APPENDIX F

Chelmer Site Investigations Factual Report

Surface flow and flooding screening flowchart Figure 3.

The Developer should consider each of the following questions in turn, answering either "ves", "unknown" or "no" in each instance.

Consideration should be given to both the temporary and permanent works, along with the proposed surrounding landscaping and drainage associated with a proposed basement development.

Question 1: Is the site within the catchment of the pond chains on Hampstead Heath?

Question 2: As part of the proposed site drainage, will surface water flows (e.g. volume of rainfall and peak run-off) be materially changed from the existing

Question 3: Will the proposed basement development result in a change in the proportion of hard surfaced / paved external areas?

Question 4: Will the proposed basement result in changes to the profile of the inflows (instantaneous and long-term) of surface water being received by adjacent properties or downstream watercourses?

Question 5: Will the proposed basement result in changes to the quality of surface water being received by adjacent properties or downstream watercourses?

Question 6: Is the site in an area known to be at risk from surface water flooding, such as South Hampstead, West Hampstead, Gospel Oak and King's Cross, or is it at risk from flooding, for example because the proposed basement is below the static water level of a nearby surface water feature?

Assessment those matter's of conwhere response is "yes" Developer to carry forward to the coping stage of the Basement Impact ► Unknown Assessment those matter's of concern where response is "anknown Developer to provide statement to LB Camden giving justification for not carrying forward to the scoping stage of the Basement Impact Assessment those matter's of concern where the response is "no" Developer to undertake a Flood Risk Yes Assessment in accordance with PPS25 Developer to undertake a Flood Risk ► Unknown -Assessment in accordance with PPS25 Flood Risk Assessment not required.

Yes

No

Developer to carry forward to the

scoping stage of the Basement Impact

Notes / sources of information

Question 1: Figure 14 in the attached study (prepared using data supplied by the City of London Corporation's hydrology consultant, Haycocks Associates) shows the catchment areas of the pond chains on Hampstead Heath

Question 2: This will be specific to the proposed development and will be a result of the proposed landscaping of areas above and surrounding a proposed basement. The developer should provide documentation of discussion with Thames Water to confirm that the sewers have capacity to receive any increased wastewater flows

Question 3: This will be specific to the proposed development and will be a result of the chosen drainage scheme adopted for the property

Question 4: This will be specific to the proposed development and will be a result of the proposed landscaping and chosen drainage scheme adopted for the property. SUDS will be required to compensate any increases in peak

Question 5: This will be specific to the proposed development and will be a result of the proposed landscaping and chosen drainage scheme adopted for the property. SUDS will be required to compensate any increases in peak

Question 6: The principles outlined in PPS25 should be followed to ensure that flood risk is not increased.

Slope stability screening flowchart

The Developer should consider each of the following questions in turn, answering either "yes", "tunknown" or "no" in each instance

Consideration should be given to both the temporary and permanent works along with the proposed surrounding landscaping and drainage associated with a proposed basement development.

Question 1: Does the existing site include slopes, natural or manuade, greater than $7^{\circ}2$ (approximately 1 in 8)

Question 2: Will the proposed we profiling of landscaping at site change slopes at the property boundary to more than 7° ? (approximately 1 in 8)

Question 3: Does the development neighbour hand, including railway cartings and the like, with a slope greater than $7^{\circ 2}$ (approximately 1 in 8)

Question 4: Is the site within a wider hillside setting in which the general slope is greater than 7"? (approximately I in 8)

Question 5: Is the London Clay the shallowest strata at the site?

and/or are any works proposed within any tree protection stones where trees are to be retained? (Note that consent to required from 4.1) Combon to undertake work to tree parterial by a Text Protection Birde artistizes him a Conservation Area of the tree is over a certain thermions.

Onestion 7: Is there a history of seasonal shrink-swell subsidence in the local area, and/or evidence of such effects at the site?

Question 8: Is the site within 100m of a watercourse or a potential spring

Question 9: Is the site within an area of previously worked ground?

Question 10: Is the site within an aquifer? If so, will the proposed basement extend beneath the water table such that dewatering may be required during construction?

Question 11: Is the site within 50m of the Hampstead Heath ponds?

Question 12: Is the site within 5m of a highway or pedestrian right of way?

Question 13: Will the proposed basement significantly increase the differential depth of foundations relative to neighbouring properties?

Question 14: Is the site over (or within the exclusion zone of) any tunnels.



Notes / sources of information

Question 1, 3 & 4: The current surface slope can be determined by a site topographical survey. Slopes may be estimated from 122,000 OS maps, however in many urban areas such maps will not show sufficient detail to determine surface slopes on a properly-by-properly scale, just overall trends. With regard to slopes associated with infrastructure, e.g. cuttings, it should be ensured that any works do not impact on critical inflastructure.

Question 2: This will be specific to the proposed development and will be a result of the proposed landscaping of areas above and surrounding a proposed basement.

Question 5: The plan footprint of the outcropping geological starta can be established from British Geological Survey maps (e.g. 1-50,000 and 1-10,000 scale). Note that the boundaries are indicative and should be considered to be accurate to ±50m at least.

hest.

Question 4: this is a project specific determination, subject to nelevant Tree Preservation Orders etc.

Question 7: this can be assessed from local knowledge and on-site observations of indicative features, such as eracking, Insurance firms may also give guidance, based on post code. Soil trups can be used to identify high-risk soil types. Releve guidance is presented in BRE Digest 20-81.0-we rise building foundations: the influence of trees in edge soils. Popply BRE Digest 240-TLow-rise buildings on shrinkable clay soils: part 1" (1993); and BRE Digest 251 "Assessment of damage in low rise buildings" (1995).

Question 8: Watercourses or spring lines may be identified from the following sources.

Local knowledge and/or site walktowers.

Onlymos Surger growing in 125 (2010) as 125 (2010) as 15 (2010) as 15 (2010) as 15 (2010).

- Local knowledge and/or site walkovers
 Ordnance Survey maps (e.g. 125,600 or 1:10,600 scale). If features are marked (they are not always) the following symbol may be present 'Spr', water is indicated by blue colouration, (check the key on the map being used)
 Geological maps will show indicative geological strata boundaries which are where springs may form at the ground surface; of relevance are the boundary between the Bagshot Formation with the Claygate Member and the Claygate Member with the London Clay. Note that the boundaries are indicative should be considered to be accurate to ±50m best. British Geological Survey maps (e.g. 1:10,000 scale, current and earlier editions).

best. British Geological Survey maps (c.g. 1:10,000 scale, current and earlier editions).

Aerial photographs

Losa Rivers of London by Nicolas Barton, 1962. Shows the alignment of rivers in London and their tributaries.

Question 9: Worked ground includes, for example, old pits, brickyards, cuttings etc. Information can be gained from local knowledge and/or site walkovers, and from historical Ordrance Survey maps (at 1:20,000 or 1:31,000 scale, or better) and British Geological Survey maps (at 1:10,000 scale, current and earlier editions). Earlier geological survey maps (at 1:10,000 scale, current and earlier editions). Earlier geological maps (e.g. the 1:10560 scale series from the 1920s) include annotated descriptions such as 'old pits', "formerly dug", 'brickyard' etc.

Question (6). In El Candon, all areas where the London Clay does not outcrept at the surface are considered to be an aquifer. This includes the River Terrace Deposits, the Clay gate Member and the Bagshot Formation. The general footprint of the geological strate can be assessed from British Geological Survey maps (e.g. 1:50,000 and 1:10,000 scale). Note that the boundaries are indicative and should be considered to be accurate to ±50m at best.

The Environment Agency (EAA Aquifer Designation Maps can be used to identify aquifers. These are available from the EA seebsife (tww. environment-agency.gov.ak), by clicking on 'Al home & Iessuer'> What's in Your Buckyard'> Interactive Maps'> Croundwater'.

Details are required of the thickness of the geological strate present and the level or dorth of derify of the proposed of the propose

Maps' > Groundwater'.

Details are required of the thickness of the geological strata present and the level or depth of the groundwater table. This may be known from existing information (for example nearly site investigations); however, it may not be known in the early stages of a project. Determination of the water table level may form part of the site investigation phase of a BIA and may require specialist advice to answer. Depth of proposed development is project specific.

Questine 11: From local knowledge and/or site walkovers, and from Ordnance Survey maps (e.g. 1:25,000 or 1:10,000 scale). In relation to the stability and integrity of the pond structures and dams, the guidance of a Panel Engineer should be sought. (Details of Panel Engineers can be found on the Environment Agency website: http://www.cnvironment-agency.gov.uk/
business/sectors/64253.naps/). Datty of care needs to be understance during any site works in the vicinity of the prods.

Question 12: From local knowledge and/or site walkovers, and from Ordnance Survey maps (e.g. 1:25,000 or 1:10,000 scale). Any works should not innosed on origical infrastructure.

Any works should not impact on critical infrastructure.

Question 13: From local knowledge and/or site walkovers. May find some details on neighbouring properties from searches o

IB Council databases, e.g. planning applications and/or building control records.

Question 14: From local knowledge and/or site walkovers, from Ordinance Survey maps (e.g. 1:25,600 or 1:10,000 scale) and
directly from those responsible for tunnels (e.g. Tfl. or Network Rail). Any works should not impact on critical infrastructure.

Figure 1. Subterranean (ground water) flow screening chart

The Developer should consider each of the following questions in turn, answering either "yes", "unknown" or "no" in each instance.

Consideration should be given to both the temporary and permanent works, along with the proposed surrounding landscaping and drainage associated with a proposed basement development.

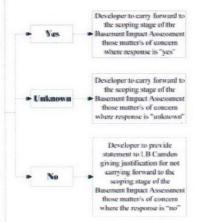
Question Le: Is the site located directly above an aquifer? Question Le: Will the proposed basement extend beneath the water table surface?

Question 2: Is the site within 100m of a watercourse, well (used/disused) or potential spring line? Question 3: Is the site within the catchment of the pond chains on Hampstead Heath?

Question 4: Will the proposed basement development result in a change in the proportion of hard surfaced / paved areas?

Question 5: As part of the site drainage, will more surface water (e.g. rainfall and run-off) than at present be discharged to the ground (e.g. via soakaways and/or SUDS)?

Question 6: Is the lowest point of the proposed excavation (allowing for any drainage and foundation space under the basement floor) close to, or lower than, the mean water level in any local pond (not just the pond chains on Hampstead Heath) or spring line.



Notes / sources of information

Question 1: In LB Camden, all areas where the London Clay does not outcrop at the surface are considered to be an aquifer. This includes the River Terrace Deposits, the Claygate Member and the Bagshot Formation. The location of the geological strata can be established from British Geological Survey maps (e.g. 1:50,000 and 1:10,000 scale). Note that the boundaries are indicative and should be considered to be accurate to =50m at best.

Additionally, the Environment Agency (EA) "Aquifer Designation Maps" can be used to identify aquifers. These can be found on the "Groundwater maps" available on the EA website (www.environment-agency.gov.uk) follow "At home & leisure" > "What's in Your Backyard" > "Interactive Maps" > "Groundwater". Knowledge of the thickness of the geological strate present and the level of the groundwater table is required. This may be known from existing information (for example nearby site investigations), however, it may not be known in the early stages of a project. Determination of the water table level may form out of the state investigation of a DIA.

form part of the site investigation phase of a BIA.

Question 2: Watercourses, wells or spring lines may be identified from the following sources:

- Local knowledge and/or site walkovers
- Ordnance Survey maps (e.g. 1:25,000 or 1:10,000 scale). If features are marked (they are not always) the following symbols may be present: W; Spr; water is indicated by blue colouration. (check the key on the map being used)
- British Geological Survey maps (e.g. 1:10,000 scale, current and earlier editions). Current maps will show indicative
 geological strata boundaries which are where springs may form at the ground surface; of relevance are the boundary
 between the Bagshot Formation with the Claygate Member and the Claygate Member with the London Clay. Note that the
 boundaries are indicative should be considered to be accurate to ±50m. Earlier geological maps (e.g. the 1920's 1:10560
 scale) maps show the location of some wells.
- Aerial photographs
- "Lost Rivers of London" by Nicolas Barton, 1962. Shows the alignment of rivers in London and their tributaries.
- The British Geological Survey (BGS) Geolndex includes "Water Well" records. See www.bgs.ac.uk and follow "Online data" > "Geolndex" > "Onshore Geolndex".
- The location of older wells can be found in well inventory/catalogue publications such as "Records of London Wells" by
 G. Barrow and L. J. Wills (1913) and "The Water Supply of the County of London from Underground Sources" by S
 Buchan (1938).
- The Environment Agency (EA) "Source Protection Zone Maps" can be used to identify aquifers. These can be found on
 the "Groundwater maps" available on the EA website (www.environment-agency_gov.uk) follow "At home & leisure" >
 "What's in Your Backyard" > "Interactive Maps" > "Groundwater".
- The EA hold records of licensed groundwater abstraction boreholes. LB Camden is within the North East Area of the Thames Region. Details can be found on the EA website.
- LB Camden Environmental Health department may hold records of groundwater wells in the Borough.

Where a groundwater well or borehole is identified, it will be necessary to determine if it is extending into the Lower Aquifer (Chalk) or the Upper Aquifer (River Terrace Deposits, Bagshot Formation, Claygate Member etc). It is water wells extending into the Upper Aquifer which are of concern with regard to basement development.

into the Upper Aquifer which are of concern with regard to basement development.

Question 3: Figure 14 in the attached study, (prepared using data supplied by the City of London Corporation's hydrology consultant, Haycocks Associates) shows the catchment areas of the pond chains on Hampstead Heath.

Question 4: This will be specific to the proposed development and will be a result of the proposed landscaping of areas above

Question 4: This will be specific to the proposed development and will be a result of the proposed landscaping of areas above and surrounding a proposed basement. Question 5: This will be specific to the proposed development and will be a result of the chosen drainage scheme adopted for

the property.

Question 6: The lowest point will be specific to the proposed development. Knowledge of local ponds may be taken from

- Local knowledge and/or site walkovers
- Ordnance Survey maps (e.g. 1:25,000 or 1:10,000 scale). If features are marked (they are not always) the following symbols may be present: W; Spr; water is indicated by blue colouration. (check the key on the map being used)
- Aerial photographs