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consulting engineers

17 Branch Hill, London, NW3 7NA

Basement Impact Assessment Audit

For

London Borough of Camden

Project Number: 12066-49
Revision: F3

January 2016

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Document History and Status

Revision	Date	Purpose/Status	File Ref	Author	Check	Review
D1	October 2015	Comment	RMjw12066-49-011015-17 Branch Hiil-D1.doc	R Morley	A Marlow	E Brown
F1	November 2015	For planning	RMjw12066-49-191115-17 Branch Hill-F1.doc	R Morley	A Marlow	E Brown
F2	November 2015	For planning	RMjw12066-49-261115-17 Branch Hill-F2.doc	R Morley	A Marlow	E Brown
F3	January 2016	For planning	RMjw12066-49-280116-17 Branch Hill-F3.doc	R Morley	E Brown	E Brown

Document Details

Last saved	29/01/2016 12:10
Path	RMjw12066-49-280116-17 Branch Hill-F3.doc
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Project Number	12066-49
Project Name	17 Branch Hill, London, NW3 7NA
Planning Reference	2015/3377/P

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Appendix

1.0 NON-TECHNICAL SUMMARY

1.1. CampbellReith was instructed by London Borough of Camden, (LBC) to carry out an audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for 17 Branch Hill, London, NW3 7NA (planning reference 2015/3377/P). The basement is considered to fall within Category B as defined by the Terms of Reference.

1.2. The Audit reviewed the BIA for potential impact on land stability and local ground and surface water conditions arising from basement development in accordance with LBC's policies and technical procedures.

1.3. The BIA was accompanied by a ground investigation report, structural engineers report, and arboricultural report. All these reports were produced by established consultancies with experience in their respective fields, with the authors holding the appropriate qualifications as required by Camden.

1.4. The basement does not involve a listed building.

1.5. The proposal involves the demolition of an existing property containing a basement level, and the construction of a new property containing a basement level to a lower depth.

1.6. Formal screening, scoping, and impact assessment sections have been provided in the BIA.

1.7. The basement will be founded within the Bagshot Beds Formation, a sand formation with clay and silt content. This overlays the Claygate Member and the London Clay.

1.8. Ground water was reported to be located and stable at 7.1m below ground level, several metres below the required excavation level and underside of the basement. The Bagshot Beds are classed as a Secondary Aquifer. While being a residual risk, it is thought the proposed basement is unlikely to affect the ground water flows or cause backing up of ground water due to the water's ability to re route around the basement.

1.9. The impact assessment has concluded that there are no surface water impacts caused by the scheme. This is accepted.

1.10. It has been concluded that the proposal increases the differential foundation depth with the neighbouring habitable single storey structure that is located directly adjacent to a boundary, whose ground is to be retained via a retaining structure. A ground movement assessment and subsequent damage assessment have been produced for this structure and found the predicted damage requires mitigation measures to be provided. These may be agreed as part of the party wall award. A pre-construction condition survey of the adjacent property is recommended.

1.11. Other than the above, all habitable buildings are concluded to be outside of the zone of influence of the works and do not require damage assessments. This is accepted.

1.12. The slope angle at the site is shallow due to a series of retaining walls that have been introduced to remodel the original more steeply sloping ground. Care must be taken when remodelling the ground further in order to avoid any local ground instabilities that may arise during the temporary case. The construction method statement details the use of temporary trench sheeting in order to mitigate this risk along with a logical sequence of works.

1.13. The nearest surface water features are greater than 100m from the site and the site does not have a history of flooding. It is concluded that the risk of surface water flooding is low and this is accepted.

1.14. The basement construction is to consist partially of retained retaining walls from the original construction, and partially from new piled walls, all of which contain an inboard reinforced concrete lining wall. The walls are to be propped during the temporary and permanent stages. The use of contiguous piles where new areas are to be retained is recognised as a suitable method for formation of the basement wall while minimising ground movement.

1.15. Proposed visual monitoring has been recommended to the retaining walls and the neighbouring garden building. An outline monitoring proposal has been provided that is to be developed further in the design stage and agreed with the party wall surveyor.

1.16. An appropriate surcharge loading has been used for the design of the retaining walls.

1.17. It has been confirmed that the retaining boundary wall shared with Holme Vale House will remain stable during the works and that it will not be subjected to more onerous loading than existing.

1.18. A number of queries were raised by this audit report, all of which have now been closed following receipt of additional/revised information. A summary of closed queries can be found in Appendix 2 of this report.

2.0 INTRODUCTION

2.1. CampbellReith was instructed by London Borough of Camden (LBC) on 07/08/2015 to carry out a Category B Audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for 17 Branch Hill, NW3 7NA (planning reference 2015/3377/P).

2.2. The Audit was carried out in accordance with the Terms of Reference set by LBC. It reviewed the Basement Impact Assessment for potential impact on land stability and local ground and surface water conditions arising from basement development.

2.3. A BIA is required for all planning applications with basements in Camden in general accordance with policies and technical procedures contained within

- Guidance for Subterranean Development (GSD). Issue 01. November 2010. Ove Arup & Partners.
- Camden Planning Guidance (CPG) 4: Basements and Lightwells.
- Camden Development Policy (DP) 27: Basements and Lightwells.
- Camden Development Policy (DP) 23: Water.

2.4. The BIA should demonstrate 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; and,

c) avoid cumulative impacts upon structural stability or the water environment in the local area.

It should also evaluate the impacts of the proposed basement considering the issues of hydrology, hydrogeology and land stability via the process described by the GSD and make recommendations for the detailed design.

2.5. LBC's Audit Instruction described the planning proposal as *"Erection of a part 2 and part 3 storey plus basement single family dwelling (following demolition of existing) with plant room, swimming pool (including air handling unit) and 5 condenser units."*

2.6. CampbellReith accessed LBC's Planning Portal on 06/11/2015 and gained access to the following relevant documents for audit purposes:

- Basement Impact Assessment; Site Analytical Services Ltd, 14/22714-2, October 2015.

- Structural Engineer's Design Statement for Planning; EngineersHRW, October 2015.
- Report on Ground Investigation; Site Analytical Services Ltd, 14/22714, May 2014.
- Construction Management Plan, June 2015.
- Arboricultural Impact Assessment, Landmark Trees, SHH/17BRH/AIA/02a, 27/06/15
- Planning application drawings, SHHArchitects;

  Existing - Lower Ground Floor, (779)010_P03, 15/06/15

  Existing - First Floor, (779)012_P02, 15/06/15

  Existing – Section BB, (779)311_P02, 15/06/15

  Existing – Section CC, (779)312_P02, 15/06/15

  Existing – Section DD, (779)313_P02, 15/06/15

  Existing – North Elevation, (779)200_P03, 22/06/15

  Existing – East Elevation, (779)201_P03, 22/06/15

  Existing – South Elevation, (779)202_P03, 22/06/15

  Existing – West Elevation, (779)203_P03, 22/06/15

  Proposed - Lower Ground Floor, (779)020_P04, 22/06/15

  Proposed – Ground Floor / Garden Level, (779)021_P03, 22/06/15

  Proposed – First Floor, (779)023_P02, 15/06/15

  Proposed – Roof, (779)024_P02, 15/06/15

  Proposed - Section AA, (779)300_P04, 22/06/15

  Proposed - Section BB, (779)301_P03, 22/06/15

  Proposed - Section CC, (779)302_P02, 15/06/15

  Proposed - Section DD, (779)303_P03, 22/06/15

  Proposed – North Elevation, (779)204_P02, 15/06/15

  Proposed – East Elevation, (779)205_P03, 22/06/15

  Proposed – South Elevation, (779)206_P03, 22/06/15

Proposed – West Elevation, (779)207_P03, 22/06/15

Long Section – (779)304_P01, 15/06/15

- Structural drawings, HRWEngineers

  Lower Ground Floor Plan, 1281/GA/010 P3

  Ground Floor Plan, 1281/GA/011 P2

  First Floor Plan, 1281/GA/013 P2

  Section AA, 1281/SE/020 P3

  Section BB, 1281/SE/021 P3

  Temporary Works – Plan, 1281/SK008 P3

  Temporary Works – Section, 1281/SK009 P3

2.7. Following the issue of revision D1 of this report, revised documents were downloaded from Camden's Planning Portal on 9/11/15. This consisted of revised;

- Basement Impact Assessment by Site Analytical Services Ltd, Dated October 2015
- BIA – Desk study Maps - Parts 1 to 11
- Structural drawings by Engineers HRW;

  1281_GA_008 P3

  1281_GA_009 P3

  1281_GA_010 P3

  1281_GA_011 P2

  1281_GA_013 P2

  1281_GA_020 P3

  1281_GA_021 P3

2.8. On 23 November 2015, CampbellReith was made aware of a number of residents' comments which were to be considered in the audit of the BIA. These are detailed in Appendix 1 and have been considered in the F2 revision of this report.

2.9. Further information regarding the site management plan, and a ground movement assessment report were provided by email on 11th January 2016. The information from these has been incorporated into the F3 revision of this report.

3.0 BASEMENT IMPACT ASSESSMENT AUDIT CHECK LIST

Item	Yes/No/NA	Comment
Are BIA Author(s) credentials satisfactory?	YES	The BIA lists the qualifications of those who prepared the report in section 1. The qualifications listed are suitable.
Is data required by Cl.233 of the GSD presented?	YES	The requested information is provided in the BIA and the various reports.
Does the description of the proposed development include all aspects of temporary and permanent works which might impact upon geology, hydrogeology and hydrology?	YES	Basement impact assessment and structural engineers report.
Are suitable plan/maps included?	YES	Sufficient architectural and engineering plans are provided. Maps indicating geological conditions and maps from the GSD are provided.
Do the plans/maps show the whole of the relevant area of study and do they show it in sufficient detail?	YES	Maps indicating geological conditions and maps from the GSD are provided.
Land Stability Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	YES	Factual comments and references of data sources have been provided.
Hydrogeology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	YES	Factual comments provided for each question.
Hydrology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	YES	Data sources or maps have been referenced in comments. Factual comments have been provided for each question with references where relevant.

Item	Yes/No/NA	Comment
Is a conceptual model presented?	YES	BIA Section 3
Land Stability Scoping Provided? Is scoping consistent with screening outcome?	YES	BIA section 5.4.
Hydrogeology Scoping Provided? Is scoping consistent with screening outcome?	YES	BIA Section 4.
Hydrology Scoping Provided? Is scoping consistent with screening outcome?	YES	BIA Section 4
Is factual ground investigation data provided?	YES	Report on Ground Investigation.
Is monitoring data presented?	YES	Report on Ground Investigation details water monitoring method and data.
Is the ground investigation informed by a desk study?	PARTIALLY	A desk study is referenced in the report on ground investigation, however this report was not submitted for planning.
Has a site walkover been undertaken?	YES	The basement impact assessment confirms that a site walkover was carried out on 10th October 2014.
Is the presence/absence of adjacent or nearby basements confirmed?	YES	It has been confirmed that no basements are presence to the adjacent properties.
Is a geotechnical interpretation presented?	YES	Report on Ground Investigation.
Does the geotechnical interpretation include information on retaining wall design?	YES	Soil properties are provided to be used in retaining wall design.

Item	Yes/No/NA	Comment
Are reports on other investigations required by screening and scoping presented?	YES	No further reports other than the ground investigation and arboricultural report were considered necessary.
Are baseline conditions described, based on the GSD?	YES	Section 6.3 in the BIA.
Do the base line conditions consider adjacent or nearby basements?	N/A	There are no adjacent basements.
Is an Impact Assessment provided?	YES	Section 7.0 in the BIA.
Are estimates of ground movement and structural impact presented?	YES	Ground movement assessment report
Is the Impact Assessment appropriate to the matters identified by screen and scoping?	YES	
Has the need for mitigation been considered and are appropriate mitigation methods incorporated in the scheme?	YES	Slope stability mitigation measures in the construction method have been discussed.
Has the need for monitoring during construction been considered?	YES	Monitoring of the existing retaining walls and adjacent garden annex building have been suggested.
Have the residual (after mitigation) impacts been clearly identified?	NO	
Has the scheme demonstrated that the structural stability of the building and neighbouring properties and infrastructure will be maintained?	YES	Yes. Appropriate temporary and permanent works details have been provided, as well as a ground movement assessment.

Item	Yes/No/NA	Comment
Has the scheme avoided adversely affecting drainage and run-off or causing other damage to the water environment?	YES	No impacts were identified.
Has the scheme avoided cumulative impacts upon structural stability or the water environment in the local area?	YES	A possible impact of the ground water flows being affected has been identified. However, as the property is detached it is considered the water will be able to flow around the basement.
Does report state that damage to surrounding buildings will be no worse than Burland Category 2?	YES	Burland Category 2 damage has been calculated for the only building within the zone of influence.
Are non-technical summaries provided?	YES	A non-technical summary has been provided for each section of the BIA.

4.0 DISCUSSION

4.1. The proposal is to demolish an existing three storey building (including lower ground floor level), and to construct a 3 and a half storey (including lower ground floor level and pool) property of a comparable size to the existing.

4.2. The site is graded in a way that the southern side of the site is lower than the north by approximately a storey's depth. This leaves the basement at ground level on the southern side and below ground on the northern side. The BIA and plans refer to the basement as a lower ground floor.

4.3. The existing site contains differing ground levels which are retained by existing retaining walls. The proposal includes some remodelling of the ground levels with the construction of new retaining walls.

4.4. The lower ground floor includes a swimming pool that is partly internal and partly external.

4.5. The LBC instruction to proceed with the audit identified that the basement proposal does not involve a listed building nor is it adjacent to a listed building.

4.6. The lowest depth of the proposed basement will be approximately 2.5m deeper than the existing lower ground floor.

4.7. The Basement Impact Assessment (BIA) has been carried out by site investigation consultants, Site Analytical Services Ltd. The individuals concerned in its production have suitable qualifications.

4.8. The Report on a Ground Investigation is an interpretive ground investigation report also produced by Site Analytical Services Ltd.

4.9. The Structural Engineers Design Statement for Planning details the design concepts and outline method statement for construction of the basement. The report has been produced by engineersHRW, an established engineering consultancy, the individuals concerned in its production have suitable qualifications.

4.10. An Arboricultural Impact Assessment Report has been produced detailing the impact on the nearby trees and recommendations. This has been produced by Landmark Trees, an established arboricultural consultancy.

4.11. A formal assessment of potential basement impacts has been carried out along with screening and scoping as detailed by the GSD.

4.12. A ground movement assessment has been produced using PDISP and WALLAP analysis software suites. This includes the ground movements during both the construction and permanent phases of the works.

4.13. A damage assessment has been produced for the habitable annex structure based on the ground movements obtained from the ground movement assessment. It has been determined that the maximum Burland damage category of 2 (slight) will be induced by the ground movements. Camden CPG4 guidance document requires mitigation mesures to be provided if the predicted damage exceeds Category 1.

4.14. The formation of the lower ground floor (basement) level is to be constructed utilising a number of differing construction methods to suit the site conditions. A large portion of the perimeter basement wall is to be constructed using contiguous piles with an inboard reinforced concrete liner wall. In other areas the existing retaining wall is to be retained, with a new reinforced concrete liner wall constructed inboard.

4.15. The method of construction in the structural engineers report details that the upper floors of the existing structure is to be demolished initially with the lower ground floor slab and laterally supporting elements retained. The contiguous piled walls are then to be installed with lateral propping provided prior to the remaining ground structure being removed. This method provides an outline method of construction that follows a logical best practice path. However a more detailed method statement and sequence of works will be required prior to construction.

4.16. Along the eastern boundary, temporary trench sheeting is shown on the structural lower ground floor plan. This sheeting is to provide lateral support to the soil until the permanent RC wall is constructed. This trench sheeting has also been considered with respect to mitigating the potential risk of running sand that had previously been identified. This approach is generally welcomed. However this wall is situated almost immediately adjacent to a neighbouring masonry garden structure, therefore care is to be used in order to minimise ground movements along this boundary. It is recommended that an undertaking is made to repair any damage.

4.17. The temporary works drawing indicates temporary propping to the proposed piled and existing retaining walls during construction. The Structural Engineer's report confirms that permanent propping will be provided by the ground floor slab once this has been constructed. This is good construction practice to minimise deflections and ground movement during the construction and permanent cases.

4.18. The site investigation report indicates that the basement will be located within the Bagshot Beds formation. The Bagshot Beds formation is a clayey sand that and it is concluded that this stratum has the capacity to carry limited ground water flows. It has been confirmed that there are no neighbouring basements present which could cause a cumulative impact on ground

water flows and it is anticipated that groundwater flows will be able to freely reroute around the basement.

4.19. In addition to the above, the groundwater level was monitored and found to stabilise at approximately 7m below ground level, this is below the underside of the proposed basement level.

4.20. The construction management plan details the position of materials storage, along the boundary shared with Holme Vale House. This boundary forms a retaining wall that is approximately 2.0m high, with the higher retained level on the side of 17 Branch Hill. It has been confirmed in supplementary information from the applicant that the existing planters along the top of the retaining wall are to be removed, and that the materials to be stored along this edge will be of no greater weight than the removed planters. The material storage is also to act as a buffer from site traffic to prevent traffic surcharges on the retaining wall.

4.21. Surface water flows have been concluded as not being disrupted. None of the surface water questions were taken beyond the screening stage and justification was provided for each answer. The area of hardstanding is not expected to change and existing surface water drainage routes are to be maintained.

4.22. The site is reported to be not within the catchment area of Hampstead ponds, nor is it within a flood risk area.

4.23. The BIA indicates that the site contains slopes of 3-5 degrees which are considered to be stable. However a risk of "running sand" and local ground instability has been identified. Measures have been recommended to batter back slopes or to provide temporary propped trench sheeting. The use of these measures is welcomed.

4.24. The arboricultural impact assessment in the arboricultural report concludes that of the trees that are proposed to be retained, the impact on each from the basement will be low or very low in practice. Adjusted root protection areas have been calculated to account for how the existing subterranean structure has impacted root growth.

4.25. Due to the new lower ground floor being constructed to a significantly lower depth than the existing (2.5m approx), an allowance for heave of the sub soil has been included. The lower ground floor slab is to be situated on compressible material to allow for ground heave to occur, while piles support the perimeter walls and point loads.

4.26. The structural engineers report indicates that the design has been carried out with an external areas loading of $10kN/m^2$ during the construction case, and $3kN/m^2$ during the permanent case. These values are accepted as suitable for retain wall design in this circumstance and adhere to the current design codes.

5.0 CONCLUSIONS

5.1. The documents reviewed comprise the BIA, a ground investigation report, structural engineers report, ground movement assessment, and arboricultural report. The authors of the reports have the required qualifications.

5.2. The basement will be founded within the Bagshot Beds Formation. Ground water was reported to be located and stable at 7.1m below ground level, several metres below the required excavation level and underside of the basement. The Bagshot Beds are classed as a Secondary Aquifers, however it has been concluded in the impact assessment that ground water flows are capable of re routing around the proposed basement as that there are no neighbouring basements presents or conditions that could cause cumulative impacts.

5.3. The slope angle at the site is shallow due to a series of retaining walls that have been introduced to remodel the original more steeply sloping ground. Care must be taken when remodelling the ground further in order to avoid any local ground instabilities that may arise during the temporary case. The use of temporary propped trench sheeting where RC walls are to be constructed, along with a logical sequence of works is welcomed.

5.4. The nearest surface water features are more than 100m from the site and the site does not have a history of flooding. It is accepted that the risk of surface water flooding is low.

5.5. The basement is to consist partially of retained retaining walls from the original construction, and partially new piled walls, all of which contain an inboard reinforced concrete lining wall. The walls are to be propped during the temporary and permanent stages. This is recognised as a suitable method. A suitable surcharge loading has been taken for the retaining wall design.

5.6. A movement assessment and subsequent damage assessment has been produced for the adjacent habitable annex building and it is predicted that damage will be no worse than Burland category 2. Mitigation measures should therefore be agreed with the Party Wall Surveyor. As the damage caused will depend on the condition of the structure, a condition survey is recommended. All other habitable structures are located some distance away from the works.

5.7. It has been confirmed that the retaining wall along the boundary with Holme Vale House can withstand the surcharge loading imposed during the storage of materials, due to existing surcharge loading from planters being removed with the material storage not exceeding this removed loading.

5.8. Proposed visual monitoring has been recommended to the retaining walls and the neighbouring garden building. It is agreed that monitoring should be carried out, the scope of which should be agreed with the Party Wall Surveyor.

5.9. All previously raised queries have now been closed, details of which can be found in appendix 2.

Appendix 1: Residents' Consultation Comments

Residents' Consultation Comments

Surname	Address	Date	Issue raised	Response
Farnworth	2c Lindfield Gardens	7/08/2015	The basement and swimming pools can cause long term damage to neighbouring properties and environment, especially the subterranean water flow.	The BIA required a formal impact assessment to demonstrate that the groundwater flow and the wider hydrological environment will not be affected.
Lombardo	6 Firecrest Drive	7/08/2015	Basement excavation often causes damage to neighbouring properties, and typically these problems appear a few years after the works.	Further information has been requested from the applicant regarding ground movement and the potential for damage to neighbouring buildings.
Lombardo	6 Firecrest Drive	7/08/2015	The presented BIA doesn't appear to be supported by a good quality, site-specific ground investigation accompanied by long-term monitoring of water levels.	The report entitled "Report on a Ground Investigation" ref 14/22714 provides site specific ground investigation data and interpretation including groundwater monitoring. A formal impact assessment has been requested.
Newbrook	Freeholders of 1-6 Firecrest Drive, Savoy Court.	14/08/2015	No consideration given to retaining wall along the boundary shared with Firecrest Drive	The basement works are located some 10m away from the boundary with Firecrest Drive. Detailed considerations of this boundary wall are not considered necessary with relation to the construction of the basement.
Newbrook	Freeholders of 1-6 Firecrest Drive and Savoy Court.	14/08/2015	No consideration made to the underground River (Westbourne) nor problems with drainage.	The BIA has confirms that the River Westborne is now culverted and does not run through the proposed site. The BIA contains appropriate screening, scoping, and impact assessment sections relating to ground water drainage.
Newbrook	Freeholders of 1-6 Firecrest Drive and Savoy Court.	14/08/2015	Concerns over stability of early mature Sycamore tree in Savoy Court, and	The arboricultural assessment has been produced by a qualified arboriculturalist.

			disagreement with arboricultural assessments conclusions.	Reasoning has been provided for conclusions and for using modified root protection areas.
Newbrook	Freeholders of 1-6 Firecrest Drive and Savoy Court.	14/08/2015	There is significant potential that the basement will incur movements through the ground. No reports on how the basement will effect areas of the neighbouring land that do not contain buildings.	A ground movement assessment and subsequent damage assessment has been requested from the applicant for buildings that fall within the basements zone of influence.
Coe	4 Firecrest Drive	14/08/2015	A fuller assessment on basement excavation is needed. There is no predictions on expected ground movement and impact on surrounding houses and trees.	A ground movement assessment and subsequent damage assessment has been requested from the applicant for buildings that fall within the basements zone of influence. The arboricultural assessment has been produced by a qualified arboriculturalist. Reasoning has been provided for conclusions and for using modified root protection areas.
Coe	4 Firecrest Drive	14/08/2015	Wider risk present for neighbouring structures, if land slippage occurs.	The BIA contains appropriate screening, scoping, and impact assessment sections relating to land stability. Mitigation measures and construction methodology has been provided that have been deemed appropriate to combat land stability.
Iley	The Chestnuts	19/08/2015	Effect on Westbourne River	The BIA has confirms that the River Westborne is now culverted and does not run through the proposed site.
Unknown	Unknown	Unknown	Effect of driven piling and vibration on the neighbouring properties.	The piles are to be bored piles and not driven. This method of piling produces significantly less noise and vibration compared to driven piling. Therefore the selected method of piling is considered appropriate for a residential area.
Majed	Holme Vale House	18/8/15	Concerns of effect of the proposal on the residential annex that is situated along	A ground movement assessment and subsequent damage assessment has been

			the boundary that is shared with the proposed development.	requested from the applicant for buildings that fall within the basements zone of influence.
Majed	Holme Vale House	18/8/15	Concerns of effect on retaining wall that retains soil to the proposed site, with regards to water pressures caused by the proposed development.	The BIA has confirmed that ground water flows are not likely to be significantly disrupted due to the works, and the required screening, scoping, and impact assessment methodology has been completed satisfactorily for this.
Majed	Holme Vale House	18/8/15	Concern of effect on retaining wall due to increased surcharge loading from HGV and material storage.	It has been requested that the applicant amend their construction management plan to avoid all surcharge loading onto the retaining wall, or otherwise confirm that the wall is suitable to accept the surcharge loading.
Majed	Holme Vale House	18/8/15	Effect of the works on the 5m high retaining wall along the boundary.	The construction management plan shows that no HGV, material storage, or welfare facilities is planned along or close to this boundary retaining wall.

Appendix 2: Audit Query Tracker

Audit Query Tracker

Query No	Subject	Query	Status	Date closed out
1	Stability	The construction of the neighbouring "existing garden building" should be confirmed and the need for a ground movement assessment determined on the basis of the revised BIA a ground movement assessment is required.	Closed	28/01/16
2	Stability	Confirming if 3.0kN/m^2 has been taken as surcharge loading for retaining structures and if so justification for this value provided.	Closed	10/11/15
3	Stability	Further details of the temporary sheet piling along the boundary and an inclusion of this in the method statement.	Closed	10/11/15
4	Stability/Groundwater	The BIA is now complete. A formal impact section by appropriately qualified personnel should be included in the BIA taking the points forward from the scoping stage. The references consulted in the screening process should be identified.	Closed	10/11/15
5	Stability	The site is sloping and the method statement should describe the sequence of construction to deal with this and the potential identified risk of 'running sand'.	Closed	10/11/15
6	Stability	Information has come to light that the "existing garden building" in close proximity to the boundary is in fact a habitable annex. Due to the increase in differential foundation depths between this annex and the proposed basement a ground movement assessment and subsequent damage assessment is required in relation to this building.	Closed	14/01/15
7	Stability	The construction management plan currently shows the site offices and welfare, and material storage being located adjacent to a retaining wall located on the neighbouring of property Holme Vale House. Construction management plan to be revised to avoid surcharge onto this wall, otherwise confirmation of capacity of wall is to be provided and that it can withstand the surcharge loading.	Closed	28/01/16

Appendix 3: Supplementary Supporting Documents

None

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