Temple Mills Depot – Independent Capacity Assessment 2025

Temple Mills 2007[1]

Prepared for Office of Rail and Road

[1] *CC BY-SA 2.0, Ben Brooksbank, Temple Mills Yard, becoming Eurostar Depot, 2007, Temple Mills Yard geograph-4035524-by-Ben-Brooksbank - Temple Mills Depot - Wikipedia*

Temple Mills Depot – Independent Capacity Assessment 2025

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1 Executive Summary

Overview

There is wide stakeholder interest in new international rail services between the UK and Europe. Temple Mills International Depot (Temple Mills) is currently the only (UK) UIC European Loading Gauge compatible depot and is considered a critical component to any potential additional rail services. Several applications for prospective channel tunnel Open Access Operators have been submitted to the rail regulator, Office of Rail and Road (ORR), for a depot access contract at Temple Mills under Section 17 of the Railways Act 1993. To process these applications, the ORR needs to understand the available capacity at Temple Mills. IPEX Consulting Limited (IPEX) were retained by the ORR as a specialist advisor to undertake an independent capacity assessment of Temple Mills.

IPEX specialise in rolling stock procurement, commercial and technical due diligence, maintenance and asset management. They support rail authorities, financiers, leasing companies, manufacturers, operators and regulators, across the private and public rail sector, in the UK and internationally. IPEX has extensive experience in depot capacity and layout modelling, using their own depot modelling tool and underpinned with decades of experience working in and managing rail maintenance depots.

IPEX has assessed Temple Mills' total 400m Set capacity as well as the capacity of each of the core depot functions for servicing, stabling, maintenance, and wheel reprofiling. IPEX has also assessed, for each function, the current utilisation by the incumbent operator, Eurostar International Ltd (EIL), to determine the available latent capacity.

The capacity analysis was performed using an IPEX depot modelling tool, which models the movement of Sets through the depot in 5 minute increments. The model uses arrival and departure patterns from the current timetable, as well as timing and sequencing of all servicing and maintenance activities performed at Temple Mills. To account for any deviations to the timetable, the model was also run with observed arrival, departure, and activity timings over a sample time period, using movement and maintenance records provided by EIL and by IPEX attending Temple Mills.

IPEX also performed a detailed 'bottom up' analysis of the maintenance activities to determine the minimum depot facilities required to maintain the current Temple Mills workload. This analysis used the current allocation of EIL maintenance to Temple Mills, as well as activity downtimes, frequencies and the specific depot facility requirements. The analysis accounted for preventive maintenance, heavy maintenance, cleaning, corrective maintenance, and additional works such as modification programmes.

The analysis was performed using a set of metrics to represent the capacity for each core depot function:

Metric / Depot Area	Description
Arrival Rate	The rate of arrivals (assuming that a typical arrival receives basic servicing on arrival, including CET empty, filling water tanks, and exterior wash) that can be accepted by the depot in 400m Sets per hour. This metric is further broken down into Normal and Exceptional Arrival Rate.
Depot Set Capacity	The total number of 400m Sets that the depot can accommodate at any given time. This metric is further broken into total Normal and Exceptional Depot Set Capacity.
Maintenance Shed Capacity	The number of maintenance shed roads required to support the current fleet allocation and total maintenance workload allocated to Temple Mills.

Wheel Lathe Capacity	The wheel lathe capacity required to support the wheel reprofiling for the current fleet allocation (in terms of corrective and preventive wheel reprofiling).

Conclusion

In summary, the key findings are:

- There is some available capacity at Temple Mills international (TMI) depot for more trains to be stabled, serviced and maintained.
- Some of this capacity can be accessed without any changes to current operational practices at the depot.
- The rest of this capacity may be delivered through investment in changes to current operational practices. This does not include any adaptions required to ensure compatibility with different types of trains.

The Normal Depot Set Capacity is 15 Sets (400m Sets), which is the total number of Sets that can be on the depot at any time for it to operate normally. An additional 4 Sets can be accommodated on Bogie Drop Roads 1-2, Wheel Lathe Road, and Cripple Roads 1-2. Although the Bogie Drop Roads and Wheel Lathe Road each accommodate a single Set, they are not considered part of Normal Depot Set Capacity because they should remain normally vacant to allow access to use these facilities. Additionally, Cripple Roads 1 and 2 are each one half-Set long and non-electrified, also excluding them from the total Normal Depot Set Capacity. The Exceptional Depot Set Capacity is 20 Sets, however, if the depot reaches this occupancy level, the practicality of undertaking servicing and maintenance is restricted.

EIL has an operational fleet of 25 Sets (8 Class 373s and 17 Class 374s) which utilise Temple Mills for stabling, servicing and maintenance. Over a normal 24hr period there are 6 to 10 of these operational Sets at Temple Mills at any time. Temple Mills is additionally occupied by 4 Class 373 decommissioned half-Sets (removed from service in 2019) which are utilised for spare parts, and which currently occupy the equivalent of one Normal Depot Set Capacity road (and both Cripple Roads). One Class 08 Shunter and one spare Class 373 Power Car also occupy the depot, but do not impact Normal Depot Set Capacity. Accounting for Temple Mills' current fleet allocation, it was identified that there is ***Latent Normal Depot Set Capacity for 4-8 Sets*** (rising to 5-9 Sets by removing a decommissioned Class 373 Set).

The infrastructure on the LDA Roads and Carriage Wash, is considered sufficient to CET, tank and wash the existing Arrival Rate. The Normal Depot Arrival Rate permissible with the current infrastructure and processes is 1.3 Sets per hour. The highest current Arrival Rate is 0.5 Sets per hour, giving a ***Latent Arrival Rate Capacity of 0.8 Sets per hour***, though this varies and is higher during some time-periods. During emergency situations (for example irregular or disrupted service patterns), the depot can accept Sets at a higher rate of up to 3 Sets per hour, although this would require non-typical processes to retrospectively CET, tank and wash Sets prior to departure. The Normal Depot Arrival Rate could be improved if the LDA Roads could CET and tank across two roads simultaneously (which is not currently possible), as outlined under improvement Option #1 in this report. In conclusion, the Arrival Rate Capacity is not considered a 'bottleneck' at the depot and more Sets could be accepted for arrival. However, any increase in Arrival Rate must be considered with and not lead to the exceedance of the total Normal Depot Set Capacity.

The assessment of the maintenance requirements indicates that 6.4 shed roads (of 8 shed roads) should regularly be required for maintaining the current Temple Mills' fleet allocation, leading to an average ***Latent***

Maintenance Shed Capacity of 1.6 roads. The latent Maintenance Shed Capacity is an average value, varying across 24 hours, with typically a maximum of 6 roads required during the day, and 7 roads required during the night. Separately, it was observed that the average shed occupancy over the observation period (based on EIL data and IPEX observations) was 5.9 roads. This figure is comparable with the 'bottom up' maintenance plan analysis performed by IPEX.

Under EIL's current operational practice, the first 6-10 **operational Sets** occupy a combination of Maintenance Shed Roads 1-8 and Stabling Roads 1-3 (total capacity 11 roads). In the depot's current use, capacity already exists for **operational Sets** in these locations, and they are well equipped for servicing (closely located to welfare facilities), so current operational practices do not necessitate the use of the Reception Roads or LDA Roads to stable, service or prepare Sets. Provisions on the LDA and Reception roads are limited (in terms of welfare facilities, and capability for sand and washer fluid top-up).

Although some latent shed capacity exists now, any utilisation of this latent capacity must reconcile the total occupation of the depot, at any given time, with the Maximum Normal Depot Set Capacity. To release all available shed capacity requires changes to the current operational practices (including using the Reception and LDA roads for activities such as stabling, cleaning, light maintenance and driver prep) at the depot and an assessment into the process changes and investment which may be required to enable those changes.

The extent to which additional Sets can be stabled, serviced and maintained at Temple Mills is limited by the current operating practices. The reception roads are not currently routinely used by EIL for any activities, other than for long term storage of a decommissioned Set, and occasionally offloading arriving Sets if both LDA roads are in use. Almost all regular interventions take place across the shed or stabling roads (total 11 roads). Making use of reception roads for stabling and departures would require changes to EIL's current operational practices and may require some improvements (to depot facilities). Use of the LDA and reception roads is considered necessary in order to utilise the full extent of the identified latent maintenance shed capacity. Six options are outlined in this report as potential improvements to depot capacity and capability, achieved with improved utilisation of the Reception and LDA Roads. Exercising some or all of these options is considered critical to unlocking all of the Latent Maintenance Shed Capacity.

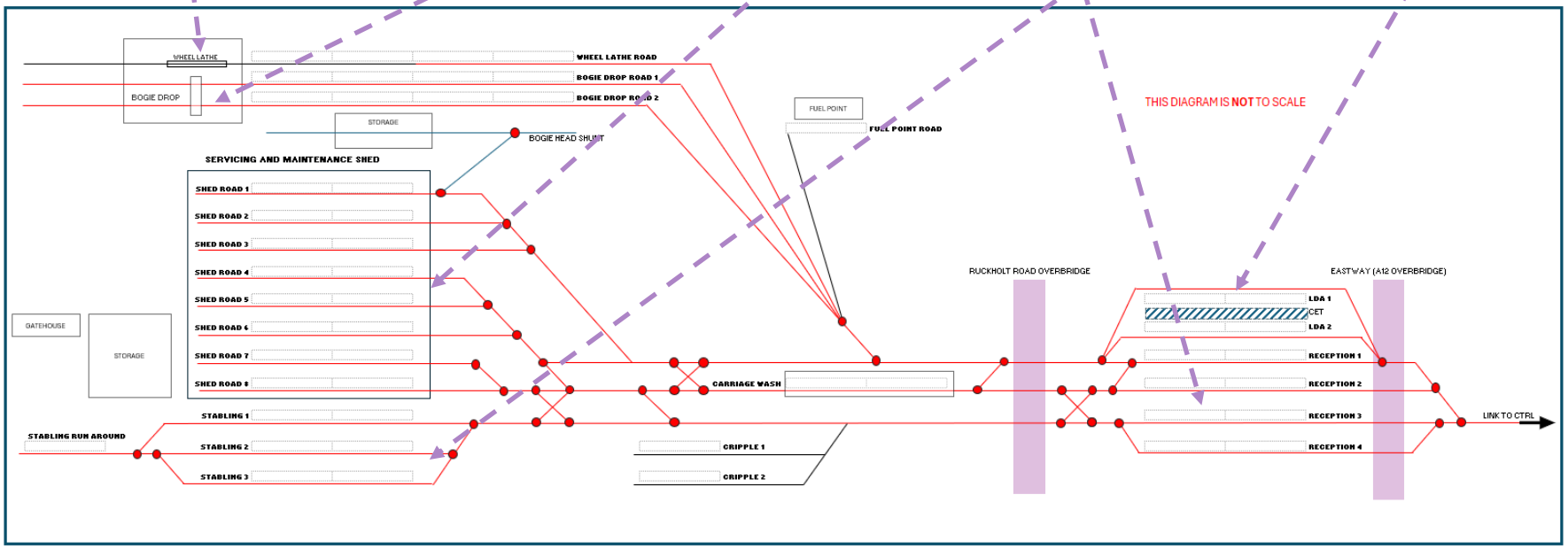
The assessment of the Wheel Lathe Road identified a ***Latent Wheel Lathe Capacity of 2,357 hours equating to an average of 35% availability***.

The utilisation of any latent capacity in the Depot Arrival Rate, Maintenance Shed Capacity and / or Wheel Lathe Capacity will need to consider the impact on and not lead to the exceedance of the total Depot Set Capacity.

A further executive overview of the depot and findings is provided in the following two pages.

Location Overview:

Wheel Lathe	Bogie Drop	Maintenance Shed	Stabling Only	LDA
• *1 x Road* • *800m length* • *Wheel reprofiling* • *24 / 7 operation* • *Can stable up to 2 x Sets in emergency circumstances*	• *2 x Roads* • *800m length per road* • *Equipment drop - share common table* • *Can stable up to 4 x Sets in emergency circumstances*	• *8 x Roads* • *400m length per road* • *Light + Heavy maintenance* • *Cleaning, sand, wash fluid* • *Can stable up to 8 x Sets*	• *3 x Roads [Stabling 1-3]* ○ *Cleaning, wash fluid* • *4 x Roads [Reception 1-4]* ○ *Limited provisions* • *Can stable up to 7 x Sets*	• *2 x Roads* • *400m length per road* • *CET and tanking* • *Can stable up to 2 x Sets*



NOTE – Exceptional Depot Set Capacity is not the sum of all available stabling space. It is not possible or desirable to use 100% of stabling space as this inhibits movements and introduces safety and operational issues.

Flow Analysis onto depot:

Metric / Location	Maximum Capacity (Sets/hr)	Utilised Capacity (Sets/hr)	Latent Capacity (Sets/hr)
Normal Depot Arrival Rate	1.33	0.48*	0.85
LDA Road	*1.33*	*0.48**	*0.85*
Carriage Wash	*2.00-2.33*	*1.33***	*0.67-1.00*
Exceptional Depot Arrival Rate	3	0.48*	2.52

**Maximum observed utilisation for the arrivals observed from 2100-0000 on 20/01/2025. Based on average arrivals of 4.71/day, the daily average arrival rate is 0.20 Sets/hour.*

***In a normal flow of emptying CET and then carriage washing, the rate is capped by the throughput of the LDA Road.*

Depot Set Capacity:

Metric	Available Capacity (Sets)	Utilised Capacity (Sets)	Latent Capacity (Sets)
Normal Depot Set Capacity	15	7-11*	4-8*
Exceptional Depot Set Capacity	20	Not applicable.	

**Figure includes the stabling of decommissioned Sets. Two decommissioned Class 373 Sets currently occupy the depot, one of which utilises Normal Depot Set Capacity equivalent to a single Set. Up to 5-9 Sets if decommissioned Sets removed from Temple Mills.*

Maintenance Shed Capacity:

Metric	(400m roads)
Maximum shed capacity	8
Required capacity under realistic shed requirement assessment	6.39
Average EIL occupancy (assessed from 15/01/2025-21/01/2025)	5.86
Latent capacity (Maximum available less utilised under realistic requirements)	1.61

Wheel Lathe Capacity

Metric	Hours	%
Available capacity *(accounting for machine downtime, shift handover, and machine calibration)*	6658	100%
Utilised capacity	4301	64.6%
Latent capacity	2357	35.4%

2 Introduction

2.1 Background

2.1.1 Temple Mills International Depot (Temple Mills) is located close to Stratford International Station, with a direct rail spur from the High Speed 1 (HS1) network. It is currently the only HS1 connected UK depot capable of accommodating rolling stock built against the UIC European Loading Gauge. Temple Mills is operated by Eurostar International Limited (EIL) and is regulated under the Railways Act 1993 (the Act). It is currently used for the sole purpose of maintaining EIL's Class 373 and Class 374 fleets.

2.1.2 The ORR has commissioned an independent advisor, IPEX Consulting Limited (IPEX), to assess and analyse depot capacity at Temple Mills.

2.1.3 Applications from prospective channel tunnel Open Access Operators have been submitted to the Office of Rail and Road (ORR) in order to direct the depot operator to agree an access contract for Temple Mills Depot under Section 17 of the Railways Act 1993.

2.2 About IPEX Consulting Limited (IPEX)

2.2.1 IPEX specialise in rolling stock procurement, commercial and technical due diligence, maintenance and asset management. They support rail authorities, financiers, leasing companies, manufacturers, operators and regulators, across the private and public rail sector, in the UK and internationally.

2.2.2 IPEX has extensive experience in depot capacity and layout modelling, gained from decades of experience working in and managing rail maintenance depots and sidings. IPEX consultants have real life experience of depot capacity and layout design and management, working in senior roles within train manufacturer's, maintainer's, and operating companies' fleet and engineering departments. IPEX regularly undertakes depot capacity modelling in the UK and overseas (on both new and existing depots) and has a devised set of concepts and in house modelling capability to create bespoke models for any specific depot design and its layout and maintenance requirements.

2.2.3 IPEX routinely support the development of new depot design or depot enhancement scoping when supporting rolling stock procurements that require new or upgraded depots. As well as depot capacity modelling and concept design expertise, IPEX has extensive experience in the maintenance of rolling stock, routinely supporting the development of train maintenance contracts (such as Train Service Agreements) during new train procurement, as well as supporting operators and maintainers in optimising and reviewing their existing maintenance strategy. IPEX has benchmarking datasets for maintenance intervals and cost (for all types of rolling stock) to support any analysis.

2.3 Purpose of the Report

2.3.1 The purpose of this report is to analyse Temple Mills' capacity and current utilisation by EIL, to address the ORR's enquiry. The objectives are:

- Assess the current stabling capacity and utilisation;
- Assess the current servicing capacity and utilisation;
- Assess the current maintenance capacity and utilisation;

- Identify any potential enhancements to process or infrastructure that may increase capacity; and
- Define how these potential enhancements may affect overall capacity.

2.4 Methodology

2.4.1 The Temple Mills capacity evaluation was informed by a combination of information provided by EIL, meetings with EIL Senior Management, depot night shift observations (on 03 Feb 2025), publicly available information, and rolling stock maintenance assumptions supported by IPEX's experience in maintenance and depot management.

2.4.2 The approach utilises a bespoke purpose-built depot modelling tool, to act as a digital twin of Temple Mills depot. It enables flow, stabling capacity, and shed occupation to be analysed. In addition, separate models have been developed to quantify utilisation of the maintenance shed roads and wheel lathe. These models are informed by information provided by EIL and onsite observations.

2.4.3 The analysis is made using the models, as described above, alongside the assessment of additional information provided by EIL on the function of Temple Mills, and its current use for maintenance of EIL's fleets. UK and international best practice on depot facility operations and specifications is leveraged to support the assessment on whether the available facilities are being used efficiently.

2.5 Analytical Assurance Statement

2.5.1 IPEX has conducted a thorough analysis to support the deliverables for the Temple Mills Independent Capacity Assessment 2025. The analytical assurance process involved data collection from various sources, the use of a bespoke depot modelling tool, and assessment of additional information provided by EIL. The risk of error has been minimised through robust data collection methods and validated modelling tools, while uncertainties and scope for challenge have been acknowledged and accounted for in the assessment, including provision of the Draft Report to EIL for fact checking. The report is based on information provided and available at the date of issue (2024/25) and IPEX bears no responsibility for any events following date of issue which alter the conclusions made.

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3 Glossary

Acronym	Description
Arr	Arrival
ATP	Autres Travaux Programmés / Other programmed work (periodicity > GVG)
ATS	Autres Travaux Systématiques / Other systematic work
ATS1 Exam	Autres Travaux Systématiques 1/ Other systematic work 1 ([Redacted] km periodicity Class 373 preventative maintenance)
ATS2 Exam	Autres Travaux Systématiques 2/ Other systematic work 2 ([Redacted] km periodicity Class 373 preventative maintenance)
ATSF Exam	Autres Travaux Systématiques F/ Other systematic work: Filters ([Redacted] km periodicity Class 373 preventative maintenance)
BD	Bogie Drop
Bi Direct	Bi Directional
C Exam	[Redacted] km periodicity Class 374 preventative maintenance
CCTV	Closed Circuit Television
CET	Controlled Emissions Toilet, also used in the report as a shortened term to describe the process of 'emptying the CET tank'
Cl	Class
CTRL	Channel Tunnel Rail Link
Dep	Departure
E300	Class 373
E320	Class 374
ECF Exam	Examen Confort/ Comfort examination ([Redacted] km periodicity Class 373 preventative maintenance)
ECS	Empty Coaching Stock
EIL	Eurostar International Limited
ETCS	European Train Control System
ESN Exam	Examen en Service Nouveau/ In service examination (new) ([Redacted] km periodicity Class 373 preventative maintenance)
FUEL	Fuel Road
GVG Comfort Exam	Grande Visite Générale Comfort Exam ([Redacted] km periodicity Class 373 preventative maintenance)
GVG Exam	Grande Visite Générale/ Heavy General examination ([Redacted] km periodicity Class 373 heavy maintenance)
Half-Set	Half a Class 373 (10-car) or half a Class 374 (8-car)
Handbashing	Hand cleaning of the train exterior
HS1	High Speed 1 – now renamed London St. Pancras Highspeed
Hshunt	Head Shunt

HVAC	Heating, Ventilation, and Air Conditioning
I Exam	[Redacted] km periodicity Class 374 preventative maintenance
IPEX	IPEX Consulting Limited
k	1000
km	kilometre
kph	kilometres per hour
L2	Preventative Maintenance (E.g. ESN, VOR, ECF, I, C, and T exams)
LDA	Lavatory Discharge Area
m	metre
M	1,000,000
MDBF	Mean Distance Between Failures
OH	Overhaul
OLE	Overhead Line Equipment
ORR	Office of Rail and Road
R Exam	[Redacted] km periodicity Class 374 Overhaul
RD	Maintenance Shed Road
REC	Reception Road
S Exam	Class 374 preventative maintenance task which is no longer in use
Set	A 400m long train, being either a 20-car Class 373 or a 16-car Class 374
Set Downtime	Time Set is stood down to perform activity
SPI	St. Pancras International
Shimming	The addition of shims between the primary and/or secondary suspension to alter vehicle height
STB	Stabling Road
T Exam	[Redacted] km periodicity Class 374 preventative maintenance
Temple Mills	Temple Mills International Depot
The Act	Railways Act 1993
TMI	Temple Mills International
UAT	Ultrasonic Axle Testing
UIC	The International Union of Railways
VG Comfort Exam	Visite Générale Comfort Exam([Redacted] km periodicity Class 373 preventative maintenance)
VG Exam	Visite Générale/ General examination ([Redacted] km periodicity Class 373 preventative maintenance)
VL Comfort Exam	Visite Limitée Comfort Exam([Redacted] km periodicity Class 373 preventative maintenance)
VL Exam	Visite Limitée/ Limited examination ([Redacted] km periodicity Class 373 preventative maintenance)

VOR Exam	Visite des Organes de Roulement/ Running gear examination ([Redacted] km periodicity Class 373 preventative maintenance)
VOS Exam	Visite des Organes Spécifiques/ Specific Running gear examination ([Redacted] km periodicity Class 373 preventative maintenance)
WL	Wheel Lathe

4 Description of Temple Mills

4.1 Overview: Temple Mills is a maintenance depot facility used for servicing, train maintenance, repair, cleaning, overhaul, wheel reprofiling, and as a stabling location. It includes various specialised areas and equipment to support these activities.

4.1.1 LDA Roads: CET and tanking roads. While the primary function is a CET and tanking point, it can also be used for stabling during times with minimal or zero arrivals.

4.1.2 Carriage Wash: This facility is used only to clean the train exterior automatically as the train drives through.

4.1.3 Stabling Roads: The depot has several stabling roads where trains can be positioned for departure. Only some roads are provisioned for cleaning and light servicing activities.

4.1.4 Maintenance Shed: The shed is used for various levels of maintenance, from light servicing and running maintenance (such as cleaning, running exams, and minor repairs) to heavy maintenance (such as overhauls and major repairs). The shed has 8 roads, each with different facilities, suitable for different maintenance activities.

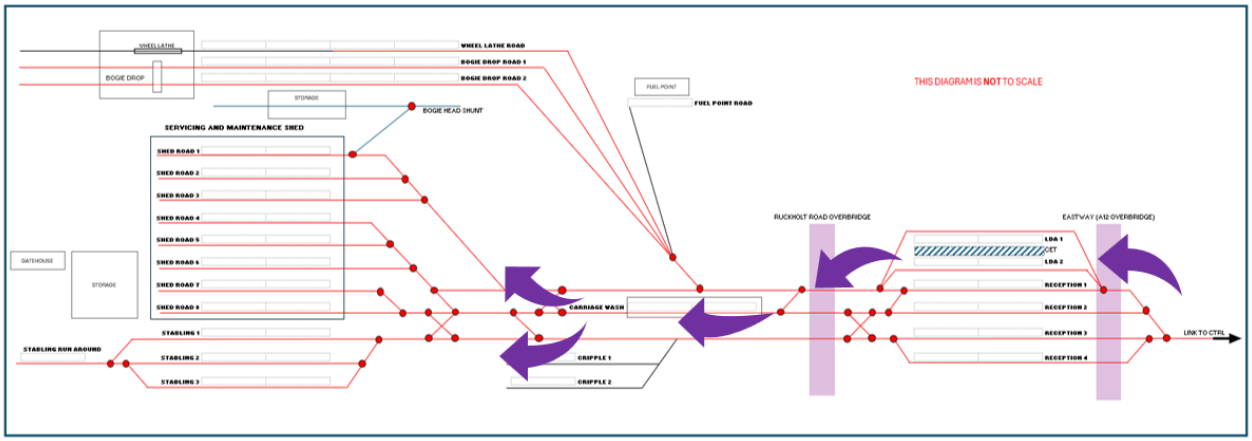
4.1.5 Bogie Drop: This is used for heavy maintenance tasks, including removal and replacement of bogies or large underframe equipment. There are 2 bogie drops. Bogie Drop 1 is fitted with an underframe cleaning facility.

4.1.6 Wheel Lathe: There is a double headed wheel lathe which is used for preventative and corrective wheel reprofiling. The wheel lathe operates 24 / 7, except during wheel lathe maintenance and calibration.

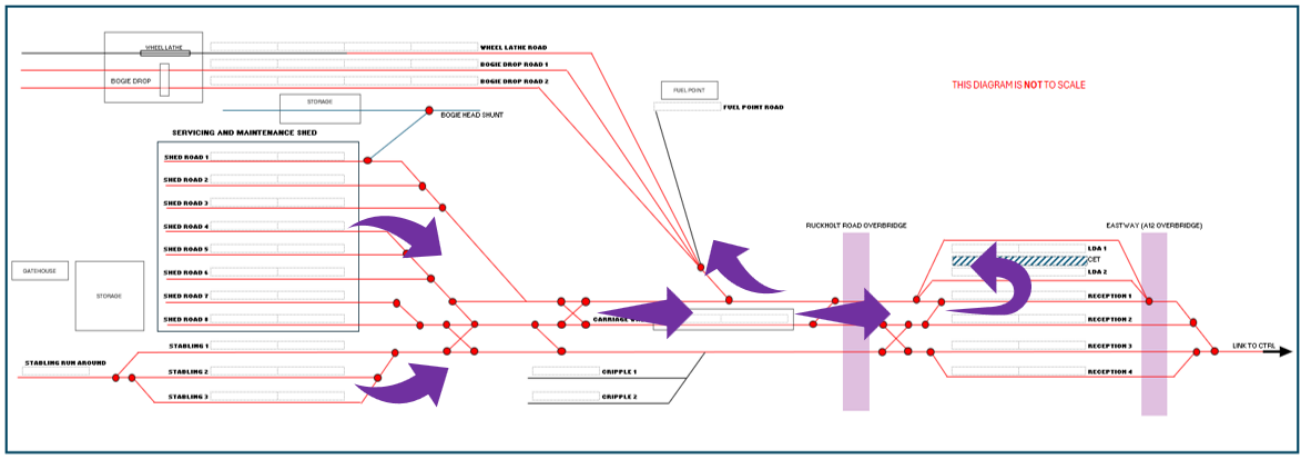
4.2 Movement Flows:

- Based on a 400m Set. Flows may be different for a shorter Set.

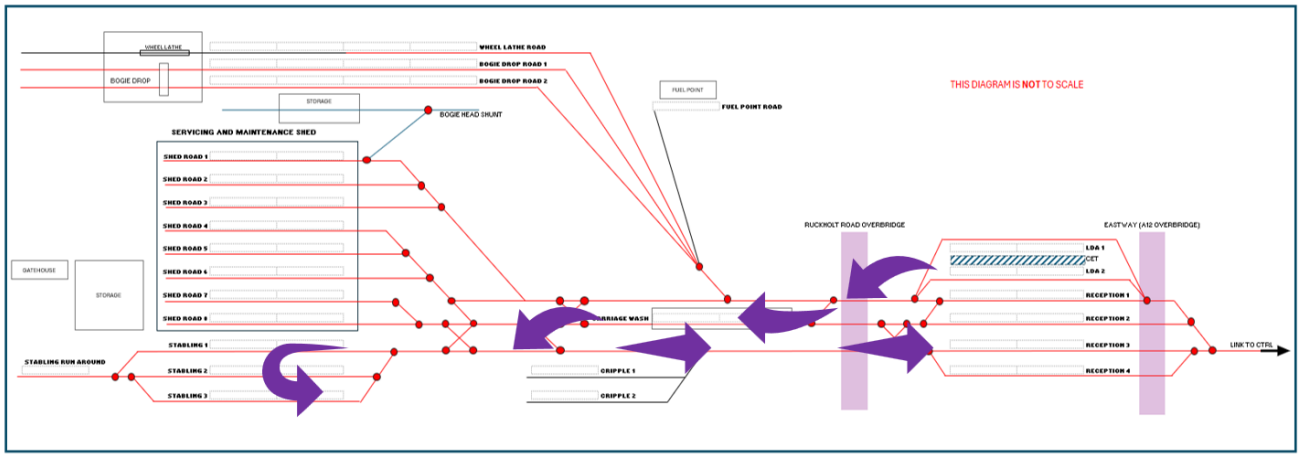
4.2.1 Arrival: Where possible, all EIL arrivals pass through the LDA Roads to CET and be tanked, followed by the Carriage Wash, and then into Maintenance Shed Road 1-8 (maintenance, cleaning and servicing) or onto Stabling Road 1-3 (cleaning and light servicing). Maintenance, cleaning and servicing tasks are undertaken in situ. Shown below.



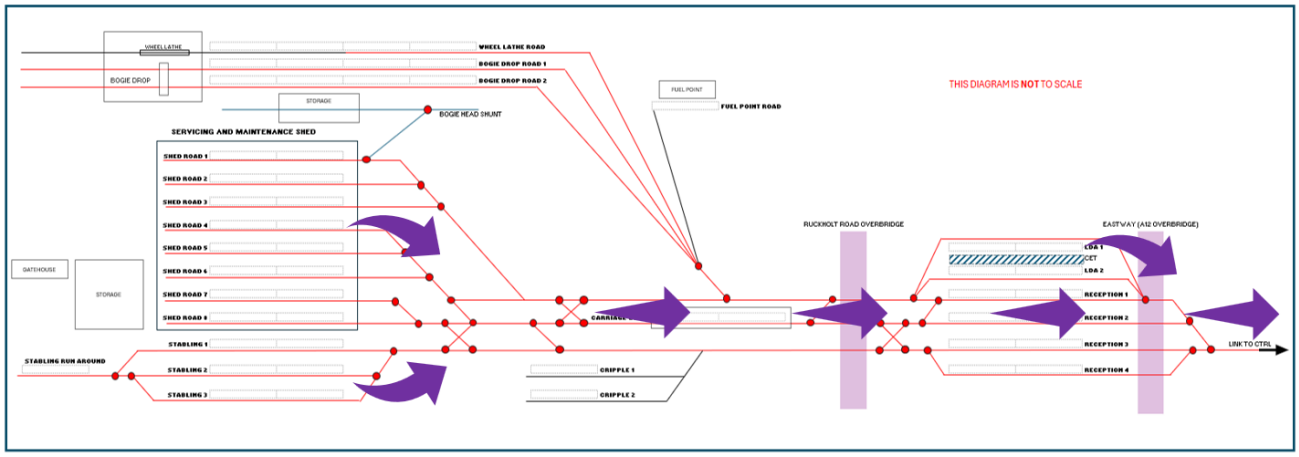
4.2.2 Shunt to Bogie Drop or Wheel Lathe: A double shunt is required if a movement is required from the Main Shed or Stabling 1-3 to the Wheel Lathe or Bogie Drop Roads. It is only possible to reach Wheel Lathe and Bogie Drop Roads in a single movement from the LDA Roads or Reception Road 1. While not shown on the below diagram, a triple shunt is required if a movement is required from Reception Roads 2-4 to the Wheel Lathe or Bogie Drop Roads. Shown below.



4.2.3 Shunt from LDA to Reception Roads: A double shunt is required if a movement is required from the LDA roads to the reception roads. This is shown in the diagram below to utilise one of Stabling Roads 1-3 as a head shunt, but the move could also be achieved using one of the Main Shed Roads. It is not possible to make a move from the LDA roads to the Reception Roads if all of the Main Shed roads and Stabling Roads are already occupied. A Set would first have to be shunted to an alternate location to enable the movement. Shown below.



4.2.4 Departure: A Set can depart from any road in a single movement. If departing from the Main Shed or Stabling 1-3 then one of the LDA Roads or Reception Roads must be clear to act as a through road. Shown below.



4.3 Current contractual commitments: Temple Mills is currently solely used by EIL for stabling, servicing and maintenance of its 2 Eurostar branded high-speed fleets.

4.3.1 Active EIL Fleet

- 8 x 20 Car Class 373 E300 Sets – 394m length – average [Redacted] kilometre per Set per annum
- 17 x 16 Car Class 374 E320 Sets – 399m length – average [Redacted] kilometre per Set per annum

4.3.2 Decommissioned Class 373s:

- 2 x decommissioned Class 373s stored as half-sets (x4) at Temple Mills since 2019 occupy the depot indefinitely.
- Further decommissioned Class 373s stored at other facilities on the continent

4.3.3 Spares and locomotives:

- 1 x Class 373 power car situated at Temple Mills
- 1 x Class 08 diesel locomotive situated at Temple Mills

4.4 **Security:** The depot receives international traffic and is considered high security, featuring advanced systems like perimeter detection, CCTV and access control. Security clearance and strict adherence to applicable security rules apply at all times and are a condition of entry. The whole depot area, including the Reception Building, LDA Roads and Main Shed, are all under the same security rating.

4.5 **Stores Facilities:** Temple Mills has two stores facilities located onsite. There is a component and consumables store attached to the Main Shed. It is fitted with high bay racking and features automated order picking. There is also a new stores facility currently undergoing commissioning for the additional storage of equipment such as bogies, traction converters, and capital spares. The new additional facility enables EIL to co-locate a greater proportion of its spares pool onsite and reduce reliance on offsite storage facilities. Stores capacity was not considered within this report, assessment of capacity would need to be undertaken as part of a follow-on study.

4.6 **Arrival and Departures:** IPEX has analysed two sources of information for arrivals and departures from Temple Mills (data provided by EIL):

- Diagrams of weekly planned Empty Coaching Stock (ECS) moves. EIL provided planned moves from Monday 10/02/2025 to Sunday 16/02/2025.
- Observed depot movements for all movements onto and off Temple Mills (including internal depot movements at Temple Mills). EIL provided all moves from Tuesday14/01/2025 to Sunday 26/01/2025. From this dataset IPEX analysed movements from Wednesday 15/01/2025 to Tuesday 21/01/2025 to gather a comparable weekly view between planned and observed movements. Both the planned and observed arrivals and departures from Temple Mills are outlined in Paragraph 4.6.1 and 4.6.3. respectively.

4.6.1 Planned arrivals and departures - (10/02/2025 to 16/02/2025):

Day	Date	Arrivals	Departures
Monday	**10/02/2025**	[Redacted]	[Redacted]
Tuesday	**11/02/2025**	[Redacted]	[Redacted]
Wednesday	**12/02/2025**	[Redacted]	[Redacted]
Thursday	**13/02/2025**	[Redacted]	[Redacted]
Friday	**14/02/2025**	[Redacted]	[Redacted]
Saturday	**15/02/2025**	[Redacted]	[Redacted]
Sunday	**16/02/2025**	[Redacted]	[Redacted]

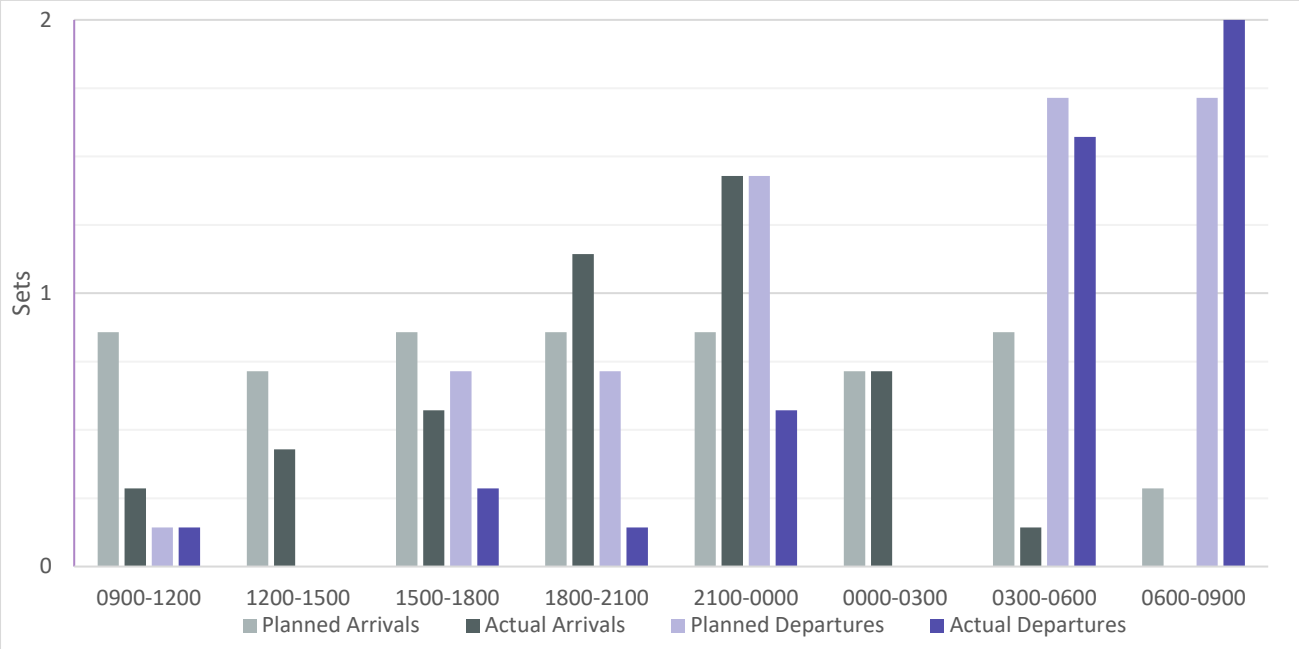
4.6.2 In the week analysed there were 42 planned arrivals and 45 planned departures averaging 6.00 planned arrivals per day and 6.43 planned departures per day. Planned moves are only indicative of observed arrivals and departures and the difference between arrivals and departures does not represent a weekly loss of Sets from depot. The planned arrivals and departures shows that EIL regularly plan for 4-7 daily arrivals and 5-7 daily departures.

4.6.3 Observed arrivals and departures – (15/01/2025 to 21/01/2025):

Day	Date	Arrivals	Departures
Wednesday	**15/01/2025**	[Redacted]	[Redacted]
Thursday	**16/01/2025**	[Redacted]	[Redacted]
Friday	**17/01/2025**	[Redacted]	[Redacted]
Saturday	**18/01/2025**	[Redacted]	[Redacted]
Sunday	**19/01/2025**	[Redacted]	[Redacted]
Monday	**20/01/2025**	[Redacted]	[Redacted]
Tuesday	**21/01/2025**	[Redacted]	[Redacted]

4.6.4 In the week analysed there were 33 observed arrivals and 33 observed departures averaging 4.71 observed arrivals and departures per day. An equal number of observed arrivals and departures is demonstrative that Temple Mills maintains a steady number of Sets on depot. The observed arrivals and departures demonstrate EIL regularly accept 4-5 arrivals and regularly despatch 3-6 departures.

4.6.5 Comparison between planned and observed arrivals and departures: Planned and observed arrivals were compared over a 24hr period in intervals of 3hrs:



4.6.6 The comparison was made over 3hr intervals to suitably highlight arrival and departure times at Temple Mills within a limited dataset when counted by total arrivals and departures. The Arrival Rate has been calculated these using these 3hr intervals, recognising the rate can vary within the interval itself.

4.6.7 Planned arrivals are consistently between 0.7-0.9 Sets per 3hr interval from 0900-0300 and fall below this during 0600-0900. Observed arrivals are later than planned and are highest between 2100-0000 where the average observed arrival rate is 1.43 Sets per 3hr interval. The difference between planned and observed departures is 0.13 Sets per 3hr interval between 0300-0900. However actual departures are 1.86 Sets per 3hr interval less than planned between 1500-0000. The difference in planned to actual departures is attributed to EIL's decision to berth Sets at SPI when they do not need to return to depot.

5 Location Overview

5.1 **Key Locations:** Temple Mills consists of various specialised areas, each designated for specific types of maintenance, servicing, and stabling. A full illustration of the depot layout is provided in **Appendix 1**. Below is a summary of the key locations within the depot and their respective road lengths.

Road Name	Categorisation	OLE	Access	Length (m)
LDA1	LDA Roads	✓	Bi Direct	400
LDA2		✓	Bi Direct	400
Reception 1	Reception Roads	✓	Bi Direct	400
Reception 2		✓	Bi Direct	400
Reception 3		✓	Bi Direct	400
Reception 4		✓	Bi Direct	400
Carriage Wash		✓	Bi Direct	N/A
Fuel Point Road	Fuel Point Road	✗	East	210
Wheel Lathe Road	Bogie Drop and Wheel Lathe Roads	✗	East	870
Bogie Drop Road 1		✓	East	850
Bogie Drop Road 2		✓	East	840
Shed Road 1	Maintenance Shed	✓	East	400
Shed Road 2		✓	East	400
Shed Road 3		✓	East	400
Shed Road 4		✓	East	400
Shed Road 5		✓	East	400
Shed Road 6		✓	East	400
Shed Road 7		✓	East	400
Shed Road 8		✓	East	400
Stabling 1	Stabling roads	✓	East	410
Stabling 2		✓	East	410
Stabling 3		✓	East	410
Cripple 1	Cripple roads	✗	East	230
Cripple 2		✗	East	230

5.2 **Location Capabilities** at Temple Mills consists of the specific capabilities within each specialised area. The capability of each specialised area is provided. A further breakdown for certain areas is provided in **Appendix 2**.

Road Name	OLE	Stabling	Servicing	Maintenance	Overhaul	Wheel Reprofiling
LDA1	✓	✓	✓**	✗	✗	✗
LDA2	✓	✓	✓**	✗	✗	✗
Reception 1	✓	✓	✓**	✗	✗	✗
Reception 2	✓	✓	✓**	✗	✗	✗
Reception 3	✓	✓	✓**	✗	✗	✗
Reception 4	✓	✓	✓**	✗	✗	✗
Wheel Lathe Road	✗	✗	✗	✗	✗	✓
Bogie Drop Road 1	✓	✗	✗	✗	✓	✗
Bogie Drop Road 2	✓	✗	✗	✗	✓	✗
Shed Road 1	✓	✗	✗	✓****	✓	✗
Shed Road 2	✓	✓	✓	✓	✗	✗
Shed Road 3	✓	✓	✓	✓	✗	✗
Shed Road 4	✓	✓	✓	✓	✗	✗
Shed Road 5	✓	✓	✓	✓	✗	Post BD and WL checks***
Shed Road 6	✓	✓	✓	✓	✗	✗
Shed Road 7	✓	✓	✓	✓	✗	✗
Shed Road 8	✓	✓	✓	✓	✗	Post BD and WL checks***
Stabling 1	✓	✓	✓*	✗	✗	✗
Stabling 2	✓	✓	✓*	✗	✗	✗
Stabling 3	✓	✓	✓*	✗	✗	✗

**No sanding facilities at this location.*

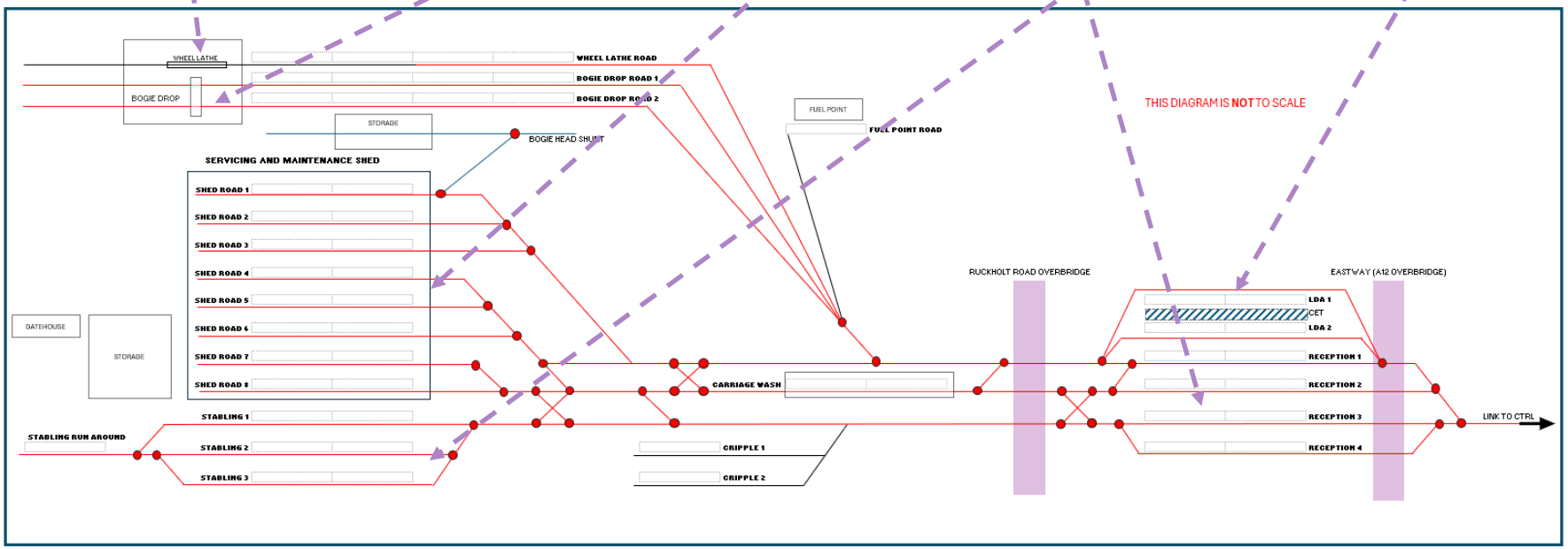
***No sanding facilities. Screen wash top-up and interior cleaning not currently done in this location.*

**** Shed road 5 and 8 are declared as level calibrated roads. Used to do vehicle height measurements post bogie drop (BD) and wheel lathe (WL). May only be necessary if shimming is required.*

***** Some limitations on activities that can be undertaken due to road setup for overhauls.*

5.3 Location Overview

Wheel Lathe	Bogie Drop	Maintenance Shed	Stabling Only	LDA
• *1 x road* • *800m length* • *Wheel reprofiling* • *24 / 7 operation* • *Can stable up to 2 x Sets in emergency circumstances*	• *2 x Roads* • *800m length per road* • *Equipment drop - share common table* • *Can stable up to 4 x Sets in emergency circumstances*	• *8 x Roads* • *400m length per road* • *Light + Heavy maintenance* • *Cleaning, sand, wash fluid* • *Can stable up to 8 x Sets*	• *3 x Roads [Stabling 1-3]* ○ *Cleaning, wash fluid* • *4 x Roads [Reception 1-4]* ○ *Limited provisions* • *Can stable up to 7 x Sets*	• *2 x Roads* • *400m length per road* • *CET and tanking* • *Can stable up to 2 x Sets*



NOTE – Exceptional Depot Set Capacity is not the sum of all available stabling capacity. It is not possible or desirable to use 100% of stabling space as this inhibits movements and introduces safety and operational issues.

6 Temple Mills Capacity and Definitions

6.1 Depot Set Capacity Definitions: These terms are used throughout the report and analysis to describe the capacity, current utilisation and latent capacity at Temple Mills.

Term	Definition
Capacity	Defined as the total spaces available at the site.
Utilisation	Defined as the proportion of capacity required to support the existing EIL fleets, accounting for EIL's current operational practices.
Latent Capacity	Defined as the delta between Utilisation and Capacity. This is a measure of available latent capacity.
Normal Depot Set Capacity	The maximum quantity which the depot can accommodate factoring for space required to accommodate and service arrivals, perform Set movements, and accounting for typical unforeseen events.
Exceptional Depot Set Capacity	The maximum quantity which the depot could accommodate in an extenuating circumstance where more Sets than usual must be removed from the operational network. This may also be considered as a 'Christmas Day' stabling scenario.
Absolute Maximum Depot Set Capacity	The sum of all available stabling spaces (i.e. the available 'footprint' of the depot). It is unrealistic for this many Sets to be on the depot even in an extenuating circumstance, and certainly not during normal operation.
Sets	A whole Class 374 or Class 373 Unit, which are 399m and 394m in length respectively.

6.2 Temple Mills Stabling Capacity

6.2.1 The ***Normal Depot Set Capacity is 15 Sets***. This is the maximum quantity which the depot can accommodate factoring for space required to stable and service arrivals, make movements, and account for typical unforeseen events. However, it must be considered that due to EIL's current operating processes, the reception roads and LDA roads (which provides 4 out of the 15 Sets Normal Depot Set Capacity) are not currently used during routine operations for stabling and Set departures.

6.2.2 The ***Exceptional Depot Set Capacity is 20 Sets.*** This is the maximum quantity which the depot could accommodate in an extenuating circumstance where more Sets than usual must be removed from the operational network. However, operating at this level would severely hinder the ability to make movements and undertake heavy maintenance (due to limited access to the bogie drop) or wheel reprofiling.

6.2.3 The ***Absolute Maximum Depot Set Capacity is 24 Sets***. This figure only demonstrates the sum of all available stabling spaces. It is unrealistic for this many Sets to be on the depot even in an extenuating circumstance, and certainly not during Normal operation.

6.2.4 Depot Set Capacity Summary:

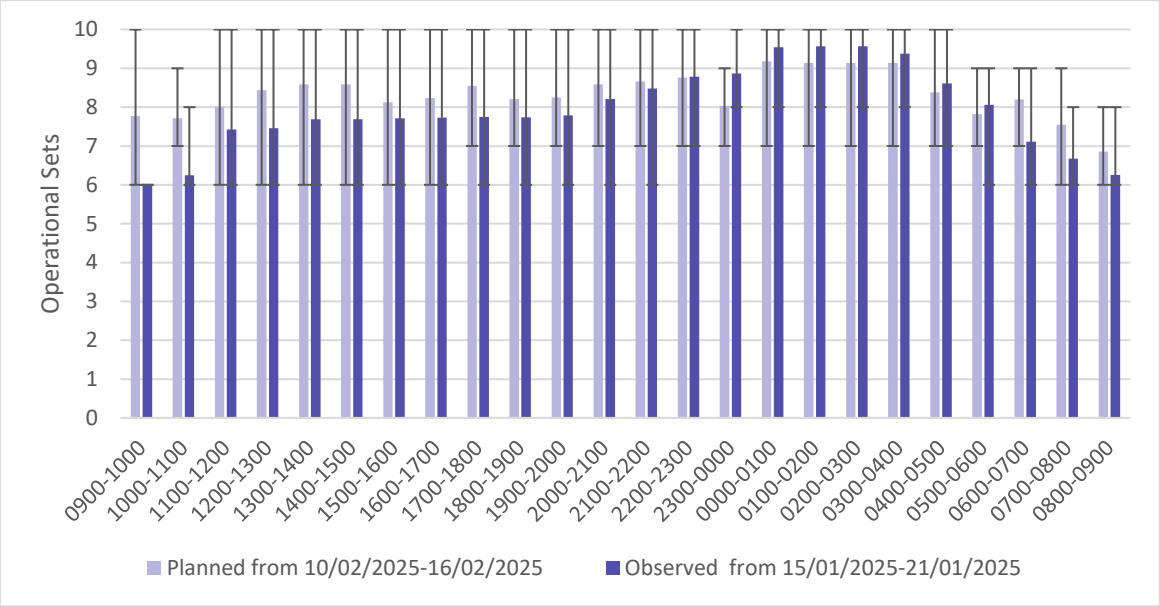
Area	Normal Depot Set Capacity (Sets)	Exceptional Depot Set Capacity (Sets)	Absolute Maximum Depot Set Capacity (Sets)
LDA Roads	1***	1	2
Reception Roads	3***	3	4
Stabling Roads	3	3	3
Maintenance Shed	8	8	8
Wheel Lathe**	0	1	2
Bogie Drop**	0	4	4
Cripple Roads*	0	0	1
TOTAL	**15**	**20**	**24**

** 200m road not electrified*

*** 800m roads*

**** not currently used by EIL for routine stabling or Set departures*

6.3 Sets on Temple Mills over 24hrs: Using arrival and departure datasets in conjunction with the original number of Sets on depot at the start of each dataset time period, the total number of Sets on depot at any one time was calculated. IPEX modelled the average number of Sets over a week at Temple Mills using the planned and observed data outlined in **Section 4.6.1** and **Section 4.6.3**:



6.3.1 The average hourly planned and observed Sets on depot over one week at Temple Mills assumes:

- Planned data assumes 10 Sets occupy the depot at the start of the dataset (00:00 on Monday 10/02/2025).
- Observed data assumes 9 Sets occupy the depot at the start of the dataset (00:00 on Wednesday 15/01/2025).

- Non-operational assets are not included in planned and observed plots. These exclusions include:
  - 1 x Cl 373 spare power car
  - 2 x Cl 373 ***decommissioned Sets*** used for spares
  - 1 x 08 Fuel shunter

6.3.2 Across both the planned and observed plots, ***the quantity of Sets on depot over a 24hr period ranges between 6 and 10***. The average quantity of Sets on depot for the planned plot is 8.4 Sets and observed plot is 7.9 Sets. The standard deviation across the planned plot over a 24hr period is 0.6 and observed plot is 1.0. The observed plot demonstrates a greater degree of variability of quantity of Sets on depot than indicated by planned data. It is difficult to determine if this is normal due to the limited range of available data, but the lower quantity of Sets on depot demonstrated by the observed data could indicate a preference to stable an additional Set at St. Pancras. The difference in minimum and maximum Sets in a single hour period is reflective of changes in diagramming over the course of the week, particularly on Saturdays and Sundays, where fewer arrivals and departures are planned or observed in the datasets.

6.3.3 This demonstrates that based on the current EIL operating practice of not normally stabling and departing Sets on the receptions roads and LDA, the depot is occasionally getting close to the maximum normal Set capacity of 11 Sets (when at the top end of the current occupancy range). Clearly, if the reception roads and LDA roads were to be utilised for Set stabling and departures, then the current depot Set occupancy would be well within the maximum of 15 Sets.

7 Depot Operational Restrictions

7.1 Maintenance and stabling restrictions are determined by several key factors, including length and quantity of available roads, stabling capacity, maintenance shed facilities, and the operational constraints outlined below.

7.1.1 Operational constraints:

- ***Speed limits:*** The entire depot operates under strict speed limits (5 kph).
- ***Operational hours:*** Temple Mills operates 24/7 and has a three-shift work pattern, 8 hours per shift.
- ***LDA:*** There are two LDA roads. It is only possible to carry out CET discharge on one road at a time. It requires 45 minutes to CET and tank a Set. Where possible, all Sets pass through LDA1/LDA2 on arrival to CET. If a Set is unable to CET and tank, it is undertaken on departure.
- ***Wash plant:*** 20 minutes is required between Sets using the wash plant. It takes 20 minutes for the water tanks to re-generate. Class 373s travel through the wash at 3kph. Class 374s travel through the wash at 5kph.
- ***Bogie Drop:*** There are two bogie drop roads. The roads share a common moveable table. Equipment can only be removed from a single Set on one of the two roads at any given time.
- ***Wheel Lathe:*** The wheel lathe is twin headed and, apart from machine downtime, can be operated 24/7. The wheel lathe road is not electrified. A tug is used to move the Sets on this road.
- ***Departure restrictions:*** During peak departure times, specific roads would be required to be kept clear to facilitate smooth and timely train movements out of the depot. This would primarily effect one of LDA1, LDA2 or Reception 1.
- ***Arrival rate:*** The maximum arrival rate based on current operational control practices and resources is 3 Sets per hour (1 Set every 20 minutes).
- ***Train movement:*** Notwithstanding driver availability, vehicle movements can take place simultaneously on the depot site providing movement paths between locations do not interfere. Movements on depot are undertaken by mainline drivers. There are usually two available depot drivers to undertake necessary vehicle moves.
- ***Departure roads:*** The layout of the depot is such that a Set can depart the depot from any road.
- ***Road lengths:*** Two uncoupled half Sets are both able to be stabled on the same 400m road. Though it may be different for different rolling stock, for example 2 x 200m train-sets.
- ***Safety align checks:*** Following each maintenance intervention, and before a Set can depart the depot, a walk around is required to check panels are up and secured, rail is clear of obstructions as is the surrounding areas. This takes approximately 20 minutes.
- ***Sanding:*** Sanding is undertaken within the main shed only. Sets are sanded on each visit to the main shed. [Redacted]
- ***Screen wash:*** Screen wash top-up can be completed in the main shed or on stabling 1-3. This is checked every visit and topped up if needed. [Redacted]
- ***Driver prep:*** Driver prep is undertaken prior to departure and takes 30 minutes for both Class 373 and Class 374 Sets.
- ***HS1 line block:*** A line block is usually applied to the HS1 network Mon-Thurs 00:25-04:40, Sat 00:25-06:30 and Sun 00:25-04:40. The line block prevents arrivals or departures at the depot between these time periods. Additional planned or unplanned interventions can also occur.

8 Maintenance Schedules and Depot Allocation

8.1 Class 373 Maintenance - (Full activities outlined in Appendix 5):

Average annual kilometrage for Class 373 – [Redacted] km/Set

8.1.1 Servicing: Consists of interior cleaning, exterior cleaning, CET and tanking, sanding, and screen wash top-up.

- Interior cleaning is undertaken by cleaners each time a Set visits the depot as part of train preparation.
- Exterior cleaning consists of the Set passing through the train wash and is undertaken each time a Set visits the depot.
- CET and tanking are undertaken on the LDA road each time a Set visits the depot.
- Sanding is undertaken each time the Set enters the shed. The backstop is every [Redacted] km at the ESN exam.
- Screen wash top-up is undertaken each time the Set enters the shed or is positioned on Stabling Roads 1-3. The backstop is every [Redacted] km at the ESN exam.

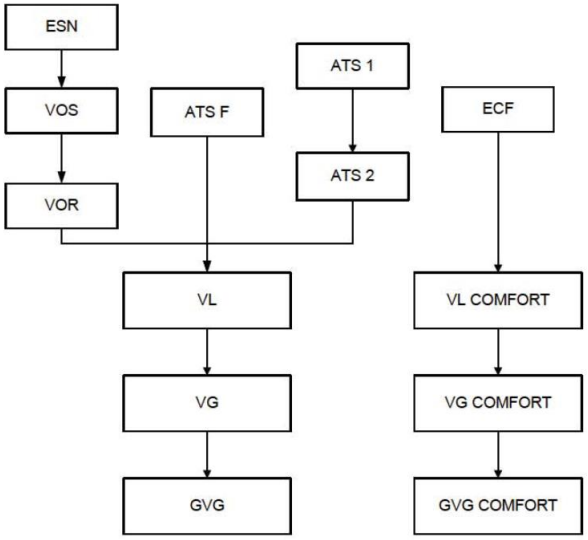
8.1.2 Preventative Maintenance: Consists of four series of exam types:

- ESN exams (at no greater than [Redacted] km periodicity), VOS exams ([Redacted] km periodicity) and VOR exams ([Redacted] km periodicity). The work content of a VOR exam includes that of a VOS exam, similarly, the VOS exam contains the work content of an ESN.
- There is an ATS F exam ([Redacted] km periodicity).
- There is ATS 1 exam ([Redacted] km periodicity) and ATS 2 exam ([Redacted] km periodicity). The work content of an ATS 2 includes that of an ATS 1.
- There is an ECF exam at ([Redacted] km periodicity).

8.1.3 Preventative heavy maintenance and overhauls: Consist of the following exam types:

- VL exams ([Redacted] km periodicity), VG exams ([Redacted] km periodicity) and GVG exam ([Redacted] km periodicity). The GVG contains the work content of a VG exam, the VG exam contains the work content of a VL exam. The VL exam contains the work content of a VOR exam, an ATS F exam and an ATS 2 exam.
- VL comfort exams ([Redacted] km periodicity), VG comfort exams ([Redacted] km periodicity) and GVG comfort exams ([Redacted] km periodicity). The work content of a GVG comfort exam contains that of a VG comfort exam, similarly a GV comfort exam contains the work content of a VL comfort exam. The VL comfort exam includes the content of an ECF exam.

8.1.4 Maintenance pattern: an excerpt of the Cl 373 Maintenance Regime is shown to indicate the primary maintenance pattern of the Cl 373 fleet**:**



Note: *the above diagram does not fully reflect the current Class 373 maintenance pattern.*

8.1.5 **Other programmed work:** In addition to the maintenance pattern there are a number of other maintenance exams which follow time and distance-based intervals. These exams do not fall within the maintenance pattern outlined in 8.1.2 and 8.1.3 and instead stand separately as discrete packages of work. This includes the exam classifications ATS (Autres Travaux Systématiquess) *(Other systematic work (periodicity < GVG))* and ATP (Autres Travaux Programmés) (*Other programmed work (periodicity > GVG)).*

8.1.6 Corrective Maintenance: Defined as fleet reliability Mean Distance Between Failures (MDBF) failures requiring shed access (estimated to [Redacted] km periodicity per Set) and non-MDBF affecting failures requiring repair in shed (provided by EIL to [Redacted] km periodicity per Set).

8.1.7 Heavy Cleaning: One weekly day shift is provisioned across the Cl 373 and Cl 374 fleet for heavy cleaning including wet carpet cleaning and exterior hand bashing. Unscheduled heavy cleaning, where this is required, has been assumed at [Redacted] km periodicity per Set.

8.1.8 Wheel Reprofiling – Corrective wheel reprofiling is used to managed wheel tread condition and arising wheel tread defects (one bogie per Set every [Redacted] km).

Observation: The Cl 373 maintenance plan is of an older methodology, with limited light preventative maintenance and a preference for higher km intervals that require removal of a set from service for a longer period. There is the possibility for duplication of maintenance tasks when they arise at the same time or in close proximity, as both are still required to be undertaken (with no parent/child task structure, as is the case for the Cl 374). The Cl 373 is generally considered to be more maintenance intensive than the Cl 374 and a comparable new fleet.

8.2 Class 374 Maintenance (full activities set out in Appendix 5):

Average annual kilometrage for Class 374 – [Redacted] km/Set

8.2.1 Servicing: Consists of interior cleaning, exterior cleaning, CET and tanking, sanding, and screen wash top-up.

- Interior cleaning is undertaken by cleaners each time a Set visits the depot as part of train preparation.
- Exterior cleaning consists of the Set passing through the train wash and is undertaken each time a Set visits the depot.
- CET and tanking are undertaken on the LDA road each time a Set visits the depot.
- Sanding is undertaken each time the Set enters the shed. The backstop is every [Redacted] km at the I exam.
- Screen wash top-up is undertaken each time the sent enters the shed or is positioned on Stabling Roads 1-3. The backstop is every [Redacted] km at the I exam.

8.2.2 Preventative Maintenance: Consists of I exams ([Redacted] km periodicity), C exams ([Redacted] km periodicity), and T exams ([Redacted] km periodicity). The scope of an I exam is contained within a C exam, and the scope of a C exam is contained within a T exam. The scheduled maintenance follows a I-C-I-C-I-T exam pattern, whereby the higher periodicity exams are more onerous.

8.2.3 Overhauls: Consist of R exams stated at [Redacted] km periodicity in the Cl 374 VMI but extended to [Redacted] km as indicated by EIL (IPEX has modelled at [Redacted] km). This is a heavy exam whereby the Set is removed from service for an extended period to overhaul key components such as bogies, transformers, running gear and doors.

8.2.4 Individually managed tasks: Consist of tasks which fall outside those outlined in 8.2.2 and 8.2.3 and are classified as either "Individually managed tasks" or "Periodical Exams" within the Cl 374 VMI.

8.2.5 Corrective Maintenance: Defined as fleet reliability Mean Distance Between Failures (MDBF) affecting failures requiring shed access (estimated to [Redacted] km periodicity) and non-MDBF affecting failures requiring repair in shed (provided by EIL to [Redacted] km periodicity per Set).

8.2.6 Heavy Cleaning: One weekly day shift is provisioned across the Cl 374 and Cl 373 fleet for heavy cleaning including wet carpet cleaning and exterior hand bashing. Unscheduled heavy cleaning, where this is required, has been assumed at [Redacted] km periodicity per Set.

8.2.7 Wheel Reprofiling – Corrective wheel reprofiling is used to managed wheel tread condition and arising wheel tread defects (one bogie per Set every [Redacted] km). Preventative wheel reprofiling is expected to be introduced on the Cl 374 fleet (likely [Redacted] km periodicity per Set). This will see the introduction of wheel reprofiling at a prescribed interval and a commensurate reduction in the need for corrective wheel reprofiling. Due to the large number of wheelsets (64 wheelsets per Set) it is likely in practice that multiple visits to the wheel lathe may be necessary to complete wheel reprofiling across a full Set. It is a future change so not factored within the analysis, but it would be expected to have a net positive impact reducing combined preventative and corrective wheel lathe requirement (in hours).

Observation: Cl 374 maintenance plan is well optimised and closely resembles the maintenance methodology of many new fleets, with a well-balanced and evenly distributed maintenance schedule which resets every [Redacted] km.

8.3 EIL Maintenance Facilities:

Note: Percentages in Sections 8.3.1, 8.3.2, and 8.3.3 denote the proportion of work undertaken across both fleets, Class 373 and Class 374.

8.3.1 Temple Mills – managed by EIL:

- Primary maintenance location for Class 374s.
- Estimated to undertake [Redacted]% of light preventative maintenance.
- Estimated to undertake [Redacted]% of heavy preventive maintenance.
- Equipped with a wheel lathe, operational 24 / 7. Temple Mills currently satisfies [Redacted]% of EIL wheel reprofiling requirements.
- Stabling and maintenance utilisation explored in following sections.

8.3.2 Other Maintenance Facility #1 – Utilised by EIL for purpose of:

- [Redacted]

8.3.3 Other Maintenance Facility #2 – Utilised by EIL for purpose of:

- [Redacted]

9 Analysis

9.1 Analysis approach and terminology: IPEX has measured the Latent Capacity at Temple Mills in terms of both the overall Depot Set Capacity (which is simply a function of physical space and time) as well as the Latent Capacity of each of the core depot functions, which are:

- Latent Normal Depot Arrival Rate – the Latent Capacity for more Sets to arrive and receive routine servicing (CET and tanking)
- Latent Normal Depot Set Capacity – the Latent Capacity for more Sets to be stabled at the depot, which may not include provision for any maintenance (i.e. only stabling)
- Latent Maintenance Shed Capacity – the Latent Capacity for more Sets to be maintained at the depot, requiring access to the maintenance shed and including the capacity for heavy maintenance as well as routine light maintenance.
- Latent Wheel Lathe Capacity – the Latent Capacity for wheel reprofiling Sets on the wheel lathe, considering that this could be a standalone service provided to a third party operator, assuming the wheel lathe is accessible and available.

The Latent Capacity has been assessed for each of the core depot functions, rather than trying to assess what size of fleet growth might be accommodated at Temple Mills, because it is currently unknown what depot functions are required by a potential third party operator. Temple Mills may be one part of an overall rolling stock fleet maintenance strategy, and therefore the demand for Temple Mills could vary from simple additional stabling through to full maintenance provision. Measuring the Latent Capacity for each individual function enables the ORR to assess whether the needs of a potential third party operator can be met, whether in part or in full. It is also recognised that individual depot function latent capacities are intrinsically linked, and should not be considered in isolation.

9.2 To determine the Latent Capacity of each of these core depot functions, the following analysis was undertaken:

Analysis	Report Section	Overview
Depot Flow Analysis (using a Depot Model)	***Section 10***	• Models arrivals and departures to Temple Mills over a 'typical' 24hr period in 5-minute intervals. • Shows the flow of Sets through and between locations at Temple Mills. ***Flow is defined in Set/hr***. • Assesses activities required to turnaround Sets for service (such as cleaning and low periodicity maintenance activities).
Depot Set Capacity	***Section 11***	• Where Sets currently occupy. • Outlines Normal and Exceptional capacity, and what latent capacity is available against these parameters.
Maintenance Shed Capacity Analysis (Maintenance Model)	***Section 12***	• A bottom-up analysis assesses how many shed roads are required to maintain Temple Mills' current fleet allocation. This is a two staged analysis, initially calculating the theoretical minimum requirement, followed by calculating the Practical Shed Requirement (based on a Maintenance Plan), which is then used to determine the latent capacity. • To give a real view of typical utilization, a weekly depot plan is used to indicate when work could be allocated over the duration of a week (measured in roads). • The difference between the maintenance plan and the maintenance shed capacity can be considered the latent capacity of the maintenance shed (excluding its use for non-shed essential activities). • An assessment of the current maintenance shed occupancy from 15/01/2025-21/01/2025 based on depot movements provided by EIL.
Wheel Lathe Capacity Analysis (Wheel Lathe Model)	***Section 13***	• Measures the total hours the wheel lathe is available to be utilised per annum after any downtime is accounted for (e.g. lathe maintenance and calibration). • Identifies lathe capacity required to support current fleet, based on wheel reprofiling practices for EIL's fleets, and outlines latent capacity which is the difference between wheel lathe capacity and that utilised by EIL.

10 Depot Flow Analysis (Depot Model)

10.1 Model Description: A bespoke model was developed specific to Temple Mills, using Microsoft Excel. The model was built from a proven set of IPEX concepts using a model template and a set of modelling inputs and assumptions, from which the model provides the key outputs as shown in **Appendix 6**. The principles of IPEX's modelling methodology are guided by extensive practical experience in depot management and layout design and has been applied successfully to several existing and new build depots.

10.2 Modelling Inputs: Two simulations were run, for observed and planned arrival and departure times. In the observed model, movements from EIL's depot movements spreadsheet were used to inform the movements of Sets on depot in the modelled time period. In the planned model, movements on depot were inferred from typical movement and activity duration times, and the January 2025 timetable.

10.3 Modelling exclusions: The planned and observed models are based on the information available at the time of the study and do not consider EIL's potential future requirements.

10.4 Arrivals and Departures Modelling (observed): The depot flow modelling in the observed scenario is based on IPEX observations over a 24hr period on 20/01/2025 (0900-0859). The model considers the 4 arrivals and 4 departures observed during this period. All Sets which appear in the depot model are listed below.

Green = Operational Fleet / Red = Decommissioned Sets (since 2019)

Set	Class	Arrival time	Departure time
3211/3212	Cl 373	[Redacted], Arrives	[Redacted], Departs
4007/4008	Cl 374	[Redacted], Arrives	Ends on depot
4003/4004	Cl 374	[Redacted], Arrives	Ends on depot
3221/3222	Cl 373	[Redacted], Arrives	[Redacted], Departs
4011/4012	Cl 374	Starts on depot	[Redacted], Departs
4013/4014	Cl 374	Starts on depot	[Redacted], Departs
3219/3220	Cl 373	Starts on depot	Ends on depot
4025/4026	Cl 374	Starts on depot	Ends on depot
4023/4024	Cl 374	Starts on depot	Ends on depot
3015/3016	Cl 373	Starts on depot	Ends on depot
4005	Cl 374 (half-set)*	Starts on depot	Ends on depot
08 Fuel	Cl 08 (Shunter)	Starts on depot	Ends on depot
3216	Cl 373 (Decommissioned half-Set)	Starts on depot	Ends on depot
3999	Cl 373 Spare Power Car	Starts on depot	Ends on depot
3217	Cl 373 (Decommissioned half-Set)	Starts on depot	Ends on depot
4006	Cl 374 (half-set)*	Starts on depot	Ends on depot
3218	Cl 373 (Decommissioned half-Set)	Starts on depot	Ends on depot
3215	Cl 373 (Decommissioned half-Set)	Starts on depot	Ends on depot

*The 2 x Class 374 half-sets (200m) 4005 and 4006 are split for R Exam works.

10.5 Arrivals and Departures Modelling (planned): The depot flow modelling in the planned scenario is based on the EIL operating timetable and considered 7 arrivals and 7 departures over a 24hr period from 20/01/2025 (0900-0859). All Sets which appear in the depot model are listed below. Green = Operational Fleet / Red = Decommissioned Sets (since 2019)

Set	Class	Arrival time	Departure time
3229/3230	Cl 373	[Redacted], Arrives	[Redacted], Departs
3211/3212	Cl 373	[Redacted], Arrives	[Redacted], Departs
4007/4008	Cl 374	[Redacted], Arrives	[Redacted], Departs
4003/4004	Cl 374	[Redacted], Arrives	Ends on depot
3221/3222	Cl 373	[Redacted], Arrives	Ends on depot
4031/4032	Cl 374	[Redacted], Arrives	[Redacted], Departs
4033/4034	Cl 374	[Redacted], Arrives	Ends on depot
4011/4012	Cl 374	Starts on depot	[Redacted], Departs
4013/4014	Cl 374	Starts on depot	[Redacted], Departs
3219/3220	Cl 373	Starts on depot	Ends on depot
4025/4026	Cl 374	Starts on depot	[Redacted], Departs
4023/4024	Cl 374	Starts on depot	Ends on depot
3015/3016	Cl 373	Starts on depot	Ends on depot
4005	Cl 374 (half-set)*	Starts on depot	Ends on depot
08 Fuel	Cl 08 (Shunter)	Starts on depot	Ends on depot
3216	Cl 373 (Decommissioned half-Set)	Starts on depot	Ends on depot
3999 Pcar	Cl 373 Power Car	Starts on depot	Ends on depot
3217	Cl 373 (Decommissioned half-Set)	Starts on depot	Ends on depot
4006	Cl 374 (half-set)*	Starts on depot	Ends on depot
3218	Cl 373 (Decommissioned half-Set)	Starts on depot	Ends on depot
3215	Cl 373 (Decommissioned half-Set)	Starts on depot	Ends on depot

*The 2 x Class 374 half-sets (200m) 4005 and 4006 are split for R Exam works.

10.6 Quantity of Sets on Depot Over 24hr Period:

10.6.1 The quantity of **Operational Sets** on depot ***ranges between 6 and 10*** during the modelled 24hr period, ***plus 2 Decommissioned Sets (total ranges between 8 and 12).***

10.6.2 The peak quantity of 10 **Operational Sets** on depot occurred between [Redacted] and [Redacted].

10.7 Maximum Normal Depot Arrival Rate: The maximum rate at which the depot can accept Sets and function normally, where servicing on LDA roads can occur normally without offloading arrivals on to a reception road, which would later require a shunt to get back to LDA1 or LDA2 or necessitate the use of an LDA road during or prior to departure.

10.7.1 LDA Roads (CET and Tanking): Only one Set at a time can CET across both LDA roads, meaning Sets are pulsed between LDA roads 1 and 2 to CET**.** The time to CET a Set is 45mins, which equates to ability to accept a steady state rate of **1.3 *Sets per hour*** to the LDA roads**.** Noting, if the LDA roads are already free, they can initially accept an additional Set, while the first Set is undergoing CET.

10.7.2 The Carriage Wash: Operates with Cl 373s travelling through at 3kph and Cl 374s travelling through at 5kph. 20 minutes is required between Sets using the wash to allow the water tanks to re-generate. The length between the Reception and LDA roads, and Stabling and Maintenance Shed Roads is approximately 0.5km. Based on these factors the carriage wash can process ***Cl 373s at a steady state rate of 2.0 Sets/hr*** and ***Cl 374s at a steady state rate of 2.3 Sets/hr***.

Maximum Normal Depot Arrival Rate = 1.3 Sets per hour.

Assuming normal servicing requires Sets to CET and be processed through the carriage wash, with the current infrastructure, the capacity is constrained by the rate at which Sets can CET, which is 45 minutes per Set with the activity only being possible on one LDA road at a time.

10.8 Exceptional Depot Arrival Rate: The absolute maximum rate at which the depot can accept Sets for a finite period to remove Sets from the mainline rapidly. This arrival rate is not considered normal or sustainable and will only occur in exceptional / emergency conditions, such as an incident on the line. To achieve this arrival rate in practice its feasibility would need to be assessed in the context of current operational control practices and resources.

10.8.1 The Exceptional Depot Arrival Rate is **3 *Sets per hour.*** This rate assumes use of LDA Roads 1-2 and Reception Roads 2-4. Road 1 is left clear for shunts and departing Sets. The capacity of these roads to accept 3 Sets, represents 3 Set per hour within this figure.

Maximum Exceptional Depot Arrival Rate = 3 Sets per hour.

Assuming exceptional circumstances where Sets must be removed from the mainline rapidly. This rate may be limited to a short period and / or restricted by driver availability, mainline infrastructure signalling, and total depot stabling capacity.

10.9 Average Depot Arrival Rate: The average rate at which Sets arrive at the depot. Arrivals are listed by Set numbers in Section 10.5. The arrival rate is calculated from the same sample data 10/02/2025 to 16/02/2025 for planned arrivals and 15/01/2025 to 21/01/2025 for observed arrivals.

Time period	Planned Arrivals rate (Sets/hour)	Planned Latent Capacity (Sets/hour)	Observed Arrivals rate (Sets/hour)	Observed Latent Capacity (Sets/hour)
0900-1200	0.29	1.04	0.10	1.23
1200-1500	0.24	1.09	0.14	1.19
1500-1800	0.29	1.04	0.19	1.14
1800-2100	0.29	1.04	0.38	0.95
2100-0000	0.29	1.04	0.48	0.85
0000-0300	0.24	1.09	0.24	1.09
0300-0600	0.29	1.04	0.05	1.28
0600-0900	0.10	1.23	0.00	1.33
0900 – 0900 (24hr average)	**0.25**	**1.08**	**0.20**	**1.13**
Average arrivals in 24hr	**6.00**	**-**	**4.71**	**-**

Note: Calculated from the sample data: 10/02/2025 to 16/02/2025 for Planned and 15/01/2025 to 21/01/2025 for Observed.

10.9.1 Both the planned and observed arrival rate is below that of the maximum depot arrival rate. Planned arrivals are balanced throughout the 24hr period, the highest 3-hour period of observed arrivals is from 2100-0000, the highest 6 hour period is from 1800-0000.

10.9.2 No more than two Sets arrive within a single hour across all the datasets for both planned and observed arrivals. The shortest time between three arrivals is 1hr 2mins and is observed in the observed arrival data on 20/01/2025 at [Redacted], [Redacted] and, [Redacted].

Based on current EIL operations, Sets do not regularly need to wait for the availability of the LDA, Stabling or Maintenance Roads. There is latent capacity to accept additional arrivals. The average Latent Capacity over 3-hour intervals for observed arrivals ranges between 0.8 and 1.3 Sets/hour.

10.10 General depot flow modelling observations

10.10.1 In both models, Sets depart from the maintenance shed roads and stabling roads and are intentionally held briefly on the reception roads prior to departure. No activity is modelled on the reception road prior to departing the depot. Sets are in effect called up to reception road in advance of needing to depart.

10.10.2 In both depot capacity model scenarios (planned and observed) all maintenance and servicing activity is undertaken in maintenance shed road 1- 8 and stabling roads 1- 3. In both models there are no 'clashes' where Sets are awaiting space on either a maintenance shed road or servicing road to undertake an activity.

10.10.3 With exception to Section 10.10.4, all Sets in both models undertake CET and pass through the carriage wash on arrival.

10.10.4 In the observed model, Set 4007/4008 does not CET on arrival. This was to prioritise later arrivals (Sets 4003/4004 and 3221/3222) for the use of the LDA roads. Despite not being able to CET within the 24hr period modelled, Set 4007/4008 later receives CET on LDA prior to departure on 23/01/2025.

11 Depot Set Capacity Analysis

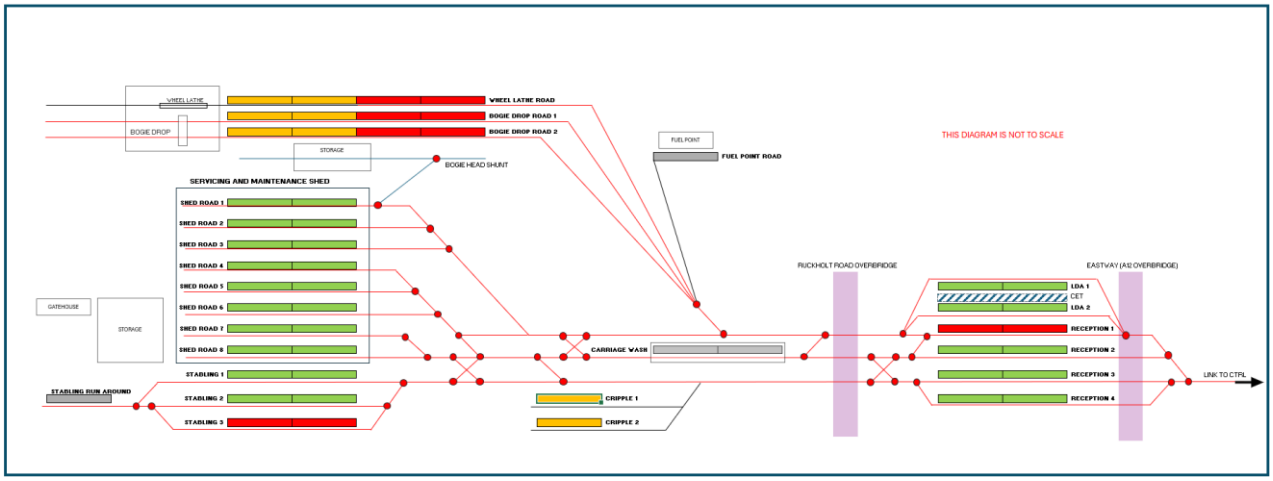
11.1 Normal Depot Set Capacity: is the maximum number of Sets on the depot where the depot can still function normally (meaning that Sets can be swapped between shed and stabling roads and from LDA / receptions to the shed / stabling roads and vice versa). This is counted in Sets and is notionally allocated against the below depot locations:

Road Name	OLE	Road length	Normal Depot Set Capacity	Justification
LDA1	✓	400	1	
LDA2	✓	400	1	
Reception 1	✓	400	0	Two spare roads are required for normal movements
Reception 2	✓	400	1	
Reception 3	✓	400	1	
Reception 4	✓	400	1	
Carriage Wash	✓	N/A	0	Unsuitable location for stabling
Fuel Point Road	✗	210	0	Stables 08 Shunter & spare Cl 373 power car
Wheel Lathe Road	✗	870	1*	
Bogie Drop Road 1	✓	850	1*	
Bogie Drop Road 2	✓	840	1*	
Shed Road 1	✓	400	1	
Shed Road 2	✓	400	1	
Shed Road 3	✓	400	1	
Shed Road 4	✓	400	1	
Shed Road 5	✓	400	1	
Shed Road 6	✓	400	1	
Shed Road 7	✓	400	1	
Shed Road 8	✓	400	1	
Stabling 1	✓	410	1	
Stabling 2	✓	410	1	
Stabling 3	✓	410	0	Two spare roads are required for normal movements
Cripple 1	✗	230	0.5**	
Cripple 2	✗	230	0.5**	
		Total	**15 / 19**	

* WL and BD roads are considered a maintenance asset. Not counted towards Normal Depot Set Capacity.

** Cripple roads are too short to stable a full Set on. Nonetheless they can be utilised without affecting Normal Depot Set Capacity.

11.1.1 Normal Depot Set Capacity is visualised below. It represents maximum occupancy of the depot without causing disruption to normal operation. Two spare roads must be available to enable departures and movements. Notionally one road at the West and one at the East.



11.1.2 **Normal Depot Set Capacity is *15 Sets*** (shown in green) where normal servicing and maintenance can take place without infringing on the Bogie Drop Roads or Wheel Lathe road. Orange represents Set spaces which may also be utilised during use of the bogie drop, wheel lathe or cripple roads (up to ***19 Sets***), red represents locations which if occupied would restrict normal capacity. Grey represents locations on the depot where no Set stabling capacity exists.

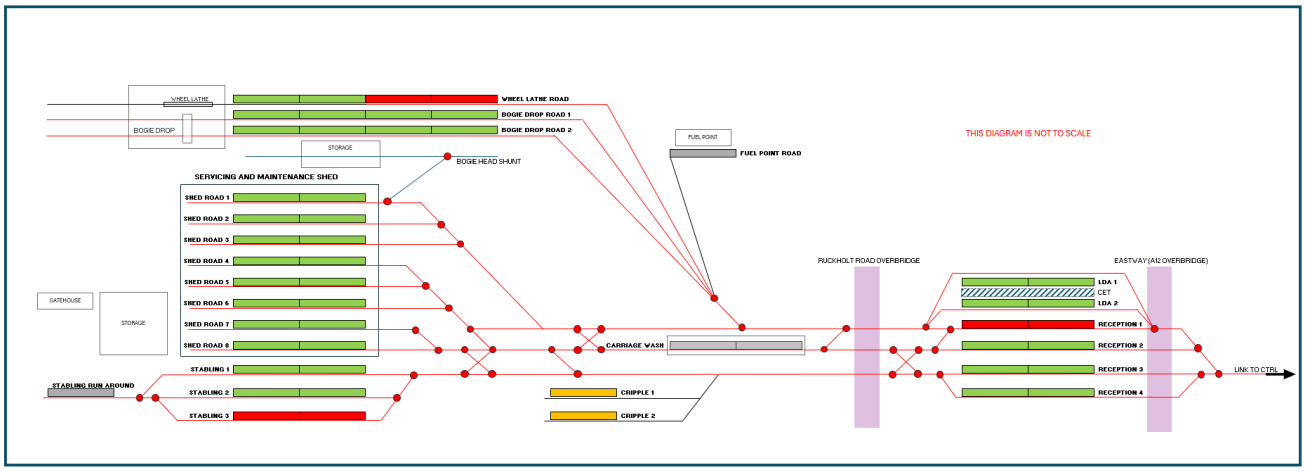
Provided there is at least one road free across Maintenance Shed Roads 1-8 and Stabling Roads 1-3, and there is at least and one road free across LDA roads 1-2 and Reception roads 1-4, the depot can operate normally. Two Sets can be swapped between shed and stabling in four moves and between each side of the depot in four moves.

11.2 Exceptional Depot Set Capacity: is the maximum number of Sets that can occupy the depot while still maintaining access to the full capabilities of the depot, but with more moves than usual to make otherwise simple Set swaps. The Exceptional Depot Set Capacity is not reflective of normal operation and is the number of Sets which Temple Mills can reasonably accept in a crisis situation. It has been calculated as follows.

Road Name	OLE	Road length	Exceptional Depot Set Capacity	Justification
LDA1	✓	400	1	
LDA2	✓	400	1	
Reception 1	✓	400	0	Two spare roads are required for movements to be able to shuffle Set locations for maintenance and departure sequencing.
Reception 2	✓	400	1	
Reception 3	✓	400	1	
Reception 4	✓	400	1	
Carriage Wash	✓	N/A	0	Unsuitable location for stabling
Fuel Point Road	✗	210		Stables 08 Shunter & spare Cl 373 power car
Wheel Lathe Road	✗	870	1	Wheel lathe accommodates one Set. Set can be moved to allow access to the wheel lathe or utilised by the Set occupying it.
Bogie Drop Road 1	✓	850	2	Two Sets occupy the bogie drop road. Cannot be utilised without Sets being moved onto other roads.
Bogie Drop Road 2	✓	840	2	Two Sets occupy the bogie drop road. Cannot be utilised without Sets being moved onto other roads.
Shed Road 1	✓	400	1	
Shed Road 2	✓	400	1	
Shed Road 3	✓	400	1	
Shed Road 4	✓	400	1	
Shed Road 5	✓	400	1	
Shed Road 6	✓	400	1	
Shed Road 7	✓	400	1	
Shed Road 8	✓	400	1	
Stabling 1	✓	410	1	
Stabling 2	✓	410	1	
Stabling 3	✓	410	0	Two spare roads are required for movements to be able to shuffle Set locations for maintenance and departure sequencing.
Cripple 1	✗	230	0.5*	
Cripple 2	✗	230	0.5*	
Total			20 / 21	

* Too short to stable full Set. Nonetheless can be utilised without affecting Normal.

11.2.1 Exceptional Depot Set Capacity is visualised below. It represents the maximum occupancy of the depot in a crisis situation, while still enabling function of the depot but in a sub-optimal state. Two spare roads must still be available to enable departures and movements, Set swapping to be able to position Sets for maintenance and sequence departures. Due to the quantity of Sets on the depot, the bogie drops cannot be used without moving a Set from the respective bogie drop road. The Cripple roads can only be utilised by half-sets. It is possible to utilise the remaining stabling road, however this is not considered good practice because swapping Set locations, while possible, places a very onerous and time-consuming movement sequences on the depot and may result in total depot blockage in the event of a Set or infrastructure failure.



11.2.2 Exceptional Depot Set Capacity is ***20 Sets*** (shown in green). The practicality of undertaking servicing and maintenance is restricted. Orange represents additional Set spaces which can be utilised without infringing on depot flow (***21 Sets***), red represents locations which if occupied would restrict the depot's ability to function. Grey represents locations on the depot where no Set capacity exists.

11.3 Normal Depot Set Capacity Utilisation: On a typical day, the quantity of **Operational Sets** present on the depot is broken down by hour over a 24hr period:

	Observed from 15/01/2025-21/01/2025			Planned from 10/02/2025-16/02/2025		
Time period	**Min**	**Average**	**Max**	**Min**	**Average**	**Max**
0900-1000	6	6.00	6	6	7.77	10
1000-1100	6	6.25	8	7	7.71	9
1100-1200	6	7.43	10	6	8.01	10
1200-1300	6	7.46	10	6	8.44	10
1300-1400	6	7.69	10	6	8.58	10
1400-1500	6	7.69	10	6	8.58	10
1500-1600	6	7.71	10	6	8.12	10
1600-1700	6	7.73	10	6	8.23	10
1700-1800	6	7.75	10	7	8.54	10
1800-1900	6	7.74	10	7	8.21	10
1900-2000	6	7.79	10	7	8.25	10
2000-2100	6	8.21	10	7	8.58	10
2100-2200	6	8.48	10	7	8.66	10
2200-2300	7	8.78	10	7	8.76	10
2300-0000	8	8.87	10	7	8.04	9
0000-0100	8	9.54	10	7	9.18	10
0100-0200	8	9.57	10	7	9.14	10
0200-0300	8	9.57	10	7	9.14	10
0300-0400	8	9.38	10	7	9.14	10
0400-0500	7	8.62	10	7	8.38	10
0500-0600	6	8.06	9	7	7.82	9
0600-0700	6	7.11	9	7	8.20	9
0700-0800	6	6.67	8	6	7.55	9
0800-0900	6	6.25	8	6	6.86	8

11.3.1 The above stabling utilisation ignores Decommissioned Sets and non-operational vehicles, as recorded below:

Vehicle	Stabling location
Cl 373 Spare Power Car	Fuel Road
Cl 373 3215 Decommissioned half-set	Cripple 1
Cl 373 3216 Decommissioned half-set	Cripple 2
Cl 373 3217 Decommissioned half-set	Reception Road 3
Cl 373 3218 Decommissioned half-set	Reception Road 3
Cl 08 Fuel Shunter	Fuel Road

11.4 Latent Normal Depot Set Capacity: The difference between current depot utilisation by **operational Sets** (up to 10 Sets) and Normal Depot Set Capacity (15 Sets) is 5 Sets. However, due to the **decommissioned Sets** which are located at Temple Mills this is reduced further by 1 Set, meaning the ***Latent Normal Depot Set Capacity is 4 Sets***.

11.4.1 The quantity of Sets at the depot varies over a 24hr period between 6 and 10 **operational Sets**. If access for additional Sets to the depot were to be limited to less congested periods, then the ***Latent Normal Depot Set Capacity is between 4 and 8 Sets*** at Temple Mills.

11.4.2 The Class 373 ***decommissioned Sets*** (stored as 4 half-Sets) occupy both cripple roads, and one reception road which could otherwise be used for stabling an additional Set within the total Normal Depot Set Capacity of 15 Sets. The stabling of decommissioned Sets for long periods of time on a highly utilised depot is not considered standard practice. In most cases, stabling of this type is limited to finite periods during decommissioning activities.

12 Maintenance Capacity Analysis (Maintenance Model)

12.1 Temple Mills Maintenance Total Capacity:

- Maintenance Shed – 8 x 400m roads
- Bogie Drop Roads – 2 x 800m roads (bogie drop positioned at midpoint)
- Wheel Lathe Road – 1 x 800m roads (wheel lathe positioned at midpoint)

12.2 Analysis Approach: IPEX developed a maintenance model to assess (using a 'bottom-up' approach) the quantity of maintenance roads required to support the existing EIL fleets. This is based on the respective maintenance regimes for each of the fleets, including all activities and their frequencies, performed by EIL at Temple Mills, including preventive maintenance, corrective works, cleaning, servicing and campaigns (modification programmes). **Appendix 5** provides a summary of all activities and the analysis performed to determine the required shed space**.** This analysis calculates the latent shed capacity, assuming that:

- Latent Maintenance Shed Capacity = Total maintenance shed roads (8 roads) – required EIL Maintenance Shed Capacity*

* based on the Realistic Shed Requirement only.

12.3 The maintenance capacity analysis follows a two staged approach as below:

Stage	Definition	Description
Stage 1	Theoretical Linear Shed Requirement	This is the absolute minimum theoretical shed space requirement to complete all maintenance activities (if completed linearly and in series), based on the current workload allocation (to Temple Mills), provided by EIL (and that require use of the shed). This is only a theoretical metric, which assumes there are no restrictions on facilities or start and end times of tasks and that all activities are performed linearly over time. It is recognised that this cannot be done in reality due to operational restrictions, which are considered in Stage 2. It excludes campaign and commissioning activities (these are included in the Practical Shed Requirement, see below).
Stage 2	Realistic Shed Requirement (based on a Maintenance Plan)	This is the shed requirement based on a realistic maintenance plan, devised using time blocking as utilised in practical maintenance planning terms and reflecting the true availability of Sets for maintenance to be performed. It takes a pragmatic approach to road requirements by allocating shed capacity suitable for activities being performed during day and night slots. It also accounts for maintenance exams being performed earlier (than vehicle maintenance instruction intervals), accounting for typical maintenance planning requirements and subtilities of equipment availability.

12.4 Depot facility requirements:

Fleet	Cl 373 and Cl 374 combined
Fleet size	25 Sets

Activity Type	Fleet downtime requirement (roads)	Depot downtime by location (roads required by location)				
		Maintenance Shed	Stabling only	LDA1 or LDA2	Wheel Lathe*	Bogie Drop
Running Maintenance	1.36	1.25	0.08	0.00	0.03	0.00
Heavy Maintenance	1.01	1.01	0.00	0.00	0.00	0.65
Servicing	0.53	0.00	0.31	0.22	0.00	0.00
Cleaning	0.09	0.04	0.00	0.00	0.00	0.04
Defect Rectification	0.74	0.74	0.00	0.00	0.19	0.19
UAT	0.16	0.16	0.00	0.00	0.00	0.00
Wheel Reprofiling*	0.05	0.05	0.00	0.00	0.05	0.00
Total	**3.93**	**3.25**	**0.39**	**0.22**	**0.27**	**0.88**

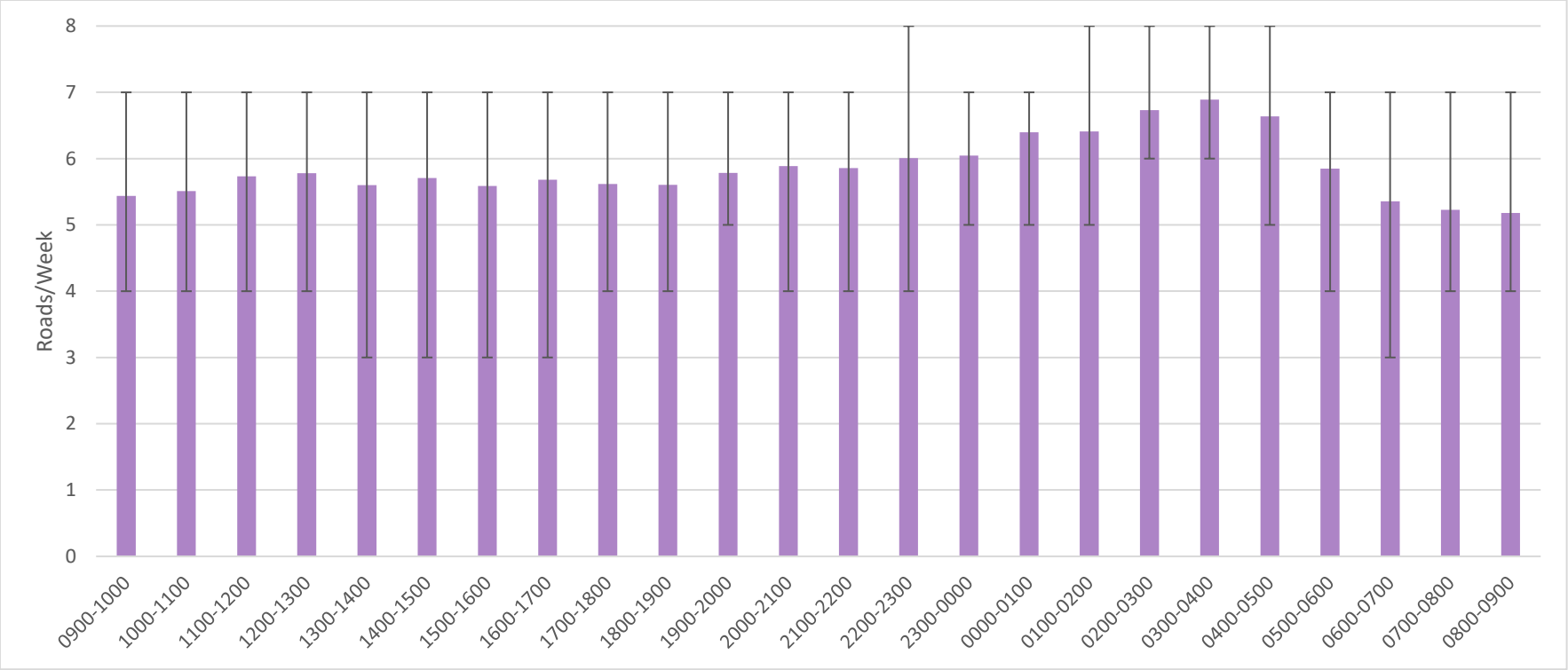
** Wheel Lathe Capacity has been assessed separately and is only used here to assess maintenance shed occupancy for unplanned/reactive wheel reprofiling.*

12.4.1 The 'Fleet downtime requirement (roads)' column indicates the total number of depot roads required to perform all activities for each activity type, across both fleets. Some activities require the use of more than one location to perform the activity. In these instances, the 'Depot downtime by location (roads required by location)' requirement is counted across more than one location because it is unrealistic to assume that the first location can be readily utilised whilst using the second location (such as heavy maintenance being performed in road 1 which requires use of the bogie drop road). This accounts for the difference between the total 'Fleet downtime requirement (roads)' and the total 'Depot downtime by location (roads required by location)'. A full list of which activities are counted against each road type is provided in **Appendix 5**.

12.4.2 If shed road availability and task scheduling was not a constraint (as is assumed the case in the theoretical scenario), based on the current maintenance plan (and work allocation to Temple Mills) for the existing EIL fleets, ***the Theoretical Linear Shed Requirement is 3.3 roads***.

12.4.3 Depot facility requirements are defined in detail for Class 373 in **Appendix 3** and Class 374 in **Appendix 4**.

12.5 **Average occupancy of the maintenance shed** over a 24hr period, from observed data provided from 15/01/2025-21/01/2025, is plotted below *(bar chart shows average occupancy, black lines show lower and upper levels observed)*:



12.5.1 The observed maintenance shed occupancy demonstrate some existing latent capacity in the maintenance shed, which varies over a 24hr period.

12.5.2 The maintenance shed was observed to be fully occupied in limited instances between 2200-2300 and 0100-0500. The average maintenance shed occupancy (across the observed period) is **5.9 Roads** and although not derived from, is broadly in line with the Realistic Shed Requirement devised by IPEX.

12.6 Realistic Shed Requirements:

12.6.1 IPEX devised a two-weekly maintenance plan (for activities typically performed on days and nights) based on typical maintenance practices, observations at Temple Mills and using the frequencies and durations for all maintenance activities provided by EIL for the existing EIL fleet, based on the proportion of work currently undertaken at Temple Mills. This type of analysis is routinely used to determine the specification and number of maintenance roads within a new depot for a new fleet, where the maintenance workload is well defined. IPEX performed this analysis in isolation of the current shed occupancy data.

12.6.2 The maintenance plan assumptions are:

- Maintenance tasks are performed earlier than scheduled, for planning purposes (IPEX has applied a reasonable adjustment to intervals);
- The equivalent of a full road dedicated to campaigns (on days);
- The equivalent of a full road dedicated to heavy maintenance (days and nights), predominantly for R exam work;
- The equivalent of a full road dedicated to corrective repairs (days and nights);
- A road is dedicated to E300 European Train Control System (ETCS) recommissioning programme (days and nights), which is for a finite period ([Redacted]) and limited to Class 373 fleet only. EIL expect commissioning of the first Set will take [Redacted], but cannot predict timescales for the remainder of the fleet [further 7 Sets]. Work will predominantly occur during the day, however it is acknowledged that the Set cannot be reasonably removed from the road each night, due to the intrusive nature of the works;
- 18 slots are allocated over days and nights across the fortnight for low frequency events including post BD / WL checks, Cl 373 ATSF exam, Cl 373 heavy maintenance, infrastructure maintenance and Set moves from Rd 1 to accommodate heavy maintenance which needs roof access. The allocation for post WL checks is sufficient for current usage of the wheel lathe as assessed in conjunction with the Wheel Lathe Capacity assessment;
- There is potential that there may be use of a road, full-time or part-time, in the future, post ETCS recommissioning works, to undertake [Redacted]; and
- Frequencies are based on the current fleet kilometrage and intervention points. Where current intervention points are not supplied, the intervention point is assumed at 95% of the activity periodicity.

12.6.3 EIL indicated in addition to R Exam heavy maintenance work on Cl 374, in 2025 Temple Mills will undertake a proportion of Cl 373 heavy maintenance. EIL confirmed the position of Cl 373s within their maintenance cycle is balanced to an extent heavy maintenance can be considered linear over time. Over the course of the year these examinations equate to [Redacted]. The exams can be undertaken in two halves (on one half-Set at a time), without splitting the Set. Within the maintenance plan the [Redacted] are absorbed by slots allocated for low frequency events. IPEX determines that the [Redacted] can also be absorbed within the maintenance plan, by deploying what are considered as routine maintenance planning strategies, as follows:

- Although Road 1 is predominantly suited to Cl 374 R exams, R exam work equates to circa [Redacted] per annum meaning there is capacity for Road 1 to absorb an additional [Redacted]. Recognising that Road 1 is considered more suitable to Cl 374 heavy maintenance, re-utilising Road 1 temporarily to undertake other maintenance activities will free up sufficient capacity in the shed for the Cl 373 heavy maintenance (subject to the limitations of Road 1 for maintenance as it is setup predominantly for overhaul use).
- The maintenance plan already has reasonable provision for campaign work which could be reordered to make temporary provision for these exams. Alternatively, the maintenance plan can be manipulated such that campaign work and heavy maintenance work is done in parallel (on the same Set).
- The maintenance plan already has reasonable provision for the E300 recommissioning programme which may similarly be reordered or capacity unlocked within the programme to make temporary provision for the [Redacted]. Alternatively, the maintenance plan can be manipulated such that recommissioning work and heavy maintenance work is done in parallel (on the same Set).

12.6.4 The assessment used the allocation of Cl 373 heavy maintenance at Temple Mills confirmed by EIL for 2025. The amount of heavy maintenance work for Cl 373 undertaken at Temple Mills is generally dependent on what is undertaken at other depots and as such may vary in the future.

12.6.5 The assessment considered current fleet kilometrage of the Cl 373 and Cl 374 fleets. EIL has indicated plans to increase fleet kilometrage which would increase the frequency of exam work, albeit these changes are expected to be limited in their impact to the maintenance plan.

12.6.6 Maintenance Plan (two-week plan):

DAYS (WEEK 1)							
	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Road 1	R2 or other HM activity						
Road 2	E300 recomissioning (ATP)						
Road 3	T-1		Campaign work				
Road 4	Campaign work		T-2		*	*	
Road 5	*	*	*	UAT		*	*
Road 6	Corrective repairs						
Road 7							
Road 8							

NIGHTS (WEEK 1)							
	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Road 1	R2 or other HM activity						
Road 2	E300 recomissioning (ATP)						
Road 3	T-1		L2/L3-5	L2/L3-7	L2/L3-9	L2/L3-12	L2/L3-15
Road 4	L2/L3-1	T-2			L2/L3-10	L2/L3-13	T-3
Road 5	L2/L3-2	L2/L3-3	UAT		L2/L3-11	L2/L3-14	L2/L3-16
Road 6	Corrective repairs						
Road 7	*	L2/L3-4	L2/L3-6	L2/L3-8	*	Hand clean	
Road 8							

DAYS (WEEK 2)							
	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Road 1	R2 or other HM activity						
Road 2	E300 recomissioning (ATP)						
Road 3	Campaign work		T-4			*	*
Road 4	T-3		Campaign work				
Road 5	*	*	*	*	*	P-1	
Road 6	Corrective repairs						
Road 7							
Road 8							

NIGHTS (WEEK 2)							
	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Road 1	R2 or other HM activity						
Road 2	E300 recomissioning (ATP)						
Road 3	L2/L3-17	T-4			L2/L3-27	L2/L3-29	T-1
Road 4	T-3		L2/L3-22	L2/L3-25	L2/L3-28	L2/L3-30	L2/L3-31
Road 5	L2/L3-18	L2/L3-20	L2/L3-23	L2/L3-26	P-1		
Road 6	Corrective repairs						
Road 7	L2/L3-19	L2/L3-21	L2/L3-24	*	*	Hand clean	L2/L3-32
Road 8							

** Spare capacity for low frequency events such as post BD / WL checks, CI 373 ATSF exam, infrastrucutre maintenance, Set moves from Rd 1 to accommodate HM.*

Activity	Total days and nights allocated	Total days and nights required (exact)
L2/L3	32	31.59
T-Exam	20	18.92
Corrective Repair	28	28.34
Hand Clean	2	2.00
UAT	4	4.54
P-Exam	5	3.32
R2/HM/E300/Campaign	70	63.74
*	18	17.20
Total	**179**	**169.66**

12.6.7 The maintenance plan shown in Section 12.6.6 indicates an average Realistic Shed Requirement of ***6.4 roads to support the existing fleet allocation***. The shed requirement is greater during the night than it is during the day, with a maximum of 7 roads required to complete night workloads and a maximum of 6 roads required for day workloads. It is typical for the demand for shed capacity to be higher during nights than days and in this context, a typical day and night shift may be considered approximately from 7am to 7pm and 7pm to 7am respectively.

12.6.8 The maintenance plan illustration is for the purposes of demonstrating Latent Maintenance Shed Capacity. The free roads shown in the example plan do not represent the actual roads that might be available. Any potential additional Temple Mills maintenance workload will need to be assessed in terms of the specific facilities required and be integrated with the existing EIL maintenance plan requirements.

12.6.9 The maintenance plan analysis is comparable and consistent with the current shed occupancy analysis, with a slightly higher number of roads determined by the maintenance plan. This is expected considering that the maintenance plan is based on provision of slots for work packages rather than considering the status of the road at every hour in the day. In addition, IPEX has factored into the maintenance plan, recent increases in EIL workload at Temple Mills, arising from the Cl 373 recommissioning, and heavy maintenance which were not present in the observed occupancy data.

12.6.10 Occasionally EIL use more shed roads than is determined by the maintenance plan, despite the average occupancy being lower. This was witnessed during observations and in the EIL occupancy analysis in Section 12.5. Due to the small ratio of stabling roads to shed roads at Temple Mills (there are only 3 stabling roads compared to 8 shed roads), and the fact that the reception roads are not currently used for stabling or Set departures, Sets may continue to occupy the shed following completion of maintenance until their departure. This is because it is not always necessary to move the Set (following maintenance completion) as it would be a wasted move if the Set is departing from the shed. Albeit a less often occurrence, the occasional use of shed roads for tasks that might be done elsewhere may arise, simply because there is nowhere else to move the Set to (if the Stabling Roads are full and the Reception Roads are not used).

12.6.11 Two of the maintenance shed roads are currently utilised by EIL: Road 1 for Class 374 heavy maintenance R exams ([Redacted] km interval) and; Road 2 for Class 373 recommissioning works (time limited intervention). These activities have been accounted for as fully utilising the roads, but in practice there are short breaks between consecutive R exam interventions and latent capacity released upon completion of Class 373 recommissioning programme. Notionally, during those periods, it may be possible for these roads could be released for other uses.

12.6.12 EIL predominantly use the shed roads for maintenance, however, more maintenance shed capacity could be realised if tasks such as interior cleaning, interior repairs, and driver preparation which are occasionally performed in the shed, were always completed elsewhere. This would be subject to suitable adjustments to process and facilities such as utilising and enabling reception roads to support relevant activities.

12.6.13 It was not possible in this study to quantify the amount of additional time that Sets currently occupy the shed unnecessarily (that is, the time Sets are occupying the shed with maintenance finished and waiting for departure and or having tasks such as driver preparation, which may be completed elsewhere), however it is evident that using the reception roads would unlock more shed capacity. It is also clear that if the current latent capacity within the shed is utilised, this would bring the total shed utilisation close to (if not, at) maximum capacity, which means that more stabling is required (such as use of the reception roads for routine stabling and departure) to support the depot operating closer to its maximum shed capacity.

13 Wheel Lathe Capacity Analysis (Wheel Lathe Model)

13.1 Temple Mills has a double-headed wheel lathe (meaning two pairs of wheels on two axles of the same bogie can be re-profiled at the same time). The wheel lathe is operational 24 /7 (apart from periods of calibration and maintenance).

13.1.1 Wheel lathe maintenance and downtime assumptions:

- Productivity loss from shift handovers, train movements, and operational inefficiencies – 4 hours unavailable per day (17% of time)
- Availability loss from wheel lathe maintenance and down time – maintenance 3 days every 3 months and failures average 4 days per year (4% of time)
- Availability loss from lathe calibration – 5 hours unavailable per week (3% of time)

13.1.2 EIL wheel reprofiling requirements:

- Class 373 corrective wheel reprofiling – one bogie every [Redacted] km
- Class 374 corrective wheel reprofiling – one bogie every [Redacted] km
- Temple Mills satisfies [Redacted]% of EIL's wheel lathe requirements, with [Redacted]% of EIL's wheel lathe requirements performed elsewhere.
- Traction motor vibration testing (using wheel lathe) – [Redacted] interventions undertaken across both fleets per annum (2024 data)

13.2 Section13.3 shows the spare capacity of the existing twin-head wheel lathe. The existing lathe has some latent capacity. It is based on 2024 actual data provided by EIL. Subject to the scheduling of slots, the ***Wheel Lathe Capacity has on average 35% latent capacity (2,357 hours)***. It is highly likely that this latent capacity could be utilised by a 3rd party train operator for the provision of wheel reprofiling. Any increased use of the wheel lathe would also lead to an increased requirement for main shed space to complete post wheel reprofiling setup activities, such as vehicle height measurements and shimming (the addition of shims between the primary and/or secondary suspension to alter vehicle height).

13.3 Wheel Lathe Capacity:

Class	Temple Mills Depot (Satisfies [Redacted]% req) (Hours)	Other Depot (Satisfies [Redacted]% req) (Hours)	Annual Wheel Lathe Requirement (Hours)
373 Preventative	[Redacted]	[Redacted]	[Redacted]
373 Corrective	[Redacted]	[Redacted]	[Redacted]
374 Preventative	[Redacted]	[Redacted]	[Redacted]
374 Corrective	[Redacted]	[Redacted]	[Redacted]
Traction Motor Vibration Testing*	[Redacted]	[Redacted]	[Redacted]
TOTAL UTILISATION (HOURS)	4301	[Redacted]	[Redacted]
AVAILABLE CAPACITY (HOURS)	6658		
LATENT CAPACITY (HOURS)	2357 (35.4%)		

*All Traction Motor Vibration Testing took place at Temple Mills

13.3.1 [Redacted]

14 Findings Summary

14.1 Flow Analysis onto depot:

Metric / Location	Maximum Capacity (Sets/hr)	Utilised Capacity (Sets/hr)	Latent Capacity (Sets/hr)
Normal Depot Arrival Rate	1.33	0.48*	0.85
LDA Road	*1.33*	*0.48**	*0.85*
Carriage Wash	*2.00-2.33*	*1.33***	*0.67-1.00*
Exceptional Depot Arrival Rate	3	0.48*	2.52

**Maximum observed utilisation for the arrivals observed from 2100-0000 on 20/01/2025. Based on average arrivals of 4.71/day, the daily average arrival rate is 0.20 Sets/hour.*

***In a normal flow of emptying CET and then carriage washing, the rate is capped by the throughput of the LDA Road.*

14.2 Depot Set Capacity:

Metric	Available Capacity (Sets)	Utilised Capacity (Sets)	Latent Capacity (Sets)
Normal Depot Set Capacity	15	7-11*	4-8*
Exceptional Depot Set Capacity	20	Not applicable.	

**Figure includes the stabling of decommissioned Sets. Two decommissioned Class 373 Sets currently occupy the depot, one of which utilises Normal Depot Set Capacity equivalent to a single Set. Up to 5-9 Sets if decommissioned sets removed from Temple Mills.*

14.3 Maintenance Shed Capacity:

Metric	(400m roads)
Maximum shed capacity	8
Required capacity under realistic shed requirement assessment	6.39
Average EIL occupancy (assessed from 15/01/2025-21/01/2025)	5.86
Latent capacity (Maximum available less utilised under realistic requirements)	1.61

14.4 Wheel Lathe Capacity

Metric	Hours	%
Available capacity *(accounting for machine downtime, shift handover, and machine calibration)*	6658	100%
Utilised capacity	4301	64.6%
Latent capacity	2357	35.4%

Note: increased use of wheel lathe may also require increased shed allocation for post wheel reprofiling setup activities. Further analysis should be undertaken to support allocation of latent wheel lathe capacity.

15 Conclusions

15.1 Overview:

15.1.1 This independent assessment of Temple Mills depot capacity, based on EIL's current utilisation, has determined that some latent capacity currently exists in terms of overall Depot Set Capacity, Depot Arrival Rate, basic servicing (emptying of CET, filling water tanks and exterior wash), in the maintenance shed, and in the wheel lathe facility.

15.1.2 Some latent capacity can be accessed without changing current operational practices at Temple Mills. However, to access the full extent of the identified latent maintenance shed capacity, changes to existing operational practices are necessary. This does not include any adaptions required to ensure compatibility with different types of trains.

15.2 Capacity by Depot Function:

15.2.1 **Latent Depot Set Capacity**: The depot has a ***Normal Depot Set Capacity of 15 Sets***. There are 6-10 **operational Sets** currently regularly occupying this Depot Set Capacity, and a further **decommissioned Set** indefinitely occupying stabling space under EIL's current operation. In its current use, the ***Latent Capacity*** (maximum number of additional Sets) at Temple Mills varies between ***4-8 Sets***, over a 24hr period. The quantity increases to ***5-9 Sets*** with the removal of one **decommissioned Set** from depot. However, it must be considered that due to EIL's current operating processes, the reception roads and LDA roads (which provides 4 out of the 15 Sets Normal Depot Set Capacity) are not used by EIL during routine operations for stabling and Set departures. Operational processes would need to be reviewed and amended to accommodate the full extent of this identified latent capacity.

15.2.2 **Latent Arrival Rate** (ability to accept and service arrivals): It is EIL's current practice to CET, tank (topping up water tanks) and move Sets through the wash plant on arrival. The LDA roads and processing times restrict the ***Maximum Normal Depot Arrival rate to 1.3 Sets/hour***. The Set arrival rate (when averaged over 3-hour intervals) for EIL's current operations was found to be no greater than ***0.5 Sets/hour.*** There is latent capacity to accept additional Set arrivals, though it would be necessary to assess the impact on an hour-by-hour basis, depending on the timetabled arrivals of additional Sets. Even during peak periods, latent capacity was identified of up to ***0.8 Sets/hour*** without disrupting the depots normal flow through the LDA roads and wash plant (notwithstanding irregular and unplanned arrivals). Under the current operational control practices and resources, the peak arrival rate is limited to 3 Sets/hour (1 Set every 20 minutes). Any utilisation of the Latent Arrival Rate must also consider the overall impact to (and not exceed, at any time) the Maximum Normal Depot Set Capacity of 15 Sets.

15.2.3 Latent Maintenance Shed Capacity: The maintenance analysis identified that the current Temple Mills' fleet allocation ***requires 6.4 maintenance roads***. Leading to a ***Latent Maintenance Shed Capacity of 1.6 maintenance roads***. The latent capacity of 1.6 roads is an average over 24 hours, ***with typically two roads latent capacity during the day and one road during the night***. Although some latent shed capacity exists now, any utilisation of this latent capacity must reconcile the total occupation of the depot, at any given time, with the Maximum Normal Depot Set Capacity. Under EIL's current practice, the first 6-10 **operational Sets** occupy a combination of Maintenance Shed Roads 1-8 and Stabling Roads 1-3 (total capacity of 11 roads). In the depot's current use, capacity already exists for **operational Sets** in these locations, and as they are well equipped for servicing (closely located to welfare facilities), the Reception Roads or LDA Roads are not required to stable, service or prepare Sets. Provisions on the LDA and Reception roads are limited (in terms of welfare facilities, and capability for sand and washer fluid top-up). To release all available shed capacity requires changes to the current operational practices (including using the Reception and LDA roads for activities such as stabling, cleaning, light maintenance and driver prep) at the depot and an assessment into the process changes and investment which may be required to enable those changes (see **Section 16**).

15.2.4 Latent Wheel Lathe Capacity: The wheel lathe at Temple Mills has some latent capacity. It is currently utilised ***4,301 hours/year*** to support the existing Temple Mill's fleet allocation. The ***Latent Wheel Lathe Capacity is 2,357 hours/year*** equating to ***35%*** of its overall capacity. Under Normal Depot Set Capacity, access to the wheel lathe is not constrained by depot movements. However, any increase to the use of the wheel lathe would necessitate some access to the Maintenance Shed for post wheel reprofiling activities. Further analysis should be undertaken in relation to the availability of shed capacity (specifically capacity in roads 5 and 8, which are calibrated as level roads), prior to any Latent Wheel Lathe Capacity being utilised.

15.3 Limitations:

15.3.1 The reception roads are not currently routinely used by EIL for any activities, other than for long term storage of a **decommissioned Set**, and occasionally offloading arriving Sets if both LDA roads are in use. Almost all regular interventions take place across the shed or stabling roads (a total of 11 roads). Making use of the Reception Roads for stabling and departures would require changes to EIL's current operational practices and may require some improvements (to depot facilities)**16**. Use of the LDA and reception roads is considered necessary in order to utilise the full extent of the identified latent maintenance shed capacity.

15.3.2 It was observed that occasionally EIL use more shed roads than is determined by the maintenance plan, despite the average occupancy being lower (than the maintenance plan requirements). Sets may continue to occupy the shed following completion of maintenance until their departure which is due to the small ratio of stabling roads to shed roads at Temple Mills (there are only 3 stabling roads compared to 8 shed roads), and that the reception and LDA roads are not currently used under current operation practices for stabling or Set departures. The full extent of the identified Latent Maintenance Shed Capacity could be realised if tasks such as interior cleaning, interior repairs, and driver preparation which are occasionally performed in the shed, were always completed elsewhere. This would be subject to suitable adjustments to process and facilities such as utilising and enabling reception roads to support relevant activities.

15.3.3 It was not possible in this study to quantify the amount of additional time that Sets currently occupy the shed (that is, the time Sets are occupying the shed with maintenance finished and waiting for departure and or having tasks such as driver preparation, which may be completed elsewhere as defined in Section 15.3.2), however it is evident that using the reception roads would provide an alternative location for these activities and therefore unlock more shed capacity.

16 Improvement Options

16.1 Costs associated with potential enhancement options were not considered within the scope of this report. The feasibility, cost, and necessity of any enhancements will need to be considered in the context of Temple Mills future fleet allocation and associated requirements. Any changes caused by potential improvement options would also need to be fully assessed, including but not limited to driver resource needed to accommodate additional movements, efficiency or reliability impacts, and safety implications.

16.2 **Option #1 - Upgraded CET capability on LDA1 and LDA2**: Two Sets can occupy LDA1 and LDA2 simultaneously, however, only a single a Set can CET at any given time. It takes 45 minutes to CET a full Set.

- **Benefits:** If it is possible to upgrade LDA capability to CET across the two LDA roads simultaneously, the LDA roads could potentially accept a steady state throughput of 2.6 Sets per hour. An increase of 1.3 Sets per hour.
- **Caveats:** A survey would be required to determine if this enhancement is possible. The current Set arrival rate is well below the current limit of 1.3 Sets per hour. The average Observed peak arrivals occurred between [Redacted] and was measured to be 0.5 Sets per hour. If it is not possible to CET a Set on arrival, it could be possible to CET on or prior to departure. The benefit of this enhancement, without a consistent and significant increase to the quantity of Sets utilising the LDA point, is likely to be limited. The maximum exceptional arrival rate based on current operational control practices and resources is 3 Sets per hour (1 Set every 20 minutes). The feasibility of sustaining a consistent arrival rate close to the current exceptional arrival rate would need to be assessed.

16.3 **Option #2 - Reception Roads 1-4 Upgrade**: Currently, Reception Roads 1-4 do not have any servicing or maintenance provisions and can only be used for stabling, driving through during departure, or as an overflow to the LDA roads. The walking routes, clearance, and lighting on these roads would need to be assessed for their suitability if considering undertaking any activities (other than the current use). There is no ability to refill sand or washer fluid on the reception roads and it is understood that there is no concrete apron for walking and accessing the exterior of a Set. Cleaning, driver preparation, and light vehicle maintenance is likely to be possible without upgrades, but is not currently undertaken on these roads because more practical and convenient areas (closer to existing welfare and stores) exist elsewhere on the depot, and it does not form part of current operational practices.

- **Benefits:** If welfare facilities, sanding and washer fluid top-up stations were available at reception roads it would enable Reception 1-4 to be used for sanding, washer fluid top-up,

cleaning, light maintenance and train preparation. It would reduce the dependency on the main shed.

- **Caveats:** A feasibility study would be necessary, which includes assessing if this change can be safely integrated into standard operating procedures, including a review of walkways, clearance and lighting. Sanding is currently carried out only when a train enters the shed for maintenance, which is currently sufficient. Providing sanding capacity on all external roads therefore may not directly add to the usefulness of the roads. It is not a change that is necessary to support the current Temple Mills fleet allocation.

16.4 **Option #3 – LDA Road 1 and LDA Road 2 Upgrade**: Similar to Option #2. Currently LDA Road 1 and LDA Road 2 can only be used for processing arrivals, stabling, CET and tanking. Sand and washer fluid refill is not currently undertaken on LDA Roads. Cleaning, driver preparation, and light vehicle maintenance is not undertaken on these roads due to the distance from main welfare facilities (over 1km), and it does not form part of current operational practices.

- **Benefits:** If sanding top-up stations were available at LDA Roads it would enable LDA Roads 1-2 to be used for sanding, washer fluid top-up, cleaning, light maintenance and train preparation (during times where arrivals do not absorb the LDA capacity, which would take priority). It would reduce the dependency on the main shed (similarly to utilising the reception roads).
- **Caveats:** A survey would be needed to determine its feasibility and ability to be safely integrated into standard operating procedures. It may reduce the flow rate of the LDA roads. Sanding is currently carried out only when a train enters the shed for a maintenance visit, which has been proven to be sufficient. Providing sanding capacity on all external roads therefore may not directly add to the usefulness of the roads. It is not a change that is necessary to support the current Temple Mills fleet allocation. The survey would need to assess walkways, clearance and lighting. This assumes that the existing welfare facilities (provided for staff undertaking the existing LDA work) is suitable.

16.5 Option #4 - Improved Walking Routes and Facilities: As part of developing improvements detailed in Option #1, Option #2 and Option #3 it would be necessary to undertake an assessment of the walkways, lighting, steps and staging, and welfare facilities between the main shed and the Reception and LDA roads to assess their suitability to accommodate any change to operational practices. Things to consider, include:

16.5.1 Walkways from main shed and welfare facilities to LDA and Reception Roads (although staff make this journey for CET already);

16.5.2 Walkways/Concrete Apron around Sets for undertaking preparation, basic interior inspections, and for light maintenance trolleys, staging and steps;

16.5.3 Lighting on walkways around Sets;

16.5.4 Steps/Staging at either end of Sets to get on and off;

16.5.5 Welfare Facilities such as additional dry room or office (with comms) located closer to LDA and Reception Roads.

- **Benefits:** Measures any changes to risk exposure and aims to mitigate them. Provides security to Depot Staff and Drivers. Identifies facilities improvements to depot servicing and maintenance capabilities which may be necessary to facilitate changes to operational practices.
- **Caveats:** Could lead to improvement works being necessary (lighting, paths, staging, and welfare). Improvement works could cause some short-term disruption.

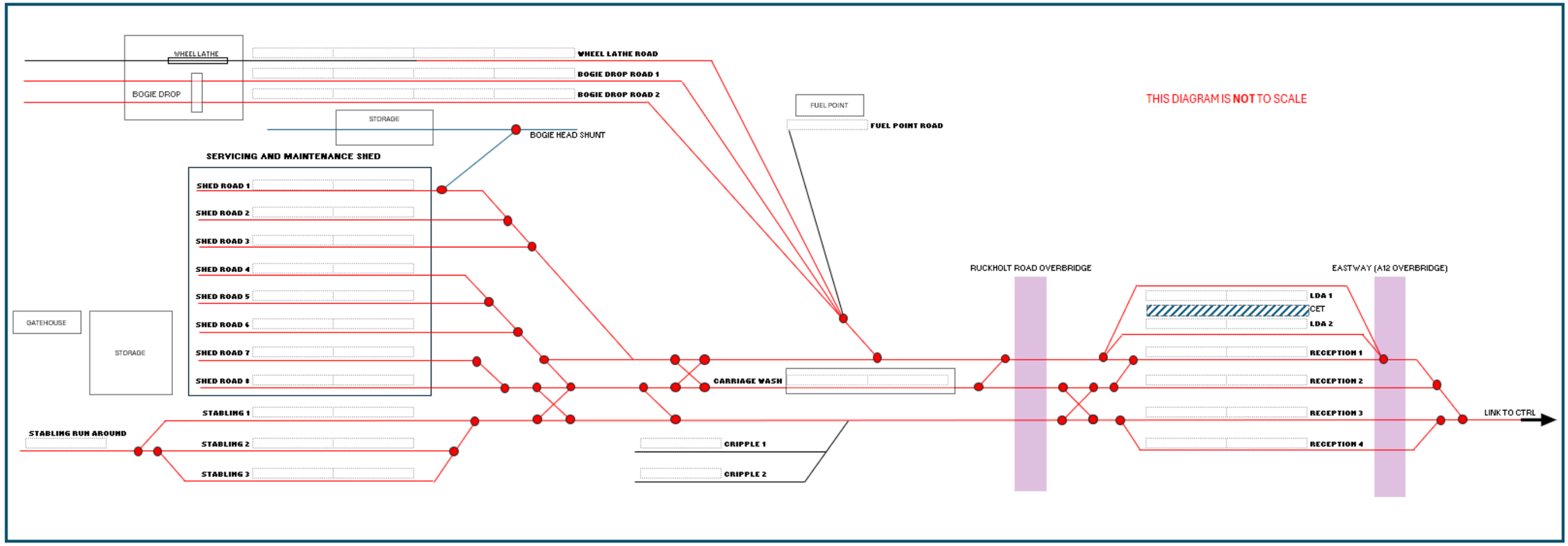
16.6 Option #5 - Stabling Roads 1 – 3, provision of sanding capability: Stabling Roads 1-3 are currently well equipped. Cleaning, light maintenance, driver preparation and washer fluid top-up can all be undertaken on this road. However, there is no sand top-up capability.

- **Benefits:** If sander top-up stations were added to stabling roads it would enable them to be used for the full suite of sanding, washer fluid top-up, cleaning, light maintenance and train preparation. It would reduce the dependency on the main shed and has the potential to reduce the quantity of train movements.
- **Caveats:** A survey would be needed to determine its feasibility and ability to be safely integrated into standard operating procedures. Sanding is currently carried out only when a train enters the shed for a maintenance visit, which has been proven to be sufficient. Providing sanding capacity on all external roads therefore may not directly add to the usefulness of the roads. It is not a change that is necessary to support the current Temple Mills fleet allocation.

16.7 Option #6 - Removal of Decommissioned Sets (Cl 373) from Depot: There are 4 Class 373 half-sets which are in a decommissioned state and have been long term stabled at the depot since 2019. The **decommissioned Sets** are utilised by EIL to salvage spare parts which are then used to support maintenance of the remaining 8 Class 373 **operational Sets**. For EIL it is normal practice, but it is not considered industry practice. Depot space would typically be given preferentially to stabling and maintenance of **operational Sets**.

- **Benefits:** Removal of the decommissioned Class 373 Sets would free-up the two Cripple Roads, and also free-up a Reception Road. This would increase the depot's Latent Normal Depot Set Capacity by a single Set, and also enable use of the Cripple roads if required.
- **Caveats:** It would be necessary to salvage and store key components from the Sets before disposing of them. This would require shed space to remove key components, and also storage space and the cost associated to store key components. Class 373s were bespoke trains for EIL, making sourcing parts from alternative sources extremely difficult. There is a cost for transportation and scrapping of the Sets. It is not a change that is necessary to support the current Temple Mills fleet allocation.

Appendix 1. Temple Mills Depot Site Map



Note: Each modelling cell represents a half-set equivalent [200m] with exception to the Stabling Run Around, and Carriage Wash.

Appendix 2. Infrastructure and Facilities Details

Maintenance Shed: There are 8 maintenance roads within the main shed. In addition to stabling vehicles the main shed is well provisioned, each road with varying equipment:

Infrastructure/facility	Road 1	Road 2	Road 3	Road 4	Road 5	Road 6	Road 7	Road 8
3 / 1.5KV	✓	✓	✓	✓	✗	✗	✗	✗
Signaling Loop	✓	✓	✓	✓	✗	✗	✗	✗
Lateral Cranes	✓	✓	✓	✓	✗	✗	✗	✗
Fixed Cranes	✗	✗	✗	✗	✓	✓	✓	✓
Sim Lift	✓	✗	✗	✗	✗	✗	✗	✗
Full length gantry	✗	✗	✓	✓	✓	✓	✓	✓
Level Road	✗	✗	✗	✗	✓	✗	✗	✓
Sand top-up	✓	✓	✓	✓	✓	✓	✓	✓
Washer top-up	✓	✓	✓	✓	✓	✓	✓	✓
Heavy Clean Exterior	✗	✓	✓	✓	✓	✓	✓	✓
Heavy Clean Interior	✗	✓	✓	✓	✓	✓	✓	✓

Bogie Drop and Wheel Lathe: There is a single wheel lathe road, and 2 bogie drop roads:

Infrastructure/Facility	Wheel Lathe Road	Bogie Drop 1	Bogie Drop 2
Stabling	✗	✗	✗
Bogie / equipment drop	✗	✓	✓
Bio Cleaning	✗	✗	✓
Wheel Reprofiling	✓	✗	✗
Heavy maintenance	✗	✓	✓

Stabling and Servicing Roads: There are 9 stabling roads, each with varying capabilities:

Facility	Stabling 1	Stabling 2	Stabling 3	Reception 1*	Reception 2*	Reception 3*	Reception 4*	LDA 1*	LDA 2*
Stabling	✓	✓	✓	✓	✓	✓	✓	✓	✓
Safety align check*	✓	✓	✓	✓	✓	✓	✓	✓	✓
Driver prep*	✓	✓	✓	✓	✓	✓	✓	✓	✓
Cleaning	✓	✓	✓	✗	✗	✗	✗	✗	✗
CET	✗	✗	✗	✗	✗	✗	✗	✓	✓
Light interior maintenance	✓	✓	✓	✗	✗	✗	✗	✗	✗
Light exterior maintenance	✓	✓	✓	✗	✗	✗	✗	✗	✗
Sand top-up	✗	✗	✗	✗	✗	✗	✗	✗	✗
Washer top-up	✓	✓	✓	✗	✗	✗	✗	✗	✗
Heavy Clean Exterior	✗	✗	✗	✗	✗	✗	✗	✗	✗
Heavy Clean Interior	✓	✓	✓	✗	✗	✗	✗	✗	✗

*These roads are positioned a long distance from welfare facilities with no nearby cleaning, driver or maintenance facilities.

Appendix 3. Class 373 Activities – depot facility requirements summary

[Redacted]

Appendix 4. Class 374 Activities – depot facility requirements summary

[Redacted]

Appendix 5. Class 373 and Class 374 maintenance plan assumptions

[Redacted]

Appendix 6. Depot Model Inputs and Outputs

IPEX depot model inputs	IPEX depot model outputs
• Fleet demographics and characteristics • Depot arrival and departure times • Depot rules of engagement and train planning parameters • Depot layout design and map, critical dimensions, key facilities and equipment • Maintenance plan and activities • Process templates for key depot operations - timings, staff rosters, process flow and activity interdependencies (including depot protection processes) • Train movement restrictions (if applicable) • Depot interfaces with main line and non-rail operations such as for emergency vehicles, deliveries, staff routes	• Maximum depot and sidings capacity • Optimum depot capacity, layout, and flow • Train planning parameter boundaries • Opportunities to improve layout with design changes or additional facilities / equipment • Maximum flow rates on and off the depot • Key interfaces with operations and signaling • Contingency planning for degraded conditions • Process pinch points and critical path sensitive activities • Opportunities to improve depot flow through process change