

# 152-156 Kentish Town Road

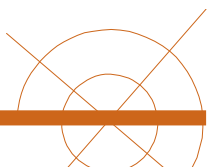
## Movement Monitoring Proposal/Methodology

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# MONITORING METHODOLOGY

## Structural Monitoring

### 1. Introduction

The purpose of this proposal is to put forward a monitoring system that will measure the effects that the excavation and construction activities at 152-156 Kentish Town Road, may have on the neighbouring structures: 148, 150, 158-160, 162 Kentish Town Road and 2a Bartholomew Road.

The monitoring will consist 3D Reflective Targets.

This proposal details the methods of structural monitoring from installation and implementation to reporting and analysis.

### 2. Installation

#### 2.1 Control

Primary Controls - Monitoring control stations will be established around site perimeter, from which the monitoring targets will be surveyed. The coordinate system will be specific to the monitoring, unless instructed otherwise.

Secondary Controls - Additional survey targets for control will be placed on surrounding structures outside of the site's zone of influence and these points will be accurately fixed in the 3-dimensional plane.

Their positions will be determined during the establishment of the primary control. Access and permission to install these points will have to be provided by others.

These targets will be used to establish survey station coordinates prior the commencement of each survey. Their coordinates will be calculated using the resection method calculated within the instrument. This method of control establishment allows for accurate control to be determined without having to rely on a fixed station position in close proximity to site.

## 2.2 Structural Monitoring - 3D Reflective Targets

3D Reflective Targets are to be installed at the approximate locations indicated on the Figure 1 below, prepared based on the AHIG Ltd Basement Impact Assessment, paragraph 11.

The exact locations of all targets will be determined by line of sight from the survey station.

The installation of high level Targets is to be carried out using a specially adapted long-reach pole and from windows.

Clear and safe access and permission to install and survey all points will need to be provided by the client.

It is understood that No.148 building is currently undergoing a demolition works. Therefore, possible movement of this building and buildings Nos.150 and 146 may be related to this work.



**Figure 1 - Proposed locations of monitoring 3D Targets**



3D Reflective Target



Example of Reflective Target and Target on right angled bracket

The 3D Targets will be attached to the walls using an adhesive.



Example of long reach telescopic pole to fix targets

### 3. Setup and Monitoring Procedure

Two rounds of angles are surveyed in both faces for each survey point. The data is recorded and stored on the instrument. The instrument also displays differences in real-time, allowing the surveyor to assess the extent of any deviation in the field, and if necessary, report large deviation immediately to Head Office.

Monitoring Targets will be surveyed 3-dimensionally with an accuracy better than  $\pm 2\text{mm}$ .

### 4. Monitoring frequency

As per the AHIG Ltd Basement Impact Assessment, during the works the monitoring is to be carried out on twice weekly basis (reduce frequency as appropriate).

### 5. Trigger Values

Trigger values for horizontal and vertical movements will be set as follow (extract from AHIG Ltd Basement Impact Assessment):

#### 12.1.6 Proposed trigger levels

The below values are based on surveying tolerances of  $\pm 2\text{mm}$ .

Suggested Trigger Levels to be Agreed				
Alert Level	At Completion of Excavation		At Completion of Basement	
	Vertical	Horizontal	Vertical	Horizontal
Green	3	3	6	10
Amber	4	4	7	11
Red	5	5	10	14

## 6. Reporting

On completion of each manual cycle of readings the data is emailed from site to head office for computation and reporting. Any large deviations identified in the field are relayed back to Head Office immediately for review.

The reporting will be provided in PDF format.

Each report will contain the following information:

- Executive Summary including:
  - Summary of results
  - Trigger Limits
  - Instrumentation
- Schedule of visits including:
  - Date of survey,
  - Weather conditions during survey,
  - Surveyor responsible for the survey.
  - Applicable notes and accuracies
- Survey results showing:
  - Tabular data highlighting exceeding specified trigger limits.
  - Graphs showing vertical and horizontal movements with time.
  - Location plans.

The installation report, in addition to the above, will include photographs of the structures before and after the installation of the instrumentation.

## 7. Instrumentation

### Total Station Theodolite



Leica TM50  
Angular Standard Deviation  
Distance Standard Deviation  
Absolute error

**Motorised Total Station**  
 **$\pm 0.5''$ arc**  
 **$\pm 0.6\text{mm}+1\text{ppm}$**   
 **$\pm 2\text{mm}$**