

HTS Statement on Movement Monitoring

1.0 Introduction

- 1.1 This document details the proposed methodology and best practice to be adopted in the monitoring and detection of movement of the party wall to No4/6 Wedderburn Road.
- 1.2 The primary purpose of the monitoring is to observe movement to ensure that this is within the expected ranges and to enable the early detection of any expected behaviour that will enable the rapid implementation of any remedial actions if required.
- 1.3 The monitoring will be undertaken by the main contractor or suitable qualified company.
- 1.4 Reporting of the monitoring shall be the responsibility of the main contractors and they are therefore responsible for the issuing of the results to the appointed surveyors at the agreed intervals.

2.0 Monitoring

- 2.1 Monitoring positions are proposed as per 1220-SK010 but the final number of should be agreed between surveyor and respective engineers.
- 2.2 Monitoring should in place prior to any works being undertaken to achieve baseline readings.
- 2.3 An EDM shall be used to record position three dimensionally of the retro targets fixed to the PW at the positions noted.

2.1 Control Stations

- 2.11 Control stations will be installed outside of the site. The location of these will be targets placed on stable structures outside the zone which the site works can be expected to influence, More than one control shall be install in case of one being lost. These off site reference "frame-works" will be arranged so as to be rigid so that the position of the control stations will established sufficiently accurately.

2.2 On-plan Positions

- 2.21 Retro targets will be used monitor both on-plan position and verticality.

2.3 Installed Targets

- 2.21 The access for the general site works will be sufficient for position the targets however ladder access may be required to install to the adjacent properties prior to the demolition.
- 2.22 Externally fixed targets will be removed after the project and by the use of degrading adhesive their fixing point will be back to as before the project within 4 years of the completion of the project.

2.4 Frequency of Monitoring

- 2.41 The frequency of the monitoring shall vary depending on the risk of the activities on site.

It is suggested that during subterranean works that monitoring shall take place weekly.

Frequency shall be increased to twice/week if the amber trigger level is reached or per the table noted below.

- 2.42 One the subterranean works are complete it is suggested the monitoring takes place monthly.

2.5 Surveying/Accuracy of Instruments

2.51 The surveyor of the targets should be able to quickly ascertain calculated displacements during the survey and so be able to react to and further investigate the results immediately.

2.52 It is suggested that the following parameters are used for the accuracy of the instruments:

Precise Level:	Standard Deviation	0.4mm for a 1km double-run
	Absolute error	+/-1mm
Total Station Theodolite:	Angular Standard deviation	+/-1/2"arc
	Distance standard deviation	+/-1/2mm+1ppm
	Absolute error	+/-2mm

2.6 Reporting and Presentation of Information

2.61 The schedule and format of measurements, data processing and reporting shall be tabular and graphical to enable simple interpretation of data.

2.62 Both displacements and movement from the last survey shall be calculated and presented.

2.63 Results shall be issued to HTS and adjoining surveyors within 2days of the survey being completed.

2.64 The weather conditions shall be recorded at the time of the survey along with any relevant items.

2.7 Monitoring, reporting and actions

2.71 The following table details the various triggers levels that are suggested to monitor movement at the various noted positions on SK043. These actions should be agreed prior to any works being carried out.

Status of Alert	Max. vertical or horizontal Displacement	Action(s) in the event of a trigger level being exceeded
Green	4mm	No action other than carry out work to original method statements and planned frequency for monitoring. Issue weekly or fortnightly reports to interested parties.
Amber 1	5mm	Inform SEng & Temporary Works Engineer that green trigger exceeded. Continue work but with increased vigilance required monitoring at least once per day. Issue daily reports (where practical) to interested parties.
Amber 2	7mm	Inform SEng, AO's Eng & Temporary Works Engineer immediately. Stop all works and await instruction. Increase monitoring at critical zones to more than twice daily and continue twice daily elsewhere. Issue reports within 24 hours to interested parties.
Red 1	10mm (movement ceased)	Inform SEng, AO's Eng & Temporary Works Engineer immediately. Stop all works and await instruction. Increase monitoring at critical zones to more than twice daily and continue twice daily elsewhere. Issue reports within 24 hours to interested parties.
Red 2	10mm (movement continuing)	Inform SEng, AO's Eng & Temporary Works Engineer immediately. Stop all works and seek immediate instruction. Increase monitoring to constant readings until movement ceased. Issue reports within 24 hours to interested parties. Advise adjoining occupiers in the unlikely event that continued movement leads to evacuation of the site.