

Lifestory Group Ltd
79 Fitzjohn's Avenue

Basement Post-Completion Report



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1 Introduction

MLM have been appointed by Lifestory Group Ltd. to undertake a post-completion review and report on the constructed basement at the development known as 79 Fitzjohn's Avenue in Hampstead, London. This report is intended to confirm that the measures described in the Basement Construction Plan have been incorporated into the works.

The project consists of a new 6 storey (ground plus 5 floors maximum) self-contained apartment development, built on a former hostel site in central Hampstead. Two separate apartment blocks rise from a combined ground and first floor building. Below that are lower ground floor and basement levels. The whole development is concrete framed and is supported on piled foundations.

The basement comprises a complex split-level structure in two distinct parts. The lower ground floor (LGF) occupies the full footprint of the building and contains habitable accommodation, a wellness centre and other utility and plant rooms. Only the east end of the LGF is effectively in basement, as a significant drop in ground level from east to west results in the west section gradually becoming at grade. Below and central to the LGF there is a further two level basement of considerably smaller plan size, designed to contain a mechanised car parking system. The entire basement structure was designed to provide full stability at all stages of construction, due to the close proximity of adjacent properties and public highways. This included all temporary stages before, during and after the removal of the original basement contained in the former hostel.

2 The Requirement

The following text is taken from the S106 Agreement, Clause 4.3.5:

"Not to occupy or permit occupation of the development until a satisfactory post-completion review has been submitted to and approved by the Council in writing by way of certification by a suitably qualified engineer from a recognised professional body confirming that the measures in the Basement Construction Plan as approved by the Council have been incorporated into the development."

3 Previous Reports Submitted

A Basement Impact Assessment (BIA) was carried out and submitted in support of the original planning application. The BIA contained comprehensive information about the project, the site and its surrounding environs. It included a hydrogeological and ground movement report, flood risk assessment, ground investigation report and design intent.

In accordance with the requirements of the Section 106 Agreement, a further Basement Construction Plan (BCP) was then prepared, submitted and approved by the planning authority. This embodied the BIA and provided a detailed narrative on how the basements would be designed and built safely and robustly to achieve stability of the surrounding areas, appropriate levels of watertightness and general structural integrity.

4 Review of Measures Described in the Basement Construction Plan

4.1 Design Responsibilities

The project comprised separate contracts for demolition, enabling works and the permanent works, each with their own documents and designers.

The scope and design of the demolition works and the enabling works were prepared by Card Geotechnics Ltd.

The permanent works were engineered by MLM Group based on the architectural design by Sergison Bates Architects. Card Geotechnics also had an input in regard to the coordination of the temporary works where they had an impact on the permanent works design.

4.2 Demolition Works

The demolition contract was undertaken in advance of and separately from the enabling works and permanent works and comprised the demolition of the former buildings down to ground floor slab level.

The former Hostel building incorporated a basement and substructure that was providing support to and preventing movement of adjoining properties and Highway. Accordingly, the design and method adopted for the demolition took full account of the need to maintain the support provided by these important existing structures at all times.

4.3 Enabling Works

The enabling works essentially comprised the design of the temporary retaining structures which extended around the perimeter of the site. These temporary structures successfully enabled the gradual removal of the existing basement and substructures from the site whilst maintaining lateral ground support and allowing the permanent works to proceed. Full details of the enabling works can be found in the Basement Construction Plan, previously submitted and approved by the planning authority.

4.4 Permanent Works

The permanent works for the basements were wholly contained within the temporary enabling works and in many areas were constructed in stages whilst allowing for the modification of the temporary works between stages.

As planned, the basement to the lower ground floor basement (LGF) area was formed using traditional reinforced concrete walls, built inside the temporary sheet piled and king-post walls installed during the enabling works. Within the lower ground accommodation there is a highly serviced wellness / gym area with a small pool. During the design of this area, it was agreed to form an undercroft to provide adequate containment for the services and this therefore involved the lowering of the LGF basement locally. An additional waling frame was designed and installed to allow an extension of the temporary sheet piled wall and a deeper dig, to provide a safe working area for the undercroft.

Having completed the permanent basement walls for the LGF, backfilling and hardening up was successfully carried out between those and the temporary walls, rendering the temporary walls redundant. The materials forming the temporary walls were however left insitu (apart from cutting down to suit site levels) to ensure full continuity of support to adjacent properties.

The two level car parking basement was formed using secant piling, finished internally with a reinforced concrete lining wall. A system of bracing and propping was installed between the capping beam of the secant piles and the temporary retaining walls around the LGF. This added complexity and difficulty to the construction of the permanent works, which had to be completed in stages to suit. However careful detailing ensured that this work was completed to a good level of quality.

Foul and storm water drainage for the site took account of the phased permanent and temporary works design and avoided drain installations that would have adversely affected the temporary works design. The approach adopted contained as much of the drainage as possible in areas where deep excavations would not be required for future maintenance and repair which would otherwise have affected the stability of neighbouring properties or boundary walls. The works were designed in accordance with statutory guidance for the 1 in 100 year storm and the associated attenuation required to meet Planning requirements.

The permanent works were designed and built to be water excluding structures and full details of the waterproofing systems adopted can be obtained from the specialist waterproofing contractor, FIS.

4.5 Monitoring and Inspection

A plan of monitoring locations and control systems was prepared by Card Geotechnical Limited and established on site. This allowed the structural stability of the surrounding/adjacent properties and Highways to be monitored by the contractor at regular intervals and agreed with the Party Wall surveyor. Trigger levels for movement were agreed and a traffic light system adopted for any action that might be required. MLM are aware of only one instance when actionable movement occurred, adjacent to Prince Arthur Road. Limited inward movement of the temporary retaining wall occurred when an excavation was taken deeper than expected. Following a site meeting, a remedial scheme for the temporary wall was agreed and implemented without delay and the permanent works design was adjusted to suit. No discernible effect of this movement translated to the integrity of the highway.

Groundwater monitoring points at agreed locations were established and readings were undertaken at intervals throughout the construction.

Whilst MLM were not employed to undertake formal site supervision, we nevertheless took the opportunity to carry out inspections of the basement construction at various stages, when visiting the site. Discussions were also had at site progress meetings and remotely in relation to methods, challenges faced and quality of the build. Solutions to issues occurring were resolved between ourselves and the contractor as the work proceeded and overall we were reassured that the construction was being implemented in accordance with the design.

MLM carried out a non-intrusive visual inspection of the completed basement structure to examine the internal concrete surfaces before they were concealed behind finishes. This revealed some very slight surface cracking but for the main this was within the 0.2mm design crack width predicted in the design i.e. that required to exclude the ingress of ground water. No serious cracks were found that would suggest overstress or movement. Whilst there was evidence of some minor corrective work, this was superficial filling of blow holes and the like for aesthetic purposes and non-structural related. The walls and slabs were otherwise found to be well constructed, being generally flat, true and well compacted.

5 Conclusions

From our knowledge of the way the work was conducted and from the inspections made, MLM believe that the basements were built to a good standard of workmanship and in accordance with the provisions of the Basement Construction Plan. The work adopted robust structural principles and methods of construction that are widely used and known. The work also took account of the prevailing ground conditions, water environment and the structural condition and applied loads from neighbouring properties, described in the original Basement Impact Assessment.



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