



# Crossrail Testing and Commissioning – Liverpool Street BIU Configuration State- ment

**Document Number: CRL1-XRL-O8-STP-C101-50010**

**Document History:**

Revision:	Date:	Prepared by:	Checked by:	Approved by:	Reason for Issue:
4.0	28/06/2021	[Redacted]	[Redacted]	[Redacted]	For issue
		[Redacted]	[Redacted]	[Redacted]	
		[Redacted]	[Redacted]	[Redacted] st	
				[Redacted]	
				[Redacted]	

This document contains proprietary information. No part of this document may be reproduced without prior written consent from the chief executive of Crossrail Ltd.



## Contents

<b>Contents</b> .....	<b>2</b>
<b>1 Introduction</b> .....	<b>3</b>
1.1 Abbreviations .....	3
1.2 References.....	4
<b>2 Assessment of Outstanding Works/Issues</b> .....	<b>5</b>
<b>3 Mitigations and Operational Restrictions</b> .....	<b>26</b>
<b>4 Residual Actions to Finalise Assessment</b> .....	<b>29</b>
<b>5 Configuration Statement</b> .....	<b>29</b>
<b>Appendix 1. Item's required by T-0</b> .....	<b>30</b>
<b>Appendix 2. Items declared as 'No Impact'</b> .....	<b>40</b>

Learning Legacy Document

## 1 Introduction

This document has been developed to describe the EOWs and Issues which will be outstanding at the point of bringing Liverpool Street Station into use and how these impact upon the Operational and Maintenance regime of the IMs (LUL and RfL-I).

The assessment contained herein built upon work conducted by the individual project teams (C502 and C660) and only considered EOWs and Issues which were expected to be outstanding at T-0 for SC3 ROGs and Bringing into Use.

Section 2 of this document contains a list of outstanding EOWs and issues and a summary of whether it has been classified as

1. Needing an Operational Restriction
2. Needing a Maintenance Mitigation
3. Information Statement – No further action required

This classification was determined following discussions between the relevant parties. If an open item doesn't fall into one of these categories, then it isn't included within the list – this may cause apparent mismatches with the contents of the Stage Completion Report [Ref 2] however to demonstrate the items considered tables are provided in the appendix which list all EOWs and issues which have been considered by the workstream. Within Appendix 1 are the items considered Required by T-0 and within Appendix 2 those which are deemed to have 'no impact'.

Section 3 of this document contains a summary of the Mitigations and Operational Restrictions required to support achievement of the SC3 ROGs and Bringing into use milestones. These will be revisited upon each review of this document.

Section 4 lists any residual actions required to finalise the contents of Section 2 and 3.

### 1.1 Stakeholder Management and Agreements

Liverpool Street Station is due to be transferred to LU upon completion of SC3ROGs. Therefore, this document will be signed by representatives from Plateau 2, LU and RfL-I. The signatories of this document deem that the configuration of Liverpool Street Station is suitable to be transferred to Infrastructure Maintainer as outstanding items are deemed to be mitigated, no impact or required for closure.

In the early stages of the T- process (prior to T-4 issue) this document highlighted the outstanding works, whether they have an impact on the operation or maintenance of the facility and proposed mitigations. Following T-4 issue, this document captures which mitigations have been agreed with the Infrastructure Maintainer and where applicable representatives from user groups. It is noted that for items which require a specific user action the agreement will be sought by user representatives for the systems and for items relating to organisational preparedness agreement will be solely by this document. The categorisation and agreement method is captured in section 3 of this document.

### 1.2 Abbreviations

Abbreviation	Definition
--------------	------------



IM	Infrastructure Manager
EOWL	Element Outstanding Works List
LUL	London Underground Limited
RfL-I	Rail for London - Infrastructure

### 1.3 References

Ref	Doc Number	Title
1	CRL1-XRL-O8-STP-CR001-50180	Crossrail Testing and Commissioning – Overall Station Commissioning Strategy
2	C502-XRL-O7-RGN-C101-50005	Staged Completion Report – Liverpool Street Station

Learning Legacy Document

## 2 Assessment of Outstanding Works/Issues

It should be noted that items in green have been closed out since the first issue of this document.

Ref	EOWL Ref (if applicable)	Title	Description	Ops Restriction - LU	Ops Restriction - RfL	Maintenance Mitigation - LU	Maintenance Mitigation - RfL	Information Note - LU	Information Note - RfL	TBC	Required by T-0	No Impact	Proposed Restrictions or Mitigations	Restriction or Mitigation Ref
1	C502-NCR-002263	Tun - CMS install multi comp trunking capacity	multi comp comms trunking/ installed in Switchroom 8/668 has been installed and now cabled, the trunking transition from vertical to horizontal has been installed by use of 'top hat' joint with a cut out section for cables to transition, it was noted that there is no capacity through the comms cable compartment for any further cabling to be installed through this junction, further more the cabling installed through the cut out appears to be damaged. note; the full route of this CMS should be checked to ensure there is adequate capacity for future cabling to be installed.					Yes					Information note to confirm further works to be conducted on the CMS and therefore any cabling works will need to be coordinated with construction works.	LIS-MIT-011
2	C502-NCR-002460	BTH - L+E - Bimetallic Fixings	Mixture of zinc, stainless and galvanised fixings for landing frame install for L8+9 top and bottom landing frames. No separation / isolation through nylon washers or similar. No protection of steelwork cut on site.			Yes							CRL Maintenance Buddy System to be instigated to cover until asset information is complete	LIS-MIT-001
3	C502-PWK-02669	O&M Manual to be CODE 1- C502-LAO-C-CER-C101 WS099-50182	O&M manual not Code 1. O&M Manual- Operations and Maintenance Manual - Tier 2 - System (PFU) / Maintenance Description, Configuration, Product and Certification Information PFU-2-00007 - Door System (Arch) at Liverpool Street Station (C502-LAO-K2-OMT12-C101-50005)			Yes							CRL Maintenance Buddy System to be instigated to cover until asset information is complete	LIS-MIT-001
4	C502-PWK-02996	MGS - P+0 A&M to MEP services	High level CMS and MEP services have been installed without provision for future access and maintenance. Access is required to the trunkings/ trays, Duct work for maintenance, planned testing and inspection. Additionally the smoke head installed on the soffit is not accessible.			Yes							CRL Maintenance Buddy System to be instigated to cover until asset information is complete	LIS-MIT-001

Ref	EOWL Ref (if applicable)	Title	Description	Ops Restriction - LU	Ops Restriction - RfL	Maintenance Mitigation - LU	Maintenance Mitigation - RfL	Information Note - LU	Information Note - RfL	TBC	Required by T-0	No Impact	Proposed Restrictions or Mitigations	Restriction or Mitigation Ref
5	C502-PWK-03176	BTH Floor Tiling (Missing / Cracked Tiles)	Missing or cracked tiles in the following locations; 2 x No Chipped tiles in front of POMS 2/021 Missing Tiles by Lift 9 Raised Tile (Lipped) on MJ in front of Escalator ES13 Skirting Tile by Door E-02-782-D02 to replace.			Yes							Maintainers to note these tiles are due to be replaced and therefore faults do not need to be raised	LIS-MIT-015
6	CRL-OBS-23998	FAC-2-014 - Liverpool Street Station Asset Information Verification Activity Plan (VAP)	A number of Asset information and labelling non-conformances have been recorded via a site survey verification exercise. Please refer to the related reports for issues and corrective actions. C502-XRL-Z3-RGN-C101-50004 To close out this Observation, the contractor is required to provide corrective evidence against the non-conformances listed in the report.			Yes							CRL Maintenance Buddy System to be instigated to cover until asset information is complete	LIS-MIT-001
7	CRL-OBS-30152	LIS - Platform Invert Water Ingress	Liverpool St has major issues in regards to Water Ingress to Platform Inverts. LU will not accept the station element at handover with unresolved water ingress issues. Please see attached report for details of the findings of this verification activity.  06/01/20 [REDACTED] CRL do not agree that there are 'major issues', the project specification has an allowable limit for leakage within non-public areas below tunnel axis. All leaks have been measured and where above the allowable limit they are being treated. Discussions have been held with LU project lead Mark Dewhirst. Please provide or attach a copy of the referred to VAP report LUCT-C101-ENG-VAR-00010.			Yes							Maintainer to be aware that the area had water seepage and needs to be checked routinely	LIS-MIT-016
8	CRL-OBS-30340	LIS - Outstanding Asset Data Drops	LU raises this observation to note that there are currently Asset Data deliverables outstanding, which are required in order to achieve the planned SC3 ROGS milestone. Asset Data Drop 6 needs to be achieved, and a plan for achieving this state of asset data delivery should be agreed with relevant parties including LU.			Yes							CRL Maintenance Buddy System to be instigated to cover until asset information is complete	LIS-MIT-001

Ref	EOWL Ref (if applicable)	Title	Description	Ops Restriction - LU	Ops Restriction - RfL	Maintenance Mitigation - LU	Maintenance Mitigation - RfL	Information Note - LU	Information Note - RfL	TBC	Required by T-0	No Impact	Proposed Restrictions or Mitigations	Restriction or Mitigation Ref
9	C502-NCR-002552	Blomfield Box - Bronze over-clad exit and maintenance doors - operation restrictions.	<p>As identified in CRL-OBS-30514 - a number of issues have been raised associated with the operation of the large maintenance doors forming part of the façade.</p> <p>Right hand Fan removal door            - Clashes with services – C502 to advise on proposed mitigation/re-location of services.            - Bolt – confirm depth requirement (security) is achieved.            - Door clashes with ramped floor (ramp towards outside) in open position.</p> <p>Right hand Fan removal door            - Clashes with flood barrier – C502 to advise on proposed mitigation/re-location of services.            - Bolt – confirm depth requirement (security) is achieved.</p> <p>Confirmation that doors in restricted position (clash with flood barrier) meets requirements of the Access and Maintenance Strategy.</p>					Yes					Information note confirming doors have a sequence of opening. Permanent signage in place on doors to inform of sequence of opening.	LIS-MIT-029
10	C660-PWK-00871	LIS-CCTV-IAC RSP50148 FOR6034	The reason for this delay to BTL & LUCC CCTV testing is due to BTP & LUCC (supported by TfL) having confirmed they will not engage in any CCTV Integration testing until CRL have confirmed ALL CCTV views (incl dwgs & coverage reports) at the appropriate interfacing stations are 100% complete - which as is it currently stands (May 2020) they are not 100% complete at LIS.	Yes	Yes								Information note stating that the CCTV system is not integrated with BTP and the Shotbook will continue to be undergo revisions whilst views are finalised. Once the views are finalised the Shotbook will be reissued and the systems integrated with BTP.	LIS-MIT-003
11	C502-NCR-002571	BTH Canopy Poster Frames	The poster frames installed within the Broadgate Ticket Hall canopy at street level on the upstands are designed to heights that are non-compliant with the Works Information and LU standard 1-313, which both describe the maximum top of the standard TfL poster frame at 2.080mm above FFL.					Yes					Information note to confirm poster frames need to be trailed prior to revenue service.	LIS-MIT-011

Ref	EOWL Ref (if applicable)	Title	Description	Ops Restriction - LU	Ops Restriction - RfL	Maintenance Mitigation - LU	Maintenance Mitigation - RfL	Information Note - LU	Information Note - RFL	TBC	Required by T-0	No Impact	Proposed Restrictions or Mitigations	Restriction or Mitigation Ref
12	CRL-OBS-34826	ES-LIS-08-CC - Liverpool Street Station (Rail Systems) Comms & Control Verification Activity Plan (VAP)	A number of Asset information and labelling non-conformances have been recorded via a desktop verification exercise based on C660 Asset Verification Report. Please refer to the related report for issues and corrective actions C660-XRL-Z3-RGN-C101-50001 To close out this Observation, the contractor is required to provide corrective evidence against the non-conformances listed in the report.			Yes							CRL Maintenance Buddy System to be instigated to cover until asset information is complete	LIS-MIT-001
13	CRL-OBS-34864	LIS - PVCQ: inadequate coverage to end-of-platform cages	This OBS is raised to provide formal notice to CRL that during PVCQ testing on 20/10/20, it was found that end-of-platform cages do not have the required radio coverage when the end of platform doors are shut (passages 7/231, 7/232, and 7/233). LU requires that CRL provide a design which will remedy this non-compliance in good time for LU to accept it by T-minus 4 to SC3 ROGS, to allow the SC3 ROGS milestone to go ahead. NB. once the accepted design is in place, the current intention is for installation to be carried out by LUCT in time for revenue service.  Noe - Observation has been closed because the scope has been transferred to LU. Mitigation is still required.	Yes		Yes							Prior to Revenue Service upon access to these spaces the entry door must remain open.  Post Revenue Service all activities in these spaces will require an extra operative to guard the door.	LIS-MIT-004



Ref	EOWL Ref (if applicable)	Title	Description	Ops Restriction - LU	Ops Restriction - RfL	Maintenance Mitigation - LU	Maintenance Mitigation - RfL	Information Note - LU	Information Note - RFL	TBC	Required by T-0	No Impact	Proposed Restrictions or Mitigations	Restriction or Mitigation Ref
14	C660-PWK-01218	LIS-CMS Part B-IAC RSP50132 FOR7798	6541 – LIS - CCTV - missing NORMAN image 7005 – Systemwide - NVR Server Offline Alarm (VMS Alert & Source Name Issues) 7024 – Systemwide - CCTV - Status of Verint Equipment from Tables CCTV Asset Equipment & SNMP Agent 7027 – OBSERVATION - CCTV - "Unknown" Cleared Alarms in the Alarm List (unexpected behaviour) 7583 – LIS - CCTV - cameras missing in VMS 7684 – LIS - CCTV - LIS-00-CAM-0117 live image issues						Yes				<p>ULR 786 / 850 / 851 / 852 - Information Statement to operators to brief them that the two cameras will be out of service on the CMS until fully commissioned. Mitigation - BN to operator to say cameras will be OOS until commissioned.</p> <p>ULR 847 / 848 / 849 - Mitigation - BN to user to state to mention starting times are accurate for recordings. For live images place the camera onto any tile but the working tile.</p> <p>ULR 859 - Information statement to advise recoding playback timestamp is fixed on the start time and does not increment. Do not use working tile for live viewing.</p>	LIS-MIT-010

Ref	EOWL Ref (if applicable)	Title	Description	Ops Restriction - LU	Ops Restriction - RfL	Maintenance Mitigation - LU	Maintenance Mitigation - RfL	Information Note - LU	Information Note - RfL	TBC	Required by T-0	No Impact	Proposed Restrictions or Mitigations	Restriction or Mitigation Ref
15	C660-PWK-01219	LIS-CMS Part B-IAC RSP50147 FOR7799	<p>ULR 699 - The CMS provides the operator with the ability to filter and select CIS displays by location and type. This filtering is lost when the operator selects a CIS display icon.</p> <p>ULR 700 - ETA, instead of ETD, is displayed on the CMS when an operator views the Realtime content of a CIS display. CIS displays are correctly showing ETD on site.</p> <p>ULR 702 - If there is alarm associated with the PID server, while the alarm is active, and the PID server fails over from A to B and the pre-existing alarm gets cleared (following reactive maintenance activity) the alarm doesn't get cleared automatically after a failover (A to B or vice versa), the only way to clear is to do another failover.</p>		Yes		Yes						<p>ULR 699 - There's a functionality within the CMS to filter out different CIS displays by location and type. The filtering needs to be reapplied if a CIS display icon is selected. Filtering does not work if a CIS icon is selected.</p> <p>ULR 700 - CMS has the functionality to view the Realtime content within a CIS display on site. When this content is viewed it currently shows ETA instead of ETD.</p> <p>Onsite is correct and will show ETD</p> <p>ULR 702 - The maintainer should carry out a manual failover for to clear the alarm.</p> <p>If there is an alarm associated with the PID server, while the alarm is active, and the PID server fails over from A to B (or vice versa) and the pre-existing alarm gets cleared (following reactive maintenance activity) the alarm doesn't get cleared automatically after a failover (A to B or vice versa), the only way to clear is to do a manual failover. The maintainer should carry out a manual failover for the clearance of the alarms</p>	LIS-MIT-005
16	C660-PWK-01220	LIS-CMS Part B-IAC RSP50142 FOR7800	<p><del>5870 - Local panel installed on non emergency evacuation lift</del></p> <p><del>6542 - Incorrect SID no for Lift 2 LEER room</del></p> <p><del>7450 - LIS - LFT - Lift 8 not ready for testing</del></p> <p><u>Additional Information - ULR 853</u>            "Impacted User -RTIM            Issue - Incorrect SID number for LEER, Lift 2.            To have discussion with RTIM to confirm and BN"</p>						Yes				<p>ULR 853 - Mitigation - BN to maintainer to state that the SID number is associated with the location of the GE300 instead of the LEER - correct SID number for Lift 2 LEER is 2/101.</p>	LIS-MIT-014

Ref	EOWL Ref (if applicable)	Title	Description	Ops Restriction - LU	Ops Restriction - RfL	Maintenance Mitigation - LU	Maintenance Mitigation - RfL	Information Note - LU	Information Note - RfL	TBC	Required by T-0	No Impact	Proposed Restrictions or Mitigations	Restriction or Mitigation Ref
17	CRL-OBS-34894	Liverpool Street station - Blomfield Box Roof Inspection	An inspection was carried out to address concerns raised in C502-PWK-03506 (linked); safe access to the roof. During the inspection a number of concerns were raised as per the attached inspection record.			Yes							Increased maintenance inspection until OSD is set up in the area	LIS-MIT-006
18	C660-PWK-01229	LIS-CCTV-PAC RGN50021 FOR7779	All the construction materials / obstructions and temporary coverings need to be removed by Tier 1 for the final clear shots. Rev 1.0 on eB populated with images captured on site for all cameras and a Rev 2.0 is in progress as per the images with current site conditions.					Yes	Yes				ULR 660 - CCTV views for a number of stations may be obscured, and will undergo revision & change throughout Trial Running	LIS-MIT-002
19	C502-PWK-03670	AP8 Booth Completion of Ironmongery	This punchwork has been raised to record the following works by other contractors in the AP8 area. For clarity this punchwork is not a defect of works but for record purposes of ongoing works. Contractor Booth Doors are to complete the installation of their ironmongery works on AP8. This is to allow the operation of booth doors to be checked for functionality of push pads, shoot bolts, locking mechanism and mag lock hold-open devices. Booth handle to be installed correctly so that it does not clash with the recessed pocket. PWK to follow from C502-PWK-03439, incorrectly completed. Refer to Work Task Notes-History of C502-PWK-03439.	Yes									AP8 Door is required to be locked out of service	LIS-MIT-007
20	CRL-OBS-35126	Liverpool Street PAVA Junction box labels missing	Type 5J Junction Boxes not labelled (PAVA Junction Box - C660-SMN-R3-RSP-CR001-50197). 1) No Asset Label 2) No Terminal Labels 3) No Zone/Circuit Labels Installer to check and label assets as specified prior to acceptance for operational use (Trial Running).			Yes							CRL Maintenance Buddy System to be instigated to cover until asset information is complete	LIS-MIT-001

Ref	EOWL Ref (if applicable)	Title	Description	Ops Restriction - LU	Ops Restriction - RfL	Maintenance Mitigation - LU	Maintenance Mitigation - RfL	Information Note - LU	Information Note - RFL	TBC	Required by T-0	No Impact	Proposed Restrictions or Mitigations	Restriction or Mitigation Ref
21	C502-PWK-03662	Doors included in withdrawn concession C502-LAO-A-QAP-C101 WS099-50001 (PRM Door Opening Forces)	The doors listed below have recorded high opening forces. C502 applied for concession C502-LAO-A-QAP-C101 WS099-50001.  W-01-331-D01 W-01-751-D01 W-02-244-D01 W-02-291-D01 W-02-318-D01 W-02-320-D01 W-02-501-D01					Yes					Information note to confirm that these doors will need to be considered in the workplace risk assessment and implement appropriate mitigations accordingly.	LIS-MIT-011
22	TBC	Northern Line Fire Doors	The Northern Line fire doors will be delivered by LUCT as agree in WPP – Moorgate - Northern Line Fire Doors (including enabling works) (C502-XRL-E1-STP-C101 WS099-50001). It is estimated that these doors will not be commissioned until November 2021. This is expected to be in advance of Crossrail Revenue Service. CRL Lift 5 cannot however be opened until fire doors have been installed, integrated and commissioned as they are integral to the evacuation strategy for persons of reduced mobility (PRM)	Yes									Lift 5 should be out of service until these doors are installed.	LIS-MIT-018
23	TBC	One CCTV outside Moorgate has been installed on the OSD gantry in a temporary position so that the gantry doesn't block the CCTV image of the bollard				Yes							Maintainer to note this camera is in a temporary position due to OSD works	LIS-MIT-025

Ref	EOWL Ref (if applicable)	Title	Description	Ops Restriction - LU	Ops Restriction - RfL	Maintenance Mitigation - LU	Maintenance Mitigation - RfL	Information Note - LU	Information Note - RfL	TBC	Required by T-0	No Impact	Proposed Restrictions or Mitigations	Restriction or Mitigation Ref
24	C502-NCR-002622	Blomfield Box - Amended Gate Operation	<p>BBX maintenance gate E-01-241-D01 - locking does not comply with emergency exit strategy.</p> <p>The gate was instructed under PMI C502-PMI-00535 and the Works Information requires SR3 rating or SR2 minimum.</p> <p>The gate is on a secondary escape route from adjacent plant rooms, it opens inwards and has a padlock, key and bolt operation to meet SR3 requirements.</p> <p>These locking features on the gate however do not comply with Emergency Fire escape routes strategy from adjacent Plant rooms.</p> <p>In achieving the emergency exit requirements it will reduce the security capability.</p>			Yes							Maintainer to ensure someone is guarding this door when works are on-going.	LIS-MIT-026
25	C502-PWK-03684	BBX Street Level +6 Roof Level Perimeter Coping Review	<p>Following CRL Final Inspection on 31/03/21 a number of comments/snags has been raise as follow:</p> <ol style="list-style-type: none"> <li>1.Left of entrance - termination s/s panel to be installed and re-inspected.</li> <li>2.Mastic between S/S and stone missing (both sides).</li> <li>3.Right of entrance - fire hydrant cupboard looks rusted - advise what has happened and that this can be cleaned.</li> <li>4.Left – stone/glazed canopy interface – mastic to be installed</li> </ol> <p>Also attached mark up drawings for reference.</p>			Yes							Maintainers to conduct more regular inspection of assets	LIS-MIT-012
26	CRL1-PWK-00199	Drop 6 - Routeway (Equipment in Stations) Comms & Control - LU assets	<p>This PWK is for LU tags that are part of Routeway (Equipment in Stations) Comms &amp; Control extract scope (ES-SYS-22-CC) which was submitted to RFL.</p>			Yes							CRL Maintenance Buddy System to be instigated to cover until asset information is complete	LIS-MIT-001

Ref	EOWL Ref (if applicable)	Title	Description	Ops Restriction - LU	Ops Restriction - RfL	Maintenance Mitigation - LU	Maintenance Mitigation - RfL	Information Note - LU	Information Note - RfL	TBC	Required by T-0	No Impact	Proposed Restrictions or Mitigations	Restriction or Mitigation Ref
27	CRL-OBS-35301	Telephony - auto-phone-style operation in CRL system	<p>The station telephone system at the LU stations is provided by telephones connected to the Crossrail system not the LU auto telephone network. This means that to access the auto telephone network from a Crossrail telephone an access code needs to be dialled in addition to the required number. This presents a problem to our station operatives who will need to remember to use the Crossrail telephones differently from the rest of the telephones on the station. To overcome this it has been agreed that certain key telephones will be programmed with a hot dialling facility to effectively mimic the way a normal auto telephone operates. It has been noted that this facility has not been provided at Farringdon in time for the SC3rogs transfer to LU milestone as it should have been. The facility needs to be programmed at Farringdon by 16 April 2021, and all subsequent stations need to have this facility programmed in, tested and working prior to the SC3rogs transfer to LU milestone.</p> <p>C660 are going to instruct Siemens to include SOR extensions in the telephone system abb dial list, which is estimated to take 8 - 10 weeks to implement. The earliest it will be implemented is 11th June. Thus, C660 cannot commit to the 16th April date.</p>	Yes									Operators to assess the station and ensure they have a process for managing the area where the dialling mechanism isn't in line with normal LU methodology.	LIS-MIT-019
28	CRL-OBS-35324	LIS - CCTV System Equipment Schedule includes wrong schedule	<p>This OBS is raised to advise CRL that LIS's CCTV System Equipment Schedule (C660-SMN-R3-LST-C101-50021 rev X01) appears to have the CCTV System Cable and Wiring Schedule included, rather than the CCTV System Equipment Schedule; it is assumed that this due to an error when compiling the document, but the issued version has been rejected in anticipation of an up revved version being issued containing the correct schedule.</p>			Yes							CRL Maintenance Buddy System to be instigated to cover until asset information is complete	LIS-MIT-001

Ref	EOWL Ref (if applicable)	Title	Description	Ops Restriction - LU	Ops Restriction - RfL	Maintenance Mitigation - LU	Maintenance Mitigation - RfL	Information Note - LU	Information Note - RFL	TBC	Required by T-0	No Impact	Proposed Restrictions or Mitigations	Restriction or Mitigation Ref
29	CRL-OBS-35325	LIS - Camera Image Report incomplete	This OBS is raised to note that, although the attached VAR records the acceptance of the PAC covering CCTV (C660-SMN-R3-CER-C101-50010 rev 2), it was noted that the CCTV Image Report still requires to be completed and issued in its final form, as it currently includes old camera views and obstructed views. Please advise when the final version of this Report has been issued so that this OBS can be closed.					Yes	Yes				ULR 660 - CCTV views for a number of stations may be obscured, and will undergo revision & change throughout Trial Running	LIS-MIT-002
30	CRL-OBS-35353	LIS - rejected Radio drawings Inc. Design Schematic	This OBS is raised to notify CRL of the two rejected drawings detailed in the attached VAR (under 'photographs'); the reasons for the rejections by the Discipline Engineer are detailed in the VAR. Please amend and reissue these drawings for acceptance.			Yes	Yes						CRL Maintenance Buddy System to be instigated to cover until asset information is complete	LIS-MIT-001
31	CRL-OBS-35354	LIS - generic comments on Radio drawings	<p>This OBS is raised to advise CRL of the following general comments that have been made in the course of Discipline Engineer checks on Radio drawings:</p> <ul style="list-style-type: none"> <li>• No SID codes or asset ID's - these need to be included on the as built drawings.</li> <li>• Colour coding on legend &amp; drawings for radiating cable &amp; 1/2 coaxial are not easy to differentiate &amp; appear to be drawn in the same colour, these need to be changed to make easier to identify on the next drawings revision.</li> <li>• Colour coding for cables on layout drawings should be the same as the Design Schematic.</li> <li>• All remedial works carried out on the radio system by CRL &amp; Tier 1 Contractor need to be captured on the as-built drawings and all applicable documentation including design schematic.</li> </ul>			Yes	Yes						CRL Maintenance Buddy System to be instigated to cover until asset information is complete	LIS-MIT-001

Ref	EOWL Ref (if applicable)	Title	Description	Ops Restriction - LU	Ops Restriction - RfL	Maintenance Mitigation - LU	Maintenance Mitigation - RfL	Information Note - LU	Information Note - RfL	TBC	Required by T-0	No Impact	Proposed Restrictions or Mitigations	Restriction or Mitigation Ref
32	C502-NCR-002619	AP2 Vesda Cabinet Doors – Opening Sequence	The 3no stainless steel Vesda cabinet doors in AP2 require a specific opening sequence.			Yes		Yes					Information note stating that the CCTV system is not integrated with BTP and the Shotbook will continue to be undergo revisions whilst views are finalised. Once the views are finalised the Shotbook will be reissued and the systems integrated with BTP.	LIS-MIT-003
33	CRL1-PWK-00296	SAS 62 - Additional CCTV and Door monitoring following RFL/CRL/LU peer review for post-revenue delivery	<p>This EOWL item is to capture SAS paper SAS 62 - This captures any issues raised by stakeholders regarding any additional CCTV &amp; Monitored Doors work that need to be undertaken.</p> <p>The scope has been allocated to Alternative Delivery Mechanism (ADM). Stemming from the Additional CCTV Works Agreed at CCTV &amp; Monitored Door Stakeholder Reviews.</p> <p>Each test spec is to be marked as complete on observation once works have been completed &amp; location to be removed from location dropdown.</p> <p>CCTV &amp; Monitored Doors Review Liverpool Street - Close Out Report- C660-XRL-R3-RGN-C101-50032</p>	Yes									<p>Additional checks to be incorporated into LU Operations regular patrols</p> <p>Through Lift (Lift 1) to be restricted to normal approach</p>	LIS-MIT-009
34	C660-PWK-01380	POE Extenders to be shown on DDA drawings where applicable	POE Extenders at sites installed are required to be shown on the DDA Drawings. These will be shown on the drawing under there drawing reference ID.			Yes							CRL Maintenance Buddy System to be instigated to cover until asset information is complete	LIS-MIT-001
35	CRL-OBS-35379	AP2 Corridor - AP2 Fire Door Installation	CRL and LUCT were invited to inspect the bespoke stainless steel doors installed in AP2. Preliminary comments on the doors: works in progress, are associated with this Observation for review and consideration.	Yes				Yes					PRM users should be restricted from using Lifts 7 and 8. LU Operators to ensure the impacts are captured in the workplace assessments	LIS-MIT-013
36	CRL-OBS-35408	LIS - Station Tier 1 to clear site materials obstructing final CCTV views	Station T1 Contractor to clear site materials obstructing CCTV views to allow for final images to be taken			Yes							Information note stating that the CCTV system is not integrated with BTP and the Shotbook will continue to be undergo revisions whilst views are finalised. Once the views are finalised the Shotbook will be reissued and the systems integrated with BTP.	LIS-MIT-003



Ref	EOWL Ref (if applicable)	Title	Description	Ops Restriction - LU	Ops Restriction - RfL	Maintenance Mitigation - LU	Maintenance Mitigation - RfL	Information Note - LU	Information Note - RfL	TBC	Required by T-0	No Impact	Proposed Restrictions or Mitigations	Restriction or Mitigation Ref
37	CRL-OBS-35417	LIS - OPE dampers not on the fire alarm panel or the SMS	<p>This OBS is raised to highlight the fact that currently, safety critical Over Platform Extract dampers are not monitored on the fire alarm panel or the SMS. They are on the BMS, but LU will not check these frequently enough to know if there is a fault or not. The long term solution needs to be agreed by LU and CRL CEG for LIS SC3 Rogs, as implementation has been different for each LU station.</p> <p>Note CRL1-XRL-M-RGN-CR001-50061 was never sent to LU for approval, and LU believes this change in fault reporting strategy should have been agreed with LU in line with the TAP.</p> <p>As these dampers are safety critical, they should be monitored on the fire alarm panel. This has been implemented at WHI.</p>			Yes							CRL Maintenance Buddy System to be instigated to cover until asset information is complete	LIS-MIT-001
38	CRL-OBS-35430	LIS - CCTV camera views - checks required on hoarding removal	<p>This OBS is raised to record the outstanding works required to check the views of, and adjust if necessary, cameras 136 and 141 when the hoarding that currently obstructs them is removed, at the point of SC3 ROGS. The review and any changes will need to be made during the same shift as the hoarding removal, so that adequate CCTV coverage is maintained.</p>					Yes					Information note stating that the CCTV system is not integrated with BTP and the Shotbook will continue to be undergo revisions whilst views are finalised. Once the views are finalised the Shotbook will be reissued and the systems integrated with BTP.	LIS-MIT-003

Ref	EOWL Ref (if applicable)	Title	Description	Ops Restriction - LU	Ops Restriction - RfL	Maintenance Mitigation - LU	Maintenance Mitigation - RfL	Information Note - LU	Information Note - RfL	TBC	Required by T-0	No Impact	Proposed Restrictions or Mitigations	Restriction or Mitigation Ref
39	CRL-OBS-35440	LIS - amendments needed to radio design schematic and equipment schedule	<p>As detailed in the attached (under 'photographs') VAR, the radio design schematic (C660-SMN-R3-DWG-C101-50011) and equipment schedule (C660-SMN-R3-LST-C101-50031) have been accepted, but the discipline engineer has specified amendments that are required to be included in a future update, as follows:</p> <p>C660-SMN-R3-DWG-C101-50011: Colour coding of radio design schematic &amp; as built layout drawings should be the same; All remedial works to be captured in design schematic; LU Connect 'off air repeater' is incorrect - the connection is hard wired.</p> <p>C660-SMN-R3-LST-C101-50031: This document does not contain the updated information provided in C660-SMN-R3-DWG-C101-50011 &amp; remedial works, CRL to issue updated document.</p>			Yes							CRL Maintenance Buddy System to be instigated to cover until asset information is complete	LIS-MIT-001
40	C502-NCR-002621	AP2 - Door Functionality	The bespoke set of AP2 doors fails to meet some of the specified criteria.	Yes				Yes					PRM users should be restricted from using Lifts 7 and 8. LU Operators to ensure the impacts are captured in the workplace assessments	LIS-MIT-013
41	C660-PWK-01393	PAVA Speaker labels missing.	<p>2 x PAVA speakers at Liverpool street have no asset and equipment labels.</p> <p>Z32/A109 Z32/B110</p> <p>Moorgate shaft Keats place. These are 2 x additional speakers that were added to Zone 32 under a C660 FCD due to no coverage in the corridor on this ground floor area of Keats place. 2 x speakers were added to Zone 32 as additional. No asset or equipment IDs allocated to these speakers. T1 unable to call off and installed these labels for both speakers as there is no assign assets tags IDs.</p> <p>C660-SMN-R3-DDA-C101_1-40004</p>			Yes							CRL Maintenance Buddy System to be instigated to cover until asset information is complete	LIS-MIT-001

Ref	EOWL Ref (if applicable)	Title	Description	Ops Restriction - LU	Ops Restriction - RfL	Maintenance Mitigation - LU	Maintenance Mitigation - RfL	Information Note - LU	Information Note - RFL	TBC	Required by T-0	No Impact	Proposed Restrictions or Mitigations	Restriction or Mitigation Ref
42	C502-PWK-03724	K Type Lighting - C610 HV	C610 HV TX Rooms 4 x 2 fittings required to complete, Install and Commission			Yes							Maintainer to check these fittings routinely. Additionally Buddies are to be made aware	LIS-MIT-020
43	C502-PWK-03725	K Type Lighting - C610 TV	C610 TV  FCR & MCC 2 X 1, Commission only  Forced vent Platform +2 Lower 3 Installation and Commission			Yes							Maintainer to check these fittings routinely. Additionally Buddies are to be made aware	LIS-MIT-020
44	C502-PWK-03726	K Type Lighting - C690, SER & SES-R	C690, SER & SES-R Rooms 3 + 2 light fittings, Commission only			Yes							Maintainer to check these fittings routinely. Additionally Buddies are to be made aware	LIS-MIT-020
45	C660-NCR-000815	Liverpool St Station - Rejected Redlines	Changes carried out at site on cabinets LIS-01-CAB-731U10 & LIS-03-CAB-731U11 have not met the requirements of Management of Redlines and As-Builts Procedure CRL1-XRL-Z-GPD-CR001-50010 and do not reflect the as-constructed condition at site. C660-Communications & Control Systems CDN Patch Wiring Schedule – Liverpool Street Station – C660-SMN-R3-LST-C101-50020 rev X02 did not align with C660-Communications & Control Systems CDN Cable & Port Schedule – Liverpool Street Station – C660-SMN-R3-LST-C101-50003 rev X02. Both schedules had been signed off by 3 No individual persons as prepared, checked and approved.			Yes							CRL Maintenance Buddy System to be instigated to cover until asset information is complete	LIS-MIT-001

Ref	EOWL Ref (if applicable)	Title	Description	Ops Restriction - LU	Ops Restriction - RfL	Maintenance Mitigation - LU	Maintenance Mitigation - RfL	Information Note - LU	Information Note - RfL	TBC	Required by T-0	No Impact	Proposed Restrictions or Mitigations	Restriction or Mitigation Ref
46	CRL-OBS-35472	LIS - CCTV Stopped Video / No Recording Available issues	This OBS is raised to highlight a Linewide issue affecting the CRL CCTV systems, whereby CRL camera views are subject to stopped video streams or “no recording available” messages, rendering the available CCTV coverage non-compliant with LU’s Cat 1 requirements. This is raised as an issue for LIS in particular since, although LU were able to accept the SC3 ROGS milestones at FAR and TCR with this issue unresolved, the situation at LIS is different as the public will be accessing some areas covered by CRL CCTV as soon as SC3 ROGS is achieved; in addition, the fact that nearly 12 weeks have elapsed since FAR achieved SC3 ROGS, and no resolution of the issue has been implemented, does not give LU confidence that SC3 ROGS could be granted at LIS in the belief that this issue would be resolved soon after. As such, this issue should be seen as potentially delaying the achievement of SC3 ROGS at LIS until there is a clear plan shared by CRL for resolution.	Yes		Yes							Operators need to refresh cameras when the 'no recording available' message appears on the screen. Additionally Buddies are to be briefed on the issues	LIS-MIT-021
47	C502-PWK-03736	AP12 - Gaps around door architrave	Inspection on 20-05-2021 with [REDACTED] (C502) for the Security Tracker. It was noticed that there are gaps around the door architrave in AP12 to the GFRC panels. Refer to photo attached. This is a similar scenario to other architraves in the station. C502 to close gaps and arrange for inspection to close PWK.					Yes					Information note to state there are finger traps in the vicinity of Lift 7 and caution should be taken to avoid catching ones fingers	LIS-MIT-027
48	C502-NCR-002628	AP2 Sump Pump (SWP 417 & 418)	The seepage water pump control panels have an F2 fire compliance on the MCR submission (CRL-MCR-006013). As such they are limited to a fire compartment no greater than 200m3, the AP2 sump panel for pumps 417 and 418 are in a compartment larger than 200m3 and therefore doesn't comply with this condition.			Yes					Yes		CRL Maintenance Buddy System to be instigated to cover until asset information is complete	LIS-MIT-001

Ref	EOWL Ref (if applicable)	Title	Description	Ops Restriction - LU	Ops Restriction - RfL	Maintenance Mitigation - LU	Maintenance Mitigation - RfL	Information Note - LU	Information Note - RFL	TBC	Required by T-0	No Impact	Proposed Restrictions or Mitigations	Restriction or Mitigation Ref
49	C660-PWK-01411	Drop 6 - C&C - Liverpool Street Station - Projected Tags not included in ES	16 tags without allocation to system.			Yes							CRL Maintenance Buddy System to be instigated to cover until asset information is complete	LIS-MIT-001
50	C660-PWK-01412	Drop 6 - C&C - Liverpool Street Station - M26 Asset Label Information Recorded	Asset labelling and update of AIMS outstanding for 521 tags.			Yes							CRL Maintenance Buddy System to be instigated to cover until asset information is complete	LIS-MIT-001
51	C660-PWK-01413	Drop 6 - C&C - Liverpool Street Station - Name Check	Name check failed for 5 tags.			Yes							CRL Maintenance Buddy System to be instigated to cover until asset information is complete	LIS-MIT-001
52	C660-PWK-01414	Drop 6 - C&C - Liverpool Street Station - C131 OEM Serial Number Not Populated	OEM serial number outstanding for 15 tags.			Yes							CRL Maintenance Buddy System to be instigated to cover until asset information is complete	LIS-MIT-001
53	C660-PWK-01415	Drop 6 - C&C - Liverpool Street Station - C132 Circuit Number Not Populated	Circuit number outstanding for 23 tags.			Yes							CRL Maintenance Buddy System to be instigated to cover until asset information is complete	LIS-MIT-001
54	C660-PWK-01416	Drop 6 - C&C - Liverpool Street Station - outstanding attributes	"Date of Commissioning" attribute outstanding for 19 tags.			Yes							CRL Maintenance Buddy System to be instigated to cover until asset information is complete	LIS-MIT-001
55	CRL1-PWK-00309	Drop 6 - C&C - Liverpool Street Station - Asset Data VAP close out	Liverpool Street Station C&C Asset data VAP close out agreed in principle but admin part has to be completed (report updated and signed off).			Yes							CRL Maintenance Buddy System to be instigated to cover until asset information is complete	LIS-MIT-001

Ref	EOWL Ref (if applicable)	Title	Description	Ops Restriction - LU	Ops Restriction - RfL	Maintenance Mitigation - LU	Maintenance Mitigation - RfL	Information Note - LU	Information Note - RfL	TBC	Required by T-0	No Impact	Proposed Restrictions or Mitigations	Restriction or Mitigation Ref
56	CRL-OBS-35495	LIS - CCTV Shotbook and drawings issues	<p>This OBS is raised to note some issues that have been found with the CCTV Shot Book, and to flag up three CCTV drawings for CRL's attention.</p> <p>Shot Book: the following issues were found by LU's Discipline Engineer on review of the shot book:</p> <ul style="list-style-type: none"> <li>• Camera 124 is incorrect shot, should be looking at gate line (I know this view has been changed as I have accepted it)</li> <li>• There are a number of cameras that have the wrong minimum rotakin % stated, e.g. some have 10% and should be 25% and vice versa. Examples are cameras 118, 134, 171, 177, 205 and 316, there are others</li> <li>• % Rotakin also not consistent, have some cameras looking at inside of doors at 10% and some at 25%.</li> <li>• Some PHP camera views do not have the rotakin at the actual PHP.</li> <li>• Some cameras have missing shots as camera 207.</li> <li>• Please clarify, what is the reason for the camera shots for the lift cameras being at three different sizes?</li> </ul> <p>LU proposes that minimum rotakin % should be checked according to requirements and changed to match, all PHP views have target at the PHP and other altered as above.</p> <p>Drawings: the following CCTV drawings have been rejected by the Discipline Engineer, for the following reasons:</p> <ul style="list-style-type: none"> <li>• C660-SMN-R3-DDA-C101 1-30003 – Camera positions on rev P05 do not match installation</li> <li>• C660-SMN-R3-DDA-C101 1-30004 - Camera views viewing gate line have not been agreed. Camera Cones are not identifiable</li> <li>• C660-SMN-R3-DDA-C101 7-30006 - Camera 284 text and cone in wrong location on rev P05 of drawing, and camera icon facing wrong direction</li> </ul>					Yes					Information note stating that the CCTV system is not integrated with BTP and the Shotbook will continue to be undergo revisions whilst views are finalised. Once the views are finalised the Shotbook will be reissued and the systems integrated with BTP.	LIS-MIT-003

Ref	EOWL Ref (if applicable)	Title	Description	Ops Restriction - LU	Ops Restriction - RfL	Maintenance Mitigation - LU	Maintenance Mitigation - RfL	Information Note - LU	Information Note - RfL	TBC	Required by T-0	No Impact	Proposed Restrictions or Mitigations	Restriction or Mitigation Ref
57	CRL-OBS-35499	LIS - Station gate takes two or more people to close	Following test operations of the new Station Gate installed by CRL, LUCT's Human Factors Discipline Engineer advised that he is not currently in a position to accept the HF report, because it was found that the installation doesn't currently work as a one-person operation. Further information is provided on eB	Yes									Operators to be trained on the specific process required to utilise the gate and supported by Crossrail [REDACTED] for an agreed period. The support arrangements are captured in the Buddy Plan (LIS-MIT-001)	LIS-MIT-028
58	C502-PWK-03739	ADT DCP and MFD drawing pack for LIS	In relation to fire Standards , there is a requirement to Produce clear Drawings for the DCP and MFD wiring . As part of CRL/CEG response to RFI-004889 . This PWK has been raised to ensure a pack of drawings are produced in line with the detail requirements as set out in the RFI-004889 response , This RFI is also attached .			Yes							CRL Maintenance Buddy System to be instigated to cover until asset information is complete	LIS-MIT-001
59	CRL-OBS-35514	LIS - Handrails in BoH cages (trapping risk)	This OBS is raised to note that a handrail has been installed within the back of house cages at LIS; which, due to its location and installation, is a safety risk to the maintainers(risk of person being trapped within a room).  [REDACTED] 14/06/21 It has been agreed that the handrails, which are shown in the accepted design, will be removed by LU.			Yes							Maintainer to ensure the door between the cages and station remains open whilst work is ongoing in the caged areas. This should be done by additional staff or an obstruction.	LIS-MIT-022

Ref	EOWL Ref (if applicable)	Title	Description	Ops Restriction - LU	Ops Restriction - RfL	Maintenance Mitigation - LU	Maintenance Mitigation - RfL	Information Note - LU	Information Note - RfL	TBC	Required by T-0	No Impact	Proposed Restrictions or Mitigations	Restriction or Mitigation Ref
60	C502-PWK-03742	Cyber Security - PWKs for Delmatic	It has been considered by CRL/RFL/LU cybersecurity team that where ██████ has installed/implemented obsolete operating system and out-of-date antivirus, ██████ is required to upgrade from windows "7" to "10" and "server 2008 R2" to "server" 2019, respectively. Additionally, ██████ shall ensure that out-of-date ESET antivirus is updated to the latest to reduce the risk and possibility of a cyber attacker exploiting these vulnerabilities. CRL shall instruct all upgrades. Once the upgrades are complete, ██████ shall provide a certificate/statement supported by relevant evidence that all cybersecurity requirements for handover, communicated within CRL-CEC-00586, have been met.			Yes							Maintainer to note the ██████ system is at Windows 7 and not Windows 10.	LIS-MIT-023
61	C502-PWK-03747	BBX - Drainage channel closure	Drainage channel between FCR 2/780 and 2/610 needs to be closed off to complete fire compliance. This PWK has been created to enable Fire Compliance Report to achieve Code 1.			Yes							Maintainer to be aware of the minor snags and these are to be closed by CRL	LIS-MIT-024
62	C502-PWK-03748	Teckentrup Doors with Smoke Seal remedial work during the blockade	These are the last two remaining double Teckentrup doors where the gap for smoke/pressure seal has not been surveyed			Yes							Maintainer to be aware of the minor snags and these are to be closed by CRL	LIS-MIT-024
63	C660-PWK-01420	Drop 6 - C&C - Liverpool Street Station - M7 Asset-System Conformance Error	3 tags assigned to wrong system.			Yes							CRL Maintenance Buddy System to be instigated to cover until asset information is complete	LIS-MIT-001
64	C660-PWK-01421	Drop 6 - C&C - Liverpool Street Station - Outstanding equipment information	Outstanding equipment information for 7 tags.			Yes							CRL Maintenance Buddy System to be instigated to cover until asset information is complete	LIS-MIT-001
65	CRL1-PWK-00312	Drop 6 - C&C - Liverpool Street Station - C124 Asset Status B blank	Asset Status attribute outstanding. 396 tags affected.			Yes							CRL Maintenance Buddy System to be instigated to cover until asset information is complete	LIS-MIT-001



Ref	EOWL Ref (if applicable)	Title	Description	Ops Restriction - LU	Ops Restriction - RfL	Maintenance Mitigation - LU	Maintenance Mitigation - RfL	Information Note - LU	Information Note - RfL	TBC	Required by T-0	No Impact	Proposed Restrictions or Mitigations	Restriction or Mitigation Ref
66	N/A	Door forces on the evacuation route	A number of doors on the escape route are not compliant with the requirements to support PRM use.	Yes									Operational Staff to sweep the escape route to ensure PRM's aren't stuck anywhere	LIS-MIT-030
67	C660-PWK-01443	Drop 6 - C&C – Liverpool Street Station - Outstanding spatial information	Relation to space or meterage outstanding for 8 tags.			Yes							CRL Maintenance Buddy System to be instigated to cover until asset information is complete	LIS-MIT-001
68	C660-PWK-01439	Drop 6 - C&C – Liverpool Street Station - M26 Asset Label Information Recorded	Asset labelling and update of AIMS outstanding for 251 tags.			Yes							CRL Maintenance Buddy System to be instigated to cover until asset information is complete	LIS-MIT-001
69	C660-PWK-01440	Drop 6 - C&C – Liverpool Street Station - C131_OEM_Serial_Number_Not_Populated	OEM serial numbers outstanding for 8 tags.			Yes							CRL Maintenance Buddy System to be instigated to cover until asset information is complete	LIS-MIT-001
70	C660-PWK-01441	Drop 6 - C&C – Liverpool Street Station - C132_Circuit_Number_Not_Populated	Circuit number outstanding for 12 tags.			Yes							CRL Maintenance Buddy System to be instigated to cover until asset information is complete	LIS-MIT-001
71	C660-PWK-01442	Drop 6 - C&C – Liverpool Street Station - outstanding attributes	"Date of Commissioning" attribute outstanding for 40 tags.			Yes							CRL Maintenance Buddy System to be instigated to cover until asset information is complete	LIS-MIT-001

### 3 Mitigations and Operational Restrictions

Below is a summary of the Operational Restrictions and Maintenance Mitigations in order to mitigate the open EOWLs listed above

Mitigation / Restriction	Reference	Required	Req. in CRL OR Log	Verified in CRL OR Log
TBC	TBD	No Longer Required	N/A	N/A
CRL Maintenance Buddy System to be instigated to cover until asset information is complete	LIS-MIT-001	Yes	No	N/A
ULR 660 - CCTV views for a number of stations may be obscured, and will undergo revision & change throughout Trial Running	LIS-MIT-002	Yes	Yes	Yes
Information note stating that the CCTV system is not integrated with BTP and the Shotbook will continue to be undergo revisions whilst views are finalised. Once the views are finalised the shotbook will be reissued and the systems integrated with BTP.	LIS-MIT-003	Yes	No	N/A
Prior to Revenue Service upon access to these spaces the entry door must remain open.  Post Revenue Service all activities in these spaces will require an extra operative to guard the door.	LIS-MIT-004	Yes	No	N/A
ULR 699 - There's a functionality within the CMS to filter out different CIS displays by location and type. The filtering needs to be reapplied if a CIS display icon is selected. Filtering does not work if a CIS icon is selected.  ULR 700 - CMS has the functionality to view the Realtime content within a CIS display on site. When this content is viewed it currently shows ETA instead of ETD.  Onsite is correct and will show ETD	LIS-MIT-005	Yes	Yes	Yes
ULR 702 - The maintainer should carry out a manual failover for to clear the alarm.  If there is an alarm associated with the PID server, while the alarm is active, and the PID server fails over from A to B (or vice versa) and the pre-existing alarm gets cleared (following reactive maintenance activity) the alarm doesn't get cleared automatically after a failover (A to B or vice versa), the only way to clear is to do a manual failover.				

Mitigation / Restriction	Reference	Required	Req. in CRL OR Log	Verified in CRL OR Log
The maintainer should carry out a manual failover for the clearance of the alarms				
Increased maintenance inspection until OSD is set up in the area	LIS-MIT-006	No Longer Required	N/A	N/A
AP8 Door is required to be locked out of service	LIS-MIT-007	Yes	No	N/A
No Longer Used	LIS-MIT-008	No Longer Required	N/A	N/A
Additional checks to be incorporated into LU Operations regular patrols	LIS-MIT-009	Yes	No	N/A
Through Lift (Lift 1) to be restricted to normal approach				
ULR 786 / 850 / 851 / 852 - Information Statement to operators to brief them that the the two cameras will be out of service on the CMS until fully commissioned. Mitigation - BN to operator to say cameras will be OOS until commissioned.	LIS-MIT-010	Yes	Yes	Yes
ULR 847 / 848 / 849 - Mitigation - BN to user to state to mention starting times are accurate for recordings. For live images place the camera onto any tile but the working tile.				
ULR 859 - Information statement to advise recoding playback timestamp is fixed on the start time and does not increment. Do not use working tile for live viewing.				
Information note to confirm that these doors will need to be considered in the workplace risk assessment and implement appropriate mitigations accordingly.	LIS-MIT-011	Yes	No	N/A
Maintainers to conduct more regular inspection of assets	LIS-MIT-012	Yes	N/A	N/A
PRM users should be restricted from using Lifts 7 and 8. LU Operators to ensure the impacts are captured in the workplace assessments	LIS-MIT-013	Yes	No	N/A
ULR 853 - Mitigation - BN to maintainer to state that the SID number is associated with the location of the GE300 instead of the LEER - correct SID number for Lift 2 LEER is 2/101.	LIS-MIT-014	Yes	Yes	Yes
Maintainers to note these tiles are due to be replaced and therefore faults do not need to be raised	LIS-MIT-015	Yes	No	N/A
Maintainer to be aware that the area had water seepage and needs to be checked routinely	LIS-MIT-016	Yes	No	N/A
ULR 732 - Outgoing breakers for all station LV panels are not fully commissioned on CMS.	LIS-MIT-	Yes	Yes	Yes

Mitigation / Restriction	Reference	Required	Req. in CRL OR Log	Verified in CRL OR Log
Incoming breakers and bus couplers are commissioned on SCADA CMS and provided to RFL beneficial use. The alarms associated with the Outgoing Breakers are to be put under OOS.	017			
Lift 5 should be out of service until these doors are installed.	LIS-MIT-018	Yes	No	N/A
Operators to assess the station and ensure they have a process for managing the area where the dialing mechanism isn't in line with normal LU methodology.	LIS-MIT-019	No Longer Required	N/A	N/A
Maintainer to check these fittings routinely. Additionally Buddies are to be made aware	LIS-MIT-020	No Longer Required	N/A	N/A
Operators need to refresh cameras when the 'no recording available' message appears on the screen. Additionally Buddies are to be briefed on the issues	LIS-MIT-021	Yes	No	N/A
Maintainer to ensure the door between the cages and station remains open whilst work is ongoing in the caged areas. This should be done by additional staff or an obstruction.	LIS-MIT-022	Yes	No	N/A
Maintainer to note the Delmatic system is at Windows 7 and not Windows 10.	LIS-MIT-023	Yes	No	N/A
Maintainer to be aware of the minor snags and these are to be closed by CRL	LIS-MIT-024	No Longer Required	N/A	N/A
Maintainer to note this camera is in a temporary position due to OSD works	LIS-MIT-025	Yes	No	N/A
Maintainer to ensure someone is guarding this door when works are on-going.	LIS-MIT-026	No Longer Required	N/A	N/A
Information note to state there are finger traps in the vicinity of Lift 7 and caution should be taken to avoid catching ones fingers	LIS-MIT-027	Yes	No	N/A
Operators to be trained on the specific process required to utilise the gate and supported by Crossrail/Laing O'Rourke for an agreed period. The support arrangements are captured in the Buddy Plan (LIS-MIT-001)	LIS-MIT-028	Yes	No	N/A
Information note confirming doors have a sequence of opening. Permanent signage in place on doors to inform of sequence of opening.	LIS-MIT-029	Yes	No	N/A
Operational Staff to sweep the escape route to ensure PRM's aren't stuck anywhere	LIS-MIT-030	Yes	No	N/A

#### **4 Residual Actions to Finalise Assessment**

No actions are required to support this configuration statement.

#### **5 Configuration Statement**

The assessment of the outstanding works has determined that Liverpool Street Station is within tolerance for Bringing into Use

This assessment has been made based on the information available at the point of review and that contained within the Liverpool Street Station Staged Completion Report [Ref 2].

Learning Legacy Document

## Appendix 1. Item's required by T-0

Required by Ref	EOWL Ref (if applicable)	Title	Description	Notes
1	C502-PWK-02482	Liverpool Street Station Wide Firestopping Register	Outstanding Fire Register, to be produced and submitted at completion of firestopping works C502-LAO-C-LRC-C101-50139	Closed
2	C502-PWK-03222	Miscellaneous QA Packages update for further works added Locations BTH, MTH, Platforms and Tunnels and BBX	C502-LAO-C-LRC-C101 WS099-50541 (Construction Quality Pack – Moorgate – Miscellaneous Metalwork) C502-LAO-C-LRC-C101 WS102-50221 (Construction Quality Pack – Broadgate Ticket Hall – Miscellaneous Metalwork) C502-LAO-C-LRC-C101-50692 (Construction Quality Pack – Blomfield Box – Miscellaneous Metalwork) C502-LAO-C-LRC-C101-50473 (Construction Quality Pack – Platforms & Tunnels – Miscellaneous Metalwork)	Closed
3	CRL-OBS-30716	LIS – Overclad doors	A number of the doors installed within the Liverpool Street Element have been modified such that additional cladding has been added. LU has not yet been issued with evidence to provide assurance that these modifications will not adversely affect the performance of the doors in terms of operability, fire performance and safety (e.g. sharp corners and finger traps).  Questions have also been raised relating to the potential impact the use of the doors might have on adjacent fireboard and structure over time. This observation is raised to request that this evidence be made available for review ASAP – please refer to the attached VARs which apply (C101Xrail/0576 and C101Xrail/0628).	Closed
4	CRL-OBS-30718	LIS – AP5 balustrade issues	Concerns were raised in C101Xrail/0594 (attached) that the glass makeup and fixing arrangements for the AP5 balustrade may not be adequate to allow the balustrade to meet the specified requirements for load capacity, including for blast loading.  This OBS is raised to request that CRL provides full assurance evidence that the installed AP5 balustrade complies with all relevant requirements, for review.	Closed
5	C502-PWK-03476	Outstanding Sharp bre Firestopping at July 2020		Closed
6	C502-PWK-03446	Blomfiled Box - Street Level - Emergency Escape Doors (Security)	C502 Human Factors have been asked to complete a risk assessment for the use of the over-clad doors to areas of the station as listed above; finger traps and weight of doors in operation.	Closed

7	CRL-OBS-33912	CEG MEP VAP - LIS - 198	Provide minimum ventilation.  Mitigation: Provide a natural vent opening	Closed
8	C502-PWK-03509	SCC 50118 - Fire Site inspection	Following a sample site inspection by Fire Engineers' team on Moorgate Shaft, the remedial work to the Belmont Mild Steel type of doors was found to be incomplete. In particular, the full scope of Vision Panels changes and the installation of additional intumescent seals, as per testing arrangements, is yet to be completed by	Closed
9	C502-PWK-03646	Stainless Steel Doors - Outstanding Remedials	Following retesting of the range of Stainless Steel Doors, a number of remedial works are required for the doors to replicate the testing conditions. These included: - intumescent strips on all single and double Doors : Completed - additional astragals on Active leaf of all double doors with an intumescent strip on the 'inner' side. All doors complete, apart from W-08-201-D07 - replacement of the Tecdur Vision Panels. Doors W-08-201-D07 & W-01-236-D01	Closed
10	CRL-OBS-34863	Station Door Security Rating - CRL As Built Security Tracker - Item 5	This observation has been raised to be included in the CRL As Built Security Tracker - Item 5 - check of the as installed ironmongery for the doors.	Closed
11	C502-PWK-03588	Mild-steel Doors Remedials	In order for the Mild Steel Doors to be certified as per successful fire testing, a number of remedial works were historically required. That list included change of Vision panels, additional astragals and additional intumescent seals. At this stage of the project the only works still outstanding, is the change of vision panels to the following doors: W-02-236-D01 W-02-236-D02 W-02-631-D01 W-06-236-D01 W-07-81-D01 W-07-81-D02 W-08-236-D01 W-08-237-D01 W-08-239-D01 E-09-793-D01 These remedials are also being monitored by Arup Fire	Closed
12	C660-PWK-01216	to revert CCTV metadata to correct version	It has been noted that since CCTV testing took place CRL Camera Metadata has reverted back to an older version of the data base which is out of date.  to update Metadata	Closed
13	C502-PWK-03593	Panel Heater Cages	Panel Heaters have been advised to require cages due to the surface temperatures	Closed
14	C660-PWK-01233	LIS-PAVA-PAC RGN50034 FOR7781	D25 Methodology is currently Code 1 accepted on eB. D25 testing is on site required to be completed by . CRL team have advised to conduct D25 testing once hoardings are removed and on the completion of D25 testing ARUP to issue a report. If NSR levels are below design limits the report will be issued as X01. If any issue identified recommendations shall be made from ARUP for Siemen C660 to implement before any further testing.	For T-0 the tester ) must confirm there are no residual issues. After which, acceptance of the full report is considered no impact.  The test and initial evidence are part of BIU

15 CRL-OBS-34817	Moorgate Ticket Hall - T Gate Installation (South)	<p>Angle at base detail/UR interface - to be confirmed - a solid base/interface to outer channel external side (Add angle to adjust gap or infill/flood UR) Bottom rails to be cleaned.</p> <p>Green box operation to be adjusted. Buffer on the green box in the enclosure. Adjust opening - top rail - as is heavy.</p> <p>Paint to be reviewed and repaired at a later date - minor scratches.</p> <p>Residual actions to be agreed.  to update the O&amp;M to include the components and advise on the ironmongery included in the current design. O&amp;M Manual - not listed on the Package Listing - speak to - request that this added at this time. Interface with Urban Realm - find out how the interface with the station is accepted? VAP Observation - speak to . Check Blast Calculations have been accepted/reviewed by - referenced on Package Listing. Operation strategy to be reviewed once North Gate complete.</p>	Closed
16 C660-PWK-01235	LIS-PAVA-IAC RSP 50117 FOR7614	<p>LIS LU11 PAVA specification is (at 99%) complete, however the remaining test steps require CRL PAVA system connection to the LU Station Operational Vikipedia Router.</p> <p>Recent successful testing of the CRL Long Line interfaces both PA / DVA and Regression testing involved the use of the LU Test Vikipedia and not the LU Operational Vikipedia.</p> <p>Remaining test step involves confirming there are no CRL RCC LLP/DVA broadcasts to the LU station areas (only CRL station areas).</p> <p>Connection to the LU Operational Router will require agreement with LU11 and CRL, date TBC.</p>	Part of BIU
17 C502-PWK-03443	SCC-50182 - Fire Outstanding Sample Inspection	<p>There is no actual defect to the works.</p> <p>-Fire, prior to confirming their acceptance of the works in terms of design, certification and installation, will require sample inspections to some of the doors included in this pack: C502-LAO-C-CER-C101 WS103-50182</p> <p>The date of the inspection will be confirmed by - Fire.</p> <p>There are no other outstanding comments for this pack (SCC List 1), as per attached table.</p>	Closed
18 CRL-OBS-34157	CEG MEP VAP - LIS - 1	<p>Fire stopping installation is not complete throughout the Station</p> <p>Mitigation: Complete all fire stopping installation works, including making good after removal of Temps, and the associated permanent fire stop labelling, certs and logs</p>	Closed
19 CRL-OBS-34549	CEG MEP VAP - LIS - 226	<p>Functional (known as 7671 labelling) and equipment name labelling is temporary or missing</p> <p>Mitigation: Permanent labelling required</p>	Closed



20	C502-NCR-002611	Design plan Light Fittings K1 / KS Communication Fault With DALI Lighting Control System	Design plan [REDACTED] type K1/KS fails to communicate LAMP Failure with the DALI lighting control system  This is contrary to CRL1-XRL-M-RSP-CR001-50044 JV 40 EMERGENCY LIGHTING , JV40.1301 w  Mitigation measure to be agreed with CEG	Closed
21	C502-NCR-002613	Short Circuit Isolation Failure	During Over & Back testing of 28/01/2021 an LU requested test was performed at Blomfield Box Street Level -1 whereby two manual call points, (P09/L25/D48) & (P09/L25/D57) were short circuited thereby simulating a short circuit isolation. Under this condition, some loop devices connected in between the two manual call points remained active and therefore considered a failed test.	Closed
22	C660-NCR-000768	LIS-05-CAB-771U1 - No evidence of cabinet assurance.	The Surveillance Report had found that changes had been carried out at site since the cabinet had been delivered to site. Evidence provided was CN711 dated 27th November 2017. Title – Change cabinet type from S2 to 6D due to space and access restrictions. The change note was signed off by [REDACTED] and [REDACTED] 12th March 2018.	Closed
23	C660-PWK-01302	Replacement of CCTV [REDACTED] fibre cables within CER, CN 1793	Replace non-compliant [REDACTED] patch leads , with 12cr fibre interlinking cable X1 link per CER.  Affected SAFs:  C660-FAR-SAF-001 - C660-SMN-R3-CER-M123-50146 C660-LIS-SAF-001 - C660-SMN-R3-CER-C101-50041 C660-PAD-SAF-001 - C660-SMN-R3-CER-M171-50128 C660-TCR-SAF-001 - C660-SMN-R3-CER-N105-50150 C660-WHI-SAF-001 - C660-SMN-R3-CER-D061-50133 C660-BOS-SAF-001 - C660-SMN-R3-CER-C125-50041 C660-WOO-SAF-001 - C660-SMN-R3-CER-CR147-50108 C660-CAW-SAF-009 - C660-SMN-R3-CER-CR143-50117 C660-CAW-SAF-010 - C660-SMN-R3-CER-CR143-50118	Closed
24	C502-NCR-002604	[REDACTED] 01A Scope Elevation W Glass Clad Doors	The 4no Glass clad doors on elevation W, [REDACTED] scope 01A, required a specific opening sequence. If for whatever reason this sequence is not follow the glass will break.	Closed

<p>25 C502-PWK-03666</p>	<p>3rd Party Wiring QA Documentation - Water Mist</p>	<p>This punchworks has been raised to capture the CEG comment (Comment 5.) associated with the LPWM completion certificate: C502-LAO-E6-CER-C101-50002 for 3rd party wiring documentation and records. These records will contain the Installation cable Evidence for all Cables including the testing.</p> <p>CEG Comment as follows:</p> <p>If this Completion Cert is capturing the Whole WM System, (incl the Electrical Element of the System), where is all the Design &amp; Installation Test/Assurance Documentation for the Electrical part of the System? (PMR 11/05/2020).</p> <p>Not accepted. Please advise how this is to be Certified and where the Electrical Test Documentation is captured for the Cabling from the Pump Control Panels to the Pressure Switches, the 'High &amp; Low' Level Alarms for the WM Storage Water Tank and all Isolation Valves in the Tank Room to the individual I/O Units on the Fire Alarm System. (PMR 06/08/2020).</p> <p>Please arrange meeting ASAP to provide guidance on where the Plan View 'As-Built' Fire Drawg for the Electrical &amp; Fire alarm Interfacing can be found, + the Installation cable Test Evidence for all Cables along with Certified Test Equipment. I will then hopefully be in a position to close the comment. (PMR 11/11/2020).</p> <p>Awaiting Information to be supplied. Comment remains. (PMR 21/01/2021).</p>	<p>Closed</p>
<p>26 C660-NCR-000769</p>	<p>LIS-06-CAB-9771U1 - No evidence of cabinet assurance</p>	<p>The Surveillance Report had found that changes had been carried out at site since the cabinet had been delivered to site. No evidence could be provided for who had carried out the changes at site or any evidence of any assurance paperwork.</p>	<p>Closed</p>
<p>27 CRL-OBS-35158</p>	<p>LIS - VAR rejection of P1 M, E and PH drawings</p>	<p>Please find attached VAR LUCT-C101-ENG-VAR-00036 (Rev 01), which records the rejection following verification activity of multiple Electrical, Mechanical and Public Health priority 1 drawings (listed in the VAR, which is attached under 'photographs'), on the following bases:</p> <ol style="list-style-type: none"> <li>1. LU SID codes are missing from the drawings. In some instances the drawings contain CRL design room numbers.</li> <li>2. Electrical supply cable details including separate or integral CPC cable types have not been included on electrical schematics. Cable identification numbers are included but there is no reference to a cable schedule lookup table.</li> <li>3. Cable sizes have not been included on cable labels, the assets they supply or the source they are fed from. A lookup table or cable information added to the drawings (as above) would mitigate this information not available in the field.</li> <li>4. Water services schematics contain a number of discrepancies relating to the position and quantity of water valves installed on site.</li> </ol>	<p>Closed</p>

28	CRL-OBS-35373	LIS - unclear punchwork status relating to PAC	During a check of PAC C502-LAO-M-CER-C101-50026 (C21.019br - Partial Acceptance Certificate For The Mains Cold Water System; All Worksites) by [REDACTED], it was noted that the status of a listed punchwork could not be tracked, as it is not listed on EOWL. When further investigated, Crossrail responded as not being satisfied with the works carried out, suggesting that the PWK should still be open on the EOWL. Please advise how the punchworks relating to this PAC can be tracked to closure.	Closed
29	CRL-OBS-35374	LIS - Traceability of punchworks in AC C502-LAO-E-CER-C101-50028	The following observation has been made by [REDACTED] in his check of the AC for the Primary Cable Management System:  Section 7 - List out all the punchworks from the IRN's rather than just commenting "refer to the individual IRN's. IRN C502-LAO-E-NOX-C101 WS103-50011 was reviewed (own references used rather than punchwork references - there are still some open snags on the list with no record of whether they have been closed out or not). C502-LAO-E-NOX-C101-50197 was also reviewed with punchwork listed however the status is unknown (not listed in the EOWL). Can the punchwork please be compiled on the main AC with the status and added to the EOWL if they have not been closed out.  Clarity on the snags / punchworks relevant to this AC, and traceability of their status and closeout, are required so that verification checks on this AC can be successfully concluded.	Closed
30	CRL-OBS-35375	LIS - absence of legionella information in AC C502-LAO-M-CER-C101-50009	The following observation was made in the course of the verification check of the Public Health System Acceptance Certificate (C502-LAO-M-CER-C101-50009) by [REDACTED]:  Under section 5, test report, there's no reference to legionella report and / or legionella risk assessment (a live document taken over by A&O).  Please could this be addressed in discussion with [REDACTED], so that access and references to the missing legionella information can be resolved in a way that allows the check of C502-LAO-M-CER-C101-50009 to be closed out?  DMW 21/04/21 The Legionella's Risk Assessment document C502-LAO-P-RGN-C101-50014, is in Section 5B, 'Additional Technical Assurance' of the AC.	Closed
31	C502-NCR-002593	Incorrect values for pull tests on [REDACTED] - [REDACTED] ITPs	Upon review of QA packs it was identified that the referenced ITP did not specify location specific pull test values. In this case the ITP (C502-LAO-04-ITP-C101-50312) reference was greater than required. [REDACTED] have tested to the lower value, therefore not meeting the standard stated in the ITP. The lower value meets the design requirements and the non conformance lies within the pre start documentation and record.	Closed
32	C502-PWK-03689	SCS Phase 3 Integration Report Close Out	Moorgate OPE Plant room fire location  SCS Phase 3 Integration Report Close Out	Closed
33	C502-PWK-03691	SCS SOR OPE Auto LED	Auto LED on SOR OPE panel currently illuminates during plantroom fire situations. This is to be changed to illuminate only when OPE fans are operational from the FAS as per document CRL1-XRL-M-RGN-CR001-50065	Closed

34	C502-PWK-03698	Bollards power loss operation testing and commissioning	The Moorgate Ticket Hall external retractable bollards in a power loss scenario (loss of power supply diverse from A&B) do not fail safe in the lowered position. As per C502-FCD-003115, the bollards should be manually lowered and raised from the bollards control panel in a power loss scenario. The method statement and the testing and commissioning of manual operation of bollards in a power loss scenario have not been completed and verified.	Closed
35	C502-PWK-03699	Lift 3 AC Outstanding Assurance Paperwork		Closed
36	C660-PWK-00024	LIS Cabinets and Related Hardware Phase 1.0 OWL	Please see attached spreadsheet containing FOR details	Closed
37	CRL-OBS-35322	LIS - Major PAVA issues identified during VAP check	<p>This OBS is raised to track the closure of the six 'major' issues identified in the attached VAR (LUCT-C101-ENG-VAR-00038 Rev 3, attached under 'photographs'). These drawings have been rejected, for the following reasons:</p> <p>PAVA Layout, Broadgate Ticket Hall, Level -1 (108.10) (C660-SMN-R3-DDA-C101_2-40002, rev X05) - Several Speakers missing from X05 drawing</p> <p>PAVA Layout Drawing, Moorgate Shaft, Level -1 (+107.750), Sheet 1 of 2 (C660-SMN-R3-DDA-C101_2-40003 rev X03) - Speakers missing and not relocated on drawing X03</p> <p>PAVA Layout Drawing, Moorgate Shaft, Level -3 (+97.040) (C660-SMN-R3-DDA-C101_4-40003 rev P04) - JB missing, Speaker not relocated and not latest Architects drawing (as per previous comments). Drawing is also Code 2.</p> <p>PAVA Layout Drawing, Moorgate Shaft, Level -5 (+83.655) (C660-SMN-R3-DDA-C101_6-40003 rev P04) - Drawing updated but is Code 2. C660 need to confirm if speaker was added in room 7/80 (as per previous comments).</p> <p>PAVA Layout Drawing, Platform Level -6, Sheet 1 of 3 (C660-SMN-R3-DDA-C101_7-40004 rev P04) - One speaker and AFIL locations are incorrect. JB Z26 JB001 missing from drawing. JB002 not installed. As per previous comments. Drawing is also Code 2.</p> <p>PAVA Layout Drawing, Platform Level -6, Sheet 3 of 3 (C660-SMN-R3-DDA-C101_7-40006 rev X08) - Speakers A11, B14 and B15 in wrong locations</p> <p>Please could the drawings be amended and reissued so that they can be accepted, and this OBS closed?</p>	Closed
38	C502-PWK-03703	LU check of C660 redlines - errors to be corrected by C502	LU have carried out a verification check of the C660 redlines prepared by C502 and identified a number of issues which require to be corrected, please provide updated redlines where noted - see under 'attached photographs' and issue to CRL.	Closed
39	C502-NCR-002623	Proof Load testing has not been carried out as required in Architectural Specification		Closed
40	C502-PWK-03705	C502-FCD-002642 to be added to radio drawings		Closed

<p>41 C502-NCR-002625</p>	<p>Fire detection Zone plans</p>	<p>The issue</p> <p>During the production of and approval for the FAS/SCS interface SAT, an issue was raised regarding the production of a general alarm and specific alarm signal that were indicated on the C&amp;E matrix. The approved DES OPS for the Kernow system indicated that a single input would be provided for the activation of the stairs pressurisation fans on or off (general alarm) but there was no provision for the receipt of a simultaneous second signal to enable the Air Release fans and Start up the stair pressurisation fans if a detector in the Air Release Zone was activated (specific alarm).</p> <p>It is understood through the workshops that this issue has also been identified at several other stations and CRL/CEG would like to adopt a consistent approach at all stations.</p> <p>Thus, the issue was that the mechanical control system could not interpret the signals in a consistent way.</p> <p>This was overcome by the introduction of an additional zone reference into the config for the specific alarm input but no change was made to the fire alarm zoning drawings. Thus, whereas the fire alarm detection and SCS systems have been tested and are working correctly to the C&amp;E matrix, the zone charts and software zone references in the FAS config do not indicate separate zones which is a breach of BS 5839 and prevents the end user and/or fire brigade from identifying which zone the fire is located in when viewing the FAP and/or zone charts in the SOR.</p> <p>Remedial works proposed</p> <p>Following a number of workshops between CRL/CEG/T1/T2, the options below have been identified as possible solutions to overcome the non-compliance to BS5839:</p> <ol style="list-style-type: none"> <li>1. Apply delay timer to the General Alarm to ensure that any specific alarm is received first by the SCS system and latched</li> <li>2. Create duplicate zones aligned with current zones such allowing Zone charts to pinpoint location of incident</li> <li>3. Create logic through hardware/software to combine multiple signals to a single signal (not preferred as this would have a single point of failure)</li> <li>4. Change the SCS general alarm priority to lower than a specific alarm</li> </ol> <p>CRL/CEG to advise the option that the T1 contractor is to progress to ensure that there is line wide consistency in the solution for the wider project.</p> <p>NB: the revisions to the zone charts and config will be included in section 7 of the fire detection and alarm AC</p>	<p>Closed</p>
<p>42 C502-PWK-03709</p>	<p>ADT Layout and schematic drawings</p>	<p>Drawings are code 2 in eB with comment sheet that suggests minor CAD defects on the drawings . These defects are outlined in the comment sheets for each drawing in eB .</p>	<p>Closed</p>

43	C502-PWK-03710	LU comments on PAVA drawings - VAP 2 comments	<p>LU have carried out a 2nd and final VAP on PAVA drawings and identified the following issues to be corrected:</p> <p>PAVA Layout Drawing, Moorgate Shaft, Ground Level 0 (+113.700), Sheet 2 of 2 (C660-SMN-R3-DDA-C101_1-40004 rev X03) - Speaker and Aerial not relocated (as per previous comments).</p> <p>PAVA Layout Drawing, Moorgate Shaft, Level -1 (+107.750), Sheet 2 of 2 (C660-SMN-R3-DDA-C101_2-40004 rev X02) - Speakers not relocated (as per previous comments).</p> <p>PAVA Layout Drawing, Blomfield Box, Level -3 (+95.580) (C660-SMN-R3-DDA-C101_4-40001 rev X03) - One speaker not relocated (as per previous comments).</p> <p>PAVA Layout Drawing, Moorgate Shaft, Level -4 (+88.305) (C660-SMN-R3-DDA-C101_5-40003 rev P03) - Speakers not relocated and not latest Architects drawing (as per previous comments). Drawing is also Code 2.</p> <p>PAVA Layout Drawing, Platform Level -6, Sheet 2 of 3 (C660-SMN-R3-DDA-C101_7-40005 rev X09) - Antennas Z14/ANT001&amp; Z15/ANT001 not relocated (as per previous comments).</p> <p>PAVA Layout Drawing, Moorgate Shaft, Level +1 (+118.010) (C660-SMN-R3-DDA-C101_A-40002 rev P04) - One speaker not relocated (as per previous comments). Drawing is also Code 2.</p> <p>Note that the architectural layouts will be amended during the as-built stage.</p>	Closed
44	C502-PWK-03716	Lift 2 AC Outstanding Assurance Paperwork		Closed
45	C502-PWK-03719	Human Factors Review of Overclad doors station wide	With the door in the closed position the surface of the door over cladding matches the wall cladding system, the increase depth cladding creating a larger zone for potential finger trap.	Closed
46	C502-PWK-03734	fittings - Door W-02-633-D01	The fixings of the maglock for this door are loose and when the door is unlatched, the door opens at a small angle towards the bottom, although still held closed by the maglock at the top.	Closed
47	C502-PWK-03737	Moorgate Shaft Street Level - Stainless Steel Cladding Panel Tether	have reviewed the stainless steel panel above the fire hydrant inlets in Moorgate shaft street level and have confirmed it requires a tether installing to comply with blast requirements	Closed
48	C502-PWK-03738	Door and maglock operation W-01-072-D01(LIFT 4 MTH)	The maglock to the left (west) door leaf does no work and the door cannot be held open. Also the same leaf is closing too fast and the speed should be adjusted.	Closed
49	C502-NCR-002628	AP2 Sump Pump (SWP 417 & 418)	The seepage water pump control panels have an F2 fire compliance on the MCR submission (CRL-MCR-006013). As such they are limited to a fire compartment no greater than 200m3, the AP2 sump panel for pumps 417 and 418 are in a compartment larger than 200m3 and therefore doesn't comply with this condition.	Closed

50	C502-PWK-03740	Cyber Security remaining actions - passwords and backups	<p>1. Actions on spreadsheet –</p> <ul style="list-style-type: none"> <li>• Chilled Water Pumps ( )</li> <li>o Set password protection.</li> <li>o Provide back up.</li> <li>• ( ) - Aspirating Smoke Detectors (A ( ))</li> <li>o Change default password to a more secure password.</li> <li>• Fire Detection and Alarm Panel ( )</li> <li>o Change default password to a more secure password.</li> <li>• Fire Panel ( ) (Mist Interface)</li> <li>o Change default password to a more secure password.</li> <li>• Side Steam Filter ( )</li> <li>o Change default password to a more secure password</li> </ul>	Closed
51	C502-PWK-03741	Cyber Security - Port blocking evidence	Port blocking evidence - will be closed using the hardening evidence document previously created by ( ); to be submitted to eB.	Closed
52	C502-PWK-03746	Lift 4 Lobby Door end to end test	End to End test for Lift 4 Door - line item on C&E to be completed. Lift 4 and device installed by LU, test is required to complete line item on C&E. LU to attend on the 20th June 2021 to complete the test with LOR.	Part of BIU

Learning Legacy Document

## Appendix 2. Items declared as ‘No Impact’

No-Impact Ref	EOWL Ref (if applicable)	Title	Description	Notes
1	C502-NCR-001919	GFRC - Acoustic Panel Boroscope Position	Boroscope holes have been installed to various panels site wide in the wrong location.	
2	C502-NCR-002102	Kerb Installation - Damage to Installed Units	Damage has been sustained to some of the kerb units installed	Closed
3	C502-NCR-002103	GFRC Cladding - Minor Repairs/Making Good	Minor damage to the GFRC cladding panels site wide requires repairing/making good	Closed
4	C502-NCR-002186	Moorgate Ticket Hall - F2b Luminaire Alignment with Cladding Panels	Regarding the F2b luminaires within Moorgate Ticket Hall it has been raised as a non conformance that the joints between the fittings do not line up with the joints of the cladding panels.	
5	C502-NCR-002209	Movement joint within Terrazzo Flooring	Visual inspection to terrazzo flooring carried out after removal of floor protection in AP7 concourse, it was noticed that the veymac rubber infill has de-bonded from the metal support in the MJ	
6	C502-NCR-002289	ESC - Tunnel Decking out of tolerance	Further to a 3D scan produced by C502 for interrogation of escalator barrels 2 and 3, LOR have identified external decking lines are not linear and straight. This out-of-tolerance installation is producing issues with cabinet installation and subsequent design rationale advertising screen install.	
7	C502-NCR-002294	MShaft - Cracking in screed to Street level - 1 corridor and rooms	surface cracking has appeared to the screen in various areas on level Street -1. Generally in corridors	
8	C502-NCR-002338	Site Wide - Wood & Wood Signage - All Different Types of Signage - Installation proceeded without approved Benchmarks	<p>Installation of W&amp;W Signage proceeded without approved Benchmarks for scopes such as:</p> <ul style="list-style-type: none"> <li>- Totems Signs</li> <li>- Suspended Signs</li> <li>- Fascia Signs &amp; Poster Cases</li> <li>- Curved Glass and General Wall Signs</li> <li>- Projecting Signs</li> </ul> <p>On a Weekly CRL Site Inspection the comment below was raised for the Curved Wall Signs on the Platforms (CRL-OBS-28077):</p> <ul style="list-style-type: none"> <li>- Alignment between top and bottom signage units is not acceptable. The step in alignment far exceeds the 2mm tolerance allowance. This issue has been observed on several platform signs.</li> </ul> <p>C502-NCR-002245 was raised previously (CRL-OBS-27230) however not progressed to the next stage.</p>	Closed
9	C502-NCR-002343	BBX - Back Entrance - Security Fence and Ladder - Wrong Installation	C502 have been instructed with C502-PMI-00535 Blomfield Box Proposed Revision to N.E. Core in May 2015. C502 failed to comply to the PMI instructions: Item 1.b. - The twin decks to be enclosed to the north and east by a metal fencing not less than 1800mm above deck level, to prevent objects being accidentally dropped to the MCL railway below. As it stands, the fence on the East Elevation is 2.4m and on the North Elevation is	



No-Impact Ref	EOWL Ref (if applicable)	Title	Description	Notes
			4.0m. Both from slab level. This was identified on a LUL VAP Report on 26/04/2018 - LUL VAP Report 518, item 20.	
10	C502-NCR-002390	P&T - NLL - Lean Bars - Broken Infill Strips	GFRC infill strips damaged	
11	C502-NCR-002412	BTH - Bedlam Memorial - Interface Works [REDACTED] / [REDACTED]	Bedlam Memorial [REDACTED] (Package 25a) was offered to CRL inspection on Tuesday 3rd September 2019. The following issues were identified as missing scope / incomplete works / damage are due to be completed by [REDACTED]. - Floor mastic: not installed between the floor plates and adjacent finishes. - Flooring / baseplate: damage flooring adjacent to baseplate forming part of floor - interface issues to be resolved. - BTH paid side: flooring missing. - BTH paid side: flooring and baseplate are at different levels - confirmation required that both scopes are within tolerances.	
12	C502-NCR-002440	P&T - Eastbound and Westbound Platforms - PES/Terrazzo Flooring Interface - Localized Gaps	Location description: PES/Flooring interface Eastbound and Westbound Platforms. Localized gaps between the manufactured floor joints and the frame / threshold to the PES. To note: this is an interface between LOR and CRL contractor.	
13	C502-NCR-002450	Movement Joint within Terrazzo Flooring in BTH	Visual inspection carried out by [REDACTED] and CRL to terrazzo flooring after removal of floor protection in BTH identified that the veymac rubber infill had de-bonded from the metal support frame. This is the same situation that has occurred in the platforms and tunnels.	
14	C502-NCR-002451	[REDACTED] Portland Stone panel damaged in MTH - 4A - GL.7	Damaged occurred to 1no Portland stone panel in MTH along GL7 - South Elevation. The bottom panel, installed by [REDACTED], has been damaged.	
15	C502-NCR-002456	BTH - Glass Canopy - S/S Joints	Further to CRL observation, it has been raised that the joints to the internal south collapsible enclosure are non-consistent. It is apparent that the Tier 2 contractor has not issued drawings for this to review. Historically this area was a door arrangement, however under PMI-1448 this was changed to a collapsible gate. The Tier 2 did not update the drawings to reflect the required enclosure.  However, CRL approved drawings C502-LAO-A-DDD-C101 Z-47643 shows the panel and joint arrangement. Furthermore drawing C502-LAO-A-DDD-C101 Z-47642 Detail 02 reflects this. This panel arrangement is as per installed on site. See attached drawing.	
16	C502-NCR-002459	Terrazzo Flooring / Tile Shading / Moorgate Ticket Hall	During site inspection of the Terrazzo floor tiles in Moorgate Ticket Hall with [REDACTED], CRL [REDACTED] and [REDACTED] it was noted that the area to the north side of the Ticket Hall had different shading to the floor tiles. Note; Attached Observation report carried out by CRL architects high lights the issue and also contains photographs of the effected area / tiles.	

No-Impact Ref	EOWL Ref (if applicable)	Title	Description	Notes
17	C502-NCR-002469	Damaged comm's assets site wide.	This NCR has been raised to highlight the fact that there are various comm's assets site wide that are damaged and will require repair or replacement. We intend to do a full site survey of these assets at the end of January 2020 and either instruct contractors to repair damage or request replacement assets from [REDACTED]	
18	C502-NCR-002481	MSH - Level 0 - Moorgate Elevation - Sunray Louvres	This NCR is an extract from C502-NCR-002360. The items below only refer to [REDACTED] Package.  Photo 14 & 15: Moorgate – [REDACTED] Louvres – Header detail The trim at the top of the louver appears to have been added in because the louvres have both been made to correct opening height of the opening in the concrete structure.  Photo 16: Moorgate – [REDACTED] Louvres – Bottom detail Bottom flashing detail does not appear on C502 drawing C502-LAO-A-DDD-C101-Z-24101. C502 to confirm if the bottom flashing has been approved as a design by Crossrail and has it been co-ordinated with the urban realm finishes and finishes levels to provide the required level of waterproofing to the building envelope.  Photo 18: Moorgate – [REDACTED] Louvres – Sealant and Staining a) Louvre frame is stained and grimy and the paint finish to the louver has been damaged b) Hole in concrete: is the C502 proposal to fill this hole or to leave it as is?  Photo 20: Moorgate – [REDACTED] Louvres – Door hardware Door to UKPN transformer secured by padlock. C502 to confirm if this is compliant with the security requirements.  Additional item: Skirting trim and floor interface – a gap between the two results in an area of waterproofing being exposed and susceptible to damage – propose detail to address issue.	
19	C502-NCR-002491	MTH – DMC Tiling – Unpaid Side – 13. Movement joint stops before hatch – Occurred on 2 occasions - Reoccurs along the gate line	Movement joint severs no functionality within hatch cover purpose. Floor tiling has been installed as per C502 drawing. No objection from [REDACTED] on as built installation	
20	C502-NCR-002522	Lift 7 Ladder :: Clear Depth Impeded by Light Fittings	The ladder installed to the Lift 7 lift shaft requires a clear depth of 600mm from the face of the ladder rungs, on the user side of the ladder.  This has not been achieved due to installation of light fittings within the shaft. Please refer to LBS Ladder drawing mark-up, photo, extract from BS-4211.	Closed
21	C502-NCR-002526	BTH - Damage to stone cladding of Steele glass canopy	Damage to stone noted on C502-NCR-002222, along with other, non-physical	

No-Impact Ref	EOWL Ref (if applicable)	Title	Description	Notes
			issues. This is a separate NCR to deal with the damage issue only.	
22	C502-PWK-00039	MTH - Cleaning of the Precast Concrete	General cleaning of the precast concrete in the MTH including columns, beamlets and precast soffits to meet CRL architectural approval.	
23	C502-PWK-00524	MG-IRF-IP-059, Moorgate Shaft, Street Level -1, CMS	CMS Tray to be installed once the structural support is taken away (T17391.1126)	
24	C502-PWK-02159	IRN 6345 MG-IRF-CAL-IP-030 DB 2-664/dbu/p01	IRN 6345 MG-IRF-CAL-IP-030 DB 2-664/dbu/p01 .. way finding signs to be fitted .	
25	C502-PWK-02218	MGS-IRF-LU-001 Moorgate Station LU Demise Inspection of Refrigeration installation.	MGS-IRF-LU-001 Moorgate Station - LU Demise Confirmation of acceptable routing used for the LV cable tray to be confirmed (passes under beam and joins / utilises an existing station tray for route within station platform area and over track crossing ) approved space allocation to be included in the IRF / IRN Pack.(DK). T17391.2312	
26	C502-PWK-02226	MGS-IRF-CAL-IP-027 CAL inspection of DB 2-701/DBU/P01 in Moorgate Shaft Northern Line Link AP6	IRN 5045 MGS-IRF-CAL-IP-027 DB7-201/DBU/P01 Demonstrate access and maintenance to FCU behind Help point down the Northern line link T1.14119114	
27	C502-PWK-02490	Broadgate Back of House Ceiling (CLG-206)	1. Edge trim detail around protruding services in ceiling detail to be agreed, designed, fabricated and installed 2. General clean of ceiling 3. Any exposed fibres to be removed 4. Demonstration to LU of back of tile showing all insulation taped.	
28	C502-PWK-02610	Back of House Floor Paint - PT-164		
29	C502-PWK-02696	GEN - Architectural - final inspection of all interfaces and under permanent lighting	Architectural packages to undergo final inspection by CRL Architect once all interfacing works completed and permanent lighting available.	Closed
30	C502-PWK-02697	CLG-212 - Stainless Beamlets Benchmark/Final inspection	CRL-OBS-28133 – CLG-212 Stainless steel ceilings ( ) Inspection notes – Friday 14th June 2019. Attendance - Broadgate Ticket Hall – Level -1 – Beamlet - Stainless steel perforate ceiling panels – CLG – 212. (Inspection of Ceilings only – lighting and equipment omitted from inspection – equipment not fully installed and lighting to be replaced). Refer to plan drawing for location of Benchmark. (GL 11), site notes and photographs. confirmed that and (CRL have already inspected ceilings and comments associated with setting out and panel lengths have been addressed (Observations to be added to Certification Packs). A. Benchmark (specific) Generally – panel as per WI – setting out good. Cut outs for services – some sharp edges - @add note to O&M gloves to be worn. Backing - Same tape used and fibres concealed – requested LUCT comment – open with CRL.@	

No-Impact Ref	EOWL Ref (if applicable)	Title	Description	Notes
			<p>B. Inspection of ceiling as installed (Punchworks).</p> <p>1. [redacted] queried installation of CCTV and lights above the signage (to be installed) on GL 11.</p> <p>Confirmation from C660 that light/CCTV and reflection on top of signage will not impact on performance.</p> <p>[redacted] confirmed that ceiling panel can be dropped for access and maintenance without the need to remove the sign.</p> <p>2. GL B – Line of ceiling closest to GL A – width of gaps is large – to review once final items of equipment have been installed.</p> <p>3. GL 8 between GLs B + C – Ceiling missing – requires re-inspection once complete.</p> <p>4. GL B – Line of ceiling closest to GLC – WAP to be installed – location and fixing detail to be agreed – (see C below).</p> <p>5. GL B – Central line of ceiling – WAP to be installed - (see C below).</p> <p>6. GL B – Central line of ceiling – Gap wide – to be reviewed once WAP (Item 5) has been installed.</p> <p>(7) Final clean as per benchmark to be carried out prior to final “CRL” acceptance to be reviewed and agreed with [redacted] and [redacted] - @ - to be confirmed if this can be added as Punchworks?</p> <p>C. Sample for amendment to ceiling panel to accept WIFI unit – accepted with the following comments :</p> <ul style="list-style-type: none"> <li>• Solid circle on s/s panel</li> <li>• WAP face fixed</li> <li>• Cut out in acoustic lining to be taped.</li> </ul>	
31	C502-PWK-02889	BBX - BOH Floor Paint - Final inspection	Final inspection	Closed
32	C502-PWK-02969	Moorgate Outstanding BOH paint works - Cousins	<p>*Wall paint - Platform Level - Tep Room</p> <p>*Street Level - Floor Paint ESSI Landing</p> <p>*Street Level - 1, Floor Paint CIR-PL Corridor</p> <p>*Street Level - 1, Wall paint - Pray room (GL3 W)</p>	
33	C502-PWK-02972	Door snags in BTH Plant room level	<p>Door E-02-411-D01 door stop to be fitted onto wall. (Teckentrup)</p> <p>Door E-03-731-D01 kick plates (Both sides) to be fitted to door. (Booth)</p>	
34	C502-PWK-02976	BTH - Recessed spotlight alignment	Recessed spot light Luminaires installed at gate line and perimeter locations in BTH ticket hall level have not been installed central and with a uniform gap within the panel surrounds and require re-alignment.	
35	C502-PWK-02977	MTH - Recessed spotlight alignment	Recessed spot light Luminaires installed at gate line location in MTH ticket hall level have not been installed central and with a uniform gap within the panel surrounds and require re-alignment.	
36	C502-PWK-03003	PWK FFO PAD - Final inspection of paintwork for BBX & MSH, ESS1 & ESS2	The handrails will be inspected for damage to paintwork that has occurred since being installed. Inspection date will be in line with SC1 extent of remedial to be agreed with CRL before works carried out	
37	C502-PWK-03039	Teckentrup Fixing Calculations	As part of the SCC submittal, [redacted] have been requested to supply calcula-	Closed

No-Impact Ref	EOWL Ref (if applicable)	Title	Description	Notes
			tions on the fixings and also confirm the type and sizes used to fit doors in block-work and concrete.	
38	C502-PWK-03049	BTH Door Snag	Due to access issues into area with door E-03-155-D01 (Permit required) internal mastic not completed at time of install and will be finished when access is arranged through the permit process.	Closed
39	C502-PWK-03146	Facades - BBX Cladding Street Level Broad Street Avenue	<p>Following final inspection CRL Architect have raised snags/comments for this package as follow:</p> <ol style="list-style-type: none"> <li>1. Small section of waterproofing to be covered/protected (Comment A on the attached mark up DWG)</li> <li>2. Overspray on the bottom panel to be make good. (Comment B on the attached mark up DWG)</li> <li>3. Minor damages/scuffs, mark up on the attached with xxx, to be make good.</li> <li>4. Top panel dirty, to be clean.</li> </ol> <p>Attached mark up DWG C502-LAO-A-DWG-C101 WS103-50161.</p>	
40	C502-PWK-03153	Kaicer- 42A - PAEE's Platform Only	<p>Ref: C502-NCR-022362 Scope - LM01A to LM01J inclusively Following on from final Inspection and review by CRL architect and C100</p> <ol style="list-style-type: none"> <li>1. Gasket between GFRC and stainless steel half moon to be installed</li> <li>2. LM01A - Half moon LHS to be replaced. Top left hand doors misaligned in plan.</li> <li>3. LM01B - Half moon LHS to be replaced</li> <li>4. LM01F - Dent in the door</li> <li>5. LM01K - PHP Glass surround door rattle.</li> </ol> <p>Specific to LM01A/B/C/F and H only (NCR -2362)</p> <ol style="list-style-type: none"> <li>1. Sometimes there is gap between top s/s infill strip and GFRC - PWK action - Gasket or alternative to be installed to close gap.</li> <li>2. Remedial infill strips are notched around hinge fixings- this is to be covered by gasket - PWK action - provide benchmark gasket to demonstrate that the bolts can be concealed in final installation.</li> </ol> <p>NOTE LM01C - C660 equipment - screen adjustment in door opening LM01H - C660 equipment - screen adjustment in door opening</p>	
41	C502-PWK-03171	Floor Tiling (Water, Oil, Rust) Stains	<p>AP9 (Along passage) Dark Tile needs replacing AP7 (By AP7 / CP8 Intersection) Rust Stain to Tile. CP8 (along Passage) Rust Stain to Tile. AP2 (By AP12 intersection) Rust Stain to Tile AP7 (along Passage) Dark Oil Stain to Tile AP5 (By AP5 Door) Dark Oil Stain to Tile AP2 (By curve) Dark Oil Stain to Tile</p>	

No-Impact Ref	EOWL Ref (if applicable)	Title	Description	Notes
			AP7 (Cross Section)) Dark Oil Stain to Tile CP6/7 (AP7 Intersection) Water staining to various tiles. Scuff Marks by Door E-04-201-D01	
42	C502-PWK-03177	BTH Floor Tiling (Rust Stains)	Rust Stains on tiles caused by other works.	
43	C502-PWK-03178	BTH Floor Tiling (Various items)	Various Miscellaneous items as listed; Grey Mastic By last POMS Clean grout from gate line post E-02-001-A35 Tiles to spare POMS machine to be replaced as grout line is shown.	
44	C502-PWK-03183	IWS-715 (solid stainless steel panels). North Elevation_Kaicer_67a	Stainless Steel panels along this elevation needs cleaning, removing of fingerprints and any traces of adhesive. All light scratches, scuffs needs making good. Top panels are not visible for inspection as this are obstructed by the lift position. Please refer to attached marked up elevation, items 1,2 and 3.	
45	C502-PWK-03185	PTW & PTW CRL Final Inspection Observations	GFRC CRL/C100 final inspection observations as indicated on the attached marked up drawings and Field view download.	
46	C502-PWK-03190	GFRC Panels - Re-Application of Anti Graffiti Coating	Re-application of anti graffiti coating to GFRC panels up to the 2.5m datum.	
47	C502-PWK-03191	Eastbound and Westbound Platforms - GFRC/Skirting/PAEE Cabinet Interface	Gaps formed at interface between GFRC Platform Cladding Panels, Granazzo skirting and PAEE (Fire Hydrant Cabinets). To be filled. Refer to photograph.	No impact for T-0 but required for Revenue Service.  LU have conducted a VAP and are happy with No Impact.
48	C502-PWK-03192	Platform Cabinet - Mis-alignment displays (Cabinets LM01c and LMOch	Platform Cabinets of the East and Westbound Platforms have openings for the departure display units. The installation of the departure display units does not sit centrally within the opening provided and the display units are not installed accurately on the X and Y axis. Alignment of screens; centrally and level - in opening display panel opening required to close.	Closed
49	C502-PWK-03204	*Moorgate Shaft - Staff Accommodation Level -1 - Door W-02-236-D01	Door leaf opened against wall - door leaf handing changed to avoid ironmongery/wall clash.	
50	C502-PWK-03243	Broadgate Ticket Hall (BTH) Cladding & Borescope Demonstration to ESC 1*	During site verification inspections it was noted that services have been installed behind cladding adjacent to escalators; previously it had been understood that services would not be installed in these areas due to access requirements and limitations. On site it was noted that services have been installed and therefore the maintainer queries access - location, frequency and method.	
51	C502-PWK-03244	Broadgate Ticket Hall - Level -1 to Intermediate Level - ESC 1 - Wall Cladding - Scaffolding Anchor Points*	During a site verification inspection concerns were raised associated with the scaffolding fixing points and specifically water tightness (see attached photo VAP 455 - Photo 9).	
52	C502-PWK-03245	Moorgate Ticket Hall - Access ladder and Platform - Level -5*	Concerns have been raised during a site verification inspection associated with the safe use of this platform temporary (scaffolding) access for maintenance activities.	LU have conducted a VAP and are happy with No Impact.
53	C502-PWK-	Broadgate Ticket Hall - Escalator	During a site verification inspection; bo-	

No-Impact Ref	EOWL Ref (if applicable)	Title	Description	Notes
	03246	Decline (ESC 1) - Water Management System*	rescope trial, a number of concerns were raised associated with the water management system, access and maintenance and records of first fixings into the structure.	
54	C502-PWK-03247	Broadgate Canopy - Internal Roof Design - Anti-pigeon Measures*	During site verification inspections concerns have been raised associated with pigeon nesting on the structure forming the canopy (VAP 498 - Item 4).	
55	C502-PWK-03248	Broadgate Canopy - Waterproofing	During a site verification inspection concerns were raised related to the extent to the waterproofing installed to the perimeter of the canopy upstand (see description above).	
56	C502-PWK-03261	MTH – DMC Tiling – Unpaid Side – 14. Low grout depth – Occurred on 1 occasion	low grout as per attached	
57	C502-PWK-03262	MTH – DMC Tiling – Unpaid Side – 16. Mat raised – Occurred on 2 occasions	matwell slightly raised	LU have conducted a VAP and are happy with No Impact.
58	C502-PWK-03270	Moorgate Shaft - Louvers - [REDACTED] 30a [REDACTED] - Mechanical/Performance/Blanking Plates	<p>The installation of the blanking plates forming part of the facades is not reflected in the Works Information requirements and the plates as installed do not meet the specification – JL13 – Louvres and associated requirements.</p> <p>C502 Mechanical/Fire and Acoustic Designers to confirm that the current configuration of the Louvers has been fully coordinated and meet the requirements of each system.</p> <p>Action to close PWK: Designers to provide a statement (internal C502 PTR) stating that they have reviewed the current installation and that this meets the Performance Requirements for each system (discipline).</p>	Closed
59	C502-PWK-03275	Blomfield Bronze Facade - [REDACTED] Package 50a	The finish of the Bronze Cladding Panels have been damaged on site with the result being re-patination.	
60	C502-PWK-03276	Blomfield Bronze Facade - [REDACTED] Package 50a	The finish of the Bronze Cladding Panels have been damaged on site with the result being re-patination.	
61	C502-PWK-03283	[REDACTED] Facades BBX Louvres Door E-01-633-D01(Escape Door)	<p>Design issue:</p> <ol style="list-style-type: none"> <li>1.Kick plate missing - to be installed</li> <li>2.Door closure to be installed</li> <li>3.Door stop to be installed</li> <li>4.Earth frame bonding to be confirmed by CHT and installed where required.</li> <li>5.Signage replaced to be read "keep locked" in lieu of "fire door keep shut"</li> </ol> <p>Snags</p> <ol style="list-style-type: none"> <li>1. Frame to be repaired</li> <li>2. Door leaf with paint damage to be repaired</li> <li>3. Rusted threshold to be repaired(make good)</li> </ol>	All door earth bonding is verified
62	C502-PWK-03284	[REDACTED] Facades BBX Louvres Door E-01-795-D01 (Bi-folding doors)	<p>• Design issues:</p> <ul style="list-style-type: none"> <li>o Earth frame bonding to be confirmed by CHT and installed where required.</li> <li>o Signage replaced to read "keep locked" in lieu of "fire door keep shut" in all instances.</li> </ul>	All door earth bonding is verified

No-Impact Ref	EOWL Ref (if applicable)	Title	Description	Notes
			<ul style="list-style-type: none"> <li>• Snags:               <ul style="list-style-type: none"> <li>o Weather bar to be installed. Signs of water ingress.</li> <li>o Left doors don't fully open, hit internal cable tray. This needs to be reviewed and confirmed by CRL acceptance.</li> <li>o Internal handle appears to have been cut short and is flimsy. To be made Robust.</li> <li>o Top door bolts are too high. Levulux to replace with a longer shaft.</li> <li>o Bottom bolts engage only with threshold plate, no holes.</li> <li>o Floor sockets on top of weatherproofing.</li> <li>o Red plastic caps come off easily.</li> <li>o "Spare" rivet hole to be filled.</li> <li>o Considerable floor gap – 30mm.</li> <li>o Frame holes to be filled and painted.</li> </ul> </li> </ul>	
63	C502-PWK-03285	██████████ Facades_BBx Louvres Door E-01-794-D01(Vent Shaft)	<ul style="list-style-type: none"> <li>• Design issues:               <ul style="list-style-type: none"> <li>o Earth frame bonding to be confirmed by CHT and installed where required.</li> <li>o Signage replaced to read "keep locked" in lieu of "fire door keep shut" in all instances.</li> </ul> </li> <li>• Snags:               <ul style="list-style-type: none"> <li>o Door leaf with paint damage to be repaired.</li> <li>o Internal exposed packers appear untidy and should be fixed. Mastic to be added for a smooth finish.</li> <li>o External handle is loose and needs to be repaired.</li> <li>o Threshold with rust to be repaired.</li> </ul> </li> </ul>	All door earth bonding is verified
64	C502-PWK-03286	██████████ Facades_BBx East Elevation Street Level - Louvers	<ol style="list-style-type: none"> <li>1. Gap between louvres and doors at Handle surround to be closed as per attached picture. This is to avoid a key to fall in the gap.</li> <li>2. Complete Install of the base L angle</li> <li>3. Paint damage on cleaned louvres.</li> <li>4. External L flashing to Door E-01-794-D01 to be replaced as per previous snag list.</li> <li>5. External L flashing to Door E-01-633-D01 to be replaced as per previous snag list.</li> </ol>	
65	C502-PWK-03294	██████████ 50A - Blomfield Box - Stone Facade	<p>The finish of the Portland Stone (██████████) has been damaged on site and cleaning is required. Also there is a requirement to establish a benchmark for repair procedure.</p> <p>Following the benchmark approval by CRL architects, the extend of repair needs to be establish and completed by C502.</p> <p>On completion present for inspection.</p>	
66	C502-PWK-03306	Paint / Scratch Damage on door leaves / door frame	Scratches and surface damages to doors and doors frames have been caused by regular usage access and ingress through those doors.	
67	C502-PWK-03310	BBX-External Facade ██████████ Package 50A	1. Waterproofing is intended to be carried out after acceptance of the cladding. The degree of disruption to the cladding, de-mounting and re-installation, is highlight-	



No-Impact Ref	EOWL Ref (if applicable)	Title	Description	Notes
			ed on the sketch attached. 2. Emergency lighting is intended to be carried out after acceptance of the cladding. The degree of disruption to the cladding, de-mounting and re-installation, is highlighted on the sketch attached.	
68	C502-PWK-03313	SAS Ceiling AP6, interface trim IWS-715 and snagging	Refer attached mark up 1. Interface trim with ironman stainless steel to be installed 2. Missing panel to be reinstalled as per mark-up 3. Missing panel to be reinstalled as per mark-up 4. Missing new scope - trim (IWS-715) between [redacted] ceiling/[redacted] sign and GRC to be installed 5. General, works to be completed and small areas of damage (as per mark-up) repaired, cleaned to close PWK *Damage as per this mark	
69	C502-PWK-03314	50A BBX-Blomfield Facade CRL Final Inspection Snag/Comments	Various snags captured in eB	
70	C502-PWK-03337	BTH - Matwell Corner and Screed to be complete adjacent to Cladding (south side)		LU have conducted a VAP and are happy with No Impact.
71	C502-PWK-03340	BTH - Matwell - Local ponding of water	There were some areas of local ponding following a water test on the Matwell	LU have conducted a VAP and are happy with No Impact.
72	C502-PWK-03343	Paint / Scratch Damage on door leaves / door frame for SCC 50110	Scratches and surface damages to doors and doors frames have been caused by regular usage access and ingress through those doors.	
73	C502-PWK-03344	Door furniture missing or damaged at Platform Ends, SCC-50110	Standard items such as door closer covers, Kickplates and similar items which fall under the door furniture, have been identified as missing or damaged. Those missing, have been identified and are on order. Those damaged, will be repaired at the same time. The schedule included in the addendum quality pack for this SCC, includes the list of doors missing Kick plates.	
74	C502-PWK-03362	MSH - Level -1 - Back of House Staff Rooms - flooring	While inspecting to close C502-NCR-002177 on 05/03/2020 it was noticed that the internal flooring of the male locker room was visible from the corridor while the door was closed. The door appears to have varying gaps around the frame resulting in the flooring being visible. C502 to review and propose remedial measures to address issue for CRL approval.	
75	CRL-OBS-19940	QS502-25 Redundant Drill Holes in CER 3	Redundant drill holes for cabinet fixings have been left within the concrete plinth of cabinet LIS-02-CAB-3731U1.  As quoted in C660-SMN-R3-GPD-CR001-50028 Installation Procedures and Guidance: Hardware: "Re-drill for any reason: If the hole is to be aborted and an alternate drilled the aborted hole should be blown out and completely filled with non-shrink grout."  To comply with the Procedures and Guidance the redundant drill holes must be removed, otherwise an NCR will be	

No-Impact Ref	EOWL Ref (if applicable)	Title	Description	Notes
			raised.	
76	CRL-OBS-19941	QS502-25 Floor Mounted Cabinet Fixings	<p>During the site visit to CER 3 it was noted that the floor mounted cabinets had been fixed with two types of fixings; threaded rod with nut and washer compared with bolt and washer.</p> <p>It is not known if both are mechanical type fixings or the threaded rod is part of a resin system.</p> <p>The Contractor is to confirm the fixing types, and that both comply with the C660 Guidance requirements in terms of performance over the life cycle of the cabinets.</p> <p>If it is confirmed that resin anchors have been used, an NCR will be raised on the back of this OBS as this contravenes the C660 guidance requirements concerning installation.</p>	
77	CRL-OBS-29896	Platform and Tunnels - GFRC Concourse Corners - FI	Site inspection carried out for the GFRC Corners to the Platform Concourse. Refer to attached marked-up sketches and photographs for comments.	Closed
78	CRL-OBS-30458	LIS - C502 & C660 Labelling	Please refer to the attached VAR (LUCT-C101-ENG-VAR-00014) for details of labelling issues found during a verification activity undertaken within the LIS element CERs on 30/01/20. Please could CRL confirm by response to this OBS once these issues have been addressed?	Downgraded to 'No Impact' as all statutory labels are complete and remaining items do not impact Ops or Maintenance
79	C502-PWK-03378	AP1 - Flooring Interface Escape Doors	<p>At an inspection on 17/03/2020, it was noticed that when the double escape door are closed, the BoH flooring is visible from the FoH concourse area.</p> <p>This is due to the FoH tiling ending on the interface between the door architrave and the door frame. As the doors open into the BoH area (away from FoH), the full width of the door frame is visible from the FoH area.</p> <p>It is our view that the tiling should have been extended at least to the edge of the door frame and door, so the joint is concealed by the doors when closed.</p> <p>C502 to review this issue and propose remedial solution.</p>	
80	C502-PWK-03379	11A- CRL Final Inspection Snag Comments	Please refer to attached mark up DWG showing notes from final inspection.	
81	C502-PWK-03383	MTH - PRM Corridor - Review of movement joint at door opening	Review of design/requirement for return on control joint around skirting	
82	C502-PWK-03391	C100/CRL Signage Graphics Audit	Final review of signage graphics based on C100/CRL audit	
83	C502-PWK-03403	Doors paint damage at P & T (SCC 50138)		
84	C502-NCR-002530	Totem Signs - Louvred Shroud	The louvre shroud on totems with small projecting signs, antenna and CCTV cameras are not as per the works information or the approved prototype details. The shrouds should be complete above and below the projecting equipment bracket and there should be a blanking plate behind the louvre fins.	
85	C502-NCR-002551	BTH - North Canopy Wall Waterproofing (Further to VAP492 &	Further to VAP 492 Item 19 and PWK 3248, the contractor is unable to raise the	

No-Impact Ref	EOWL Ref (if applicable)	Title	Description	Notes
		PWK3248)	level of the waterproofing to the required 225mm above FFL due to clashes with containment of the uplighters within the BTH canopy. The contractor has been able to raise the level of the preprufe of the waterproofing to approximately 100mm above FFL.	
86	C502-NCR-002566	██████ - SOR glazing	Some glazing units have some powder / dust inside. This is very unsightly as facing the public at eye level. Please refer to attached photos for clarity.	
87	C502-NCR-002561	Omission of easy clean-dust free sockets from Door thresholds	On Various locations around the station where a shoot-bolt forms part of the installed Ironmongery, an easy clean floor socket has not been fitted as identified on the door schedule. This applies to both suppliers of this project. However, the majority of Teckentrup doors are only securely fixed (bolted) to the top frame so no hole has been formed on the floor. On many locations, although the door schedule does not call for an easy clean socket, there are holes in the threshold as the installed Ironmongery consists of floor restrained bottom shoot-bolts on either the passive or active leaf of the door.	
88	C502-PWK-03426	Doors' paint damage at BBx (SCC 50182)	In addition to PWK-3423, the following items have been identified for the doors included in SCC-50182. These works are currently being carried out as part of Niche working.  Field View reference / Door reference / Snag Description T17395.3118 / E-09-784-D01 / paint damage T102843.352 / E-02-761-D01 / dent in door T102843.75 / E-D-792-D02 / paint damage on door T102843.34 / E-02-631-D04 / paint damage to frame T102843.29 / E-02-631-D01 / paint damage T102843.18 / E-01-236-D01 / paint damage T102843.15 / E-07-793-D01 / paint damage	
89	C502-PWK-03428	Omission of easy clean-dust free sockets from Door thresholds	The supplier has confirmed that omission of sockets does not negatively impact on the performance of the doors including for fire certification. A 20% check is to be carried out on the current depth within the existing hole in the threshold/substrate. Omission of easy-clean sockets in thresholds of 6mm and above have been previously accepted through FCDs 002978 and 002948 in relation to previously submitted packages containing similar doors. The check will focus particularly on the smaller 3mm plates but will include a sample of all types. The holes should be to the length of the dropped bolt +20mm in order to consider the omission of drop bolts	

No-Impact Ref	EOWL Ref (if applicable)	Title	Description	Notes
90	CRL-OBS-32518	Liverpool Street station - Platform and Tunnels - Totem Installation - C660 Equipment Initial Inspection	<p>CRL were invited to carry out an initial inspection of the Totems located along the central concourse at Platform Level. Comments associated with the inspection are attached in a spread sheet along with corresponding photographs.</p> <p>The Totem installation includes a number of interfacing elements including C660 Systems; PAVA/CCTV/Antenna/PHPs/Antennae and WIFI -this observation covers the installation of these systems and the impact on architectural finishes. Areas on spread sheet in grey are specific to C660.</p>	
91	CRL-OBS-33604	Moorgate Ticket Hall - Public/BoH Door Interfaces	<p>During a site inspection of Overclad Doors to Public Areas, queries raised in relation to the installation of a single step.</p> <p>A. Room 4/834 – Overclad door to riser in Escalator Decline. The threshold between Escalator Decline and AP9 - Door threshold to Riser – a single step is in place between the ladder and the door – not on the threshold of the door and this is not identified as a hazard. Refer to Approved Document Part B , Clause 6.1.5 – “All doors on escape routes should be hung to open not less than 90 degrees, and with a swing that is clear of any change of floor level, other than a threshold or single step on the line of the doorway (see paragraph 6.21) and does not reduce the effective width of any escape route”.</p> <ul style="list-style-type: none"> <li>• With reference to the door, an area of floor outside of the door is outstanding, levels and flatness to be assessed.</li> <li>• The interface of the Stainless Steel cladding and interfacing GFRC leaves gaps due to the geometry of the installation – what remedial actions are proposed for this area.</li> </ul> <p>B. Room 2/101 – Leer Room – (refer to photographs 1 &amp; 2) – a single step is in place but away from the door. C502 designer/fire engineers to confirm that this has been risk assessed and deemed to be safe. This Observation includes some but not all doors that are within restricted areas where the installation of services are installed within the door swing of the area reducing the minimum clear width requirement. C502 Designers and Fire Engineers to provide evidence that these do not present a risk to users.</p> <p>C. Room 2/515 – Staff Corridor – the floor leading to the door (back of house – photos 3, 4 and 5) us ramped. Assess the ramp gradient and the installation of the services adjacent to the door and confirm that there is adequate width for the use of the door? The handrail for the stair lead-</p>	

No-Impact Ref	EOWL Ref (if applicable)	Title	Description	Notes
			<p>ing to this door does not seem to project beyond the top of the ramp by 300 mm. C502 to confirm that this is compliant; stair used by staff on a daily basis and should meet AD Part K of building regulations – 300 mm overrun of handrail to top and bottom of stairs.</p> <p>D. Refer to the attached photo 6 – a single stair has been installed in front of the door leading to the escape route. Although classified as a Plant Room – the area once held a ramp for the removal of plant for this area. C502 to confirm the strategy for the removal of the plant from the room and that they are satisfied that this does not represent a trip hazard for people escaping.</p>	
92	C502-NCR-002176	MTH - Ground Floor Level - Water/weather Proofing	<p>CRL-OBS-26107 - Jo Blackburne</p> <p>During a Quality Surveillance site walk we observed the installation of the glazed rain screen cladding for the Moorgate Ticket Hall. The façade design is made up of number of components or systems each with a differing performance requirement: EWS-115, EWS-220 and EWS -910.</p> <p>The water proofing behind the cladding has not been installed using a single water proofing system – sheet membrane and liquid applied systems have both been installed. In some areas there is no evidence of waterproofing being in place (around Bostwick Gate floor/jamb and head details) and how this has been coordinated with adjacent finishes/types of façade (Tag sheet references noted above).</p> <p>If water does penetrate the façade in some areas this will require an outlet again, this is not evident in what has been installed on site.</p> <p>Fire separation is also to be provided between the station and OSD/Adjacent Buildings. There is no evidence that this has been considered based on what can be seen on site.</p>	
93	C502-NCR-002576	MTH - CoL Sign adhesive	<p>Further to installation on September 2019, it has been found that inspection by 07/07/2020 CRL architecture representative that the adhesive is not suitable. It has been agreed with City of London deem the installation acceptable.</p> <p>C502 raise this NCR to allow for the ADM mechanism. It has been agreed that CRL are to transfer the installation</p>	
94	C502-PWK-03440	AP8- Interface items not coordinated		
95	C502-PWK-03453	00a-BTH Overclad Doors Omission of easy clean-dust free sockets from Door thresholds		
96	C502-PWK-03454	00a BTH & BBX OSD Final Inspection Snags/Comments		Closed

No-Impact Ref	EOWL Ref (if applicable)	Title	Description	Notes
97	C502-PWK-03486	Poster Cases - Missing Gaskets and Clips	Gaskets and poster clips to be installed to poster cases in accordance with proto-type drawing pack C964-WWI-A-DWG-CRG03-50126 issued via PMI C502-PMI-01452.	
98	C502-PWK-03491	BTH - External totem snags	<p>Further to inspection on 11/08/2020 by [REDACTED] (CRL) and [REDACTED] the following notes were made:            Inspection Notes (Benchmark) and In-spection:</p> <p>West: -Blue painted strip to side of totem loose – tighten.            South: -Roundel – acrylic as installed is bowed – this needs to be adjusted to be vertical and flat.            -Top edge of bottom blue panel seems damaged – review and assess installation of gasket.            -Bottom blue panel has minor scratches.            -Shot peened skirting stained            East: -Minor scratches on blue middle panel.            North: -Drip on roundel.            -Bottom blue panel minor scratches.            -Skirting stained.</p> <p>Baseplate to be templated and re-installed – not reviewed.</p> <p>Note 1: Graphic and glass installation to be reviewed by TfL/CoL – to be confirmed.            Note 2: Lighting not installed/commissioned – CRL MEP to inspect – CRL Architects to attend. (item covered by C502-PWK-03373 Electrical supply for Totem LU Sign BGTH)</p>	
99	C660-PWK-00933	LIS-CDN-IAC RSP50157 FOR6356	<p>Baselining Tests will require to be re-run once the following have been completed on all devices (where applicable):-            VLAN updates            CDN Prime Logging Updates            Access List Updates            Cisco IOS and Ruggedcom Firmware Updates            Estimated Time to Resolve FOR to progress testing: 2 Months            Estimated resource to resolve FOR: Site Engineers to monitor firmware updates, RCC Support to carry out all other tasks            Estimated time to complete outstanding activities: 6 days            Estimated resource to complete outstanding activities: 1 Site Team, RCC Engineer</p>	Closed
100	CRL-OBS-33877	CEG MEP VAP - LIS - 122	<p>Primary CMS needs to be labelled</p> <p>Mitigation:            Labels WHITE on RED as per the standard/specification</p>	Closed
101	CRL-OBS-34369	All LU Stations - Totem Emergency Lighting issues	This observation is raised to provide formal notification of issues in need of resolution, relating to the emergency lighting arrangements integral to the totems in-	Downgraded to 'No Impact' as a risk assessment of the failures has been com-

No-Impact Ref	EOWL Ref (if applicable)	Title	Description	Notes
			<p>stalled within the CRL station elements.</p> <p>1. Numerous faults were raised in the course of the installation of this emergency lighting, which were referred to the manufacturer. Subsequent investigations having been undertaken, it seems that some of these were genuine faults with the equipment, while others were due to incorrect installations undertaken by the contractors' specialist engineers. In both cases, LU requires confidence that the assets are both sufficiently reliable in themselves, and sufficiently usable in terms of installation and replacement, that LU's maintainers will be able properly to maintain the totems as fully-functioning assets following SC3 ROGS / Handover.</p> <p>Background and additional detail relating to the above issue:</p> <p>In September 2019, TCR reported to LUCT that they had 2 x Totem emergency lighting failures and requested direct to LUCT ADM for the 2 x spare fittings that LU AO had been issued as part of their spares pack. LUCT's Senior Engineer - Building Services (E&amp;M) (henceforth 'LUCT's Discipline Engineer') was informed by the LUCT ADM, and asked CRL CEG for their comments on this. The initial response from Future Lighting (the lighting supplier) via CRL stated: "With regards to failures, to date the component failure rate across all Crossrail sites are low and as such not considered high enough to carry out a detailed analysis at the moment. We only had to remove 2 No drivers and 4 No LED boards from Farringdon site and these were returned as a precaution to Tridonic for testing and they confirmed that all components were in working order (report issued to Farringdon 14/2/2019). All other issues related to either a damaged leads, connectors not fully engaged and a cable that had worked loose from a terminal. With regards to the reported failures at TCR – until we get the units back here we cannot comment on the reason for the failure, however we confirm that we will do an initial assessment when the goods get back here and if needs be we will send the goods on to Tridonic for evaluation. Notwithstanding the above we confirm that all luminaires are supplied with a 5 year warranty, however we also confirm that the luminaires in question are emergency units which were designed for use only under emergency condition only – TCR and other stations have been operating these fixtures as if they were conventional general lighting which may invalidate the warranty subject to testing."</p> <p>LUCT's Discipline Engineer challenged this via CRL CEG for the following points:</p>	<p>pleted.</p>

No-Impact Ref	EOWL Ref (if applicable)	Title	Description	Notes
			<p>“As a number of failures are due to poor installation (broken leads, not fully engaged connectors and loose cable) are now subject to monitoring and confirmation verification across all sites. Is there an inherent problem with protecting cables within the totem or are the connectors difficult to engage? Also, LED Luminaires have a life of 50,000 hours (approx. 5 + years usage) and this is dependent on a number of factors including: the amount of time it is on per day; percentage driven; number of switching events, etc. Are Future stating that they only warranty for 5 years because it is off for the vast majority of the time and that it isn't expected to last for 5 years if just left on? Does this mean that all emergency luminaires on the Totems will need to be changed out prior to handover as they've been on and the warranty is invalid. As the IM whilst we understand the 'bathtub' effect on new technologies, but we do expect to know exactly why items have failed and what is being done about if for the future. We also expect to have a product that is fit for purpose and lasts, with warranty, for the number of hours published. We also expect poor installation to be eradicated and dealt with through experience and assurance/verification activities.”</p> <p>At the end of September 2019, █████ sent Engineers to TCR and found that 1 x luminaire had started working again and the other was still inoperable. LIS then reported that they had 14 x Emergency Lighting failures on their Totems. LUCT's Discipline Engineer then engaged with CRL CEG regarding a pan-CRL solution to the Totem lighting issues, raising comments in 3 distinct areas:</p> <p>A) Why were there so many Totem Emergency Lighting failures across the first 3 x sites to have them fitted (there are only 52 totems in total and 20 had declared failures)?</p> <p>B) What is the CRL proposal for dealing with the modified fitting that has a very serious impact on our maintenance strategy (e.g. ability to carry the correct spares for different lights, and how we know which light is which if they have the same number, etc)?</p> <p>C) How is the warranty or liability period affected?</p> <p>In May 2020, C422 at TCR contacted LUCT's Discipline Engineer to request closure of the Observation on TCR as they had no recollection of any emergency luminaires failing on their Totems. It became apparent through discussion that what TCR actually meant was that although there were 2 x faults with the Totem, these faults should be discounted as</p>	



No-Impact Ref	EOWL Ref (if applicable)	Title	Description	Notes
			<p>one was found to be 'No Fault Found' on site, and the other was 'No Fault Found' back at the factory. LUCT's Discipline Engineer found this response unsatisfactory and also worrying, as it included no explanation of why the qualified C422 electrician carrying out the installation should have raised the original faults, therefore leaving open the possibility that the same could happen to LU AO electricians in the future. In July 2020, C422 (██████████) arranged a virtual meeting with ██████████, ██████████, LUCT &amp; CEG to discuss the issue and resolve the TCR observation if possible. The relevant agreed actions arising from this discussion were as follows:</p> <p>A) C422 to confirm that the two perceived emergency light failures a TCR were: 1) Due to DALI failure; 2) No failure found on the luminaire when checked at Factory – including root cause for returning.</p> <p>B) ██████████ (██████████) to provide CRL CEG &amp; LUCT with a report of all reported failures to date identifying the root cause of failure. CRL CEG to review this report against the RAMS to determine if reliability is acceptable.</p> <p>C422 confirmed to LUCT that the Emergency lighting failures were due to poor connections on site, and still maintained that this didn't constitute a failure. ██████████ produced a report on the Emergency Lighting failures (attached). The summary is: "The first tab shows amounts of failures against components supplied across all Crossrail sites, and then we have broken these down as percentages per station on other tabs and as you can see the amount of failures are very small and whilst I cannot explain why someone has perceived a large quantity of failures the attached re-confirms my comments. We also attach a further spreadsheet that confirms details of the site visits in words with additional information to assist you." In reviewing this data, LUCT's Discipline Engineer noted that the figures quoted are against all of ██████████ CRL supplied luminaires - not just the totem emergency luminaires - making the percentage failures appear very small. In the context of emergency lighting only, the percentages are considerably larger.</p> <p>LUCT's Discipline Engineer requires to be assured on the following points:</p> <ul style="list-style-type: none"> <li>• Do the stated hours of luminaire availability (50,000 hours) represent a total design life regardless of the proportion of that time the luminaires are illuminated; or are they designed to last for 50,000 hours of illumination regardless of the frequency and duration for which they are inactive?</li> <li>• What aspect(s) of the installation were</li> </ul>	

No- Impact Ref	EOWL Ref (if applica- ble)	Title	Description	Notes
			<p>so complex that presumed fully qualified Tier 1 electricians returned a number of luminaires as having faults when none were present, and how have / can these be mitigated so that future LU Maintainers do not encounter the same issues?</p> <ul style="list-style-type: none"> <li>• To what extent do the emergency lights installed within the totems meet the RAMS specifications within the design?</li> </ul> <p>2. Site modifications in the process of installing the emergency lighting luminaires are understood to have resulted in what was intended to be a single design applicable to all LU stations, effectively becoming two different designs; with TCR, FAR and WHI utilising modified versions of the luminaires with the fixing lugs cut off, while LIS and BOS require unmodified luminaires. CRL is required to provide LU with a proposal for how this situation should be mitigated or managed, such that it is clear to future maintainers which types of spares are required at each station</p> <p>Background and additional detail relating to the above issue:</p> <p>At the end of September 2019, ██████ sent Engineers to TCR in connection with the faults issue described above. Along with their findings in that context, they discovered that the Totem Emergency Lights had been 'locally modified' (i.e. fixing lugs cut off) contrary to the agreed signed off design. CRL CEG investigated and found that one of the Totem manufacturers, ██████, had done this across their entire installations due to confusion surrounding the prototype. ██████ had not informed CRL Architects or C100, and it wasn't found on the Totem FAT or SAT. This means that the Totems at TCR, FAR &amp; WHI have modified emergency lights and the Totems at BOS &amp; LIS have the unmodified version. CRL CEG &amp; C100 investigated this and produced a report (attached), which has yet to be acted upon.</p> <p>Along with the actions agreed in July 2020 documented in the item above, ██████ also undertook to provide CRL CEG with details of the emergency lighting housing redesign with quantities and associated costs. CRL CEG's intention was then to agree with ██████ on CRLs proposed way forward and subsequently secure agreement with LUCT.</p> <p>The desired outcome is that LU should be provided with a clear means of ensuring that the maintainers following Handover (or SC3 ROGS) have clarity as to which spares will be useable at which sites, and</p>	

No-Impact Ref	EOWL Ref (if applicable)	Title	Description	Notes
			that sufficient quantities of both types of fitting (if necessary) are available.	
102	C502-PWK-03434	GFRC - Platforms - Interface with Glazed Down stands	<p>Inspection on 18-06-2020 with [REDACTED] to close C502-PWK-03348.</p> <p>The interfaces between the GFRC panels and the lighting booms and glazed smoke down stands in cross passageways appear very inconsistent with joints misaligned and varying gaps.</p> <p>CP4 appears to be the most consistent, while CP5 appears to be the most erratic example.</p> <p>These issues have been highlighted previously, more specifically with CRL-OBS-29729 from 07-11-2019 and with the Lighting Booms Matrix, generated and compiled by [REDACTED] after a series of inspections in February 2020.</p> <p>LOR to review and adjust / extend / align GFRC panels and infill strips, to achieve consistent interfaces with the lighting booms and the glazed smoke down stands in both horizontal and vertical planes. The joints and gaps should be parallel and aligned.</p> <p>Refer to the Matrix and plans attached for detailed extent of works although the current condition with the GFRC panels has changed since February.</p> <p>Areas of the glazed smoke down stands to be fully inspected by CRL once works of this PWK are complete and inspected / accepted by C502 / H+B.</p>	
103	C502-PWK-03435	PHP Units Snags station-wise	<p>Station wise site survey shows below listed PHPs observed with snags :</p> <p>PHP-00001 Damaged Paint work</p> <p>PHP 13 - Paint Chipped on front down to metal</p> <p>IRN-50154 Scratched outside edges</p> <p>PHP-20, PHP-21</p> <p>PHP-00021 Damaged Rubber Seal</p> <p>IRN-50101 Scratches to PHP's</p> <p>Scratches to outside Edge</p> <p>Associated with IRN's :</p> <p>IRN 50155</p> <p>IRN 50184</p> <p>IRN 66</p> <p>IRN 50183</p> <p>IRN 50185</p> <p>IRN 50186</p>	
104	C502-PWK-03441	P&T - PAD - AP5 - BAL-112 - Gap in lower balustrade adjacent to lift shaft	<ul style="list-style-type: none"> <li>- Requirement for vertical S/S trim against glazing to be reviewed</li> <li>- Requirement for S/S end cap on balustrade base to be reviewed</li> </ul>	
105	C502-PWK-03482	[REDACTED] 00a MTH Overclad Doors Paint Damage (SCC 50289)	<p>Door Reference / Snag Description</p> <p>W-01-237-D01 / Paint Chips on leading leaf edge.</p> <p>W-02-132-D01 / Paint Scratch on frame beside lock receiver plate, deep paint scratch on inside of door leaf by handle, paint scratch on inside left of frame.</p> <p>W-02-151-D01 / Minor Paint chip on leading edge of door leaf.</p> <p>W-02-237-D01 / Small Paint chips to leading leaf edge.</p> <p>W-02-633-D01 / Paint chips on leading leaf edge.</p> <p>W-02-633-D03 / Edge of door and inner</p>	

No-Impact Ref	EOWL Ref (if applicable)	Title	Description	Notes
			<p>face of door damaged and need repair/re-painting.</p> <p>W-02-801-D01 / small paint chips to leading leaf edge.</p> <p>W-02-242-D01 / Paint Chip on leading leaf edge.</p> <p>W-04-789-D01 / paint scratch on inside of door leaf.</p>	
106	C502-PWK-03484	00A MTH Overclad Doors_ Booth remedial work/outstanding/snags	<p>1.Door 3 – Glass Overclad Door at bottom of PRM Escape Route onto PRM Corridor – W-02-633-D03.</p> <p>*Issues with closer and PRM use covered under CRL-OBS-30719 and associated C502-NCR-002218.</p> <p>*Maglock/closure not engaged – height of projecting mag-lock requires addressing as this is at head height.</p> <p>*Handle damaged</p> <p>*Threshold is loose – additional screw to be fixed to hold in place</p> <p>*Easy clean socket to be installed – (refer to comments on benchmark)</p> <p>2.Door 4 – Overclad Glass Door to Escalator/LEER Room – Double Vision Panel - W02-151-D01 – (2/626).</p> <p>*Door in open position clashes with Column – block to be added to restrict opening</p> <p>*Plastic to be removed from kick plate in order to inspect – remove.</p> <p>*Tape removed from top of door.</p> <p>3.Door 5 – Glass Overclad Door to Faith Room - W01-801-D02 – Faith Room 2/900</p> <p>*Threshold is loose – additional screw to be fixed to hold in place</p> <p>*Easy clean socket to be installed – (refer to comments on benchmark – this door to be used as the benchmark for the socket due to ease of access)</p> <p>4.Door 6 – Glass Overclad Door to the top of the Staff Corridor Ramp – W02-242-D01 (2/801).</p> <p>*Adjust closer to restrict clash with wall</p> <p>5.Door 7 – Glass Overclad Door to top of PRM Escape Ramp - W01-633-D01 – (Benchmark) – 2/515</p> <p>*Door closer clashes with the adjacent wall – closer needs a block to restrict opening to 90 degrees</p> <p>*Additional screw fixing to threshold</p> <p>*Easy clean socket to be added (benchmark to be installed on Faith Room).</p> <p>*Plastic on kick plate – to be removed and re-inspected</p> <p>6.Door 8 – Glass Overclad Door to Plant Rooms - W02-237-D01 - 2/900</p> <p>*Plastic removed from the kickplates</p> <p>*Door restrictor requires block to avoid clash with adjacent</p>	Closed
107	C502-PWK-03512	00a MTH -1 Overclad Door W-02-633-D03 Paint Damage (SCC 50289)	Edge of door and inner face of door damaged and needs repair/re-painting.	
108	C502-PWK-03519	BTH - Flooring Patch Door E-02-762-D01	<p>Inspection on 10-09-2020 with [REDACTED] (C502) for C502-PWK-03175 uncovered tile patch next to door E-02-762-D01.</p> <p>Refer to photo attached.</p>	

No-Impact Ref	EOWL Ref (if applicable)	Title	Description	Notes
			Tile should be whole without patch. C502 to take necessary remedial works to solve problem and offer for inspection to CRL.	
109	C502-PWK-03524	AP10 - LU Interface Remaining Floor and Wall Tiling	Unable to complete the floor and wall tiling at the top of stairs interface with LU due to hoarding positioning.  Refer to mark up for outstanding works.  Floor tiling Corduroy tiles and Wall tiling	Closed
110	C502-PWK-03525	AP5 - Signage	Inspection on 17-09-2020 with [REDACTED] and [REDACTED] (C502) to close C502-NCR-002545. Works below are outstanding and have been incorporated in this PWK to enable closure of NCR: • Signs above doors 402 and 403 installed, although gaps are visible below and above signs. C502 to review and propose solution for CRL review. Refer to photo attached.	
111	C502-PWK-03526	AP10 - Wall tiling snags	Inspection on 17-09-2020 with [REDACTED] (C502) for C502-PWK-03370. Several tiles are damaged/chipped, refer to photo attached. C502 to complete works in the area and then assess wall tiles for damages. Any damaged tiles to be repaired/replaced and then offer to CRL for inspection.	
112	C502-PWK-03630	14003 MTH 04a Outstanding Works identified on Final Inspection	MTH facade - details TBC	
113	C502-PWK-03631	[REDACTED] 04a MTH External Elevation Final Inspection Snags/Comments	MTH facade - details TBC	
114	C502-PWK-03633	[REDACTED] 04a Scope EWS-911 White Portland Stone Cladding & EWS-560 Stainless Steel Copings	MTH facade - details TBC	
115	C502-PWK-03607	GRC Making Good - AP5, CP4, CP7 and AP1	Following an onsite inspection of the GFRC 15th October 2020 to ascertain whether items raised in CRL observations have been completed the following items as listed in C502-XRL-O4-RGN-C101-50016 require completing:-  AP5 c) Gap between vertical infill strip and soffit panels - Fill in / make good to close off the gap CP4 b) Panel repair x1 still visible on the bottom / Sand down repair CP7 b) Panel repair still visible / Repair to be improved AP1 d) Minor damage to the GRC panels at the bottom / Pending making good	Closed
116	CRL-OBS-34939	LIS - CDRL docs to be issued with L&E ACs	This OBS is raised to request that CRL issues all documentation relevant to the Lifts and Escalators CDRLs, at the same time as the respective Acceptance Certification is issued, via the HMDL	Downgraded to 'No Impact' as outstanding items do not impact the maintenance of the assets
117	C502-PWK-03608	SCC 50118 - Booth Doors Moor-gate - outstanding Field View Snags	Various Snags as recorded on Internal Snag management by C502 (Field View) Report produced on 02.11.20	

No-Impact Ref	EOWL Ref (if applicable)	Title	Description	Notes
118	C502-PWK-03643	Platforms and Tunnels Curved Signage Rattling Issues	The openable panel on some of the curved glass wall panels has some movement / rattling associated with it when the panel is locked shut. Refer to the attached list of applicable signs.	
119	C502-PWK-03644	Platforms and Tunnels Curved Wall Signage - Alignment Issues	The glass panels on some of the curved glass signs are not perfectly aligned with each other and there are visible steps between them. Refer to the attached list of applicable signs and the approximate misalignment.	
120	C502-NCR-002601	MTH - Lack of approved documentation for LU interface Floor Infill	Infill flooring to the LU interface on the westbound of metropolitan line commenced without approved documentation. No formal agreement on design through (FCD) - FCD was submitted prior, but works did not wait for formal CRL approval. No approval of MCRs (Tiles, Grout) - materials were detailed on the submitted FCD. but MCRs were not submitted before commencing.	Closed
121	C502-PWK-03647	MTH - Matwell - Minor Snags	- Black paint repair to skirting under cladding on southern matwell - Completion of grout/mastic were floor tile missing on GL10	LU have conducted a VAP and are happy with No Impact.
122	C502-PWK-03573	AP10 Door Control System	There is fundamental issue in the door to the control panel not opening to at least 90 degrees. The door is hindered by the DURA steel enclosure that could or may have been made larger to accommodate the operation	LU have conducted a VAP and are happy with No Impact.
123	C502-NCR-002590	Anti drumming to ironman cladding	During final inspection it was identified that the design of the Ironman cladding failed to incorporate sufficient anti drumming measures as per section JK17.1206 (f) of the specification. Remedial work is required to bring the cladding up to the correct specification.	
124	C502-PWK-03650	MTH -1 SAS Suspended Ceiling CRL Final Inspection Snags/Comments	Please refer to attached mark up notes made during CRL Final Inspection on 15/12/2020 for SAS suspended ceiling in MTH -1	Closed
125	C660-PWK-01221	LIS-CMS Part B-IAC RSP50131 FOR7801	4922 – Systemwide - Virtual Machines used for PA need to be updated to use more recent file sharing protocol 5029 – LIS - 'correct zone information' mismatch 7137 – Systemwide - CMS & SMS Unable to Preview PAVA Announcements (Live Recorded & Pre-Recorded) 7212 – Systemwide - CMS / SMS PA zone Lost Comms Not Triggered When Speak Chain (Both Legs) Is Disconnected 7421 – RCC - PAVA Preview operator confirmation message has incorrect text 7619 – RCC - UTL failover due to crm dva System.NullReferenceException: 7768 – Systemwide - PAVA schedule message observations 7783 – RCC - PAVA - RCC-12-MIC-00002 issues	
126	C660-PWK-01222	LIS-CMS Part B-IAC RSP50137 FOR7802	6122 – Tag name mismatch on RCM and IO 6850 – LSX - LSX-01-LVS-E1.B004 Class Tag Number Inconsistency 7025 – No mimic association with LSX-	Downgraded to 'No Impact' as the LV Switchboard alarms are being brought into service

No-Impact Ref	EOWL Ref (if applicable)	Title	Description	Notes
			LVB-W1.BAT1 or LSX-LVB-W2.BAT1	
127	C660-PWK-01223	LIS-CMS Part B-IAC RSP50081 FOR7803	4597 – Monitored Door Crossrail Clarification required - LIS	
128	C502-PWK-03592	Site Wide Interface floor to wall cladding/ Help points head details	Works have been completed as per work information details and additional work subject to change is require. Please refer to attached mark up showing locations where mastic infills are required. This has been raised to record Architects observation made on Thursday 15th October.	
129	C502-PWK-03597	Transverse Infill Strip Extensions	The transverse infill strips in some locations in circular and rectilinear cross passages are not long enough and there are visible gaps of approximately 15 to 20mm adjacent to the lighting boom.  It was agreed during a site inspection 15 October 2020 with [REDACTED] that a colour matched 'U' channel can be bonded to the end of the infill strip to close the gap.	
130	C502-NCR-002595	Anti drumming to ironman cladding AP5	During final inspection its was identified that the design of the Ironman cladding failed to incorporate sufficient anti drumming measures as per section JK17.1206 (f) of the specification. Remedial work is required to bring the cladding up to the correct specification.	
131	C502-PWK-03533	Cover Plates for Projecting Signage	Cover plates to be installed for projecting signage where the first fix bracket projects through the GFRC. The following signs require the cover plate installing: USN 122, 123, 286, 454, 456, 555, 556, 557, 558, 559, 756, 757, 758, 759, 760.  Action: Install cover plates on all signs projecting through GRC.  PWK to be closed by inspection after remedial works completed	
132	C502-PWK-03535	Projecting Signage Openable Face Panel Bowing	The openable face panel on projecting signs greater than 1200mm in length are bulging in the centre because there are no stiffeners in the panel.  The signs affected by this are USN 500, 506, 512, 518, 527, 534, 596, 597, 700, 702, 707, 713, 719, 728, 730 and 736.  Action: Stiffeners to be installed on all projecting signage greater than 1200m.  PWK to be closed via inspection that bowing is no longer occurring.	
133	C502-PWK-03539	BTH Glass Canopy SEELE CRL Final Inspection Snag/Comments	Final inspection on 28/09/20 Please refer to attached mark up showing locations and snag/comments.	Closed
134	C502-NCR-002603	Grout tests to AP doors cladding steel work	Section 3.4 of ITP C502-LAO-04-ITP-C101-50312 states for grouting of baseplates at each installation 4No cubes will be taken in accordance with BS EN 12350 with a minimum 40N required. Grout install and testing to be completed by LOR as per the LOR method/ITP. The deliverable of this section of the ITP	Closed

No-Impact Ref	EOWL Ref (if applicable)	Title	Description	Notes
			is noted as a grout cube report.  A grout cube report has not been produced for this specific area, instead reports have been produced for the batch of grout used, which does not specifically reference the area covered under the ITP.	
135	CRL-OBS-34160	CEG MEP VAP - LIS - 4	Temporary Services are still installed in some areas of the Station  Mitigation: Remove all temporary services from site, including lighting, fire alarms, small power, comms and vent/cooling. Ensure that all fire compartments that were penetrated by the temporary services are made good with fire stopping and are re-certified	Closed
136	C502-PWK-03493	Signage Face Panels Bulging	Projecting, wall mounted and suspended signage that have an openable face panel and are generally greater than 1200mm longer do not have stiffeners on the inside face and the panel is bulging in the middle and is not flush with the S/S frame.	
137	C502-NCR-002614	BTH - Lift 8 Primer Leakage onto Lift Equipment	While prepping for the screeding of the floor hatch above lift motor room, some primer leaked through into the motor room below and onto various pieces of lift equipment	Closed
138	C502-NCR-002615	Contractor Commenced works without an accepted ITP relevant to works undertaken	During a planned surveillance it was found that the Inspection and Test Plan for the installation of Eastern and Western Ticket Mat wells C502-LAO-04-ITP-C101 WS099-50078 Rev 3.0 Code1 was not relevant to the installation. The only reference on the ITP is for a temporary Mat well installation.	Closed
139	C502-NCR-002605	MTH - SL-1 - Floor plate to balustrade base	The baseplate for the glazed balustrade does not correspond to the finished floor level. A floor plate will need to be introduced over the baseplate to accommodate the difference in levels	Closed
140	C502-NCR-002610	Finishing floor paint to street +5	BBX at street +5 level, The paint to floor screed at the locations of a fall from roof rain water discharge to floor gully seems to be bubbling, attached photos of the inspection of the area	Closed
141	C502-NCR-002612	MTH - In-situ Skirting	The project specification does not specifically identify areas of in-situ skirting	Closed
142	C502-PWK-03659	BTH Fascia USN 003 Inspection Items	Following Arup/HB inspection of BTH fascia, USN 003, there are the following issues: 1. Missing fixings 2. Missing 'T' bar from right hand glass joint 3. Interface at the top and bottom with Steele stainless steel and black glass respectively to be reviewed.	Closed
143	C502-PWK-03664	Escalators ES3 and ES2 Remedials by the advertising panels	Further to completed works listed under C502-NCR-002583 and C502-NCR-002400 there are 3 items still to be addressed as below listed:  1. Repair and make good the notched GFRC infill strips on both Escalators ES3	Closed



No-Impact Ref	EOWL Ref (if applicable)	Title	Description	Notes
			and ES2 2. Replace the broken GFRC infill strips on Escalator ES3 3. Close the gap between the GFRC infill strips and advertising panels on both Escalators ES3 and ES2.	
144	C502-PWK-03668	Completion of Redlines for SCC-50227	- The changes to the ironmongery on Doors W-08-240-D01/D02 have been captured under NCR 2532 - Door W-07-236-D01, does not require a Vision Panel as it was confirmed by the RFIs which lead to PMI 2085.	
145	C502-PWK-03671	MTH - Floor Tiling - Minor Snags (SCC Rev 2.0)	- Matwell rail grout untidy (CRL photo 2 & 3) - Skirting damaged adjacent to matwell (CRL photo 4) - Skirting damage at top of eastbound stair & grout/mastic (HB photo 26) - Mastic above skirting to be repaired (CRL photo 11) - Grout/clean to insitu/precast skirting interface (CRL photo 12, 13, 14, 15) - Mastic to skirting (CRL photo 16) - Polishing termination points to skirting & trim/mastic to skirting (CRL photo 42, 43, 44, 45) - Skirting remedials (HB photos)	Closed
146	C502-PWK-03675	MTH - Cleaning of AAR2 Floor/Steps	Floor to be cleaned	Closed
147	C502-PWK-03676	MTH - Skirting to be installed Westbound Stair fire hoarding location	Skirting to be completed following removal of hoarding	Closed
148	C502-PWK-03677	MFD [REDACTED] Damper Connections - Sitewide	During the 2020/2021 Care & Custody works associated with the operational checks of the MFDs (Motorised Fire Dampers) as manufactured by [REDACTED] [REDACTED], the terminations to the damper actuator pre-manufactured connection units, have been questioned by the Fire Detection contractor [REDACTED]. Crossrail site team have inspected approx. 12 nr connection units on 08/02/2021 and have identifies similar queries regarding the neatness of the installation. It is accepted by all parties that the installation works were approved at the 2.1 IRN stage and therefore these queries are post approval. The Fire detection contractor [REDACTED] has accepted the installation is to be re-worked where necessary following the C&C inspection. These works are to include the provision of an increased level of neatness of dressed cables for both fire controls and power. CRL have provided 2 nr images of an acceptable standard under cover of their email of 10/02/2021 [REDACTED]. For absolute clarity the reworks will not include adding identification numbering or ferrules. In addition, and where there is a requirement to provide additional supports for flexible conduits, these will be considered separately under dedicated Punchworks or as LOR Field View items.	Closed

No-Impact Ref	EOWL Ref (if applicable)	Title	Description	Notes
149	C502-PWK-03678	MTH - SL-1 - Met Line Platform paving reinstatement below LU fire point	Paving slabs to be reinstated upon relocation of fire call point	Closed
150	C502-PWK-03679	MTH - SL-1 - Met Line Platform replacement of 3 no. small cut paving slabs	Replacement of 3 no. small cut paving slabs with min 1/3rd sized paving slabs	Closed
151	C502-PWK-03680	MTH - SL-1 - Eastbound Met Line Platform adjustment of paving levels upon removal of fire hoarding	Paving levels at bottom of eastbound stair to be adjusted upon removal of fire hoarding	
152	CRL-OBS-35073	Moorgate Ticket Hall, Level -1, Flooring (LU/CRL interfacing works)	CEG/LUCT Architects have completed a general surveillance of works to the level -1 flooring of the Moorgate Ticket Hall for the interfacing works between the existing LU Platforms and the new CRL works. Initial findings have been captured in the report linked to this Observation.	Closed
153	CRL-OBS-35080	Moorgate Ticket Hall - Flooring Review - Ground and Level -1 Public Areas including Westbound Stair.	<p>CRL were invited to inspect the installation of the floor finishes for the Moorgate Ticket Hall - primarily Westbound Stair and Level -1 along with remedial works to the main ticket hall (ground). [REDACTED] Inspection Records, marked up drawings and photographs are attached to the Observation as a record of the inspection. The works are insufficiently complete to be considered a final inspection with the agreement of the PWKs to be raised to cover the outstanding works.</p> <p>11.01.2021 – Moorgate Ticket Hall Inspection (C502-LAO-C-CER-C101 WS099-50111)</p> <p>CRL were invited to inspect the installation of the floor finishes for the Moorgate Ticket Hall - primarily Westbound Stair and Level -1 along with remedial works to the main ticket hall (ground). [REDACTED] Inspection Records, marked up drawings and photographs are attached to the Observation as a record of the inspection. The works are insufficiently complete to be considered a final inspection with the agreement of the PWKs to be raised to cover the outstanding works. Suggest that this take place once area is cleaned.</p> <p>Ground Floor – Main Ticket Area Drawings - Part 1</p> <ul style="list-style-type: none"> <li>• Item 1 (HB open) refer to photo 1</li> <li>• Matwell channel (Southern [REDACTED] Gate) rail grout is untidy – refer to CRL-OBS-34817 [REDACTED] installation actions. photos 2 &amp; 3</li> <li>• Skirting – damaged/grout stains to be reviewed and amended – photo 4.</li> <li>• HB 26 – Skirting damaged – repair/replace -</li> <li>• Photos 5 and 6 – general progress of installation.</li> <li>• Photo 7 – skirting at top of stair (east) – damage to skirtings (insitu/kerb joint).- HB 25/26 – missing grout and mastic.</li> <li>• Westbound Stair</li> <li>• Photos 8 and 9 – skirting installed is insitu – this is not included in the WI Specifications. Raise and NCR to cap-</li> </ul>	Closed

No-Impact Ref	EOWL Ref (if applicable)	Title	Description	Notes
			<p>ture the change.</p> <ul style="list-style-type: none"> <li>• Photo 17 -Insitu skirting has been installed without an isolation/construction joint with the adjacent finishes; flooring and ATTI nosing. This makes it difficult to remove (LU Standard).</li> <li>• Insitu – skirting has been installed on varying substrates (steel wall plate and concrete stair – provide details and review ; differential movement.</li> </ul> <p>Note: MCR – C502-LAO-O4-XDS-C101 WS099-50039 – has a specification reference: JM40.1206 and 1220 however, these clauses are not in the Specification (Rev 23.0 referenced). ITP does not include for the insitu areas (eastbound/westbound stair and eastern façade of SOR).</p> <ul style="list-style-type: none"> <li>• Photos 10 – grout seems to be of a different colour – confirm that this is due to dust – grout in skirting tiles should be consistent.</li> <li>• Photo 11 – mastic above skirting poor.</li> <li>• Photo 12 and 13 – generally the interface between the insitu and cast skirtings is visible, requires cleaning and can then be assessed for damage – one grout/mastic has been installed (relates to both stairs).</li> <li>• Photo 14 and 15 – skirting/grout stained/damaged – to be reviewed via PWK.</li> <li>• Photo 16 – generally edges/top of skirting to be assessed for rough edges – mastic to be applied (refer to HB comments).</li> <li>• [redacted] comments 16 to 26 to be included in PWK – provide reference.</li> <li>• Photo 18 and 19 – areas of skirting/interface with tactile not installed.</li> <li>• Tactile cannot be reviewed due to installation of temporary hoarding – to be reviewed in final inspection.</li> </ul> <p>Ground Floor – Main Ticket Area Part 2 Eastbound Stair – interface with LU works.</p> <ul style="list-style-type: none"> <li>• [redacted] – Comments 8, 11,12,13,14 and 15 open – provide PWK reference.</li> <li>• Photos 20 – 25 – Tactile at bottom of East Bound Stair – refer to CRL-OBS-35073.</li> </ul> <p>Ticket Hall</p> <ul style="list-style-type: none"> <li>• Photo 26, 27 and 28 - Skirting to SOR adjacent to Matwell – In-situ skirting installed as opposed to the WI (kerbs).</li> </ul> <p>Level -1 – Concourse - Part 3</p> <ul style="list-style-type: none"> <li>• [redacted] comments – 32 to 44 open – provide PWK reference.</li> <li>• Photo 28 shows the threshold plate to the door and the finishes on either side – confirm that these meet BS 8003. Currently unfinished.</li> <li>• Threshold with other doors not reviewed – refer to CRL-OBS-</li> <li>• Photos 29, 30 and 31 show areas of scope missing – to be captured via PTR.</li> <li>• Photos 32 to 35 – skirting/flooring interfaces to be reviewed; grout installation</li> </ul>	

No-Impact Ref	EOWL Ref (if applicable)	Title	Description	Notes
			<p>although dark areas may be a consequence of water leakage?</p> <ul style="list-style-type: none"> <li>• Photos 36 – 39 – general cleaning required and then final inspection.</li> <li>• Photos 40 – 45 – generally the termination points of tiles need polishing.</li> <li>• Photos 40 – 45 – top of skirting to be polished/cleaned/aligned and mastic applied.</li> <li>• Photos 46 – 50 – missing balustrade baseplate – covered by separate NCR-2606.</li> <li>• Photos 50 – 54 – general installation – to be cleaned.</li> </ul> <p>LU interface works excluded from review. General clean required along with closure of PWKs for final inspection.</p>	
154	CRL-OBS-35093	Platform and Tunnels - Platform Construction/Movement Joints	<p>During a general site walk it was noted that some of the construction joints along the platforms seem to have opened; refer to attached photographs.</p> <p>This was recorded previously and is currently being monitored. Refer to C502-LAO-S-RGN-C101-50014 Revision 3.0 for Condition Survey and associated C502-NCR-002209.</p>	
155	CRL-OBS-35154	LIS - Observations on Architectural drawings	Please find attached (under 'photographs') VAR LUCT-C101-ENG-VAR-00036, which documents observations made during checks carried out on Architectural drawings at LIS.	
156	C502-NCR-002617	AP5-AP6 Emergency Exit Signage	Emergency escape signage provided on USN 402 at the bottom of AP5-AP6 staircase is not visible enough from AP5 and the emergency escape signage provided on USN 304 at the top of AP5-AP6 staircase is incorrect because it directs able bodied persons in the same direction as persons with reduced mobility.	Temporary is suitably installed and agreed with designer for Fire Compliance Statement
157	C502-PWK-03681	Moorgate TH - ES5 Anti-Fall Fin		Closed
158	C502-PWK-03683	Drop 6 - PSD - Platform Screen Doors	This PWK is for tags that belong to C502 but are referenced under PSD Drop 6 package (ES-SYS-02-PSD). This PWK is to cover all C502 tags on ES-SYS-02-PSD extract scope and is to be closed out at the time of LIS MEPA Drop 6 submission.	Closed
159	C502-PWK-03687	Broadgate Ticket Hall Fascia Blast Calculations	<p>██████████ BTH Entrance Fascia drawing, C502-LAO-A-DWG-C101 WS102-50465 revision 2.0 dated July 2019, received a comment regarding glass composition, blast and fire requirements. The response received from ██████████ stated 'blast calcs will be provided to confirm use in this specific location' but to date these have not been provided.</p>	Downgraded to 'No Impact' as the calculations have been accepted by CEG.
160	C502-PWK-03700	Lift 3 AC Outstanding Assurance Paperwork	<p>Outstanding Documentation from the Lift 3 AC</p> <ul style="list-style-type: none"> <li>██████████ CDRL - C502-KON-M1-LRG-C101-001</li> <li>██████████ Competency Policy - C502-LAO-04-STP-C101-50002</li> <li>██████████ Final O&amp;M Manual - C503-LAO-K2-OMT11-C101-5003</li> </ul>	Closed
161	CRL-OBS-35305	Liverpool Street Station Signage Installation Audit	During the construction phase CEG Architects have carried out an Audit on the final installation of the station's Wayfind-	

No-Impact Ref	EOWL Ref (if applicable)	Title	Description	Notes
			ing and Signage Scheme. Recommendations are captured in C100-ATK-A-RGN-CRG02-50151 - CEG Signage Review Recommendations by C100 attached to the Observation. A signage review summary (C100-ATK-A-RGN-CRG02-50174) is also included that provides commentary on each sign installed within the station. Please arrange for a meeting to review and propose actions to address the recommendations.	
162	CRL-OBS-35316	Moorgate Ticket Hall - Level -1 - Balustrade and LU Interface Works	An inspection was carried out to review the installation of the Balustrade and review the C502/LU works at the interface. Some but not all of these areas are covered under the linked Observations.  An inspection was carried out to review the installation of the Balustrade and review the C502/LU works at the interface. Some but not all of these areas are covered under the linked Observations.  Works to be reviewed are as follows:  Balustrade/Wall – area of render (existing) to be extended to balustrade clamp plate (LU side) – C502-PWK-03363. Flooring – stair/balustrade clamp plate interface. Flooring – tactile/balustrade clamp plate interface Flooring – ATTI nosing and stair and stainless steel base plate interface. Flooring – termination of new LU Paving works with Stainless Steel Balustrade floor plate. Flooring – termination of new CRL Terrazzo works with Stainless Steel Balustrade floor plate.  These works may fall outside of C502's scope.	Closed
163	CRL-OBS-35317	LIS - Removal of disclaimer from as-built drawings	Arup are to remove a disclaimer inserted on as-built drawings regarding the accuracy of the drawings. This is not a critical deliverable for SC3 ROGS	
164	C502-NCR-002616	MTH – Finishes Street Level & PRM Corridor - Benchmark and Quality Records	Following submittal of QA pack C502-LAO-C-LRC-C101 WS099 1-50001 Rev 1.0 it was determined that no benchmark evidence was referenced and the pack did not contain evidence of inspection of the first area of installed tiles and grout.	Closed
165	C502-NCR-002620	AP2 [REDACTED] Cabinet - Anti Drumming	AP2 [REDACTED] cabinet design does not include anti drumming insulation	Closed
166	C502-PWK-03629	[REDACTED] C502-LAO-O4-RGN-C101-50198_	C502-LAO-O4-RGN-C101-50198 - Repair and Cleaning Methodology for Portland Stone Report to obtain Code 1 in order to close this PWK.	Closed
167	C502-PWK-03685	Door Snags - BoH doors in wrap up pack SCC 50293		Closed
168	C502-PWK-03686	Door Snags - Public facing doors in wrap up pack SCC 50293		Closed
169	C502-PWK-03688	BTH Canopy & Lift Portals SEELE Outstanding Mastic to	Please refer to attached mark up drawings outlining the outstanding scope to	Closed

No-Impact Ref	EOWL Ref (if applicable)	Title	Description	Notes
		complete	complete, Mastic works.	
170	C502-PWK-03694	Platforms - PAEE's Snags	<p>Site walkaround with [redacted] (CRL Head of Architecture) and [redacted] and [redacted] (C100).</p> <p>It was noticed that some PAEEs and adjacent areas have some issues unresolved, such as:</p> <ul style="list-style-type: none"> <li>- Gaps adjacent to the PAEEs between the skirting and the GFRC panels - these are large enough to present some concern;</li> <li>- Visible daylight showing at some signage edge;</li> <li>- GFRC panels adjacent to the PAEE's with some noticeable damage that should be repaired;</li> <li>- Gaps large enough to fit a hand at the top of the PAEEs next to the S/S trim;</li> <li>- Some top S/S trims have sharp corners that should be addressed.</li> </ul> <p>C502 to address these snags and arrange for a site inspection with CRL to close this PWK.</p>	Closed
171	C502-PWK-03695	Platforms - Flooring Snags	<p>Site walkaround with [redacted] (CRL Head of Architecture) and [redacted] and [redacted] (C100).</p> <p>It was noticed that some flooring areas have some issues unresolved, such as:</p> <ul style="list-style-type: none"> <li>- Oil stain next to the WB platform edge screens;</li> <li>- Area with staining possible from water ingress in Central Concourse.</li> </ul> <p>C502 to address these snags and arrange for a site inspection with CRL to close this PWK.</p>	Closed
172	C502-PWK-03696	Platforms - GFRC Snags	<p>Site walkaround with [redacted] (CRL Head of Architecture) and [redacted] and [redacted] (C100).</p> <p>It was noticed that some GFRC areas have some issues unresolved, such as:</p> <ul style="list-style-type: none"> <li>- Noticeable gap between GFRC horizontal infill and skirting in WB Platform;</li> <li>- Areas with incorrect installation of SID number plaques, such as in the Central Concourse (installed in a double curvature panel) and at the far end of AP5 (installed at incorrect height - too low and should be moved up to align with plaque on the opposite wall).</li> </ul> <p>C502 to address these snags and arrange for a site inspection with CRL to close this PWK.</p>	Closed
173	C502-PWK-03697	Platforms - Curved Wall Signs Snags	<p>Site walkaround with [redacted] (CRL Head of Architecture) and [redacted] and [redacted] (C100).</p> <p>It was noticed that some curved wall signs have some issues unresolved, such as:</p> <ul style="list-style-type: none"> <li>- Inconsistent gaps to the GFRC panels when close - note should be 5mm;</li> <li>- Inconsistent gaps and misalignment between top and bottom panels;</li> <li>- Gaps at the end of locking bars - note there is already C502-PWK-03682 raised to address this issue in the Central Concourse area.</li> </ul> <p>Due to these issues, CRL recommends a full inspection of all curved wall signs in</p>	Closed

No-Impact Ref	EOWL Ref (if applicable)	Title	Description	Notes
			the Platforms and Central Concourse to verify their operation. C502 to address these snags and arrange for a site inspection with CRL to close this PWK.	
174	C502-PWK-03701	█████ Glass Clad doors Engraved Escutcheons	The text Door 1 and Door 2 to be etched/Lasor cut into the escutcheon of the respective door(example attached)	Closed
175	C660-PWK-01344	Minor formatting comments for drawings @ LIS	Advisory comments contained within the following comment sheets to be incorporated into future as-built revisions:  C660-XRL-R3-XCS-C101-50017 - 7 CRL advisory comments. C660-XRL-R3-XCS-C101-50010 - 9 CRL advisory comments. C660-XRL-R3-XCS-C101-50042 - 7 CRL advisory comments.	
176	CRL-OBS-35221	The provision and installation of bins in the public areas	The provision and installation of bins in the public areas at Liverpool Street Station is yet to be carried out - these are in CRL scope to deliver but not necessarily in the T1's.  A design setting location, type and number has been agreed with the IM's. Delivery method has not been determined, I kely █████.  Bin numbers and locations is contained in documents:  Elizabeth Line Litter Receptacle (Bin) Positioning Bond Street, Tottenham Court Road, Farringdon, Liverpool Street, Whitechapel Stations C100-ATK-A-RGN-CRG02-50157  and  Elizabeth line Litter Receptacle (Bin) Positioning Paddington, Custom House C100-ATK-A-RGN-CRG02-50158	Required by Revenue Service
177	CRL-OBS-35266	Liverpool Street station, Construction Certificates	A number of Construction Completion Certificates for the Liverpool Street station have been submitted for review; linked via related documentation below.  The Construction Completion Certificates have been submitted at a point in time with works incomplete and outstanding works listed under Section 7; this includes the EOWL. Invitations to witness points for testing have not always been sent and little evidence (photographic) is provided in documentation; if this is available via a different discipline then this should be listed on Relevant SCCs. Changes made to architectural assets by the Fire Team have not been presented, discussed and agreed with the Architects; the reduction in width of escape routes and doors examples. References to PTRs changing the Architectural works should be included in the SCCs linked to the CC.	Closed

No-Impact Ref	EOWL Ref (if applicable)	Title	Description	Notes
			<p>Key documents are incomplete or are not listed on the Certificate; door, hatch and accommodation schedules and O&amp;M Manuals.</p> <p>Items allocated to [REDACTED] are not referenced on the CC making the CC incomplete (if it is representative of the Works Information and meets the Performance Requirements). The Architects have not been part of the discussions associated with the transfer therefore cannot know what is and what is not included in the scope; the schedule is work in progress and this will continue to change for some time.</p> <p>Inspections of all spaces as opposed to elements of works as reflected by the SCC Package breakdown used to build the Construction Certificate, have yet to be completed. Additional VAP Observations to be carried out to cover any missing works; escape stairs being an example.</p> <p>Volume and complexity of the Package Structure make review of the Certificates in full prohibitive within the time frame; all six are currently with CRL for review.</p>	
178	CRL-OBS-35308	Braoadgate Canopy - Street Level - Co-ordination of interfacing packages		Closed
179	CRL-OBS-35323	LIS - Minor comments requiring updates following VAP check	<p>The attached VAR (under 'photographs') accepts the following six drawings; however it also notes that some previously requested updates have not yet been made. LU requests that these be addressed in future updates, as follows:</p> <p>PAVA Layout Drawing, Moorgate Shaft, Ground Level 0 (+113.700), Sheet 2 of 2 (C660-SMN-R3-DDA-C101 1-40004 rev X03) - Speaker and Aerial not relocated (as per previous comments).</p> <p>PAVA Layout Drawing, Moorgate Shaft, Level -1 (+107.750), Sheet 2 of 2 (C660-SMN-R3-DDA-C101 2-40004 rev X02) - Speakers not relocated (as per previous comments).</p> <p>PAVA Layout Drawing, Blomfield Box, Level -3 (+95.580) (C660-SMN-R3-DDA-C101 4-40001 rev X03) - One speaker not relocated (as per previous comments).</p> <p>PAVA Layout Drawing, Moorgate Shaft, Level -4 (+88.305) (C660-SMN-R3-DDA-C101 5-40003 rev P03) - Speakers not relocated and not latest Architects drawing (as per previous comments). Drawing is also Code 2.</p> <p>PAVA Layout Drawing, Platform Level -6, Sheet 2 of 3 (C660-SMN-R3-DDA-C101 7-40005 rev X09) - Antennas Z14/ANT001&amp; Z15/ANT001 not relocated (as per previous comments).</p> <p>PAVA Layout Drawing, Moorgate Shaft, Level +1 (+118.010) (C660-SMN-R3-</p>	Closed



No-Impact Ref	EOWL Ref (if applicable)	Title	Description	Notes
			DDA-C101 A-40002 rev P04) - One speaker not relocated (as per previous comments). Drawing is also Code 2.	
180	C502-PWK-03702	ES1 AC Assurance Paperwork	Below documentation to be closed out and assessed Code 1 CDRL Tracker - C502-LAO-M1-RGN-C101-50013 Escalator LOIS - C502-LAO-M1-LST-C101-50009 Operations and Maintenance Manual - C502-LAO-K2-OMT11-C101-50020 Safe Use and Operations Handbook - C502-LAO-K2-OMT11-C101-50015 As-built drawings pack E13-15 - C502-LAO-M1-DWG-C101-50067 Factory Specific Drawings - C502-LAO-M1-DWG-C101-50042	Downgraded to 'No Impact' as outstanding items do not impact the maintenance of the assets
181	C502-NCR-002624	Contractor has not followed their Document and Data Control Procedure for the checking of Red Line Drawings.		Closed
182	C502-PWK-03704	AP5 - Flooring Interface Escape Doors		Closed
183	C502-PWK-03706	ES2 AC Assurance Paperwork		Downgraded to 'No Impact' as outstanding items do not impact the maintenance of the assets
184	C502-PWK-03707	ES6 AC Assurance Paperwork		Downgraded to 'No Impact' as outstanding items do not impact the maintenance of the assets
185	C502-PWK-03708	Lift 6 AC Outstanding Assurance Paperwork		Closed
186	CRL-OBS-35368	Moorgate Ticket Hall - Station Facade/Urban Realm Interfaces		Closed
187	CRL-OBS-35409	LIS - Station Tier 1 to remove hoardings to allow completion of D25 noise overspill measurements.		Closed
188	C502-NCR-002627	Quality Assurance Packs – Evidence Required by the Works Information Not Provided	Quality Assurance packs C502-LAO-C-LRC-C101-50748 and C502-LAO-C-LRC-C101-50587 submitted as part of the assurance process for SCC C502-LAO-C-CER-C101-50296 have been returned 'Code 2' because they do not reference or include certain evidence required by the works information.	Closed
189	C502-PWK-03712	ES5 AC Assurance Paperwork	C502-LAO-M1-DWG-C101-50044 - C08.076 - DDS Factory site specific drawings ES5 ESC 22-24 C502-LAO-M1-LST-C101-50009 - C21.023j - LOIS List Escalator No.10-24 (CDRL: D18 & G2) C502-LAO-M1-RGN-C101-50013 - C20.001v - CDRL Report Liverpool Street C502-LAO-K2-OMT11-C101-50023 - O&M Manual Esc 22-24 - ES5 (CDRL Ref. G6)	Downgraded to 'No Impact' as outstanding items do not impact the maintenance of the assets
190	C502-PWK-03713	Lift 1 AC Outstanding Assurance Paperwork	C502-LAO-M1-LRG-C101-50003 - C20.001i - Contract Document Required List (CDRL) Asset Tracker - Vertical Lifts C502-LAO-M1-DWG-C101_WS099-50010 - MTH - CAR DESIGN Lift 1 C502-LAO-K2-OMT11-C101-50001 -	Closed

No-Impact Ref	EOWL Ref (if applicable)	Title	Description	Notes
			Operation and Maintenance Manual - CDRL section G4 Owner's Manual – PFU-2-01139 Lift 1 at Liverpool Street Station	
191	C502-PWK-03711	ES3 AC Assurance Paperwork	C502 Liverpool Street Station DDS Factory site specific drawings (Wiring Diagrams ESC 10-24) - C502-LAO-M1-DWG-C101-50043 Liverpool Street - [REDACTED] Escalator No.10-24 (CDRL: D18) - C502-LAO-M1-LST-C101-50009 Liverpool St - O&M Manual Esc 19-21 - ES3 (CDRL Ref: G6) - C502-LAO-K2-OMT11-C101-50022 C19.002 - Safe Use & Operations Handbook Esc 19 - 21 (CDRL Ref: G11) - C502-LAO-M1-GML-C101-50006	Downgraded to 'No Impact' as outstanding items do not impact the maintenance of the assets
192	C502-PWK-03714	AP5 Door - Finger pull change	The finger pull detail will need to be updated as the current one is made from chrome and is not robust enough.	
193	C502-PWK-03720	BTH & MTH Light Reflection on Glass Wall Mounted Signs	USN 129 in Broadgate ticket hall and USN 201, 202, 203 and 204 in Moorgate ticket hall are all glass wall mounted signs that are reflecting internal lights or external daylight respectively making the graphics and text difficult to read. All signs have been manufactured and installed as per the works information specifications and schedules.	Closed
194	C502-PWK-03721	Lift 5 AC Outstanding Assurance Paperwork		Closed
195	C502-PWK-03723	Lift 7 AC Outstanding Assurance Paperwork		Downgraded to 'No Impact' as outstanding items do not impact the maintenance of the assets
196	C502-PWK-03715	Platform Curved Poster Case Snags	During a site inspection on 29 April 2021 of the curved wall signs and the curved poster cases on PTE and PTW with [REDACTED] and [REDACTED] (CRL Head of Architecture), as a follow up of a previous inspection and PWK 3697, it was confirmed that the operation of all the curved wall signs is acceptable but the curved poster cases have some snagging items. These include:  1. General to all eight poster cases - Sharp edges to the central sprung catch. 2. General to all eight poster cases - Screw adjuster for the central sprung catch is a protruding hex head bolt 3. General to all eight poster cases - Locking and unlocking mechanism is too tight and is not easy to operate 4. USN 1230 and USN 1237 - Central sprung catch has been moved to avoid the GRC cross bracing but is not fixed securely 5. USN 1234 - the gas struts are not taking sufficient opening weight and are not assisting the closing of the panel	
197	C502-PWK-03718	MTH - CoL Sign	Site walkaround on 11-05-2021 with [REDACTED] (CRL Head of Architecture), [REDACTED] and [REDACTED] (C502).	Closed

No-Impact Ref	EOWL Ref (if applicable)	Title	Description	Notes
			It was noticed that the letters, symbols, etc of the City of London (CoL) sign, glued to the blue glazing cladding, appear loose. Refer to photos attached. C502 to address issue.	
198	C502-PWK-03722	BTH - Trellidor Gate Enclosure	Site walkaround with [REDACTED] (CRL Head of Architecture), [REDACTED] (CRL) and [REDACTED] (C502). Enclosure of [REDACTED] Gate appear unfinished with bare concrete and few areas of yellow paint. C502 to review and agree with CRL finish to enclosure and proceed with works.	Closed
199	C502-PWK-03730	Lift 8 AC Outstanding Assurance Paperwork		Downgraded to 'No Impact' as outstanding items do not impact the maintenance of the assets
200	C502-PWK-03731	Lift 9 Outstanding Assurance Paperwork		Downgraded to 'No Impact' as outstanding items do not impact the maintenance of the assets
201	C502-PWK-03727	MTH Floor Punchwork Rationalisation	Further to site inspection of snagging / PWK items and CRL observation items by [REDACTED] (CRL) and [REDACTED] on 14 May 2021 all items, except seven items as detailed in the attached photos, are resolved. It is also accepted that some observations can only be actioned further when temporary site hoardings are removed in July.	Closed
202	C502-PWK-03728	MTH - Cladding Entrance Gap	Site walkaround on 17-05-2021 with [REDACTED] (CRL Head of Architecture). It was noticed that a large gap between the cladding edge and the floor is a potential spot for infestation intrusion. Refer to photo attached. C502 to close gap.	Closed
203	C502-PWK-03729	MTH - External - Access Hatches	Site walkaround on 17-05-2021 with [REDACTED] (CRL Head of Architecture). It was noticed that the external service floor hatches next to the entrance façade present contrasting finish to the ground paving. Refer to photos attached. C502 to replace lids with correct finish to match external paving.	Closed
204	C502-PWK-03732	PMI-2196 outstanding Dampers		Closed
205	C502-PWK-03733	C502+C610 MINIMUM FAULT CURRENT DESIGN INTERFACE CHECK	C610 to confirm that using the minimum fault current figures issued by C502 there are no disconnection time issues raised within there [REDACTED] under fault conditions.	Closed
206	CRL-OBS-35473	LIS - CCTV loss of focus post-commissioning	This OBS is raised to report LU's concern that some CCTV camera images have been observed to lose focus post-commissioning, at LIS. It appears that the cameras are commissioned with the correct focus, and then for some reason (possibly to do with an auto-focus capability) the focus is lost and the camera requires manual re-focussing. This pre-	Downgraded to 'No Impact' as the evidence has been provided confirming resolution of the issue.

No-Impact Ref	EOWL Ref (if applicable)	Title	Description	Notes
			sents a technical challenge to the operations staff and also has an impact on station security, where incidents may be captured on cameras that have lost focus. LU requests that CRL respond to this OBS detailing whether the cause of this issue is known, and what steps are being taken to resolve it at LIS. It is expected to be resolved by SC3 ROGS for LIS.	
207	C660-PWK-01400	Removal of temporary ethernet cable @ LIS	It has been noted that Tet & Commissioning have made a connection to a VNET card from a spare ethernet port on an NVR at LU stations Farringdon, Bond Street, Whitechapel & Liverpool Street. This would have been acceptable during commissioning when systems weren't connected together. We are only allowed a single network connection to the integrated PAVA systems at the LU interchange stations which is as agreed from the LU side (except Whitechapel) and that is to avoid possible network bridging issues.  Note: At no point was the CDN connected to the PA system and there was no bridge between any networks.	Closed
208	C502-NCR-002630	Platform Projecting Help Point Signs - Wrong Colour Down Light	The colour of the down lights in the platform projecting help point signs is incorrect. It is currently 3000K but it should be 5000K.	
209	C660-NCR-000819	Liverpool Street SOR Speaker Feedback	Feedback has been observed when making an announcement in the SOR using the SOR microphone/s.	Physical works have been completed and thus this was downgraded to 'No Impact'
210	C502-PWK-03744	Overclad doors - finger traps	At inspection with [REDACTED] (C502) on 07-06-2021 for C502-PWK-03719, it was noticed that some doors present finger traps in the handle recessed area, which vary from 15 to 20mm. These occur after the S/S vertical trim inside the recess of the cladding for the door handle, refer to photos attached. Please note included in C502-PWK-03719, [REDACTED] proposed in C502-LAO-C-RGN-C101 WS102-50026 Appendix B for door mitigation measures, on page 26, a potential solution for this issue. C502 to investigate and propose solution for CRL approval. C502 then to arrange for inspection with CRL to close this PWK.	Closed
211	C502-PWK-03749	Cyber security, [REDACTED] Cyber security handover	[REDACTED] to complete collating Cyber security evidence for hire won back ups . Sign off sheet required from LU to close Punchwork .	
212	CRL-OBS-35520	BTH & MTH Light Reflection on Glass Wall Mounted Signs	Site walkaround on 11-05-2021 with [REDACTED] (CRL Head of Architecture), [REDACTED] and [REDACTED] (C502). As per C502-PWK-03720, USN 129 in Broadgate Ticket Hall and USN 201, 202, 203 and 204 in Moorgate Ticket Hall are all glass wall mounted signs that are re-	

No-Impact Ref	EOWL Ref (if applicable)	Title	Description	Notes
			flecting internal lights or external daylight respectively making the graphics and text difficult to read. All signs have been manufactured and installed as per the works information specifications and schedules. It is recommended that the signs are changed to vinyl or a vinyl overlay is applied.	
213	CRL-OBS-35524	LIS - Updated CCTV Coverage Report required	This OBS is raised to note that, further to previous (now closed) OBS CRL-OBS-29643, an updated version of the CCTV Coverage Report for LIS (C660-SMN-R3-RGN-C101-50005) is required, in order to confirm that the coverage provided by the final CCTV arrangement is adequate for LU's requirements. Please could the report be updated and re-issued, to allow this OBS to be closed?	
214	TBC	Concession for Northern Line Link Staircase	Concession around middle handrail was rejected by LU with more information to be submitted by Crossrail. This item has been through StEJ	
215	CRL-OBS-35543	LIS - Moorgate Ticket Hall Trellidor gates	<p>This OBS is raised to advise CRL of the following necessary works, relating to the MTH [REDACTED] gates:</p> <p>New colour contrasted handles are to be fitted to the Moorgate ticket hall Trellidor gates. The grey used at BTH is the preferred colour to provided sufficient contrast. The handles are to be made more ergonomic by removing the sharp edges formed by the bent box section – rounded/bevelled edges or bars should be used. The handles are to remain the same size at a minimum (or be made larger), and placement to remain the same. The handles are to incorporate some form of protection against the rivets that sit between the inside edge of the handle and the gate (2 per long handle).</p> <p>The three floor markings, currently black grout, are to be redone using red grout to provide better contrasting and a clearer visual cue for operational staff operating the gate.</p>	
216	C502-PWK-03750	LIS Agreements to be completed after SC3 ROGS	There are 59 Agreements which remain to be closed after SC3 ROGS, as per attached spreadsheet.	
217	CRL-OBS-35542	LIS - insitu skirting on MTH staircase	This OBS is raised to note a concern that the insitu skirting sitting over AATI on the MTH staircase to Met/Circle Line Platform Level, will be unlikely to meet the design life requirements and, as it is no longer modular as required by standards, may be difficult to repair / replace as damage occurs. Please could CRL confirm if the work can be rectified, and/or confirm that replacement is covered within an O&M?	
218	CRL-OBS-35544	LIS - flooring on MTH escape route	Please see attached photo of a section of flooring on the escape route in the Moorgate Ticket Hall shaft. It is not clear to LU whether this is intended to be the final floor finish, nor whether (if so) it has the necessary slip resistance values. Please could CRL confirm whether there is a further finish to be applied, and if not,	

No-Impact Ref	EOWL Ref (if applicable)	Title	Description	Notes
			what the measured SRV is for this section of floor?	
219	CRL-OBS-35545	LIS - Trip hazard at interview room threshold	<p>This OBS is raised to note that a trip hazard observed at the threshold to the LIS Interview Room may not be necessary, as LU does not consider this doorset to be required to be SR3 rated.</p> <p>CRL is requested to consider whether there are reasons other than providing the SR3 rating for the trip hazard to be in place (eg. fire resistance); and if not, to seek to agree with LU that it can be removed in order to provide level flooring throughout.</p>	
220	CRL-OBS-35546	LIS - Complete final set of as-built drawings awaited	<p>This OBS is raised to note that, although a majority of items on the As-built Register have been issued at some version, it is not clear which are at their final version and which may yet be updated and re-issued. Please could CRL confirm once all As-built drawings have been issued at their final versions? If possible, in advance of this being achieved, please could CRL advise LU of the date when it is expected to be achieved?</p>	
221	CRL-OBS-35547	LIS - open caveats relating to LU's issued AAC	<p>This OBS is raised so that the close-out of the caveats appended to LU's issue of the Assurance Acceptance Certificate for the station can be tracked within the EOWL. Please confirm all caveats have been addressed and confirmed as accepted by LU, so that this OBS can be closed.</p>	