C510 – Whitechapel and Liverpool Street Station Tunnels

Instrumentation and Monitoring Close Out Report
Block 01 Liverpool Street

CRL Document Number: C510-BBM-C2-RGN-C101-50238

Supplier Document Number: N/A

Contract MDL reference: C13.014

1. Contractor Document Submittal History:

Revision:	Date:	Prepared by:	Checked by:	Approved by:	Reason for Issue:
2.0	27/08/2017	[redacted]			For Acceptance

2a. Stakeholder Review Required? YES ☐ NO ☐

Stakeholder submission required: LU ☐ RfL ☐ NR ☐ LO ☐ DLR ☐ Other: _____

Purpose of submission: For no objection ☐ For information ☐

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

Sign: _____ Role: _____ Name: _____ Date: _____

Sign: _____ Role: _____ Name: _____ Date: _____

2b. Review by Stakeholder (if required):

Stakeholder Organisation	Job Title	Name	Signature	Date	Acceptance
					☐
					☐

3. Acceptance by *Crossrail*:

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Reviewed/Accepted by:(signature)	Print Name:	Position:	Date:
[redacted]			02/10/17

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Document Revision History		
Revision	Date	Purpose
1.0	12/01/2016	For approval
2.0	27/08/2017	For approval

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Tables and Figures

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 01 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.

This revision of the close out report (Revision 2) proposes to decommission the remaining manual monitoring not agreed in Revision 1. The summary table and associated graphs for sensors agreed to be decommissioned in Revision 1 are provided in Appendix 1.

N.B. Monitoring sensors refers to all monitoring points; which includes BREs, road studs, extensometers, inclinometers, tilt meters, crack meters, 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 01 Location

Figure 1 shows the Liverpool St general location plan, C510 tunnel construction and where Block 01 is situated. Detailed location plans can be found within the installation reports and photomontages as listed in Section 3.2. Each monitoring sensor's location is shown within the assessment plans (Section 5.4).

Thames Water critical assets include 10" and 12" cast iron water mains (north of London Wall), the Goswell Street Sewer north branch diversion (Moorgate and Ropemaker) and the Goswell Street north branch crossing over London Wall. There are numerous other utilities surrounding Block 01 including gas mains, water mains and brick sewers. Location and details of these 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.

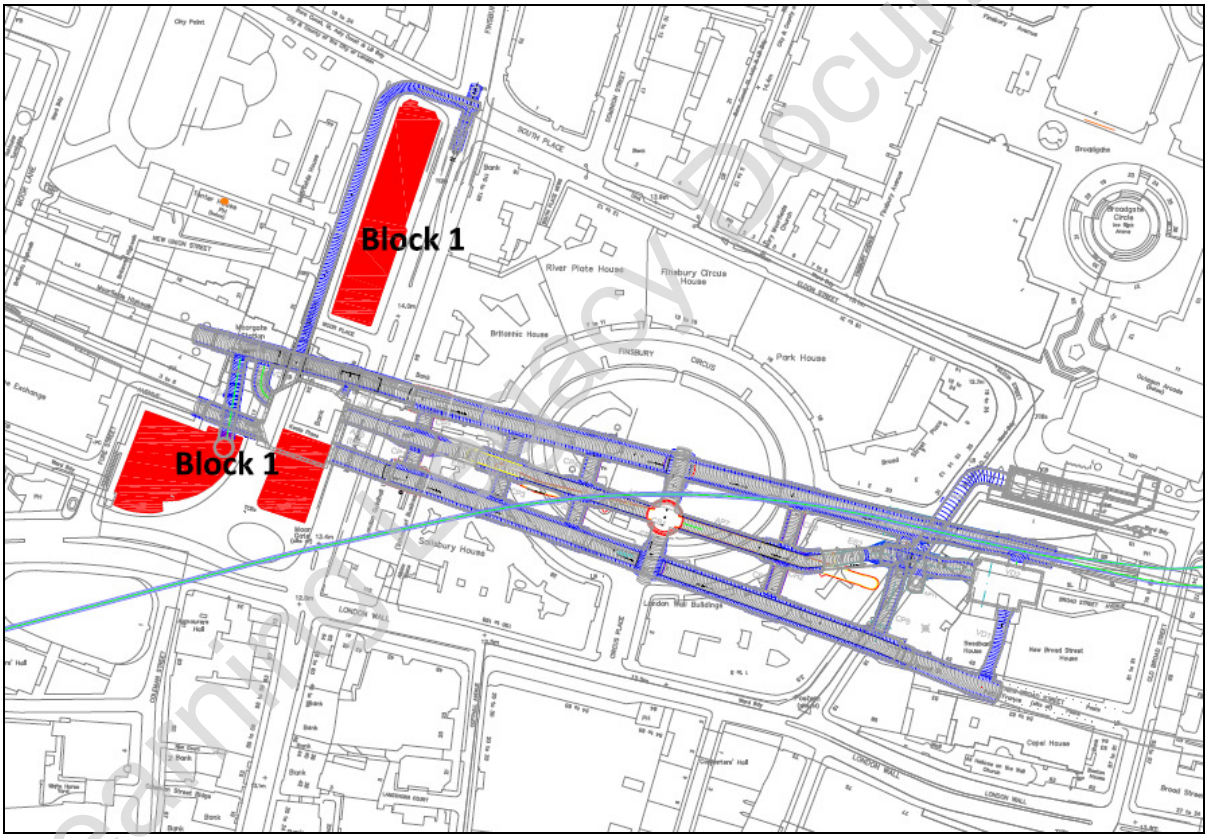


***Figure 1*- Liverpool St General Location Plan - including Block 01 monitoring area**

3.2 Block 01 Description

Block 01 is parallel to Moorgate; between London Wall and Ropemaker Street. Block 01 contains the following types of monitoring sensors:

- Road Studs (LP) - manual monitoring
- 3D Geodetic Prism Monitoring (RP) – automated monitoring
- Tiltmeters (TB)- automated monitoring
- Building (BREs)- manual monitoring
- Water Settlement Cell- Electronic (SH)- automated monitoring
- Crack Meters- (CK) manual monitoring
- Extensometers (XR)- automated monitoring
- Inclinometers (IE)- automated monitoring

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

Block 01 Report References:

- Installation Report- Moorgate (Block 01), Liverpool Street
  CRL Document Number: C510-BBM-C2-RGN-C101-50004
- Monitoring Installation Report LIV-LP-1- Moorgate
  CRL Document Number: C510-BBM-C2-RGN-C101-50071
- Monitoring Installation Report LIV-LP-21-Moorfields
  CRL Document Number: C510-BBM-C2-RGN-C101-50125
- Monitoring Installation Report LIV-LB-01 Moorgate
  CRL Document Number: C510-BBM-C2-RGN-C101-50126
- Installation Report Rod Extensometer C510-XR11401- Liverpool Street
  CRL Document Number: C510-BBM-C2-RGN-C101-50106
- Installation Report Rod Extensometer C510-XR11402- Liverpool Street
  CRL Document Number: C510-BBM-C2-RGN-C101-50107
- Instrumentation C510-XR11403- Liverpool Street- Extensometer
  CRL Document Number: C510-BBM-C2-RGN-C101-50108
- Instrumentation C510-XR11404- Liverpool Street- Extensometer
  CRL Document Number: C510-BBM-C2-RGN-C101-50109
- Instrumentation C510-IM11401- Liverpool Street- Inclinometer
  CRL Document Number: C510-BBM-C2-RGN-C101-50092
- Installation Report- IM11402- Finsbury Circus
  CRL Document Number: C510-BBM-C2-RGN-C101-50100
- Installation Report IM11404- Finsbury Circus
  CRL Document Number: C510-BBM-C2-RGN-C101-50091

The Settlement Contour Drawing (C122-OVE-C2-DDA-CR001_Z-21313) predicts the Block 01 area to experience approximately 1-90mm of settlement.

4 Construction Programme Influencing Block 01

Extent of Influence (EOI) monitoring areas were established to record ground movements in relation to Crossrail 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 01, a ZOI area 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 (red outline) and the tunnel constructions. Tunnel advance start and finish dates will be used in assessment of the monitoring data.

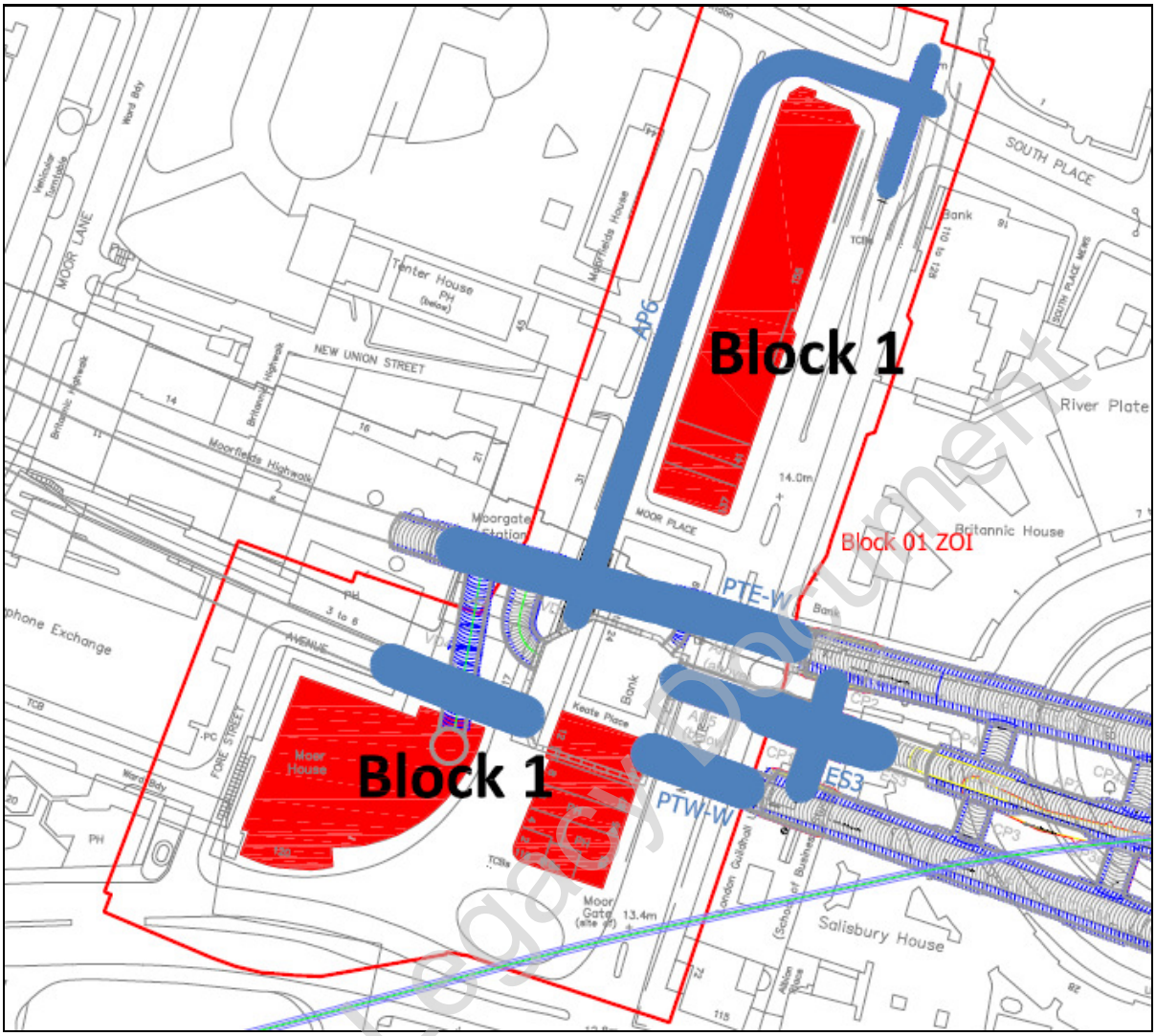


***Figure 2*- Block 01 ZOI Constructions**

Figure 2 shows the Block 01 ZOI and the tunnel advances that occurred within its boundary. The construction advances within the ZOI that have the potential to affect Block 01 are listed and summarised in *Table 1.* Further evidence for construction dates can be seen in *Table 2,* which lists the latest tunnel advances for each point.

ES3 enlargement advances were the final construction advances of the project and were completed on the 18th of March 2017. Grouting within the GAD adits has been decommissioned and it is proposed that all automated sensors are to be decommissioned. Under ss. 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. Precise levelling points will be maintained in place and monitored until such time that the sensors meet the settlement criteria. Further evidence for Block 03 sensors decommissioning status can be found in the decommissioning tracker.

N.B. It should be noted that C502 and C501 works may have affected Block 01. References should be made to C502 and C501 close out reports for construction dates.

4.1 Tunnel Advances Affecting Block 01

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

TUNNEL ADVANCE START & END FOR GRAPHS					
Tunnel Code	Tunnel Reference	Primary Layer Type	Start Date	End Date	Zone
ES3-Enlargement	ES3	Enlargement	11/12/2016	10/02/2017	ZOI
ES3-Pilot	ES3	Pilot	23/10/2016	15/11/2016	ZOI
CP2-Enlargement	CP2	Enlargement	26/08/2016	26/08/2016	ZOI
AP9-Enlargement	AP9	Enlargement	30/05/2016	09/06/2016	ZOI
PRM Lift-Enlargement	PRM Lift	Enlargement	09/08/2015	09/10/2015	ZOI
AP10b-Enlargement	AP10b	Enlargement	21/07/2015	02/08/2015	ZOI
AP10a-Enlargement	AP10a	Enlargement	14/07/2015	20/07/2015	ZOI
TBM-West-LC-Pilot	TBM-West-LC	Pilot	11/04/2015	16/04/2015	C305
AP6-2-Enlargement	AP6-2	Enlargement	09/04/2015	02/05/2015	ZOI
LCWa-Enlargement	LCWa	Enlargement	29/01/2015	11/02/2015	ZOI
LCWa-Pilot	LCWa	Pilot	17/01/2015	25/01/2015	ZOI
AP6-1-Enlargement	AP6-1	Enlargement	17/06/2014	18/05/2015	ZOI
VD4-Enlargement	VD4	Enlargement	16/06/2014	11/09/2014	ZOI
VD7-Enlargement	VD7	Enlargement	04/06/2014	05/06/2014	ZOI
VD5-Enlargement	VD5	Enlargement	22/05/2014	24/05/2014	ZOI
VD5-Pilot	VD5	Pilot	15/05/2014	15/05/2014	ZOI
AP5-Enlargement	AP5	Enlargement	05/04/2014	12/04/2014	ZOI
CH5-Enlargement	CH5	Enlargement	28/03/2014	05/04/2014	ZOI
LCWb-Enlargement	LCWb	Enlargement	25/02/2014	05/03/2014	ZOI
PTW-West-Enlargement	PTW-West	Enlargement	19/02/2014	24/02/2014	ZOI
LCE-Enlargement	LCE	Enlargement	01/02/2014	01/03/2014	ZOI
PTE-West-Enlargement	PTE-West	Enlargement	25/01/2014	31/01/2014	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-Pilot	PTW-West	Pilot	15/10/2013	20/10/2013	ZOI
LCE-Pilot	LCE	Pilot	06/08/2013	06/08/2013	ZOI
PTE-West-Pilot	PTE-West	Pilot	02/08/2013	06/08/2013	ZOI

***Table 1*- Tunnel Advances Affecting Block 01**

Heading Index:

AP – Access Passage

CH - Chamber

CP - Cross Passage

ES – Escalator

GAD – Grout Adit

LCE - Launch Chamber East

LCW – Launch Chamber West

PTE – Platform Tunnel East

PTW – Platform Tunnel West

RCE – Reception Chamber East

RCW – Reception Chamber West

TBM – Tunnel Boring Machine

VD – Ventilation Drive

5 Monitoring Assessment of Block 01

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 01. The final construction activity took place on 18/03/2017; therefore, all sensors are eligible for decommissioning from 18/09/2017 provided the specified sensor meets the <2mm/year settlement requirement. As discussed in section 4, KC21.3220(c) states, however, that all automated sensors can be decommissioned at the same time as grouting regardless of the automated sensor's settlement rate.

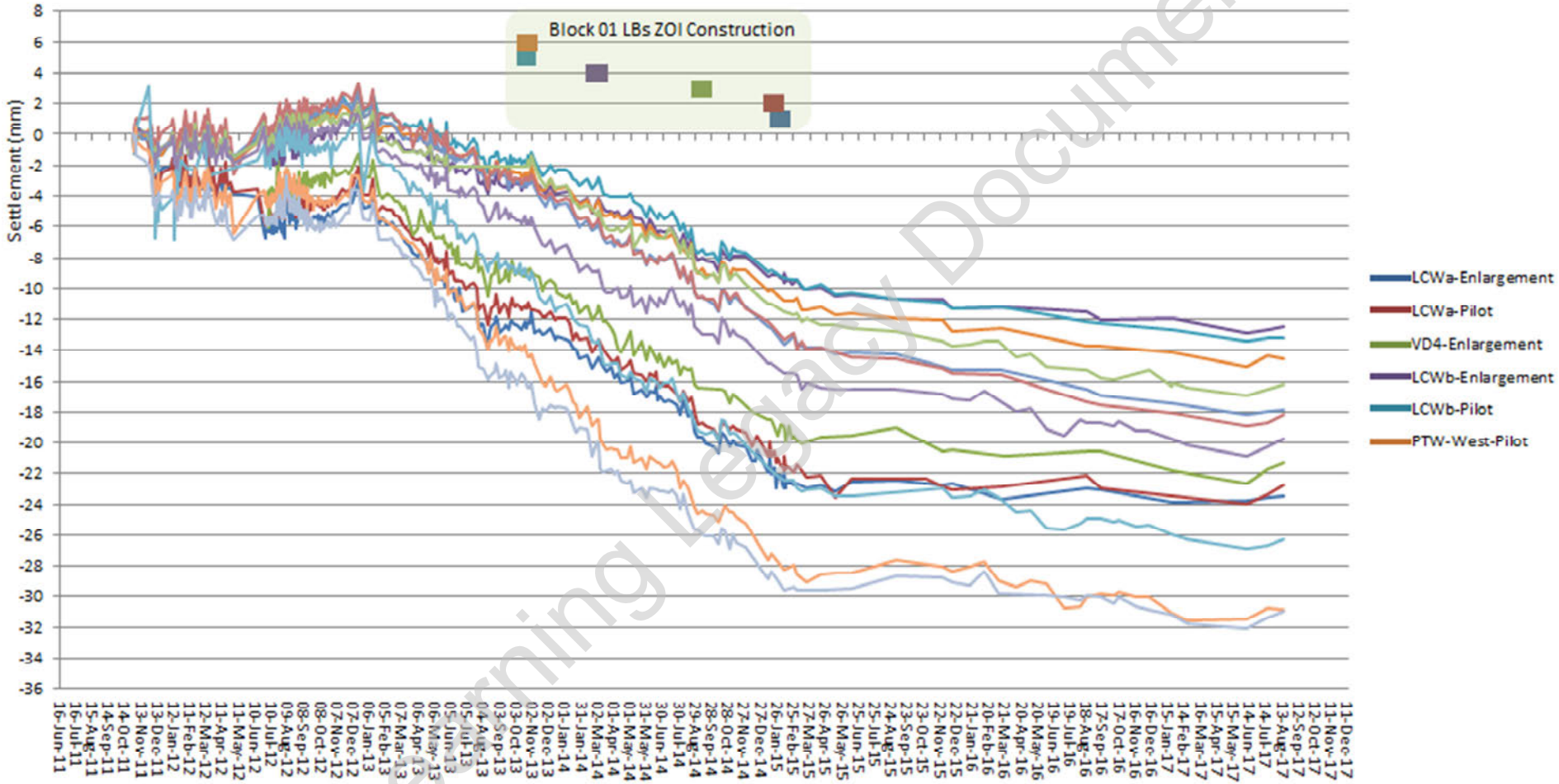
Crossrail agreed at the ERP meeting held on the 20/6/2017 to decommission the grouting within GAD2 tunnel and Blomfield Grout Box. It was also agreed by Crossrail at a separate ERP meeting held on 27/07/2017 to decommission the grouting within GAD1. As such, this allowed for decommissioning of all automated sensors within the influence area. It is therefore proposed that all automated sensors within Block 01 be removed. See graphs, tables and plans for further details on the automated sensors.

5.1 Time Graphs Monitoring Full History and Construction Durations

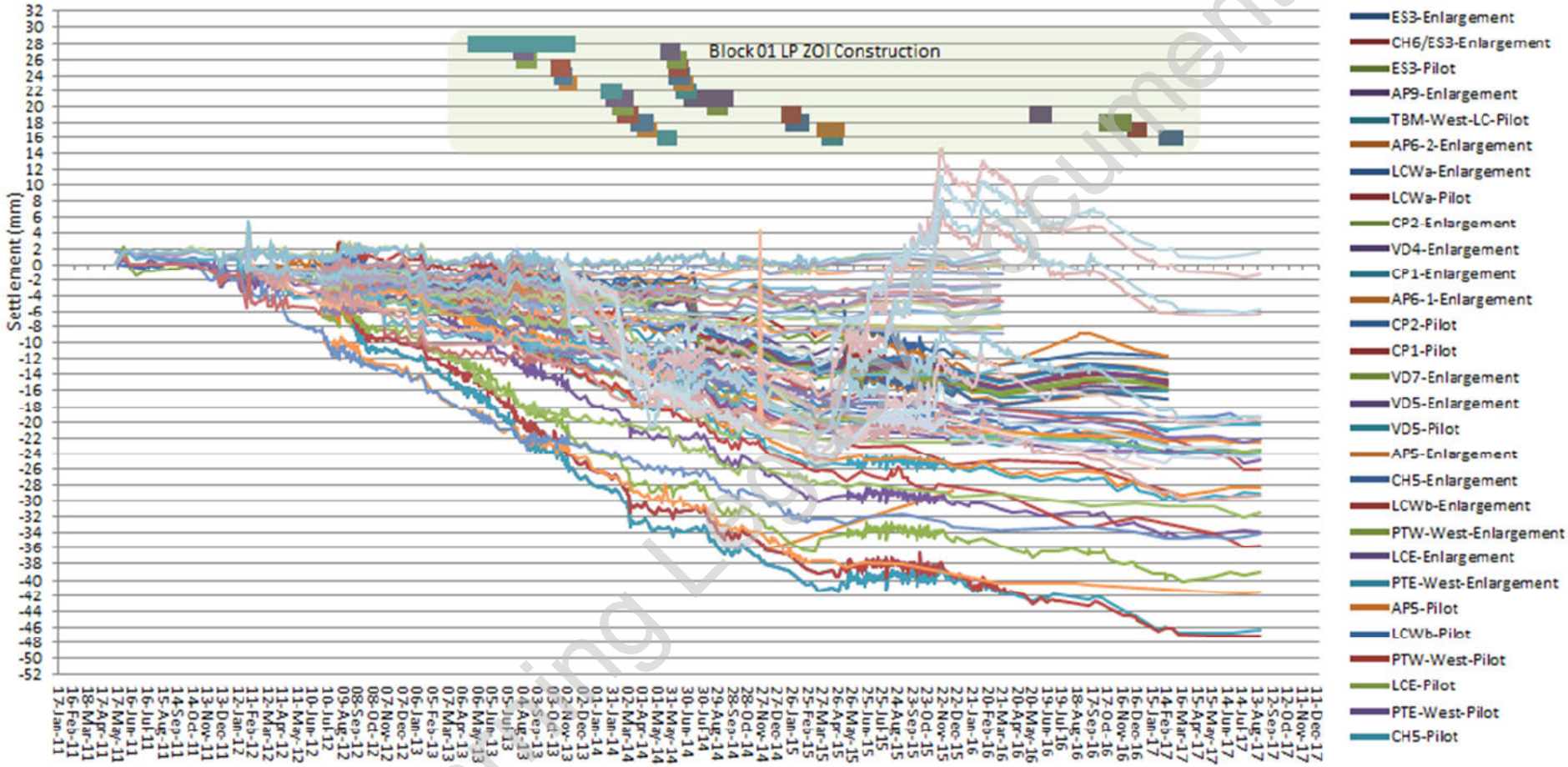
To assess the movement of Block 01 monitoring sensors; each monitoring sensor data type is displayed in a line graph, with a gantt chart (bar) representing the construction identified in Section 4:

- *Graph 1*– All Block 01 BREs (LB) Manual Monitoring History in Relation to Construction
- *Graph 2*– All Block 01 Road Studs (LP) Manual Monitoring History in Relation to Construction
- *Graph 3*- All Block 01 3d Geodetic Prisms (RP) Automated Monitoring History in Relation to Construction

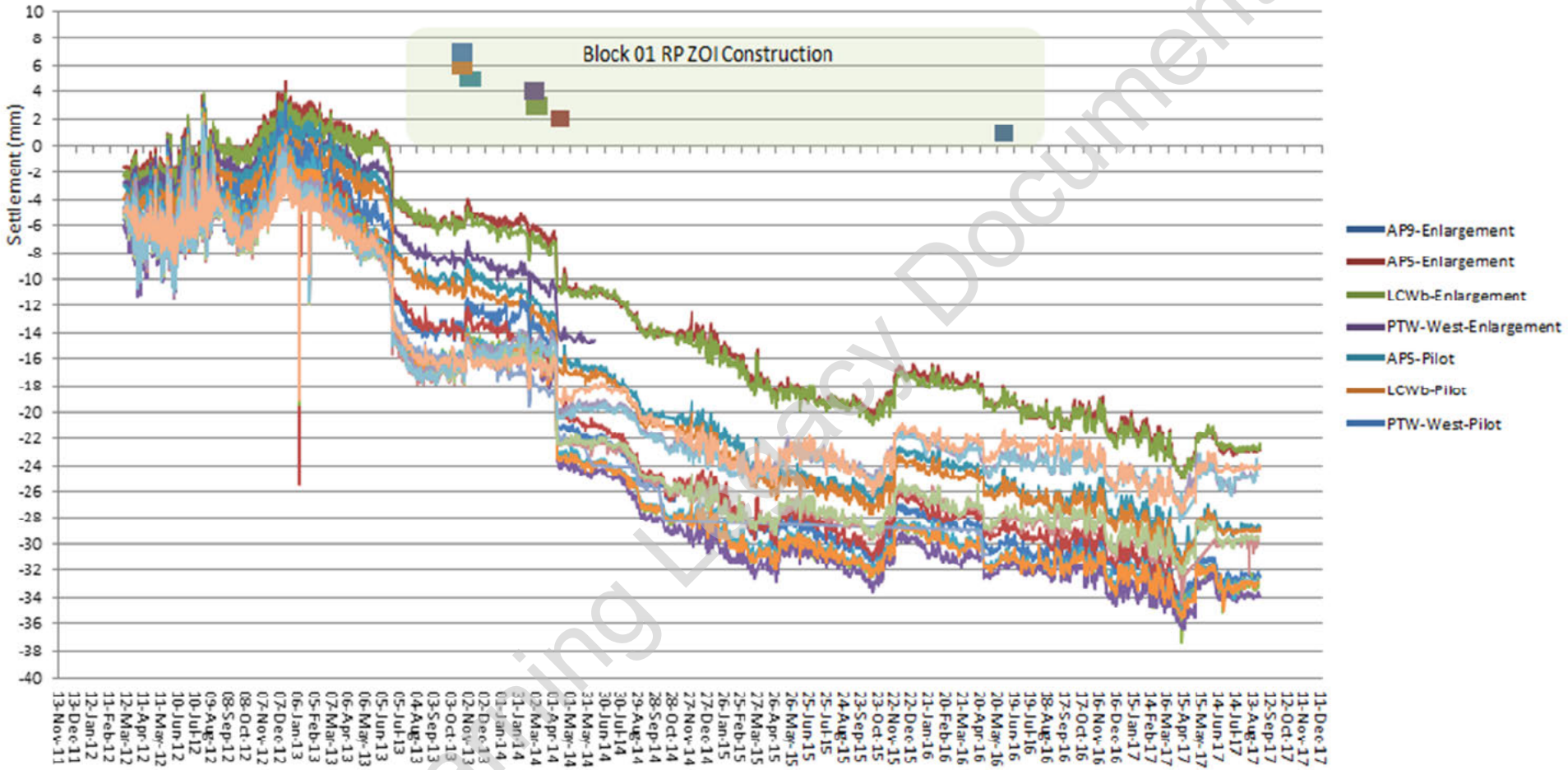
***Graph 1*- All Block 01 BREs (LB) Manual Monitoring History in Relation to Construction**



***Graph 2*- All Block 01 Road Studs (LP) Manual Monitoring History in Relation to Construction**



***Graph 3*- All Block 01 3d Geodetic Prisms (RP) Automated Monitoring History in Relation to Construction**



5.2 Block 01 Decommissioning Status Tracker

The decommissioning trackers identify *(Tables 2, 3, 4 and 5)* 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 and Traffic Lights

For each sensor the EOI parameter is used to determine the last completed construction advance that had the potential to cause settlement. All construction tunnel advances that had the potential to affect a sensor through its EOI are listed for each sensor, from the list the latest advance is used as a construction completion indicator. A traffic light system is used to highlight when a sensor has surpassed defined monitoring time frames; 4 months (120 days), 6 months (180 days) and 16 months (480 days).

> **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.

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 a calculation to determine annual settlement rates using measurements taken across a full year. This measurement period is therefore the desired duration to be used to assess whether long term settlement meets the 2mm per annum specification.

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 01. 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 01 Decommissioning Status Tracker LP, LB and RP

18/09/2017

< 2.0 mm GREEN	< 3.5 mm AMBER	> 3.5 mm RED

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	120 day	120 Days	120 Day Calculation Period	180 day	180 Days	180 Day Calculation Period	480 day	365 Days	365 Day Calculation Period	Ceased Date	General Comment	Decommissioning Status
C510-LP12122B	Block 101	S10109	External	Manual	LP	Road Stud	Moorgate	LIV_AP9_Enlargement_Adv-4	02/06/2016	18/09/2017		0.57	125		0.33	195		-4.36	376			Proposed
C510-LP12123B	Block 101	S10109	External	Manual	LP	Road Stud	Moorgate	LIV_AP9_Enlargement_Adv-10	09/06/2016	18/09/2017		-1.08	125		-0.86	195		-4.49	376			
C510-LP12124	Block 101	S10102	External	Manual	LP	Road Stud	Moorgate	LIV_LCWb_Enlargement_Adv-36	05/03/2014	18/09/2017		0.32	125		1.61	190		-2.99	371			
C510-LP12125	Block 101	S10102	External	Manual	LP	Road Stud	Moorgate	LIV_LCWb_Enlargement_Adv-36	05/03/2014	18/09/2017		-0.61	125		0.85	190		-2.12	371		Stable 6 month trend	
C510-LP12126	Block 101	S10102	External	Manual	LP	Road Stud	Moorgate	LIV_LCWb_Enlargement_Adv-36	05/03/2014	18/09/2017		-0.26	125		1.17	190		-1.75	371			
C510-LP12127	Block 101	S10102	External	Manual	LP	Road Stud	Moorgate	LIV_LCWb_Enlargement_Adv-36	05/03/2014	18/09/2017		-0.15	125		1.25	190		-1.69	374			
C510-LP12128	Block 101	S10102	External	Manual	LP	Road Stud	Moorgate	LIV_LCWb_Enlargement_Adv-36	05/03/2014	18/09/2017		-0.85	125		0.32	190		-1.83	371			
C510-LP12129	Block 101	S10102	External	Manual	LP	Road Stud	Moorgate	LIV_LCWb_Enlargement_Adv-36	05/03/2014	18/09/2017		-6.37	125		-6.02	217		-3.82	371		Trend anomolous with adjacent sensors. See Supplementary Evidence.	
C510-LP12130	Block 101	S10102	External	Manual	LP	Road Stud	Surrounding Globe Pensinsula	LIV_LCWb_Enlargement_Adv-36	05/03/2014	18/09/2017		-1.08	125		-0.35	217		-1.60	371			
C510-LP12131	Block 101	S10102	External	Manual	LP	Road Stud	Surrounding Globe Pensinsula	LIV_LCWb_Enlargement_Adv-36	05/03/2014	18/09/2017		-5.55	125		-1.59	400		-1.59	400			
C510-LP12132	Block 101	S10102	External	Manual	LP	Road Stud	Surrounding Globe Pensinsula	LIV_LCWb_Enlargement_Adv-36	05/03/2014	18/09/2017		-2.16	125		-0.07	217		-1.16	371		2mm per annum specification met	
C510-LP12133	Block 101	S10102	External	Manual	LP	Road Stud	Surrounding Globe Pensinsula	LIV_LCWb_Enlargement_Adv-36	05/03/2014	18/09/2017		-2.27	125		-1.06	217		-1.18	371			
C510-LP12134	Block 101	S10102	External	Manual	LP	Road Stud	Surrounding Globe Pensinsula	LIV_LCWb_Enlargement_Adv-36	05/03/2014	18/09/2017		-2.61	125		-1.02	217		-0.90	371			
C510-LP12135	Block 101	S10102	External	Manual	LP	Road Stud	Surrounding Globe Pensinsula	LIV_LCWb_Enlargement_Adv-36	05/03/2014	18/09/2017		-9.84	217		-9.84	217		-8.50	371		Trend anomolous with adjacent sensors. See Supplementary Evidence.	
C510-LP12136	Block 101	S10102	External	Manual	LP	Road Stud	Surrounding Globe Pensinsula	LIV_LCWb_Enlargement_Adv-36	05/03/2014	18/09/2017		-3.81	125		-2.72	217		-1.76	371		2mm per annum specification met	
C510-LP12137	Block 101	S10102	External	Manual	LP	Road Stud	Surrounding Globe Pensinsula	LIV_LCWb_Enlargement_Adv-36	05/03/2014	18/09/2017		-3.10	125		-1.56	217		-2.54	371		Stable 6 month trend	
C510-LP12138	Block 101	S10102	External	Manual	LP	Road Stud	Surrounding Globe Pensinsula	LIV_LCWa_Enlargement_Adv-18	03/02/2015	18/09/2017		-2.15	125		-0.64	217		-1.85	371			
C510-LP12139	Block 101	S10102	External	Manual	LP	Road Stud	Surrounding Globe Pensinsula	LIV_LCWa_Enlargement_Adv-24	04/02/2015	18/09/2017		-1.42	371		-1.42	371		-1.42	371		2mm per annum specification met	
C510-LP12140	Block 101	S10102	External	Manual	LP	Road Stud	Surrounding Globe Pensinsula	LIV_LCWa_Enlargement_Adv-30	06/02/2015	18/09/2017		0.68	125		0.67	217		-0.94	371			
C510-LP12166B	Block 101	S10109	External	Manual	LP	Road Stud	Moorgate	LIV_AP9_Enlargement_Adv-10	09/06/2016	18/09/2017		0.45	125		0.24	195		-4.55	376			
C510-LP12167B	Block 101	S10109	External	Manual	LP	Road Stud	Moorgate	LIV_ES3_Elargement_Invert_Downhill_Adv-5	17/12/2016	18/09/2017		0.81	125		0.32	195		-6.19	366			
C510-LP12168B	Block 101	S10109	External	Manual	LP	Road Stud	Moorgate	LIV_ES3_Elargement_Invert_Downhill_Adv-7	28/02/2017	18/09/2017		-0.25	125		-0.50	195		-5.97	366			
C510-LP12169B	Block 101	S10109	External	Manual	LP	Road Stud	Moorgate	LIV_ES3_Elargement_Invert_Downhill_Adv-7	28/02/2017	18/09/2017		0.35	125		-0.16	195		-6.58	366		Stable 6 month trend	
C510-LP12170B	Block 101	S10109	External	Manual	LP	Road Stud	Moorgate	LIV_ES3_Elargement_Invert_Downhill_Adv-7	28/02/2017	18/09/2017		-1.67	125		-1.63	195		-6.64	366			
C510-LP12171B	Block 101	S10109	External	Manual	LP	Road Stud	Moorgate	LIV_ES3_Elargement_Invert_Downhill_Adv-5	17/12/2016	18/09/2017		2.10	125		1.17	195		-5.38	366			
C510-LP12172B	Block 101	S10109	External	Manual	LP	Road Stud	Moorgate	LIV_AP9_Enlargement_Adv-10	09/06/2016	18/09/2017		1.86	125		1.14	195		-3.01	376			
C510-LP12173B	Block 101	S10109	External	Manual	LP	Road Stud	Moorgate	LIV_VD7_Enlargement_Adv-8	05/06/2014	16/06/2017		-2.26	213		-2.26	213		-2.89	434		Trend anomolous with adjacent sensors. See Supplementary Evidence.	
C510-LP12174B	Block 101	S10109	External	Manual	LP	Road Stud	Moorgate	LIV_VD7_Enlargement_Adv-7	05/06/2014	18/09/2017		-0.85	125		-0.43	209		-1.08	384		2mm per annum specification met	
C510-LB10101	Block 101	S10102	External	Manual	LB	BRE	Globe Penisula	LIV_LCWa_Enlargement_Adv-26	04/02/2015	15/08/2017		0.68	203		0.68	203		-0.63	364			Proposed
C510-LB10102	Block 101	S10102	External	Manual	LB	BRE	Globe Penisula	LIV_LCWa_Enlargement_Adv-24	04/02/2015	15/08/2017		0.94	203		0.94	203		-0.81	364			
C510-LB10103	Block 101	S10102	External	Manual	LB	BRE	Globe Penisula	LIV_LCWa_Enlargement_Adv-14	01/02/2015	15/08/2017		0.57	203		0.57	203		-1.22	364			
C510-LB10104	Block 101	S10102	External	Manual	LB	BRE	Globe Penisula	LIV_LCWa_Enlargement_Adv-14	01/02/2015	15/08/2017		-1.33	203		-1.33	203		-1.08	364			
C510-LB10105	Block 101	S10102	External	Manual	LB	BRE	Globe Penisula	LIV_LCWa_Enlargement_Adv-14	01/02/2015	15/08/2017		-0.98	203		-0.96	203		-1.19	364			
C510-LB10106	Block 101	S10102	External	Manual	LB	BRE	Globe Penisula	LIV_LCWa_Enlargement_Adv-14	01/02/2015	15/08/2017		-0.68	203		-0.68	203		-0.99	364			
C510-LB10107	Block 101	S10102	External	Manual	LB	BRE	Globe Penisula	LIV_LCWa_Enlargement_Adv-14	01/02/2015	15/08/2017		-1.06	203		-1.06	203		-1.48	364			
C510-LB10108	Block 101	S10102	External	Manual	LB	BRE	Globe Penisula	LIV_LCWa_Enlargement_Adv-14	01/02/2015	15/08/2017		-0.60	203		0.60	203		-1.27	364			
C510-LB10109	Block 101	S10102	External	Manual	LB	BRE	Globe Penisula	LIV_LCWa_Enlargement_Adv-14	01/02/2015	15/08/2017		0.20	179		-0.36	203		-1.08	364			
C510-LB10110	Block 101	S10102	External	Manual	LB	BRE	Globe Penisula	LIV_LCWa_Enlargement_Adv-14	01/02/2015	15/08/2017		0.48	179		-0.37	207		-1.82	374			
C510-LB10111	Block 101	S10102	External	Manual	LB	BRE	Globe Penisula	LIV_LCWb_Enlargement_Adv-36	05/03/2014	15/08/2017		-0.31	179		-0.83	207		-1.88	374			
C510-LB10112	Block 101	S10102	External	Manual	LB	BRE	Globe Penisula	LIV_LCWb_Enlargement_Adv-36	05/03/2014	15/08/2017		1.82	179		0.94	207		-1.19	374			
C510-LB10113	Block 101	S10102	External	Manual	LB	BRE	Globe Penisula	LIV_LCWb_Enlargement_Adv-36	05/03/2014	15/08/2017		1.56	179		0.44	207		-1.58	374			
C510-RP10123	Block 101	N/A	External	Automated	RP	3D Geodetic prism	83-87 Moorgate	LIV_LCWb_Enlargement_Adv-36	05/03/2014	19/12/2016		#N/A			#N/A			#N/A				Proposed
C510-RP10124	Block 101	N/A	External	Automated	RP	3D Geodetic prism	83-87 Moorgate	LIV_LCWb_Enlargement_Adv-36	05/03/2014			#N/A			#N/A			#N/A				
C510-RP10125	Block 101	N/A	External	Automated	RP	3D Geodetic prism	83-87 Moorgate	LIV_LCWb_Enlargement_Adv-36	05/03/2014	25/08/2017		-3.04	121		0.47	181		-3.15	301			
C510-RP10126	Block 101	N/A	External	Automated	RP	3D Geodetic prism	83-87 Moorgate	LIV_LCWb_Enlargement_Adv-36	05/03/2014	25/08/2017		-2.58	121		1.42	181		-2.08	301			
C510-RP10127	Block 101	N/A	External	Automated	RP	3D Geodetic prism	83-87 Moorgate	LIV_LCWb_Enlargement_Adv-36	05/03/2014	12/06/2014		#N/A			#N/A			#N/A				
C510-RP10128	Block 101	N/A	External	Automated	RP	3D Geodetic prism	83-87 Moorgate	LIV_LCWb_Enlargement_Adv-36	05/03/2014	25/08/2017		-2.89	124		1.21	181		-2.83	300			
C510-RP10129A	Block 101	N/A	External	Automated	RP	3D Geodetic prism	83-87 Moorgate	LIV_LCWb_Enlargement_Adv-36	05/03/2014	25/08/2017		-1.89	121		1.99	181		-1.94	301			
C510-RP10130	Block 101	N/A	External	Automated	RP	3D Geodetic prism	83-87 Moorgate	LIV_LCWb_Enlargement_Adv-36	05/03/2014	23/08/2017		-2.98	121		0.55	181		-2.53	301			
C510-RP10131	Block 101	N/A	External	Automated	RP	3D Geodetic prism	83-87 Moorgate	LIV_LCWb_Enlargement_Adv-36	05/03/2014	31/03/2017		-6.31	121		-6.59	180		-4.13	301			
C510-RP10132	Block 101	N/A	External	Automated	RP	3D Geodetic prism	83-87 Moorgate	LIV_LCWb_Enlargement_Adv-36	05/03/2014	22/08/2017		-2.56	126		2.16	183		-1.73	301			
C510-RP10133	Block 101	N/A	External	Automated	RP	3D Geodetic prism	83-87 Moorgate	LIV_LCWb_Enlargement_Adv-36	05/03/2014	23/08/2017		-1.42	121		2.28	181		-1.00	300			
C510-RP10134	Block 101	N/A	External	Automated	RP	3D Geodetic prism	83-87 Moorgate	LIV_LCWb_Enlargement_Adv-36	05/03/2014	22/08/2017		-2.32	121		1.46	181		-1.70	300			
C510-RP10135	Block 101	N/A	External	Automated	RP	3D Geodetic prism	83-87 Moorgate	LIV_LCWb_Enlargement_Adv-36	05/03/2014	22/08/2017		-1.83	121		1.96	181		-1.46	301			
C510-RP10136	Block 101	N/A	External	Automated	RP	3D Geodetic prism	83-87 Moorgate	LIV_LCWb_Enlargement_Adv-36	05/03/2014	04/05/2016		#N/A			#N/A			#N/A				
C510-RP10137	Block 101	N/A	External	Automated	RP	3D Geodetic prism	83-87 Moorgate	LIV_AP9_Enlargement_Adv-4	02/06/2016	22/08/2017		2.73	130		1.97	186		-2.17	301			
C510-RP10138	Block 101	N/A	External	Automated	RP	3D Geodetic prism	83-87 Moorgate	LIV_AP9_Enlargement_Adv-4	02/06/2016	22/08/2017		-2.24	121		2.55	181		-0.64	300			
C510-RP10139	Block 101	N/A	External	Automated	RP	3D Geodetic prism	83-87 Moorgate	LIV_AP9_Enlargement_Adv-4	02/06/2016	17/08/2017		-1.15	121		2.99	205		-0.82	300			

5.3 Supplementary Evidence for Decommissioning

In some cases supplementary evidence will be provided to support the decommissioning evidence.

5.3.1 Road Stud LP12129

LP12129 has not met any trend requirements; however, the surrounding studs have all met the allowable trend for a minimum of 180/365 days. It can be seen in *Figure 3* below that the circled pin is located on a section of pavement that was resealed more recently than the surrounding pavement. It is likely that some utility works were undertaken in this vicinity and in turn, may have led to greater settlement than the adjacent area (e.g. due to poor compaction). As such, the settlement trend may not be a true reflection of the absolute ground movement caused by Crossrail works in the area.

It should also be noted that the head of the road stud does not clearly protrude above the pavement around it; therefore, monitoring results may have been affected if the measuring staff was not exclusively resting on the stud.

Based on the adjacent road studs' settlement trends, it is proposed to consider LP12129 as unreliable with regards to trends caused by tunnelling construction and to decommission the sensor.

***Figure 3*- LP12129 Location on Pavement**

5.3.2 **Road Stud LP12135**

LP12135 has not met any trend requirements; however, the surrounding studs have all met the allowable trend for a minimum of 365 days. Upon investigation of the road stud, it was noted that it was located near a garden hedge which may affect the ground by seasonal changes. It can also be seen in *Figure 4* below that the stud also is very close to a manhole and reticulated stormwater system. This may also be subject to local superficial movement and not a reflection of deeper seated movement caused by tunnelling construction. Furthermore, the damage to the pavement stones nearby suggests that a heavy object/impact caused some localised movement.

Based on the adjacent road studs' settlement trends, it is proposed to consider LP12135 as unreliable with regards to trends caused by tunnelling construction and to decommission the sensor.

***Figure 4*- LP12135 Location on Pavement**

5.3.3 **Road Stud 12173B**

LP12173B settlement trend is 2.2-2.9mm/year; however, the surrounding studs have met the allowable trend for a minimum of 180 days. It can be seen in *Figure 5* that the stud is located at the base of a temporary hoarding. The road stud is located directly under the hoarding and is no longer accessible for monitoring.

Based on the adjacent road studs' settlement trends, it is proposed to consider LP12173B as unreliable with regards to trends caused by tunnelling construction and to decommission the sensor.

***Figure 5*- LP12173B Location on Pavement**

5.4 Monitoring sensor Location Plan and Decommissioning Status

The following plots provide a visual representation of all Block 01 monitoring sensors with a colour circle that defines its settlement status. A green circle represents when a trend is below 2mm/yr and the larger the circle the greater the trend period. When a trend has not been met, a small red circle will represent the monitoring sensor.

- *Figure 6*- LB Monitoring Sensor Settlement Status and Location Plan
- *Figure 7*- LP Monitoring Sensor Settlement Status and Location Plan
- *Figure 8*- RP Monitoring Sensor Settlement Status and Location Plan

Figure 3- LB Monitoring Sensor Settlement Status and Location Plan

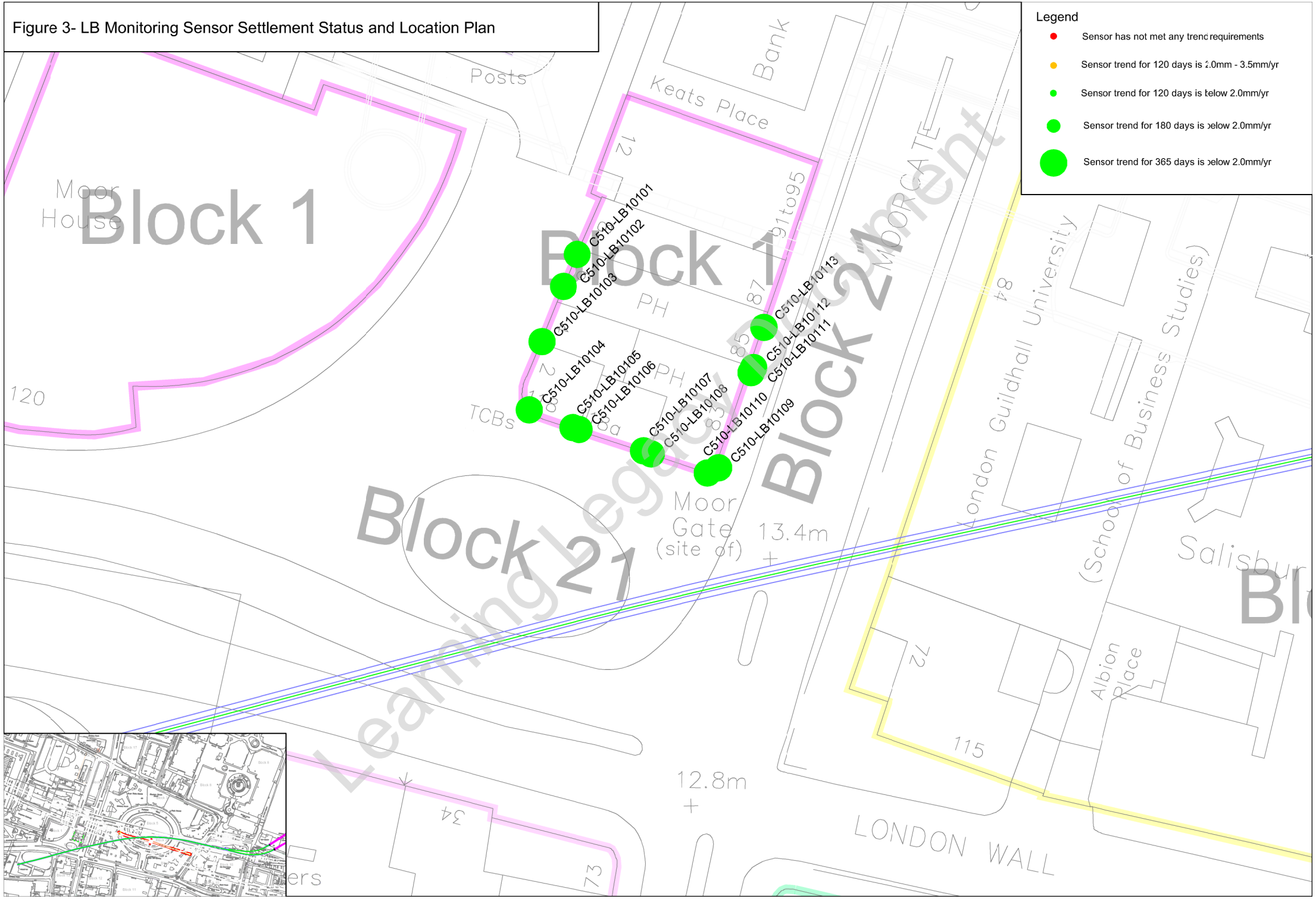


Figure 4 - LP Monitoring Sensor Settlement Status and Location Plan

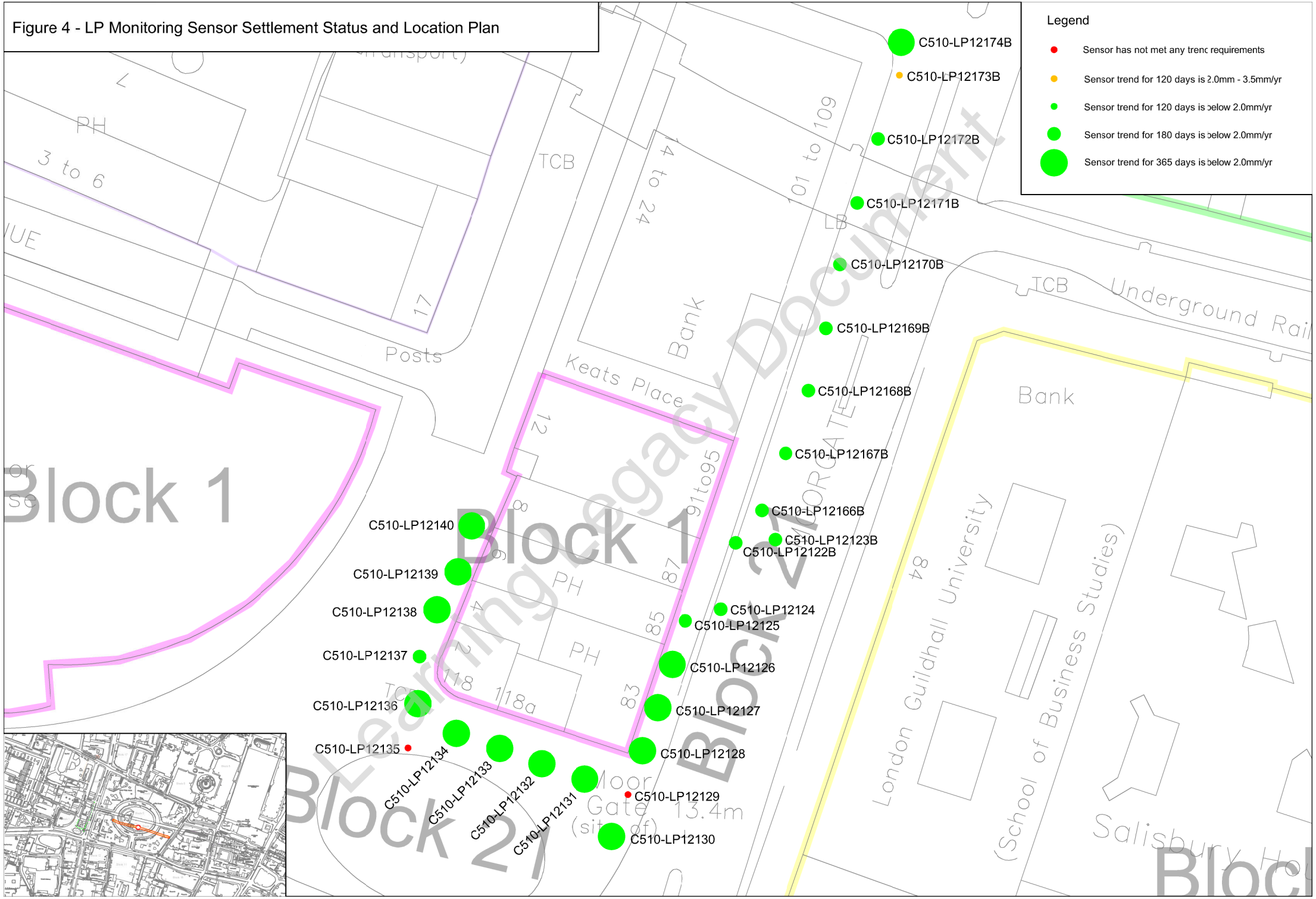
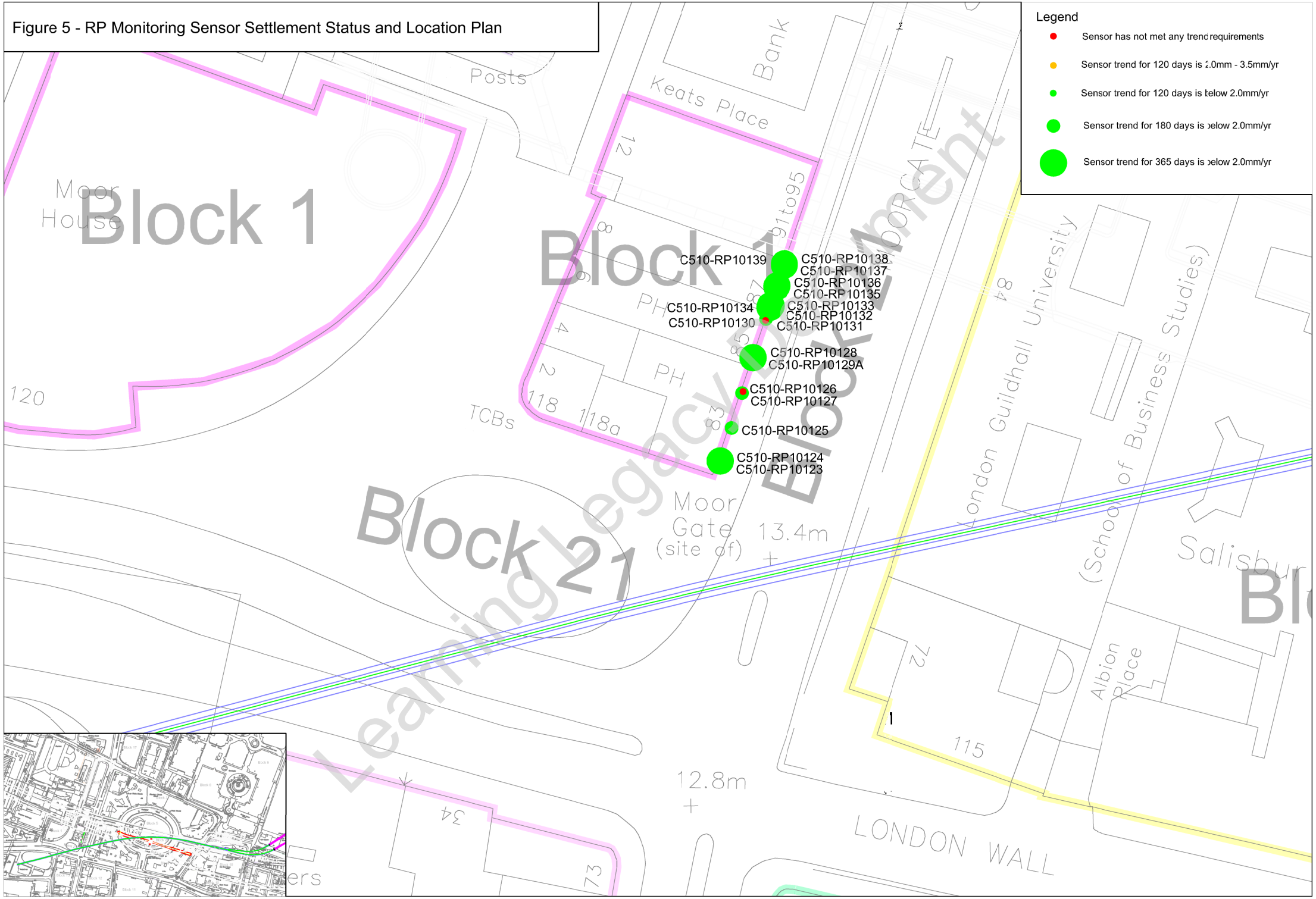


Figure 5 - RP Monitoring Sensor Settlement Status and Location Plan



6 Decommissioning Recommendations

Revision 2 of Block 01 close out report requests all monitoring sensors to be decommissioned. The decommissioning status tracker (*Table 2)* identifies the monitoring sensors to be agreed for decommissioning.

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 decommissioning tracker table and plots that were used as evidence to agree decommissioning in Revision 1 of Block 01 close out report.

Table 2 - Block 01 Decommissioning Status Tracker LB, SH & TB

24/03/2017

< 2.0 mm GREEN	< 3.5 mm AMBER	> 3.5 mm RED

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	120 day	120 Days	120 Day Calculation Period	180 day	180 Days	180 Day Calculation Period	480 day	365 Days	365 Day Calculation Period	Ceased Date	General Comment	Decommissioning Status
C510-LB10101	Block 101	S10102	External	Manual	LB	BRE	Globe Peninsula	LIV_LCWa_Enlargement_Adv-26	04/02/2015	24/01/2017		-2.18	134		-0.19	315		-0.68	409		Met 2mm per annum specification	Outstanding
C510-LB10102	Block 101	S10102	External	Manual	LB	BRE	Globe Peninsula	LIV_LCWa_Enlargement_Adv-24	04/02/2015	24/01/2017		-1.64	134		-0.84	315		-0.21	409		Met 2mm per annum specification	Outstanding
C510-LB10103	Block 101	S10102	External	Manual	LB	BRE	Globe Peninsula	LIV_LCWa_Enlargement_Adv-14	01/02/2015	24/01/2017		-3.27	134		-1.00	311		-0.83	409		Met 2mm per annum specification	Outstanding
C510-LB10104	Block 101	S10102	External	Manual	LB	BRE	Globe Peninsula	LIV_LCWa_Enlargement_Adv-14	01/02/2015	24/01/2017		0.27	134		-0.88	311		-0.68	409		Met 2mm per annum specification	Outstanding
C510-LB10105	Block 101	S10102	External	Manual	LB	BRE	Globe Peninsula	LIV_LCWa_Enlargement_Adv-14	01/02/2015	24/01/2017		-1.09	134		-1.76	315		-1.42	409		Met 2mm per annum specification	Outstanding
C510-LB10106	Block 101	S10102	External	Manual	LB	BRE	Globe Peninsula	LIV_LCWa_Enlargement_Adv-14	01/02/2015	24/01/2017		-1.09	134		-1.75	315		-1.38	409		Met 2mm per annum specification	Outstanding
C510-LB10107	Block 101	S10102	External	Manual	LB	BRE	Globe Peninsula	LIV_LCWa_Enlargement_Adv-14	01/02/2015	24/01/2017		-1.36	134		-2.48	315		-2.10	409		Not met specification	Outstanding
C510-LB10108	Block 101	S10102	External	Manual	LB	BRE	Globe Peninsula	LIV_LCWa_Enlargement_Adv-14	01/02/2015	24/01/2017		-1.64	134		-2.93	315		-2.62	409		Not met specification	Outstanding
C510-LB10109	Block 101	S10102	External	Manual	LB	BRE	Globe Peninsula	LIV_LCWa_Enlargement_Adv-14	01/02/2015	17/02/2017		-1.68	133		-1.52	185		-2.69	373		Within ES3 EOI	Outstanding
C510-LB10110	Block 101	S10102	External	Manual	LB	BRE	Globe Peninsula	LIV_LCWa_Enlargement_Adv-14	01/02/2015	17/02/2017		-4.05	126		-2.86	185		-2.56	373		Within ES3 EOI	Outstanding
C510-LB10111	Block 101	S10102	External	Manual	LB	BRE	Globe Peninsula	LIV_LCWb_Enlargement_Adv-36	05/03/2014	17/02/2017		-3.77	126		-2.86	185		-2.23	373		Within ES3 EOI	Outstanding
C510-LB10112	Block 101	S10102	External	Manual	LB	BRE	Globe Peninsula	LIV_LCWb_Enlargement_Adv-36	05/03/2014	17/02/2017		-5.69	126		-3.30	185		-2.45	373		Within ES3 EOI	Outstanding
C510-LB10113	Block 101	S10102	External	Manual	LB	BRE	Globe Peninsula	LIV_LCWb_Enlargement_Adv-36	05/03/2014	17/02/2017		-4.76	126		-3.63	185		-2.33	373		Within ES3 EOI	Outstanding
C510-LB10114	Block 101	S10101	External	Manual	LB	BRE	Moor House	LIV_TBM-West-LC_Pilot_Adv-4020	16/04/2015	15/09/2016		3.38	184		3.38	184		0.59	379	10/03/2016	Met 2mm per annum specifiation - Decommissioned after 10.03.2016 ERP meeting	Proposed
C510-LB10115	Block 101	S10101	External	Manual	LB	BRE	Moor House	LIV_VD4_Enlargement_Adv-43	11/09/2014	15/09/2016		-0.27	184		-0.27	184		0.59	379	10/03/2016	Met 2mm per annum specifiation - Decommissioned after 10.03.2016 ERP meeting	Proposed
C510-LB10116	Block 101	S10101	External	Manual	LB	BRE	Moor House	LIV_VD4_Enlargement_Adv-43	11/09/2014	15/09/2016		-0.71	184		-0.71	184		0.42	379	10/03/2016	Met 2mm per annum specifiation - Decommissioned after 10.03.2016 ERP meeting	Proposed
C510-LB10117	Block 101	S10101	External	Manual	LB	BRE	Moor House	LIV_VD4_Enlargement_Adv-43	11/09/2014	15/09/2016		-0.30	184		-0.30	184		0.75	379	10/03/2016	Met 2mm per annum specifiation - Decommissioned after 10.03.2016 ERP meeting	Proposed
C510-LB10118	Block 101	S10101	External	Manual	LB	BRE	Moor House	LIV_VD4_Enlargement_Adv-43	11/09/2014	15/09/2016		-1.59	184		-1.59	184		0.23	379	10/03/2016	Met 2mm per annum specifiation - Decommissioned after 10.03.2016 ERP meeting	Proposed
C510-LB10119	Block 101	S10101	External	Manual	LB	BRE	Moor House	LIV_VD4_Enlargement_Adv-43	11/09/2014	15/09/2016		-2.18	184		-2.18	184		0.00	379	10/03/2016	Met 2mm per annum specifiation - Decommissioned after 10.03.2016 ERP meeting	Proposed
C510-LB10120	Block 101	S10101	External	Manual	LB	BRE	Moor House	LIV_VD4_Enlargement_Adv-43	11/09/2014	15/09/2016		-1.42	184		-1.42	184		0.00	379	10/03/2016	Met 2mm per annum specifiation - Decommissioned after 10.03.2016 ERP meeting	Proposed
C510-LB10121	Block 101	S10101	External	Manual	LB	BRE	Moor House	LIV_VD4_Enlargement_Adv-43	11/09/2014	15/09/2016		0.68	184		0.68	184		0.45	379	10/03/2016	Met 2mm per annum specifiation - Decommissioned after 10.03.2016 ERP meeting	Proposed
C510-LB10122	Block 101	S10101	External	Manual	LB	BRE	Moor House	LIV_TBM-West-LC_Pilot_Adv-4048	21/04/2015	15/09/2016		0.54	184		0.54	184		0.50	379	10/03/2016	Met 2mm per annum specifiation - Decommissioned after 10.03.2016 ERP meeting	Proposed
C510-LB10123	Block 101	S10101	External	Manual	LB	BRE	Moor House	LIV_TBM-West-LC_Pilot_Adv-4054	22/04/2015	15/09/2016		-2.55	184		-2.55	184		-0.37	379	10/03/2016	Met 2mm per annum specifiation - Decommissioned after 10.03.2016 ERP meeting	Proposed
C510-LB10124	Block 101	S10101	External	Manual	LB	BRE	Moor House	LIV_TBM-West-LC_Pilot_Adv-4046	21/04/2015	15/09/2016		-1.17	184		-1.17	184		0.05	379	10/03/2016	Met 2mm per annum specifiation - Decommissioned after 10.03.2016 ERP meeting	Proposed
C510-LB10125	Block 101	S10101	External	Manual	LB	BRE	Moor House	LIV_TBM-West-LC_Pilot_Adv-4038	21/04/2015	15/09/2016		0.65	184		0.65	184		0.03	379	10/03/2016	Met 2mm per annum specifiation - Decommissioned after 10.03.2016 ERP meeting	Proposed
C510-LB10126	Block 101	S10101	External	Manual	LB	BRE	Moor House	LIV_TBM-West-LC_Pilot_Adv-4030	20/04/2015	10/04/2012		N/A			N/A			N/A		10/03/2016	Decommissioned after 10.03.2016 ERP meeting	Proposed
C510-LB10127	Block 101	S10103	External	Manual	LB	BRE	155 Moorgate	LIV_AP6-2_Enlargement_Adv-56	02/05/2015	22/03/2017		-3.11	189		-3.11	189		0.70	372		Agreed to cease CTC meeting 21/03/2017- No discernable influence from ES3 tunneling- 2mm yr achieved- Insar coverage sufficient	Proposed
C510-LB10128	Block 101	S10103	External	Manual	LB	BRE	155 Moorgate	LIV_AP6-1_Enlargement_Adv-69	30/06/2014	22/03/2017		-5.02	189		-5.02	189		0.29	372		Agreed to cease CTC meeting 21/03/2017	Proposed
C510-LB10129	Block 101	S10103	External	Manual	LB	BRE	155 Moorgate	LIV_AP6-1_Enlargement_Adv-79	03/07/2014	06/03/2013		N/A			N/A			N/A			Agreed to cease CTC meeting 21/03/2017	Proposed
C510-LB10130	Block 101	S10103	External	Manual	LB	BRE	155 Moorgate	LIV_AP6-1_Enlargement_Adv-91	05/07/2014	24/01/2017		-3.32	132		1.49	315		0.15	426		Agreed to cease CTC meeting 21/03/2017	Proposed
C510-LB10131	Block 101	S10103	External	Manual	LB	BRE	155 Moorgate	LIV_AP10b_Enlargement_Adv-22	02/08/2015	24/01/2017		-4.43	132		1.66	315		1.91	371		Agreed to cease CTC meeting 21/03/2017	Proposed
C510-LB10132	Block 101	S10103	External	Manual	LB	BRE	155 Moorgate	LIV_PRM Lift_Enlargement_Adv-100	09/10/2015	24/01/2017		-3.87	132		1.52	315		1.36	371		Agreed to cease CTC meeting 21/03/2017	Proposed
C510-LB10133	Block 101	S10103	External	Manual	LB	BRE	155 Moorgate	LIV_PRM Lift_Enlargement_Adv-100	09/10/2015	24/01/2017		-3.04	132		1.02	315		0.69	371		Agreed to cease CTC meeting 21/03/2017	Proposed
C510-LB10134	Block 101	0103;S101	External	Manual	LB	BRE	155 Moorgate	LIV_PRM Lift_Enlargement_Adv-100	09/10/2015	24/01/2017		-2.77	132		1.13	315		0.84	371		Agreed to cease CTC meeting 21/03/2017	Proposed
C510-LB10135	Block 101	S10104	External	Manual	LB	BRE	155 Moorgate	LIV_AP10b_Enlargement_Adv-10	25/07/2015	24/01/2017		-0.28	132		1.06	315		0.16	371		Agreed to cease CTC meeting 21/03/2017	Proposed
C510-LB10136	Block 101	S10104	External	Manual	LB	BRE	155 Moorgate	LIV_AP6-1_Enlargement_Adv-163	13/05/2015	24/01/2017		-1.94	132		0.51	315		-0.07	371		Agreed to cease CTC meeting 21/03/2017	Proposed
C510-LB10137	Block 101	S10104	External	Manual	LB	BRE	155 Moorgate	LIV_AP6-1_Enlargement_Adv-150	09/05/2015	24/01/2017		-2.77	132		0.52	315		0.26	371		Agreed to cease CTC meeting 21/03/2017	Proposed
C510-LB10138	Block 101	S10104	External	Manual	LB	BRE	155 Moorgate	LIV_AP6-1_Enlargement_Adv-117	10/07/2014	24/01/2017		-4.43	132		0.95	315		-0.39	409		Agreed to cease CTC meeting 21/03/2017	Proposed
C510-LB10139	Block 101	S10104	External	Manual	LB	BRE	155 Moorgate	LIV_AP6-1_Enlargement_Adv-101	07/07/2014	24/01/2017		-3.87	132		0.80	315		-0.26	409		Agreed to cease CTC meeting 21/03/2017	Proposed
C510-LB10140	Block 101	S10104	External	Manual	LB	BRE	155 Moorgate	LIV_AP6-2_Enlargement_Adv-56	02/05/2015	22/03/2017		-4.47	189		-4.47	189		-0.14	372		Agreed to cease CTC meeting 21/03/2017	Proposed
C510-LB10141	Block 101	S10104	External	Manual	LB	BRE	137-141 Moorgate	LIV_AP6-2_Enlargement_Adv-56	02/05/2015	22/03/2017		-3.39	189		-3.39	189		0.73	372		Agreed to cease CTC meeting 21/03/2017- No discernable influence from ES3 tunneling- 2mm yr achieved- Insar coverage sufficient	Proposed
C510-LB10142	Block 101	S10104	External	Manual	LB	BRE	137-141 Moorgate	LIV_AP6-2_Enlargement_Adv-56	02/05/2015	22/03/2017		-3.10	189		-3.10	189		0.80	372		Agreed to cease CTC meeting 21/03/2017- No discernable influence from ES3 tunneling- 2mm yr achieved- Insar coverage sufficient	Proposed
C510-LB10143	Block 101	S10104	External	Manual	LB	BRE	137-141 Moorgate	LIV_AP6-2_Enlargement_Adv-56	02/05/2015	22/03/2017		-4.41	189		-4.41	189		-0.39	372		Agreed to cease CTC meeting 21/03/2017- No discernable influence from ES3 tunneling- 2mm yr achieved- Insar coverage sufficient	Proposed
C510-LB10144	Block 101	S10104	External	Manual	LB	BRE	137-141 Moorgate	LIV_AP6-2_Enlargement_Adv-56	02/05/2015	22/03/2017		-4.34	189		-4.34	189		-0.67	372		Agreed to cease CTC meeting 21/03/2017- No discernable influence from ES3 tunneling- 2mm yr achieved- Insar coverage sufficient	Proposed
C510-LB10145	Block 101	S10103	External	Manual	LB	BRE	137-141 Moorgate	LIV_AP6-2_Enlargement_Adv-50	29/04/2015	22/03/2017		-3.87	189		-3.87	189		-0.05	372		Agreed to cease CTC meeting 21/03/2017- No discernable influence from ES3 tunneling- 2mm yr achieved- Insar coverage sufficient	Proposed
C510-LB10146	Block 101	S10103	External	Manual	LB	BRE	137-141 Moorgate	LIV_AP6-2_Enlargement_Adv-47	27/04/2015	22/03/2017		-3.66	189		-3.66	189		-0.03	372		Agreed to cease CTC meeting 21/03/2017- No discernable influence from ES3 tunneling- 2mm yr achieved- Insar coverage sufficient	Proposed
C510-LB10147	Block 101	S10103	External	Manual	LB	BRE	137-141 Moorgate	LIV_AP6-2_Enlargement_Adv-52	30/04/2015	22/03/2017		-4.31	189		-4.31	189		0.24	372		Agreed to cease CTC meeting 21/03/2017- No discernable influence from ES3 tunneling- 2mm yr achieved- Insar coverage sufficient	Proposed
C510-LB10148	Block 101	S10103	External	Manual	LB	BRE	137-141 Moorgate	LIV_AP6-2_Enlargement_Adv-56	02/05/2015	22/03/2017		-3.97	189		-3.97	189		0.91	372		Agreed to cease CTC meeting 21/03/2017- No discernable influence from ES3 tunneling- 2mm yr achieved- Insar coverage sufficient	Proposed
C510-LB10149	Block 101	S10103	External	Manual	LB	BRE	137-141 Moorgate	LIV_AP6-2_Enlargement_Adv-56	02/05/2015	22/03/2017		-2.40	189		-2.40	189		1.22	372		Agreed to cease CTC meeting 21/03/2017- No discernable influence from ES3 tunneling- 2mm yr achieved- Insar coverage sufficient	Proposed
C510-SH010111	Block 101	N/A	Internal	Automated	SH	Settlement Cell-Electronic	87 Moorgate (basement)	LIV_LCWb_Enlargement_Adv-36	05/03/2014	28/11/2016		9.74	120		9.05	180		0.18	365		C502 to decommission- PMI Reference: C510-PMI-01175	Complete
C510-SH010112	Block 101	N/A	Internal	Automated	SH	Settlement Cell-Electronic	87 Moorgate (basement)	LIV_AP9_Enlargement_Adv-4	02/06/2016	28/11/2016		6.55	120		7.57	180		0.73	365		C502 to decommission- PMI Reference: C510-PMI-01175	Complete
C510-SH010113	Block 101	N/A	Internal	Automated	SH	Settlement Cell-Electronic	87 Moorgate (basement)	LIV_LCWa_Enlargement_Adv-5	30/01/2015	28/11/2016		9.58	120		8.50	180		0.37	365		C502 to decommission- PMI Reference: C510-PMI-01175	Complete
C510-SH010114	Block 101	N/A	Internal	Automated	SH	Settlement Cell-Electronic	87 Moorgate (basement)	LIV_LCWa_Enlargement_Adv-17	02/02/2015	28/11/2016		3.60	120		6.51	180		2.01	365		C502 to decommission- PMI Reference: C510-PMI-01175	Complete
C510-SH010115	Block 101	N/A	Internal	Automated	SH	Settlement Cell-Electronic	87 Moorgate (basement)	LIV_LCWa_Enlargement_Adv-15	02/02/2015	28/11/2016		7.22	120		7.34	180		0.67	365		C502 to decommission- PMI Reference: C510-PMI-01175	Complete
C510-SH010116	Block 101	N/A	Internal	Automated	SH	Settlement Cell-Electronic	8 Moorfields (basement)	LIV_LCWa_Enlargement_Adv-6	30/01/2015	28/11/2016		6.28	120		6.76	180		1.08	365		C502 to decommission- PMI Reference: C510-PMI-01175	Complete
C510-SH010121	Block 101	N/A	Internal	Automated	SH	Settlement Cell-Electronic	8 Moorfields (basement)	LIV_LCWa_Enlargement_Adv-17	02/02/2015	29/11/2016		7.13	120		7.26	180		0.68	365		C502 to decommission- PMI Reference: C510-PMI-01175	Complete
C510-SH010122	Block 101	N/A	Internal	Automated	SH	Settlement Cell-Electronic	8 Moorfields (basement)	LIV_LCWa_Enlargement_Adv-20	03/02/2015	29/11/2016		2.70	120		5.59	180		1.54	365		C502 to decommission- PMI Reference: C510-PMI-01175	Complete
C510-SH010123	Block 101	N/A	Internal	Automated	SH	Settlement Cell-Electronic	8 Moorfields (basement)	LIV_LCWa_Enlargement_Adv-20	03/02/2015	29/11/2016		2.42	120		5.60	180		1.91	365		C502 to decommission- PMI Reference: C510-PMI-01175	Complete
C510-SH010124	Block 101	N/A	Internal	Automated	SH	Settlement Cell-Electronic	8 Moorfields (basement)	LIV_LCWa_Enlargement_Adv-23	04/02/2015	29/11/2016		1.15	120		5.28	180		2.49	365		C502 to decommission- PMI Reference: C510-PMI-01175	Complete
C510-SH010125	Block 101	N/A	Internal	Automated	SH	Settlement Cell-Electronic	8 Moorfields (basement)	LIV_LCWa_Enlargement_Adv-29	06/02/2015	29/11/2016		0.59	120		4.87	180		2.60	365		C502 to decommission- PMI Reference: C510-PMI-01175	Complete
C510-SH010126	Block 101	N/A	Internal	Automated	SH	Settlement Cell-Electronic	8 Moorfields (basement)	LIV_LCWa_Enlargement_Adv-27	05/02/2015	29/11/2016		2.35	120		5.38	180		1.64	365		C502 to decommission- PMI Reference: C510-PMI-01175	Complete
C510-TB10101A	Block 101	N/A	External	Automated	TB	Tiltmeter-Biaxial	87 Moorgate	LIV_AP9_Enlargement_Adv-1	30/05/2016	25/01/2017		-0.93	120		-0.71	180		-0.01	365		C502 to decommission- PMI Reference: C510-PMI-01175	Complete
C510-TB10101B	Block 101	N/A	External	Automated	TB	Tiltmeter-Biaxial	87 Moorgate	LIV_AP9_Enlargement_Adv-1	30/05/2016	25/01/2017		-0.72	120		-0.44	180		0.08	365		C502 to decommission- PMI Reference: C510-PMI-01175	Complete
C510-TB10102A	Block 101	N/A	External	Automated	TB	Tiltmeter-Biaxial	87 Moorgate	LIV_LCWa_Enlargement_Adv-9	31/01/2015	25/01/2017		0.57	120		0.23	180		-0.23	365		C502 to decommission- PMI Reference: C510-PMI-01175	Complete
C510-TB10102B	Block 101	N/A	External	Automated	TB	Tiltmeter-Biaxial	87 Moorgate	LIV_LCWa_Enlargement_Adv-9	31/01/2015	25/01/2017		-1.05	120		-0.29	180		0.10	365		C502 to decommission- PMI Reference: C510-PMI-01175	Complete
C510-TB10103A	Block 101	N/A	External	Automated	TB	Tiltmeter-Biaxial	87 Moorgate	LIV_AP9_Enlargement_Adv-1	30/05/2016	25/01/2017		-1.36	120		-0.90	180		-0.29	365		C502 to decommission- PMI Reference: C510-PMI-01175	Complete
C510-TB10103B	Block 101	N/A	External	Automated	TB	Tiltmeter-Biaxial	87 Moorgate	LIV_AP9_Enlargement_Adv-1	30/05/2016	25/01/2017		-1.30	120		-0.87	180		-0.09	365		C502 to decommission- PMI Reference: C510-PMI-01175	Complete
C510-TB10104A	Block 101	N/A	External	Automated	TB	Tiltmeter-Biaxial	87 Moorgate	LIV_AP9_Enlargement_Adv-1	30/05/2016	25/01/2017		-0.70	120		-0.81	180		-0.69	365		C502 to decommission- PMI Reference: C510-PMI-01175	Complete
C510-TB10104B	Block 101	N/A	External	Automated	TB	Tiltmeter-Biaxial	87 Moorgate	LIV_AP9_Enlargement_Adv-1	30/05/2016	25/01/2017		-0.44	120		-0.43	180		0.03	365		C502 to decommission- PMI Reference: C510-PMI-01175	Complete
C510-TB10105A	Block 101	N/A	External	Automated	TB	Tiltmeter-Biaxial	87 Moorgate	LIV_LCWa_Enlargement_Adv-9	31/01/2015	25/01/2017		-1.82	120		-1.20	180		-0.46	365		C502 to decommission- PMI Reference: C510-PMI-01175	Complete
C510-TB10105B	Block 101	N/A	External	Automated	TB	Tiltmeter-Biaxial	87 Moorgate	LIV_LCWa_Enlargement_Adv-9	31/01/2015	25/01/2017		-0.66	120		-0.31	180		-0.08	365		C502 to decommission- PMI Reference: C510-PMI-01175	Complete
C510-TB10111A	Block 101	N/A	External	Automated	TB	Tiltmeter-Biaxial	8 Moorfields	LIV_LCWa_Enlargement_Adv-18	03/02/2015	25/01/2017		-1.68	120		-0.76	180		-0.39	365		C502 to decommission- PMI Reference: C510-PMI-01175	Complete
C510-TB10111B	Block 101	N/A	External	Automated	TB	Tiltmeter-Biaxial	8 Moorfields	LIV_LCWa_Enlargement_Adv-18	03/02/2015	24/01/2017		-7.36	120		-3.11	180		-0.63	365		C502 to decommission- PMI Reference: C510-PMI-01175	Complete
C510-TB10112A	Block 101	N/A	External	Automated	TB	Tiltmeter-Biaxial	8 Moorfields	LIV_LCWa_Enlargement_Adv-26	04/02/2015	25/01/2017		-16.59	120		-8.60	180		-2.27	365		C502 to decommission- PMI Reference: C510-PMI-01175	Complete
C510-TB10112B	Block 101	N/A	External	Automated	TB	Tiltmeter-Biaxial	8 Moorfields	LIV_LCWa_Enlargement_Adv-26	04/02/2015	25/01/2017		-8.98	120		-4.32	180		-0.99	365		C502 to decommission- PMI Reference: C510-PMI-01175	Complete
C510-TB10113A	Block 101	N/A	External	Automated	TB	Tiltmeter-Biaxial	8 Moorfields	LIV_LCWa_Enlargement_Adv-18	03/02/2015	25/01/2017		-5.83	120		-3.10	180		-1.08	365		C502 to decommission- PMI Reference: C510-PMI-01175	Complete
C510-TB10113B	Block 101	N/A	External	Automated	TB	Tiltmeter-Biaxial	8 Moorfields	LIV_LCWa_Enlargement_Adv-18	03/02/2015	25/01/2017		0.12	120		0.67	180		0.08	365		C502 to decommission- PMI Reference: C510-PMI-01175	Complete
C510-TB10114A	Block 101	N/A	External	Automated	TB	Tiltmeter-Biaxial	8 Moorfields	LIV_LCWa_Enlargement_Adv-26	04/02/2015	24/01/2017		-9.49	120		-5.44	180		-1.42	365		C502 to decommission- PMI Reference: C510-PMI-01175	Complete
C510-TB10114B	Block 101	N/A	External	Automated	TB	Tiltmeter-Biaxial	8 Moorfields	LIV_LCWa_Enlargement_Adv-26	04/02/2015	24/01/2017		-16.33	120		-8.47	180		-2.52	365		C502 to decommission- PMI Reference: C510-PMI-01175	Complete
C510-TB10121A	Block 101	N/A	Internal	Automated	TB	Tiltmeter-Biaxial	87 Moorgate (basement)	LIV_LCWa_Enlargement_Adv-12	01/02/2015	28/11/2016		0.92	120		0.36	180		0.23	365		C502 to decommission- PMI Reference: C510-PMI-01175	Complete
C510-TB10121B	Block 101	N/A	Internal	Automated	TB	Tiltmeter-Biaxial	87 Moorgate (basement)	LIV_LCWa_Enlargement_Adv-12	01/02/2015	28/11/2016		-0.17	120		-0.25	180		-0.12	365		C502 to decommission- PMI Reference: C510-PMI-01175	Complete
C510-TB10122A	Block 101	N/A	Internal	Automated	TB	Tiltmeter-Biaxial	87 Moorgate (basement)	LIV_LCWa_Enlargement_Adv-8	31/01/2015	28/11/2016		0.12	120		0.01	180		0.06	365		C502 to decommission- PMI Reference: C510-PMI-01175	Complete
C510-TB10122B	Block 101	N/A	Internal	Automated	TB	Tiltmeter-Biaxial	87 Moorgate (basement)	LIV_LCWa_Enlargement_Adv-8	31/01/2015	28/11/2016		0.66	120		0.09	180		-0.14	365		C502 to decommission- PMI Reference: C510-PMI-01175	Complete
C510-TB10123A	Block 101	N/A	Internal	Automated	TB	Tiltmeter-Biaxial	8 Moorfields (basement)	LIV_LCWa_Enlargement_Adv-29	06/02/2015	28/11/2016		0.64	120		0.44	180		-0.03	365		C502 to decommission- PMI Reference: C510-PMI-01175	Complete
C510-TB10123B	Block 101	N/A	Internal	Automated	TB	Tiltmeter-Biaxial	8 Moorfields (basement)	LIV_LCWa_Enlargement_Adv-29	06/02/2015	28/11/2016		1.23	120		1.06	180		0.19	365		C502 to decommission- PMI Reference: C510-PMI-01175	Complete
C510-TB10124A	Block 101	N/A	Internal	Automated	TB	Tiltmeter-Biaxial	8 Moorfields (basement)	LIV_LCWa_Enlargement_Adv-17	02/02/2015	28/11/2016		-0.35	120		0.15	180		0.33	365		C502 to decommission- PMI Reference: C510-PMI-01175	Complete
C510-TB10124B	Block 101	N/A	Internal	Automated	TB	Tiltmeter-Biaxial	8 Moorfields (basement)	LIV_LCWa_Enlargement_Adv-17	02/02/2015	29/11/2016		-0.66	120		-0.12	180		0.46	365		C502 to decommission- PMI Reference: C510-PMI-01175	Complete
C510-TB11404A	Block 101	N/A	Unknown	Automated	TB	Tiltmeter-Biaxial	155 Moorfields	LIV_AP6-1_Enlargement_Adv-118	10/07/2014	01/12/2016		0.88	120		0.44	180		0.07	365		6 Months automated monitoring specification complete	Proposed
C510-TB11405A	Block 101	N/A	Unknown	Automated	TB	Tiltmeter-Biaxial	155 Moorfields	LIV_PRM Lift_Enlargement_Adv-100	09/10/2015	01/12/2016		0.20	120		-0.31	180		-0.90	365		6 Months automated monitoring specification complete	Proposed

Table 3 - Block 01 Decommissioning Status Tracker LP & CK

24/03/2017

< 2.0 mm GREEN | ######## AMBER | > 3.5 mm RED

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	120 day	120 Days	120 Day Calculation Period	180 day	180 Days	180 Day Calculation Period	480 day	365 Days	365 Day Calculation Period	Ceased Date	General Comment	Decommissioning Status
C510-LP12101	Block 101	S10101	External	Manual	LP	Road Stud	Moorfields	LIV_PRM Lift_Enlargement_Adv-100	09/10/2015	13/02/2017		-2.97	154		0.76	335		1.05	391		Agreed to cease CTC meeting 21/03/2017	Proposed
C510-LP12102	Block 101	S10101	External	Manual	LP	Road Stud	Moorfields	LIV_PRM Lift_Enlargement_Adv-100	09/10/2015	13/02/2017		-1.16	154		1.30	335		1.11	391		Agreed to cease CTC meeting 21/03/2017	Proposed
C510-LP12103	Block 101	S10101	External	Manual	LP	Road Stud	Moorfields	LIV_PRM Lift_Enlargement_Adv-100	09/10/2015	13/02/2017		-1.13	154		1.20	335		1.09	391		Agreed to cease CTC meeting 21/03/2017	Proposed
C510-LP12104	Block 101	S10101	External	Manual	LP	Road Stud	Moorfields	LIV_PRM Lift_Enlargement_Adv-100	09/10/2015	13/02/2017		0.09	154		1.08	335		0.98	391		Agreed to cease CTC meeting 21/03/2017	Proposed
C510-LP12105	Block 101	S10101	External	Manual	LP	Road Stud	Moorfields	LIV_AP6-1_Enlargement_Adv-165	14/05/2015	13/02/2017		-0.47	154		0.52	335		0.20	391		Agreed to cease CTC meeting 21/03/2017	Proposed
C510-LP12106	Block 101	S10101	External	Manual	LP	Road Stud	Moorfields	LIV_AP6-1_Enlargement_Adv-163	13/05/2015	13/02/2017		0.97	154		0.95	335		0.24	391		Agreed to cease CTC meeting 21/03/2017	Proposed
C510-LP12107	Block 101	S10101	External	Manual	LP	Road Stud	Moorfields	LIV_AP6-1_Enlargement_Adv-160	12/05/2015	13/02/2017		-1.62	154		0.62	335		0.41	391		Agreed to cease CTC meeting 21/03/2017	Proposed
C510-LP12108	Block 101	S10101	External	Manual	LP	Road Stud	Moorfields	LIV_AP6-1_Enlargement_Adv-156	11/05/2015	13/02/2017		-2.59	154		0.63	335		0.72	391		Agreed to cease CTC meeting 21/03/2017	Proposed
C510-LP12109	Block 101	S10101	External	Manual	LP	Road Stud	Moorfields	LIV_AP6-1_Enlargement_Adv-150	09/05/2015	13/02/2017		-0.66	154		1.39	335		1.10	391		Agreed to cease CTC meeting 21/03/2017	Proposed
C510-LP12110	Block 101	S10101	External	Manual	LP	Road Stud	Moorfields	LIV_AP6-1_Enlargement_Adv-136	13/07/2014	13/02/2017		-2.56	154		0.95	335		1.14	391		Agreed to cease CTC meeting 21/03/2017	Proposed
C510-LP12111	Block 101	S10101	External	Manual	LP	Road Stud	Moorfields	LIV_AP6-1_Enlargement_Adv-126	11/07/2014	13/02/2017		-2.09	154		0.98	335		0.86	429		Agreed to cease CTC meeting 21/03/2017	Proposed
C510-LP12112	Block 101	S10101	External	Manual	LP	Road Stud	Moorfields	LIV_AP6-1_Enlargement_Adv-118	10/07/2014	13/02/2017		-2.56	154		0.93	335		0.48	429		Agreed to cease CTC meeting 21/03/2017	Proposed
C510-LP12113	Block 101	S10101	External	Manual	LP	Road Stud	Moorfields	LIV_AP6-1_Enlargement_Adv-113	09/07/2014	13/02/2017		-6.74	154		0.75	335		0.84	429		Agreed to cease CTC meeting 21/03/2017	Proposed
C510-LP12114	Block 101	S10101	External	Manual	LP	Road Stud	Moorfields	LIV_AP6-1_Enlargement_Adv-109	08/07/2014	13/12/2016		2.62	273		2.62	273		1.06	367		Agreed to cease CTC meeting 21/03/2017	Proposed
C510-LP12115	Block 101	S10101	External	Manual	LP	Road Stud	Moorfields	LIV_AP6-1_Enlargement_Adv-103	07/07/2014	13/02/2017		-2.53	154		0.83	335		0.29	429		Agreed to cease CTC meeting 21/03/2017	Proposed
C510-LP12116	Block 101	S10101	External	Manual	LP	Road Stud	Moorfields	LIV_AP6-1_Enlargement_Adv-97	06/07/2014	13/02/2017		-2.72	154		0.73	335		0.29	429		Agreed to cease CTC meeting 21/03/2017	Proposed
C510-LP12117	Block 101	S10101	External	Manual	LP	Road Stud	Moorfields	LIV_AP6-2_Enlargement_Adv-56	02/05/2015	13/02/2017		-3.75	154		0.67	335		0.29	429		Agreed to cease CTC meeting 21/03/2017	Proposed
C510-LP12118	Block 101	S10101	External	Manual	LP	Road Stud	Moorfields	LIV_AP6-2_Enlargement_Adv-56	02/05/2015	13/02/2017		-3.03	154		0.23	335		-0.13	429		Agreed to cease CTC meeting 21/03/2017	Proposed
C510-LP12119	Block 101	S10101	External	Manual	LP	Road Stud	Moorfields	LIV_AP6-2_Enlargement_Adv-56	02/05/2015	13/02/2017		-3.38	154		0.48	331		-1.38	530		Agreed to cease CTC meeting 21/03/2017	Proposed
C510-LP12120	Block 101	S10101	External	Manual	LP	Road Stud	Moorfields	LIV_AP6-2_Enlargement_Adv-56	02/05/2015	13/02/2017		-3.94	154		-0.25	331		-0.01	429		Agreed to cease CTC meeting 21/03/2017	Proposed
C510-LP12121	Block 101	S10101	External	Manual	LP	Road Stud	Moorfields	LIV_AP6-2_Enlargement_Adv-56	02/05/2015	13/02/2017		-6.61	179		-4.13	331		-2.73	429		Agreed to cease CTC meeting 21/03/2017 (deemed that external influences from C502 were causing the additional settlement)	Proposed
C510-LP12122	Block 101	S2	N/A	Manual	LP	Road Stud	Moorgate	LIV_AP5_Enlargement_Adv-61	11/04/2014	29/11/2014		-9.21	121		-9.02	182		-9.66	368		Replaced	Proposed
C510-LP12122A	Block 101	S8	N/A	Manual	LP	Road Stud	Moorgate	LIV_AP9_Enlargement_Adv-4	02/06/2016	21/11/2015		0.30	121		1.08	180		0.96	367		Replaced	Proposed
C510-LP12122B	Block 101	S10109	External	Manual	LP	Road Stud	Moorgate	LIV_AP9_Enlargement_Adv-4	02/06/2016	07/03/2017		-9.82	153		-9.54	181		-4.72	365		Within ES3 EOI	Outstanding
C510-LP12123	Block 101	S2	N/A	Manual	LP	Road Stud	Moorgate	LIV_LCWb_Enlargement_Adv-36	05/03/2014	12/12/2015		7.34	378		7.34	378		7.34	378		Replaced	Proposed
C510-LP12123A	Block 101	S8	N/A	Manual	LP	Road Stud	Moorgate	LIV_AP9_Enlargement_Adv-10	09/06/2016	21/11/2015		-1.96	121		-0.82	180		-1.13	367		Replaced	Proposed
C510-LP12123B	Block 101	S10109	External	Manual	LP	Road Stud	Moorgate	LIV_AP9_Enlargement_Adv-10	09/06/2016	07/03/2017		-8.35	153		-8.12	181		-5.38	365		Within ES3 EOI	Outstanding
C510-LP12124	Block 101	S10102	External	Manual	LP	Road Stud	Moorgate	LIV_LCWb_Enlargement_Adv-36	05/03/2014	12/03/2017		-7.14	127		-7.59	181		-3.97	369		Within ES3 EOI	Outstanding
C510-LP12125	Block 101	S10102	External	Manual	LP	Road Stud	Moorgate	LIV_LCWb_Enlargement_Adv-36	05/03/2014	12/03/2017		-5.67	127		-6.13	181		-3.39	369		Within ES3 EOI	Outstanding
C510-LP12126	Block 101	S10102	External	Manual	LP	Road Stud	Moorgate	LIV_LCWb_Enlargement_Adv-36	05/03/2014	12/03/2017		-5.36	127		-5.68	181		-3.04	369		Within ES3 EOI	Outstanding
C510-LP12127	Block 101	S10102	External	Manual	LP	Road Stud	Moorgate	LIV_LCWb_Enlargement_Adv-36	05/03/2014	12/03/2017		-4.60	127		-5.86	184		-2.89	369		Within ES3 EOI	Outstanding
C510-LP12128	Block 101	S10102	External	Manual	LP	Road Stud	Moorgate	LIV_LCWb_Enlargement_Adv-36	05/03/2014	12/03/2017		-3.87	127		-4.33	181		-3.68	369		Within ES3 EOI	Outstanding
C510-LP12129	Block 101	S10102	External	Manual	LP	Road Stud	Moorgate	LIV_LCWb_Enlargement_Adv-36	05/03/2014	13/02/2017		1.24	154		1.46	183		-4.35	460		Within ES3 EOI	Outstanding
C510-LP12130	Block 101	S10102	External	Manual	LP	Road Stud	Surrounding Globe Pensinsula	LIV_LCWb_Enlargement_Adv-36	05/03/2014	13/02/2017		-4.00	154		-3.67	183		-1.89	367		Continue to monitor, decommissioning specification not met for the section 20/03/2017	Outstanding
C510-LP12131	Block 101	S10102	External	Manual	LP	Road Stud	Surrounding Globe Pensinsula	LIV_LCWb_Enlargement_Adv-36	05/03/2014	14/08/2016		-3.12	152		-1.37	246		-2.00	431		Continue to monitor, decommissioning specification not met for the section 20/03/2017	Outstanding
C510-LP12132	Block 101	S10102	External	Manual	LP	Road Stud	Surrounding Globe Pensinsula	LIV_LCWb_Enlargement_Adv-36	05/03/2014	13/02/2017		-4.00	154		-3.78	183		-1.66	429		Continue to monitor, decommissioning specification not met for the section 20/03/2017	Outstanding
C510-LP12133	Block 101	S10102	External	Manual	LP	Road Stud	Surrounding Globe Pensinsula	LIV_LCWb_Enlargement_Adv-36	05/03/2014	13/02/2017		-1.56	154		-1.12	183		-0.84	429		Continue to monitor, decommissioning specification not met for the section 20/03/2017	Outstanding
C510-LP12134	Block 101	S10102	External	Manual	LP	Road Stud	Surrounding Globe Pensinsula	LIV_LCWb_Enlargement_Adv-36	05/03/2014	13/02/2017		-1.10	154		-0.86	183		-0.74	429		Continue to monitor, decommissioning specification not met for the section 20/03/2017	Outstanding
C510-LP12135	Block 101	S10102	External	Manual	LP	Road Stud	Surrounding Globe Pensinsula	LIV_LCWb_Enlargement_Adv-36	05/03/2014	13/02/2017		-5.16	154		-4.35	183		-2.80	429		Continue to monitor, decommissioning specification not met for the section 20/03/2017	Outstanding
C510-LP12136	Block 101	S10102	External	Manual	LP	Road Stud	Surrounding Globe Pensinsula	LIV_LCWb_Enlargement_Adv-36	05/03/2014	13/02/2017		-0.13	154		-0.41	183		-1.24	429		Continue to monitor, decommissioning specification not met for the section 20/03/2017	Outstanding
C510-LP12137	Block 101	S10102	External	Manual	LP	Road Stud	Surrounding Globe Pensinsula	LIV_LCWb_Enlargement_Adv-36	05/03/2014	13/02/2017		-4.65	154		-3.87	183		-2.41	429		Continue to monitor, decommissioning specification not met for the section 20/03/2017	Outstanding
C510-LP12138	Block 101	S10102	External	Manual	LP	Road Stud	Surrounding Globe Pensinsula	LIV_LCWa_Enlargement_Adv-18	03/02/2015	13/02/2017		-4.43	154		-3.70	183		-1.77	429		Continue to monitor, decommissioning specification not met for the section 20/03/2017	Outstanding
C510-LP12139	Block 101	S10102	External	Manual	LP	Road Stud	Surrounding Globe Pensinsula	LIV_LCWa_Enlargement_Adv-24	04/02/2015	12/09/2016		-0.14	154		-0.14	183		-2.22	530		Continue to monitor, decommissioning specification not met for the section 20/03/2017	Outstanding
C510-LP12140	Block 101	S10102	External	Manual	LP	Road Stud	Surrounding Globe Pensinsula	LIV_LCWa_Enlargement_Adv-30	06/02/2015	13/02/2017		-3.50	154		-2.88	183		-0.84	429		Continue to monitor, decommissioning specification not met for the section 20/03/2017	Outstanding
C510-LP12144	Block 101	S10103	External	Manual	LP	Road Stud	Surrounding Moor House	LIV_LCWa_Enlargement_Adv-30	06/02/2015	15/03/2016		-1.12	195		-1.12	195		-0.28	370	10/03/2016	2mm per annum specification met- Ceased ERP 10/03/2016	Proposed
C510-LP12145	Block 101	S10103	External	Manual	LP	Road Stud	Surrounding Moor House	LIV_LCWa_Enlargement_Adv-30	06/02/2015	15/03/2016		0.58	195		0.58	195		-0.37	370	10/03/2016	2mm per annum specification met- Ceased ERP 10/03/2016	Proposed
C510-LP12146	Block 101	S10103	External	Manual	LP	Road Stud	Surrounding Moor House	LIV_LCWa_Enlargement_Adv-30	06/02/2015	15/03/2016		0.99	195		0.99	195		-0.07	370	10/03/2016	2mm per annum specification met- Ceased ERP 10/03/2016	Proposed
C510-LP12147	Block 101	S10103	External	Manual	LP	Road Stud	Surrounding Moor House	LIV_LCWa_Enlargement_Adv-30	06/02/2015	15/03/2016		1.24	195		1.24	195		-0.30	370	10/03/2016	2mm per annum specification met- Ceased ERP 10/03/2016	Proposed
C510-LP12148	Block 101	S10103	External	Manual	LP	Road Stud	Surrounding Moor House	LIV_LCWa_Enlargement_Adv-30	06/02/2015	15/03/2016		0.13	195		0.13	195		0.44	370	10/03/2016	2mm per annum specification met- Ceased ERP 10/03/2016	Proposed
C510-LP12149	Block 101	S10103	External	Manual	LP	Road Stud	Surrounding Moor House	LIV_LCWa_Enlargement_Adv-30	06/02/2015	15/03/2016		1.26	195		1.26	195		0.23	370	10/03/2016	2mm per annum specification met- Ceased ERP 10/03/2016	Proposed
C510-LP12150	Block 101	S10103	External	Manual	LP	Road Stud	Surrounding Moor House	LIV_LCWa_Enlargement_Adv-30	06/02/2015	15/03/2016		0.50	195		0.50	195		0.46	370	10/03/2016	2mm per annum specification met- Ceased ERP 10/03/2016	Proposed
C510-LP12151	Block 101	S10103	External	Manual	LP	Road Stud	Surrounding Moor House	LIV_LCWa_Enlargement_Adv-30	06/02/2015	19/03/2016		-0.70	367		-0.70	367		-0.70	367	10/03/2016	2mm per annum specification met- Ceased ERP 10/03/2016	Proposed
C510-LP12152	Block 101	S10103	External	Manual	LP	Road Stud	Surrounding Moor House	LIV_LCWa_Enlargement_Adv-30	06/02/2015	15/03/2016		-1.52	195		-1.52	195		0.31	370	10/03/2016	2mm per annum specification met- Ceased ERP 10/03/2016	Proposed
C510-LP12153	Block 101	S10103	External	Manual	LP	Road Stud	Surrounding Moor House	LIV_LCWa_Enlargement_Adv-30	06/02/2015	15/03/2016		-0.25	195		-0.25	195		0.67	370	10/03/2016	2mm per annum specification met- Ceased ERP 10/03/2016	Proposed
C510-LP12154	Block 101	S10103	External	Manual	LP	Road Stud	Surrounding Moor House	LIV_LCWa_Enlargement_Adv-30	06/02/2015	15/03/2016		1.26	195		1.26	195		1.19	370	10/03/2016	2mm per annum specification met- Ceased ERP 10/03/2016	Proposed
C510-LP12155	Block 101	S10103	External	Manual	LP	Road Stud	Surrounding Moor House	LIV_LCWa_Enlargement_Adv-30	06/02/2015	19/03/2016		-0.60	367		-0.60	367		-0.60	367	10/03/2016	2mm per annum specification met- Ceased ERP 10/03/2016	Proposed
C510-LP12156	Block 101	S10103	External	Manual	LP	Road Stud	Surrounding Moor House	LIV_LCWa_Enlargement_Adv-30	06/02/2015	19/03/2016		-2.46	199		-2.46	199		-0.82	367	10/03/2016	2mm per annum specification met- Ceased ERP 10/03/2016	Proposed
C510-LP12157	Block 101	S10104	External	Manual	LP	Road Stud	Surrounding Moor House	LIV_TBM-West-LC_Pilot_Adv-4020	16/04/2015	15/03/2016		-1.68	195		-1.68	195		-0.15	370	10/03/2016	2mm per annum specification met- Ceased ERP 10/03/2016	Proposed
C510-LP12158	Block 101	S10104	External	Manual	LP	Road Stud	Surrounding Moor House	LIV_TBM-West-LC_Pilot_Adv-4014	11/04/2015	15/03/2016		-0.40	195		-0.40	195		0.17	370	10/03/2016	2mm per annum specification met- Ceased ERP 10/03/2016	Proposed
C510-LP12159	Block 101	S10104	External	Manual	LP	Road Stud	Surrounding Moor House	LIV_VD4_Enlargement_Adv-43	11/09/2014	15/03/2016		0.53	195		0.53	195		0.64	370	10/03/2016	2mm per annum specification met- Ceased ERP 10/03/2016	Proposed
C510-LP12160	Block 101	S10105	External	Manual	LP	Road Stud	Fore St / London Wall	LIV_VD4_Enlargement_Adv-43	11/09/2014	31/05/2014		-1.58	136		-2.40	191		-3.40	376	10/03/2016	Cease ERP 10/03/2016- Trends Not Applicable no data since 2014	Proposed
C510-LP12161	Block 101	S10105	External	Manual	LP	Road Stud	Fore St / London Wall	LIV_VD4_Enlargement_Adv-43	11/09/2014	19/03/2016		-0.50	367		-0.50	367		-0.50	367	10/03/2016	2mm per annum specification met- Ceased ERP 10/03/2016	Proposed
C510-LP12162	Block 101	S10105	External	Manual	LP	Road Stud	Fore St / London Wall	LIV_VD4_Enlargement_Adv-43	11/09/2014	15/03/2016		0.15	195		0.15	195		-0.89	370	10/03/2016	2mm per annum specification met- Ceased ERP 10/03/2016	Proposed
C510-LP12163	Block 101	S10105	External	Manual	LP	Road Stud	Fore St / London Wall	LIV_VD4_Enlargement_Adv-43	11/09/2014	15/03/2016		-1.74	195		-1.74	195		-0.03	370	10/03/2016	2mm per annum specification met- Ceased ERP 10/03/2016	Proposed
C510-LP12164	Block 101	S10105	External	Manual	LP	Road Stud	Fore St / London Wall	LIV_VD4_Enlargement_Adv-43	11/09/2014	15/03/2016		0.57	195		0.57	195		1.13	370	10/03/2016	2mm per annum specification met- Ceased ERP 10/03/2016	Proposed
C510-LP12165	Block 101	S10105	External	Manual	LP	Road Stud	Fore St / London Wall	LIV_VD4_Enlargement_Adv-43	11/09/2014	15/03/2016		0.12	195		0.12	195		0.79	370	10/03/2016	2mm per annum specification met- Ceased ERP 10/03/2016	Proposed
C510-LP12166B	Block 101	S10109	External	Manual	LP	Road Stud	Moorgate	LIV_AP9_Enlargement_Adv-10	09/06/2016	07/03/2017		-10.77	153		-10.44	181		-7.88	365		Within ES3 EOI	Outstanding
C510-LP12167B	Block 101	S10109	External	Manual	LP	Road Stud	Moorgate	LIV_ES3_Unknown_Adv-42	15/03/2017	07/03/2017		-12.33	155		-13.10	181		-7.88	365		Within ES3 EOI	Outstanding
C510-LP12168B	Block 101	S10109	External	Manual	LP	Road Stud	Moorgate	LIV_ES3_Unknown_Adv-42	15/03/2017	07/03/2017		-11.66	155		-12.36	181		-10.69	365		Within ES3 EOI	Outstanding
C510-LP12169B	Block 101	S10109	External	Manual	LP	Road Stud	Moorgate	LIV_ES3_Unknown_Adv-42	15/03/2017	07/03/2017		-13.08	155		-13.44	181		-10.70	365		Within ES3 EOI	Outstanding
C510-LP12170B	Block 101	S10109	External	Manual	LP	Road Stud	Moorgate	LIV_ES3_Unknown_Adv-42	15/03/2017	07/03/2017		-12.17	155		-12.03	181		-11.35	365		Within ES3 EOI	Outstanding
C510-LP12171B	Block 101	S10109	External	Manual	LP	Road Stud	Moorgate	LIV_ES3_Unknown_Adv-42	15/03/2017	07/03/2017		-11.50	155		-12.43	181		-6.05	365		Within ES3 EOI	Outstanding
C510-LP12172B	Block 101	S10109	External	Manual	LP	Road Stud	Moorgate	LIV_AP9_Enlargement_Adv-10	09/06/2016	07/03/2017		-8.18	153		-7.67	181		-6.15	365		Within ES3 EOI	Outstanding
C510-LP12173B	Block 101	S10109	External	Manual	LP	Road Stud	Moorgate	LIV_VD7_Enlargement_Adv-8	05/06/2014	21/02/2017		-5.02	175		-4.16	237		-3.83	365		Within ES3 EOI	Outstanding
C510-LP12174B	Block 101	S10109	External	Manual	LP	Road Stud	Moorgate	LIV_VD7_Enlargement_Adv-7	05/06/2014	21/02/2017		-3.86	136		-3.74	229		-2.71	369		Within ES3 EOI	Outstanding
C510-LP12166	Block 101	S10106	External	Manual	LP	Road Stud	Moorgate	LIV_AP9_Enlargement_Adv-10	09/06/2016	11/03/2015		-13.43	125		-6.19	182		-4.78	365		Replaced	Proposed
C510-LP12166A	Block 101	S10108	External	Manual	LP	Road Stud	Moorgate	LIV_ES3_Unknown_Adv-42	15/03/2017	21/11/2015		5.40	121		4.59	180		4.93	367		Replaced	Proposed
C510-LP12167	Block 101	S10106	External	Manual	LP	Road Stud	Moorgate	LIV_ES3_Unknown_Adv-42	15/03/2017	11/03/2015		-8.50	125		-10.59	182		0.41	365		Replaced	Proposed
C510-LP12167A	Block 101	S10108	External	Manual	LP	Road Stud	Moorgate	LIV_ES3_Unknown_Adv-42	15/03/2017	21/11/2015		16.10	121		12.54	180		9.88	367		Replaced	Proposed
C510-LP12168	Block 101	S10106	External	Manual	LP	Road Stud	Moorgate	LIV_ES3_Unknown_Adv-42	15/03/2017	11/03/2015		-5.87	125		-8.76	182		2.96	365		Replaced	Proposed
C510-LP12168A	Block 101	S10108	External	Manual	LP	Road Stud	Moorgate	LIV_ES3_Unknown_Adv-42	15/03/2017	21/11/2015		39.33	121		31.17	180		23.89	367		Replaced	Proposed
C510-LP12169	Block 101	S10106	External	Manual	LP	Road Stud	Moorgate	LIV_ES3_Unknown_Adv-42	15/03/2017	11/03/2015		-11.63	125		-11.64	182		2.00	365		Replaced	Proposed
C510-LP12169A	Block 101	S10108	External	Manual	LP	Road Stud	Moorgate	LIV_ES3_Unknown_Adv-42	15/03/2017	21/11/2015		45.15	121		38.26	180		28.52	367		Replaced	Proposed
C510-LP12170	Block 101	S10106	External	Manual	LP	Road Stud	Moorgate	LIV_ES3_Unknown_Adv-42	15/03/2017	11/03/2015		-6.05	125		-9.72	182		1.54	365		Replaced	Proposed
C510-LP12170A	Block 101	S10108	External	Manual	LP	Road Stud	Moorgate	LIV_ES3_Unknown_Adv-42	15/03/2017	21/11/2015		47.06	121		43.10	180		31.52	367		Replaced	Proposed
C510-LP12171	Block 101	S10106	External	Manual	LP	Road Stud	Moorgate	LIV_ES3_Unknown_Adv-42	15/03/2017	11/03/2015		-3.75	125		-6.90	182		1.74	365		Replaced	Proposed
C510-LP12171A	Block 101	S10108	External	Manual	LP	Road Stud	Moorgate	LIV_ES3_Unknown_Adv-42	15/03/2017	21/11/2015		31.21	121		31.20	180		24.60	367		Replaced	Proposed
C510-LP12172	Block 101	S10106	External	Manual	LP	Road Stud	Moorgate	LIV_AP9_Enlargement_Adv-10	09/06/2016	11/03/2015		-3.65	125		-5.69	182		-9.47	365		Replaced	Proposed
C510-LP12172A	Block 101	S10108	External	Manual	LP	Road Stud	Moorgate	LIV_AP9_Enlargement_Adv-10	09/06/2016	21/11/2015		15.01	121		15.62	180		11.56	367		Replaced	Proposed
C510-LP12173	Block 101	S10106	External	Manual	LP	Road Stud	Moorgate	LIV_VD7_Enlargement_Adv-8	05/06/2014	11/03/2015		-4.45	125		-6.24	182		-9.72	365		Replaced	Proposed
C510-LP12173A	Block 101	S10108	External	Manual	LP	Road Stud	Moorgate	LIV_AP9_Enlargement_Adv-8	06/06/2016	20/11/2015		8.54	121		8.26	193		5.84	366		Replaced	Proposed
C510-LP12174	Block 101	S10106	External	Manual	LP	Road Stud	Moorgate	LIV_VD7_Enlargement_Adv-7	05/06/2014	14/01/2017		-5.43	420		-5.43	420		-5.43	420		Replaced	Proposed
C510-CK10101	Block 101	S10101	External	Automated	CK	Crack Monitor	Moorfields Footbridge	LIV_TBM-West-LC_Pilot_Adv-4038	21/04/2015	29/09/2015		0.06	120		-0.60	180		0.61	365	07/08/2016	CTC agreed to cease 07/08/2016	Proposed
C510-CK10102	Block 101	S10101	External	Automated	CK	Crack Monitor	Moorfields Footbridge	LIV_TBM-West-LC_Pilot_Adv-4038	21/04/2015	29/09/2015		-0.02	120		-0.36	180		0.14	365	07/08/2016	CTC agreed to cease 07/08/2016	Proposed
C510-CK10103	Block 101	S10101	External	Automated	CK	Crack Monitor	Moorfields Footbridge	LIV_TBM-West-LC_Pilot_Adv-4036	21/04/2015	29/09/2015		-0.30	120		-0.99	180		-0.28	365	07/08/2016	CTC agreed to cease 07/08/2016	Proposed
C510-CK10104	Block 101	S10101	External	Automated	CK	Crack Monitor	Moorfields Footbridge	LIV_TBM-West-LC_Pilot_Adv-4036	21/04/2015	29/09/2015		0.57	120		0.32	180		0.28	365	07/08/2016	CTC agreed to cease 07/08/2016	Proposed

Table 4 - Block 01 Decommissioning Status Tracker RP

10/04/2017

< 2.0 mm GREEN	< 3.5 mm AMBER	> 3.5 mm RED

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	120 day	120 Days	120 Day Calculation Period	180 day	180 Days	180 Day Calculation Period	365 day	365 Days	365 Day Calculation Period	Ceased Date	General Comment	Decommissioning Status
C510-RP10149	Block 101	N/A	External	Automated	RP	3D Geodetic prism	118 London Wall	LIV_LCWa_Enlargement_Adv-5	30/01/2015	21/01/2017		-0.58	120		0.32	180		-3.86	366		6 Months post construction monitoring complete- Agreed to decommission ATS 127 at CTC 28/03/2017	Proposed
C510-RP10150	Block 101	N/A	External	Automated	RP	3D Geodetic prism	118 London Wall	LIV_LCWa_Enlargement_Adv-5	30/01/2015	22/01/2017		-2.50	120		-1.69	181		-3.81	366		6 Months post construction monitoring complete- Agreed to decommission ATS 127 at CTC 28/03/2017	Proposed
C510-RP10151	Block 101	N/A	External	Automated	RP	3D Geodetic prism	118 London Wall	LIV_LCWa_Enlargement_Adv-5	30/01/2015	21/01/2017		-1.44	121		0.26	180		-3.53	366		6 Months post construction monitoring complete- Agreed to decommission ATS 127 at CTC 28/03/2017	Proposed
C510-RP10152	Block 101	N/A	External	Automated	RP	3D Geodetic prism	118 London Wall	LIV_LCWa_Enlargement_Adv-5	30/01/2015	22/01/2017		-2.71	121		-1.34	180		-3.55	366		6 Months post construction monitoring complete- Agreed to decommission ATS 127 at CTC 28/03/2017	Proposed
C510-RP10115	Block 101	N/A	External	Automated	RP	3D Geodetic prism	118a London Wall	LIV_LCWa_Enlargement_Adv-15	02/02/2015	22/01/2017		-1.56	121		0.20	180		-3.56	365		6 Months post construction monitoring complete- Agreed to decommission ATS 127 at CTC 28/03/2017	Proposed
C510-RP10116	Block 101	N/A	External	Automated	RP	3D Geodetic prism	118a London Wall	LIV_LCWa_Enlargement_Adv-15	02/02/2015	22/01/2017		-3.18	121		-1.83	180		-3.61	366		6 Months post construction monitoring complete- Agreed to decommission ATS 127 at CTC 28/03/2017	Proposed
C510-RP10117	Block 101	N/A	External	Automated	RP	3D Geodetic prism	118a London Wall	LIV_LCWa_Enlargement_Adv-15	02/02/2015	22/01/2017		-2.83	120		-0.43	180		-4.17	365		6 Months post construction monitoring complete- Agreed to decommission ATS 127 at CTC 28/03/2017	Proposed
C510-RP10118	Block 101	N/A	External	Automated	RP	3D Geodetic prism	118a London Wall	LIV_LCWa_Enlargement_Adv-15	02/02/2015	22/01/2017		-4.08	121		-2.31	180		-4.24	366		6 Months post construction monitoring complete- Agreed to decommission ATS 127 at CTC 28/03/2017	Proposed
C510-RP101109	Block 101	N/A	External	Automated	RP	3D Geodetic prism	137 Moorgate	LIV_AP6-2_Enlargement_Adv-56	02/05/2015	22/01/2017		-5.11	121		-3.26	181		-2.33	366		CRL confirms there is sufficient INSAR coverage of 137-141 Moorgate- CTC 21/03/2017 agreed to decommission all manual monitoring- no discernable influence from ES3 construction	Proposed
C510-RP101110	Block 101	N/A	External	Automated	RP	3D Geodetic prism	137 Moorgate	LIV_AP6-2_Enlargement_Adv-56	02/05/2015	21/01/2017		-5.39	120		-3.25	181		-2.11	365		CRL confirms there is sufficient INSAR coverage of 137-141 Moorgate- CTC 21/03/2017 agreed to decommission all manual monitoring- no discernable influence from ES3 construction	Proposed
C510-RP101111	Block 101	N/A	External	Automated	RP	3D Geodetic prism	137 Moorgate	LIV_AP6-2_Enlargement_Adv-52	30/04/2015	21/01/2017		-4.26	121		-2.19	180		-1.88	366		CRL confirms there is sufficient INSAR coverage of 137-141 Moorgate- CTC 21/03/2017 agreed to decommission all manual monitoring- no discernable influence from ES3 construction	Proposed
C510-RP101112	Block 101	N/A	External	Automated	RP	3D Geodetic prism	137 Moorgate	LIV_AP6-2_Enlargement_Adv-49	28/04/2015	21/01/2017		-4.24	120		-1.42	181		-1.51	366		CRL confirms there is sufficient INSAR coverage of 137-141 Moorgate- CTC 21/03/2017 agreed to decommission all manual monitoring- no discernable influence from ES3 construction	Proposed
C510-RP101115	Block 101	N/A	External	Automated	RP	3D Geodetic prism	137 Moorgate	LIV_AP6-2_Enlargement_Adv-56	02/05/2015	22/01/2017		-6.35	120		-4.48	181		-2.34	366		CRL confirms there is sufficient INSAR coverage of 137-141 Moorgate- CTC 21/03/2017 agreed to decommission all manual monitoring- no discernable influence from ES3 construction	Proposed
C510-RP101116	Block 101	N/A	External	Automated	RP	3D Geodetic prism	137 Moorgate	LIV_AP6-2_Enlargement_Adv-56	02/05/2015	21/01/2017		-6.60	121		-4.80	180		-2.14	366		CRL confirms there is sufficient INSAR coverage of 137-141 Moorgate- CTC 21/03/2017 agreed to decommission all manual monitoring- no discernable influence from ES3 construction	Proposed
C510-RP101117	Block 101	N/A	External	Automated	RP	3D Geodetic prism	137 Moorgate	LIV_AP6-2_Enlargement_Adv-52	30/04/2015	21/01/2017		-5.70	121		-3.92	180		-1.97	366		CRL confirms there is sufficient INSAR coverage of 137-141 Moorgate- CTC 21/03/2017 agreed to decommission all manual monitoring- no discernable influence from ES3 construction	Proposed
C510-RP101118	Block 101	N/A	External	Automated	RP	3D Geodetic prism	137 Moorgate	LIV_AP6-2_Enlargement_Adv-49	28/04/2015	22/01/2017		-5.61	120		-3.11	180		-1.47	366		CRL confirms there is sufficient INSAR coverage of 137-141 Moorgate- CTC 21/03/2017 agreed to decommission all manual monitoring- no discernable influence from ES3 construction	Proposed
C510-RP11545	Block 101	N/A	External	Automated	RP	3D Geodetic prism	137 Moorgate	LIV_AP6-2_Enlargement_Adv-56	02/05/2015	15/11/2016		-0.64	121		-0.31	180		-2.38	366		CRL confirms there is sufficient INSAR coverage of 137-141 Moorgate- CTC 21/03/2017 agreed to decommission all manual monitoring- no discernable influence from ES3 construction	Proposed
C510-RP11546	Block 101	N/A	External	Automated	RP	3D Geodetic prism	137 Moorgate	LIV_AP6-2_Enlargement_Adv-56	02/05/2015	18/11/2016		-2.13	121		-0.84	180		-1.84	365		CRL confirms there is sufficient INSAR coverage of 137-141 Moorgate- CTC 21/03/2017 agreed to decommission all manual monitoring- no discernable influence from ES3 construction	Proposed
C510-RP11548	Block 101	N/A	External	Automated	RP	3D Geodetic prism	137 Moorgate	LIV_AP6-2_Enlargement_Adv-56	02/05/2015	16/11/2016		-0.41	121		-0.47	180		-2.63	365		CRL confirms there is sufficient INSAR coverage of 137-141 Moorgate- CTC 21/03/2017 agreed to decommission all manual monitoring- no discernable influence from ES3 construction	Proposed
C510-RP101113	Block 101	N/A	External	Automated	RP	3D Geodetic prism	141 Moorgate	LIV_AP6-2_Enlargement_Adv-56	02/05/2015	22/01/2017		-5.52	120		-2.45	181		-0.90	366		CRL confirms there is sufficient INSAR coverage of 137-141 Moorgate- CTC 21/03/2017 agreed to decommission all manual monitoring- no discernable influence from ES3 construction	Proposed
C510-RP101114	Block 101	N/A	External	Automated	RP	3D Geodetic prism	141 Moorgate	LIV_AP6-2_Enlargement_Adv-56	02/05/2015	21/01/2017		-4.98	120		-1.75	181		-0.21	365		CRL confirms there is sufficient INSAR coverage of 137-141 Moorgate- CTC 21/03/2017 agreed to decommission all manual monitoring- no discernable influence from ES3 construction	Proposed
C510-RP101119	Block 101	N/A	External	Automated	RP	3D Geodetic prism	141 Moorgate	LIV_AP6-2_Enlargement_Adv-56	02/05/2015	22/01/2017		-6.08	121		-3.41	180		-0.73	366		CRL confirms there is sufficient INSAR coverage of 137-141 Moorgate- CTC 21/03/2017 agreed to decommission all manual monitoring- no discernable influence from ES3 construction	Proposed
C510-RP101120	Block 101	N/A	External	Automated	RP	3D Geodetic prism	141 Moorgate	LIV_AP6-2_Enlargement_Adv-56	02/05/2015	21/01/2017		-5.98	121		-2.88	181		-0.11	366		CRL confirms there is sufficient INSAR coverage of 137-141 Moorgate- CTC 21/03/2017 agreed to decommission all manual monitoring- no discernable influence from ES3 construction	Proposed
C510-RP10162	Block 101	N/A	External	Automated	RP	3D Geodetic prism	155 Moorgate	LIV_PRM Lift_Enlargement_Adv-100	09/10/2015	22/01/2017		-8.27	121		-7.75	181		1.08	365		C510-RFI-001014 confirms that there is sufficient coverage for INSAR to assume responsibilty of the long term automated monitoring	Proposed
C510-RP10163	Block 101	N/A	External	Automated	RP	3D Geodetic prism	155 Moorgate	LIV_PRM Lift_Enlargement_Adv-100	09/10/2015	22/01/2017		-1.85	121		-1.25	181		1.30	366		C510-RFI-001014 confirms that there is sufficient coverage for INSAR to assume responsibilty of the long term automated monitoring	Proposed
C510-RP10164	Block 101	N/A	External	Automated	RP	3D Geodetic prism	155 Moorgate	LIV_PRM Lift_Enlargement_Adv-100	09/10/2015	21/01/2017		-6.09	120		-6.14	181		1.48	366		C510-RFI-001014 confirms that there is sufficient coverage for INSAR to assume responsibilty of the long term automated monitoring	Proposed
C510-RP10165	Block 101	N/A	External	Automated	RP	3D Geodetic prism	155 Moorgate	LIV_AP10b_Enlargement_Adv-5	23/07/2015	22/01/2017		0.99	121		0.63	181		1.52	366		C510-RFI-001014 confirms that there is sufficient coverage for INSAR to assume responsibilty of the long term automated monitoring	Proposed
C510-RP10166	Block 101	N/A	External	Automated	RP	3D Geodetic prism	155 Moorgate	LIV_AP6-1_Enlargement_Adv-167	15/05/2015	22/01/2017		-3.43	121		-4.35	181		1.51	365		C510-RFI-001014 confirms that there is sufficient coverage for INSAR to assume responsibilty of the long term automated monitoring	Proposed
C510-RP10167A	Block 101	N/A	External	Automated	RP	3D Geodetic prism	155 Moorgate	LIV_AP6-1_Enlargement_Adv-163	13/05/2015	21/01/2017		2.23	120		3.34	180		-0.06	366		C510-RFI-001014 confirms that there is sufficient coverage for INSAR to assume responsibilty of the long term automated monitoring	Proposed
C510-RP10168A	Block 101	N/A	External	Automated	RP	3D Geodetic prism	155 Moorgate	LIV_AP6-1_Enlargement_Adv-163	13/05/2015	22/01/2017		-2.54	121		-2.15	180		-0.57	365		C510-RFI-001014 confirms that there is sufficient coverage for INSAR to assume responsibilty of the long term automated monitoring	Proposed
C510-RP10169	Block 101	N/A	External	Automated	RP	3D Geodetic prism	155 Moorgate	LIV_AP6-1_Enlargement_Adv-151	09/05/2015	22/01/2017		1.26	120		2.88	180		0.15	366		C510-RFI-001014 confirms that there is sufficient coverage for INSAR to assume responsibilty of the long term automated monitoring	Proposed
C510-RP10170	Block 101	N/A	External	Automated	RP	3D Geodetic prism	155 Moorgate	LIV_AP6-1_Enlargement_Adv-151	09/05/2015	21/01/2017		-3.67	121		-3.41	180		0.06	366		C510-RFI-001014 confirms that there is sufficient coverage for INSAR to assume responsibilty of the long term automated monitoring	Proposed
C510-RP10171	Block 101	N/A	External	Automated	RP	3D Geodetic prism	155 Moorgate	LIV_AP6-1_Enlargement_Adv-118	10/07/2014	22/01/2017		-0.69	121		1.11	181		0.22	366		C510-RFI-001014 confirms that there is sufficient coverage for INSAR to assume responsibilty of the long term automated monitoring	Proposed
C510-RP10172	Block 101	N/A	External	Automated	RP	3D Geodetic prism	155 Moorgate	LIV_AP6-1_Enlargement_Adv-118	10/07/2014	01/08/2015		N/A			N/A			N/A			C510-RFI-001014 confirms that there is sufficient coverage for INSAR to assume responsibilty of the long term automated monitoring	Proposed
C510-RP10173	Block 101	N/A	External	Automated	RP	3D Geodetic prism	155 Moorgate	LIV_AP6-1_Enlargement_Adv-103	07/07/2014	22/01/2017		-0.71	121		1.03	181		-0.37	366		C510-RFI-001014 confirms that there is sufficient coverage for INSAR to assume responsibilty of the long term automated monitoring	Proposed
C510-RP10174	Block 101	N/A	External	Automated	RP	3D Geodetic prism	155 Moorgate	LIV_AP6-1_Enlargement_Adv-104	07/07/2014	22/01/2017		-4.90	121		-4.09	181		-0.36	365		C510-RFI-001014 confirms that there is sufficient coverage for INSAR to assume responsibilty of the long term automated monitoring	Proposed
C510-RP10175	Block 101	N/A	External	Automated	RP	3D Geodetic prism	155 Moorgate	LIV_AP6-2_Enlargement_Adv-56	02/05/2015	21/01/2017		-1.90	121		0.37	181		-0.41	366		C510-RFI-001014 confirms that there is sufficient coverage for INSAR to assume responsibilty of the long term automated monitoring	Proposed
C510-RP10176	Block 101	N/A	External	Automated	RP	3D Geodetic prism	155 Moorgate	LIV_AP6-2_Enlargement_Adv-56	02/05/2015	22/01/2017		-4.82	120		-3.45	181		-0.52	366		C510-RFI-001014 confirms that there is sufficient coverage for INSAR to assume responsibilty of the long term automated monitoring	Proposed
C510-RP10177	Block 101	N/A	External	Automated	RP	3D Geodetic prism	155 Moorgate	LIV_AP6-2_Enlargement_Adv-56	02/05/2015	21/01/2017		-3.04	121		0.45	181		-0.02	365		C510-RFI-001014 confirms that there is sufficient coverage for INSAR to assume responsibilty of the long term automated monitoring	Proposed
C510-RP10178	Block 101	N/A	External	Automated	RP	3D Geodetic prism	155 Moorgate	LIV_AP6-2_Enlargement_Adv-56	02/05/2015	22/01/2017		-7.35	120		-4.84	180		-0.20	366		C510-RFI-001014 confirms that there is sufficient coverage for INSAR to assume responsibilty of the long term automated monitoring	Proposed
C510-RP10144	Block 101	N/A	External	Automated	RP	3D Geodetic prism	2 Moorfields	LIV_LCWa_Enlargement_Adv-12	01/02/2015	22/01/2017		-0.53	121		0.53	181		-3.91	365		Agreed to decommission ATS 126 at CTC meeting 04.04.2017	Proposed
C510-RP10145	Block 101	N/A	External	Automated	RP	3D Geodetic prism	2 Moorfields	LIV_LCWa_Enlargement_Adv-12	01/02/2015	22/01/2017		-2.61	121		-2.10	181		-3.95	366		Agreed to decommission ATS 126 at CTC meeting 04.04.2017	Proposed
C510-RP10146	Block 101	N/A	External	Automated	RP	3D Geodetic prism	2 Moorfields	LIV_LCWa_Enlargement_Adv-5	30/01/2015	21/01/2017		0.38	121		0.77	181		-4.41	365		Agreed to decommission ATS 126 at CTC meeting 04.04.2017	Proposed
C510-RP10111	Block 101	N/A	External	Automated	RP	3D Geodetic prism	4 Moorfields	LIV_LCWa_Enlargement_Adv-18	03/02/2015	12/09/2014					N/A			N/A			Agreed to decommission ATS 126 at CTC meeting 04.04.2017	Proposed
C510-RP10112	Block 101	N/A	External	Automated	RP	3D Geodetic prism	4 Moorfields	LIV_LCWa_Enlargement_Adv-21	03/02/2015	18/02/2013		N/A			N/A			N/A			Agreed to decommission ATS 126 at CTC meeting 04.04.2017	Proposed
C510-RP10113	Block 101	N/A	External	Automated	RP	3D Geodetic prism	4 Moorfields	LIV_LCWa_Enlargement_Adv-15	02/02/2015	02/12/2015		1.48	121		-3.67	181		-7.52	366		Agreed to decommission ATS 126 at CTC meeting 04.04.2017	Proposed
C510-RP10114	Block 101	N/A	External	Automated	RP	3D Geodetic prism	4 Moorfields	LIV_LCWa_Enlargement_Adv-15	02/02/2015	21/01/2017		-2.25	120		-1.32	181		-3.66	366		Agreed to decommission ATS 126 at CTC meeting 04.04.2017	Proposed
C510-RP10107	Block 101	N/A	External	Automated	RP	3D Geodetic prism	6 Moorfields	LIV_LCWa_Enlargement_Adv-26	04/02/2015	22/01/2017		-1.82	121		-0.93	180		-3.06	365		Agreed to decommission ATS 126 at CTC meeting 04.04.2017	Proposed
C510-RP10108	Block 101	N/A	External	Automated	RP	3D Geodetic prism	6 Moorfields	LIV_LCWa_Enlargement_Adv-26	04/02/2015	21/01/2017		-2.86	120		-2.13	181		-3.01	366		Agreed to decommission ATS 126 at CTC meeting 04.04.2017	Proposed
C510-RP10109B	Block 101	N/A	External	Automated	RP	3D Geodetic prism	6 Moorfields	LIV_LCWa_Enlargement_Adv-21	03/02/2015			N/A			N/A			N/A			Agreed to decommission ATS 126 at CTC meeting 04.04.2017	Proposed
C510-RP10109	Block 101	N/A	External	Automated	RP	3D Geodetic prism	6 Moorfields	LIV_LCWa_Enlargement_Adv-21	03/02/2015	01/06/2013		N/A			N/A			N/A			Agreed to decommission ATS 126 at CTC meeting 04.04.2017	Proposed
C510-RP10110	Block 101	N/A	External	Automated	RP	3D Geodetic prism	6 Moorfields	LIV_LCWa_Enlargement_Adv-21	03/02/2015			N/A			N/A			N/A			Agreed to decommission ATS 126 at CTC meeting 04.04.2017	Proposed
C510-RP10101	Block 101	N/A	External	Automated	RP	3D Geodetic prism	8 Moorfields	LIV_TBM-West-LC_Pilot_Adv-4014	11/04/2015	19/12/2016		-6.93	121		-3.61	181		-3.02	365		Agreed to decommission ATS 126 at CTC meeting 04.04.2017	Proposed
C510-RP10102A	Block 101	N/A	External	Automated	RP	3D Geodetic prism	8 Moorfields	LIV_TBM-West-LC_Pilot_Adv-4014	11/04/2015			N/A			N/A			N/A			Agreed to decommission ATS 126 at CTC meeting 04.04.2017	Proposed
C510-RP10102	Block 101	N/A	External	Automated	RP	3D Geodetic prism	8 Moorfields	LIV_TBM-West-LC_Pilot_Adv-4014	11/04/2015	21/01/2017		-7.40	120		-5.99	181		-3.19	366		Agreed to decommission ATS 126 at CTC meeting 04.04.2017	Proposed
C510-RP10103	Block 101	N/A	External	Automated	RP	3D Geodetic prism	8 Moorfields	LIV_LCWa_Enlargement_Adv-30	06/02/2015	21/11/2016		-0.04	121		-0.18	181		-2.87	365		Agreed to decommission ATS 126 at CTC meeting 04.04.2017	Proposed
C510-RP10104	Block 101	N/A	External	Automated	RP	3D Geodetic prism	8 Moorfields	LIV_LCWa_Enlargement_Adv-30	06/02/2015	22/01/2017		-5.79	121		-4.44	181		-3.06	365		Agreed to decommission ATS 126 at CTC meeting 04.04.2017	Proposed
C510-RP10105A	Block 101	N/A	External	Automated	RP	3D Geodetic prism	8 Moorfields	LIV_LCWa_Enlargement_Adv-27	05/02/2015	22/01/2017		-1.28	120		0.10	181		-3.01	366		Agreed to decommission ATS 126 at CTC meeting 04.04.2017	Proposed
C510-RP10105	Block 101	N/A	External	Automated	RP	3D Geodetic prism	8 Moorfields	LIV_LCWa_Enlargement_Adv-29	06/02/2015	05/10/2016		2.34	132		-0.67	183		-0.24	369		Agreed to decommission ATS 126 at CTC meeting 04.04.2017	Proposed
C510-RP10106	Block 101	N/A	External	Automated	RP	3D Geodetic prism	8 Moorfields	LIV_LCWa_Enlargement_Adv-29	06/02/2015	25/12/2012		N/A			N/A			N/A			Agreed to decommission ATS 126 at CTC meeting 04.04.2017	Proposed
C510-RP101103	Block 101	N/A	External	Automated	RP	3D Geodetic prism	8 Moorfields/87 Moorgate	LIV_LCWa_Enlargement_Adv-20	03/02/2015	29/10/2014		N/A			N/A			N/A			Line of sight blocked by C502 scaffolding	Proposed
C510-RP101104	Block 101	N/A	External	Automated	RP	3D Geodetic prism	8 Moorfields/87 Moorgate	LIV_LCWa_Enlargement_Adv-20	03/02/2015	22/01/2017		-8.26	121		-6.56	181		-1.55	366		Line of sight blocked by C502 scaffolding	Proposed
C510-RP101105	Block 101	N/A	External	Automated	RP	3D Geodetic prism	8 Moorfields/87 Moorgate	LIV_LCWa_Enlargement_Adv-27	05/02/2015	12/01/2017		-6.72	121		-3.96	180		-1.35	365		Line of sight blocked by C502 scaffolding	Proposed
C510-RP101106	Block 101	N/A	External	Automated	RP	3D Geodetic prism	8 Moorfields/87 Moorgate	LIV_LCWa_Enlargement_Adv-27	05/02/2015	21/01/2017		-7.80	121		-6.07	180		-1.39	366		Line of sight blocked by C502 scaffolding	Proposed
C510-RP10141	Block 101	N/A	External	Automated	RP	3D Geodetic prism	8 Moorfields/87 Moorgate	LIV_AP9_Enlargement_Adv-4	02/06/2016	21/01/2017		-8.62	121		-6.15	180		-1.78	366		Line of sight blocked by C502 scaffolding	Proposed
C510-RP10142	Block 101	N/A	External	Automated	RP	3D Geodetic prism	8 Moorfields/87 Moorgate	LIV_LCWa_Enlargement_Adv-12	01/02/2015	08/01/2017		0.10	861		0.10	861		0.10	861		Line of sight blocked by C502 scaffolding	Proposed
C510-RP10143	Block 101	N/A	External	Automated	RP	3D Geodetic prism	8 Moorfields/87 Moorgate	LIV_LCWa_Enlargement_Adv-12	01/02/2015	21/01/2017		-9.49	120		-7.48	181		-1.53	366		Line of sight blocked by C502 scaffolding	Proposed
C510-RP10140	Block 101	N/A	External	Automated	RP	3D Geodetic prism	8 Moorfields/87 Moorgate	LIV_AP9_Enlargement_Adv-1	30/05/2016	08/01/2017		-6.15	121		-3.09	180		-1.78	365		Line of sight blocked by C502 scaffolding	Proposed
C510-RP10119	Block 101	N/A	External	Automated	RP	3D Geodetic prism	83-87 Moorgate	LIV_LCWa_Enlargement_Adv-15	02/02/2015	22/01/2017		-3.21	121		-0.97	180		-4.22	366		6 Months post construction monitoring complete- Agreed to decommission ATS 127 at CTC 28/03/2017	Proposed
C510-RP10120	Block 101	N/A	External	Automated	RP	3D Geodetic prism	83-87 Moorgate	LIV_LCWa_Enlargement_Adv-15	02/02/2015	21/01/2017		-3.95	121		-2.43	180		-4.17	366		6 Months post construction monitoring complete- Agreed to decommission ATS 127 at CTC 28/03/2017	Proposed
C510-RP10121	Block 101	N/A	External	Automated	RP	3D Geodetic prism	83-87 Moorgate	LIV_LCWa_Enlargement_Adv-15	02/02/2015	22/01/2017		-3.96	121		-1.70	180		-4.43	366		6 Months post construction monitoring complete- Agreed to decommission ATS 127 at CTC 28/03/2017	Proposed
C510-RP10122	Block 101	N/A	External	Automated	RP	3D Geodetic prism	83-87 Moorgate	LIV_LCWa_Enlargement_Adv-15	02/02/2015	22/01/2017		-4.99	121		-3.43	180		-4.37	365		6 Months post construction monitoring complete- Agreed to decommission ATS 127 at CTC 28/03/2017	Proposed
C510-RP10123	Block 101	N/A	External	Automated	RP	3D Geodetic prism	83-87 Moorgate	LIV_LCWa_Enlargement_Adv-15	02/02/2015	21/01/2017		-4.50	121		-1.98	181		-4.28	366		Within ES3 EOI	Outstanding
C510-RP10124	Block 101	N/A	External	Automated	RP	3D Geodetic prism	83-87 Moorgate	LIV_LCWa_Enlargement_Adv-15	02/02/2015	21/01/2017		-5.54	120		-3.56	181		-4.32	366		Within ES3 EOI	Outstanding
C510-RP10125	Block 101	N/A	External	Automated	RP	3D Geodetic prism	83-87 Moorgate	LIV_LCWb_Enlargement_Adv-36	05/03/2014	12/06/2014		-19.09	120		-13.24	181		-7.09	366		Within ES3 EOI	Outstanding
C510-RP10126	Block 101	N/A	External	Automated	RP	3D Geodetic prism	83-87 Moorgate	LIV_LCWb_Enlargement_Adv-36	05/03/2014	21/01/2017		-4.39	120		-1.69	181		-3.89	366		Within ES3 EOI	Outstanding
C510-RP10127	Block 101	N/A	External	Automated	RP	3D Geodetic prism	83-87 Moorgate	LIV_LCWb_Enlargement_Adv-36	05/03/2014	21/01/2017		-5.70	120		-3.44	180		-3.85	366		Within ES3 EOI	Outstanding
C510-RP10128	Block 101	N/A	External	Automated	RP	3D Geodetic prism	83-87 Moorgate	LIV_LCWb_Enlargement_Adv-36	05/03/2014	21/01/2017		-3.42	120		-1.09	181		-3.01	365		Within ES3 EOI	Outstanding
C510-RP10129A	Block 101	N/A	External	Automated	RP	3D Geodetic prism	83-87 Moorgate	LIV_LCWb_Enlargement_Adv-36	05/03/2014	22/01/2017		-5.25	120		-3.23	180		-3.34	365		Within ES3 EOI	Outstanding
C510-RP10130	Block 101	N/A	External	Automated	RP	3D Geodetic prism	83-87 Moorgate	LIV_LCWb_Enlargement_Adv-36	05/03/2014	21/01/2017		-4.56	121		-1.77	180		-2.70	366		Within ES3 EOI	Outstanding
C510-RP10131	Block 101	N/A	External	Automated	RP	3D Geodetic prism	83-87 Moorgate	LIV_LCWa_Enlargement_Adv-36	05/03/2014	22/01/2017		-6.33	121		-4.20	180		-2.67	366		Within ES3 EOI	Outstanding
C510-RP10132	Block 101	N/A	External	Automated	RP	3D Geodetic prism	83-87 Moorgate	LIV_LCWb_Enlargement_Adv-36	05/03/2014	21/01/2017		-4.69	121		-2.11	181		-2.74	366		Within ES3 EOI	Outstanding
C510-RP10133	Block 101	N/A	External	Automated	RP	3D Geodetic prism	83-87 Moorgate	LIV_LCWb_Enlargement_Adv-36	05/03/2014	22/01/2017		-5.34	121		-2.81	181		-2.61	366		Within ES3 EOI	Outstanding
C510-RP10134	Block 101	N/A	External	Automated	RP	3D Geodetic prism	83-87 Moorgate	LIV_LCWb_Enlargement_Adv-36	05/03/2014	04/05/2016		-1.01	572		-1.01	572		-1.01	572		Within ES3 EOI	Outstanding
C510-RP10135	Block 101	N/A	External	Automated	RP	3D Geodetic prism	83-87 Moorgate	LIV_LCWb_Enlargement_Adv-36	05/03/2014	22/01/2017		-6.14	120		-3.30	180		-2.51	366		Within ES3 EOI	Outstanding
C510-RP10136	Block 101	N/A	External	Automated	RP	3D Geodetic prism	83-87 Moorgate	LIV_LCWb_Enlargement_Adv-36	05/03/2014	21/01/2017		-6.51	121		-4.16	181		-2.46	365		Within ES3 EOI	Outstanding
C510-RP10137	Block 101	N/A	External	Automated	RP	3D Geodetic prism	83-87 Moorgate	LIV_AP9_Enlargement_Adv-4	02/06/2016	17/01/2017		-6.87	121		-2.54	181		-1.63	379		Within ES3 EOI	Outstanding
C510-RP10138	Block 101	N/A	External	Automated	RP	3D Geodetic prism	83-87 Moorgate	LIV_AP9_Enlargement_Adv-4	02/06/2016	20/01/2017		-6.26	121		-3.64	181		-1.95	366		Within ES3 EOI	Outstanding
C510-RP10139	Block 101	N/A	External	Automated	RP	3D Geodetic prism	83-87 Moorgate	LIV_AP9_Enlargement_Adv-4	02/06/2016	21/01/2017		-9.64	120		-6.74	181		-2.40	366		Within ES3 EOI	Outstanding
C510-RP101100	Block 101	S10101	External	Automated	RP	3D Geodetic prism	Fore St Avenue	LIV_TBM-West-LC_Pilot_Adv-4050	21/04/2015	29/09/2015		N/A			N/A			N/A			Trends not applicable- Building Demolished- ATS131 Decommissioned	Proposed
C510-RP101101	Block 101	S10101	External	Automated	RP	3D Geodetic prism	Fore St Avenue	LIV_TBM-West-LC_Pilot_Adv-4054	22/04/2015	29/09/2015		N/A			N/A			N/A			Trends not applicable- Building Demolished- ATS131 Decommissioned	Proposed
C510-RP101102	Block 101	S10101	External	Automated	RP	3D Geodetic prism	Fore St Avenue	LIV_TBM-West-LC_Pilot_Adv-4054	22/04/2015	28/09/2015		N/A			N/A			N/A			Trends not applicable- Building Demolished- ATS131 Decommissioned	Proposed
C510-RP10195	Block 101	S10101	External	Automated	RP	3D Geodetic prism	Fore St Avenue	LIV_TBM-West-LC_Pilot_Adv-4040	21/04/2015	28/09/2015		N/A			N/A			N/A			Trends not applicable- Building Demolished- ATS131 Decommissioned	Proposed
C510-RP10196	Block 101	S10101	External	Automated	RP	3D Geodetic prism	Fore St Avenue	LIV_TBM-West-LC_Pilot_Adv-4040	21/04/2015	29/09/2015		N/A			N/A			N/A			Trends not applicable- Building Demolished- ATS131 Decommissioned	Proposed
C510-RP10197	Block 101	S10101	External	Automated	RP	3D Geodetic prism	Fore St Avenue	LIV_TBM-West-LC_Pilot_Adv-4044	21/04/2015	29/09/2015		N/A			N/A			N/A			Trends not applicable- Building Demolished- ATS131 Decommissioned	Proposed
C510-RP10198	Block 101	S10101	External	Automated	RP	3D Geodetic prism	Fore St Avenue	LIV_TBM-West-LC_Pilot_Adv-4044	21/04/2015	29/09/2015		N/A			N/A			N/A			Trends not applicable- Building Demolished- ATS131 Decommissioned	Proposed
C510-RP10199	Block 101	S10101	External	Automated	RP	3D Geodetic prism	Fore St Avenue	LIV_TBM-West-LC_Pilot_Adv-4050	21/04/2015	29/09/2015		N/A			N/A			N/A			Trends not applicable- Building Demolished- ATS131 Decommissioned	Proposed
C510-RP101107	Block 101	N/A	External	Automated	RP	3D Geodetic prism	Moor House	LIV_TBM-West-LC_Pilot_Adv-4030	20/04/2015	21/01/2017		-4.46	120		-4.11	181		-2.25	474		C510-RFI-001014 confirms that there is sufficient coverage for INSAR to assume responsibilty of the long term automated monitoring	Proposed
C510-RP101108	Block 101	N/A	External	Automated	RP	3D Geodetic prism	Moor House	LIV_TBM-West-LC_Pilot_Adv-4030	20/04/2015	15/10/2014		N/A			N/A			N/A			C510-RFI-001014 confirms that there is sufficient coverage for INSAR to assume responsibilty of the long term automated monitoring	Proposed
C510-RP10153	Block 101	N/A	External	Automated	RP	3D Geodetic prism	Moor House	LIV_LCWa_Enlargement_Adv-5	30/01/2015	22/01/2017		-0.51	120		-0.92	181		-3.66	373		C510-RFI-001014 confirms that there is sufficient coverage for INSAR to assume responsibilty of the long term automated monitoring	Proposed
C510-RP10154	Block 101	N/A	External	Automated	RP	3D Geodetic prism	Moor House	LIV_LCWa_Enlargement_Adv-5	30/01/2015	21/01/2017		-2.25	120		-3.13	181		-3.63	300		C510-RFI-001014 confirms that there is sufficient coverage for INSAR to assume responsibilty of the long term automated monitoring	Proposed
C510-RP10155	Block 101	N/A	External	Automated	RP	3D Geodetic prism	Moor House	LIV_VD4_Enlargement_Adv-43	11/09/2014	22/01/2017		-0.58	120		-0.61	181		-2.66	300		C510-RFI-001014 confirms that there is sufficient coverage for INSAR to assume responsibilty of the long term automated monitoring	Proposed
C510-RP10156	Block 101	N/A	External	Automated	RP	3D Geodetic prism	Moor House	LIV_VD4_Enlargement_Adv-43	11/09/2014	21/01/2017		-2.61	121		-3.15	180		-3.26	300		C510-RFI-001014 confirms that there is sufficient coverage for INSAR to assume responsibilty of the long term automated monitoring	Proposed
C510-RP10157	Block 101	N/A	External	Automated	RP	3D Geodetic prism	Moor House	LIV_TBM-West-LC_Pilot_Adv-4020	16/04/2015	21/01/2017		-1.61	121		-1.44	181		-2.43	300		C510-RFI-001014 confirms that there is sufficient coverage for INSAR to assume responsibilty of the long term automated monitoring	Proposed
C510-RP10158	Block 101	N/A	External	Automated	RP	3D Geodetic prism	Moor House	LIV_TBM-West-LC_Pilot_Adv-4020	16/04/2015	21/01/2017		-3.75	121		-4.16	180		-3.09	300		C510-RFI-001014 confirms that there is sufficient coverage for INSAR to assume responsibilty of the long term automated monitoring	Proposed
C510-RP10159	Block 101	N/A	External	Automated	RP	3D Geodetic prism	Moor House	LIV_TBM-West-LC_Pilot_Adv-4022	18/04/2015	05/10/2016		-3.73	121		-4.12	181		-2.30	1048		C510-RFI-001014 confirms that there is sufficient coverage for INSAR to assume responsibilty of the long term automated monitoring	Proposed
C510-RP10160	Block 101	N/A	External	Automated	RP	3D Geodetic prism	Moor House	LIV_TBM-West-LC_Pilot_Adv-4022	18/04/2015	20/01/2017		-1.62	121		-2.73	180		-2.68	300		C510-RFI-001014 confirms that there is sufficient coverage for INSAR to assume responsibilty of the long term automated monitoring	Proposed
C510-RP10179	Block 101	N/A	External	Automated	RP	3D Geodetic prism	Moor House	LIV_TBM-West-LC_Pilot_Adv-4054	22/04/2015	28/09/2015		-3.16	121		-2.08	180		-1.06	366		C510-RFI-001014 confirms that there is sufficient coverage for INSAR to assume responsibilty of the long term automated monitoring	Proposed
C510-RP10180	Block 101	N/A	External	Automated	RP	3D Geodetic prism	Moor House	LIV_TBM-West-LC_Pilot_Adv-4054	22/04/2015	02/09/2013		N/A			N/A			N/A			C510-RFI-001014 confirms that there is sufficient coverage for INSAR to assume responsibilty of the long term automated monitoring	Proposed
C510-RP10181	Block 101	N/A	External	Automated	RP	3D Geodetic prism	Moor House	LIV_TBM-West-LC_Pilot_Adv-4054	22/04/2015			N/A			N/A			N/A			C510-RFI-001014 confirms that there is sufficient coverage for INSAR to assume responsibilty of the long term automated monitoring	Proposed
C510-RP10182	Block 101	N/A	External	Automated	RP	3D Geodetic prism	Moor House	LIV_TBM-West-LC_Pilot_Adv-4050	21/04/2015	29/09/2015		-4.15	121		-2.12	180		-0.73	366		C510-RFI-001014 confirms that there is sufficient coverage for INSAR to assume responsibilty of the long term automated monitoring	Proposed
C510-RP10183	Block 101	N/A	External	Automated	RP	3D Geodetic prism	Moor House	LIV_TBM-West-LC_Pilot_Adv-4050	21/04/2015			N/A			N/A			N/A			C510-RFI-001014 confirms that there is sufficient coverage for INSAR to assume responsibilty of the long term automated monitoring	Proposed
C510-RP10184	Block 101	N/A	External	Automated	RP	3D Geodetic prism	Moor House	LIV_TBM-West-LC_Pilot_Adv-4048	21/04/2015	18/09/2014		-0.76	121		2.23	181		2.20	366		C510-RFI-001014 confirms that there is sufficient coverage for INSAR to assume responsibilty of the long term automated monitoring	Proposed
C510-RP10185	Block 101	N/A	External	Automated	RP	3D Geodetic prism	Moor House	LIV_TBM-West-LC_Pilot_Adv-4046	21/04/2015	11/04/2015		-0.16	121		1.27	181		-0.64	366		C510-RFI-001014 confirms that there is sufficient coverage for INSAR to assume responsibilty of the long term automated monitoring	Proposed
C510-RP10186	Block 101	N/A	External	Automated	RP	3D Geodetic prism	Moor House	LIV_TBM-West-LC_Pilot_Adv-4046	21/04/2015	20/09/2015		-4.06	121		0.19	181		0.54	365		C510-RFI-001014 confirms that there is sufficient coverage for INSAR to assume responsibilty of the long term automated monitoring	Proposed
C510-RP10188	Block 101	N/A	External	Automated	RP	3D Geodetic prism	Moor House	LIV_TBM-West-LC_Pilot_Adv-4042	21/04/2015	26/10/2014		-2.32	121		-1.55	182		2.50	366		C510-RFI-001014 confirms that there is sufficient coverage for INSAR to assume responsibilty of the long term automated monitoring	Proposed
C510-RP10189	Block 101	N/A	External	Automated	RP	3D Geodetic prism	Moor House	LIV_TBM-West-LC_Pilot_Adv-4040	21/04/2015	14/04/2015		-2.25	121		-0.12	180		-1.16	366		C510-RFI-001014 confirms that there is sufficient coverage for INSAR to assume responsibilty of the long term automated monitoring	Proposed
C510-RP10190	Block 101	N/A	External	Automated	RP	3D Geodetic prism	Moor House	LIV_TBM-West-LC_Pilot_Adv-4038	21/04/2015	29/09/2015		-4.07	121		-0.49	181		0.86	366		C510-RFI-001014 confirms that there is sufficient coverage for INSAR to assume responsibilty of the long term automated monitoring	Proposed
C510-RP10191	Block 101	N/A	External	Automated	RP	3D Geodetic prism	Moor House	LIV_TBM-West-LC_Pilot_Adv-4038	21/04/2015	28/09/2015		-4.17	121		0.01	181		1.19	366		C510-RFI-001014 confirms that there is sufficient coverage for INSAR to assume responsibilty of the long term automated monitoring	Proposed
C510-RP10192	Block 101	S10101	External	Automated	RP	3D Geodetic prism	Moorfields Highwalk Footbridge	LIV_TBM-West-LC_Pilot_Adv-4038	21/04/2015	29/09/2015		N/A	121		N/A	181		N/A	366		Trends Not Applicable- No Recent data- ATS131 Decommissioned	Proposed
C510-RP10193	Block 101	S10101	External	Automated	RP	3D Geodetic prism	Moorfields Highwalk Footbridge	LIV_TBM-West-LC_Pilot_Adv-4038	21/04/2015	28/09/2015		N/A	121		N/A	180		N/A	366		Trends Not Applicable- No Recent data- ATS131 Decommissioned	Proposed
C510-RP10194	Block 101	N/A	External	Automated	RP	3D Geodetic prism	Moorfields Highwalk Footbridge	LIV_TBM-West-LC_Pilot_Adv-4038	21/04/2015	28/09/2015		N/A	121		N/A	181		N/A	366		Trends Not Applicable- No Recent data- ATS131 Decommissioned	Proposed

Table 5 - Block 01 Decommissioning Status Tracker XR & IE

13/02/2017

< 2.0 mm GREEN | < 3.5 mm AMBER | > 3.5 mm RED

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	Last Survey 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-XR11401A-29m	Block 114	XR11401	Inground	Automated	XR	Extensometer-Rod	Moorgate	LIV_AP9_Enlargement_ADV-8	06/06/2016	06/09/16	-1.03	120	-1.48	180	-0.02	365		C510-PMI-01175 states that C510-XR11401 is no longer accessible and that C502 are to provide access to decommission the sensors once it has been formally agreed. As the sensors have been broken since September 2016 and are not accesssible it is propsed to formally agree decommissioning.	Proposed
C510-XR11401B-25m										06/09/16	-0.92		-1.06		-0.23				
C510-XR11401C-20m										06/09/16	-0.38		-0.44		-2.50				
C510-XR11401D-15m										06/09/16	1.13		0.68		-1.54				
C510-XR11401E-9m										06/09/16	0.60		1.35		-0.05				
C510-XR11401F-5m										06/09/16	-0.97		1.73		-0.78				
C510-XR11402A-29m	Block 114	XR11402	Inground	Automated	XR	Extensometer-Rod	Moorgate	LIV_ES3_Unknown_ADV-42	15/03/2017	06/09/16	-0.11	120	-0.21	180	0.08	365		C510-PMI-01175 states that C510-XR11402 is no longer accessible and that C502 are to provide access to decommission the sensors once it has been formally agreed. As the sensors have been broken since September 2016 and are not accesssible it is propsed to formally agree decommissioning.	Proposed
C510-XR11402B-25m										06/09/16	2.88		4.75		-2.40				
C510-XR11402C-20m										06/09/16	-1.43		-2.01		-6.07				
C510-XR11402D-15m										06/09/16	-0.93		-0.99		-5.61				
C510-XR11402E-9m										06/09/16	-1.32		-1.47		0.01				
C510-XR11402F-5m										06/09/16	-1.4		-1.23		-0.20				
C510-XR11403A-29m	Block 114	XR11403	Inground	Automated	XR	Extensometer-Rod	Moorgate	LIV_ES3_Unknown_ADV-42	15/03/2017	04/04/16	-0.65	120	-0.40	180	-1.24	365		C510-PMI-01175 states that C510-XR11403 is no longer accessible and that C502 are to provide access to decommission the sensors once it has been formally agreed. As the sensors have been broken since September 2016 and are not accesssible it is propsed to formally agree decommissioning.	Proposed
C510-XR11403B-25m										06/09/16	-0.45		-0.39		0.00				
C510-XR11403C-20m										06/09/16	-0.60		-0.52		-0.01				
C510-XR11403D-15m										06/09/16	-0.53		-0.49		0.10				
C510-XR11403E-9m										06/09/16	-0.62		-0.55		-0.01				
C510-XR11403F-5m										06/09/16	-0.69		-0.61		-0.03				
C510-XR11404A-29m	Block 114	XR11404	Inground	Automated	XR	Extensometer-Rod	Moorgate	LIV_ES3_Unknown_ADV-42	15/03/2017	22/06/15	N/A	120	N/A	180	N/A	365		C510-PMI-01175 states that C510-XR11404 is no longer accessible and that C502 are to provide access to decommission the sensors once it has been formally agreed. As the sensors have been broken since September 2016 and are not accesssible it is propsed to formally agree decommissioning.	Proposed
C510-XR11404B-25m										06/09/16	0.37		0.54		1.64				
C510-XR11404C-20m										06/09/16	0.76		0.58		0.19				
C510-XR11404D-15m										06/09/16	1.85		1.21		0.32				
C510-XR11404E-9m										06/09/16	0.48		0.43		-0.64				
C510-XR11404F-5m										06/09/16	-0.11		-0.45		-0.73				
C510-IE11401	Block 114	IE11401A	Inground	Automated	IE	nclinometer-Automated	Moorgate Shaft	LIV_AP9_Enlargement_Adv-8	06/06/2016	02/02/2015	N/A		N/A		N/A			Sensor removed during Genie lift- 02/02/2015+ Supplementary Evidence	Complete
C510-IE11402	Block 114	IE11402A	Inground	Automated	IE	nclinometer-Automated	Moorgate Shaft	LIV_ES3_Unknown_ADV-42	15/03/2017	02/02/2015	N/A		N/A		N/A			C510-PMI-01175 states that C510-IE11402 is no longer accessible and that C502 are to provide access to decommission the sensors once it has been formally agreed. As the sensors have been broken since February 2015 and are not accesssible it is propsed to formally agree decommissioning.	Proposed
C510-IE11404	Block 114	IE11404A	Inground	Automated	IE	nclinometer-Automated	Moorgate Shaft	LIV_ES3_Unknown_ADV-43	15/03/2017	02/02/2015	N/A		N/A		N/A			C510-PMI-01175 states that C510-IE11403 is no longer accessible and that C502 are to provide access to decommission the sensors once it has been formally agreed. As the sensors have been broken since February 2015 and are not accesssible it is propsed to formally agree decommissioning.	Proposed

Figure 5- LB & CK Monitoring Sensor Decommissioning Status and Location Plan

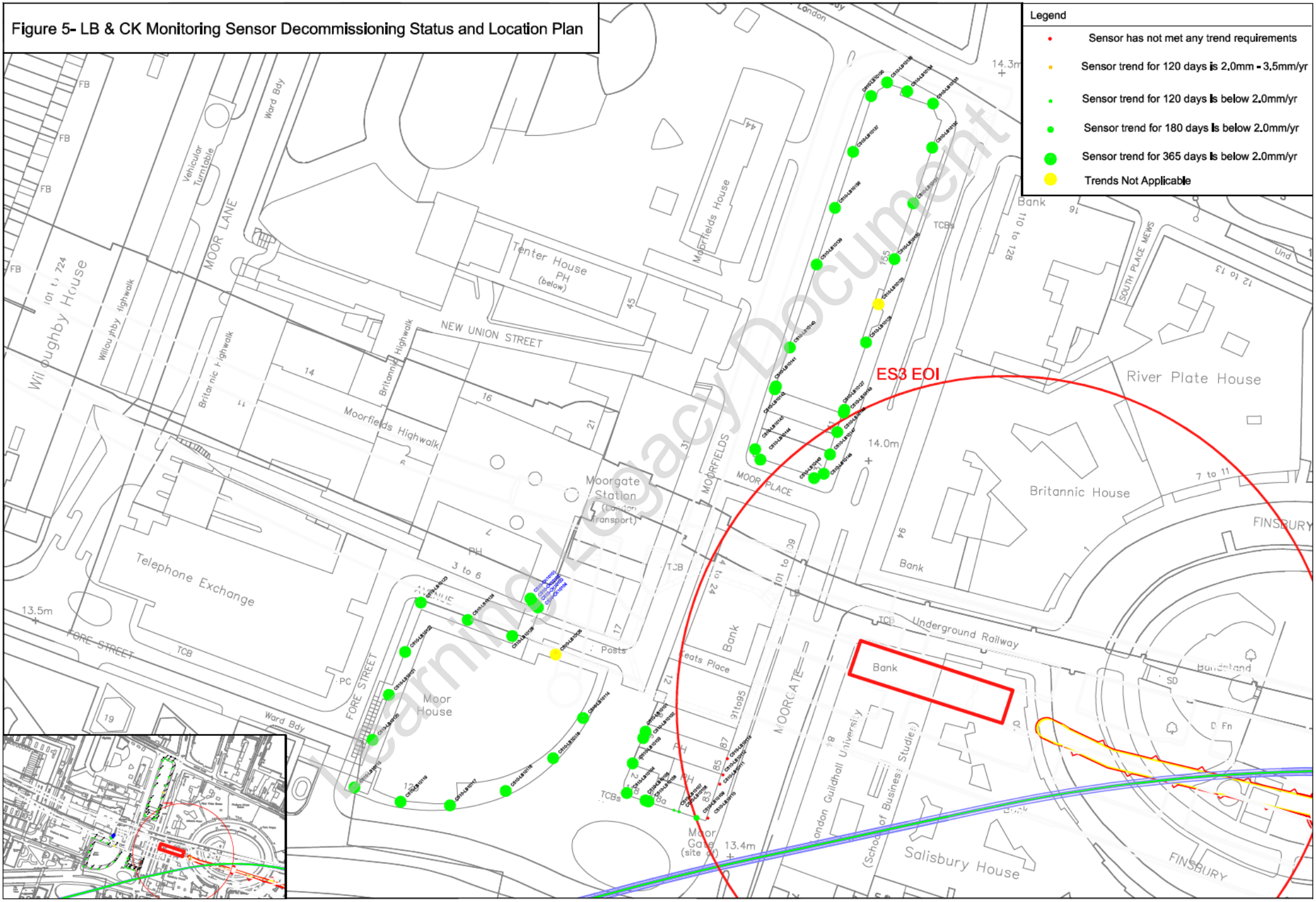


Figure 6- LP Monitoring Sensor Decommissioning Status and Location Plan

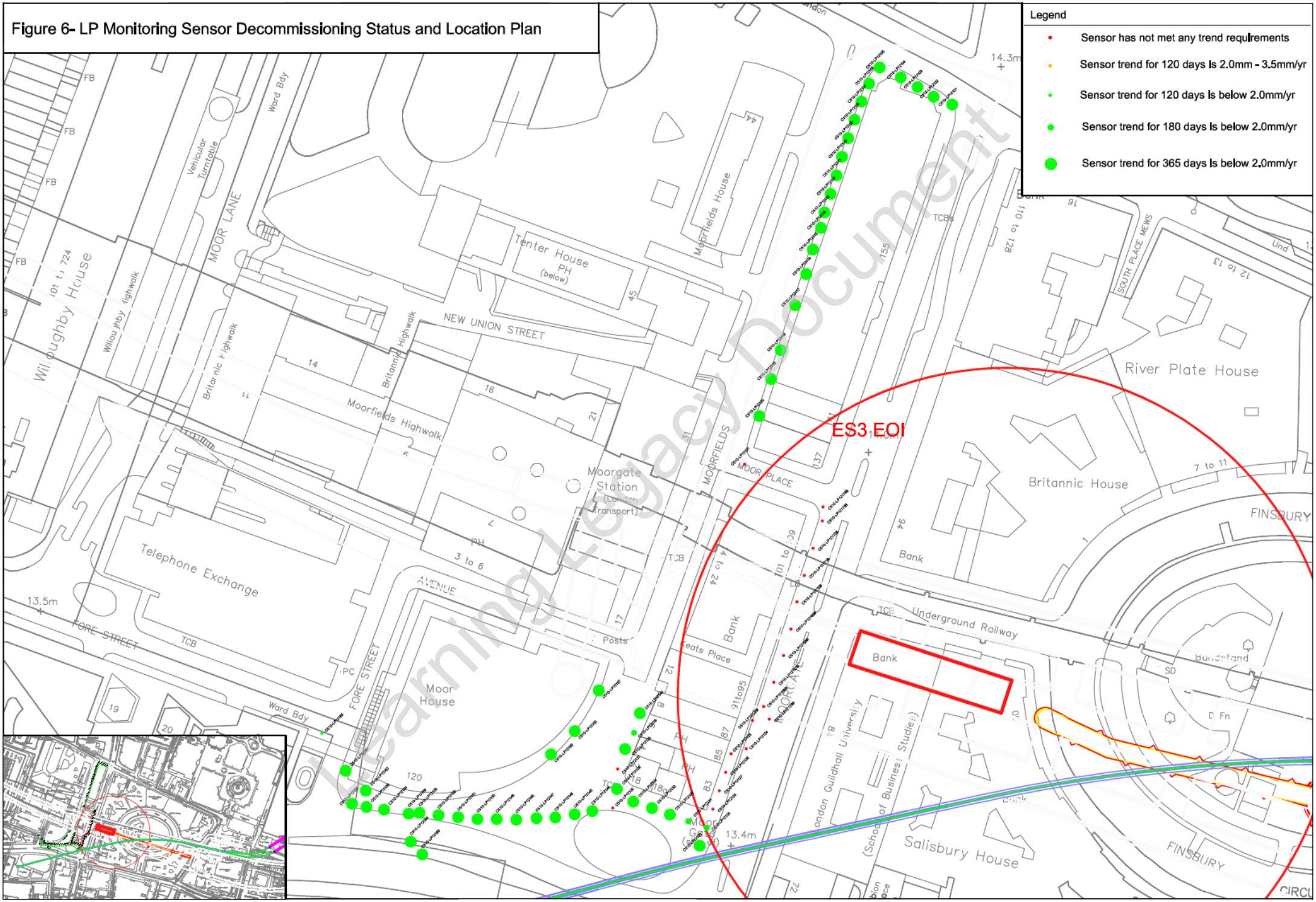


Figure 7- TB Monitoring Sensor Decommissioning Status and Location Plan

Legend

- 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

Refer to Table 2 for individual sensor trends of Tiltmeters

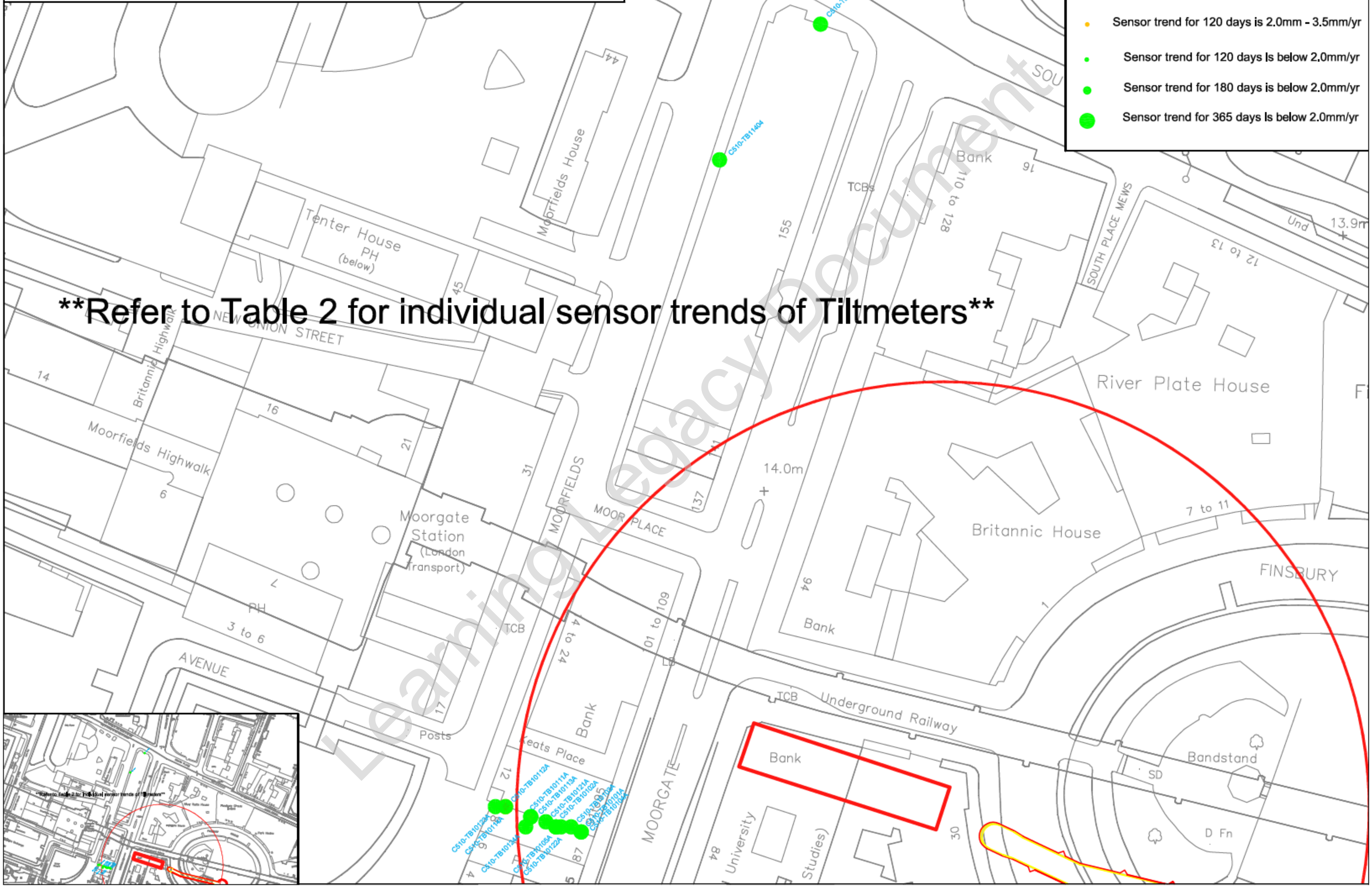


Figure 8- RP (south) Monitoring Sensor Decommissioning Status and Location Plan

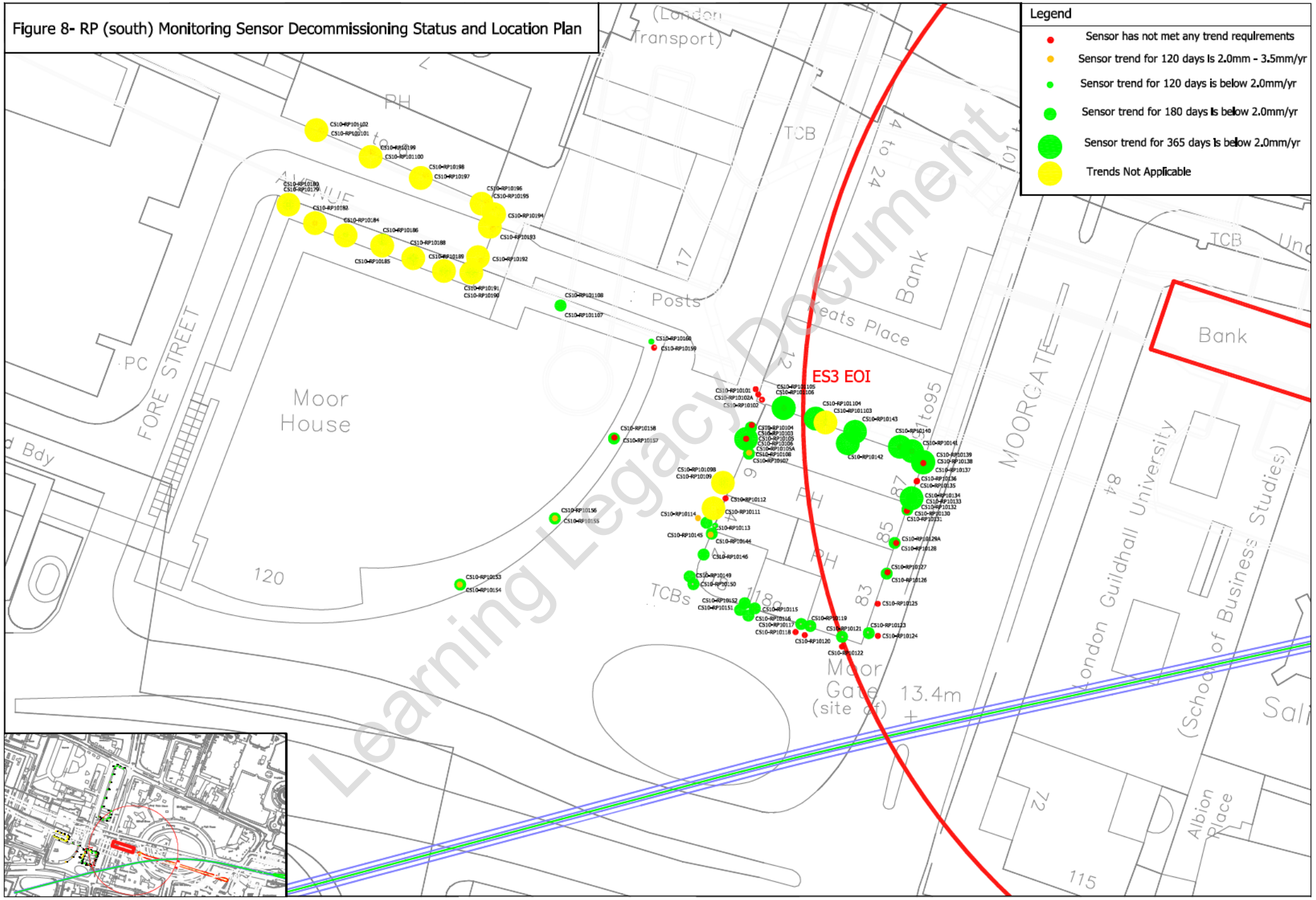


Figure 9- RP (north) Monitoring Sensor Decommissioning Status and Location Plan

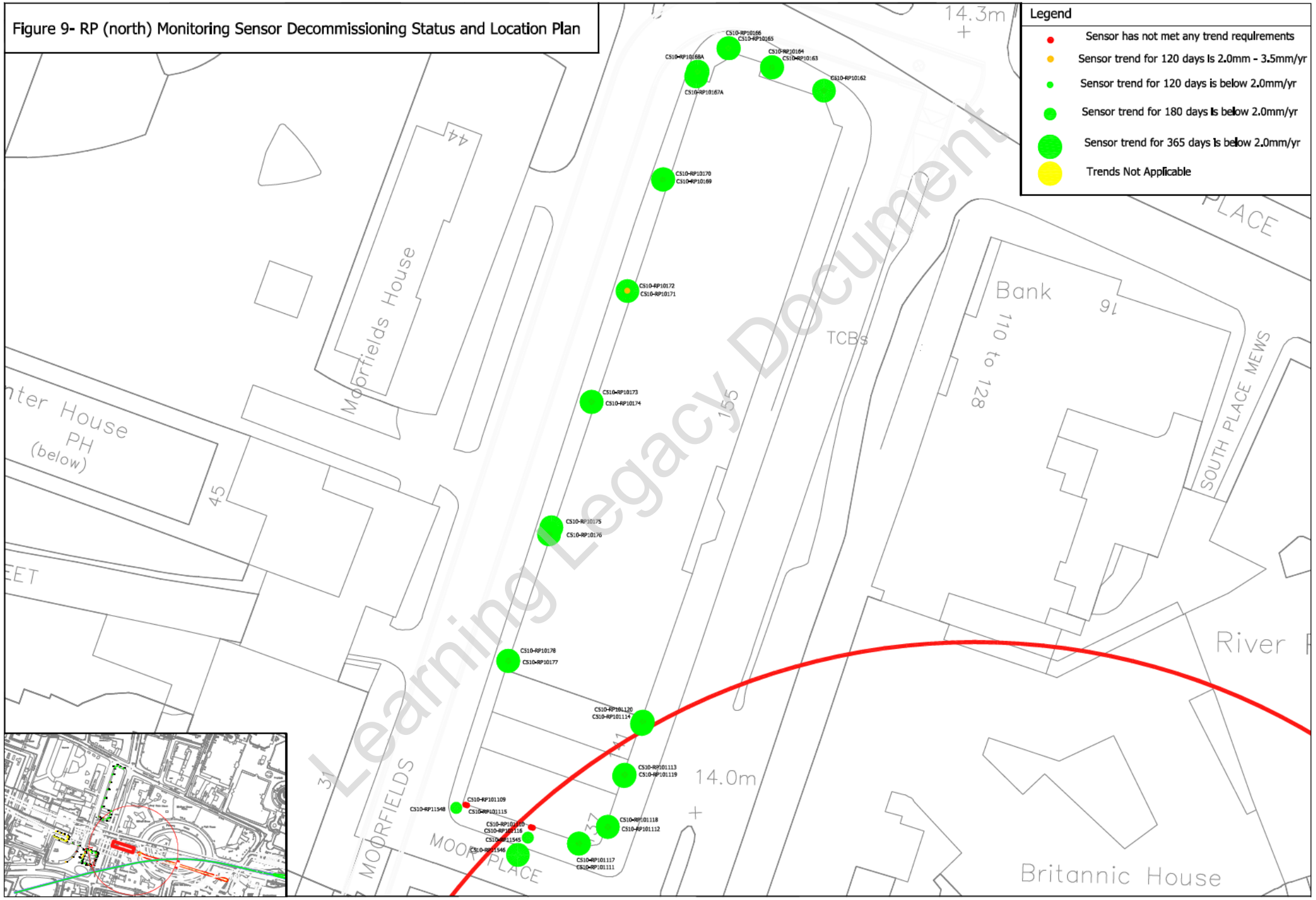


Figure 10- SH Monitoring Sensor Decommissioning Status and Location Plan

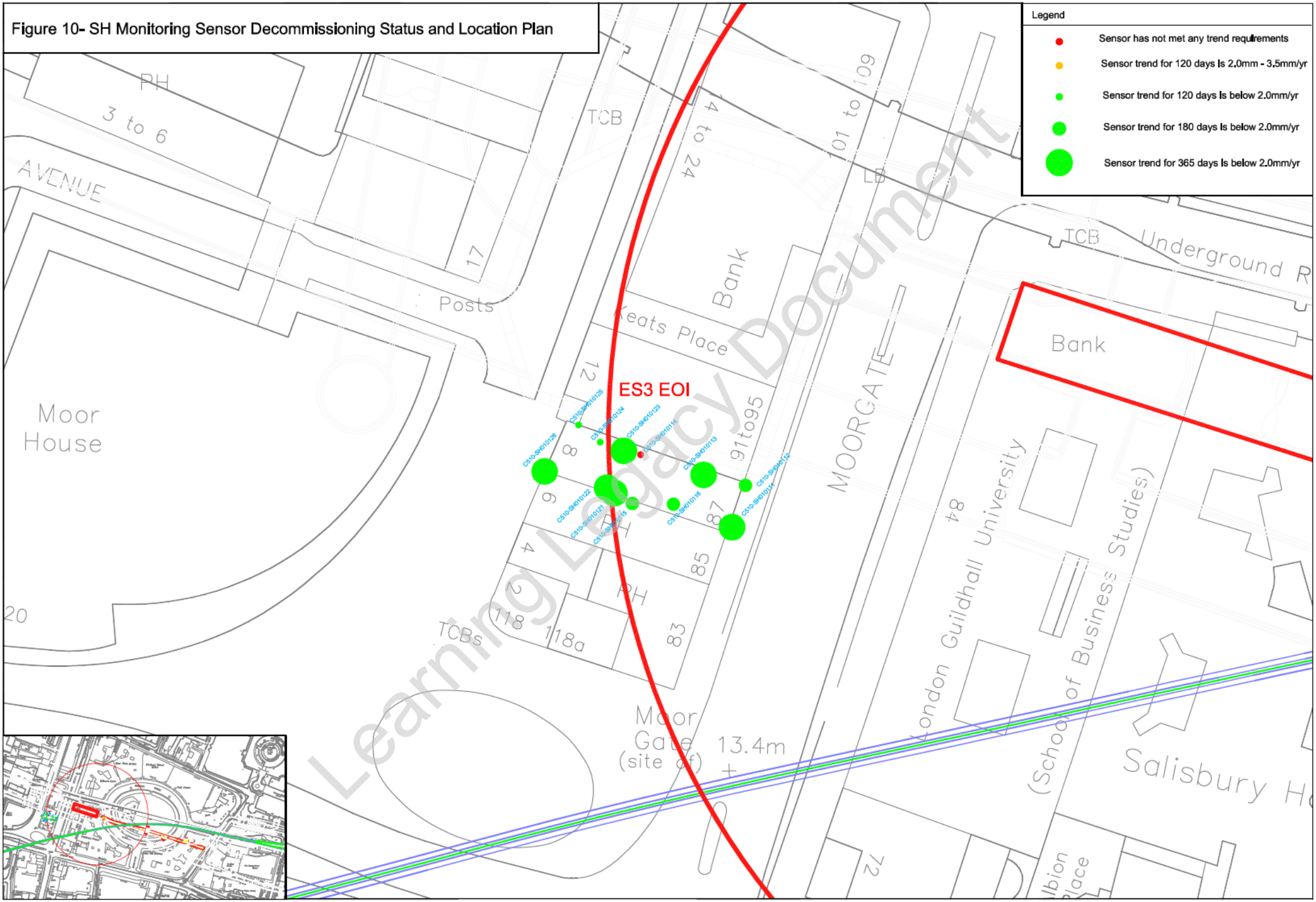


Figure 11-XR & IE Monitoring Sensor Decommissioning Status and Location Plan