



# OLD OAK COMMON

Lineside Road Rail Access Point (RRAP)  
South West Access – North Pole Depot  
Feasibility Report

152270-ARC-REP-ECV-000025

JULY 2020

ELR: **MLN1**

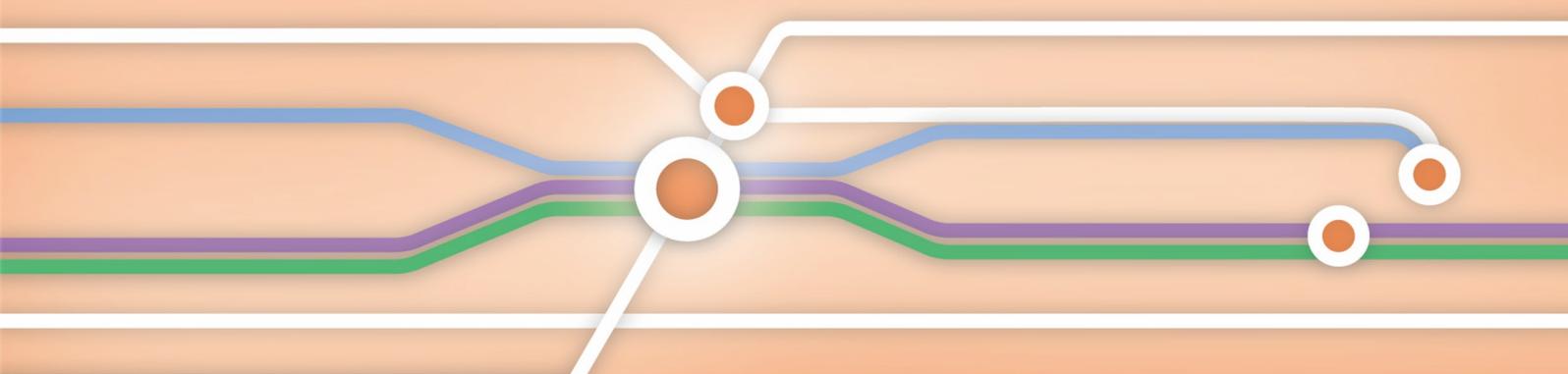
Mileage: **3m 716yds**

OS Reference: **TQ 214 818**

Revision Number: **A01**



**CIVIL  
ENGINEERING**



## CONTACTS



**BEN NAYLOR**

**Project Manager**

e [ben.naylor@arcadis.com](mailto:ben.naylor@arcadis.com)

**Arcadis.**

1<sup>st</sup> Floor, 2 Glass  
Wharf,  
Temple Quay,  
Bristol  
BS2 0FR

---



**KAMAL MATHARU**

**Contractor's Responsible  
Engineer**

e [kamal.matharu@arcadis.com](mailto:kamal.matharu@arcadis.com)

**Arcadis.**

34 York Way,  
Kings Cross,  
London  
N1 9AB

---



**MARK EADEN**

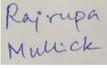
**Contractors Engineering Manager**

e [mark.eaden@arcadis.com](mailto:mark.eaden@arcadis.com)

**Arcadis.**

34 York Way,  
Kings Cross,  
London  
N1 9AB

## Old Oak Common RRAP Optioneering – North Pole Depot

Author	Rajrupa Mullick	
Checker	Susie Howells	
Reviewer	Kamal Matharu	
Approver	Mark Eaden	
Report No	152270-ARC-REP-ECV-000025	
Date	JULY 2020	

### Version control

Version	Date	Author	Changes
A01	10 <sup>th</sup> July 2020	R Mullick	First Issue For Acceptance

This report dated 10 July 2020 has been prepared for Network Rail (the “Client”) in accordance with the terms and conditions of appointment dated 02 November 2018(the “Appointment”) between the Client and **Arcadis Consulting (UK) Limited** (“Arcadis”) for the purposes specified in the Appointment. For avoidance of doubt, no other person(s) may use or rely upon this report or its contents, and Arcadis accepts no responsibility for any such use or reliance thereon by any other third party.

# CONTENTS

<b>1</b>	<b>INTRODUCTION .....</b>	<b>4</b>
1.1	Project Overview.....	4
1.2	Brief General Description .....	4
<b>2</b>	<b>GENERAL DESCRIPTION OF PROPOSED WORKS .....</b>	<b>6</b>
2.1	General Description.....	6
2.2	Design Assumptions .....	6
2.2.1	Road Rail Vehicle (RRV) .....	7
2.3	Number and Layout of Tracks .....	7
2.3.1	Down Main Loop.....	7
2.3.2	Down Main .....	7
2.3.3	Up Main Loop .....	7
2.3.4	Cant .....	7
2.3.5	Gradient .....	7
2.4	OLE .....	7
2.5	Vehicular Access from Public Highway .....	8
2.6	Compound .....	10
2.7	Principal Materials to be used.....	11
2.8	Significant Interface with Other Network Rail Engineering Disciplines .....	12
2.9	Significant Interface with External Organisations.....	12
2.10	Alternative Solutions to the Remit Considered.....	12
<b>3</b>	<b>SUMMARY .....</b>	<b>12</b>
<b>4</b>	<b>SAFE BY DESIGN.....</b>	<b>13</b>

# APPENDICES

## APPENDIX A

### DRAWING

Project title	Old Oak Common, SW RRAP Options AR011 – Jewson Depot	Project Number	152270
Location	Old Oak Common, London		
ELR	MLN1	Mileage	3m 716yds
OS grid reference	TQ 214 818	Structure Number	N/A
RRD Reference Nr.	OOC/NRL/REQ/RO/000347	V1, 16/03/2018	
DRRD Reference Nr.	N/A		
CR-T Reference Nr.	152270-NWR-CRT-EMG-000007	A02 16/04/2018	
Other documents associated with this submission	152270-ARC-REG-EMG-100001 GRIP 4 TIDP 152270-ARC-REP-ECV-000024 Jewson's Yard Feasibility 152270-ARC-REP-ECV-000026 Options Report		

## 1 Introduction

### 1.1 Project Overview

Further to the submission of GRIP Stage 4, under Change Alteration AR011, Arcadis have been asked to look into incorporation of a design of the South West Access points as follows:

Option A. Jewson's Yard: Progress an option which includes purchase of part or all of the yard to allow for the requirements regarding space recorded in the NR 'Access Point Strategy v0.2'.

Option B. North Pole Depot Access: To take consideration of GRIP 4 track alignment. To be based on currently available survey information. Not to encroach upon depot lines and to maintain 2.5m from running edge of depot lines to compound fence line. This is to be located in the vicinity of the Western Access to North Pole depot from OOC. Note: vehicle moves would likely pass through the depot from the West.

This report covers the feasibility of Option B: North Pole Depot. Option A: Jewson's Yard can be found in report 152270-ARC-REP-ECV-000024. An Options Report, comparing the two, can be found in report 152270-ARC-REP-ECV-000026. Both documents are submitted alongside this one.

### 1.2 Brief General Description

This report covers the South West RRAP which was submitted at GRIP4 in May 2020 by Arcadis. It is located off Old Oak Common Lane near the Hitachi Depot. Mitre way is accessed via Scrubs Lane to the east. All existing tracks within the vicinity are being replaced by a new permanent way layout to accommodate the new station. The drawings associated with these reports take this into account.

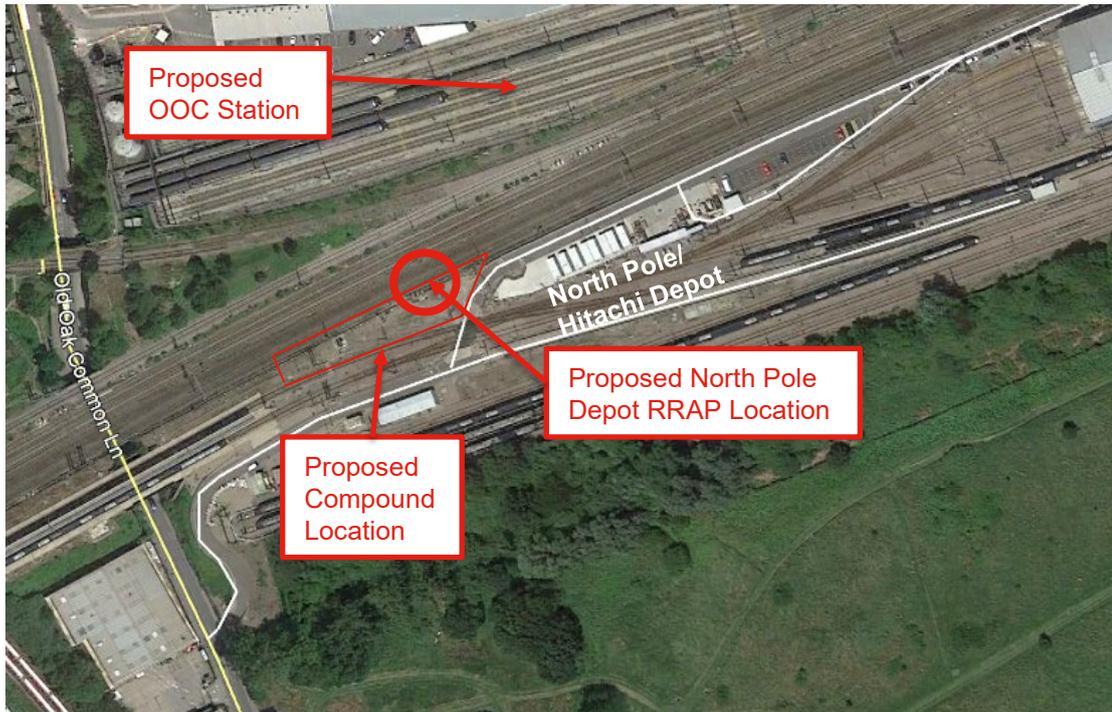


Figure 1 - Approximate location of proposed SW RRAP at North Pole Depot

There is only one available location where the RRAP can be placed. Therefore, that is the only option that is discussed in this report.

An alternative location for the SW RRV access at Jewson's Yard is investigated in a separate report, with an optioneering report summarising and comparing both options.

This feasibility study has been carried out based on topographical survey, GRIP4 design, NR Routeview, available OS tiles, LiDAR and Railway Infrastructure Alignment Acquisition System (RILA) data.

## 2 General Description of Proposed Works

### 2.1 General Description

The North Pole Depot South West RRAP would be located within a new compound to the west of the North Pole Depot site. The compound and RRAP is currently accessed from Scrubs Lane, Mitre Way and along the Hitachi internal road system as shown in Figure 2. An option to access the site from Old Oak Common Lane to the west has been presented in paragraph 2.5.

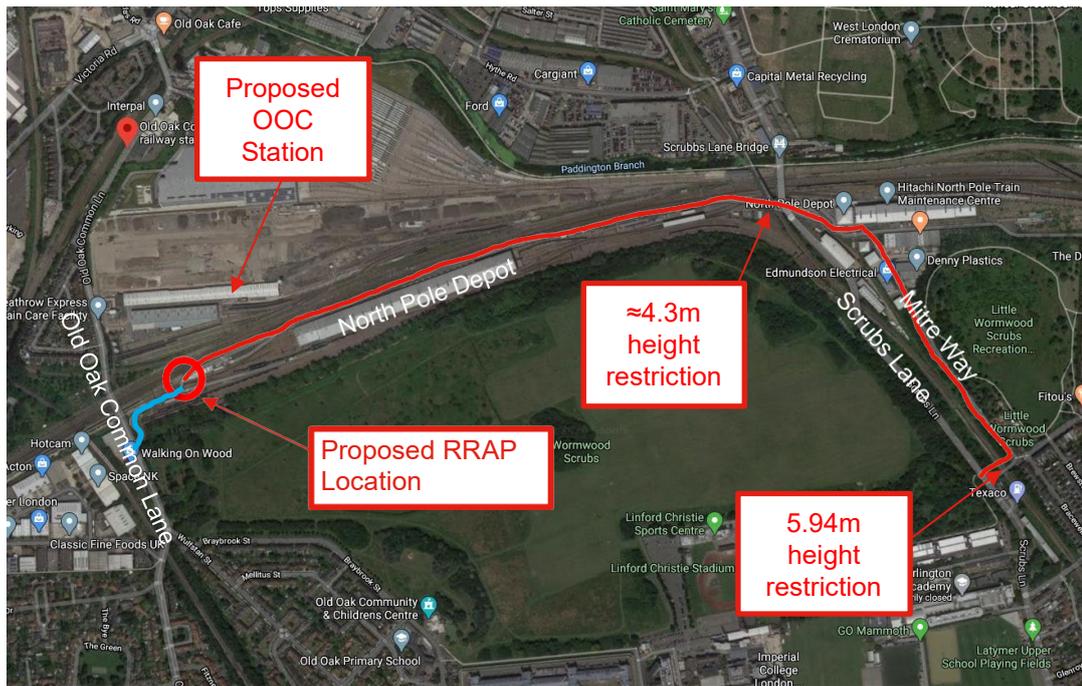


Figure 2 – Existing access from Scrubs Lane (Red) with vehicle height restrictions, optional access from OOC Lane (blue) GoogleEarth 2020

### 2.2 Design Assumptions

The following assumptions have been made for this option:

- Hitachi North Pole Depot to remain operational by Hitachi, with Network Rail acquiring the parcel of land recommended by this report.
- Access will be permitted by Hitachi.
- Land use/purchase of the compound area will be permitted.
- Access Point class and Security assumed to be Class 3 Access Point along with Security Level 2 (refer to Options report for full classification).
- All levels are based on currently available data.
- All existing permanent way components structures will be recovered and proposed permanent way will be in place prior to RRAP and compound installation (for proposed location see Arcadis GRIP 4 PWay submission ref: 152270-ARC-REP-ETR-000002).
- The proposed permanent way layout is not amended or altered at the next GRIP stage.
- The proposed OLE structures are not amended or altered at the next GRIP stage.

### **2.2.1 Road Rail Vehicle (RRV)**

The SW RRAP and access track has been designed for use by the SRS PKR750 or equivalent (refer to Options Report for details of RRVs and why it was selected). Vehicle tracking and provision of a 16.2m length RRAP has allowed for this.

## **2.3 Number and Layout of Tracks**

The new permanent way layout for this section is submitted within the GRIP4 package from Arcadis, the line speed at this location on the Down and Up Main is 60mph. The paragraphs below relate to the proposed design, and not the existing.

### **2.3.1 Down Main Loop**

The track will be on a 1174m radius curve with no cant. The rail is proposed to be CEN60 on concrete sleepers. The track gradient will be approximately 1 in 810.

### **2.3.2 Down Main**

The track will be on a 40m transition curve with a cant varying from 5mm to 25mm. This cant might limit the type of vehicles which can join the track, although it is only a low value, so most common RRVs are expected to be able to mount the track. It is on a transition curve of 40m, this is not ideal for a RRAP, and means the RRAP will need to be fitted around this curvature. The rail is proposed to be CEN60 on concrete sleepers. The track gradient is approximately 1 in 889.

### **2.3.3 Up Main Loop**

The track will be on a 1200m radius curve with no cant. The rail is proposed to be CEN60 on concrete sleepers. The track gradient will be approximately 1 in 830 to 1 in 161.

### **2.3.4 Cant**

The small values of cant mean the RRVs that can access are not likely to be restricted.

### **2.3.5 Gradient**

There is no gradient between the tracks (a gradient of more than 1 in 20 would remove the option of having a RRAP on the Up Main due to the vehicle grounding).

## **2.4 OLE**

Proposed OLE will be present for this section of track, as per Arcadis GRIP4 design. The RRAP will be positioned at least 10m away from any proposed OLE structures in accordance with Figure 7 of NR/L2/RMVP/0200/P301. The proposed OLE contact wire heights are a minimum 4.7m above rail height. ATF and Earth wire heights at the RRAP location are to be confirmed but will be designed clear of the RRAP.

The submitted GRIP4 OLE design took into consideration the compound in this area and adjusted the OLE masts to suit. The design by Arcadis was been adjusted for this RRAP and compound area. Temporary OLE TTC structures will be installed. Registering the existing Main Lines until re-routed on to the temporary Mains alignment. The TTC's will then be removed and the Portal structures will be installed in their final position which will be clear of the proposed compound.

If this location is not used, there is potential to revert to the original OLE design and not use temporary structures prior to installation of permanent ones.

## 2.5 Vehicular Access from Public Highway

Access from the public highway to the compound is currently off Scrubs Lane (Figure 2).

Scrubs Lane is an A-road public highway with easy access links for large vehicles (see Figure 3). No alteration works would be required to utilise this entrance. Vehicles would travel along Mitre Way and enter the North Pole Depot. From here, they would utilise the private North Pole Depot road travelling west until they reach the depot.



Figure 3 - Access from Scrubs Lane, left onto Mitre Way (facing South, Google Streetview 2020)

This route, once off Old Oak Common Lane involves going under 2 no. Network Rail bridges, one of which has a permanent height restriction of 19'6" (5.94m) , the second is a private road for North Pole Depot with a height restriction assumed to be 4.3m (Figure 4).



*Figure 4 - Looking east, access under Scrubs Lane to North Pole Depot*

Access from Old Oak Common Lane (to the west of the compound, Figure 5) is possible but at present the access is Emergency Only. Vehicle tracking shows the PKR750 can access this route from the south of Old Oak Common Lane. This would shorten the journey from main roads for vehicles to the compound and would reduce the distance travelled on Hitachi land. It would mean vehicles need to cross the depot serving tracks (which they would do from either direction). If desired Network Rail are to look into the possibility of changing this access from Emergency Only.

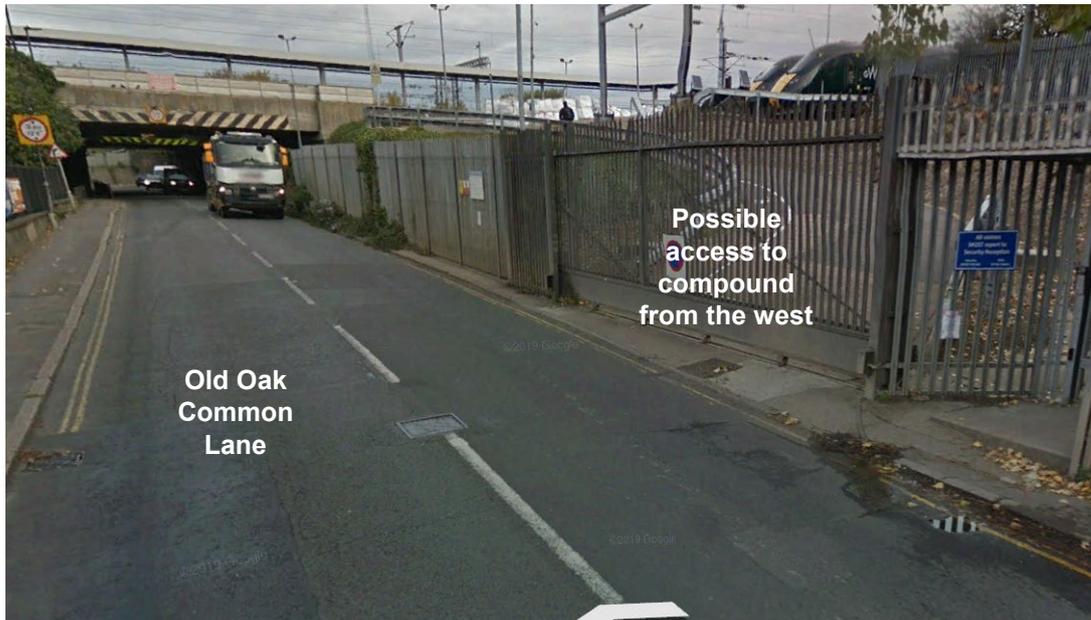


Figure 5 - Access from Old Oak Common Lane

## 2.6 Compound

The proposed compound measures approximately 120m x 16m and will be lit and bound by palisade fencing.

NOTE: Requirements for any welfare and storage facilities at any type of access point are detailed in NR/L3/INI/CP0036.

One cabinet within the compound area has been proposed as part of GRIP4 to be removed and replaced, and cable troughing running through the centre of the site will need burying and protecting with a steel plate.

Only a small area of the compound is required for RRV manoeuvring to access the track, therefore the rest of the compound (approximately 80m x 10m, denoted by the blue hatching in Figure 6) can be used for vehicle parking and storage. Due to the narrow nature of the compound it is likely using this space for multiple purposes will be difficult (i.e. vehicle parking or manoeuvring won't be possible if materials are in the way).

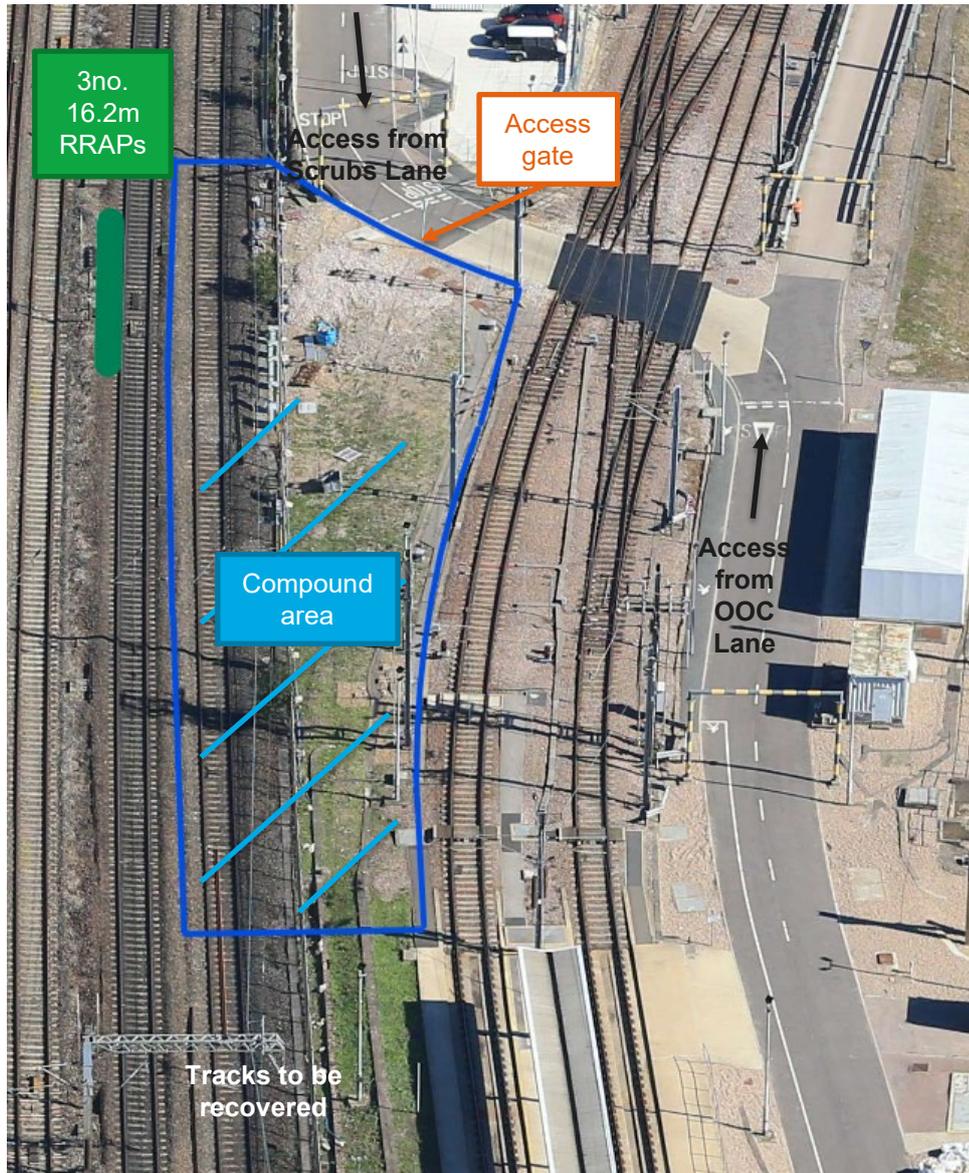


Figure 6 - Approximate area of compound (blue outline) and RRAP (green) overlain on existing tracks (Routeview 2018)

## 2.7 Principal Materials to be used

- Strail (or similar approved) Premium System Network Rail Approved Product RRAP Matting
- New fibre reinforced concrete slab
- Palisade fencing and gate
- Armco (or similar approved) barrier
- Lighting units
- Type 1 material for the compound

## 2.8 Significant Interface with Other Network Rail Engineering Disciplines

This is a multidisciplinary project which will require the Civils design team to maintain close liaison with the OLE, Signals, Track, Drainage, and other relevant disciplines, including the constructability of OOC.

As mentioned above this option was taken through GRIP4 design, therefore any clashes have been mitigated as part of the GRIP4 design.

This site is an option for the ATFS associated with Old Oak Common Station works. Arcadis have been asked to look at the feasibility of different sites as part of a change request (ref. 152270-NWR-CHR-COM-000010). At the time of writing it is not certain if a RRAP and ATFS can be located at this spot.

## 2.9 Significant Interface with External Organisations

The land is not owned by Network Rail. Network Rail is to contact relevant stakeholders.

Liaison with the highway authority may be required, if vehicles proposed are different to the ones serving the site now. Or if the option of using the Old Oak Common Lane access to the west is pursued.

There is an interface with HS2 on these works. They are leading on the provision of the HS2 box station and the Great Western Mainline Station.

## 2.10 Alternative Solutions to the Remit Considered

An alternative South West RRAP at Jewson's Yard is considered alongside this report (doc ref. 152270-ARC-REP-ECV-000024 & 152270-ARC-REP-ECV-000026).

## 3 Summary

Table 1 summarises the advantages and disadvantages of this option.

Table 1 - Summary Table

Option	Advantage	Disadvantage
B: North Pole Depot	<p>NR can access Down Main, Down Main Loop and Up Main Loop</p> <p>Easy vehicle access</p>	<p>The tracks are not parallel</p> <p>Hitachi land acquisition necessary</p> <p>Access is over private track crossings</p> <p>Three consecutive RRAPs required to access the Up Main Loop</p>

The option of placing the RRAP within this land is only possible with agreement or compulsory purchasing from the landholder. This is something that hasn't been explored as part of this report and is out of Arcadis's remit. This section of land is currently unused, but its future use is not known at the time of writing this report (i.e. possible ATFS location). Hitachi would need to be content with NR vehicles having access to its private roads.

From a practical point of view, this location looks suitable for a RRAP. It has a small compound area adjacent to it, and access roads are suitable and convenient. It provides access onto the Up and Down Main for a PKR750, which will aid the construction of Old Oak Common Station

## 4 Safe by Design

The proposed arrangement has been developed to incorporate safe by design principles.

The design has been modelled in 3D to allow simple referencing and coordination with other disciplines and organisations.

Clashes with existing NR Assets have been avoided where possible. Where this is not possible, they have been highlighted as a hazard and protected as necessary.

It is not assumed that Network Rail have sole use of the Hitachi Depot land or access road. Therefore, the design has tried to minimise the area to be used by Network Rail, and keep it separate from areas other business. This should reduce the risk of vehicles or pedestrians coming into contact with HGVs.

A Project Hazard Log and Designers Hazard Record are to be produced at GRIP4, to show a full list of what hazards have been identified through design and mitigated to eliminate or reduce the risk of injury.

# APPENDIX A

## Drawing

152270-25067-P2R-MLN1-DRG-ECV-400026



**Arcadis UK**

1<sup>st</sup> Floor  
2 Glass Wharf  
Temple Quay  
Bristol  
BS2 0FR  
UK  
T: +44 (0) 117 372 1200

[arcadis.com](http://arcadis.com)

