



# C510 – Whitechapel and Liverpool Street Station Tunnels

## Instrumentation and Monitoring Close Out Report Block 05 Liverpool Street

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This document has been reviewed by the following individual for coordination, compliance, integration and acceptance and is acceptable for transmission to the above stakeholder for the above stated purpose.

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### 2b. Review by Stakeholder (If required):

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		Crossrail Review and Acceptance Decal	
This decal is to be used for submitted documents requiring an acceptance by Crossrail.			
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I hereby approve the above documents and I hereby substitute Crossrail approval of design, details, calculations,			

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(From General Document Template ref: BBMV-Form-S9-04 rev 5.0)

## 1 Purpose of Close out Report

Materials and Workmanship Specification - Instrumentation and Monitoring (C122-OVE-Z4-RSP-CR001-00007), section KX10.2114 specifies the requirement for a close out report prior to the decommissioning of monitoring sensors and instruments. It is, therefore, the purpose of this close out report to gain acceptance to decommission identified monitoring sensors in Block 05 of Crossrail's C510 Liverpool St. Acceptance to decommission sensors will result in ceasing measurements, stopping the reporting and removing sensors.

To gain approval to decommission instrumentation and monitoring, the monitoring data will be analysed to demonstrate settlement does not breach specified rates after the minimum monitoring period is complete.

**N.B.** Monitoring sensors refers to all monitoring points; which includes BRES, invar scales, road studs, extensometers, inclinometers, tilt meters, crack meters, water cells, retros (survey stickers) and prisms. Please note this is not an exhaustive list and does not include monitoring systems/equipment, such as communication boxes.

## 2 Scope of Monitoring Assessment for Close Out

Specification KX10.4103 of document C122-OVE-Z4-RSP-CR001-00007 states that to establish approval for decommissioning, the contractor is to produce a close out report which summarises the observations in correlation with the construction activities. The report is to demonstrate monitoring has reached acceptable settlement rates; whether to the specified rate, or where no rate is specified trigger values are evaluated against potential residual risks. I&M schedule C122-OVE-C2-DDJ-CR001-Z-31511 specifies the acceptable settlement rates with the requirements to monitor at different construction phases, and duration for completion. To summarise the I&M schedule states that the manual monitoring decommissioning specified rate is 2mm per year, following 16 months post construction monitoring (4 months step down and quarterly measurements for a minimum of 12 months long term monitoring). The I&M schedule does not identify the need for long term automated monitoring or specify a settlement rate requirement, it only states that monitoring must continue for 6 months post construction. At the 6 month juncture, agreement must be sought from the project manager to decommission automated monitoring programmes through a close out report or agreeing to cease the works with the project manager. In most cases decommissioning will be possible, as the residual risk will be captured through the remaining long term manual monitoring.

Contrary to the Specification for Instrumentation and Monitoring (C122-OVE-Z4-RSP-CR001-00007), the Project Managers Instruction (PMI) C510-PMI-01102 replaces long term monitoring with satellite interferometry (InSAR) for the areas agreed by the project manager. If long term monitoring responsibilities are removed from BBMV and covered by satellite interferometry, the specified settlement criteria may not be met by BBMV. If this occurs, reference to the agreement will be provided to state BBMV are no longer responsible for the sensors and consequently decommissioning acceptance will be proposed.

In some cases it may be agreed with the project manager to cease monitoring prior to meeting the specified rates. The close out report will be revised to incorporate these agreements prior to decommissioning. Due to multiple influencers and large construction monitoring zones, it may be prudent to submit successive document revisions for close out reports, where the specification is not met or the minimum post construction monitoring has not been achieved.

### 3 Close Out Report Block Description and Location Plan

#### 3.1 Block 05 Location

Figure 1 shows the Liverpool St general location plan, C510 tunnel construction and where Block 05 is situated. Detailed location plans can be found within the installation reports as listed in Section 3.2. Each monitoring sensor's location is shown within the assessment plans (Section 5.3).

No Thames Water critical assets surround Block 05. The location and details of nearby assets can be found in Instrumentation and Monitoring Plan: Liverpool Street Station Ground Movement and Asset Protection C122-OVE-C2-RGN-C101-50013 or the relevant C122 prepared Damage Assessment Reports.

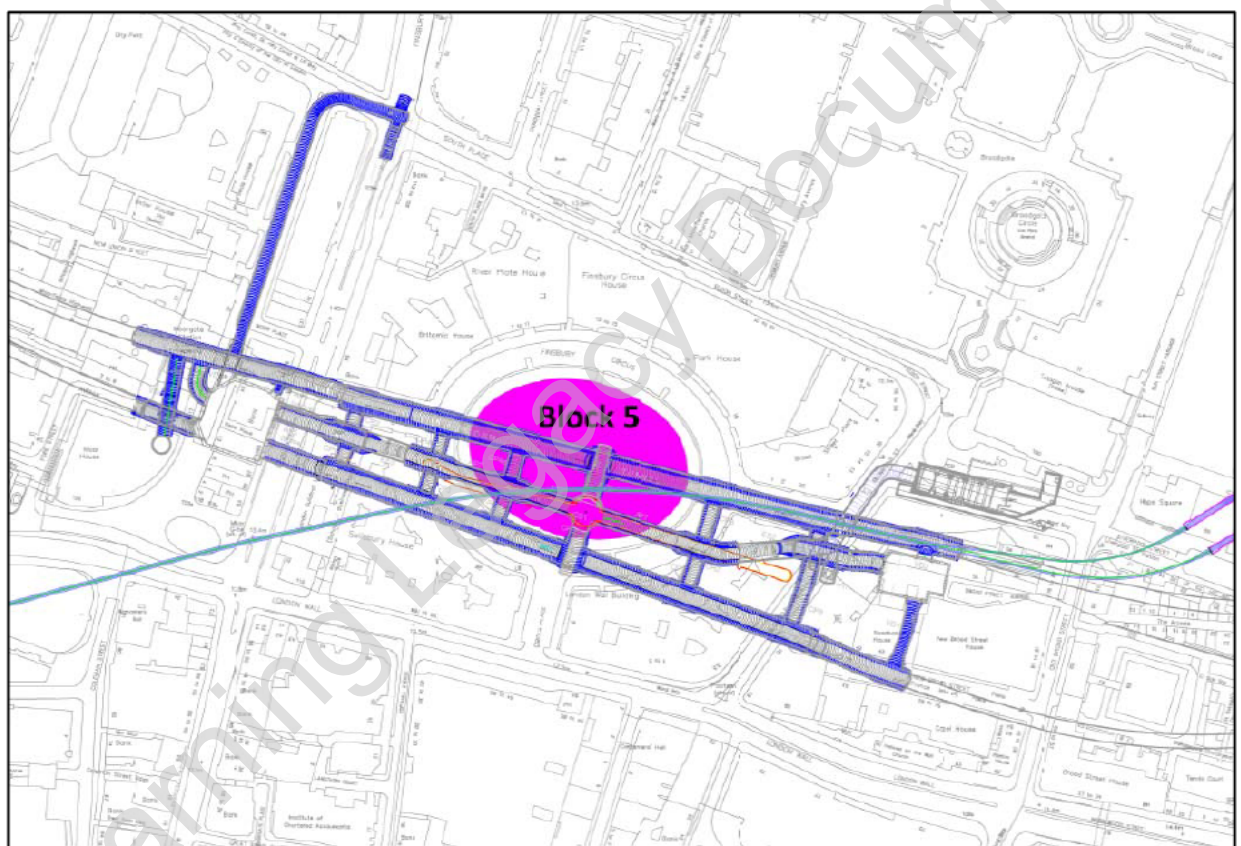


Figure 1 - Liverpool St General Location Plan - including Block 05 monitoring area

### 3.2 Block 05 Description

Block 05 is confined entirely within Finsbury Circus, and contains the c510 worksite/yard. Block 05 is located above Platform Tunnel East (PTE), Platform Tunnel West (PTW), Cross Passage 3a (CP3a), Cross Passage 4a (CP4a), Cross Passage 5 (CP5), Cross Passage 6 (CP6), Chamber 1-1 (CH1-1), Access Shaft 1 (AS1), Access Passage 7 West (AP7W), and Access Passage 7 East (AP7E). Further details of the construction programmes can be found in Section 4. Block 05 contains the following types of monitoring sensors:

- Building Levelling Studs/BREs (LB) - manual monitoring
- Road Studs (LP)- manual monitoring
- Tiltmeters (TB) – automated monitoring
- 3D Geodetic Prism (RP) and Reflectors (RL)– automated and manual monitoring
- Extensometer Rods (XR) – automated and manual monitoring
- Inclinometers (IM) – automated and manual monitoring

Each monitoring sensor's details are listed within the Decommissioning Status Tracker (Table 2) and further relevant information can be sourced from the following reports.

3D Geodetic Prism (RP) and Reflectors (RL) were installed in the shaft only for site construction control so there isn't any installation report available.

#### Block 05 Report References:

- Installation Report – Block 5 (Shaft), Liverpool St  
CRL Document Number: C510-BBM-C2-RGN-C101-50145
- Monitoring Installation Report LIV-LP-05 – Finsbury Circus  
CRL Document Number: C510-BBM-C2-RGN-C101-50154
- Instrumentation C510-IM10501– Liverpool St. –Inclinometer (Redrilled)  
CRL Document Number: C510-BBM-C2-RGN-C101-50061
- Instrumentation C510-IM10502– Liverpool St. –Inclinometer (Redrilled)  
CRL Document Number: C510-BBM-C2-RGN-C101-50060
- Instrumentation C510-IM10503– Liverpool St. –Inclinometer (Re-drilled)  
CRL Document Number: C510-BBM-C2-RGN-C101-50059
- Instrumentation C510-IM10504– Liverpool St. –Inclinometer (Re-drilled)  
CRL Document Number: C510-BBM-C2-RGN-C101-50058
- Instrumentation C510-IM10505– Liverpool St. –Inclinometer (Re-drilled)  
CRL Document Number: C510-BBM-C2-RGN-C101-50057
- Instrumentation C510-IM10506– Liverpool St. –Inclinometer (Redrilled)  
CRL Document Number: C510-BBM-C2-RGN-C101-50096
- Instrumentation C510-IM10507– Liverpool St. –Inclinometer (Redrilled)  
CRL Document Number: C510-BBM-C2-RGN-C101-50055

- Instrumentation C510-IM10508– Liverpool St. –Inclinometer (Redrilled)  
CRL Document Number: C510-BBM-C2-RGN-C101-50065
- Instrumentation C510-IM10509– Liverpool St. –Inclinometer (Redrilled)  
CRL Document Number: C510-BBM-C2-RGN-C101-50064
- Instrumentation C510-IM10511– Liverpool St. –Inclinometer  
CRL Document Number: C510-BBM-C2-RGN-C101-50097
- Instrumentation C510-IM10512– Liverpool St. –Inclinometer  
CRL Document Number: C510-BBM-C2-RGN-C101-50099
- Instrumentation C510-IM10513– Liverpool St. –Inclinometer (Redrilled)  
CRL Document Number: C510-BBM-C2-RGN-C101-50063
- Instrumentation C510-IM10514– Liverpool St. –Inclinometer (Redrilled)  
CRL Document Number: C510-BBM-C2-RGN-C101-50062
- Instrumentation C510-IM11201– Liverpool St. –Inclinometer  
CRL Document Number: C510-BBM-C2-RGN-C101-50094
- Instrumentation C510-IM11203– Liverpool St. –Inclinometer  
CRL Document Number: C510-BBM-C2-RGN-C101-50093
- Instrumentation C510-XR10501– Liverpool St. –Extensometer  
CRL Document Number: C510-BBM-C2-RGN-C101-50103
- Instrumentation C510-XR10502– Liverpool St. –Extensometer  
CRL Document Number: C510-BBM-C2-RGN-C101-50074
- Instrumentation C510-XR10503– Liverpool St. –Extensometer  
CRL Document Number: C510-BBM-C2-RGN-C101-50075
- Instrumentation C510-XR10504– Liverpool St. –Extensometer  
CRL Document Number: C510-BBM-C2-RGN-C101-50076
- Instrumentation C510-XR10505B– Liverpool St. –Extensometer  
CRL Document Number: C510-BBM-C2-RGN-C101-50101
- Instrumentation C510-XR10506– Liverpool St. –Extensometer  
CRL Document Number: C510-BBM-C2-RGN-C101-50077
- Instrumentation C510-XR10507– Liverpool St. –Extensometer  
CRL Document Number: C510-BBM-C2-RGN-C101-50078
- Instrumentation C510-XR10508– Liverpool St. –Extensometer  
CRL Document Number: C510-BBM-C2-RGN-C101-50104
- Instrumentation C510-XR10509– Liverpool St. –Extensometer  
CRL Document Number: C510-BBM-C2-RGN-C101-50079
- Instrumentation C510-XR10510– Liverpool St. –Extensometer  
CRL Document Number: C510-BBM-C2-RGN-C101-50080
- Instrumentation C510-XR10511– Liverpool St. –Extensometer  
CRL Document Number: C510-BBM-C2-RGN-C101-50081
- Instrumentation C510-XR10512– Liverpool St. –Extensometer  
CRL Document Number: C510-BBM-C2-RGN-C101-50082



- Instrumentation C510-XR10514– Liverpool St. –Extensometer  
CRL Document Number: C510-BBM-C2-RGN-C101-50083
- Instrumentation C510-XR11201– Liverpool St. –Extensometer  
CRL Document Number: C510-BBM-C2-RGN-C101-50085
- Instrumentation C510-XR11206– Liverpool St. –Extensometer  
CRL Document Number: C510-BBM-C2-RGN-C101-50086

The Settlement Contour Drawing (C122-OVE-C2-DDA-CR001\_Z-21313) predicted Block 05 to experience approximately 5-90mm of settlement.

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#### 4 Construction Programme Influencing Block 05

Extent of Influence (EOI) monitoring areas were established to record ground movements in relation to C510 construction. The EOI purpose is to ensure all assets and areas are adequately monitored for movement during construction, this is achieved by controlling when and how often monitoring occurs. The Asset Protection Instrument and Monitoring (I&M) Schedules (C122 –OVE-C2-DDJ-CR001\_Z-31511) states the extent of influence (EOI) of an active tunnel is 2 x depth from the active tunnel face. The EOI is used to determine when monitoring sensors are no longer influenced by construction and can be considered for decommissioning.

The original specification received amendments to manual monitoring frequency within the EOI through several PMIs, with the latest PMI (C510-PMI-01103) establishing an Active ZOI (Zone of Influence) as 2 x tunnel diameter from the active tunnel face projected to the surface. The Active ZOI changed the rates of monitoring frequency, it did not replace EOI. The EOI is used to determine when a monitoring sensor is eligible for decommissioning; whereas, active ZOI is used to analyse manual monitoring movement against construction.

To identify the tunnels that had the potential to significantly affect Block 05, a ZOI was established by giving each monitoring sensor a radius of 2.0 x tunnel diameter. This area was then used to determine all the mining advances that occurred within its boundary. Figure 2 shows the ZOI boundary (magenta outline) and the tunnel constructions. Tunnel advance start and finish dates will be used in the assessment of the monitoring data.

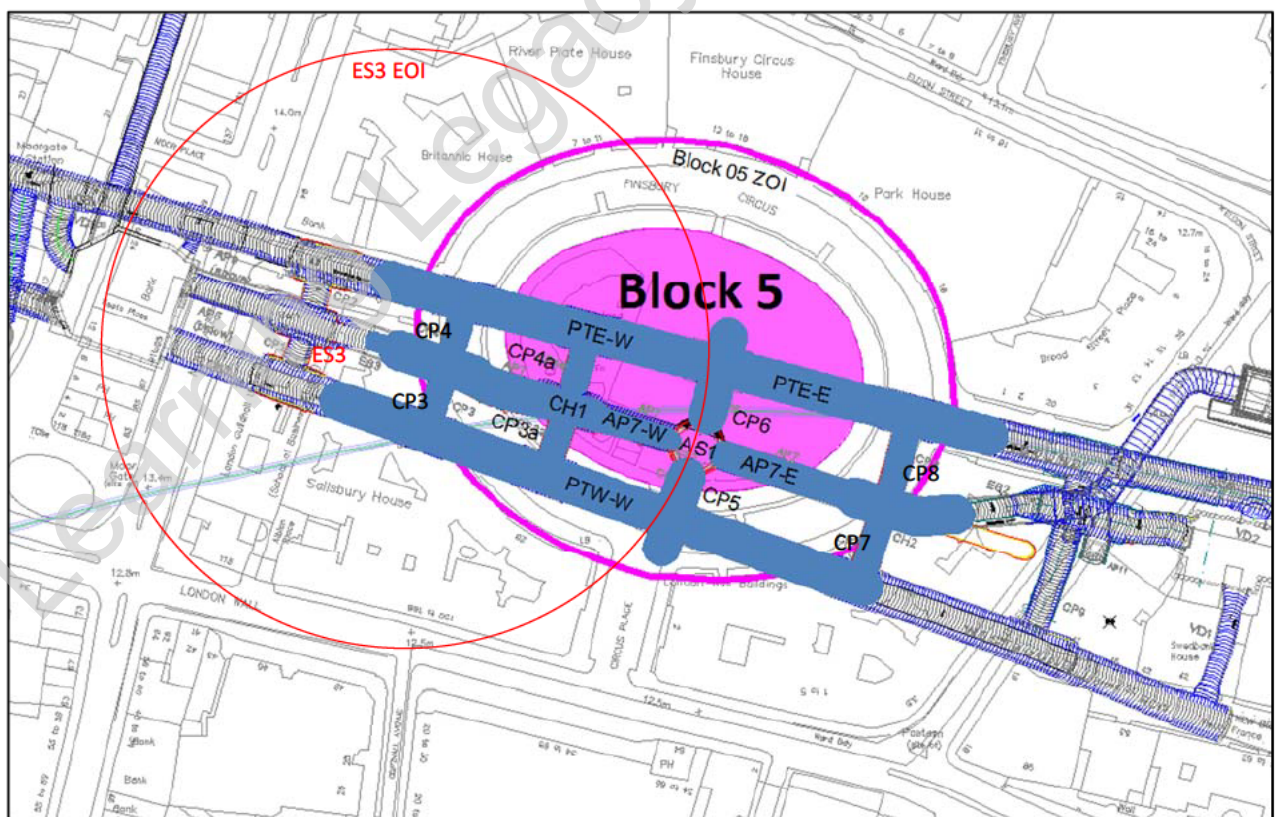


Figure 2 - Block 05 ZOI Constructions

Figure 2 shows the Block 05 ZOI and the tunnel advances that occurred within its boundary. The construction advances within the ZOI that have the potential to affect Block 05 are listed and summarised in Table 1. Further evidence for construction dates can be seen in Table 2, which lists the latest tunnel advance for each point.

As the final construction activity (ES3 enlargement) was completed on the 18<sup>th</sup> of March 2017, post construction monitoring has been completed for all of Block 05 with regards to ES3 EOI. Therefore, all monitoring sensors are eligible to be decommissioned, subject to meeting required settlement trends. Grouting facilities within the GAD adits were agreed to be decommissioned at the ERP meeting on 27/07/2017, and as such, all remaining automated sensors were agreed to be decommissioned. Under Specification Section KC21.3220(c) of the Crossrail document C122-OVE-Z4-RSP-CR001-00010, it states that automatic monitoring can be decommissioned at the same time as the grouting facilities. Further evidence for Block 05 sensors' decommissioning status can be found in the decommissioning tracker (Table 2).

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#### 4.1 Tunnel Advances Affecting Block 05

The information presented in Table 1 is used in all monitoring graphs (Section 5.1), to show the ground movements in relation to construction.

TUNNEL ADVANCES STARTS & ENDS FOR GRAPHS					
Tunnel Code	Tunnel Reference	Primary Layer Type	Start Date	End Date	Zone
ES3-Enlargement	ES3	Enlargement	15/02/2017	20/02/2017	ZOI
CH6/ES3-Enlargement	CH6/ES3	Enlargement	11/12/2016	30/01/2017	ZOI
ES3-Pilot	ES3	Pilot	24/06/2016	15/11/2016	ZOI
AP9-Enlargement	AP9	Enlargement	30/05/2016	09/06/2016	ZOI
CP4-Enlargement	CP4	Enlargement	27/09/2014	03/10/2014	ZOI
CP2-Enlargement	CP2	Enlargement	23/08/2014	30/08/2014	ZOI
CP1-Enlargement	CP1	Enlargement	24/06/2014	30/06/2014	ZOI
CP2-Pilot	CP2	Pilot	08/06/2014	15/06/2014	ZOI
CP1-Pilot	CP1	Pilot	06/06/2014	13/06/2014	ZOI
VD7-Enlargement	VD7	Enlargement	04/06/2014	11/06/2014	ZOI
CP3a-Enlargement	CP3a	Enlargement	24/05/2014	31/05/2014	ZOI
CP4-Pilot	CP4	Pilot	07/05/2014	10/05/2014	ZOI
CP3-Enlargement	CP3	Enlargement	01/05/2014	06/05/2014	ZOI
CP3-Pilot	CP3	Pilot	29/04/2014	06/05/2014	ZOI
AP5-Enlargement	AP5	Enlargement	05/04/2014	12/04/2014	ZOI
CH5-Enlargement	CH5	Enlargement	14/03/2014	05/04/2014	ZOI
LCWb-Enlargement	LCWb	Enlargement	25/02/2014	05/03/2014	ZOI
LCE-Enlargement	LCE	Enlargement	01/02/2014	16/02/2014	ZOI
CP3a-Pilot	CP3a	Pilot	10/01/2014	14/01/2014	ZOI
PTE-West-Enlargement	PTE-West	Enlargement	29/11/2013	31/01/2014	ZOI
PTW-East-Enlargement	PTW-East	Enlargement	17/11/2013	24/11/2013	ZOI
AP5-Pilot	AP5	Pilot	30/10/2013	04/11/2013	ZOI
LCWb-Pilot	LCWb	Pilot	20/10/2013	24/10/2013	ZOI
PTW-West-Enlargement	PTW-West	Enlargement	18/08/2013	24/02/2014	ZOI
LCE-Pilot	LCE	Pilot	06/08/2013	13/08/2013	ZOI
PTW-East-Pilot	PTW-East	Pilot	13/07/2013	21/07/2013	ZOI
PTE-West-Pilot	PTE-West	Pilot	16/06/2013	06/08/2013	ZOI
PTW-West-Pilot	PTW-West	Pilot	02/06/2013	20/10/2013	ZOI
CH1-Enlargement	CH1	Enlargement	16/05/2013	26/05/2013	ZOI
CH5-Pilot	CH5	Pilot	27/04/2013	30/10/2013	ZOI
ES3/CH5-Pilot	ES3/CH5	Pilot	23/04/2013	26/04/2013	ZOI
CH1-Pilot	CH1	Pilot	09/03/2013	22/04/2013	ZOI
AP7 West-Enlargement	AP7 West	Enlargement	17/02/2013	26/05/2013	ZOI
AP7 West-Pilot	AP7 West	Pilot	11/02/2013	09/03/2013	ZOI
CP5-Enlargement	CP5	Enlargement	08/12/2012	13/01/2013	ZOI
CP5-Pilot	CP5	Pilot	11/11/2012	16/11/2012	ZOI
GAD1-Pilot	GAD1	Pilot	26/01/2012	07/02/2012	ZOI

**Table 1 - Tunnel Advances Affecting Block 05**

**Heading Index:**

- AP – Access Passage
- CH - Chamber
- CP - Cross Passage
- ES – Escalator
- GAD – Grout Adit

PTE – Platform Tunnel East  
PTW – Platform Tunnel West  
LCE – Launch Chamber East  
LCW – Launch Chamber West  
VD – Ventilation Drive

## 5 Monitoring Assessment of Block 05

Evidence for decommissioning each monitored sensor is shown through graphs, tables (decommissioning status tracker) and plans. Each element of assessment compliments the other and is used together to determine acceptance of decommissioning. The decommissioning status tracker (Table 2) highlights the monitoring sensors to be considered for decommissioning and provides the supporting evidence for the decision. In some cases supplementary evidence is required to prove stability or provide reasoning for decommissioning.

ES3 was the final construction activity to affect Block 05. The final construction activity was 18/03/2017; therefore, all automated sensors are eligible for decommissioning from 18/09/2017 and all manually monitored sensors from the same date, provided the specified sensor meets the <2mm/year settlement requirement.

Crossrail agreed at the ERP meeting held on the 20/6/2017 to decommission the grouting within GAD2 tunnel and Blomfield Grout Box. It was also agreed by Crossrail at the ERP meeting held on 27/07/2017 to decommission the grouting within GAD1. As such, this allowed for decommissioning of all automated sensors within the influence area. It was therefore agreed, as per the contract, that all automated sensors within Block 05 be removed. See graphs, tables and plans for further details on the automated sensors.

BBMV was informed by CRL that CEG meeting held on 29/11/2017 agreed that all manual sensors, except Section 1 (above HMC Line) and Section 4 (around Finsbury Circus), could be decommissioned as there are no other specific assets located within the circus that need monitoring.

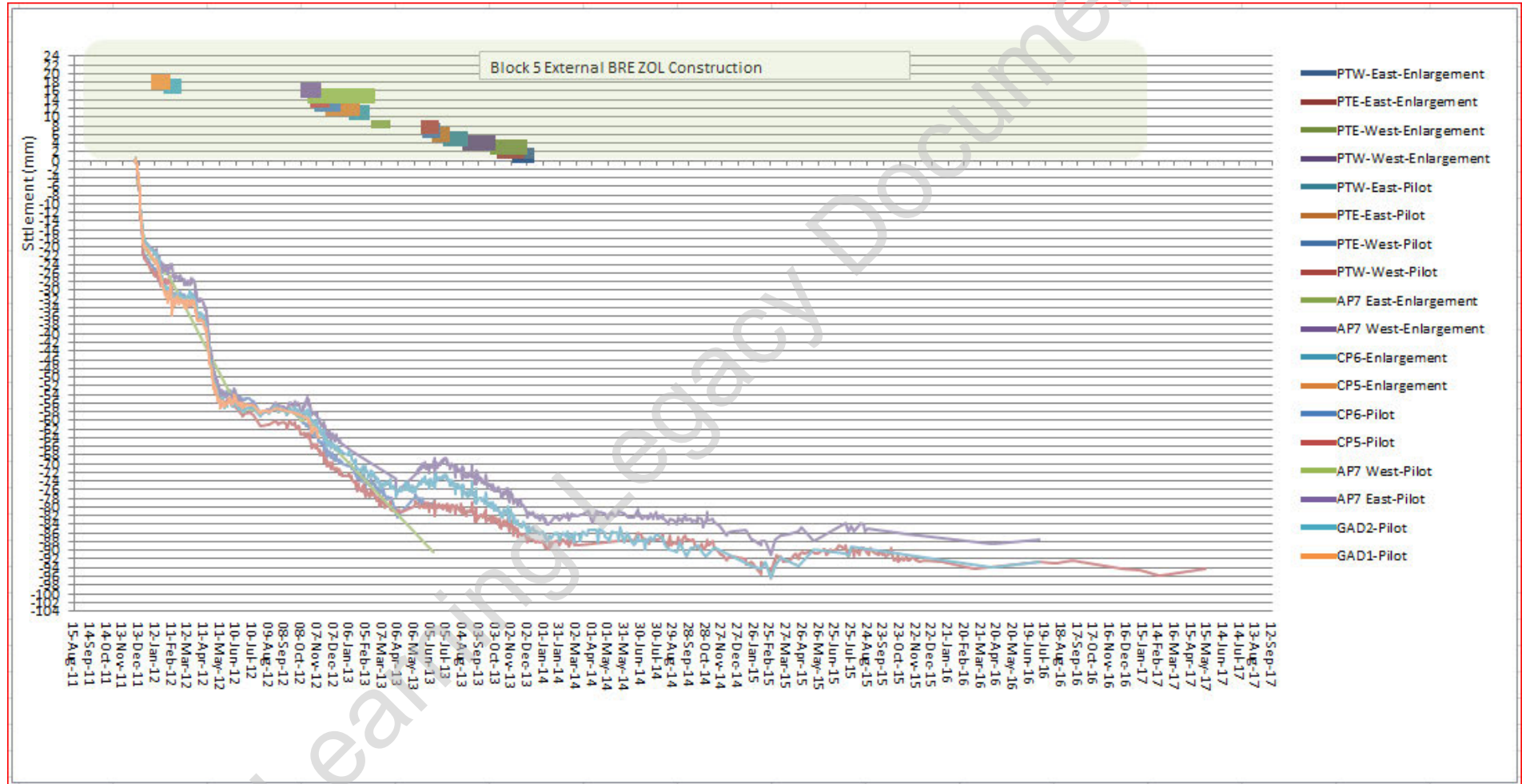
Section 1 and Section 4 sensors are ceased through email correspondence from Paul Braddish 28/02/2018 (Appendix 1).

### 5.1 Time Graphs Monitoring Full History and Construction Durations

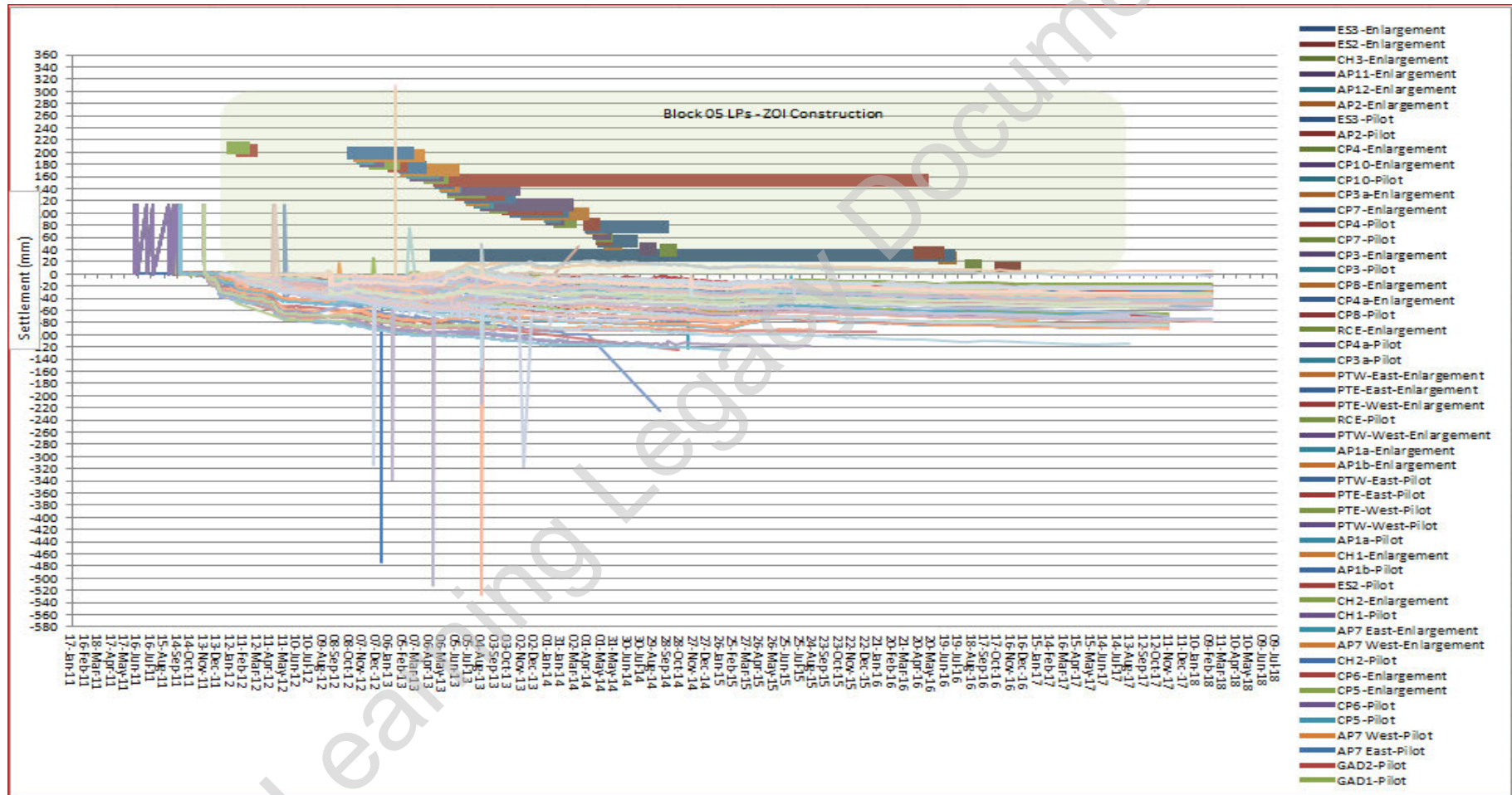
To assess the movement of Block 05 monitoring sensors; each monitoring sensor data type is displayed in a line graph, with a Gantt chart (bar) representing the construction identified in Section 04:

- Graph 1 - Block 05 External Building BRE's Manual Monitoring History in Relation to Construction
- Graph 2 - Block 05 All Road Studs (LPs) Manual Monitoring History in Relation to Construction
- Graph 3 - Block 05 Tiltmeters (TB) Automated Monitoring History in Relation to Construction

Graph 1 - Block 05 External Building BRE's Manual Monitoring History in Relation to Construction

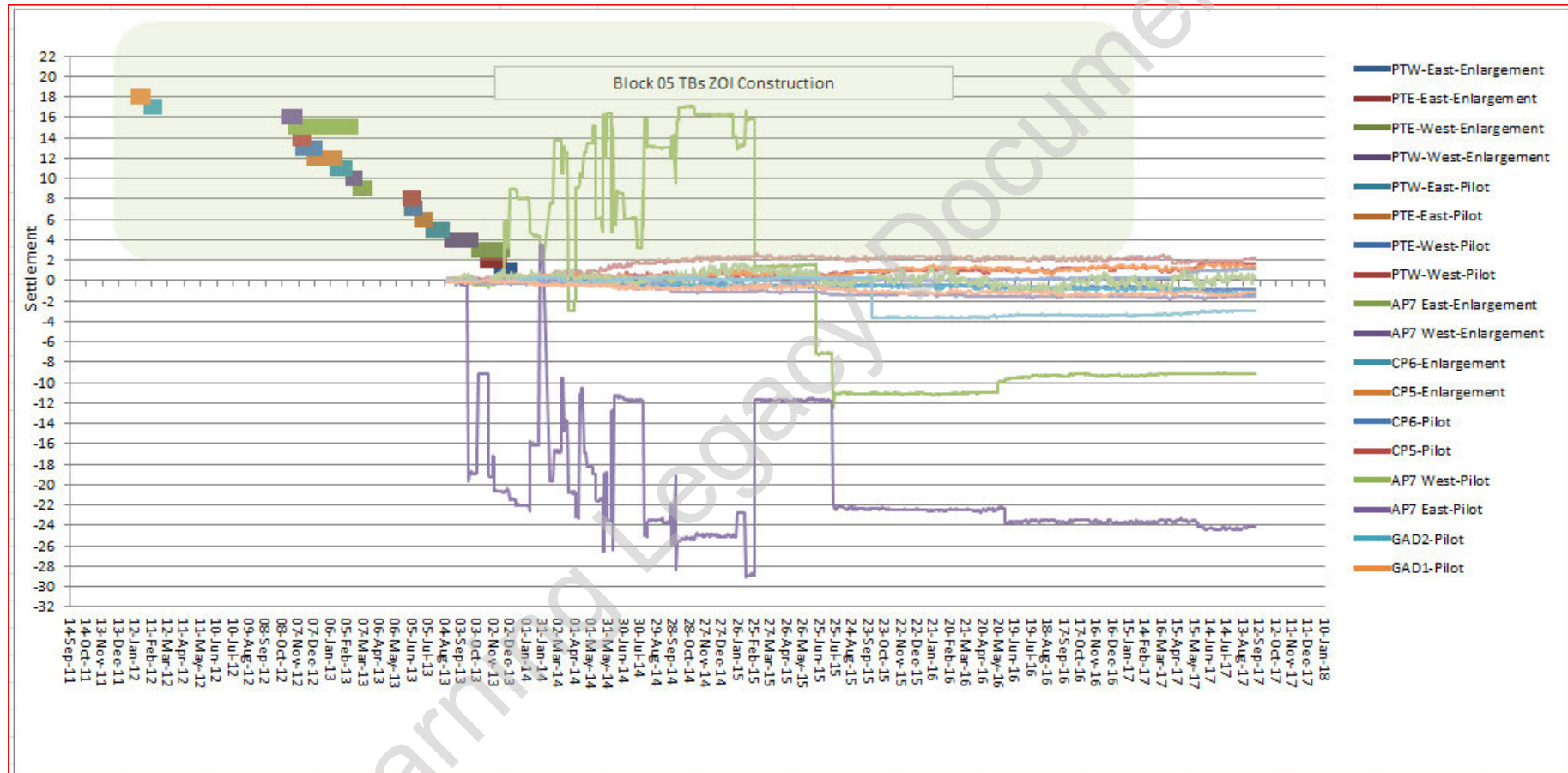


Graph 2 - Block 05 All Road Studs (LPs) Manual Monitoring History in Relation to Construction



(From General Document Template ref: BBMV-Form-S9-04 rev 5.0)

Graph 3 - Block 05 Tiltmeters (TB) Automated Monitoring History in Relation to Construction



(From General Document Template ref: BBMV-Form-S9-04 rev 5.0)



## 5.2 Block 05 Decommissioning Status Tracker

The decommissioning tracker (Table 2) identifies each monitoring sensor and provides the critical information to enable decommissioning assessment for each sensor. The initial fields shown in the tracker are descriptors of the monitoring sensor, whilst the remaining fields are the assessment for decommissioning. The purpose of the tracker is to provide Crossrail reviewers with sufficient information in conjunction with construction movement graphs and plots, to accept BBMV's proposal to decommission sensors on an individual basis.

Detailed explanation of the tracker column headers:

### Tracker Column Header – Last Construction Date

To determine the last influencing construction works for each sensor, the Active ZOI parameter was used. All construction tunnelling advances within the 2 x diameter radius were listed for each sensor, from these lists the latest advance date is used as an indicator.

**N.B.** Each monitoring sensor's last affecting primary construction heading and advance number's completion date has been listed within the Decommissioning Status Tracker. The last construction heading listed, is not the closest to the monitoring sensor, but the last completed within the 2 x diameter radius. Not all sensors are within a distance of 2 x diameter of a tunnel advance location. If this scenario occurs the last completed heading within Block 05's ZOI is used as a reference.

### Tracker Column Header – 120, 180 & 365 Days Average Settlement Trend

There are three average settlement trends, which tie into the defined monitoring time frames; 120, 180 and 365 days. The calculation used to determine the trend is the same for all three periods. It is a slope calculation (explained below) of the defined period, multiplied over one year. The trend is calculated from the latest reading and includes all readings within the defined period, which is averaged and then multiplied over 1 year. If there is no initial reading for the time frame date, the calculation will continue back to include the next available date. This is an important consideration when assessing the trend and to assist the reviewers, the time frame used within the calculation is included within the decommissioning tracker status table. Defined monitoring time frames:

- The 120 day average rate is used to show the completion of manual monitoring step down period, this is the minimum period of monitoring prior to InSAR taking monitoring responsibility.
- The 180 day average rate is the minimum monitoring period after construction for automated sensors.
- The 365 day average trend is the desired period to be used if the long term monitoring has been completed for decommissioning evidence. The specification states that if the trend is below 2mm/yr, then the sensor is eligible for decommissioning.

### Slope calculation Settlement Trend:

**Description** – The settlement trend calculates the slope of the linear regression line through data points in known\_y's and known\_x's. The slope is the vertical distance divided by the horizontal distance between any two points on the line, which is the rate of change along the regression line.

## Calculation

$$b = \frac{\sum (x - \bar{x})(y - \bar{y})}{\sum (x - \bar{x})^2}$$

Example - If the calculated trend for a 6 month period is 1.5mm, it is multiplied into 365 days, to equal a projected settlement trend of 3mm over 1 year.

## Tracker Column Header – ERP Ceased date

ERP and CTC meetings have identified project efficiencies, by ceasing manual monitoring programmes early, or prior to reaching 2mm/yr. InSAR may have taken responsibility of monitoring or the perceived risk may be low enough to warrant ceasing the monitoring. In these situations the cease date is provided, along with a comment explaining the reasoning. Monitoring that has been ceased still requires approval to decommission and will be identified within the decommissioning status tracker as proposed to decommission.

## Tracker Column Header – Decommissioning Status

The status is the decommissioning situation for each sensor within Block 05. The different statuses are as follows:

- Outstanding - Monitoring sensor has not met the close out requirements and approval to decommission will be sought in subsequent revisions of this close out report.
- Proposed - the sensor is proposed to be decommissioned. Crossrail to accept the sensor can be decommissioned.
- Agreed – Agreed to decommission through previous revision of the close out report. No further reporting or monitoring has taken place.
- Complete - Monitoring sensor has been removed and evidence gathered during decommissioning.

**N.B.** When monitoring sensors have not met the requirements, it may still be appropriate to decommission. In this scenario supplementary evidence will be provided to explain the reasoning for decommissioning.

Table 2 - Block 05 Decommissioning Status Tracker

Export CloseOut  
Sensor Status  
AutoCAD Script

22/05/2018

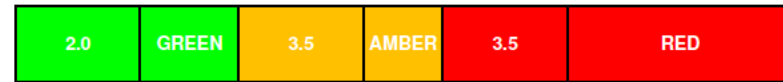


C510 Sensor Name	Block	Section	Int / Ext	Measurement Type	Sensor Type	Sensor Description	Asset/Location	EOI Last Primary Layer Construction	Last Construction Date	Latest Surveyed Date	AVERAGE SETTLEMENT TREND					Ceased Date	General Comment	Decommissioning Status
											120 Days	120 Day Calculation Period	180 Days	180 Day Calculation Period	365 Days			
C510-LP10507	Block 105	S10501	External	Manual	LP	Road Stud	Site/H&C	LIV_CP4_Enlargement_Adv-11	03/10/2014	14/02/2018	-1.9	188	-1.9	188	-2.6	399	Ceased through email correspondence from Paul Braddish 28/02/2018	Agreed
C510-LP10508	Block 105	S10501	External	Manual	LP	Road Stud	Site/H&C	LIV_CP4a_Enlargement_Adv-13	16/09/2014	14/02/2018	-2.3	188	-2.3	188	-0.6	399	Ceased through email correspondence from Paul Braddish 28/02/2018	Agreed
C510-LP10509	Block 105	S10501	External	Manual	LP	Road Stud	Site/H&C	LIV_CP4a_Enlargement_Adv-13	16/09/2014	14/02/2018	-2.9	188	-2.9	188	-0.5	399	Ceased through email correspondence from Paul Braddish 28/02/2018	Agreed
C510-LP10510	Block 105	S10501	External	Manual	LP	Road Stud	Site/H&C	LIV_CP4a_Enlargement_Adv-13	16/09/2014	14/02/2018	-3.4	188	-3.4	188	-0.3	399	Ceased through email correspondence from Paul Braddish 28/02/2018	Agreed
C510-LP10524	Block 105	S10501	External	Manual	LP	Road Stud	Site/H&C	LIV_CP4a_Enlargement_Adv-13	16/09/2014	06/08/2015	#N/A	132	#N/A	196	#N/A	368	Destroyed	Agreed
C510-LP10525	Block 105	S10501	External	Manual	LP	Road Stud	Site/H&C	LIV_PTE-West_Enlargement_Adv-49	23/11/2013	16/12/2015	#N/A	420	#N/A	420	#N/A	420	Destroyed	Agreed
C510-LP10526	Block 105	S10501	External	Manual	LP	Road Stud	Site/H&C	LIV_PTE-West_Enlargement_Adv-43	22/11/2013	01/12/2017	#N/A	204	1.5	204	0.4	392	Ceased through email correspondence from Paul Braddish 28/02/2018	Agreed
C510-LP10527	Block 105	S10501	External	Manual	LP	Road Stud	Site/H&C	LIV_PTE-West_Enlargement_Adv-38	19/11/2013	14/02/2018	#N/A	188	-4.5	188	0.2	399	Ceased through email correspondence from Paul Braddish 28/02/2018	Agreed
C510-LP10528	Block 105	S10501	External	Manual	LP	Road Stud	Site/H&C	LIV_PTE-East_Enlargement_Adv-46	16/11/2013	14/02/2018	#N/A	188	-4.2	188	0.6	399	Ceased through email correspondence from Paul Braddish 28/02/2018	Agreed
C510-LP10529	Block 105	S10501	External	Manual	LP	Road Stud	Site/H&C	LIV_PTE-East_Enlargement_Adv-52	17/11/2013	01/12/2017	#N/A	268	2.9	268	-1.1	633	Ceased through email correspondence from Paul Braddish 28/02/2018	Agreed
C510-LP10530	Block 105	S10501	External	Manual	LP	Road Stud	Site/H&C	LIV_PTE-East_Enlargement_Adv-58	18/11/2013	14/02/2018	#N/A	188	-4.1	188	1.0	434	Ceased through email correspondence from Paul Braddish 28/02/2018	Agreed
C510-LP10531	Block 105	S10501	External	Manual	LP	Road Stud	Site/H&C	LIV_PTE-East_Enlargement_Adv-64	20/11/2013	14/02/2018	-2.9	188	-2.9	188	1.0	399	Ceased through email correspondence from Paul Braddish 28/02/2018	Agreed
C510-LP10532	Block 105	S10501	External	Manual	LP	Road Stud	Site/H&C	LIV_PTE-East_Enlargement_Adv-70	29/11/2013	10/08/2017	6.5	155	3.7	211	-1.7	368	Destroyed since 01/12/2017	Agreed
C510-LP10533	Block 105	S10501	External	Manual	LP	Road Stud	Site/H&C	LIV_PTE-East_Enlargement_Adv-77	01/12/2013	10/08/2017	6.0	155	2.4	211	-1.9	368	Destroyed since 01/12/2017	Agreed
C510-LP10535	Block 105	S10501	External	Manual	LP	Road Stud	Site/H&C	LIV_CP8_Enlargement_Adv-END FACE	26/04/2014	10/03/2014	#N/A	466	#N/A	466	#N/A	466	Destroyed -covered by materials	Agreed
C510-LP10537	Block 105	S10501	External	Manual	LP	Road Stud	Site/H&C	LIV_CP4a_Enlargement_Adv-13	16/09/2014	14/02/2018	-3.6	188	-3.6	188	-0.1	399	Ceased through email correspondence from Paul Braddish 28/02/2018	Agreed
C510-LP10515	Block 105	S10501,S10502,S105XS2	External	Manual	LP	Road Stud	Site/H&C	LIV_CP4a_Enlargement_Adv-13	16/09/2014	01/12/2017	-3.6	147	-0.5	207	0.0	366	Ceased through email correspondence from Paul Braddish 28/02/2018	Agreed
C510-LP10505	Block 105	S10501,S10504	External	Manual	LP	Road Stud	Site/H&C	LIV_CP4_Enlargement_Adv-11	03/10/2014	14/02/2018	-1.3	188	-1.3	188	-0.1	386	Ceased through email correspondence from Paul Braddish 28/02/2018	Agreed
C510-LP10506	Block 105	S10501,S10505	External	Manual	LP	Road Stud	Site/H&C	LIV_CP4_Enlargement_Adv-11	03/10/2014	14/02/2018	-1.3	188	-1.3	188	0.4	399	Ceased through email correspondence from Paul Braddish 28/02/2018	Agreed
C510-LP10534	Block 105	S10501,S10505	External	Manual	LP	Road Stud	Site/H&C	LIV_CP8_Enlargement_Adv-END FACE	26/04/2014	02/09/2014	#N/A	120	#N/A	180	#N/A	365	Destroyed -covered by materials	Agreed
C510-LP10536	Block 105	S10501,S10505	External	Manual	LP	Road Stud	Site/H&C	LIV_CP8_Enlargement_Adv-END FACE	26/04/2014	10/03/2014	#N/A	245	#N/A	245	#N/A	383	Destroyed -covered by materials	Agreed
C510-LP10543	Block 105	S10502,S10503,S105XS2	External	Manual	LP	Road Stud	Site	LIV_CP4a_Enlargement_Adv-13	16/09/2014	06/11/2017	-5.8	122	-3.2	182	-2.8	367	CRL/CEG agreed 29/11/2017	Agreed
C510-LP10503	Block 105	S10502,S10505,S105XS2	External	Manual	LP	Road Stud	Site	LIV_CP3a_Enlargement_Adv-end face	31/05/2014	06/11/2017	2.8	122	1.7	182	-1.3	383	2mm per annum specification met	Agreed
C510-LP10512	Block 105	S10502,S10506,S105XS2	External	Manual	LP	Road Stud	Site	LIV_CP4a_Enlargement_Adv-13	16/09/2014	06/11/2017	-5.7	122	-1.6	182	-1.7	367	2mm per annum specification met	Agreed
C510-LP10553	Block 105	S10502,S10509,S105XS2	External	Manual	LP	Road Stud	Site	LIV_PTW-East_Enlargement_Adv-14	24/11/2013	13/01/2016	#N/A	890	#N/A	890	#N/A	890	Destroyed since 13/01/2016	Agreed
C510-LP10511	Block 105	S10502,S105XS2	External	Manual	LP	Road Stud	Site	LIV_CP4a_Enlargement_Adv-13	16/09/2014	06/11/2017	-4.9	122	-2.5	182	-2.3	367	CRL/CEG agreed 29/11/2017 - used for construction control	Agreed
C510-LP10513	Block 105	S10502,S105XS2	External	Manual	LP	Road Stud	Site	LIV_CP4a_Enlargement_Adv-13	16/09/2014	06/11/2017	-4.0	122	-0.7	182	-1.2	367	2mm per annum specification met	Agreed
C510-LP10514	Block 105	S10502,S105XS2	External	Manual	LP	Road Stud	Site	LIV_CP4a_Enlargement_Adv-13	16/09/2014	06/11/2017	-4.0	122	0.4	182	0.0	367	2mm per annum specification met	Agreed
C510-LP10516	Block 105	S10502,S105XS2	External	Manual	LP	Road Stud	Site	LIV_PTE-West_Enlargement_Adv-55	25/11/2013	06/11/2017	-4.3	122	-0.8	182	-0.8	367	2mm per annum specification met	Agreed
C510-LP10517	Block 105	S10502,S105XS2	External	Manual	LP	Road Stud	Site	LIV_PTE-West_Enlargement_Adv-53	24/11/2013	06/11/2017	-4.0	122	-0.8	182	-1.2	367	2mm per annum specification met	Agreed
C510-LP10518	Block 105	S10502,S105XS2	External	Manual	LP	Road Stud	Site	LIV_PTE-West_Enlargement_Adv-50	24/11/2013	06/11/2017	-2.8	122	-1.2	182	-1.3	367	2mm per annum specification met	Agreed
C510-LP10519	Block 105	S10502,S105XS2	External	Manual	LP	Road Stud	Site	LIV_PTE-West_Enlargement_Adv-46	23/11/2013	06/11/2017	-2.6	122	-0.1	182	-1.5	367	2mm per annum specification met	Agreed
C510-LP10520	Block 105	S10502,S105XS2	External	Manual	LP	Road Stud	Site	LIV_PTE-West_Enlargement_Adv-41	21/11/2013	06/11/2017	-6.2	122	-0.4	213	0.4	367	2mm per annum specification met	Agreed
C510-LP10521	Block 105	S10502,S105XS2	External	Manual	LP	Road Stud	Site	LIV_PTE-West_Enlargement_Adv-34	30/10/2013	07/06/2017	-5.9	609	-5.9	609	-5.9	609	CRL/CEG agreed 29/11/2017 - used for construction control	Agreed
C510-LP10522	Block 105	S10502,S105XS2	External	Manual	LP	Road Stud	Site	LIV_PTE-West_Enlargement_Adv-23	27/10/2013	10/08/2017	-2	125	-6.0	198	-2.9	368	CRL/CEG agreed 29/11/2017 - used for construction control	Agreed
C510-LP10523	Block 105	S10502,S105XS2	External	Manual	LP	Road Stud	Site	LIV_CP8_Enlargement_Adv-37	31/01/2013	10/08/2017	-9.3	125	-6.1	198	-4.2	368	CRL/CEG agreed 29/11/2017 - used for construction control	Agreed
C510-LP10538	Block 105	S10503	External	Manual	LP	Road Stud	Site/Post Office	LIV_CP8_Enlargement_Adv-END FACE	26/04/2014	06/11/2017	-5.3	122	-3.0	182	-2.6	397	CRL/CEG agreed 29/11/2017 - used for construction control	Agreed
C510-LP10540	Block 105	S10503	External	Manual	LP	Road Stud	Site/Post Office	LIV_PTE-East_Enlargement_Adv-64	20/11/2013	11/01/2017	-12.0	157	-11.5	188	-8.8	366	Destroyed	Agreed
C510-LP10542	Block 105	S10503	External	Manual	LP	Road Stud	Site/Post Office	LIV_PTE-West_Enlargement_Adv-37	18/11/2013	22/10/2014	#N/A	449	#N/A	449	#N/A	449	Destroyed	Agreed
C510-LP10544	Block 105	S10503	External	Manual	LP	Road Stud	Site/Post Office	LIV_CP4a_Enlargement_Adv-13	16/09/2014	06/11/2017	-0.7	179	-0.4	243	-2.8	397	Stable 9 month trend	Agreed
C510-LP10545	Block 105	S10503	External	Manual	LP	Road Stud	Site/Post Office	LIV_CP4a_Enlargement_Adv-13	16/09/2014	06/11/2017	2.3	179	1.6	243	-1.7	397	2mm per annum specification met	Agreed
C510-LP10546	Block 105	S10503	External	Manual	LP	Road Stud	Site/Post Office	LIV_CP4a_Enlargement_Adv-13	16/09/2014	06/11/2017	-0.8	179	-0.7	243	-2.6	397	Stable 9 month trend	Agreed
C510-LP10547	Block 105	S10503	External	Manual	LP	Road Stud	Site/Post Office	LIV_CP4a_Enlargement_Adv-13	16/09/2014	06/11/2017	-1.8	179	-1.4	243	-3.2	397	Stable 6 month trend	Agreed
C510-LP10502	Block 105	S10503,S10504	External	Manual	LP	Road Stud	Site/Post Office	LIV_ES2_Safe_Stop_Adv-7	20/11/2016	14/02/2018	-0.7	188	-0.7	188	-0.1	386	Ceased through email correspondence from Paul Braddish 28/02/2018	Agreed
C510-LP10549	Block 105	S10503,S10504	External	Manual	LP	Road Stud	Site/Post Office	LIV_CP4_Enlargement_Adv-6	02/10/2014	14/02/2018	-3.7	188	-3.7	188	-2.5	386	Ceased through email correspondence from Paul Braddish 28/02/2018	Agreed
C510-LP10548	Block 105	S10503,S10505	External	Manual	LP	Road Stud	Site/Post Office	LIV_CP4a_Enlargement_Adv-13	16/09/2014	06/11/2017	-4.2	122	-4.0	182	-4.5	397	CRL/CEG agreed 29/11/2017	Agreed
C510-LP10541	Block 105	S10503,S10506	External	Manual	LP	Road Stud	Site/Post Office	LIV_PTE-East_Enlargement_Adv-47	16/11/2013	30/03/2014	#N/A	166	#N/A	208	#N/A	365	Destroyed	Agreed
C510-LP10591	Block 105	S10504	External	Manual	LP	Road Stud	Site	LIV_PTW-East_Enlargement_Adv-38	02/12/2013	14/02/2018	#N/A	188	-1.8	188	-1.2	386	Ceased through email correspondence from Paul Braddish 28/02/2018	Agreed
C510-LP10592	Block 105	S10504	External	Manual	LP	Road Stud	Site	LIV_CP3a_Enlargement_Adv-end face	31/05/2014	14/02/2018	#N/A	188	0.4	188	-0.7	386	Ceased through email correspondence from Paul Braddish 28/02/2018	Agreed
C510-LP10593	Block 105	S10504	External	Manual	LP	Road Stud	Site	LIV_CP4a_Enlargement_Adv-8	14/09/2014	01/12/2017	-1.5	147	-1.4	207	-1.4	381	Ceased through email correspondence from Paul Braddish 28/02/2018	Agreed
C510-LP10504A	Block 105	S10504	External	Manual	LP	Road Stud	Site	LIV_CP3a_Enlargement_Adv-end face	31/05/2014	14/02/2018	0.7	188	0.7	188	-0.5	386	Ceased through email correspondence from Paul Braddish 28/02/2018	Agreed
C510-LP10566	Block 105	S10504	External	Manual	LP	Road Stud	Site	LIV_CP4a_Enlargement_Adv-11	15/09/2014	14/02/2018	#N/A	188	-0.6	188	-1.3	386	Ceased through email correspondence from Paul Braddish 28/02/2018	Agreed
C510-LP10568	Block 105	S10504	External	Manual	LP	Road Stud	Site	LIV_CP4a_Enlargement_Adv-13	16/09/2014	14/02/2018	#N/A	188	-0.8	188	-1.2	386	Ceased through email correspondence from Paul Braddish 28/02/2018	Agreed
C510-LP10571	Block 105	S10504	External	Manual	LP	Road Stud	Site	LIV_CP4_Enlargement_Adv-11	03/10/2014	14/02/2018	#N/A	188	-3.7	188	-3.6	386	Ceased through email correspondence from Paul Braddish 28/02/2018	Agreed
C510-LP10575	Block 105	S10504	External	Manual	LP	Road Stud	Site											

Table 2 - Block 05 Decommissioning Status Tracker

Export CloseOut  
Sensor Status  
AutoCAD Script

22/05/2018



C510 Sensor Name	Block	Section	Int / Ext	Measurement Type	Sensor Type	Sensor Description	Asset/Location	EOI Last Primary Layer Construction	Last Construction Date	Latest Surveyed Date	AVERAGE SETTLEMENT TREND					Ceased Date	General Comment	Decommissioning Status
											120 Days	120 Day Calculation Period	180 Days	180 Day Calculation Period	365 Days			
C510-LP10560	Block 105	S10508	External	Manual	LP	Road Stud	Site/Shaft	LIV_PTW-East_Enlargement_Adv-38	02/12/2013	04/09/2013	#N/A	121	#N/A	182	#N/A	390	Destroyed since 04/09/2013	Agreed
C510-LP10551	Block 105	S10509	External	Manual	LP	Road Stud	Site/Shaft	LIV_PTW-East_Enlargement_Adv-32	30/11/2013	24/08/2015	#N/A	122	#N/A	182	#N/A	368	Destroyed since 24/08/2015	Agreed
C510-LP10555	Block 105	S10509	External	Manual	LP	Road Stud	Site/Shaft	LIV_PTW-East_Enlargement_Adv-4	17/11/2013	16/08/2015	#N/A	182	#N/A	182	#N/A	366	Destroyed since 16/08/2015	Agreed
C510-LP10557	Block 105	S10509	External	Manual	LP	Road Stud	Site/Shaft	LIV_PTW-East_Enlargement_Adv-35	01/12/2013	08/03/2013	#N/A	239	#N/A	239	#N/A	390	Destroyed since 08/03/2013	Agreed
C510-LP10559	Block 105	S10509	External	Manual	LP	Road Stud	Site/Shaft	LIV_PTW-East_Enlargement_Adv-41	06/12/2013	10/03/2014	#N/A	167	#N/A	181	#N/A	366	Destroyed since 10/03/2014	Agreed
C510-LP12540	Block 105	S10510	External	Manual	LP	Road Stud	Site	LIV_PTE-West_Enlargement_Adv-53	24/11/2013	06/11/2017	-1.0	179	#N/A	367	-1.8	367	2mm per annum specification met	Agreed
C510-LP12541	Block 105	S10510	External	Manual	LP	Road Stud	Site	LIV_PTE-West_Enlargement_Adv-46	23/11/2013		#N/A		#N/A				Destroyed	Agreed
C510-LP12542	Block 105	S10510	External	Manual	LP	Road Stud	Site	LIV_PTE-West_Enlargement_Adv-38	19/11/2013	12/11/2015	#N/A		#N/A		#N/A		Destroyed	Agreed
C510-LP12543	Block 105	S10510	External	Manual	LP	Road Stud	Site	LIV_CP6_Enlargement_Adv-37	31/01/2013	06/11/2017	-21.5	179	-16.7	243	-14.2	367	CRL/CEG agreed 29/11/2017	Agreed
C510-LP12544	Block 105	S10510	External	Manual	LP	Road Stud	Site	LIV_CP6_Enlargement_Adv-37	31/01/2013	06/11/2017	-21.3	179	-17.9	243	-16.0	367	CRL/CEG agreed 29/11/2017	Agreed
C510-LP12545	Block 105	S10510	External	Manual	LP	Road Stud	Site	LIV_PTE-East_Enlargement_Adv-17	09/11/2013	06/11/2017	-20.1	179	-17.2	243	-15.4	367	CRL/CEG agreed 29/11/2017	Agreed
C510-LP12546	Block 105	S10510	External	Manual	LP	Road Stud	Site	LIV_PTE-East_Enlargement_Adv-31	12/11/2013	06/11/2017	-16.5	179	-14.0	243	-13.6	367	CRL/CEG agreed 29/11/2017	Agreed
C510-LP12547	Block 105	S10510	External	Manual	LP	Road Stud	Site	LIV_PTE-East_Enlargement_Adv-44	15/11/2013	10/08/2017	-7.9	155	-10.1	211	-12.0	368	CRL/CEG agreed 29/11/2017	Agreed
C510-LP12548	Block 105	S10510	External	Manual	LP	Road Stud	Site	LIV_PTE-East_Enlargement_Adv-56	18/11/2013	10/08/2017	-4.6	155	-6.6	211	-9.5	368	CRL/CEG agreed 29/11/2017	Agreed
C510-LP12549	Block 105	S10510	External	Manual	LP	Road Stud	Site	LIV_PTE-East_Enlargement_Adv-68	20/11/2013	10/08/2017	0.4	155	-2.4	211	-7.7	368	CRL/CEG agreed 29/11/2017	Agreed
C510-LP12550	Block 105	S10510	External	Manual	LP	Road Stud	Site	LIV_PTE-East_Enlargement_Adv-79	02/12/2013	10/08/2017	-5.2	155	-6.5	211	-9.6	368	CRL/CEG agreed 29/11/2017	Agreed
C510-LP12551	Block 105	S10511	External	Manual	LP	Road Stud	Site	LIV_CP4a_Enlargement_Adv-13	16/09/2014	06/11/2017	0.0	179	0.4	243	-1.5	397	2mm per annum specification met	Agreed
C510-LP12552	Block 105	S10511	External	Manual	LP	Road Stud	Site	LIV_PTE-West_Enlargement_Adv-47	23/11/2013	25/03/2015	#N/A		#N/A		#N/A		Destroyed	Agreed
C510-LP12553	Block 105	S10511	External	Manual	LP	Road Stud	Site	LIV_PTE-West_Enlargement_Adv-41	21/11/2013	11/01/2017	-2.2	126	-2.2	188	-6.3	392	CRL/CEG agreed 29/11/2017	Agreed
C510-LP12554	Block 105	S10511	External	Manual	LP	Road Stud	Site	LIV_PTE-East_Enlargement_Adv-37	13/11/2013	22/11/2015	#N/A		#N/A		#N/A		Destroyed - not measured since 22/11/2015	Agreed
C510-LP12557	Block 105	S10511	External	Manual	LP	Road Stud	Site	LIV_PTE-East_Enlargement_Adv-67	20/11/2013	18/01/2013	#N/A		#N/A		#N/A		Destroyed since 13/03/2013	Agreed
C510-LP12558	Block 105	S10511	External	Manual	LP	Road Stud	Site	LIV_PTE-East_Enlargement_Adv-80	02/12/2013	11/05/2017	-8.0	188	-8.0	188	-9.1	429	CRL/CEG agreed 29/11/2017	Agreed
C510-LP12559	Block 105	S10511	External	Manual	LP	Road Stud	Site	LIV_CP6_Enlargement_Adv-END FACE	26/04/2014	08/12/2015	#N/A	122	#N/A	186	#N/A		Point was constantly getting destroyed - stopped been measured	Agreed
C510-LP12529	Block 105	S10512	External	Manual	LP	Road Stud	Site	LIV_PTW-East_Enlargement_Adv-19	25/11/2013	10/08/2017	0.1	155	-0.8	211	-4.7	368	Stable 9 month trend	Agreed
C510-LP12530	Block 105	S10512	External	Manual	LP	Road Stud	Site	LIV_PTE-East_Enlargement_Adv-49	16/11/2013	10/08/2017	-3.6	279	-3.6	279	-5.5	399	CRL/CEG agreed 29/11/2017	Agreed
C510-LP12531	Block 105	S10512	External	Manual	LP	Road Stud	Site	LIV_PTE-East_Enlargement_Adv-53	17/11/2013	05/06/2015	#N/A		#N/A		#N/A		Destroyed	Agreed
C510-LP12526	Block 105	S10513A	External	Manual	LP	Road Stud	Site	LIV_PTE-East_Enlargement_Adv-59	19/11/2013	10/08/2017	#N/A	211	-1.3	211	-5.7	368	Stable 6 month trend	Agreed
C510-LP12528	Block 105	S10513A	External	Manual	LP	Road Stud	Site	LIV_PTW-East_Enlargement_Adv-28	29/11/2013	25/08/2014	#N/A	124	#N/A	180	#N/A	366	Destroyed	Agreed
C510-LP12536	Block 105	S10513A	External	Manual	LP	Road Stud	Site	LIV_PTW-East_Enlargement_Adv-44	12/12/2013	10/08/2017	3.3	155	-1.5	211	-7.6	368	Stable 6 month trend	Agreed
C510-LP12537	Block 105	S10513A	External	Manual	LP	Road Stud	Site	LIV_PTW-East_Enlargement_Adv-40	05/12/2013	10/08/2017	-1.5	155	-3.0	211	-5.2	368	CRL/CEG agreed 29/11/2017	Agreed
C510-LP12538	Block 105	S10513A	External	Manual	LP	Road Stud	Site	LIV_PTW-East_Enlargement_Adv-35	01/12/2013	10/08/2017	3.0	155	-0.2	211	-5.8	368	CRL/CEG agreed 29/11/2017	Agreed
C510-LP12539	Block 105	S10513A	External	Manual	LP	Road Stud	Site	LIV_PTW-East_Enlargement_Adv-26	28/11/2013	10/08/2017	-1.8	155	-4.3	211	-5.2	368	CRL/CEG agreed 29/11/2017	Agreed
C510-LP12532	Block 105	S10514	External	Manual	LP	Road Stud	Site	LIV_PTW-East_Enlargement_Adv-32	30/11/2013	10/08/2017	-6.8	155	-3.8	279	-3.9	368	CRL/CEG agreed 29/11/2017	Agreed
C510-LP12533	Block 105	S10514	External	Manual	LP	Road Stud	Site	LIV_PTW-East_Enlargement_Adv-40	05/12/2013		#N/A		#N/A		#N/A		Destroyed	Agreed
C510-LP12534	Block 105	S10514	External	Manual	LP	Road Stud	Site	LIV_PTW-East_Enlargement_Adv-44	12/12/2013	10/08/2017	0.5	155	0.1	211	-5.3	368	Stable 6 month trend	Agreed
C510-LP12535	Block 105	S10514	External	Manual	LP	Road Stud	Site	LIV_PTW-East_Enlargement_Adv-47	13/12/2013	10/08/2017	-0.7	155	-4.5	211	-6.5	368	CRL/CEG agreed 29/11/2017	Agreed
C510-LP10563	Block 105	N/A	N/A	Manual	LP	Road Stud	Site	LIV_CP4a_Enlargement_Adv-13	16/09/2014	06/11/2017	-6.3	179	-0.6	243	-2.7	397	Stable 9 month trend	Agreed
C510-LP10573	Block 105	N/A	N/A	Manual	LP	Road Stud	Site	LIV_ES3_Enlargement_Uphill_Adv-10	18/03/2017	06/11/2017	-2.9	179	-2.6	243	-4.0	397	CRL/CEG agreed 29/11/2017	Agreed
C510-LP10588	Block 105	N/A	N/A	Manual	LP	Road Stud	Site	LIV_PTE-West_Enlargement_Adv-40	21/11/2013	16/07/2014	#N/A	122	#N/A	182	#N/A	366	Destroyed	Agreed
C510-LP10589	Block 105	N/A	N/A	Manual	LP	Road Stud	Site	LIV_PTE-West_Enlargement_Adv-38	19/11/2013	15/11/2014	#N/A	122	#N/A	184	#N/A	373	Destroyed	Agreed
C510-LP12560	Block 105	N/A	External	Manual	LP	Road Stud	Site	LIV_PTE-West_Enlargement_Adv-37	18/11/2013	04/11/2016	#N/A	342	#N/A	342	#N/A	380	Point was constantly getting destroyed - stopped been measured	Agreed
C510-LP12561	Block 105	N/A	External	Manual	LP	Road Stud	Site	LIV_PTE-West_Enlargement_Adv-37	18/11/2013	26/11/2015	#N/A	124	#N/A	194	#N/A		Point was constantly getting destroyed - stopped been measured	Agreed
C510-LB10501	Block 105	S10507	External	Manual	LB	BRE	Site/Shaft	LIV_PTW-East_Enlargement_Adv-8	22/11/2013	12/06/2013	#N/A	121	#N/A	181	#N/A	365	Installed in the shaft - not accessible	Agreed
C510-LB10502	Block 105	S10507	External	Manual	LB	BRE	Site/Shaft	LIV_PTW-East_Enlargement_Adv-23	27/11/2013	11/05/2017	-0.3	155	-3.7	246	-1.7	429	Installed in the shaft - not accessible	Agreed
C510-LB10503	Block 105	S10507	External	Manual	LB	BRE	Site/Shaft	LIV_PTW-East_Enlargement_Adv-37	01/12/2013	10/06/2013	#N/A	240	#N/A	240	#N/A	368	Installed in the shaft - not accessible	Agreed
C510-LB10504	Block 105	S10507	External	Manual	LB	BRE	Site/Shaft	LIV_PTW-East_Enlargement_Adv-34	01/12/2013	07/07/2016	#N/A	242	#N/A	242	#N/A	418	Installed in the shaft - not accessible	Agreed
C510-LB10505	Block 105	S10507	External	Manual	LB	BRE	Site/Shaft	LIV_PTW-East_Enlargement_Adv-20	26/11/2013	07/07/2016	#N/A	348	#N/A	348	#N/A	418	Installed in the shaft - not accessible	Agreed
C510-LB10506	Block 105	S10507	External	Manual	LB	BRE	Site/Shaft	LIV_PTW-East_Enlargement_Adv-11	23/11/2013	09/11/2012	#N/A	129	#N/A	180	#N/A		Installed in the shaft - not accessible	Agreed
C510-TB10501A	Block 105		Unknown	Automated	TB	Tiltmeter-Biaxial	Finsbury Circus Silo			03/09/2017	0.1	121	-0.2	181	-0.3	366	Stable. For site construction control only / Agreed to decommission automated sensors at ERP Meeting	Complete
C510-TB10501B	Block 105		Unknown	Automated	TB	Tiltmeter-Biaxial	Finsbury Circus Silo			03/09/2017	1.0	121	1.9	181	0.6	366	Stable. For site construction control only / Agreed to decommission automated sensors at ERP Meeting	Complete
C510-TB10502A	Block 105		Unknown	Automated	TB	Tiltmeter-Biaxial	Finsbury Circus Silo			03/09/2017	0.1	121	0.2	181	0.3	366	Stable. For site construction control only / Agreed to decommission automated sensors at ERP Meeting	Complete
C510-TB10502B	Block 105		Unknown	Automated	TB	Tiltmeter-Biaxial	Finsbury Circus Silo			03/09/2017	-1.3	121	-2.1	181	-0.8	366	Stable. For site construction control only / Agreed to decommission automated sensors at ERP Meeting	Complete
C510-TB10503A	Block 105		Unknown	Automated	TB	Tiltmeter-Biaxial	Finsbury Circus Silo			03/09/2017	-1.1	121	-1.3	181	-0.6	366	Stable. For site construction control only / Agreed to decommission automated sensors at ERP Meeting	Complete
C510-TB10503B	Block 105		Unknown	Automated	TB	Tiltmeter-Biaxial	Finsbury Circus Silo			03/09/2017	0.5	121	0.8	181	0.3	366	Stable. For site construction control only / Agreed to decommission automated sensors at ERP Meeting	Complete
C510-TB10504A	Block 105		Unknown	Automated	TB	Tiltmeter-Biaxial	Finsbury Circus Silo			03/09/2017	1.0	121	2.1	181	1.2	366	Stable. For site construction control only / Agreed to decommission automated sensors at ERP Meeting	Complete
C510-TB10504B	Block 105		Unknown	Automated	TB	Tiltmeter-Biaxial	Finsbury Circus Silo			03/09/2017	0.7	121	0.0	181	-0.2	366	Stable. For site construction control only / Agreed to decommission automated sensors at ERP Meeting	Complete
C510-TB10505A	Block 105		Unknown	Automated	TB	Tiltmeter-Biaxial	Finsbury Circus Silo			03/09/2017	1.1	121	1.2	181	0.6	366	Stable. For site construction control only / Agreed to decommission automated sensors at ERP Meeting	Complete
C510-TB10505B	Block 105		Unknown	Automated	TB	Tiltmeter-Biaxial	Finsbury Circus Silo			03/09/2017	0.4	121	0.1	181	-0.1	366	Stable. For site construction control only / Agreed to decommission automated sensors at ERP Meeting</	



Table 2 - Block 05 Decommissioning Status Tracker

Export CloseOut  
Sensor Status  
AutoCAD Script

22/05/2018



AVERAGE SETTLEMENT TREND

C510 Sensor Name	Block	Section	Int / Ext	Measurement Type	Sensor Type	Sensor Description	Asset/Location	EOI Last Primary Layer Construction	Last Construction Date	Latest Surveyed Date	AVERAGE SETTLEMENT TREND				Ceased Date	General Comment	Decommissioning Status	
											120 Days	120 Day Calculation Period	180 Days	180 Day Calculation Period				365 Days
C510-RL19915	Block 105	N/A	External	Automated	RL	Reflectorless					N/A		N/A		N/A		For site construction control only / Agreed to decommission automated sensors at ERP Meeting 27/07/2017	Complete
C510-RL19916	Block 105	N/A	External	Automated	RL	Reflectorless					N/A		N/A		N/A		For site construction control only / Agreed to decommission automated sensors at ERP Meeting 27/07/2017	Complete
C510-RL19917	Block 105	N/A	External	Automated	RL	Reflectorless					N/A		N/A		N/A		For site construction control only / Agreed to decommission automated sensors at ERP Meeting 27/07/2017	Complete
C510-RL19918	Block 105	N/A	External	Automated	RL	Reflectorless					N/A		N/A		N/A		For site construction control only / Agreed to decommission automated sensors at ERP Meeting 27/07/2017	Complete
C510-RL19919	Block 105	N/A	External	Automated	RL	Reflectorless					N/A		N/A		N/A		For site construction control only / Agreed to decommission automated sensors at ERP Meeting 27/07/2017	Complete
C510-RL19920	Block 105	N/A	External	Automated	RL	Reflectorless					N/A		N/A		N/A		For site construction control only / Agreed to decommission automated sensors at ERP Meeting 27/07/2017	Complete
C510-RP10532	Block 105	N/A	External	Unknown	RP	3D Geodetic prism					N/A		N/A		N/A		For site construction control only / Agreed to decommission automated sensors at ERP Meeting 27/07/2017	Complete
C510-RP10534	Block 105	N/A	External	Unknown	RP	3D Geodetic prism					N/A		N/A		N/A		For site construction control only / Agreed to decommission automated sensors at ERP Meeting 27/07/2017	Complete
C510-RP10536	Block 105	N/A	External	Unknown	RP	3D Geodetic prism					N/A		N/A		N/A		For site construction control only / Agreed to decommission automated sensors at ERP Meeting 27/07/2017	Complete

Learning Legacy Document

Table 2 - Block 05 Decommissioning Status Tracker XR

Latest Surveyed Date: 14/02/2018



C510 Sensor Name	Block	Section	Int / Ext	Measurement Type	Sensor Type	Sensor Description	Asset/Location	EOI Last Primary Layer Construction	Last Construction Date	Latest Surveyed Date	120 Days	120 Day Calculation Period	180 Days	180 Day Calculation Period	365 Days	365 Day Calculation Period	Ceased Date	General Comment	Decommissioning Status
C510-XR10501H-0m	Block 105	XR10501	Inground	Manual	XR	Extensometer-Rod	Finsbury Circus	LIV_PTE-West_Enlargement_Adv-53	24/11/2013	22/05/2017	-1.5	130	-0.6	188	-3.1	368		Email correspondence from Paul Braddish 08/09/2017. Additional to ERP 27/07/2017.	Complete
C510-XR105016-5m	Block 105	XR10501	Inground	Manual	XR	Extensometer-Rod	Finsbury Circus	LIV_PTE-West_Enlargement_Adv-53	24/11/2013	22/05/2017	-0.6	130	0.9	188	-1.4	368			Complete
C510-XR105015-9m	Block 105	XR10501	Inground	Manual	XR	Extensometer-Rod	Finsbury Circus	LIV_PTE-West_Enlargement_Adv-53	24/11/2013	22/05/2017	-1.2	130	0.0	188	-1.5	368			Complete
C510-XR105014-15m	Block 105	XR10501	Inground	Manual	XR	Extensometer-Rod	Finsbury Circus	LIV_PTE-West_Enlargement_Adv-53	24/11/2013	22/05/2017	-0.1	130	1.2	188	-1.4	368			Complete
C510-XR105013-20m	Block 105	XR10501	Inground	Manual	XR	Extensometer-Rod	Finsbury Circus	LIV_PTE-West_Enlargement_Adv-53	24/11/2013	22/05/2017	-0.2	130	1.3	188	-1.6	368			Complete
C510-XR105012-25m	Block 105	XR10501	Inground	Manual	XR	Extensometer-Rod	Finsbury Circus	LIV_PTE-West_Enlargement_Adv-53	24/11/2013	22/05/2017	0.0	130	1.6	188	-1.2	368			Complete
C510-XR105011-29.5m	Block 105	XR10501	Inground	Manual	XR	Extensometer-Rod	Finsbury Circus	LIV_PTE-West_Enlargement_Adv-53	24/11/2013	22/05/2017	2.6	130	2.7	188	-0.8	368		Complete	
C510-XR10502H-0m	Block 105	XR10502	Inground	Manual	XR	Extensometer-Rod	Finsbury Circus	LIV_PTE-West_Enlargement_Adv-56	25/11/2013	16/06/2017	0.6	127	-1.5	184	-3.7	379		Email correspondence from Paul Braddish 08/09/2017. Additional to ERP 27/07/2017.	Complete
C510-XR105026-5m	Block 105	XR10502	Inground	Manual	XR	Extensometer-Rod	Finsbury Circus	LIV_PTE-West_Enlargement_Adv-56	25/11/2013	16/06/2017	1.3	127	-0.2	184	-2.6	379			Complete
C510-XR105025-9m	Block 105	XR10502	Inground	Manual	XR	Extensometer-Rod	Finsbury Circus	LIV_PTE-West_Enlargement_Adv-56	25/11/2013	16/06/2017	1.4	127	0.1	184	-2.5	379			Complete
C510-XR105024-15m	Block 105	XR10502	Inground	Manual	XR	Extensometer-Rod	Finsbury Circus	LIV_PTE-West_Enlargement_Adv-56	25/11/2013	16/06/2017	1.7	127	0.2	184	-2.5	379			Complete
C510-XR105023-20m	Block 105	XR10502	Inground	Manual	XR	Extensometer-Rod	Finsbury Circus	LIV_PTE-West_Enlargement_Adv-56	25/11/2013	16/06/2017	1.8	127	0.5	184	-2.6	379			Complete
C510-XR105022-25m	Block 105	XR10502	Inground	Manual	XR	Extensometer-Rod	Finsbury Circus	LIV_PTE-West_Enlargement_Adv-56	25/11/2013	16/06/2017	2.9	127	2.5	184	-1.7	379			Complete
C510-XR105021-29.5m	Block 105	XR10502	Inground	Manual	XR	Extensometer-Rod	Finsbury Circus	LIV_PTE-West_Enlargement_Adv-56	25/11/2013	16/06/2017	3.1	127	3.4	184	-0.7	379		Complete	
C510-XR10503H-0m	Block 105	XR10503	Inground	Manual	XR	Extensometer-Rod	Finsbury Circus	LIV_CP4a_Enlargement_Adv-13	16/09/2014	26/07/2017	2.6	127	0.2	184	-4.3	404		Email correspondence from Paul Braddish 08/09/2017. Additional to ERP 27/07/2017.	Complete
C510-XR105036-5m	Block 105	XR10503	Inground	Manual	XR	Extensometer-Rod	Finsbury Circus	LIV_CP4a_Enlargement_Adv-13	16/09/2014	26/07/2017	2.8	127	0.1	184	-3.7	404			Complete
C510-XR105035-9m	Block 105	XR10503	Inground	Manual	XR	Extensometer-Rod	Finsbury Circus	LIV_CP4a_Enlargement_Adv-13	16/09/2014	26/07/2017	3.1	127	0.6	184	-2.8	404			Complete
C510-XR105034-15m	Block 105	XR10503	Inground	Manual	XR	Extensometer-Rod	Finsbury Circus	LIV_CP4a_Enlargement_Adv-13	16/09/2014	26/07/2017	2.6	127	-0.1	184	-3.1	404			Complete
C510-XR105033-20m	Block 105	XR10503	Inground	Manual	XR	Extensometer-Rod	Finsbury Circus	LIV_CP4a_Enlargement_Adv-13	16/09/2014	26/07/2017	0.7	127	1.3	184	-4.7	404			Complete
C510-XR105032-25m	Block 105	XR10503	Inground	Manual	XR	Extensometer-Rod	Finsbury Circus	LIV_CP4a_Enlargement_Adv-13	16/09/2014	26/07/2017	2.0	127	-0.6	184	-3.3	404			Complete
C510-XR105031-29.5m	Block 105	XR10503	Inground	Manual	XR	Extensometer-Rod	Finsbury Circus	LIV_CP4a_Enlargement_Adv-13	16/09/2014	26/07/2017	3.3	127	0.7	184	-0.4	404		Complete	
C510-XR10504H-0m	Block 105	XR10504	Inground	Manual	XR	Extensometer-Rod	FC Western Adit	LIV_CP4a_Enlargement_Adv-12	15/09/2014	14/05/2013	#N/A		#N/A		#N/A			Located within GAD. Not working due to grout ingress - CTC agreed to decommission 18/06/2013	Agreed
C510-XR105045-3m	Block 105	XR10504	Inground	Manual	XR	Extensometer-Rod	FC Western Adit	LIV_CP4a_Enlargement_Adv-12	15/09/2014	14/05/2013	#N/A		#N/A		#N/A				Agreed
C510-XR105044-8m	Block 105	XR10504	Inground	Manual	XR	Extensometer-Rod	FC Western Adit	LIV_CP4a_Enlargement_Adv-12	15/09/2014	14/05/2013	#N/A		#N/A		#N/A				Agreed
C510-XR105043-11m	Block 105	XR10504	Inground	Manual	XR	Extensometer-Rod	FC Western Adit	LIV_CP4a_Enlargement_Adv-12	15/09/2014	14/05/2013	#N/A		#N/A		#N/A				Agreed
C510-XR10505H-0m	Block 105	XR10505	Inground	Manual	XR	Extensometer-Rod	Finsbury Circus	LIV_CP3a_Enlargement_Adv-end face	31/05/2014	26/07/2017	1.2	127	-0.4	184	-4.7	404		Email correspondence from Paul Braddish 08/09/2017. Additional to ERP 27/07/2017.	Complete
C510-XR105054-5m	Block 105	XR10505	Inground	Manual	XR	Extensometer-Rod	Finsbury Circus	LIV_CP3a_Enlargement_Adv-end face	31/05/2014	26/07/2017	1.5	127	0.1	184	-3.5	419			Complete
C510-XR105055-9m	Block 105	XR10505	Inground	Manual	XR	Extensometer-Rod	Finsbury Circus	LIV_CP3a_Enlargement_Adv-end face	31/05/2014	26/07/2017	1.6	127	0.5	184	-3.6	419			Complete
C510-XR105056-15m	Block 105	XR10505	Inground	Manual	XR	Extensometer-Rod	Finsbury Circus	LIV_CP3a_Enlargement_Adv-end face	31/05/2014	26/07/2017	2.5	127	1.0	184	-3.4	419			Complete
C510-XR105051-20m	Block 105	XR10505	Inground	Manual	XR	Extensometer-Rod	Finsbury Circus	LIV_CP3a_Enlargement_Adv-end face	31/05/2014	26/07/2017	1.3	127	0.6	184	-3.2	419			Complete
C510-XR105052-25m	Block 105	XR10505	Inground	Manual	XR	Extensometer-Rod	Finsbury Circus	LIV_CP3a_Enlargement_Adv-end face	31/05/2014	26/07/2017	1.4	127	-0.1	184	-3.5	419			Complete
C510-XR105053-29.5m	Block 105	XR10505	Inground	Manual	XR	Extensometer-Rod	Finsbury Circus	LIV_CP3a_Enlargement_Adv-end face	31/05/2014	26/07/2017	1.0	127	0.6	184	-2.4	419		Complete	
C510-XR10506H-0m	Block 105	XR10506	Inground	Manual	XR	Extensometer-Rod	Finsbury Circus	LIV_CP3a_Enlargement_Adv-end face	31/05/2014	12/10/2013	#N/A		#N/A		#N/A			Email correspondence from Paul Braddish 08/09/2017. Additional to ERP 27/07/2017.	Complete
C510-XR10506F-5m	Block 105	XR10506	Inground	Automated	XR	Extensometer-Rod	Finsbury Circus	LIV_CP3a_Enlargement_Adv-end face	31/05/2014	10/08/2017	-2.0	125	-2.4	198	-2.9	367			Complete
C510-XR10506E-9m	Block 105	XR10506	Inground	Automated	XR	Extensometer-Rod	Finsbury Circus	LIV_CP3a_Enlargement_Adv-end face	31/05/2014	10/08/2017	-2.4	125	-2.6	198	-3.1	367			Complete
C510-XR10506D-15m	Block 105	XR10506	Inground	Automated	XR	Extensometer-Rod	Finsbury Circus	LIV_CP3a_Enlargement_Adv-end face	31/05/2014	10/08/2017	-2.2	125	-2.4	198	-2.8	367			Complete
C510-XR10506C-20m	Block 105	XR10506	Inground	Automated	XR	Extensometer-Rod	Finsbury Circus	LIV_CP3a_Enlargement_Adv-end face	31/05/2014	10/08/2017	-2.0	125	-2.2	198	-2.7	367			Complete
C510-XR10506B-25m	Block 105	XR10506	Inground	Automated	XR	Extensometer-Rod	Finsbury Circus	LIV_CP3a_Enlargement_Adv-end face	31/05/2014	10/08/2017	-1.6	125	-1.8	198	-2.2	367			Complete
C510-XR10506A-29.5m	Block 105	XR10506	Inground	Automated	XR	Extensometer-Rod	Finsbury Circus	LIV_CP3a_Enlargement_Adv-end face	31/05/2014	10/08/2017	-1.3	125	-1.2	198	-1.5	367		Complete	
C510-LP10504A	Block 105	S10504	External	Manual	LP	Road Stud	Site	LIV_CP3a_Enlargement_Adv-end face	31/05/2014	14/02/2018	#N/A	188	0.73	188	-0.46	386		2mm per annum specification met	Agreed
C510-XR10507H-0m	Block 105	XR10507	Inground	Manual	XR	Extensometer-Rod	Finsbury Circus	LIV_PTW-East_Enlargement_Adv-23	27/11/2013	01/05/2013	#N/A		#N/A		#N/A			Email correspondence from Paul Braddish 08/09/2017. Additional to ERP 27/07/2017.	Complete
C510-XR10507A-5m	Block 105	XR10507	Inground	Automated	XR	Extensometer-Rod	Finsbury Circus	LIV_PTW-East_Enlargement_Adv-23	27/11/2013	15/08/2017	-1.8	132	-0.8	188	-2.1	365			Complete
C510-XR10507F-9m	Block 105	XR10507	Inground	Automated	XR	Extensometer-Rod	Finsbury Circus	LIV_PTW-East_Enlargement_Adv-23	27/11/2013	15/08/2017	-2.1	132	-1.1	188	-2.7	365			Complete
C510-XR10507D-15m	Block 105	XR10507	Inground	Automated	XR	Extensometer-Rod	Finsbury Circus	LIV_PTW-East_Enlargement_Adv-23	27/11/2013	15/08/2017	-2.0	132	-1.2	188	-2.7	365			Complete
C510-XR10507C-20m	Block 105	XR10507	Inground	Automated	XR	Extensometer-Rod	Finsbury Circus	LIV_PTW-East_Enlargement_Adv-23	27/11/2013	15/08/2017	-1.6	132	-0.7	188	-2.5	365			Complete
C510-XR10507E-25m	Block 105	XR10507	Inground	Automated	XR	Extensometer-Rod	Finsbury Circus	LIV_PTW-East_Enlargement_Adv-23	27/11/2013	08/12/2014	#N/A		#N/A		#N/A				Complete
C510-XR10507B-29.5m	Block 105	XR10507	Inground	Automated	XR	Extensometer-Rod	Finsbury Circus	LIV_PTW-East_Enlargement_Adv-23	27/11/2013	15/08/2017	-2.1	132	-0.9	188	-1.7	365		Complete	
C510-LP12218A	Block 102	S10202	External	Manual	LP	Road Stud	Circus Place	LIV_PTW-East_Enlargement_Adv-13	24/11/2013	15/08/2017	-1.4	132	-0.4	188	-3.8	370		Stable 6 month trend	Complete
C510-XR10508H-0m	Block 105	XR10508	Inground	Manual	XR	Extensometer-Rod	Finsbury Circus	LIV_PTE-East_Enlargement_Adv-68	20/11/2013	16/06/2017	-3.0	128	-4.5	224	-8.7	375		Email correspondence from Paul Braddish 08/09/2017. Additional to ERP 27/07/2017.	Complete
C510-XR105085-5m	Block 105	XR10508	Inground	Manual	XR	Extensometer-Rod	Finsbury Circus	LIV_PTE-East_Enlargement_Adv-68	20/11/2013	16/06/2017	1.3	128	-0.1	224	-3.0	375			Complete
C510-XR105082-9m	Block 105	XR10508	Inground	Manual	XR	Extensometer-Rod	Finsbury Circus	LIV_PTE-East_Enlargement_Adv-68	20/11/2013	16/06/2017	1.3	128	0.7	224	-1.9	375			Complete
C510-XR105081-15m	Block 105	XR10508	Inground	Manual	XR	Extensometer-Rod	Finsbury Circus	LIV_PTE-East_Enlargement_Adv-68	20/11/2013	16/06/2017	1.8	128	0.8	224	-1.6	375			Complete
C510-XR105083-20m	Block 105	XR10508	Inground	Manual	XR	Extensometer-Rod	Finsbury Circus	LIV_PTE-East_Enlargement_Adv-68	20/11/2013	16/06/2017	0.4	128	-0.3	224	-1.7	375			Complete
C510-XR105086-25m	Block 105	XR10508	Inground	Manual	XR	Extensometer-Rod	Finsbury Circus	LIV_PTE-East_Enlargement_Adv-68	20/11/2013	16/06/2017	0.8	128	-0.2	224	-2.4	375			Complete
C510-XR105084-29.5m	Block 105	XR10508	Inground	Manual	XR	Extensometer-Rod	Finsbury Circus	LIV_PTE-East_Enlargement_Adv-68	20/11/2013	16/06/2017	2.6	128	1.3	224	-1.6	375		Complete	

C510-XR10509H-0m	Block 105	XR10509	Inground	Manual	XR	Extensometer-Rod	Finsbury Circus	LIV_PTE-East_Enlargement_Adv-80	02/12/2013	26/07/2017	-7.1	127	-6.7	192	-9.1	450	Email correspondence from Paul Braddish 08/09/2017. Additional to ERP 27/07/2017.	Complete
C510-XR105096-5m	Block 105	XR10509	Inground	Manual	XR	Extensometer-Rod	Finsbury Circus	LIV_PTE-East_Enlargement_Adv-80	02/12/2013	26/07/2017	-3.1	127	-3.7	192	-6.4	450		Complete
C510-XR105095-9m	Block 105	XR10509	Inground	Manual	XR	Extensometer-Rod	Finsbury Circus	LIV_PTE-East_Enlargement_Adv-80	02/12/2013	26/07/2017	2.8	127	0.9	192	-1.3	450		Complete
C510-XR105094-15m	Block 105	XR10509	Inground	Manual	XR	Extensometer-Rod	Finsbury Circus	LIV_PTE-East_Enlargement_Adv-80	02/12/2013	26/07/2017	0.5	127	-0.7	192	-2.8	450		Complete
C510-XR105093-20m	Block 105	XR10509	Inground	Manual	XR	Extensometer-Rod	Finsbury Circus	LIV_PTE-East_Enlargement_Adv-80	02/12/2013	26/07/2017	-2.2	127	-1.8	192	-2.4	450		Complete
C510-XR105092-25m	Block 105	XR10509	Inground	Manual	XR	Extensometer-Rod	Finsbury Circus	LIV_PTE-East_Enlargement_Adv-80	02/12/2013	26/07/2017	0.1	127	-0.6	192	-1.4	450		Complete
C510-XR105091-29.5m	Block 105	XR10509	Inground	Manual	XR	Extensometer-Rod	Finsbury Circus	LIV_PTE-East_Enlargement_Adv-80	02/12/2013	26/07/2017	1.3	127	0.9	192	-1.1	450	Complete	
C510-XR10510H-0m	Block 105	XR10510	Inground	Manual	XR	Extensometer-Rod	Finsbury Circus	LIV_CP8_Enlargement_Adv-16	25/04/2014	31/10/2015	#N/A		#N/A		#N/A		Email correspondence from Paul Braddish 08/09/2017. Additional to ERP 27/07/2017.	Complete
C510-XR105104-5m	Block 105	XR10510	Inground	Manual	XR	Extensometer-Rod	Finsbury Circus	LIV_CP8_Enlargement_Adv-16	25/04/2014	31/10/2015	#N/A		#N/A		#N/A			Complete
C510-XR105105-9m	Block 105	XR10510	Inground	Manual	XR	Extensometer-Rod	Finsbury Circus	LIV_CP8_Enlargement_Adv-16	25/04/2014	31/10/2015	#N/A		#N/A		#N/A			Complete
C510-XR105106-15m	Block 105	XR10510	Inground	Manual	XR	Extensometer-Rod	Finsbury Circus	LIV_CP8_Enlargement_Adv-16	25/04/2014	31/10/2015	#N/A		#N/A		#N/A			Complete
C510-XR105101-20m	Block 105	XR10510	Inground	Manual	XR	Extensometer-Rod	Finsbury Circus	LIV_CP8_Enlargement_Adv-16	25/04/2014	31/10/2015	#N/A		#N/A		#N/A			Complete
C510-XR105102-25m	Block 105	XR10510	Inground	Manual	XR	Extensometer-Rod	Finsbury Circus	LIV_CP8_Enlargement_Adv-16	25/04/2014	31/10/2015	#N/A		#N/A		#N/A			Complete
C510-XR105103-29.5m	Block 105	XR10510	Inground	Manual	XR	Extensometer-Rod	Finsbury Circus	LIV_CP8_Enlargement_Adv-16	25/04/2014	31/10/2015	#N/A		#N/A		#N/A		Complete	
C510-XR10511H-0m	Block 105	XR10511	Inground	Manual	XR	Extensometer-Rod	FC Eastern Adit	LIV_PTW-East_Enlargement_Adv-64	12/03/2014	29/04/2013	#N/A		#N/A		#N/A		Located within GAD. Not working due to grout ingress - CTC agreed to decommission 18/06/2013	Agreed
C510-XR105113-3m	Block 105	XR10511	Inground	Manual	XR	Extensometer-Rod	FC Eastern Adit	LIV_PTW-East_Enlargement_Adv-64	12/03/2014	29/04/2013	#N/A		#N/A		#N/A			Agreed
C510-XR105112-8m	Block 105	XR10511	Inground	Manual	XR	Extensometer-Rod	FC Eastern Adit	LIV_PTW-East_Enlargement_Adv-64	12/03/2014	29/04/2013	#N/A		#N/A		#N/A			Agreed
C510-XR105111-11m	Block 105	XR10511	Inground	Manual	XR	Extensometer-Rod	FC Eastern Adit	LIV_PTW-East_Enlargement_Adv-64	12/03/2014	29/04/2013	#N/A		#N/A		#N/A			Agreed
C510-XR10512H-0m	Block 105	XR10512	Inground	Manual	XR	Extensometer-Rod	Finsbury Circus	LIV_PTW-East_Enlargement_Adv-70	14/03/2014	04/09/2017	-1.4	186	-1.4	186	-4.0	381	Email correspondence from Paul Braddish 08/09/2017. Additional to ERP 27/07/2017.	Complete
C510-XR105121-5m	Block 105	XR10512	Inground	Manual	XR	Extensometer-Rod	Finsbury Circus	LIV_PTW-East_Enlargement_Adv-70	14/03/2014	04/09/2017	-0.9	186	-0.9	186	-3.1	381		Complete
C510-XR105126-9m	Block 105	XR10512	Inground	Manual	XR	Extensometer-Rod	Finsbury Circus	LIV_PTW-East_Enlargement_Adv-70	14/03/2014	04/09/2017	-0.9	186	-0.9	186	-3.2	381		Complete
C510-XR105125-15m	Block 105	XR10512	Inground	Manual	XR	Extensometer-Rod	Finsbury Circus	LIV_PTW-East_Enlargement_Adv-70	14/03/2014	04/09/2017	-1.1	186	-1.1	186	-3.2	381		Complete
C510-XR105124-20m	Block 105	XR10512	Inground	Manual	XR	Extensometer-Rod	Finsbury Circus	LIV_PTW-East_Enlargement_Adv-70	14/03/2014	04/09/2017	-0.9	186	-0.9	186	-3.1	381		Complete
C510-XR105123-25m	Block 105	XR10512	Inground	Manual	XR	Extensometer-Rod	Finsbury Circus	LIV_PTW-East_Enlargement_Adv-70	14/03/2014	04/09/2017	0.8	186	0.8	186	-0.9	381		Complete
C510-XR105122-29.5m	Block 105	XR10512	Inground	Manual	XR	Extensometer-Rod	Finsbury Circus	LIV_PTW-East_Enlargement_Adv-70	14/03/2014	04/09/2017	1.8	186	1.8	186	0.4	381	Complete	
C510-XR10514H-0m	Block 105	XR10514	Inground	Manual	XR	Extensometer-Rod	Finsbury Circus	LIV_PTW-East_Enlargement_Adv-43	11/12/2013	26/07/2017	-1.8	146	-1.6	187	-2.8	370	Email correspondence from Paul Braddish 08/09/2017. Additional to ERP 27/07/2017.	Complete
C510-XR105146-5m	Block 105	XR10514	Inground	Manual	XR	Extensometer-Rod	Finsbury Circus	LIV_PTW-East_Enlargement_Adv-43	11/12/2013	26/07/2017	-2.0	146	-1.9	187	-2.4	370		Complete
C510-XR105145-9m	Block 105	XR10514	Inground	Manual	XR	Extensometer-Rod	Finsbury Circus	LIV_PTW-East_Enlargement_Adv-43	11/12/2013	26/07/2017	-2.0	146	-1.9	187	-2.4	370		Complete
C510-XR105144-15m	Block 105	XR10514	Inground	Manual	XR	Extensometer-Rod	Finsbury Circus	LIV_PTW-East_Enlargement_Adv-43	11/12/2013	26/07/2017	-2.0	146	-1.8	187	-2.4	370		Complete
C510-XR105143-20m	Block 105	XR10514	Inground	Manual	XR	Extensometer-Rod	Finsbury Circus	LIV_PTW-East_Enlargement_Adv-43	11/12/2013	26/07/2017	-1.8	146	-1.7	187	-2.4	370		Complete
C510-XR105142-25m	Block 105	XR10514	Inground	Manual	XR	Extensometer-Rod	Finsbury Circus	LIV_PTW-East_Enlargement_Adv-43	11/12/2013	26/07/2017	-1.0	146	-0.7	187	-1.1	370		Complete
C510-XR105141-29.5m	Block 105	XR10514	Inground	Manual	XR	Extensometer-Rod	Finsbury Circus	LIV_PTW-East_Enlargement_Adv-43	11/12/2013	26/07/2017	-0.8	146	-0.1	187	-0.2	370	Complete	
C510-XR11201H-0m	Block 105	XR11201	Inground	Manual	XR	Extensometer-Rod	Finsbury Circus	LIV_CP4_Enlargement_Adv-11	03/10/2014	26/07/2017	-1.2	146	-2.6	187	-3.9	370	Email correspondence from Paul Braddish 08/09/2017. Additional to ERP 27/07/2017.	Complete
C510-XR112016-4.5m	Block 105	XR11201	Inground	Manual	XR	Extensometer-Rod	Finsbury Circus	LIV_CP4_Enlargement_Adv-11	03/10/2014	26/07/2017	0.5	146	-1.0	187	-3.0	370		Complete
C510-XR112015-9m	Block 105	XR11201	Inground	Manual	XR	Extensometer-Rod	Finsbury Circus	LIV_CP4_Enlargement_Adv-11	03/10/2014	26/07/2017	0.5	146	-1.2	187	-3.3	370		Complete
C510-XR112014-14m	Block 105	XR11201	Inground	Manual	XR	Extensometer-Rod	Finsbury Circus	LIV_CP4_Enlargement_Adv-11	03/10/2014	26/07/2017	-0.7	146	-1.6	187	-2.4	370		Complete
C510-XR112013-19m	Block 105	XR11201	Inground	Manual	XR	Extensometer-Rod	Finsbury Circus	LIV_CP4_Enlargement_Adv-11	03/10/2014	26/07/2017	-0.5	146	-1.3	187	-2.1	370		Complete
C510-XR112012-24m	Block 105	XR11201	Inground	Manual	XR	Extensometer-Rod	Finsbury Circus	LIV_CP4_Enlargement_Adv-11	03/10/2014	26/07/2017	-0.2	146	-1.0	187	-1.3	370		Complete
C510-XR112011-29m	Block 105	XR11201	Inground	Manual	XR	Extensometer-Rod	Finsbury Circus	LIV_CP4_Enlargement_Adv-11	03/10/2014	26/07/2017	1.3	146	0.5	187	-0.3	370	Complete	
C510-XR11206H-0m	Block 105	XR11206	Inground	Manual	XR	Extensometer-Rod	Finsbury Circus	LIV_ES3_Elargement_Uphill_Adv-10	18/03/2017	26/07/2017	-3.4	135	-4.7	191	-5.7	372	Email correspondence from Paul Braddish 08/09/2017. Additional to ERP 27/07/2017.	Complete
C510-XR112066-5m	Block 105	XR11206	Inground	Manual	XR	Extensometer-Rod	Finsbury Circus	LIV_ES3_Elargement_Uphill_Adv-10	18/03/2017	26/07/2017	-0.7	149	-0.8	191	-1.7	372		Complete
C510-XR112065-9m	Block 105	XR11206	Inground	Manual	XR	Extensometer-Rod	Finsbury Circus	LIV_ES3_Elargement_Uphill_Adv-10	18/03/2017	26/07/2017	0.3	135	-2.2	191	-5.7	372		Complete
C510-XR112064-15m	Block 105	XR11206	Inground	Manual	XR	Extensometer-Rod	Finsbury Circus	LIV_ES3_Elargement_Uphill_Adv-10	18/03/2017	26/07/2017	0.2	135	-2.2	191	-4.1	372		Complete
C510-XR112063-20m	Block 105	XR11206	Inground	Manual	XR	Extensometer-Rod	Finsbury Circus	LIV_ES3_Elargement_Uphill_Adv-10	18/03/2017	26/07/2017	-0.2	149	-0.8	191	-5.5	372		Complete
C510-XR112062-25m	Block 105	XR11206	Inground	Manual	XR	Extensometer-Rod	Finsbury Circus	LIV_ES3_Elargement_Uphill_Adv-10	18/03/2017	26/07/2017	2.7	135	-0.3	191	-2.1	372		Complete
C510-XR112061-30m	Block 105	XR11206	Inground	Manual	XR	Extensometer-Rod	Finsbury Circus	LIV_ES3_Elargement_Uphill_Adv-10	18/03/2017	26/07/2017	1.3	135	-1.3	191	-0.6	372	Complete	



**Table 2 - All Blocks Decommissioning Status Tracker IM**

C510 Sensor Name	Block	Asset/Location	Ceased Date	General Comment	Decommissioning Status
C510-IM10204	Block 102	Finsbury Circus	29/01/2016	Ceased through C510-PMI-01083 29.01.2016	Proposed
C510-IM10205	Block 102	Finsbury Circus	29/01/2016	Ceased through C510-PMI-01083 29.01.2016	Proposed
C510-IM10402	Block 104	Bloomfield St	29/01/2016	Ceased through C510-PMI-01083 29.01.2016	Proposed
C510-IM10501	Block 105	Finsbury Circus	29/01/2016	Ceased through C510-PMI-01083 29.01.2016	Proposed
C510-IM10502	Block 105	Finsbury Circus	29/01/2016	Ceased through C510-PMI-01083 29.01.2016	Proposed
C510-IM10503	Block 105	Finsbury Circus	29/01/2016	Ceased through C510-PMI-01083 29.01.2016	Proposed
C510-IM10504	Block 105	Finsbury Circus	29/01/2016	Ceased through C510-PMI-01083 29.01.2016	Proposed
C510-IM10505	Block 105	Finsbury Circus	29/01/2016	Ceased through C510-PMI-01083 29.01.2016	Proposed
C510-IM10506	Block 105	Finsbury Circus	29/01/2016	Ceased through C510-PMI-01083 29.01.2016	Proposed
C510-IM10507N	Block 105	Finsbury Circus	29/01/2016	Ceased through C510-PMI-01083 29.01.2016	Proposed
C510-IM10508	Block 105	Finsbury Circus	29/01/2016	Ceased through C510-PMI-01083 29.01.2016	Proposed
C510-IM10509	Block 105	Finsbury Circus	29/01/2016	Ceased through C510-PMI-01083 29.01.2016	Proposed
C510-IM10512	Block 105	Finsbury Circus	29/01/2016	Ceased through C510-PMI-01083 29.01.2016	Proposed
C510-IM10513	Block 105	Finsbury Circus	29/01/2016	Ceased through C510-PMI-01083 29.01.2016	Proposed
C510-IM10514	Block 104	Finsbury Circus	29/01/2016	Ceased through C510-PMI-01083 29.01.2016	Proposed
C510-IM11001	Block 110	New Broad St	29/01/2016	Ceased through C510-PMI-01083 29.01.2016	Agreed
C510-IM11201	Block 105	Finsbury Circus	29/01/2016	Ceased through C510-PMI-01083 29.01.2016	Proposed

### 5.3 Monitoring sensor Location Plan

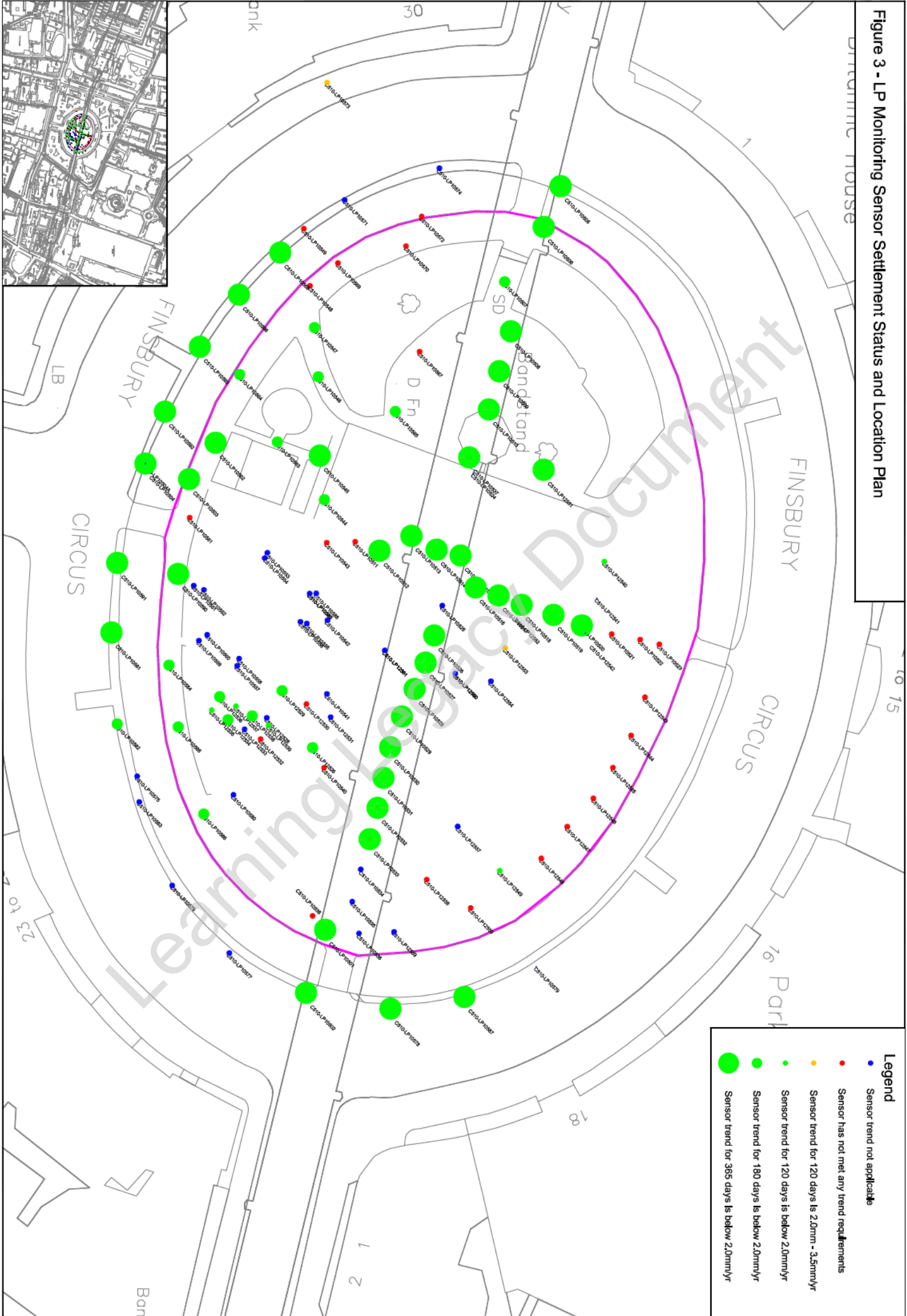
The following plots provide a visual representation of all Block 05 monitoring sensors. There are two plans for Block 05 monitoring sensors:

- Figure 3 - LP Monitoring Sensor Settlement Status and Location Plan
- Figure 4 – XR & IM Monitoring Sensor Settlement Status and Location Plan

There aren't any location plans for LBs, LPs, RLs and Tiltmeters as they were located in the shaft and they were only installed for site construction control purposes only.

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Figure 3 - LP Monitoring Sensor Settlement Status and Location Plan



**Legend**

- Sensor trend not applicable
- Sensor has not met any trend requirements
- Sensor trend for 120 days is 2.0mm - 3.5mm/yr
- Sensor trend for 120 days is below 2.0mm/yr
- Sensor trend for 180 days is below 2.0mm/yr
- Sensor trend for 365 days is below 2.0mm/yr



## 6 Decommissioning Recommendations

This revision 1 of Block 05 close out report request all monitoring sensors to be decommissioned. The decommissioning status tracker (Table 2) identifies the monitoring sensors to be agreed for decommissioned.

### Summary to Decommission ("Proposed to Decommission"):

- All automated monitoring within Block 05 is to be decommissioned. Six months automated post construction monitoring specification has been completed and grouting has been agreed to be decommissioned, therefore sensors are no longer required.
- Sensors that have met the 2mm/year trend and proposed to be decommissioned, as per the decommissioning status tracker (Table 2).
- Sensors that have not met the 2mm/year trend and have been agreed to cease through email correspondence from Paul Braddish 28/02/2018, as per the decommissioning status tracker (Table 2).

**N.B.** When required, decommissioning and re-instatement evidence will be collected during the removal of monitoring sensors, which will be included within the final report.

## 7 **Appendix 1**

Appendix 1 includes the email correspondence from Paul Braddish 28/02/2018 as evidence to agree decommissioning of Block 05 sensors.

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[Redacted]

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**From:** [Redacted]  
**Sent:** 28 February 2018 11:37  
**To:** [Redacted]  
**Cc:** [Redacted]  
**Subject:** RE: Request for an update on proposed monitoring

[Redacted]  
We will provide full clarity in the near future on what monitoring can cease now and will liaise with [Redacted] shortly on future proposals.

In the meantime, please provide me with an updated tracker for Block 4 road studs (monitored yesterday) so I can determine whether some or all can be decommissioned now. To save time, please don't worry about amending the general comments as I will provide any necessary markups during my review. As discussed on Monday, no further monitoring is required for Block 5 so the Close Out Report can be completed now.

Regards  
[Redacted]

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