Listed Building Consents – Russell Square

Project Programme	**PLU OPO – Listed Building Consents**

Stage	Detailed Design

Responsible	Project Manager	Damian Cawley
	Signature	Date: 30/11/2023

Accountable	Programme Manager	Joanne Pettigrew
	Signature	Date

Product History	Version	Date	Summary of changes
	1	30/11/2023	Document creation
	2	21/03/2024	Incorporation of latest design route (stair wells are no longer used, penetration is made from the footbridge to the platforms)
	3	20/06/2024	Incorporation of merged elevation drawing in *section 1.5*
	4	21/06/2024	Amendments made from Heritage team comments.
	5		

Name	**Role**
Edmund Bird	LU Heritage Manager
Sophia Laird	LU Heritage Advisor
Ian Gilbert	LU Principal Consents Advisor
Michael Raby	LU Town Planning Advisor
Zak Shayler	LU OPO Project Manager
Damian Cawley	LU OPO Assistant Project Manager
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Stuart Knapp	LU Project Engineer
Thomas Tan	LU Project Engineer
Chris Brown	ADC Project Manager
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Contents

Glossary of terms:

CRMS: Cable Route Management System

OPO: One Person Operations

PLU: Piccadilly Line Upgrade

PEB: Platform End Barriers

PSM: Platform Stopping Marker

Leading End: The end of the platform corresponding to the front of the train in the normal direction of travel.

Trailing End: The end of the platform corresponding to the rear of the train in the normal direction of travel.

24TS: 2024 Tube Stock

73TS: 1973 Tube Stock

EB: Eastbound

WB: Westbound

PTI: Platform Train Interface

CER: Communications Equipment Room

SOC = Start of Coverage (This is the start of coverage for the new OPO Camera)

EOC = End of Coverage (This is the end of coverage for the new OPO Camera)

X-Over = Overlap Marker (This is where the coverage of the cameras overlaps)

OTC = Off-train Communications

IS Box = Intermediate Switch Box (Part of the OTC equipment)

1. OPO Scope Summary

The Piccadilly Line Upgrade (PLU) remains a key element of the TfL Business Plan and is a priority for investment over the plan period and beyond. The TfL Business Plan describes the investment needed to transform London's transport infrastructure to meet the economic, employment and regeneration requirements of the Mayor's Transport Strategy (MTS).

The PLU will first upgrade the Piccadilly line to provide around a 60% increase in capacity through the introduction of new higher capacity trains and train control systems, enabling peak service levels to be raised to 33 trains per hour (or greater).

Platform Train Interface (PTI) is LU's top safety risk due to lack of physical separation between the passengers on the platforms and moving trains. Since the impact of this risk is possible passenger fatality, mitigations are carefully developed and prescribed in various LU standards.

The primary mitigation of the PTI risk during train dispatch is provision of clear and uninterrupted view of the complete critical area of the PTI under all conditions to the Train Operator. It is a safety requirement that the Train Operator must have a clear un-obstructed view of the complete platform critical area under all conditions during dwell and train dispatch.

Video images from designated platform cameras are combined and transmitted to trains and the images are displayed on monitors in the driver's cab(s) in near 'real – time'.

The functionality of the OPO CCTV system is critical to safe dispatch of the train, and therefore any failure of the system in operation leads to railway service disruptions.

The OPO CCTV system will be designed, installed, commissioned, and brought into use on the Piccadilly Line, with requirements of delivering the Off-Train Communications (OTC) equipment (stations only), and Platform Stopping Marker equipment (stations only), which are all within scope of the main OPO CCTV contract, with Alan Dick Communications (AD Comms).

Additional OPO scope includes other platform ancillary works such as the platform enabling works, platform end barriers, or other operational signage.

Due to the nature of the programme, there will be a migration phase where existing equipment associated with the 73Tube Stock (73TS) and new assets for the 24 Tube Stock (24TS) will coexist on platforms. This is vitally important and safety critical as the new Fleet of trains (24TS) is introduced to the Piccadilly Line so that the 73TS can still run until full delivery has been complete, not compromising quality of service or safety.

1.1. Town Planning Consents

Listed building consent will be required for work on the Grade 2 and Grade 2* structure. Listed building consents will not be required for locally listed stations, although changes to the stations will need to be discussed with LU Heritage Advisors.

Borough	Station	Listing
Hounslow	Hounslow West	Grade 2
	Hounslow Central	Locally Listed
	Osterley	Grade 2
	Boston Manor	Grade 2
Brent	Sudbury Town	Grade 2*
	Alperton	Locally Listed
Hillingdon	Uxbridge	Grade 2
	Ruislip	Grade 2
	Eastcote	Grade 2
	Ruislip Manor	Locally Listed
	Hillingdon	Locally Listed
Harrow	Rayners lane	Grade 2
	Sudbury Hill	Grade 2
	South Harrow	Locally Listed
Ealing	Northfields	Grade 2
	Park Royal	Grade 2
	North Ealing	Grade 2
	Ealing Common	Grade 2
	Acton Town	Grade 2
HS & Fulham	Barons Court	Grade 2
Kensington & Chelsea	Earls Court	Grade 2
	Gloucester Road	Grade 2
	South Kensington	Grade 2
Westminster	Piccadilly Circus	Grade 2
	Covent Garden	Grade 2
Camden	Russell Square	Grade 2
Hackney	Manor House	Locally Listed
Islington	Caledonian Road	Grade 2
	Holloway Road	Grade 2
	Arsenal	Locally Listed
Haringey	Turnpike Lane	Grade 2
	Wood Green	Grade 2
	Bounds Green	Grade 2
Enfield	Arnos Grove	Grade 2*

	Southgate	Grade 2*
	Oakwood	Grade 2*
	Cockfosters	Grade 2

1.2 Planning Statement (From Consents Officer)

This text is to be filled in by consents officer (IG) prior to be submission to the borough.

1.3 CRMS Design Proposal

Russell Square

Use of existing CRMS:

Where possible, the OPO Project on behalf of the Piccadilly Line Upgrade will be reusing existing CMS (Cable Management Systems) and only using and adding new CMS where required. As per each station submission, the OPO project will consider the LU Heritage Features document when submitted the listed building consents document.

In relation to Russell Square, there is new CRMS being installed in the passenger realm / public areas / station areas or areas showcased within the LU Heritage Features document for Russell square.

Where possible, it is planned for us to try and reuse any existing CRMS in public areas therefore not affecting any heritage assets.

NP		Node Power
NC		Node Comms
	yellow arrow	Direction
	dark blue line	New CRMS
	light blue line	Support brackets
	oval	Structural Penetration
	oval	CRMS Penetration

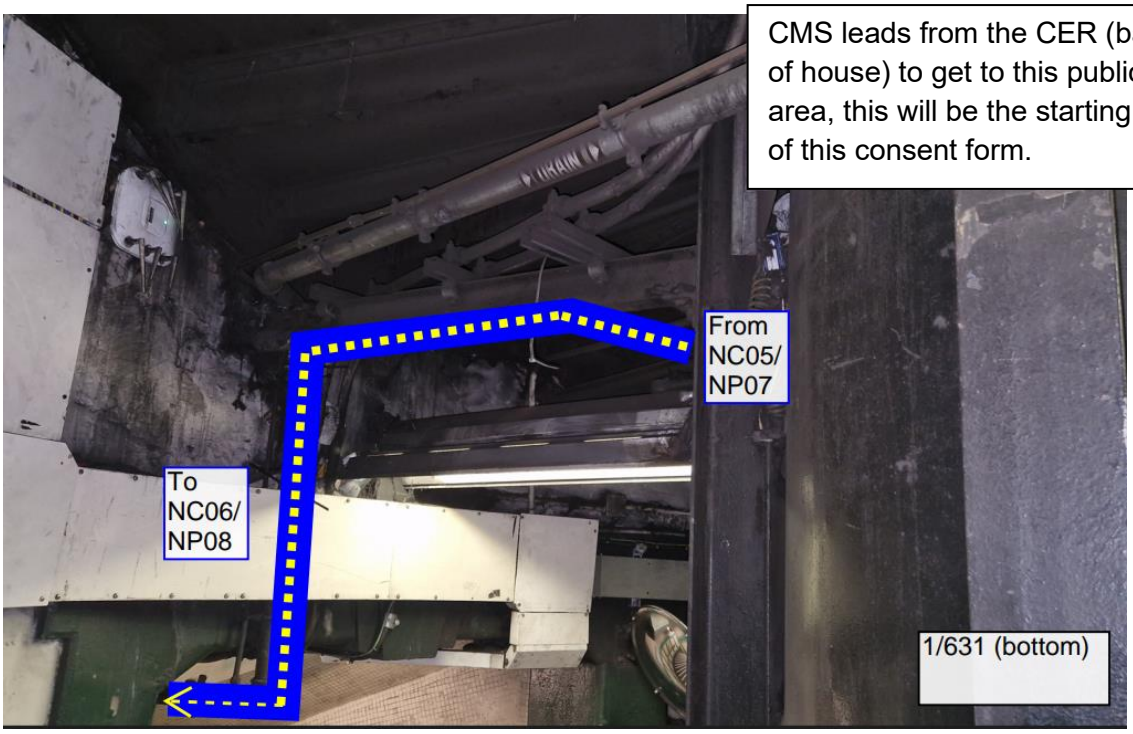
CRMS Hidden from public view = Dashed Lines

CRMS Visible= Solid Lines

All CRMS will be colour-coated to match the finish of the substrate to which it will be affixed in alignment with the LU Design Idiom.

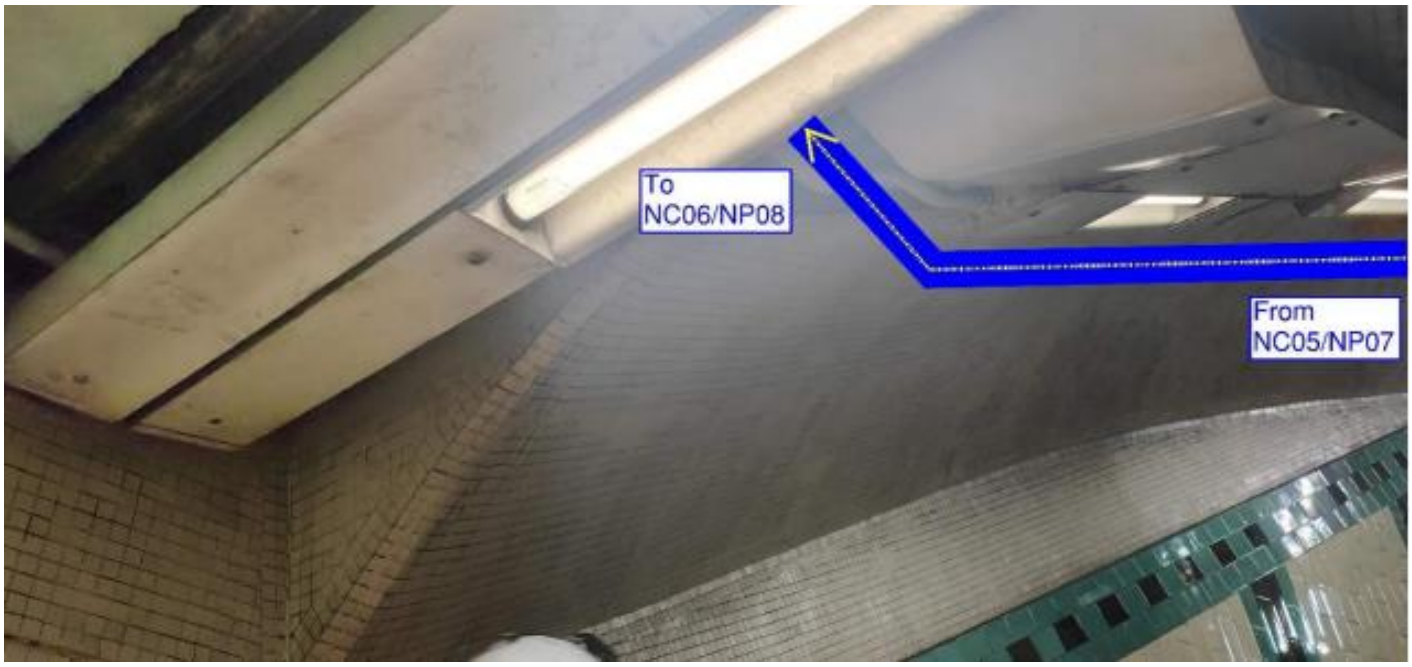
Please note, this design route has been chosen after extensive optioneering. We originally considered using the stairwells for both platforms – however this soon became problematic due to a plethora of existing assets that obstructed the route. After reaching out to the relevant stakeholders of those assets, we came to realise that this route was not feasible – in which we attended site to discover that we could utilise a route from the footbridge/walkway through penetrations (similar to what existing conduits have done to this area). This new route ensures that we A.) have no clashes with existing assets or interfacing projects and B.) use/install less trunking/cabling than we previously intended to.

CMS leads from the CER (back of house) to get to this public area, this will be the starting point of this consent form.



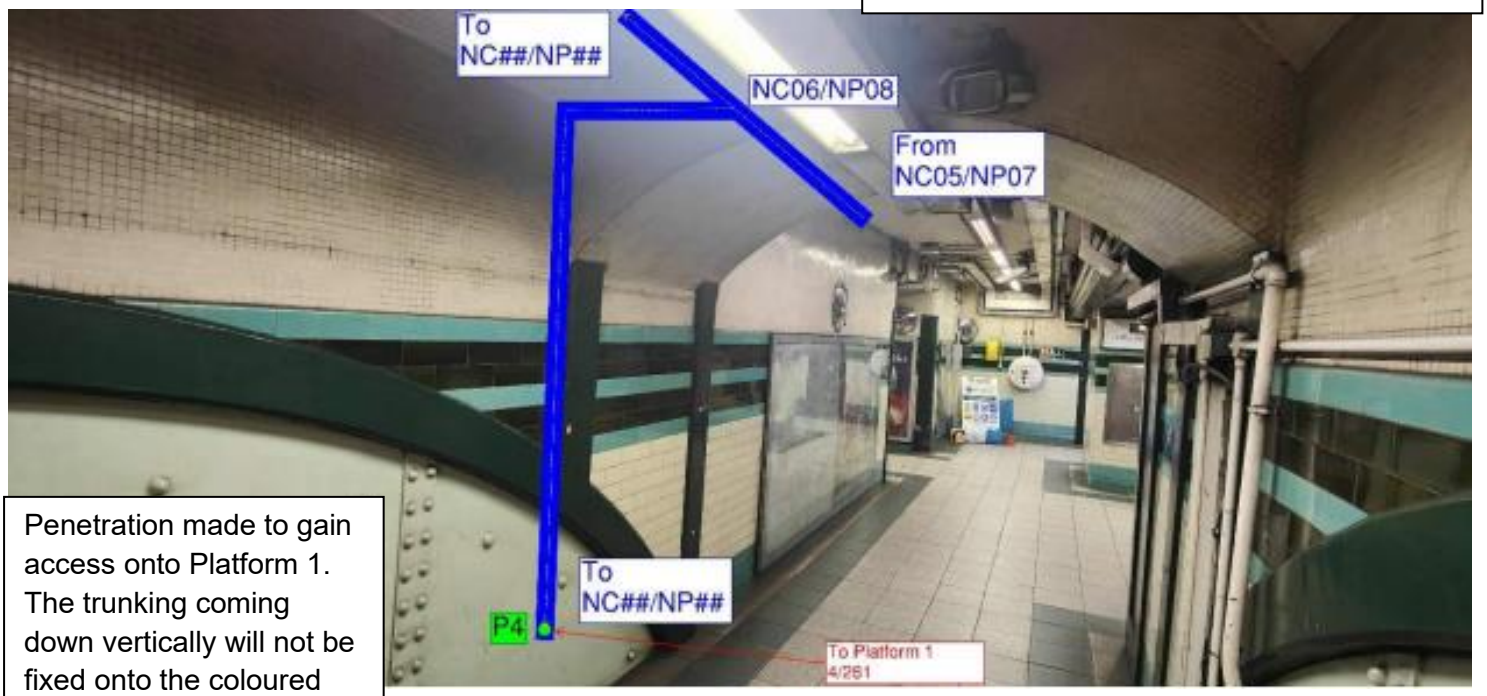
New CMS (100x50mm)has to be installed this way due to the existing assets (cameras) that impact the route. The owners of the cameras have been liaised with and we have been informed that these assets cannot be disabled or relocated. This will be colour matched against the structure it's placed on.

New CMS will be colour matched against the structure it's placed on.

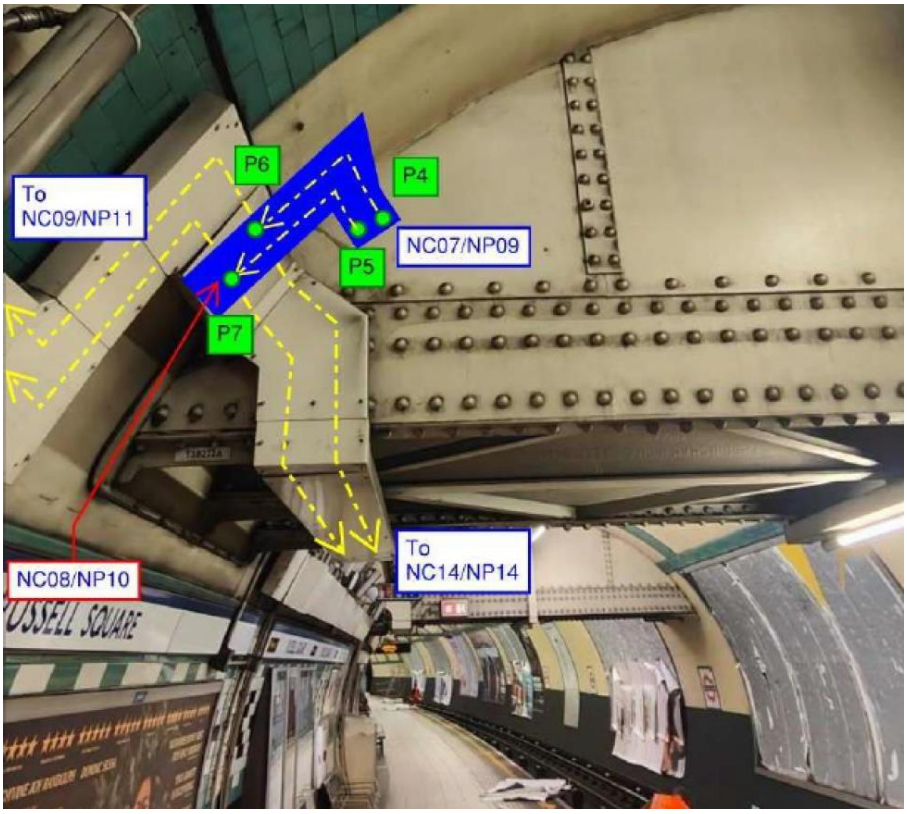


New CMS will be colour matched against the structure it's placed on.

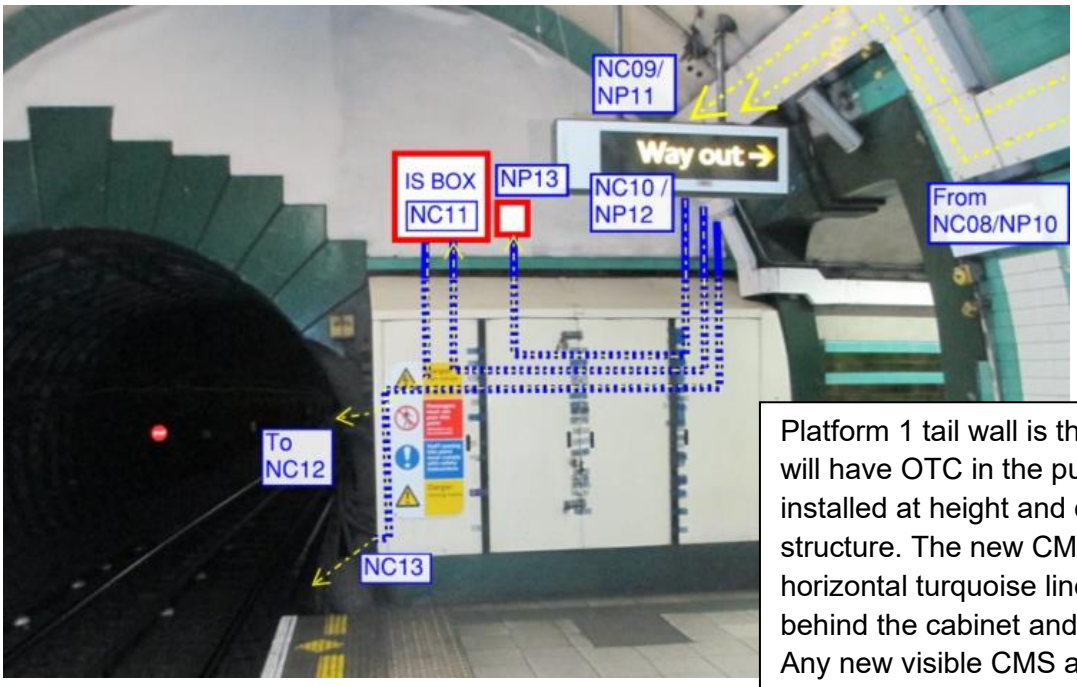
New CMS will be colour matched against the structure it's placed on.



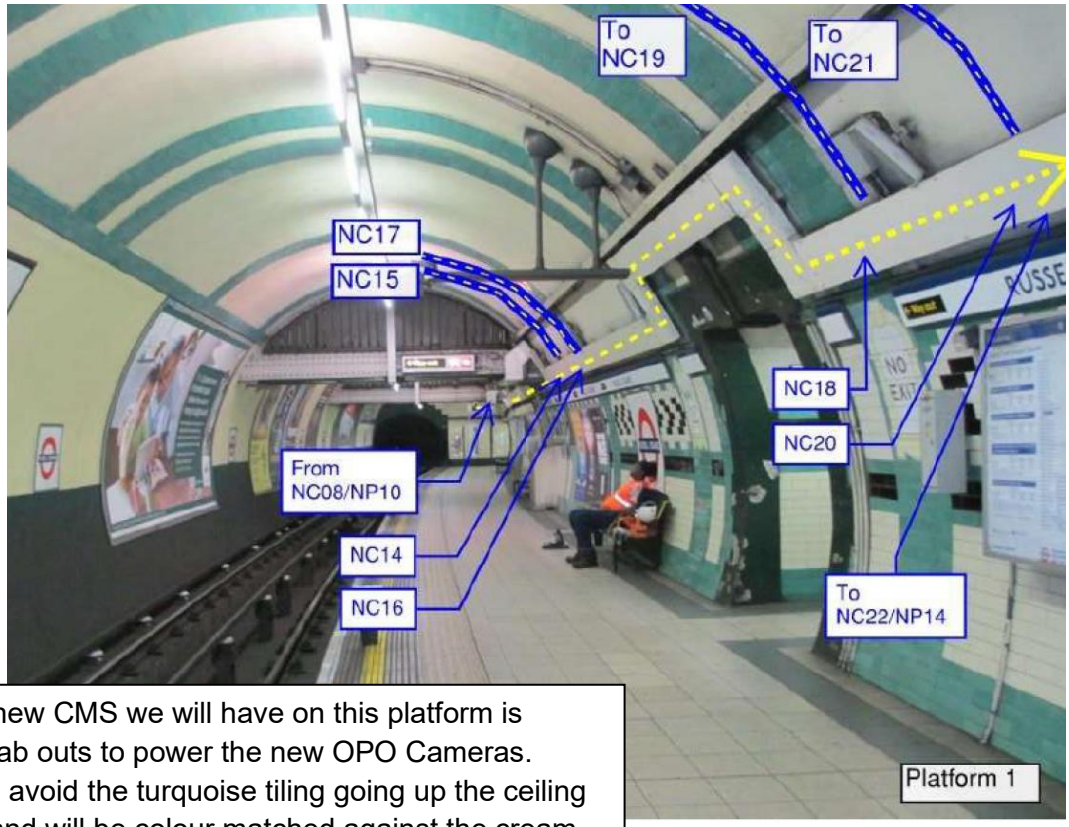
Penetration made to gain access onto Platform 1. The trunking coming down vertically will not be fixed onto the coloured heritage tiling (similar to the existing conduits on the other side).



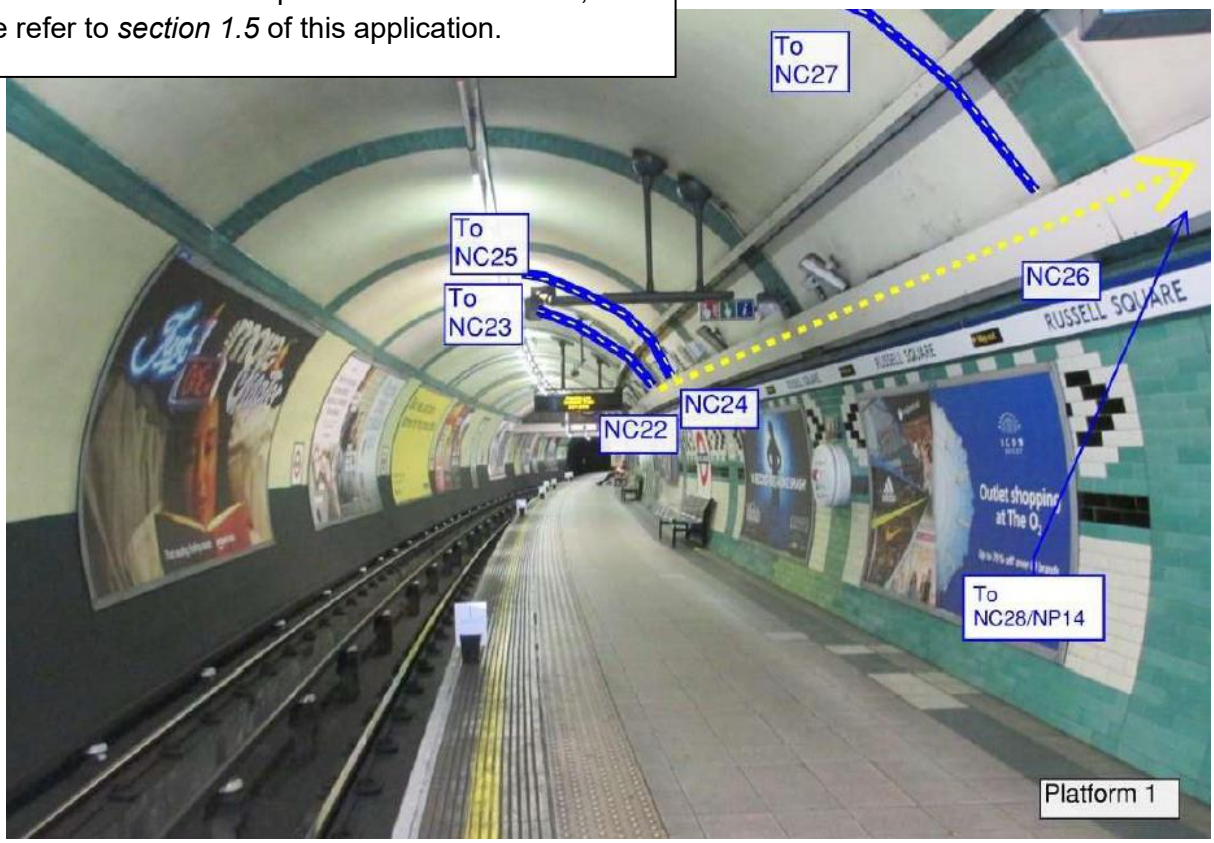
Penetration leads onto platform 1. A small piece of new trunking is required to connect to the existing trunking. This will be colour matched.

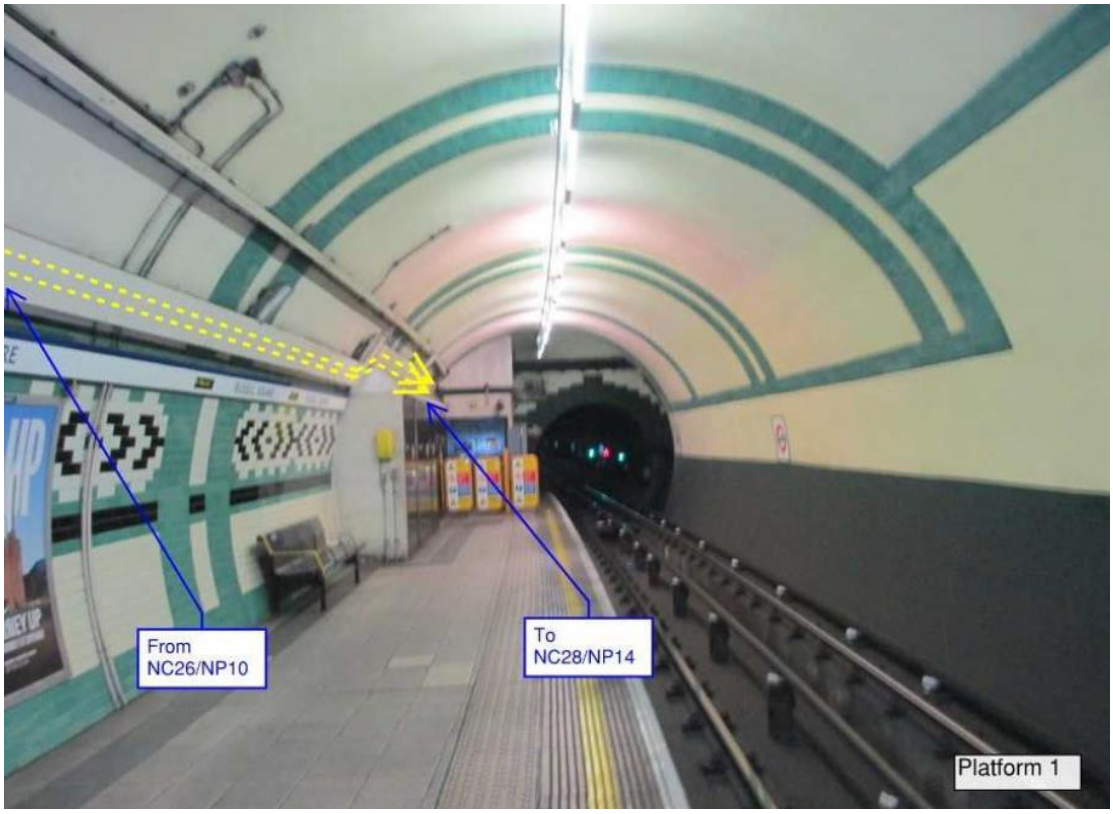


Platform 1 tail wall is the only location which will have OTC in the public realm. It will be installed at height and colour-matched to its structure. The new CMS situated below the horizontal turquoise line will be installed behind the cabinet and therefore out of sight. Any new visible CMS and the IS Box will be colour matched. New CMS will not be fixed to the turquoise line, it will only cover parts of it and be colour matched.



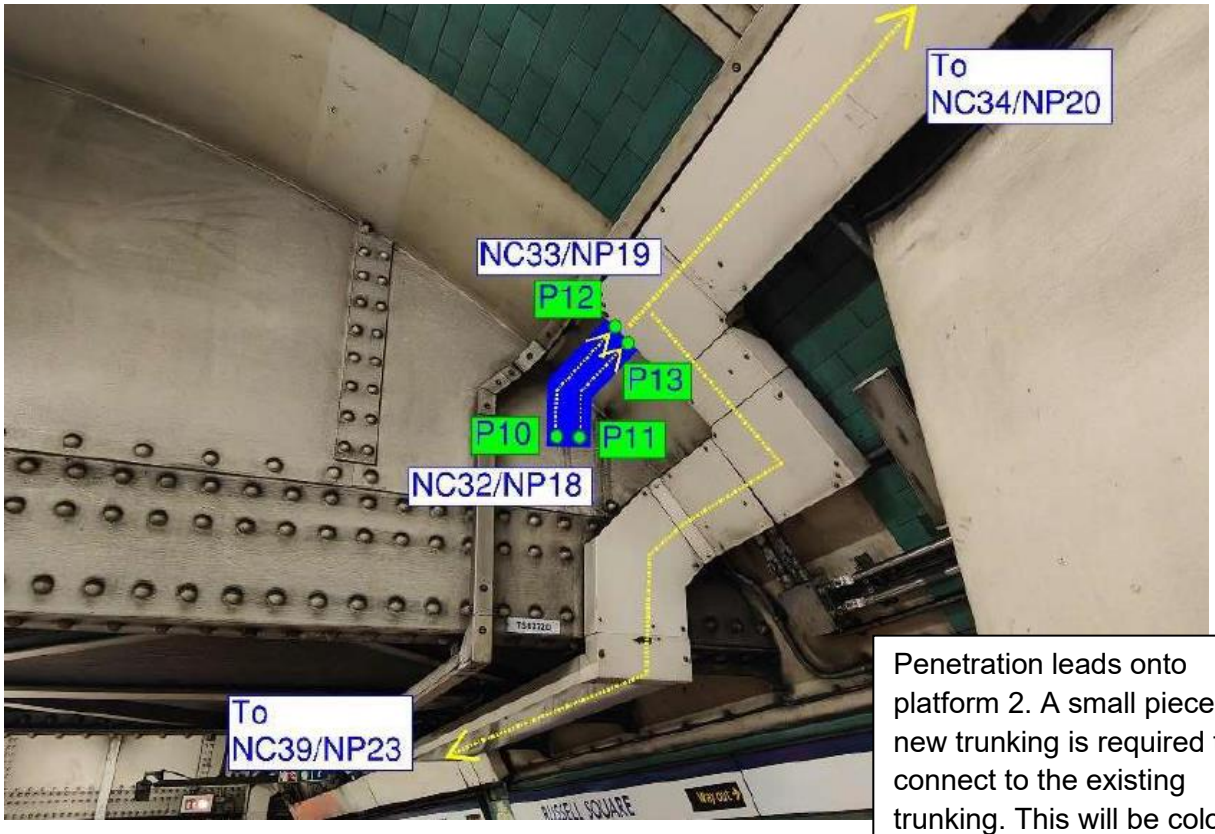
The only new CMS we will have on this platform is conduit stab outs to power the new OPO Cameras. These will avoid the turquoise tiling going up the ceiling archway and will be colour matched against the cream structure. To see the exact position of the cameras, please refer to *section 1.5* of this application.





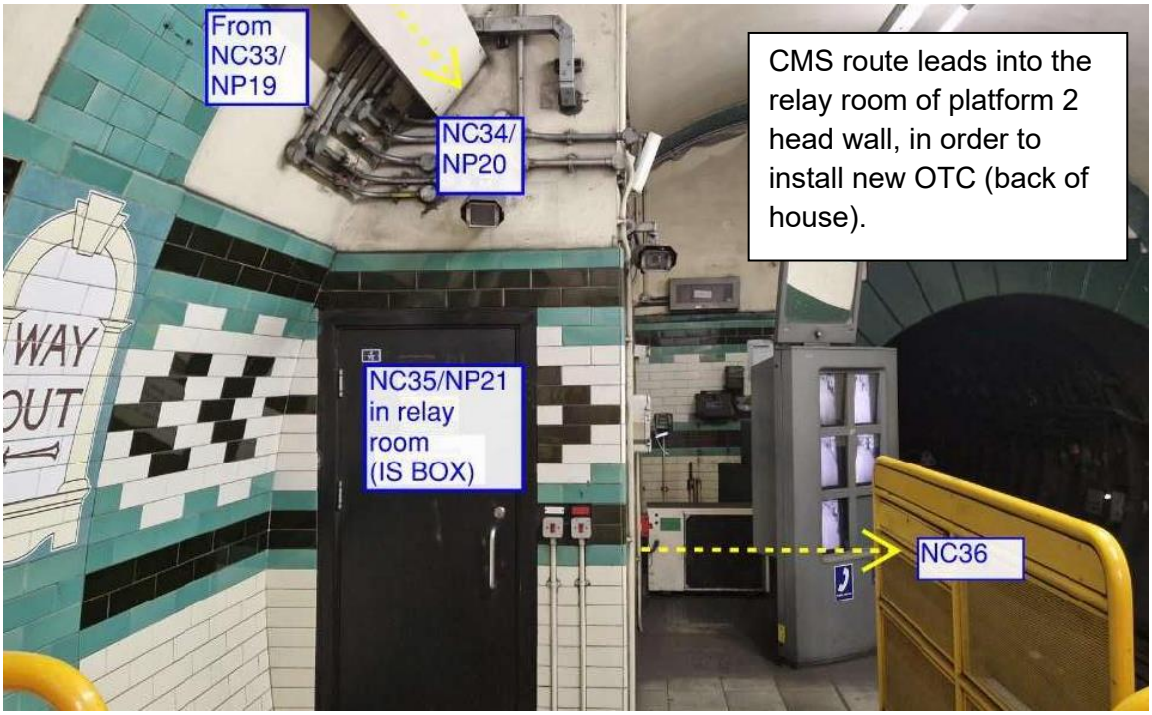
CMS will lead into the relay room at the head wall of platform 1 for the install of OTC (back of house).

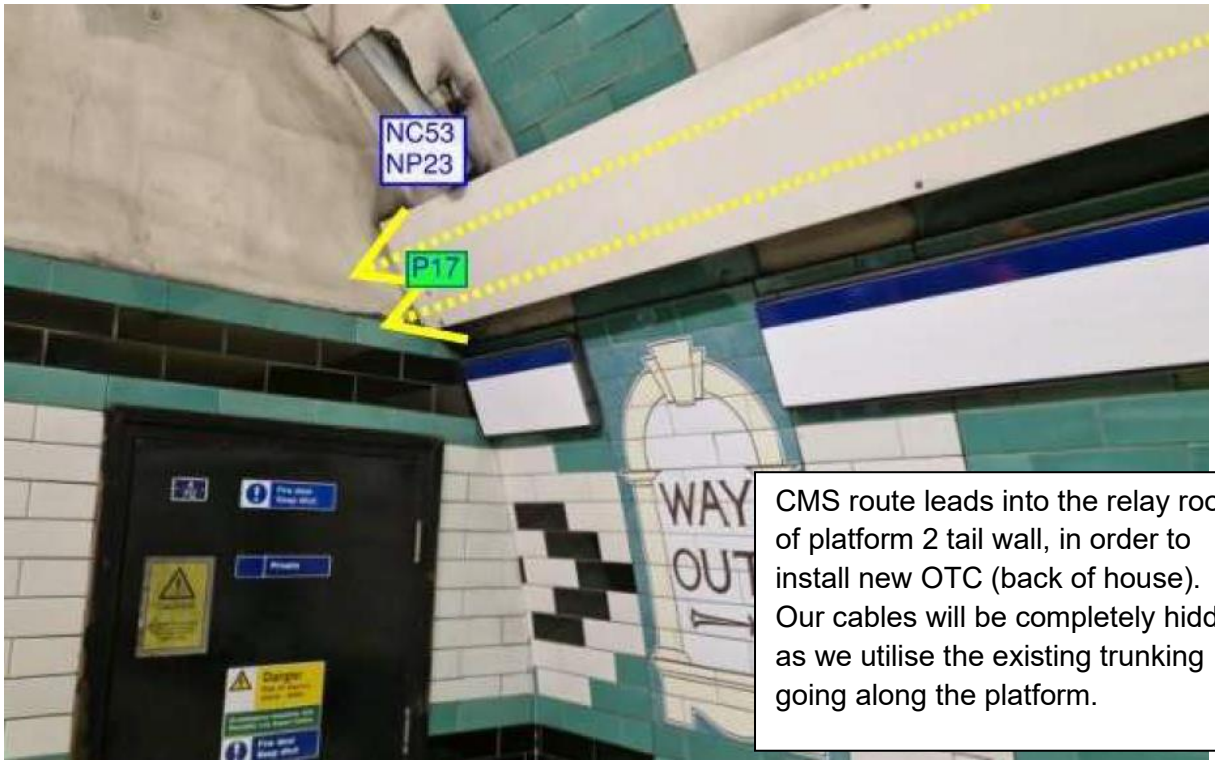
Starting from the footbridge again, the CMS route continues further along to make a second penetration to lead to platform 2. Again, the trunking coming down vertically will not be fixed onto the coloured heritage tiling.



Penetration leads onto platform 2. A small piece of new trunking is required to connect to the existing trunking. This will be colour matched.


From
NC33/
NP19
Way out
To
NC34/
NP20
PLATFORM 2


From
NC33/
NP19
NC34/
NP20
CMS route leads into the relay room of platform 2 head wall, in order to install new OTC (back of house).
NC35/NP21
in relay
room
(IS BOX)
NC36



CMS route leads into the relay room of platform 2 tail wall, in order to install new OTC (back of house). Our cables will be completely hidden as we utilise the existing trunking going along the platform.

1.4 Lifecycle of OPO Project on Platform – Russell Square

This section provides augmented reality imagery of the platforms in the below phases;

- In their current state with 73 Tube Stock (TS) equipment alone
- Mid-way through with both 73TS and 24TS equipment on the platform
- End of the project's lifecycle, where 73TS has been removed and 24TS Stands alone

The images solely showcase the changes in Cameras and bracketry and no other platform changes.

Images for every camera to be attached showing Current, Migration and End states. Russell Square images are attached as an example only. Where existing cameras are removed, the relevant area will be made good in terms of filling fixing holes and restoring the colour match.

Key:

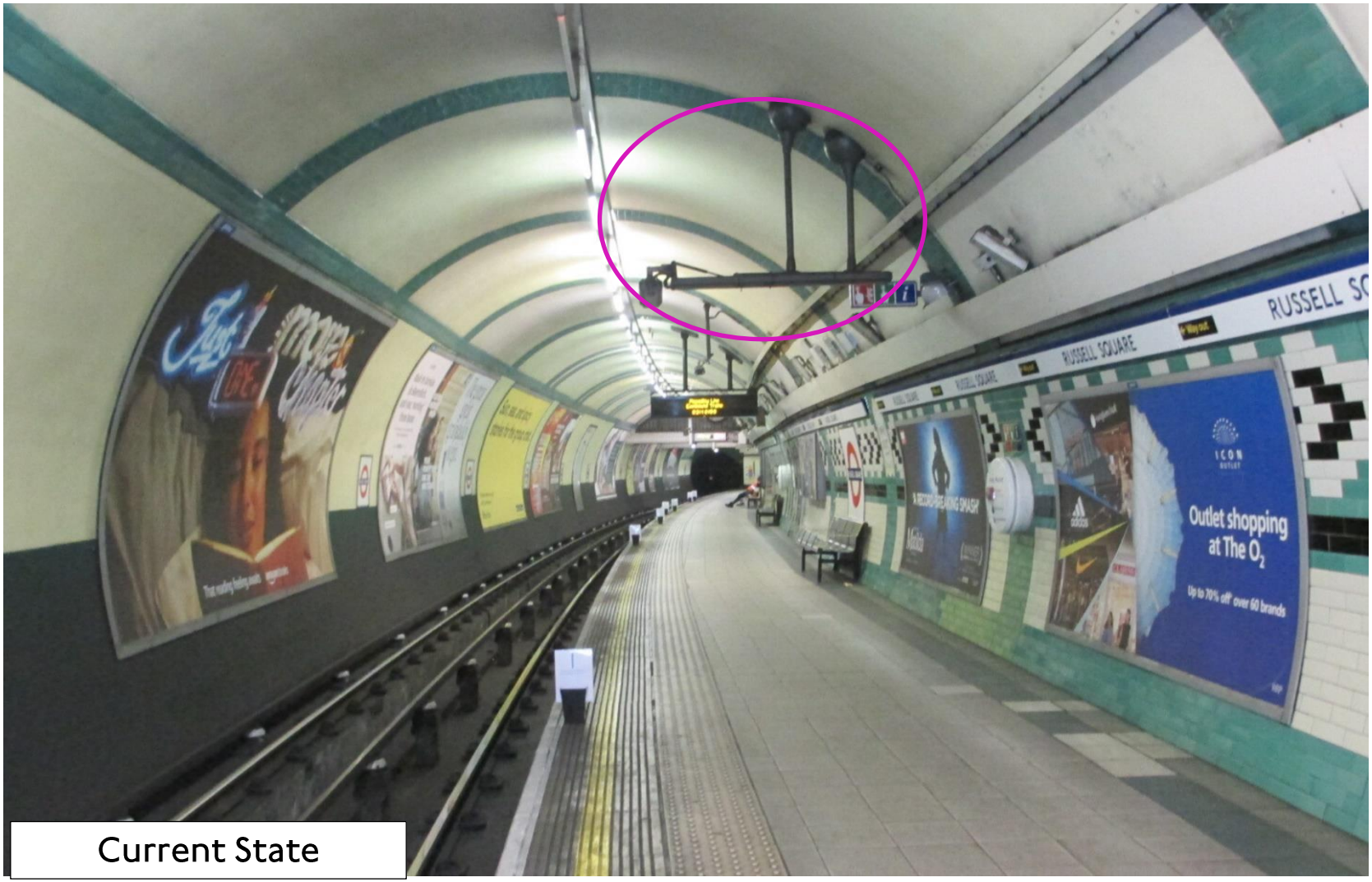
Existing bracketry & cameras = 

Existing bracketry & cameras = 

New bracketry & cameras = 

New bracketry & cameras = 

Platform 1

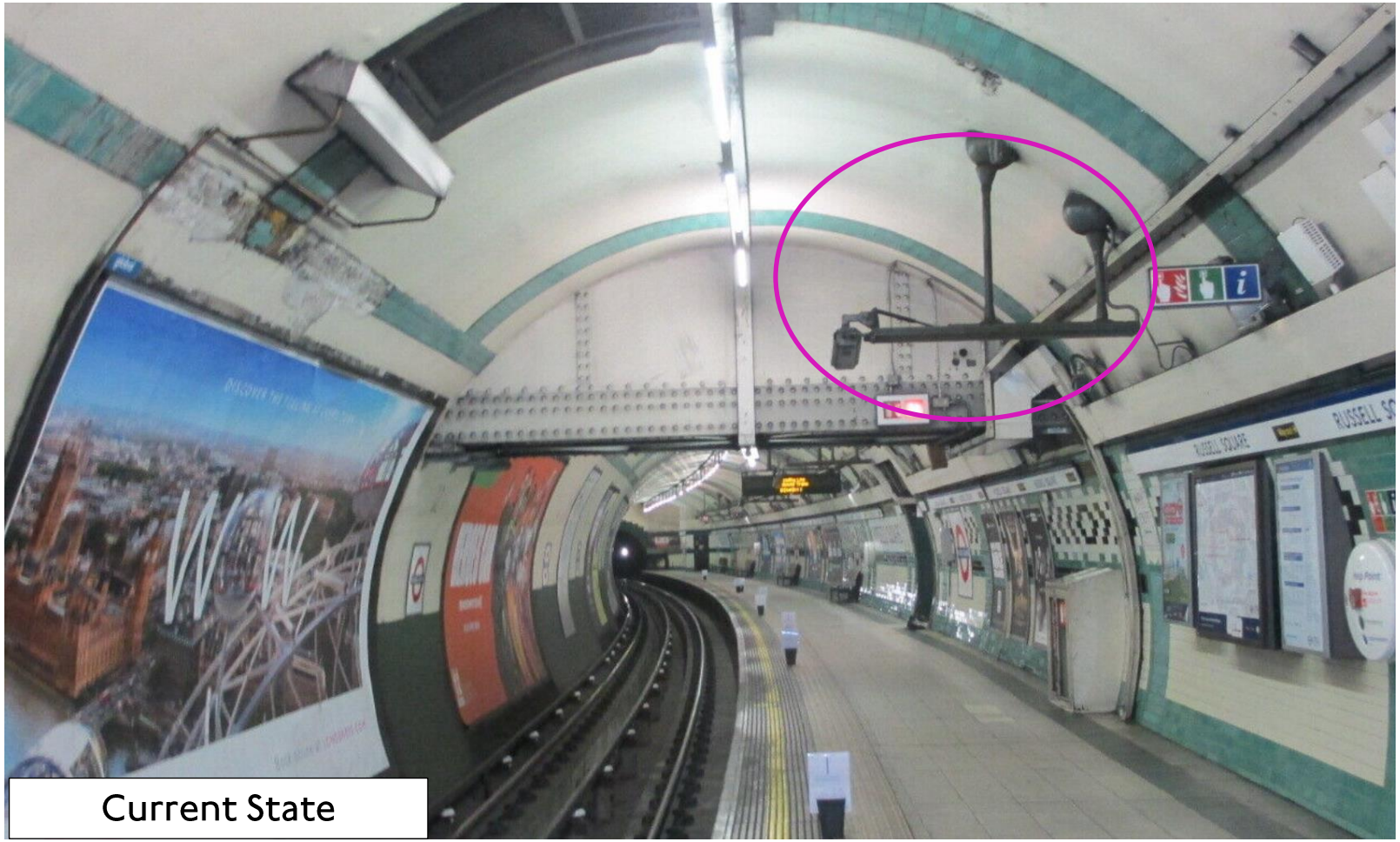


Current State

NOTE: Any areas where existing cameras are removed after end state will be restored. Existing holes / drillings will be made good as well as restoring colour matching concerns.


RUSSELL SQUARE
End State

Platform 2




Migration State


End State

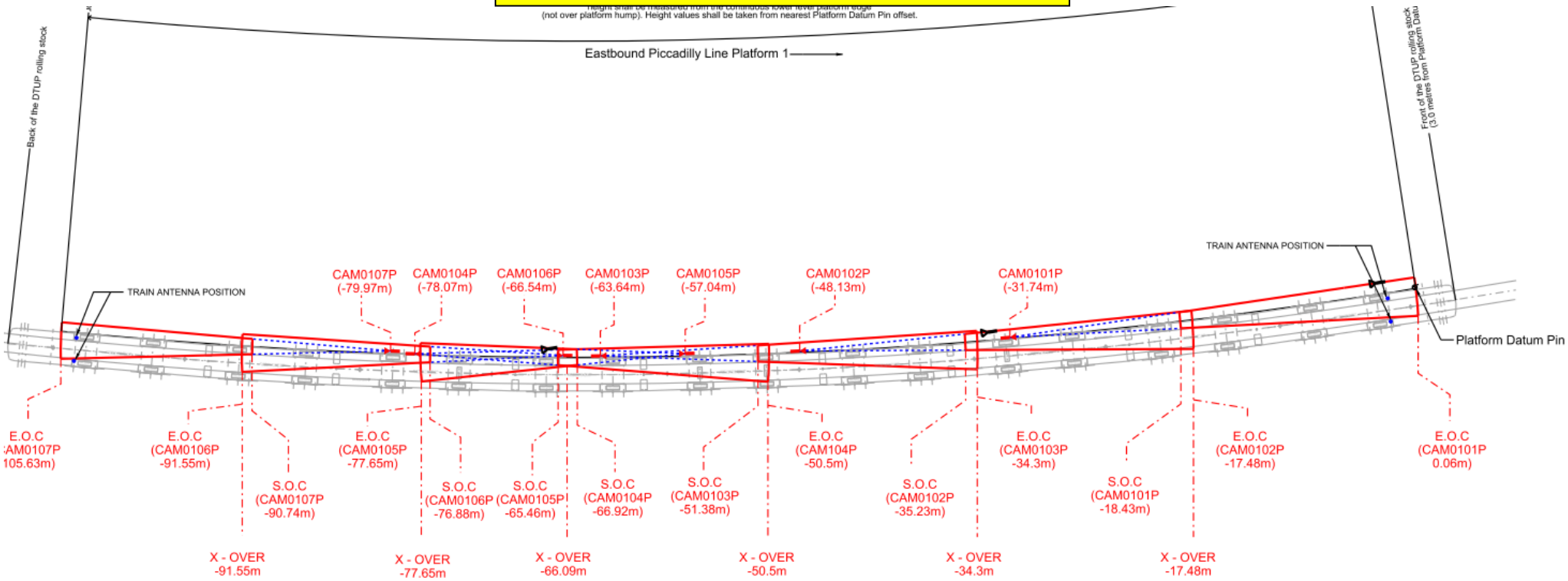
1.5 Camera positions

Platform 1

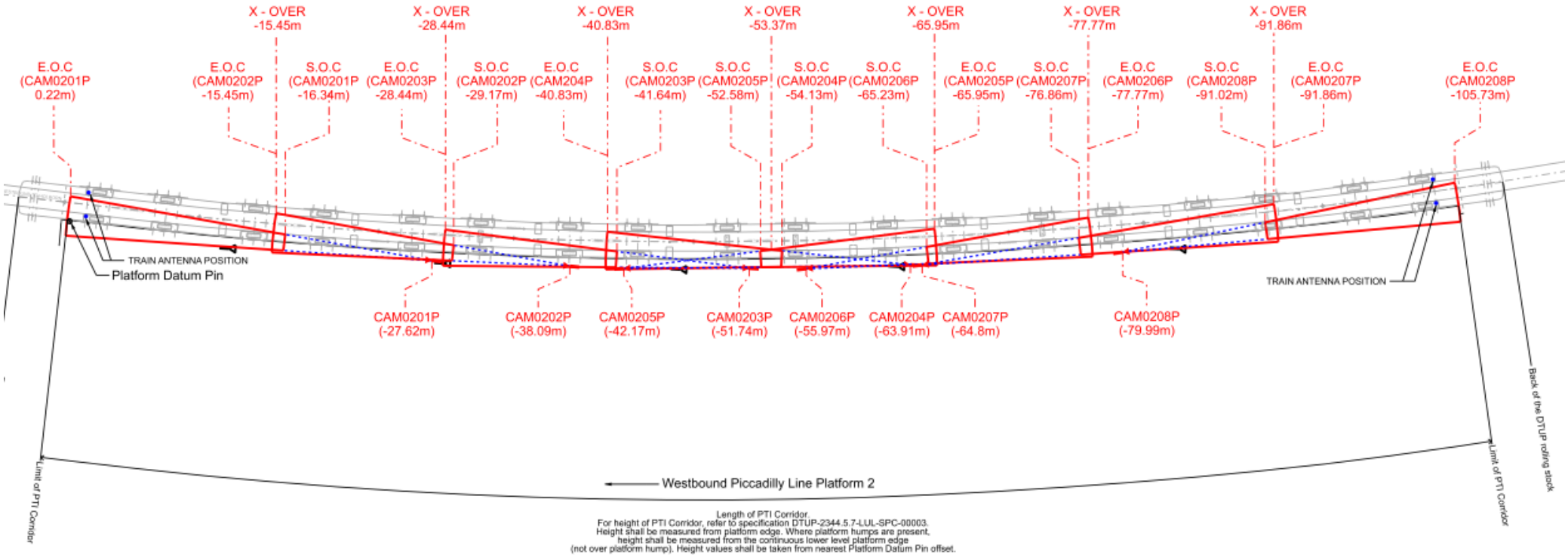
Solid red lines = represent the coverage of each new camera

Dotted blue lines = represent the angle of coverage until SOC (start of coverage)

Key	
Red	New OPO Cameras
Black	Existing OPO Cameras



Platform 2


X - OVER -15.45m
X - OVER -28.44m
X - OVER -40.83m
X - OVER -53.37m
X - OVER -65.95m
X - OVER -77.77m
X - OVER -91.86m
E.O.C (CAM0201P 0.22m)
E.O.C (CAM0202P -15.45m)
S.O.C (CAM0201P -16.34m)
E.O.C (CAM0203P -28.44m)
S.O.C (CAM0202P -29.17m)
E.O.C (CAM204P -40.83m)
S.O.C (CAM0203P -41.64m)
S.O.C (CAM0205P -52.58m)
S.O.C (CAM0204P -54.13m)
S.O.C (CAM0206P -65.23m)
E.O.C (CAM0205P -65.95m)
S.O.C (CAM0207P -76.86m)
E.O.C (CAM0206P -77.77m)
S.O.C (CAM0208P -91.02m)
E.O.C (CAM0207P -91.86m)
E.O.C (CAM0208P -105.73m)
TRAIN ANTENNA POSITION
Platform Datum Pin
CAM0201P (-27.62m)
CAM0202P (-38.09m)
CAM0205P (-42.17m)
CAM0203P (-51.74m)
CAM0206P (-55.97m)
CAM0204P (-63.91m)
CAM0207P (-64.8m)
CAM0208P (-79.99m)
TRAIN ANTENNA POSITION
Limit of PTI Corridor
Limit of PTI Corridor
Back of the DTUP rolling stock
Westbound Piccadilly Line Platform 2
Length of PTI Corridor.
For height of PTI Corridor, refer to specification DTUP-2344.5.7-LUL-SPC-00003.
Height shall be measured from platform edge. Where platform humps are present,
height shall be measured from the continuous lower level platform edge
(not over platform hump). Height values shall be taken from nearest Platform Datum Pin offset.

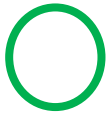
The following page demonstrates a merged elevation drawing of platform 1 at Russell Square. On this particular platform, the PLU OPO project are facing an interface with a similar project, OPO GAPs. Both projects intent is to install new sets of cameras which capture footage of the critical area between the train and the platform (better known as the Platform-Train Interface) and are therefore crucial from a health and safety perspective for the successful view of the PTI for the train drivers. The justification for why both are required is due to the 2 different Piccadilly Line fleets that will operate in parallel during a migration phase; the OPO GAPs cameras will provide coverage to the existing 73TS fleet whilst the PLU OPO cameras will provide coverage to the new fleet. Once the existing fleet is decommissioned and removed from service, the GAPs cameras will be removed (it is envisioned that these assets will be removed by the end of 2027).

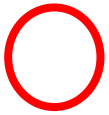
The following drawing shows 3 sets of elevations which demonstrate:

- **Current state (now)** = 2x Existing OPO Cameras (which will be removed upon the install of the GAPs cameras)
- **Migration state (2024 – 2027)** = 7x new PLU OPO cameras and 6x new OPO GAPs cameras
- **End state (2027 and beyond)** = 7x new PLU OPO cameras (GAPs cameras will be removed once the existing 73TS fleet is decommissioned and removed from the network)

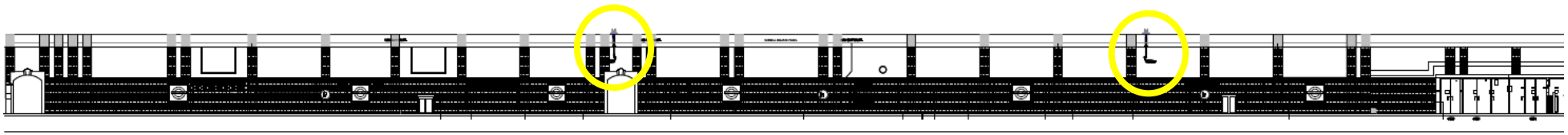
Key:

Current OPO cameras =

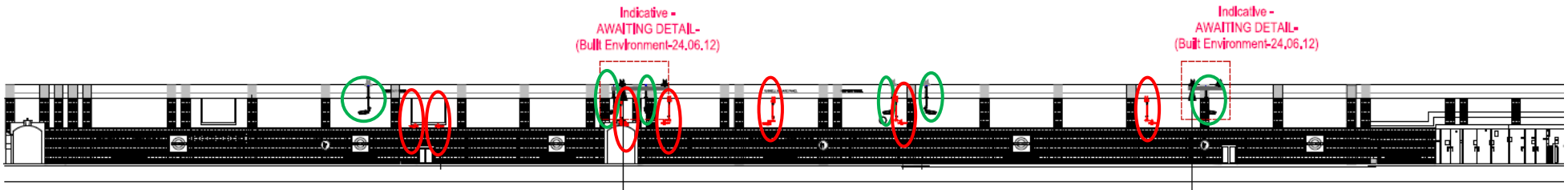
OPO GAPs cameras = 

PLU OPO cameras = 

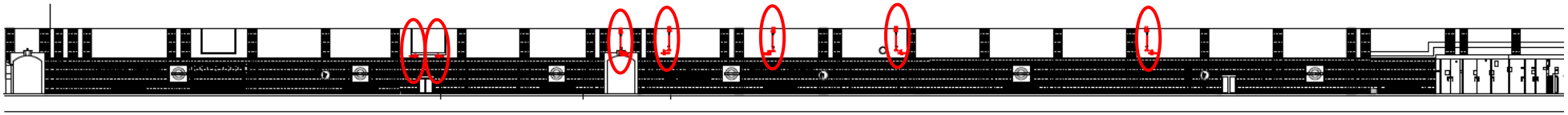
Scale Bar 1:250 @ A1
0m 5m 10m 15m 20m 25m



(EXISTING STATE)
Platform 1- Existing Camera Locations
Scale 1:250 at A1



(INTERIM STATE)
Platform 1- Proposed Camera Locations-(GAPS & PLU combined)
Scale 1:250 at A1



(END STATE)
Platform 1- Proposed 'PLU Camera Locations'
Scale 1:250 at A1

No 'Gaps' cameras to be shown on this elevation
This elevation just to show PLU cameras only-
as the 'End state'

1.6 Camera Housing

Please see the below imagery of the Camera Housing we have selected. The First image is of the Camera Housing itself and the second image prescribes the dimensions. Although the Camera within the housing is smaller, for safety critical purposes, it is vital to have sturdy housing to ensure the risk to damage and environmental impact is as minimal as possible + ancillary equipment. The Camera Housing will come in a standard grey as per the below image.

Length = 16.9 Inches

Depth = 5.6 Inches

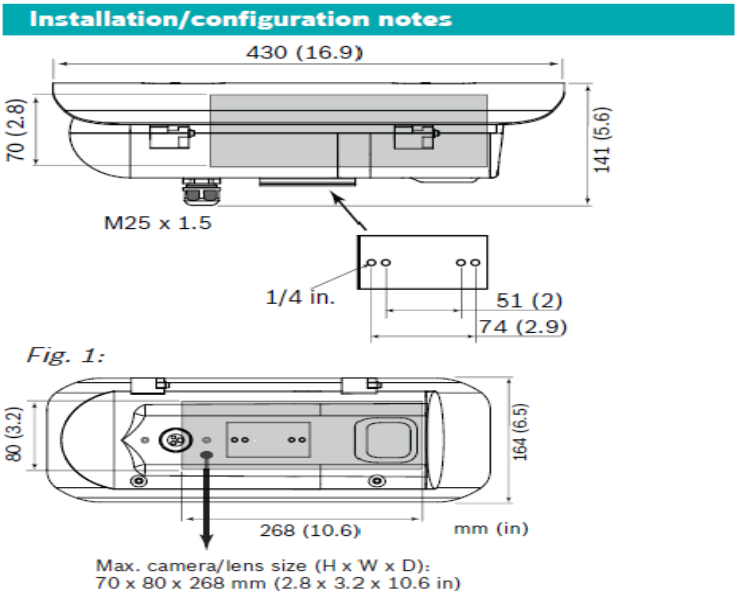
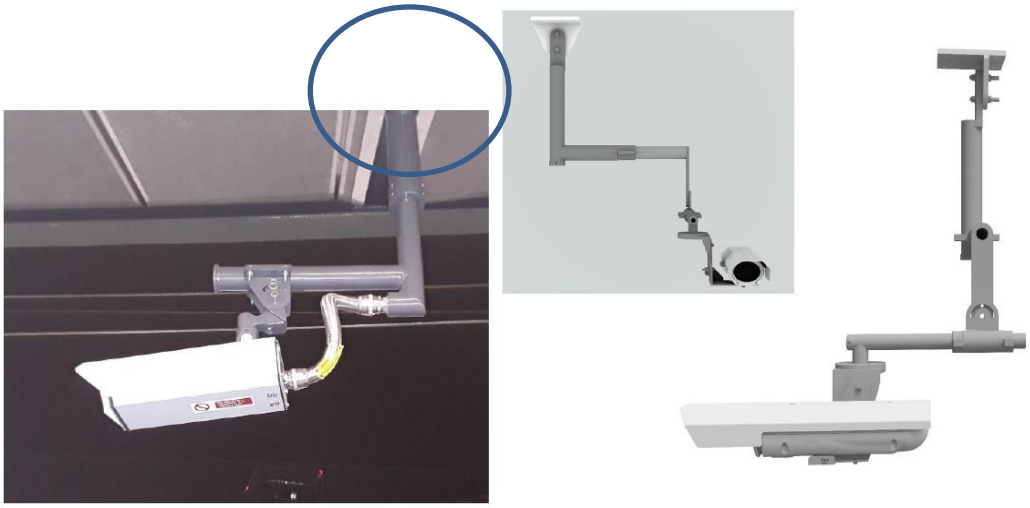


Fig. 1:

1.7 Camera bracket types

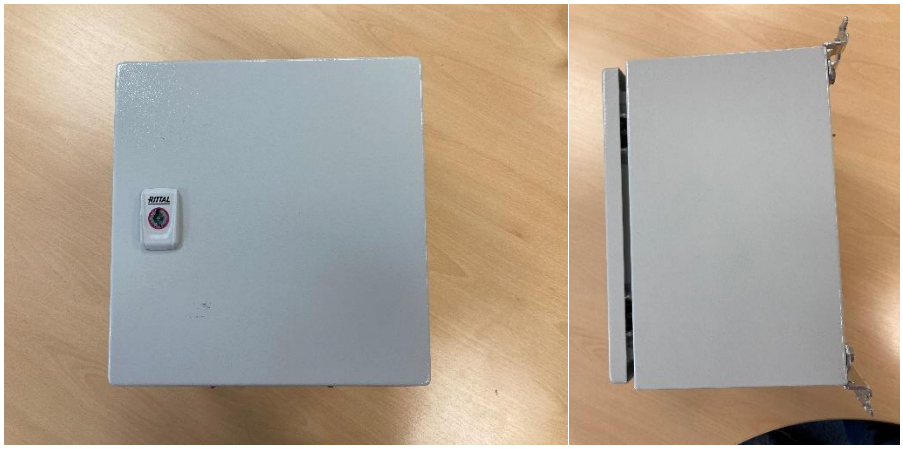
4.b. Overview of visible subsystems - **OPO CCTV cameras – Canopy Mount Bracket**



At Russell Square, we will be installing Canopy Mount Brackets, as per images at section 1.4

1.8 OTC broadband equipment

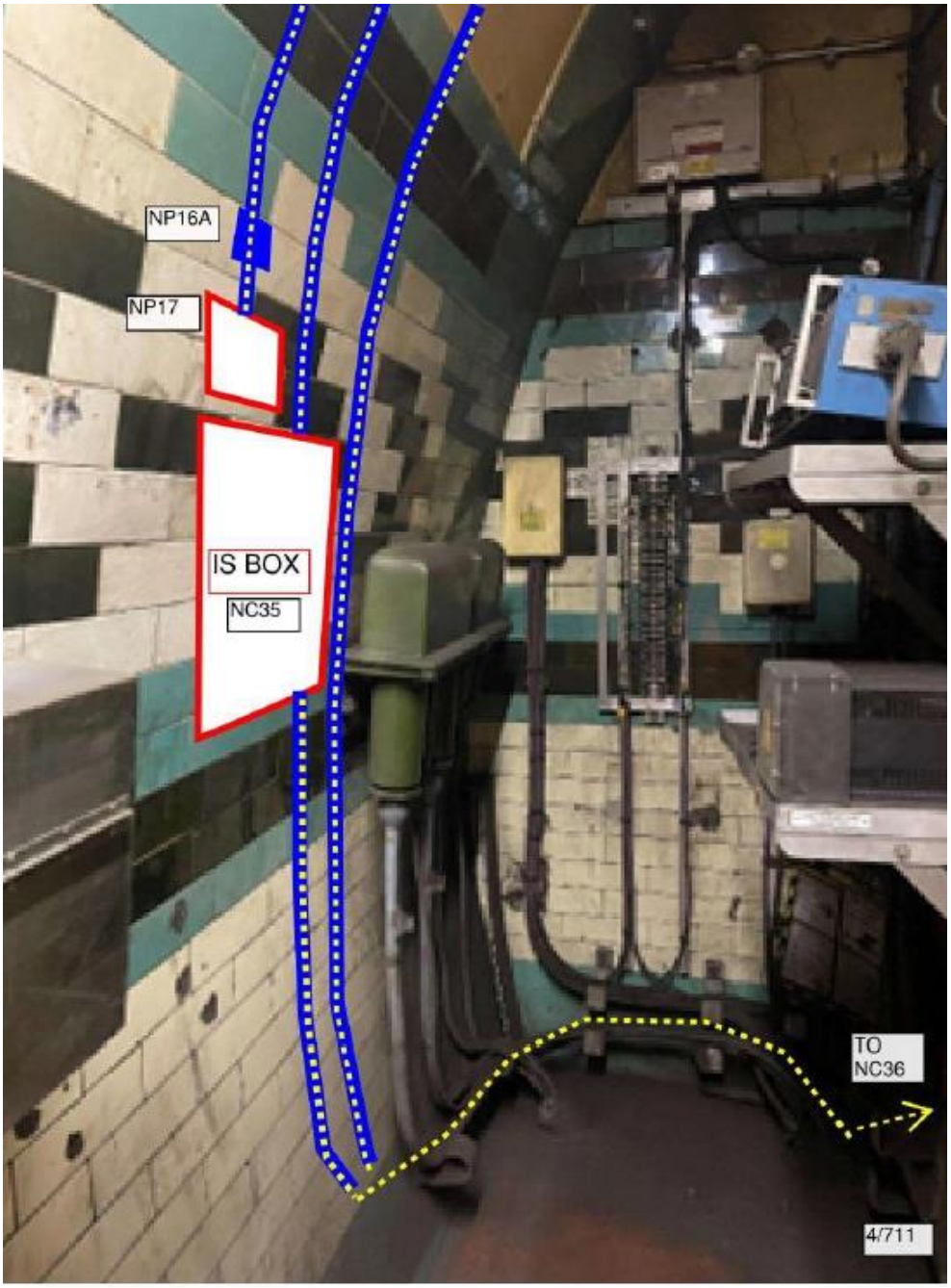
Dimensions:
IS box
300wx300hx2
10d(mm)



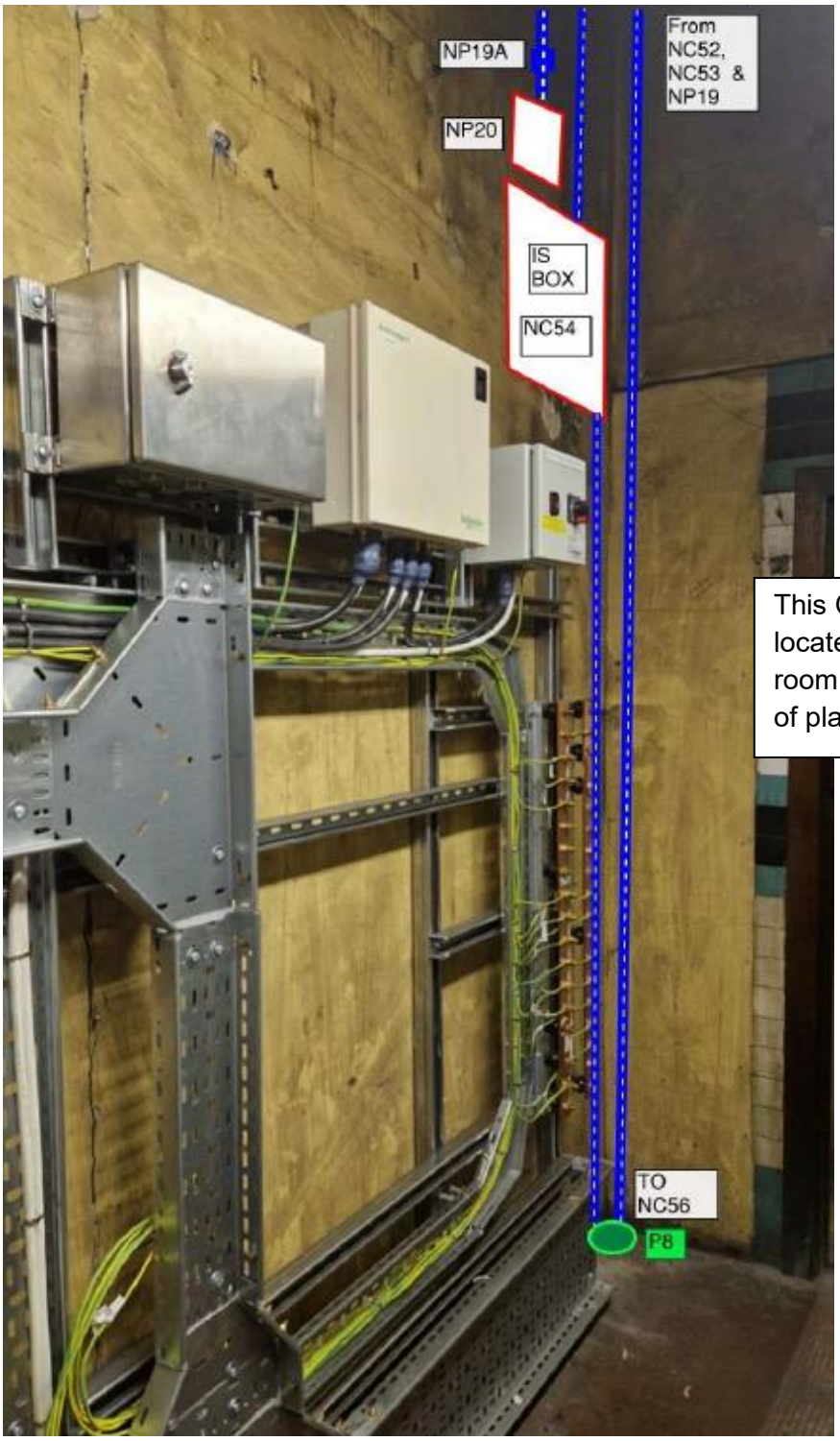
Intermediate Switch housing to be mounted at the head/tail wall or back of house room

Dimensions:
AP box
200wx300hx
80d (mm)

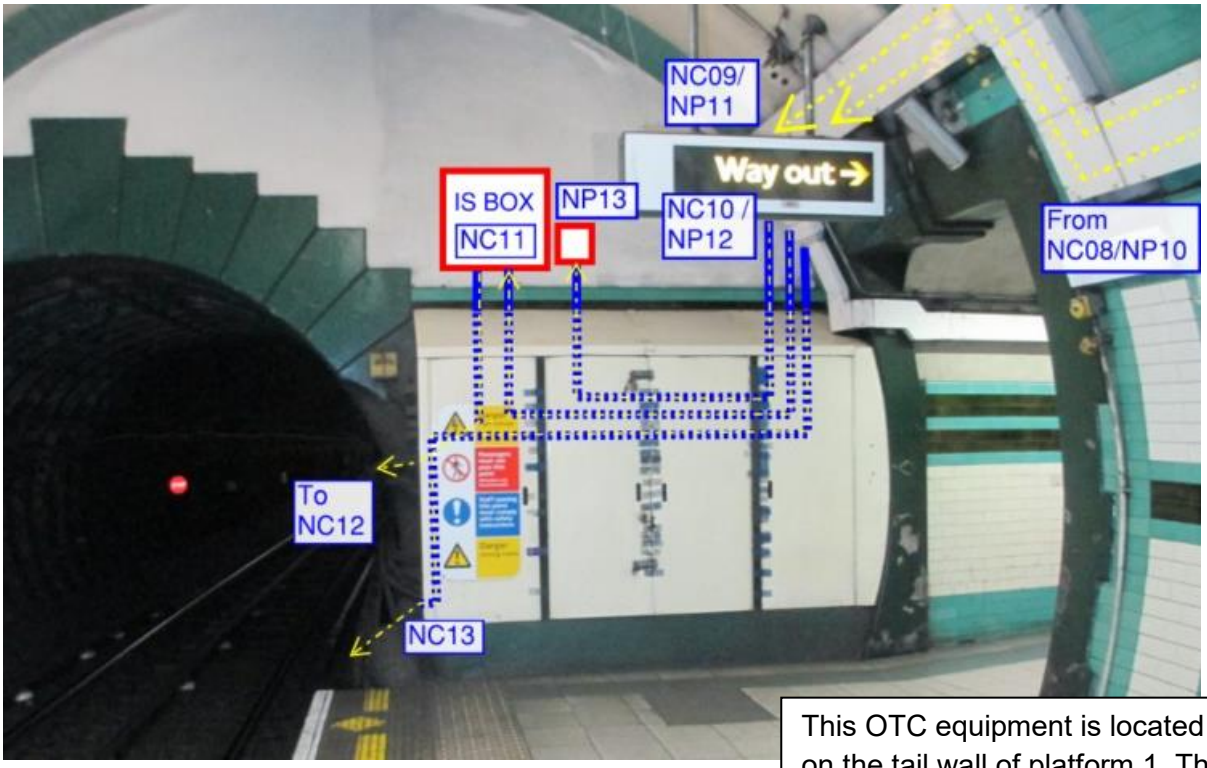
AP housing to be mounted in the tunnel or trackside



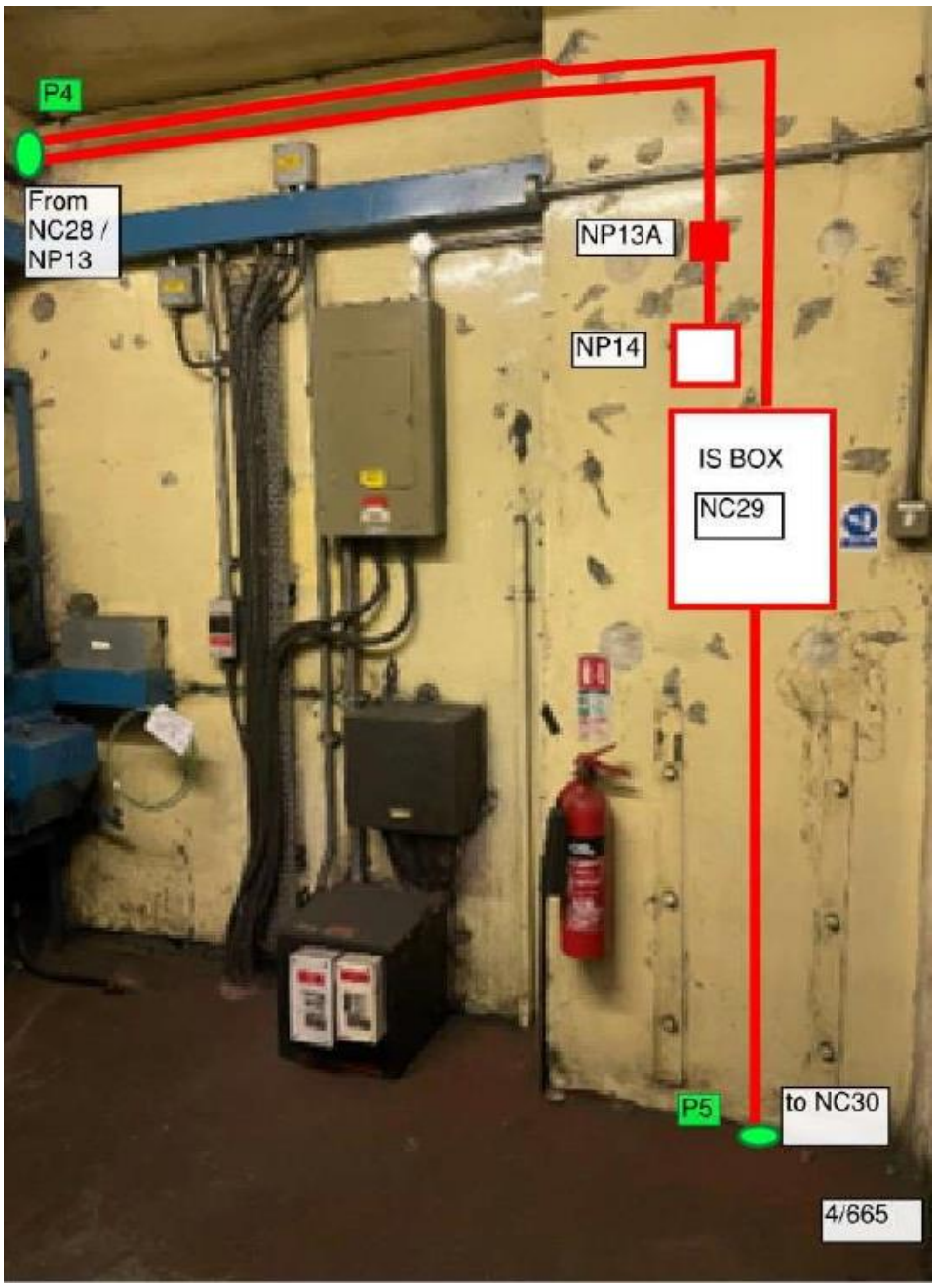
This OTC equipment is located within the relay room located at the head wall of platform 2.



This OTC equipment is located within the relay room located at the tail wall of platform 2.



This OTC equipment is located on the tail wall of platform 1. This is the only type of OTC that will be within the passenger realm / view, due to not having a relay room to occupy.



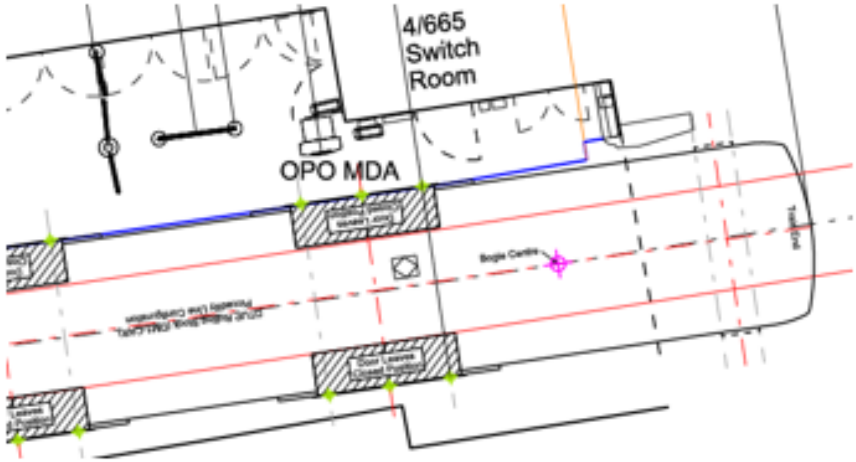
This OTC equipment is located within the relay room located at the head wall of platform 1.

1.9 Platform End Barriers (PEB)

The Platform End Barriers are to be moved further down the Platform itself. This is to align with the 24ts longer carriage and is shown in the drawings below. As a result, this will provide the passenger with more room on the platform. Once migration has been complete in 2027*, the PEB move will be complete and 73ts equipment will be removed. The change in PEB's will also align with decluttering the end of the platforms. For reference, the image below is one of the current PEB at Russell Square.

Platform 1 (Front of Train):

- Platform 1 (Leading End)
  - Removal – OPO Screen, 1 x Single Barrier, 3 x Swing Gates
  - Installation – 1 x Swing Gate, Tactile, Yellow Line



Existing

End State

Platform 1 (Back of Train):

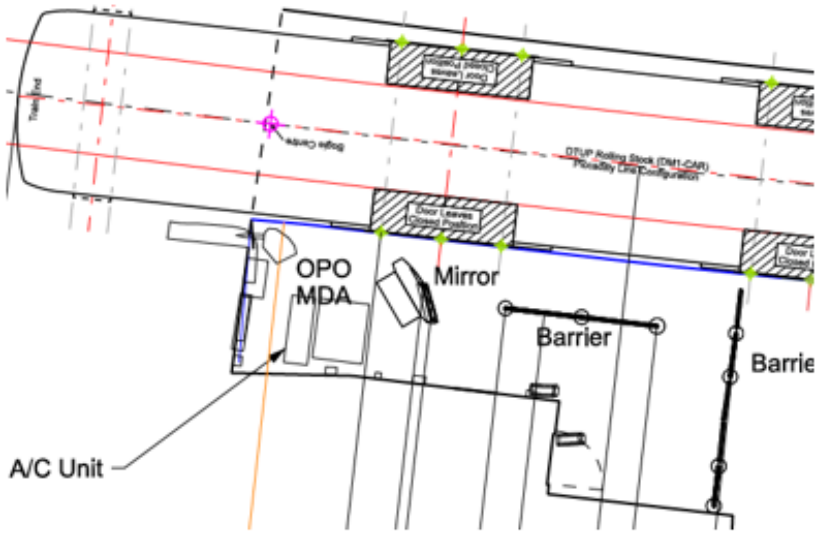
- Platform 1 (Trailing End)
  - Removal – N/A
  - Installation – N/A

Existing

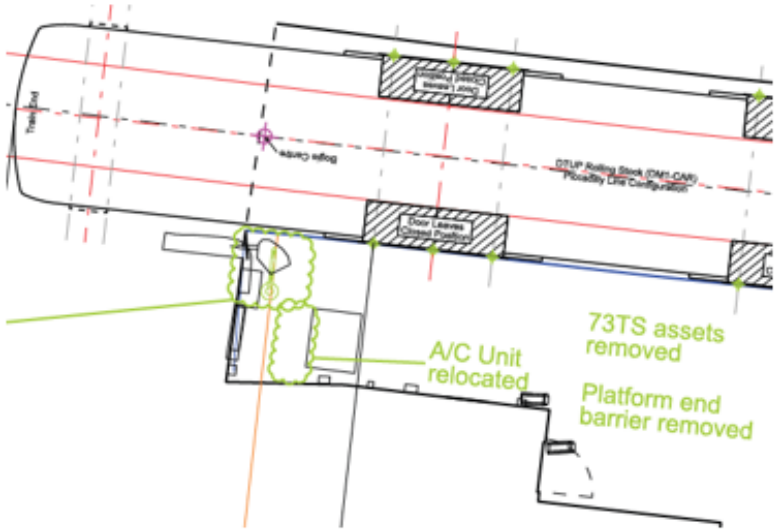
End State (No Change)

Platform 2 (Front of Train):

- Platform 2 (Leading End)
  - Removal – OPO MDA & Mirror, 1 x Screen, AC Unit (Relocated), 1 x Double Barrier, 2 x Single Barriers, 3 x Swing Gates
  - Installation – 1 x Swing Gate



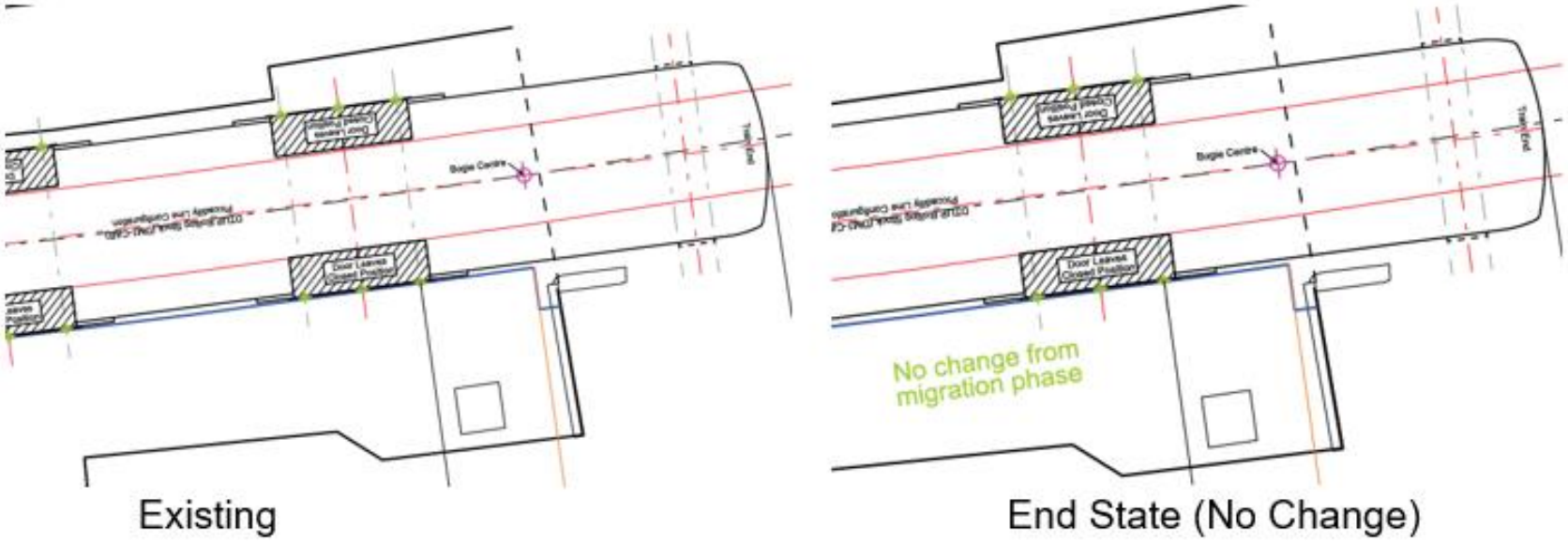
Existing



End State

Platform 2 (Back of Train)

- Platform 2 (Trailing End)
  - Removal – N/A
  - Installation – N/A

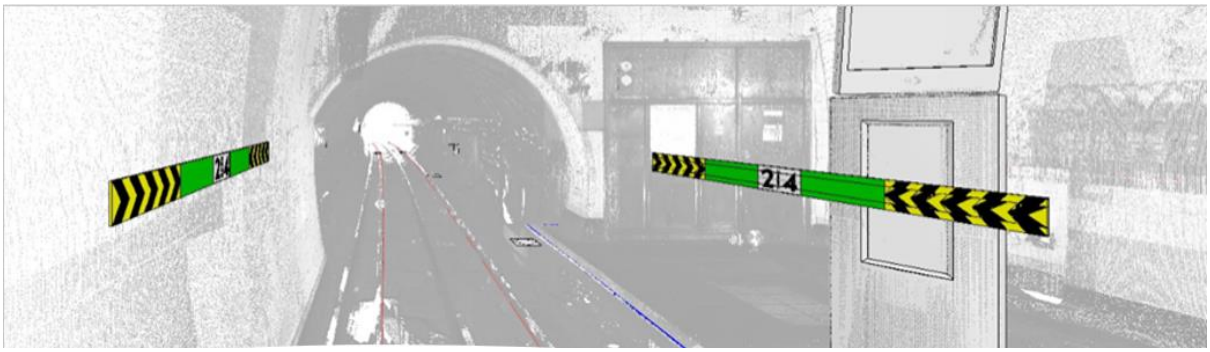


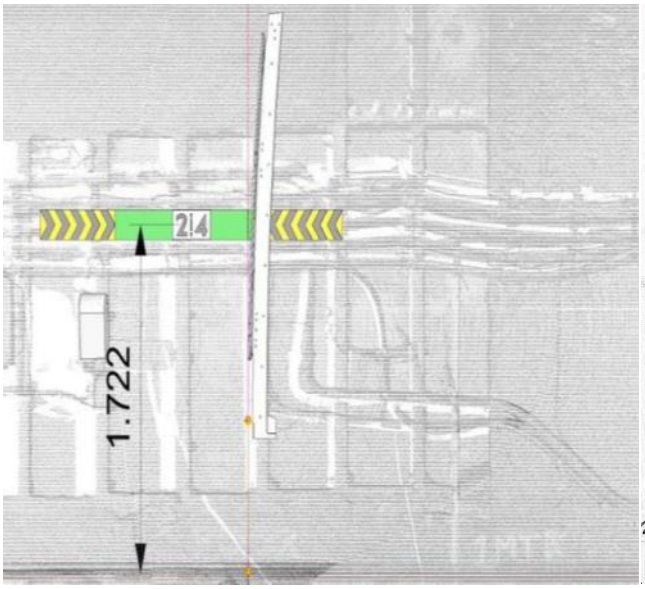
Existing

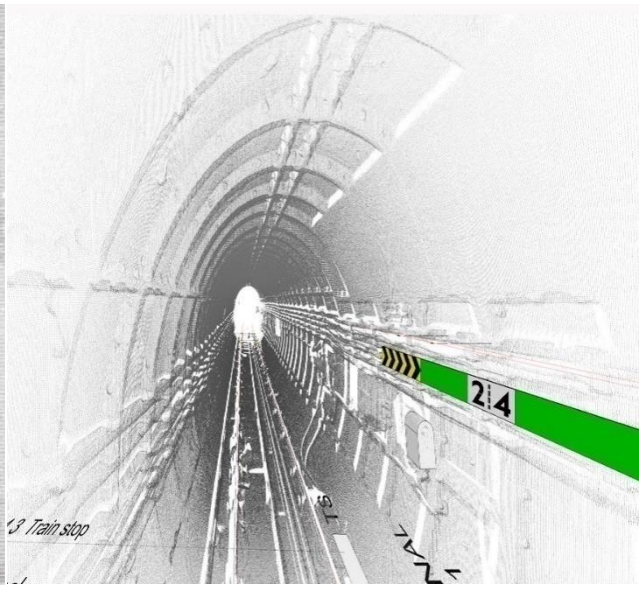
End State (No Change)

1.10 Platform Stopping Marker (PSM)

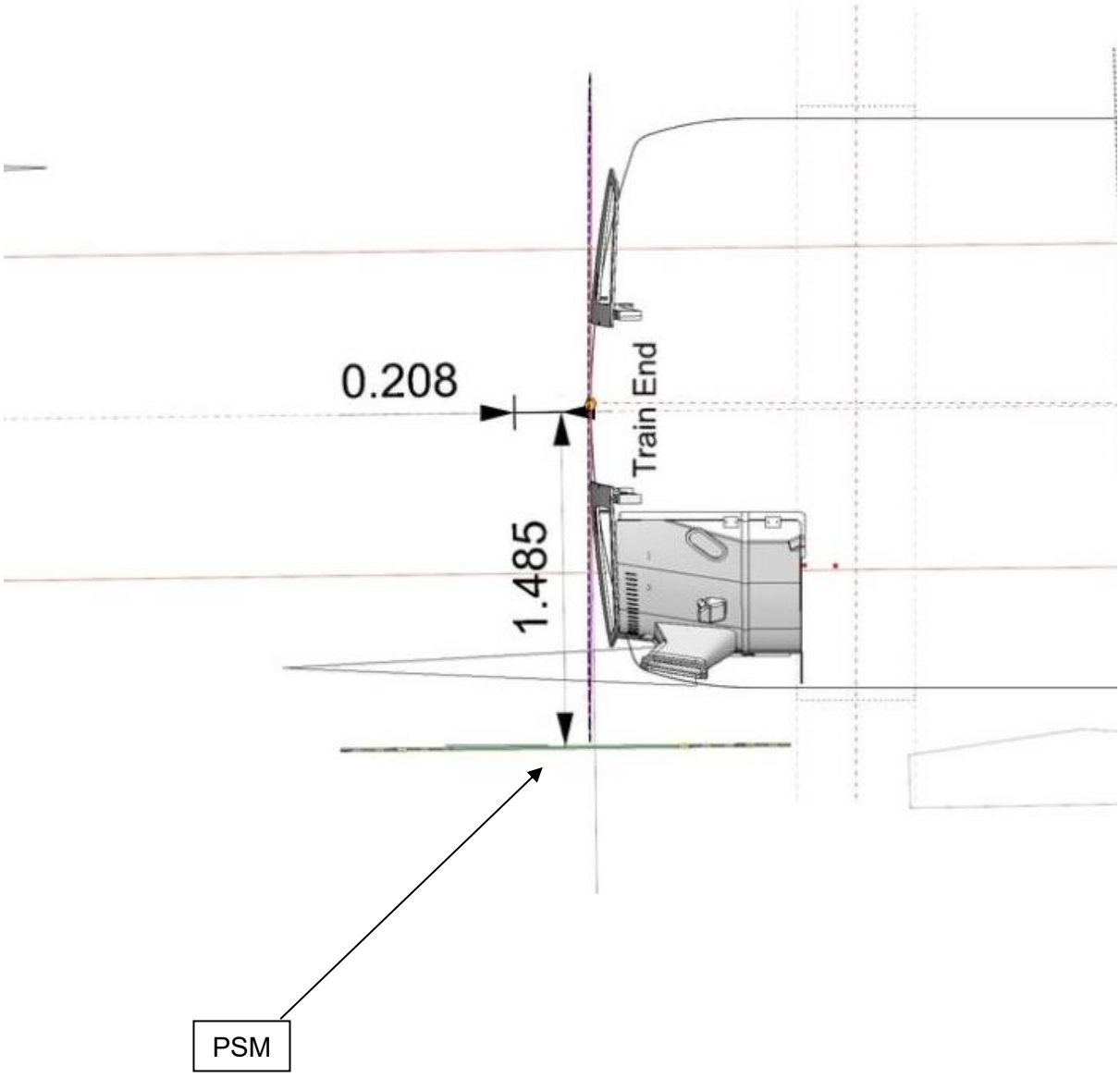
These images are from Turnpike Lane (1st) and Caledonian Road (2nd). This acts as an example of what the PSM will physically look like. These will be the type of images the Heritage advisors can expect to receive.



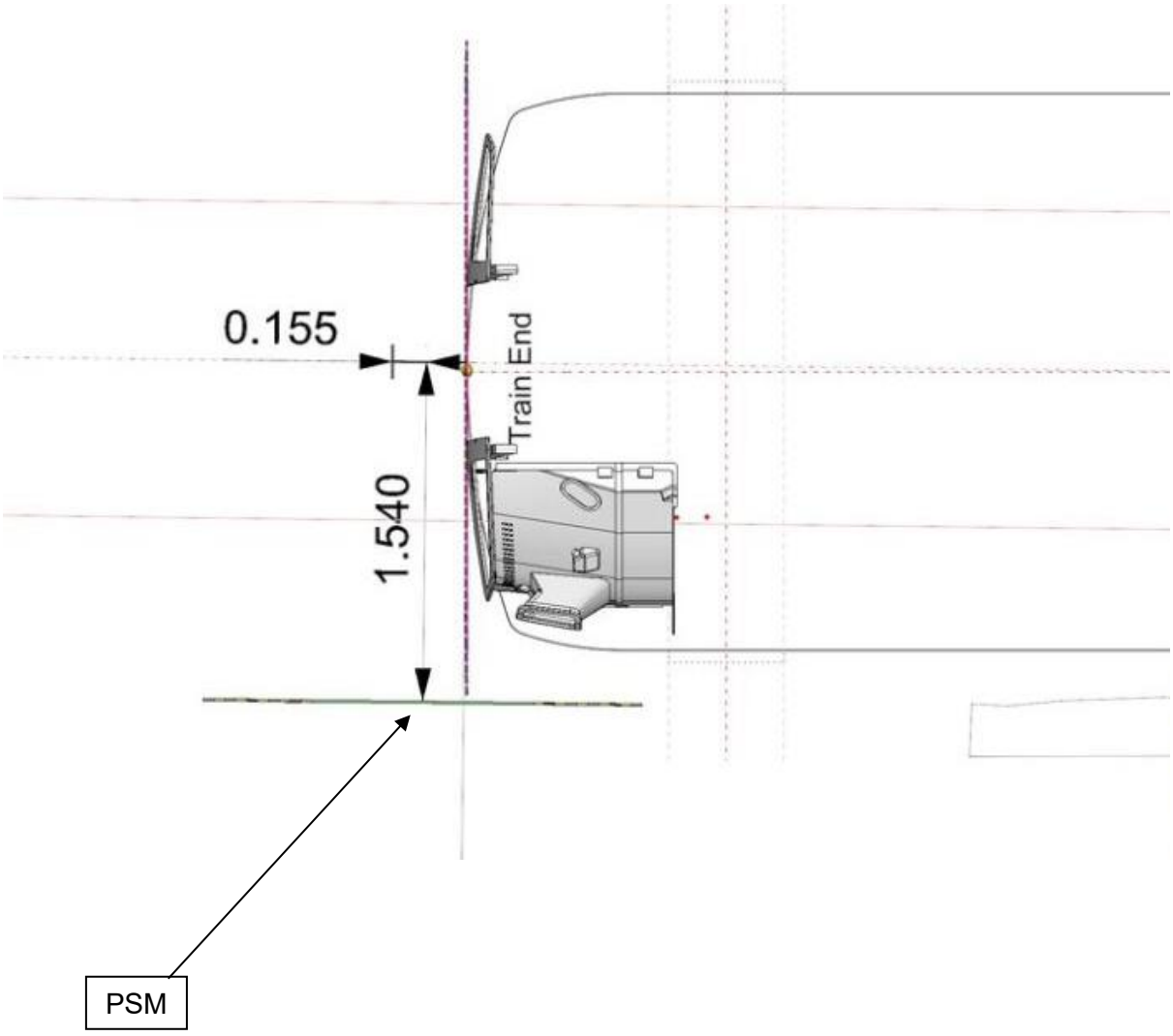




Below is a plan view of Russell Square Platform 1, showing the location of the Platform Stopping Marker in relation to where the platform ends. Note that this PSM is within the tunnel and therefore not within public view.



Below is a plan view of Russell Square Platform 2, showing the location of the Platform Stopping Marker in relation to where the platform ends. Note that this PSM is within the tunnel and therefore not within public view.



1.11 Operational Signage

This is signage that is manned by the Station Staff to provide the train drivers with further information. This type of signage is made of vitreous enamel.

At Russell Square, the below listed are to be installed. These assets are to be installed passed the barriers and will not be directly visible whilst on the platforms.

The mounting solution & location has yet to be defined. Currently these assets are mounted with the Platform Stopping Markers or on the Platform End Barriers.

Platform 1:

'A' OPO Platform Category Board

Platform 2:

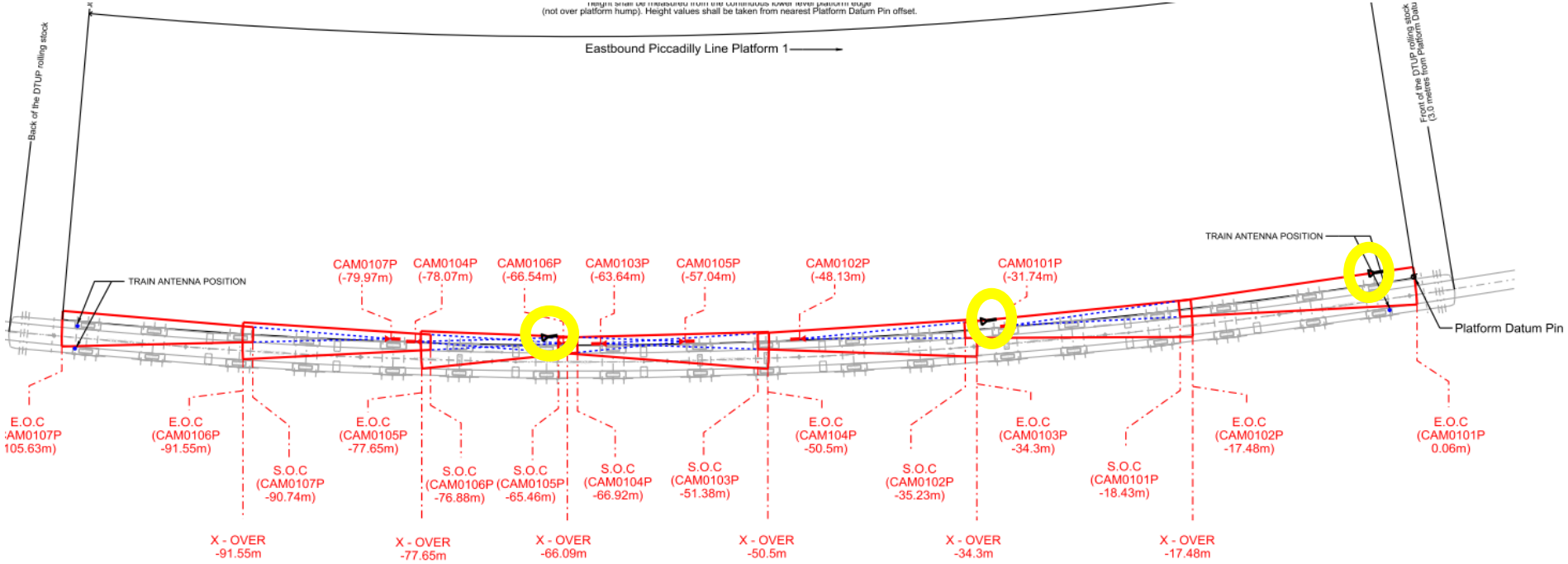
'A' OPO Platform Category Board

2. Removal of redundant equipment

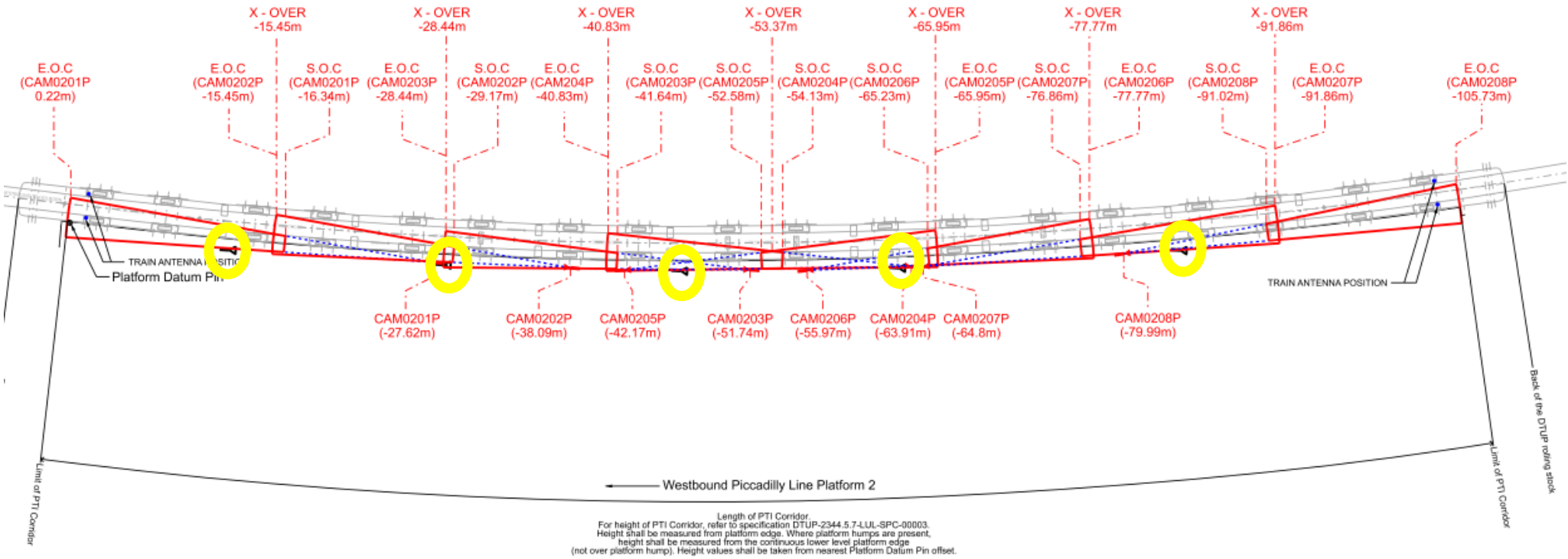
The existing assets are highlighted in yellow on the drawings below. Remaining redundant OPO equipment can be seen in section 1.9.

Key	
Red	New OPO Cameras
Yellow	Existing OPO equipment (e.g. Cameras, Mirrors) to be removed

Platform 1;



Platform 2:


X - OVER -15.45m
X - OVER -28.44m
X - OVER -40.83m
X - OVER -53.37m
X - OVER -65.95m
X - OVER -77.77m
X - OVER -91.86m
E.O.C (CAM0201P 0.22m)
E.O.C (CAM0202P -15.45m)
S.O.C (CAM0201P -16.34m)
E.O.C (CAM0203P -28.44m)
S.O.C (CAM0202P -29.17m)
E.O.C (CAM204P -40.83m)
S.O.C (CAM0203P -41.64m)
S.O.C (CAM0205P -52.58m)
S.O.C (CAM0204P -54.13m)
S.O.C (CAM0206P -65.23m)
E.O.C (CAM0205P -65.95m)
S.O.C (CAM0207P -76.86m)
E.O.C (CAM0206P -77.77m)
S.O.C (CAM0208P -91.02m)
E.O.C (CAM0207P -91.86m)
E.O.C (CAM0208P -105.73m)
TRAIN ANTENNA POSITION
Platform Datum Pin
CAM0201P (-27.62m)
CAM0202P (-38.09m)
CAM0205P (-42.17m)
CAM0203P (-51.74m)
CAM0206P (-55.97m)
CAM0204P (-63.91m)
CAM0207P (-64.8m)
CAM0208P (-79.99m)
TRAIN ANTENNA POSITION
Limit of PTI Corridor
Westbound Piccadilly Line Platform 2
Limit of PTI Corridor
Back of the DTUP rolling stock
Length of PTI Corridor.
For height of PTI Corridor, refer to specification DTUP-2344.5.7-LUL-SPC-00003.
Height shall be measured from platform edge. Where platform humps are present,
height shall be measured from the continuous lower level platform edge
(not over platform hump). Height values shall be taken from nearest Platform Datum Pin offset.

2.1 Platform End Removals

Leading End = The end of the platform corresponding to the front of the train in the normal direction of travel.

Trailing End = The end of the platform corresponding to the rear of the train in the normal direction of travel.

Platform 1:

- Platform 1 (Leading End)
  - Removal – OPO Screen, 1 x Single Barrier, 3 x Swing Gates
  - Installation – 1 x Swing Gate, Tactile, Yellow Line

Existing

End State

- Platform 1 (Trailing End)
  - Removal – N/A
  - Installation – N/A

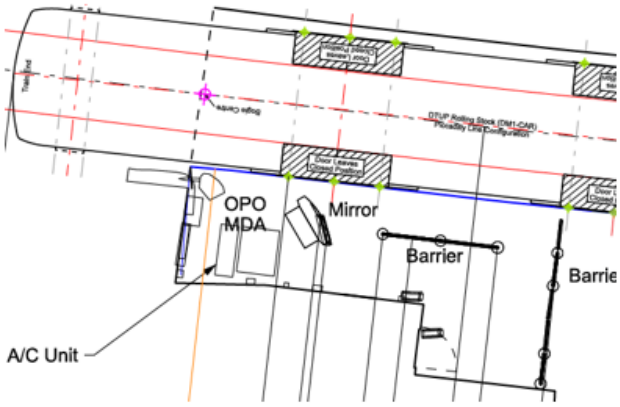
Existing

End State (No Change)

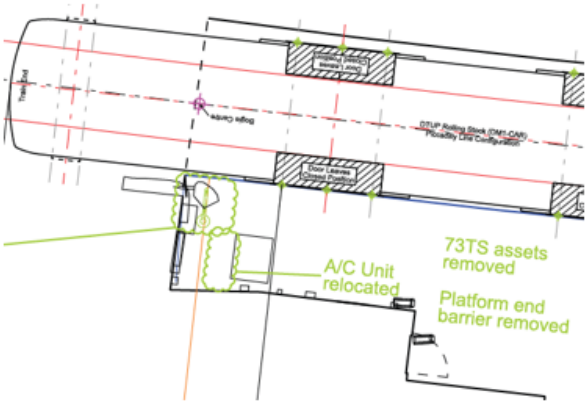
Platform 1 Leading end (Front of Train) and Trailing end (Back of Train)

Platform 2:

- Platform 2 (Leading End)
  - Removal – OPO MDA & Mirror, 1 x Screen, AC Unit (Relocated), 1 x Double Barrier, 2 x Single Barriers, 3 x Swing Gates
  - Installation – 1 x Swing Gate

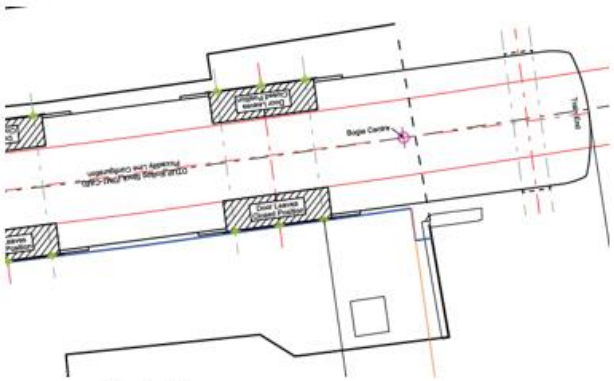


Existing



End State

- Platform 2 (Trailing End)
  - Removal – N/A
  - Installation – N/A



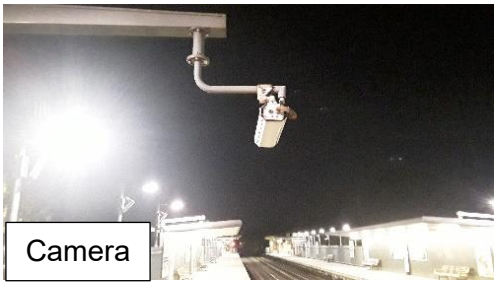
Existing

End State (No Change)

Platform 2 Leading end (Front of Train) and Trailing end (Back of Train)

3.0 Assets to be removed at End of Fleet Migration

Photos of legacy assets –



Camera

Mirror

OPO screens

*Gate/Barrier

*Note that gates/barriers are being replaced entirely, not relocated.

At various stations the extent of removable assets will vary. This will be confirmed in each heritage application for each listed station.

Existing Camera assets will be removed alongside the removal of the old 73ts at Migration State 5 by mid to late 2027 (Current projection).