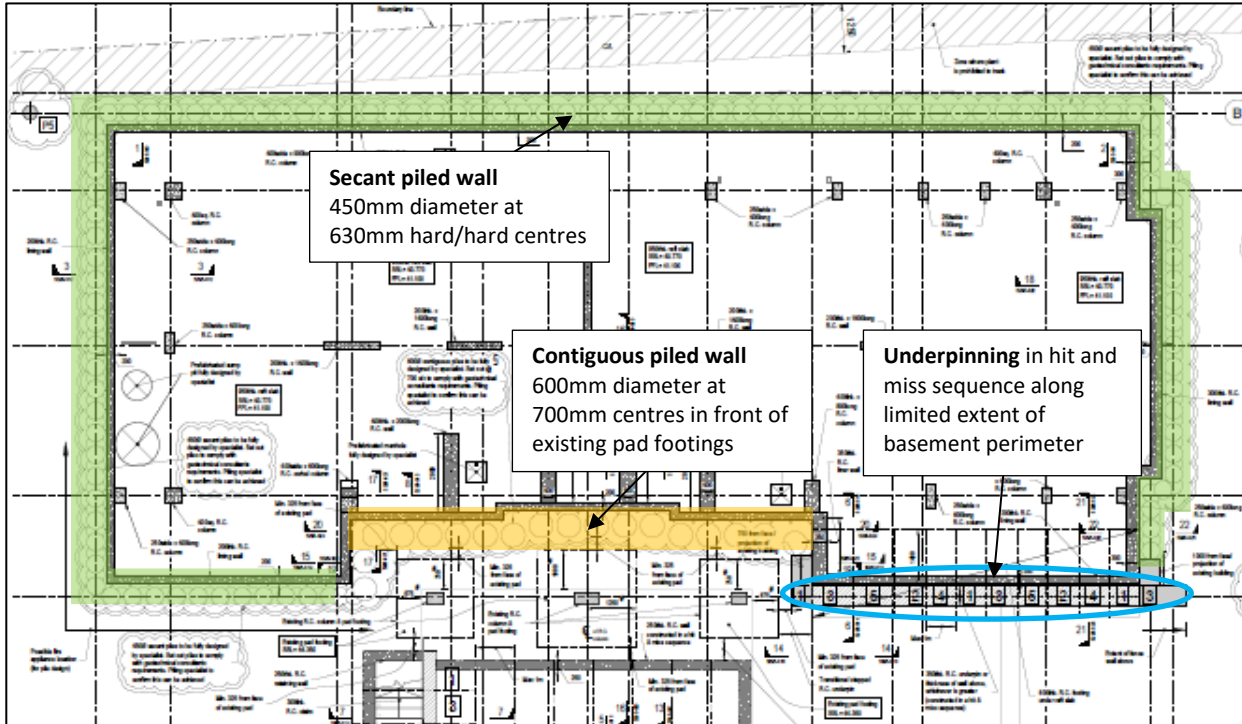
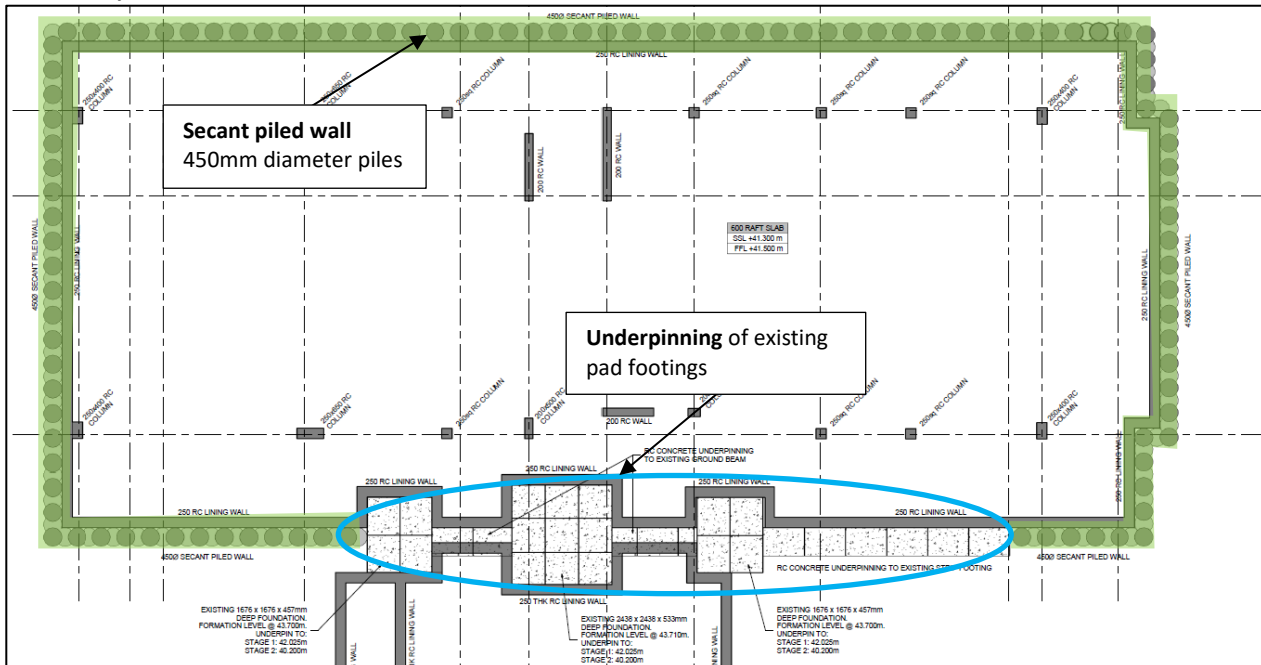


Plate 3: Proposed basement beneath extension in Revision 2.



A comparative review of the CGL BIA Revision 2¹ and Revision 4² is summarised in Table 1 below.

Table 1: Comparative review of CGL BIA Revision 2 and Revision 4.

CGL BIA Revision 2	CGL BIA Revision 4	CGL comment
2.3 Proposed Development	2.3 Proposed Development	
<p>Proposed basement beneath Barrie House:</p> <ul style="list-style-type: none"> • SSL = +42.8mOD FL = +42.5mOD • Founded on 300mm thick basement slab <p>Proposed basement beneath extension:</p> <ul style="list-style-type: none"> • SSL = +40.70mOD • FL = +40.20mOD • Founded on 500mm thick pad foundations • Constructed within a 450mm diameter secant piled wall • In front of the existing Barrie House pads, it is constructed by underpinning the existing pad foundations 	<p>Proposed basement beneath Barrie House:</p> <ul style="list-style-type: none"> • SSL = +42.475mOD to +42.875mOD • FL = +42.175mOD to +42.575mOD • Founded on 300mm thick basement slab <p>Proposed basement beneath extension:</p> <ul style="list-style-type: none"> • SSL = +40.770mOD • FL = +39.770mOD • Founded on a 950mm thick raft foundation • Constructed within a 450mm diameter secant piled wall • In front of the existing Barrie House pads, it is constructed within a 600mm diameter contiguous piled wall • Underpinning is proposed along a limited extent of the south-east perimeter • High and low level props utilised during excavation to minimise deflection 	<p>Underpinning of the existing pad foundations is no longer proposed. In front of the pads, the basement will now be excavated in front of a contiguous piled wall. Local underpinning of the one storey structure is proposed. CGL has previously provided a letter report⁴ in September 2022 concluding that the existing pad foundations are highly stressed and strongly recommended against underpinning the existing pad foundations. Therefore, the approach in Revision 4 preferred.</p> <p>The formation level of the basements are marginally deeper in Revision 4. The ground movement assessment has been updated accordingly and the resulting damage categories are discussed at the end of this table.</p>
3. Ground and Groundwater Conditions	3. Ground and Groundwater Conditions	CGL comment
<p>Geotechnical parameters are based on 2012 Soil Consultants ground investigation.</p> <p>The soil profile comprises of:</p> <ul style="list-style-type: none"> • Made Ground from +46.0mOD • London Clay Formation from +45.5mOD 	<p>Geotechnical parameters are based on 2012 Soil Consultants ground investigation and June 2022 CGL ground investigation.</p> <p>The soil profile comprises of:</p> <ul style="list-style-type: none"> • Made Ground from +46.0mOD • Head / Weathered London Clay Formation from +44.5mOD • Weathered London Clay Formation from +43.5mOD 	<p>The soil parameters in Revision 4 use the additional information from the CGL 2022 ground investigation. Therefore, the parameters are considered to be more accurate. Additionally, the Made Ground is deeper in Revision 4 and the strength of the Weathered London Clay Formation is lower, resulting in a more conservative assessment.</p>
4.2 Subterranean (Groundwater) Flow	4.2 Subterranean (Groundwater) Flow	CGL comment
<p>Further monitoring visits recommended to address Question 1b "Will the proposed basement extend beneath the water table surface?".</p>	<p>No action required.</p>	<p>Monitoring visits were carried out as part of the CGL 2022 ground investigation. Gas and groundwater monitoring standpipes were installed in four window sampler boreholes to a maximum depth of 5mbgl. Three gas and groundwater monitoring visits were undertaken between May and June 2022. Therefore, the recommendation in Revision 2 is addressed and closed out in Revision 4.</p>

⁴ CGL (07 September 2022) Barrie House, 29 St Edmunds Terrace, London – Discussion on Underpinning Ref. CG/28408B


CGL BIA Revision 2	CGL BIA Revision 4	CGL comment
4.3 Slope / Land Stability	4.3 Slope / Land Stability	CGL comment
Impact assessment recommended to close Question 5 “Is the London Clay the shallowest stratum on site?” and 13 “Will the proposed basement significantly increase the differential depth of foundations relative to neighbouring properties?”. An impact assessment is provided in the report.	Impact assessment recommended to close Question 5 “Is the London Clay the shallowest stratum on site?” and 13 “Will the proposed basement significantly increase the differential depth of foundations relative to neighbouring properties?”. An impact assessment is provided in the report.	No change.
4.4 Surface Flow and Flooding	4.4 Surface Flow and Flooding	CGL comment
No further action recommended.	No further action recommended.	No change.
5. Scoping	5. Scoping	CGL comment
This section recommends a ground movement assessment to determine the impact of the proposed development on neighbouring properties and further groundwater monitoring. An impact assessment provided in the report.	This section recommends a ground movement assessment to determine the impact of the proposed development on neighbouring properties. An impact assessment is provided in the report.	As above, the groundwater monitoring recommended in Revision 2 was completed as part of the CGL 2022 ground investigation and is addressed and closed out in Revision 4. An impact assessment is provided in Section 6 of the Revision 4 report.
7. Basement Impact Assessment	6. Ground Movement Assessment	CGL comment
Ground movements arising from pile wall installation and deflection, heave, construction loads and settlement of underpins analysed.	Ground movements arising from pile wall installation and deflection, heave, construction loads and settlement of underpins analysed.	No change.
Underpinning of the existing pad foundations is proposed. The formation level is +40.20mOD.	Underpinning is proposed along a limited extent of the south-eastern section of the proposed basement, adjacent to the existing one storey structure. The underpinning formation level is +39.2mOD.	In Revision 2, underpinning of the existing pad foundations was proposed. In Revision 4, the one storey structure is proposed to be underpinned and the existing pad foundations are no longer proposed to be underpinned. As per the CGL letter report provided in September 2022 ⁴ , the approach in Revision 4 is preferred because the existing pads are anticipated to be already highly stressed. The proposed underpinning formation level is deeper by 1m in Revision 4. The ground movement assessment has been updated accordingly and the resulting damage categories are discussed at the end of this table.
Piled wall installation and deflection movements calculated in accordance with CIRIA C760 guidance.	Piled wall installation movements are calculated in accordance with CIRIA C760 guidance. Piled wall deflection movements are assessed using WALLAP.	In Revision 4 the construction sequence, temporary props and surcharge of the existing Barrie House pad foundations have been input in WALLAP, which isn’t captured using C760 guidance. Therefore, deflections from the WALLAP assessment are more accurate and representative of the anticipated movements from the current design. The ground movement assessment has been updated accordingly and the resulting damage categories are discussed at the end of this table.

CGL BIA Revision 2	CGL BIA Revision 4	CGL comment
The toe level of the secant piled wall is +37.7mOD, assuming 3m embedment in lieu of detailed design.	The toe level of the secant piled wall is +36.6mOD. The toe level of the contiguous piled wall is +28.6mOD. The toe levels are taken from Deep Foundation Specialists Ltd detailed piled wall design report ⁵ .	The piled wall toe levels used in Revision 4 are those from the detailed design report by Deep Foundation Specialists Ltd ⁵ . Therefore, the assessment in Revision 4 is more accurate. The ground movement assessment has been updated accordingly and the resulting damage categories are discussed at the end of this table.
Buildings loads were provided by the structural engineer. Indicative pad dimensions were calculated and proposed loads input as patch loads in PDISP.	Building loads on the proposed raft foundation were provided by the structural engineer for the project and input as patch loads in PDISP.	The basement is now proposed to be founded on a 950mm thick raft instead of pad foundations. Loads on the raft were provided by the structural engineer. Therefore, the loads in Revision 4 are more accurate. The ground movement assessment has been updated accordingly and the resulting damage categories are discussed at the end of this table.
The predicted damage category is: <ul style="list-style-type: none"> 72 Kingsland: Damage Category 1 16 Kingsland: Damage Category 0 Barrie House single storey structure: Category 0 Barrie House block of flats: Category 1 	The predicted damage category is: <ul style="list-style-type: none"> 72 Kingsland: Damage Category 0 16 Kingsland: Damage Category 0 Barrie House: angular distortion is above 1/500 and building damage is negligible 	In Revision 4, the predicted damage to Barrie House and the neighbouring buildings are anticipated to be within acceptable limits.
The report recommends: <ul style="list-style-type: none"> Construction monitoring scheme will be required. A condition survey on all adjacent walls and property facades prior to works commencing 	The report recommends: <ul style="list-style-type: none"> Construction monitoring scheme will be undertaken. A condition survey on all adjacent walls and property facades prior to works commencing 	Not applicable.

⁵ Deep Foundation Specialists Ltd. (February 2023). *Broxwood View, 29 St. Edmunds Terrace, London, NW8 7QH. Detailed Design for ø450 Perimeter Secant Pile Retaining Wall, ø600 Perimeter Contiguous Pile Retaining Wall & ø300 Bearing Piles. Revision 4.* DFS221011.

Overall, the assessment in Revision 4 of the CGL BIA is more detailed and accurate to the current scheme than Revision 2. Revision 2 concluded that the predicted damage category for 72 Kingsland was Category 1 'very slight' and for 16 Kingsland the predicted damage category was Category 0 'negligible'. In Revision 4, the anticipated damage category for both 72 and 16 Kingsland is Category 0 'negligible' i.e. the damage category is the same or improved in Revision 4. In Revision 2, the worst-case predicted angular distortion of the existing Barrie House flats was $1/650$, above the Rankin criteria of $1/500$. In Revision 4, the predicted angular distortion of the pads is $1/640$, also above the Rankin criteria of $1/500$ and the damage category is anticipated to be 'negligible', similar to in Revision 2. Additionally, in front of the existing Barrie House pads the proposed basement will be constructed in front of a propped contiguous piled wall which is preferred over the method in Revision 2 of underpinning the pads. Overall, the predicted damage to Barrie House, 72 Kingsland and 16 Kingsland is considered to be within acceptable limits and the construction methodology, including temporary props and no longer underpinning the existing pads, is preferred / favourable to reduce potential movements.

Yours sincerely,



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