

16756

Athlone House
Review of Ground Water reports

Prepared by: Tim Marcot
February 2010
16756

1 Introduction

The purpose of this report is to review a number of previous reports on ground conditions and groundwater. The aim is to assess the potential impact of the proposed development, known as Athlone House, on prevailing groundwater conditions in the district.

2 Previous Reports and Investigations

A number of reports including, Geotechnical and Hydrological investigations have been undertaken, these include:

- LBH Wembley – Site Investigation Report, Athlone House, June 2002
- LBH Wembley – Report on Groundwater for Athlone House, September 2003
- RPS Health, Safety and Environment - Desk Study Assessment of Groundwater at Athlone House, May 2004

3 Summary of Previous Reports

LBH Wembley Site Investigation, June 2002

The LBH Wembley site investigation consisted of three boreholes (to a maximum depth of 30m) and five trial pits, spread across the site. Standpipes piezometers were installed in boreholes 1 and 3. The investigation was completed in support of a wider development plan for Athlone House and the proposed new housing to the east.

The investigation found a relatively small amount of fill over London Clay, which extended to the maximum depth of the boreholes. Occasional pockets and layers of fine silt and sand were found intermittently through the London Clay.

The LBH Wembley investigation found ground water seepages at depths of 3.9m (107.4 mOD) and 10.5m (101.8 mOD), and minor aquifer flows below 7.0m (104 mOD). These coincide with pockets and layers of silt and fine sand within the London Clay. During the excavation of the trial pits no ground water inflows were encountered, although the soils were found to be damp at depths between 2.2m (108.2 mOD) and 3.1m (107.9 mOD) which coincide with the layers of silt and fine sand.

LBH Wembley Report on Ground Water, September 2003

In September 2003, LBH Wembley re-visited site to monitor the standpipes they had installed and report on the ground water. They specifically mention the proposed development of three residential buildings and basement car parks approximately 80m to the east of the proposed Athlone House development. The construction of these residential buildings has been completed. As noted above the boreholes and trial pits are spread across the entire site with borehole 1 directly behind Athlone House. Standpipes piezometers were installed in boreholes 1 and 2.

LBH Wembley found that the standpipes indicated ground water standing at 109.1 mOD in borehole 1 and 109.4 mOD in borehole 3. They noted that the site lies outside the designated Environmental Agency source protection zones. They also state that for a basement reaching a

level of approximately 107 mOD it is likely that the ground water would simply flow around the perimeter of the basement structure, and to ensure that this is the case specific drainage provisions should be installed around the basement.

RPS Health, Safety and Environment - Desk Study Assessment of Groundwater May 2004

The RPS report collates and expands on the conclusions drawn from the earlier LBH reports. It is also based on the scheme to build three residential buildings (with basements) and the refurbishment of the nearby Athlone House. It concentrates on the implications of the proposed development on the groundwater behaviour in the district. As the development discussed in this report is very close to the site of the proposed redevelopment of Athlone House, it is highly relevant to the current proposal.

RPS questioned the accuracy of the standpipe results identified in the earlier LBH work. The monitoring wells were shown to be blocked a short depth below the recorded groundwater level. It was concluded that the relatively high readings taken in boreholes 1 & 2 may have actually been rainwater sitting on fine sediments that had accumulated in the monitoring wells.

The main conclusion of the RPS report is that the site as a whole is of limited importance with respect to the transmission of groundwater in the wider district. This is mainly due to the site being located almost at the topographic peak of the district and there being very limited opportunity for surface water to infiltrate into the ground water as no outcropping beds of Silt and Fine Sands were identified on site.

4 The Proposed Development

The proposal is to build a new house in a similar location to the existing Athlone House building. It is located approximately 40m south of Hampstead Lane. The new construction will include a basement with a founding depth of approximately 108.0 mOD. The basement will be constructed of reinforced concrete in an open cut excavation with the soil battered back during construction. Free draining material will be installed immediately around and below the basement to ensure any ground water reaching the basement structure will be diverted around and below it. Even at the highest level of groundwater found, the proposed basement only encroaches into it by approximately 1m. The ground water would simply flow around and below the basement (as indicated in sketch 16756-SK2) and suggested by LBH Wembley and RPS reports.

As noted in the RPS report, the levels noted in the boreholes may in fact overstate the amount of groundwater present. It should also be noted that the Ladies Bathing Pond is approximately 400m south west and 29m below the proposed development (as shown on sketch 16756-SK1).

5 Conclusions

The ground and hydrological investigations that have been undertaken show water seepages and Minor Aquifers approximately 1m above the founding level of the proposed basement (at their highest level). By surrounding the proposed basement with free draining material these ground water flows can be easily diverted around and below the basement.

Given the relative scale of the principal water bearing strata in relation to the proposed basement, and the distance to and relative level of the Ladies Bathing Pond, we cannot see how the proposed basement would have any meaningful impact on the groundwater flows into the Bathing Ponds.