Responses to ORR's 31 March 2025 consultation on Available Capacity at Temple Mills depot.

Capacity at Temple Mills International Depot | Office of Rail and Road

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28 April 2025

Dear Martin,

The ORR's consultation on the initial findings on available capacity at Temple Mills International Depot

The Department for Transport welcomes IPEX's report into available capacity at Temple Mills International Depot (TMI) and the opportunity to respond to these findings. Firstly, I would like to thank ORR officials for their thorough work on the Section 17 access applications for TMI. This is a highly complex situation that has many interested parties with competing aims.

As you are aware, the government is fully supportive of a thriving and competitive international rail passenger service market and welcomes the prospect of new entrants in future, which offers the potential for greater choice and lower fares for passengers, stimulating further shift to rail for international journeys.

As the report correctly highlighted, there are major capacity constraints at TMI with limited space available to support the growth ambitions of the international rail market, both from current and prospective operators. Within the report, 1.6 maintenance shed roads were identified as being available overall. Whilst some capacity has been identified, this appears insufficient to support the demands of the market and would likely not

meet the full needs of any single operator. It is also not clear what the impact would be if there was a reduction in overnight stabling at St Pancras if there were a second operator. This would presumably reduce the available maintenance shed roads further.

The Department recognises that there are significant capacity constraints that currently exist in terms of maintenance facilities for international rail services. As you are aware we are therefore engaging with a range of industry stakeholders to explore options to potentially address this capacity challenge for the sustained long term future growth of International Rail. Officials will continue to engage with ORR colleagues and report on emerging conclusions as this work progresses.

Yours Sincerely,

[redacted]

Andrea Pearson OBE
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International Rail and Rail Freight

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Sent by email: operations.team@orr.gov.uk

28 April 2025

Dear Operations Team,

Eurostar's response to the ORR's initial findings on available capacity at Temple Mills International Depot (TMI)

Thank you for the opportunity to respond to the ORR's initial findings on the availability of capacity at the Temple Mills International Depot (TMI) and the evidence set out in the independent report by the ORR's appointed consultants, IPEX, ("the Report") on which these findings are based.[1]

Executive summary: options for growth.

The ORR published its initial finding in relation to Temple Mills Depot on 31st March. This said that there was "some" capacity available at Temple Mills Depot. This, in itself, was a departure from the final draft of the report which Eurostar had been asked to check for factual accuracy (version 0.21) which had concluded that "*as the depot is currently utilised, without any changes, there is no Latent Capacity within the maintenance shed.*"

The ORR's initial findings were in turn presented by several potential operators to suggest that it had been concluded by ORR that sufficient capacity existed to meet their needs. Eurostar does not believe that the findings of the report support such a view. The Report was clear that the opportunity to create meaningful capacity was dependent on a number of options provisionally identified by IPEX but that these had not been further assessed or costed. Eurostar agrees and believes that, even at this early stage, there are a range of factors that would call into question the deliverability of the IPEX options. These include (without limitation):

- The spare capacity is presented (at least diagrammatically) as being available as single contiguous roads. In practice any available capacity is likely to be distributed as white space across several roads of varying maintenance capabilities and, therefore, to be less operationally accessible.
- Most options are predicated on being able to move servicing activities outside the shed and on doing so delivering material capacity gains. In practice, it is already the case that no train enters the shed without a maintenance need; no train is delayed in leaving the shed for servicing (as opposed to maintenance) reasons; and previous trials of this approach proved inefficient and took up more capacity than was gained.
- The options to convert LDA and reception roads underestimate the scale and feasibility of remodelling necessary to make such changes and could result in the loss of one or more reception roads.

[1] Source: The ORR's consultation announcements, available here: https://www.orr.gov.uk/search-consultations/capacity-temple-mills-international-depot (accessed 22 April 2025).

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- It is not possible to mix Heavy and Light maintenance on Road 1 without risking the major fleet overhaul programme (to which Eurostar has committed considerable prior investment) and further restricting Heavy Maintenance capacity.
- The report takes no account of the current overnight stabling and rectification of sets at St Pancras International station (SPI). In the event of additional operators accessing SPI some of this overflow may need to be transferred back to TMI, further reducing capacity at TMI.

Eurostar notes that we are now 8 months into the section 17 process. To date the applicants have had the (entirely proper) opportunity to set out their future maintenance needs, albeit details of all applications remain scant given their early stages of development. However, the process so far has not given Eurostar a similar opportunity to set out its own future needs and legitimate plans for the depot. Nor is it clear when it will do so. This is important because Eurostar has its own plans to intensify the use of the current fleet to provide additional services and benefits to customers and to help support future investment such as the expansion and development of SPI. In addition, Eurostar has its own publicly stated intention to purchase up to 50 new trains, for which it is in an advanced state of discussion. These growth ambitions have every bit the same legitimacy as those put forward by alternative operators – and arguably more so in the case of the use of the e320 fleet which will deliver immediate passenger benefits and is not dependent on as yet unconfirmed train orders or further, as yet uncommitted, investments.

Eurostar will continue fully to co-operate with and support the ORR's (multiple) section 17 processes but believes the time has come to take a step back and assess whether the current processes, or those processes alone, are efficient, manageable and capable of delivering positive outcomes. Even if all the options provisionally identified by IPEX prove in due course to be feasible, beneficial and non-disruptive, they would still only deliver 1.6 equivalent roads of capacity. An amount which is patently – and significantly – inadequate to meet the needs of maintaining up to 100 new trains (adding together the ambitions of all concerned). In fact, it is likely inadequate to meet the proper future needs of even one operator – Eurostar included. And that is before any consideration has been given as to whether the depot – which was built for 400m TMST and then adapted for e320 trains of the same length - is even technically capable of accommodating the various 200m from different manufacturers which the applicants have indicated that they might purchase.

Eurostar's concern is that an increasingly prolonged and costly section17 process can, at best, drive towards outcomes that are more about rationing failure and thwarting the investment ambitions of those who are not successful, than finding solutions to unlock the full measure of potential investment (over £2bn) and growth ambitions from the sector as a whole.

To be clear, Eurostar wants to see growth in the market and expects to compete for that growth with other rail operators, just as we do with short-haul aviation and cross-Channel journeys today. Eurostar anticipates fair on-rail competition and ORR will know that Eurostar approached the recent Periodic Review of HS1 for Control Period 4 with the possibility of new entrants firmly in mind. However, Eurostar does not believe that whatever space may be freed up within the existing maintenance shed at TMI is sufficient to meet Eurostar's future new fleet needs – or those of the applicant parties. Eurostar expects to invest in increased and enhanced depot facilities and wants alternative operators to have the same fundamental opportunity.

Eurostar is committed to helping find solutions. It believes that options exist for expansion at alternative locations in Kent and East London and that these should be examined. Whilst this is not wholly a matter for the ORR, we believe that ORR has a vital role in helping to assess the system needs in relation to growth and capacity as a whole, and in helping to set the rules around future use and access to new build capacity which will support the necessary private investment.

We encourage the ORR now to broaden its consideration beyond the narrow (and inevitably limited) section 17 processes and the current light maintenance facilities at TMI, and to help lead this wider vision for growth and investment. Eurostar will lend its full assistance.

Structure of our response

Below, Eurostar sets out its response to the ORR's consultation on its initial findings regarding available capacity at TMI and the underlying Report by IPEX.

- In Section 1, Eurostar comments on the Report's findings regarding the current use of TMI;
- In Section 2, Eurostar provides its headline views on the capacity options presented in the report. Further details relating to these views can be found in the annex to this letter.
- In Section 3, Eurostar sets out more information on its future additional maintenance needs supporting its long-standing growth agenda
- In Section 4, Eurostar takes stock on the section 17 application process today and what steps could and should follow
- In Section 5, Eurostar provides options for finding solutions that can satisfactorily accommodate the overall growth of the sector for the best interest of consumers.

The current use of the depot

While heavy maintenance is part of the capacity study, it is outside of the regulated scope and the section 17 process

The scope of the ORR's s.17 consideration is the current light maintenance facilities, principally the main shed at TMI, approach roads and sidings. The Report also reflects on the use of the Heavy Maintenance facilities (bogie drop and wheel lathe), but to avoid confusion, these fall outside the scope of section 17.

This also includes Road 1 in the maintenance shed that is equipped to carry out heavy maintenance activities and dedicated in its current use to heavy maintenance activities. Eurostar invested in equipping and using Road 1 in this way in order to increase efficiency of its heavy maintenance activities and make most efficient use of its heavy maintenance equipment.

The Report suggested that the road could also be used for some light maintenance activities (with some restrictions). While this may free up a limited amount of incremental light maintenance capacity in the main shed, it would likely have an adverse impact for the efficient use the heavy maintenance facilities, further restricting these. Using Road 1 for any alternative uses which would undermine the considerable investments already made in the efficient delivery of the necessary "R Exam" works cannot be objectively justified. No reliance should therefore be placed on options to deliver latent shed capacity which are predicated on returning Road 1 to mixed use.

The key finding regarding currently available maintenance shed capacity changed shortly before publication, but the facts didn't.

The ORR's initial findings included that there was

"some available capacity at TMI depot for more trains to be stabled, serviced and maintained", and that *"some of this capacity can be accessed without any changes to current operational practices at the depot"*.[2]

Those findings are consistent with the content of the Report, which also states that the currently available capacity includes some latent maintenance shed capacity.[3]

However, Eurostar was asked to comment, for accuracy only, in the days leading up to the report's publication by the ORR , at which stage it understood the version it was reviewing was complete in terms of the report, analysis and data supplied for the study.[4] The final, published Report's contents and conclusions shifted significantly in relation to the current use and capacity in those final days. It is not clear why this happened.

In particular, the statements:

[2] https://www.orr.gov.uk/search-consultations/capacity-temple-mills-international-depot, accessed on 21 April 2025.
[3] IPEX Report, Conclusions section on page 4, and para 15.2.3 : "some latent shed capacity exists now".
[4] Eurostar received two near-final draft versions to review for accuracy and confidentiality on 12 and 21 March. In addition Eurostar received the final Report version for a final confidentiality review on the morning of 28 March in which the findings regarding the current shed use had changed.

"the maintenance shed is currently fully utilised based on EIL's current use of the shed" and "*as the depot is currently utilised, without any changes, there is no Latent Capacity within the maintenance shed."*

appeared in the draft reviewed by Eurostar on 21st March but had been replaced in the published version.

This is important because the revised wording increases the likelihood of an inaccurate understanding of the Report's conclusions, but it is unclear how such changes to the report were supported, since there was nothing that changed in either fact or evidence between these two versions of the report.

IPEX's proposed options

The Report identified a maximum of 1.6 roads of latent shed capacity, which broadly break down into: a) capacity equivalent to two roads during the day; and b) capacity equivalent with one road during the night. Despite the diagrammatic presentation of the maintenance plan in the Report[5] showing the available capacity as contiguously available capacity (i.e. one road completely available at all times during the night and two roads completely available at all times during the day), this is not necessarily the case. In practice, the capacity which exists is more likely to be available in packages of white space distributed across several roads (each of which have different maintenance capabilities). This can be less efficiently utilised and the diagram therefore risks giving a misleading impression.

However, even this modest level of latent capacity is dependent on hypothetical options that the Report itself acknowledges have not been fully assessed, costed or verified. As a general statement the Report asserted that some latent shed capacity was available "*now*"[6], before presenting six options which it says have the potential to free up latent maintenance shed capacity by permitting moving some non-maintenance activities currently carried out inside the shed always to outside roads.[7] As indicated above, IPEX did not conduct any material appraisal of these options and Eurostar's comments likewise present our own view informed by the experience of managing the depot for over 25 years, but without more detailed appraisal.

Eurostar provides a summary of its views below. Further detail in relation to each option is provided in the Annex to this letter.

No evidence supporting how, and how much, latent shed capacity can be accessed "now"

The Report presents no further evidence or explanation for its claim that some latent shed capacity was available "now". This is all the more unclear because the previous near final draft versions had stated clearly that as the depot was currently being used, there was no latent available capacity.

It also leaves entirely unclear how much of the latent capacity, including the latent shed capacity, can be accessed without any operational changes supported by additional investments in the depot infrastructure as set out in the Report's options regarding the enhancement of external roads.

Absent further clarifications there is therefore no reliable basis on which to find that material, useable capacity in the maintenance shed exists without operational changes.

As Eurostar explains in more detail below and in the Annex to this letter, we do not agree that moving non-maintenance activities currently being carried out in the shed onto external roads (suitably enhanced, which is, in itself, subject to such enhancements being feasible) is likely free up the level of additional shed capacity suggested.

[5] IPEX Report, paragraph 12.6.6.
[6] IPEX Report, Conclusions section, page 5: "*Although some latent shed capacity exists now*".
[7] IPEX Report, paragraph 4.3.2: "*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."*

Moving non-maintenance outside the Shed

The main tenor of the options identified by IPEX is to enhance the external roads so that non-maintenance activities, including cleaning, driver preparation, sanding, washer fluid top up and pre departure testing can be carried out on these roads. These enhancements, so the Report claims, will enable a moving of all non-maintenance activities currently carried out inside the shed to external roads, which appears to be the key lever to freeing up latent capacity in the shed.

That assessment is not robust for several reasons:

- It is already the current operational practice that trains only enter the maintenance shed if they require a maintenance visit. Any trains not requiring this are already serviced, cleaned and prepared on the external Stabling Roads.
- Wherever possible, non-maintenance activities are carried out concurrently to maintenance activities (i.e. where a maintenance service is required regardless of non-maintenance requirements) to increase overall efficiency.
- Eurostar previously carried out pre-departure tests outside of the shed, but this led to service delays because train sets needed to be returned to the shed for faults detected during the pre-departure checks.
- The additional set moves between the shed and external roads would consume a significant amount of the time claimed to be freed up through the moving of non-maintenance activities to external roads.
- There are significant caveats and concerns regarding the feasibility of many of the enhancement options, which we explain in more detail in the Annex.

IPEX itself caveated its findings by stating *"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…),"*[8]

The assertion that carrying out non-maintenance tasks exclusively on external roads can free up a meaningful amount of shed capacity is, therefore, conjectural, rather than evidenced and carries a low level of confidence.

Storage of decommissioned e300 sets currently stabled at TMI

Eurostar agrees that this is currently done as a matter of convenience (and de-prioritisation of re-cycling due to depot pressures). It should be borne in mind that one of these trains (the one formed as two half sets) occupies the Cripple Roads which are not electrified and only 200m in length, so their usefulness is limited compared to other external roads.

This disassembling and moving of these sets to offsite storage facilities is entirely feasible but not trivial. The value derived from this undertaking needs to be clearly quantified so it can be weighed against the significant cost, time and resources that such an undertaking would likely require. Due to their age and condition, they would need to be disassembled on site carriage by carriage and moved by road to offsite storage locations.

Physical constraints around the LDA and reception roads may limit the feasibility of some enhancement proposals

Eurostar has safety-related and practical concerns about improvement options discussed in the Report.

The Report proposed that all external roads could be equipped with sanding facilities. For sanding activities, trains must be accessible from both sides. Without major reconfigurations, there is not sufficient space on both the LDA and the reception roads to access trains for sanding from both sides.

[8] IPEX published report, paragraph 15.3.3.

To enable cleaning and other servicing activities to be carried out on the reception roads, significant wholesale reconfigurations would become necessary, which may even come at the loss of one reception road in order to create sufficient space for the necessary walkways, access platforms, sanding facilities, equipment storage and welfare facilities. At a minimum, the layout of the reception roads in the depot would likely need to be altered, requiring a moving of the rails and the OLE, which in turn would have knock on effects on the rest of the depot.

Stabling at SPI

A further important consideration when assessing available capacity at the depot is the use of SPI for stabling and low-level rectification tasks. This has been a long standing, well-established practice and takes place currently with the permission of the station facility owner. This approach was adopted to alleviate existing pressures which are felt in the depot.

Currently, Eurostar stables sets at SPI overnight and has a small team based there to conduct some low-level rectification tasks at the station. If other operators start to access SPI, this level of stabling may no longer be available to Eurostar, and if that is the case then the requirement will transfer back to TMI. This will inevitably utilise some of the areas identified by the IPEX report as potential available capacity.

Eurostar's Own Future requirements

The IPEX study was a point in time study looking at use in early 2025. Access is sought for years which are in the future and the use of the depot will have evolved.

Eurostar notes that the s.17 process has now been under consideration by the ORR for 8 months. To date four separate operators have now submitted to the ORR their requests for access, however Eurostar itself has not yet been asked about its own future use by the ORR, and it is not clear at what point in the process this will happen. Such an approach risks distorting the narrative around available capacity since Eurostar has its own future legitimate needs which any potential determination should take into account. There are two general topics (in addition to the SPI stabling issue raised above): Eurostar's planned increased use of its current e320 fleet; and its intended purchase of up to 50 new trains.

Increased use of current e320 fleet

Eurostar has a stated public ambition to grow to 30m passengers in the 2030s[9]. The new fleet is a key component in these ambitions, but it is not the sole component. An essential element of the strategy is to increase the usage of the existing fleets (including e320) until the new fleet becomes available. This is already in evidence: rolling stock utilisation across the business increased by 26% in 2023 and 10% in 2024. E320s are already being exclusively deployed for regular services on the Amsterdam – Paris route and Eurostar has stated its intention to introduce a fifth Amsterdam – London service in 2026 which will necessitate a further increase of the e320 utilisation rate.

Eurostar's broader future plans are also, directly and indirectly, predicated on this increased fleet utilisation: a successful increase in fleet density is expected to drive increased frequencies, benefitting passengers through increased choice and more choice of fares and providing Eurostar a more robust basis on which to undertake investments in future capacity to further serve passenger interests, including not only its new planned fleet but also station capacity enhancements already planned at SPI. Passengers would start to benefit almost immediately from increased service density, and well before the introduction of any new fleets.

[9] Eurostar's ambition to grow to 30 million passengers by 2030, has been an objective of the merger between Eurostar and Thalys, since 2019: https://mediacentre.eurostar.com/mc_view?language=&article_Id=ka43z000000kM6fAAE.

Finally, it is objectively justified for priority to be given to the capacity use of facilities by the enhanced use of the e320 fleet because it represents the most efficient use of the TMI depot capacity with the greatest and most certain passenger benefits:

- These benefits are available progressively from the current date – it would be unreasonable and damaging to consumer benefit to cancel certain passenger benefits today against the prospect of very uncertain potential benefits in five years' time.
- They require no further major investment of modification of the depot and so are most efficient to achieve.
- There is a high degree of certainty that the services and therefore passenger benefits will be delivered in a timely manner since the trains exist and all necessary licences, safety certificates and access contracts are already place.

In contrast none of the current four section 17 applicants has yet to place an order for a single train.

New Fleet

Eurostar also has its own legitimate needs for its depot to house and maintain its own future fleet. Eurostar is close to finalising an order for up to 50 new trains and has committed to the necessary investment in new facilities to service them[10].

Eurostar has concluded in respect of its own fleet exactly what it has consistently communicated to the alternative applicants and ORR: that new trains with very different technical characteristics running a significant density of services cannot realistically be accommodated within the existing light maintenance shed at TMI.

The area available at TMI to develop the necessary new facilities significantly overlaps with the areas identified by IPEX as offering the potential for increased capacity. Planning assessments are already underway, and work here is likely to start in the next two to three years. As such, they will not be available to provide alternative space for the existing e320 fleet.

Limitations of the s.17 process

It is now eight months since the ORR received the first section 17 application and began its process of consideration. In the meantime, there have been three further applications for the same capacity at the same depot. In addition, and as indicated above, Eurostar has its own growth plans, and its own legitimate future needs and investment intentions for the depot.

The IPEX depot capacity study has now concluded. It was a necessary step (and one offered by Eurostar under its own application process as set out in its Service Facility Description for TMI) and Eurostar welcomes it. However, the study has found that, even if every option proposed by IPEX was validated and implemented (irrespective of feasibility, cost, disruption, the distribution of capacity, future pressures from SPI or other constraints), then the capacity realised would be insufficient to satisfy the needs of any one operator let alone five operators all of whom have plans and intentions to invest.

This is without even considering the next critical step in the published depot access application process which would likely be to undertake technical assessments of compatibility of the depot facilities with for the various types of future rolling stock to identify if it is even technically possible (without significant, disruptive re-purposing) to maintain these new trains in a depot designed for an entirely different class, generation, and length of train. Especially bearing in mind that re-purposing for one class of new train is likely to exclude future access by operators who buy a different train.

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[10] The fleet procurement plans were first publicly reported on 16 May 2024: https://mediacentre.eurostar.com/mc_view?language=&article_Id=ka4Rz000007RgGrIAK.

Eurostar is concerned that the focus, energy and expectations of all participants are being channelled into a section 17 process that:

- was never designed for international services;
- was never designed to support five different competing applications/usages; and
- is increasingly costly, resource-intensive and disproportionately burdensome on all involved whilst (as is clear from this study) offering no realistic prospect of a beneficial outcome.

The latter point is one of the most important. If ORR drives through to a determination of access, then, based on the findings in this report, the most that can be offered is a partial award of access for one operator out of five. This cannot be expected to deliver a successful service for that operator and, at the same time, may well prejudice the financing prospects for other applicants seeking access. In other words, pursuing a section 17 solution within the limitations of that process will be insufficient to enable a full new service to be introduced (by Eurostar or anybody else), but it could serve to undermine significant sums (by our reckoning over £2 billion) in proposed alternative investments by disappointed applicants that might otherwise benefit passengers wishing to travel by international passenger rail.

To put it starkly, Eurostar is ordering up to 50 new trains, Evolyn previously stated up to 16, Virgin have recently announced an intention to buy 12 trains, and it can reasonably be expected that Trenitalia and Gemini needs will be of a similar order of magnitude. Up to 100 new trains of different models and characteristics are not all going to fit onto a theoretical 1.6 roads of potential capacity in a depot designed for an entirely different class of trains altogether.

The current ORR process does not, therefore, appear to be capable of delivering the outcomes sought by any party (including the ORR's objectives to promote growth and passenger choice), but at best can only ration what is already inadequate capacity, undermine much broader investment opportunities, and consume time and money in getting there.

This is not to diminish the process, in which Eurostar has played a full and proper part, but it is to argue that there is a need to look beyond.

Future growth, Future Solutions

Eurostar wants to see market growth to the maximum extent, and within that market, we expect and intend to continue to compete for customers.

Eurostar is investing in a new fleet, and the associated maintenance that will come with a new fleet. We want other international passenger rail services to have the same chance, if they decide that they are prepared to take it.

Eurostar believes that the time has come for the ORR, working with the UK government, to take a broader system view. It is in any case necessary that the ORR to consider other economic alternatives for capacity in order to support this growth. Eurostar suggests these alternatives may include the following:

- the Southeastern Trains Limited/Hitachi high-speed passenger rail depot at Ashford (Importantly we note that there is currently no service facility description published for this depot, despite notes in successive HS1 Network Statements that suggest this is in preparation, and we ask why ORR has not to date required this be completed and published);
- the current freight facilities owned by Getlink at Dolland's Moor and/or alternative Getlink facilities.
- Singlewell Depot;
- the previous depot site at Ripple Lane in East London;
- the HS1 chord and Fawkham Junction; and
- other alternative land and sites in East London.

Eurostar would support the ORR to undertake this broader review in order to assess the total growth needs for the high-speed passenger rail system and its passengers, as well as the options available for development to facilitate these. Eurostar would commit itself to engaging constructively with such a review.

Once again, thank you for the opportunity to provide these comments. Eurostar remains available to discuss any element of this letter or its comments to assist with the process further.

Yours sincerely

Gareth Williams

General Secretary
Eurostar

Annex to Eurostar's response to the ORR's initial findings on available capacity at Temple Mills International Depot (TMI)

This annex contains further detail comments relating to Eurostar's responsive submissions and the content of the Report. The annex is structured as follows:

- Section A contains further submissions on the Report's findings regarding maintenance shed road availability.
- Section B contains further submissions on the Report's proposals relating to enhancing external roads and moving conduct of some non-maintenance activities out of the maintenance shed.
- Section C contains specific submissions on each of the 6 "*improvement options*" discussed in the Report.

Section A – maintenance shed road availability

The Report identifies that latent available capacity exists for 1.6 roads of additional maintenance shed capacity, which breaks down broadly into one road at nighttime and two roads during daytime. Specifically, the analysis appears to suggest that one maintenance shed road is permanently and contiguously available day and night, and a second road is always available during dayshifts.[11]

Without having had access to the underlying modelling it is not possible for Eurostar to comment directly on the analysis. However, even to the extent that latent shed capacity exists, it is unlikely to exist in the sufficiently large contiguous and regular time windows that would provide meaningful capacity for additional trains.

In particular, it would be misleading to assume that one road could be permanently vacated in order to make it exclusively and permanently available for another operator (Eurostar notes that potential operators seeking section 17 directions from ORR seek exclusive use of at least one maintenance shed road within their access requests[12]).

It is not unusual that all eight roads are used simultaneously, particularly during the night, even within the parameters of the capacity needs recognised in the analysis. This is for several reasons:

a) Frequently more than one shed road is simultaneously occupied for reactive repairs. This is expected to increase over time as both fleets are aging. This does not appear to be reflected in the Report.
b) The analysis appears to assume that Eurostar can consistently and reliably sequence preventative exam works during the night with campaign work (modification programmes) during the day shifts on the same train. While this is indeed a correct reflection of how Eurostar *seeks* to sequence work to enhance efficiency, this is not always possible, particularly as a campaign nears its end. As a result a road may be occupied by one train for a campaign activity lasting several days while nighttime preventative exam works need to be carried out on other trains in the night shifts that then need to occupy an additional road.
c) There is some fluctuation across the year in the depot's usage intensity that varies with seasonality. The Report shows in section 12.5 that over a sample week in January 2025, the maintenance shed was fully occupied during the night shift on some days (notably between 10pm and 11pm and between 1am and 5am). As the trainplan intensifies later in the year, the shed occupation also tends to increase. So even if some shed capacity could be available in January, this capacity may be unavailable during other months, particularly in the summer.
d) Overall, it is not obvious to Eurostar whether the maintenance capacity analysis is based on an average need or on a peak need. The two examples above might suggest that it does not reflect peak capacity need. If so, this would mean that the identified latent capacity in the report may be overstated for, at least, some of the time.

[11] Ipex published report, section 12.6.6.
[12] Evolyn requested two "workshop tracks for daily maintenance", Virgin asked for capacity for two trains "to be inside the shed for up to 16 hours" "every day", and Gemini specified "one dedicated track in workshop shed". Source: applications published on https://www.orr.gov.uk/rail-guidance-compliance/network-access/station-depot/depot-applications-decisions, accessed on 24 April 2025.

Finally, the Report's capacity availability assessments are based on the assumption that the depot is maintaining trains with the same technical characteristics as the present fleets maintained at TMI, i.e. that there are no compatibility or other limitations that would operate to alter this assessment. There is no guarantee that the latent capacity as identified in the Report would be the same for trains with different technical characteristics.

Section B - moving non-maintenance activities from the shed to external roads is extremely unlikely to increase maintenance shed capacity availability to a meaningful extent

The Report states that unlocking the full latent shed capacity is contingent on enabling all external roads for non-maintenance activities such as servicing, cleaning, sanding, pre-departure tests[13] and driver preparation: "*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.*"[14]

To the points already set out in the body of Eurostar's letter, the proposals for enhancing external roads and moving all non-maintenance activities cannot be anticipated to increase maintenance shed capacity availability to a meaningful extent because:

a) It is the current operational practice that trains only enter the maintenance shed if they require a maintenance visit. Any trains not requiring this are serviced, cleaned and prepared on the external Stabling Roads, or berthed overnight at SPI where low level rectification tasks as well as other non-maintenance activities can be performed. Therefore, moving non-maintenance activities for trains coming into the maintenance shed to external roads would always introduce additional intra-depot train moves which due to the layout of the depot can require considerable amounts of time. They would abstract from the capacity in the maintenance shed.

b) Wherever possible, non-maintenance activities such as interior cleaning, sanding and washer fluid refill are carried out concurrently to maintenance activities inside the shed to increase overall efficiency. Moving such concurrent non-maintenance activities to external roads would therefore reduce, not enhance, efficient use of the depot capacity and extend the time a train must remain at the depot.

c) It is current practice for sanding only to be conducted during maintenance visits. Since sanding can be carried out concurrently to maintenance activities, installing sanding facilities on outside roads would provide no time saving inside the shed;

d) External road pre departure tests were practiced by Eurostar in 2015-2017. These were discontinued as they were found to reduce overall efficiency of use of the depot, and impact detrimentally upon timely return of sets to service. It was identified that the additional intra-depot moves (each taking up to an hour) were abstractive of capacity and that this also required additional driver resource to complete. In addition, where pre-departure tests identified faults, which happens, it proved to cause a reliability issue as sets needed to be taken back into the shed, necessitating further time-consuming moves and delaying return to service (by more than would have been the case had the pre-departure test been carried out inside the shed where the fault in question could have been addressed more quickly and without requiring additional train moves). Were pre-departure tests moved outside to allow other sets to move into the shed immediately, delays would quickly compound since the train now on an outside road could not necessarily be returned to an empty shed road but would have to await another free road. The likely adverse impact on efficiency and reliability would be unacceptable.

[13] The IPEX Report references interchangeably "train prep" and "service prep" which we reference as pre-departure checks that must be carried out following a maintenance intervention before releasing a train set for service and takes c. 60-90 minutes.
[14] IPEX Report, paragraph 4.3.2.

A conclusion that carrying out non-maintenance tasks exclusively on external roads would free up a meaningful amount of shed capacity is therefore, at this stage, hypothetical and unproven.

Based on Eurostar's experience, it is unlikely that any more than limited maintenance shed capacity could be freed up. Any capacity gain could be largely (or wholly) abstracted by the additional time required for internal moves. Further it is a material possibility that any capacity gain after accounting for internal moves at the start or end of a night shift would not be within a sufficient time window for an additional train to be maintained in the maintenance shed before it needs to be returned to service in the morning.

Section C: comments on the feasibility of IPEX recommended options for potential depot enhancements

IPEX's "*improvement options*" are all caveated in that they are contingent on feasibility studies confirming that they would a) be physically feasible, b) increase efficiency if implemented and c) could safely be incorporated into operational procedures. IPEX has also not considered cost and return on investment as part of its optioneering.

Option 1 – Upgraded CET capability on LDA1 and LDA2

Currently only one set can be CET at any given time. This is due to the available water pressure from the supply and drainage capacity that are insufficient to use both LDAs concurrently. A feasibility study would be required to assess if and how both could be upgraded. In addition, it should be noted that the existing LDA hard and software systems may require significant upgrades or entire replacement in order to accommodate the doubling of current LDA capacity. This has not been required either at the depot design stage or at any time afterwards since the absolute emergency maximum arrival frequency for the depot has been one train every 20 minutes, and with CET taking 45 minutes being only able to CET one train at a time has never represented a bottleneck.

Since the arrival rate of train sets has not been identified as a bottleneck the Report, it is not clear how this enhancement in and of itself would aid the freeing up of theoretical identified latent capacity that is currently unavailable, for stabling and/or maintenance.

Option 2 – Reception Roads 1-4 Upgrade

IPEX suggests that the roads could be used for cleaning, driver preparation and light vehicle maintenance without upgrades. This is not feasible as:

a) There is currently no level walkway from the depot to the reception roads, only a drivers' walkway. The roads are currently on ballast. This means that carrying any equipment required for cleaning and other non-maintenance activities from the main shed, which currently cannot be stored closer to the reception roads, would be hazardous, particularly at night and in poor weather conditions and would only be permissible subject to passing relevant health and safety checks. Further down in this annex are comments on IPEX's proposals to enhance these roads including building walkways and other necessary infrastructure.
b) Absent access platforms alongside the reception roads, cleaning crews would be unable to take any essential cleaning equipment, such as vacuum cleaning machines, onto the trains. Due to the length of the trains, at 400m long, it is not suitable to provide access only at the front and/or end of the sets.
c) Teams working on reception roads would need additional time to move between the maintenance shed and the reception roads, including with equipment. Without relevant welfare facilities closer to the reception roads, additional welfare trips would need to be scheduled for staff working on the reception roads. This would Involve a significant efficiency loss for crews working on reception roads.
d) Responding to the above considerations, this would require the recruitment of additional staff and making available additional equipment, which would also require additional staff facilities (eg changing rooms and lockers) and equipment storage at the main shed. That has not been considered in the Report.
e) As previously explained, moving pre departure testing to reception roads creates additional service reliability risks since any return to the maintenance shed required by faults detected during driver preparation would significantly delay the return to service.

Further, the report suggests that adding welfare facilities, sanding and wash fluid top up stations could enhance the use of these rods for further servicing activities, allowing trains to be moved from the maintenance shed to these roads following the completion of a maintenance activity for sanding, washer fluid top-up, cleaning, light vehicle maintenance (which is not further defined) and train preparation.

Eurostar comments as follows:

a) Upgrading the reception roads 1-4 as proposed At a minimum, upgrading the reception roads 1-4 as proposed would likely require moving the rails and OLE because there is currently insufficient space between and alongside the roads to accommodate walkways, access infrastructure and welfare and storage facilities. It may necessitate access through third party land, due to the tight boundary. It is not at all clear that this is achievable within the current footprint. This would incur significant additional costs, as well as potentially reduce reception roads from four to three in order to create space for the proposal (if it were physically feasible at all).
b) For sanding, there needs to be access to both sides of the train. There is insufficient space to access trains on both sides for sanding, and to create the necessary space would require additional disruptive infrastructure works. We also note that there is limited space available to transport the sand to and store it at the reception roads.
c) As mentioned above, additional access platforms would have to be built alongside each reception road to permit access to the train with equipment, for example for cleaning. This again would likely require extensive reconfiguration of the reception roads layout.
d) Undertaking such significant infrastructure work on these roads carries risk for the operations of the rest of the depot and would significantly disrupt the overall depot flow for a considerable amount of time. Any reconfigurations of the OLE in particular would likely significantly compromise other areas of the depot, which is operational 24 hours a day 7 days a week. While within the time available to comment in this response Eurostar has been unable to develop a detailed estimate, it expects any such major enhancements to take around 2 years to complete, with the associated disruptions to the overall depot operations and with no project or other delays during the works.
   More generally, as explained above, enhancing the servicing facilities available on these roads outside of the maintenance shed is unlikely to free up a meaningful amount of capacity in the maintenance shed.

Option 3 - LDA Road 1 and LDA Road 2 Upgrade

a) Using LDA roads for anything else but toilet discharge on arrival to the depot may reduce the flow of sets into the depot, which may limit the additional capacity being sought to be unlocked through this option.
b) It could only be used for additional activities and stabling after the last arrival so that it would not limit the flow of sets into the depot.
c) Similar to the reception roads, there is no access to both sides of the trains which is necessary particularly for sanding.[15]
d) As explained elsewhere, it is far from clear that additional sanding stations would unlock capacity in the main shed where these activities are currently being carried out concurrently to maintenance activities and have been found not to be necessary in between maintenance visits.

Option 4 – Improved walking routes and facilities

The report correctly identifies that any enhancement of the outside roads as outlined under options 1-3 above would require the availability of walkways, lighting, steps and stages and welfare facilities between the main shed and the outside roads to accommodate the additional use of the outside roads.

a) Eurostar agrees that this is an essential part of considering any options that would seek to enhance use of the outside roads as outlined in options 1-3. Any options also must be considered carefully against staff relationship aspects, staff welfare and health and safety requirements.
b) Eurostar has commented above on the significance of such enhancement projects and the significant disruption it would bring to the operation of the depot during the construction phase. Eurostar reiterates those points with regard to IPEX's improvement option 4.

[15] IPEX Report, paragraph 16.4, Caveats.

c) As highlighted above, any increase in utilisation of the external roads would require an increase in the workforce, for which additional welfare facilities need to be made available such as changing rooms and lockers, as well as additional storage for additional equipment that would be utilised on these roads. These do not appear to have been factored into the options presented in the report.

Option 5 – Stabling Roads 1-3, provision of sanding capability

Ipex itself caveated that *"providing sanding capacity on all external roads therefore may not directly add to the usefulness of the roads"*[16], because currently sanding is only carried out with a maintenance visit and that has been proven to be sufficient. As for the other external roads, it is therefore unlikely this would help unlock the theoretical capacity identified by the report.

Option 6 – Removal of Decommissioned Sets (Cl 373) from TMI

The report suggests that the four decommissioned half sets currently stabled, if removed, could free up a reception road and two half-length roads (Cripple Roads) that currently are not electrified.

This should be be feasible allowing for a suitable time period to carry this out, but the benefit of this option has to be properly quantified to be weighed against the costs incurred by removing the sets. At this stage we have the following additional considerations relating to this option:

a) Dismantling and moving to an offsite storage facility of the decommissioned set would likely be very time consuming. They would have to be dismantled carriage by carriage on site as they can no longer be moved by rail, and be moved to an offsite storage facility by road transport. Such a project would likely take at least 18 months.
b) Two of the roads that are currently occupied by decommissioned sets are the Cripple Roads which are only 200m long and not currently electrified. It is noted that the benefits of freeing up these two non-electrified half-length roads appear limited.

[16] Ipex published report, paragraph 16.6.

ORR consultation on Temple Mills International depot Capacity Analysis
Eurotunnel response 28.04.2025

Eurotunnel welcomes the publication on 31.03.2025 of ORR's initial findings together with the Ipex report, and we are grateful for this opportunity to contribute to ORR's public consultation.

This analysis takes place as a result of strong growth in demand for UK international high speed rail travel, requiring both increased supply of seat capacity on existing routes (London to Paris, Belgium and the Netherlands), and creation of direct services to new destinations (including Germany, Switzerland, Southern France and beyond). This strong market development potential has been duly recognised both by prospective new operators wishing to enter the cross-Channel high speed rail market and by Eurostar studying new direct routes, both requiring investment in new fleet capacity. The cross-Channel rail system was indeed dimensioned from the outset to accommodate more than double the current level of traffic, and Eurotunnel is keen to ensure that these growth ambitions are allowed to materialise, in order to realise the full potential of the Channel Tunnel Fixed Link.

ORR's report and initial findings appear particularly positive and constructive, as they pave the way for a final decision catering for all actors and projects seeking to develop the market, at several levels and timescales:

1) ORR's identification of immediately available shed capacity for maintenance of additional fleet at the international depot provides a green light for investment in new international fleet, allowing for the 1st phase of growth by one operator (with adequacy confirmed by several actors' reactions to publication of the report).

2) The report's identification of further capacity that may be delivered through medium-term improvements in current operational practices (displacement of idle vehicles, more efficient use of roads for productive tasks, subject to modest investment) provides confirmation of further sources of depot capacity, allowing for an initial phase of growth by the facility's operator (best able to release space to cater for its own future requirements).

3) While ORR's initial findings open the way in the medium term for first phases of growth by one operator and by the facility's operator, there is now clear evidence of market demand for new international services beyond those initial phases (thus both for 2nd phases of growth by one operator and by the existing operator, or for a 3rd operator). Since congestion has been declared on public record at this essential facility for international services, there is now a formal requirement to initiate a capacity development process for international depot capacity, in order

to satisfy forecast demand by all operators, in line with global system capacity commitments (as supported both by existing and new operators). A major capacity development project around Temple Mills International depot will naturally involve greater investment and longer timescales, to be delivered in time to meet the growth ambitions of all operators, including both Eurostar and new entrants.

At detailed level, the Ipex report provides a useful technical analysis combining three distinct angles of analysis (statistical approach on historical occupancy of resources, bottom-up approach reconstructing global resource requirements, modelling of operational flows & processes between individual depot resources) to arrive at prudent, reasoned conclusions. In support of Ipex's technical analysis, some additional observations may be helpful:

A) To complement bottom-up approaches, a top-bottom approach of high-level benchmarking against high-speed train fleets would indicate a typical ratio of fleet in shed for maintenance at ca.15%, within a maximum range between 10% (extremely low) to 20% (extremely high) – in other terms, 17% represents one shed road for 6 fleet units (high maintenance), while 11% reflects one shed road for 9 fleet units (efficient maintenance). Ratios would be expected to vary between recent fleets with efficient maintenance regimes (data capture & diagnosis tools) and ageing fleets with higher maintenance needs and lower-efficiency fixed regimes (until retirement from operations), also depending on fleet sizes (small fleets imply higher fluctuations) and exceptional events (brand new fleet, winter or wildlife damage, retrofitting). Top-bottom benchmarking would return a shed requirement of 4 shed roads for a 16% ratio (25 units x 16%) or 5 shed roads for an extreme 20% ratio (25 units x 20%) of fleet in maintenance [NB: in both cases, consistent with Ipex's recommendation for dedicated use of shed capacity for maintenance tasks, excluding servicing (eg. sand replenishment) and stabling (eg. spare units or under testing)]

B) Ipex's analysis on stabling capacity requirements correctly highlights the critical importance of adequacy of spare stabling road capacity as a key factor for operational efficiency & performance of depot resources. Once initial fleet growth is accommodated for maintenance & servicing at the depot in the medium term (all the more so after improvements in operational practices), lack of spare stabling capacity would inevitably result in loss of efficiency of optimised resources, therefore counteracting prior efficiency gains. In that context, the mobilisation of ring-fenced stabling capacity for international services would play an instrumental role in enabling efficient depot operations & capacity utilisation.

The Office of Rail and Road

By email: [redacted]

cc:

25 April 2025

Re: Temple Mills Depot – Independent Capacity Assessment 2025 (IPEX)

Dear Ms O'Brien and Mr Chowdhury

Firstly, Evolyn thanks you and other involved parties for your work with IPEX which has culminated in this thorough assessment on the available capacity at Temple Mills International Depot (TMI).

This letter sets out Evolyn's written response to the ORR regarding the IPEX document published on 31st March 2025 "Temple Mills Depot – Independent Capacity Assessment 2025".

- Evolyn is pleased to acknowledge and confirm that there is **some capacity available** at Temple Mills Depot.

- We strongly believe that at the point at which a second international operator maintains its rolling stock at these facilities, Temple Mills Depot will become a multi-operator depot and so the manager of the depot should be a neutral third party who, in order to be fully independent, must not be any of the operators maintaining its rolling stock at Temple Mills Depot. From that point onwards, each operator should manage the movements and activities of their trains within the depot independently, and pay the corresponding access charges per train according to clause 4.11 of Temple Mills International Depot - Service Facility Description, but the coordination and procedures should be overseen fairly and transparently by a **neutral depot manager**.

- In a multi-operator context within the Temple Mills Depot, it would be advantageous to analyse the possibility of amending the working shifts of the **personnel working at the depot** in order to adapt the future resources to the actual maintenance activities, particularly in the observed "bottlenecks". This analysis about the personnel would also help to increase the overall capacity of the facilities from another point of view.
  In addition, according to Temple Mills International Depot - Service Facility Description, the clause 4.26 refers to some services delivered by TMI personnel (currently employed and managed by Eurostar). Evolyn understands that those services which require Eurostar equipment to perform such activities will also require TMI personnel, however, that TMI personnel should be neutral and not managed by Eurostar, especially if those services are carried out on different rolling stock than the current one maintained at Temple Mills Depot. In summary, there will be general activities that are common to any operator at TMI that should be carried out by a neutral third party.

- If the objective of the UK railway sector is to uphold the principles of open access and fair competition within a multi-operator framework, the **allocation of the latent Depot Capacity** would be advisable to be designated for new entrants rather than the existing operator, even in the event of any future expansion of its fleet. It is noteworthy that, although Eurostar's primary maintenance facility is TMI, it currently utilises other depots across mainland Europe to diversify its maintenance operations. Consequently, this current latent Depot Capacity should be available solely and exclusively to new international operators.

- According to 'Temple Mills International Depot Service Facility Description' written by Eurostar International Limited, the basic services offered at TMI include '*2.2 (e) Maintenance, with the exception of "heavy" maintenance*'. However, this assessment confirms on several occasions that Eurostar does indeed use **at least one shed road for "heavy" maintenance** activities as described for example in the following pages:
    - Page 21. '*Shed Road 1: Overhaul (Some limitations on activities that can be undertaken due to road setup for overhauls)*'.
    - Page 22. '*Maintenance Shed: Light + Heavy maintenance*'.
    - Page 32. '*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*'.
    - Page 48. Heavy Maintenance - Fleet downtime requirement: 1.01 roads.
    - Page 51. '*12.6.2 The maintenance plan assumptions are: ... The equivalent of a full road dedicated to heavy maintenance (days and nights), predominantly for R exam work*'.

  Therefore, if Eurostar is currently using this road to perform some overhaul activities within the maintenance shed, Evolyn assumes that this procedure results from the operator's decision, as it is the sole user of these facilities. In this case, these "heavy" maintenance services should be effectively excluded from the services offered at Temple Mills Depot under clause 2.2 (e) above, and hence, this road should be considered as another "normal" road for light maintenance, significantly increasing the latent Depot Capacity value compared to the one outlined in the assessment.

- The **maintenance shed**, as the name suggests, must be used for maintenance only, not for parking, cleaning or any other activity that is not maintenance. However, the assessment concludes that the latent Depot Capacity in the maintenance shed is 1.6 roads, including these activities that are not strictly "maintenance", as mentioned in the following cases among others:
    - Page 54. '*... 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*'.
    - Page 55. '*... 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... It was not possible in this study to quantify the amount of additional time that Sets currently occupy the shed unnecessarily..., however it is evident that using the reception roads would unlock more shed capacity*'.

  Some activities are currently performed within the maintenance shed because Eurostar is the only operator maintaining trains at Temple Mills, and there is adequate space within the shed, making it

unnecessary for Eurostar to move its trains elsewhere at this time. Therefore, this practice is clearly inefficient in terms of capacity, as it leads to occupation of vital shed roads for non-maintenance activities that can and should be done outside the maintenance shed.
In addition, the assessment states the following: '*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 observation together with the above explanation about the use of the maintenance shed would suggest that the latent Depot Capacity in the maintenance shed is significantly higher than 1.6 roads.

- Regarding the **Wheel Lathe facility**, the assessment mentions that the Wheel Lathe Capacity has on average 35% latent capacity (2,357 hours). Will a new international operation have access to perform some activities at this facility of the depot?

- Regarding the **Bogie Drop facility** and values, the assessment only indicates that 0.88 out of the 2 Bogie Drop roads are required. Therefore, Evolyn understands that there is some latent capacity available at this facility, specifically 1.12 road. Will a new international operation have access to perform some activities at this facility of the depot?

- Finally, all the **improvement options** included in the assessment offer varying benefits in terms of optimisation and capacity increase at TMI, particularly those relating to the upgrade capability on LDA1 and LDA2 due to the significant increase in sets per hour, and also the removal of the decommissioned Class 373 sets from the cripple roads and their possible electrification in the future.

I hope that this response has been clear and helpful to you, and we look forward to the conclusion of the consultation period and moving forward together to the next phase of the project.

Yours sincerely,

[redacted]

Antonio Urda
Project Director
Evolyn Mobility Ltd.

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Via e mail to: operations.team@orr.gov.uk

28 April 2025

Capacity at Temple Mills International Depot – ORR consultation

Thank you for the opportunity to respond to the above consultation. Gemini Trains welcomes the publication of the independent assessment on the availability of capacity at Temple Mills International Depot (TMI), which was commissioned by the ORR.

Gemini Trains also welcomes the ORR's initial findings, which we fully support. The conclusions of the independent report and the ORR's initial findings concur with our analysis and assessment of the capacity at TMI.

In response to the specific initial findings, Gemini Trains makes the following observations.

There is some available capacity at Temple Mills international (TMI) depot for more trains to be stabled, serviced and maintained.

Gemini Trains agrees with this finding. We have undertaken our own assessment of the available capacity at TMI, including a visit to the facility hosted by Eurostar International Limited (Eurostar), and believe there is available capacity that can be made available.

Some of this capacity can be accessed without any changes to current operational practices at the depot.

Gemini Trains agrees with this finding. We highlight that the capacity that we require, as set out in our Section 17 application dated 24 February 2025, can be met within the currently available capacity for operations, stabling, and maintenance at TMI.

The rest of this capacity may be delivered through investment in changes to current operational practices. This does not include any adaptations required to ensure compatibility with different types of trains.

Gemini Trains agrees with this finding, but notes that the capacity we seek can be accommodated without investment in changes to current operational practices.

About Gemini Trains

Gemini TOC Ltd (Gemini Trains) is a new business that for the last two years has been developing plans to operate passenger rail services between London and mainland Europe. It comprises a team of senior industry leaders on both sides of the Channel and we have a substantive business plan that has been independently verified.

Gemini Trains looks forward to introducing services in competition to Eurostar to the core destinations of Paris and Brussels, as well as serving other destinations not currently served by Eurostar. We believe there are substantial benefits to passengers from the introduction of competition, as well as supporting wider objectives of passenger growth and modal shift to rail.

Our services will be operated by a fleet of purpose-built new high-speed train sets that will be certified to operate on the high-speed rail infrastructure on both sides of the channel and meet the specific requirements of operation through the Channel Tunnel.

We propose to maintain our trains at the purpose-built service facility of Temple Mills International Depot (TMI). TMI is a regulated service facility and is the only UK service facility capable of maintaining trains for operation through the Channel Tunnel.

In developing its business plan Gemini Trains has met senior representatives at Eurostar to discuss our requirements, access application process and their view of available capacity. Eurostar have also hosted a visit to TMI for the Gemini Trains team, enabling us to observe first-hand the design and operation of the facility.

While Eurostar have been cordial and professional in our meetings, they have taken the position that insufficient capacity exists to accommodate our requirements. This is a position we disagree with and is supported by the IPEX report and the ORR's initial findings. Recognising Eurostar's position, the submission of Section 17 applications by other potential operators and the ORR review of available capacity, Gemini Trains submitted a Section 17 application for access to TMI on 24 February 2025.

Our Section 17 application sets out the capacity that Gemini Trains is seeking, which can be accommodated within the available operations, stabling and maintenance capacity identified in the IPEX study.

In the remainder of our response, we firstly make some brief observations on the detail within the IPEX report. These comments are brief as we broadly agree with its analysis and conclusions. Secondly, we highlight the necessary steps we believe the ORR should adopt to progress access applications to TMI.

Gemini Trains' comments on the IPEX report

We welcome the IPEX report and substantially agree with its analysis and conclusions. These concur with our own assessment of the available capacity.

IPEX have assessed the available spare maintenance shed capacity as either '1.6 shed roads' (based on a calculation of the requirements needed to maintain the current Eurostar fleet), or spare available capacity of '2.1 shed roads' based on the observed utilisation during the period of the report. Using either approach clearly evidences that there is available spare capacity.

We would make the following observations regarding the assessment of available capacity:

The report assumes operation of 400m train sets throughout. Eurostar currently operate 400m train sets and therefore only this length of train is reflected in the report's operational analysis.

Apart from the current situation on the Channel Tunnel route, the European high-speed sector is increasingly focused on 200m train sets, which also have the capability to operate in double set formation to create a 400m train. Each of the major OEMs who offer a high-speed train product provides this in a 200m formation.

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Any train that operates on the high-speed infrastructure between the UK and mainland Europe via the Channel Tunnel must comply both with all the relevant Technical Specifications for Interoperability (TSIs) relating to operation of high-speed train sets and additionally the specific requirements relating to operation through the Channel Tunnel. Currently no OEM offers a fully certified train that can operate through the Channel Tunnel, as TSIs have been updated since the current Eurostar trains were certified. All the major OEMs are engaged with Getlink and the other Infrastructure Managers regarding the requirements to ensure they can offer an approved product.

It is reasonable to assume and widely accepted that a 200m train (based on the standard European products) would be the basis for future operation. Therefore, the assessment of available capacity at TMI for operations, stabling and maintenance should also consider that 200m length trains may use the facility.

The maintenance building at TMI currently accommodates 400m sets, so a single road within the maintenance shed would be capable of maintaining two 200m train sets. The same goes for stabling elsewhere at TMI. While the tracks are not currently electrified, the cripple sidings used by Eurostar to store decommissioned train sets, could be utilised to provide stabling capacity for 200m train sets.

Therefore, we recommend the ORR considers the implications of the use of 200m train sets and the likelihood that this will further facilitate available capacity.

Our second substantive point on the IPEX report is that it does not address directly the impact on capacity that can be achieved through efficient train operations on the site. The IPEX report correctly addresses issues including arrival rates, CET processing time, wheel lathe hours and time for maintenance activities. The overall efficiency of a service facility is also determined by the effectiveness through which these activities are coordinated and movements around the service facility are managed.

This becomes increasingly important as spare capacity is used and the site must be operated efficiently to maximise the use of capacity. This is less of an issue currently when the facility is under-utilised and only used by a single operator.

The transition to a multi-user environment, plus increased utilisation of the facility, will need to be accompanied by effective and efficient planning of capacity and 'on the day' train movements. Without this there is a real risk that the identified available capacity could be frustrated.

This does not change the underlying assessment of available capacity, but we recommend the ORR also consider how the use of capacity is efficiently managed in a neutral manner when TMI moves into a multi-user environment.

We have previously highlighted to the ORR - in our response to Eurostar's initial representations on our Section 17 application- that it is essential that the facility operator (Eurostar) ensures that available spare capacity at TMI is made available to other operators. We also highlighted the importance that they engage positively with both the ORR and new operators to support this outcome, as opposed to seeking to frustrate the process as could be inferred from the tone and content of their letter to the ORR of 1 April 2025.

In summary, we agree with the conclusions of the IPEX report and the supporting initial findings of the ORR. We expect that the ORR will remain proactively engaged in relation to TMI in the coming years, to provide independent assurance that Eurostar's special obligations as the dominant incumbent - in providing fair and non-discriminatory access to its facility - are being met.

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Taking forward access applications

TMI is a regulated 'service facility' and it is essential that fair access is made available to new operators who wish to operate services on HS1 and through the Channel Tunnel. We are grateful to the ORR for commissioning the IPEX report that shows clearly that space exists at TMI, despite Eurostar claiming otherwise.

We remain concerned that Eurostar could seek to frustrate the process of making capacity available to applicants, including Gemini Trains.

Gemini Trains highlights that the volume of capacity it has requested in its Section 17 application can be accommodated at TMI. This level of capacity is within the identified level of available space without modifications set out in the IPEX report. Furthermore, and importantly, we draw your attention to the fact that currently Gemini Trains is the only Section 17 applicant whose request for space can be accommodated with no enabling work at TMI.

Following the conclusion of your consultation, we ask that the ORR sets out clearly and promptly the process it will follow to determine the three Section 17 applications for the available space at TMI. Furthermore, we request that the ORR provides an assurance that it will monitor Eurostar's engagement with other operators with the transparent objective of finding solutions and agreeing access to TMI rather than attempting to frustrate the process and in so doing, causing unnecessary delay.

We are keen to engage effectively with the ORR as you develop your understanding of our requirements and set out your process to opine on the respective applications. We ask that a meeting be set up shortly to discuss the timescales you will be working to.

We note the ORR will publish this response on its website and confirm that we are content that the contents of this letter to be published in full.

Yours sincerely

[redacted]

Adrian Quine
Chief Executive Officer
Gemini TOC Limited

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From: Sarah Parsons
To: Operations Team
Subject: Capacity at Temple Mills International Depot
Date: Thursday, May 8, 2025 12:45:57 PM
Attachments: image001.jpg

Dear Operations Team

I am writing on behalf of the London Borough of Waltham Forest in response to the your report into Capacity at Temple Mills International Depot. Unfortunately by the time we were made aware of the report and associated consultation it was too late to submit a response before the deadline. We are hopeful however, that you will accept this late submission.

The Council is of the view that expansion could be very positive for the borough, particularly in driving inclusive economic growth through the creation of high quality jobs - both temporary opportunities during the construction phase and permanent employment once the expanded depot is in operation. We also welcome the opportunity to expand our role in increased international rail travel.

The Leyton Mills area of the borough, within which the depot can be found, is our largest growth area, where we have been working with landowners, infrastructure providers and other stakeholders to develop an ambitious vision for an inclusive neighbourhood that fully integrates with, and sees direct investment into the existing communities of Leyton. Our vision seeks to deliver over 5,000 new homes, including affordable homes for local people, 40,000 sqm of high quality workspace and industrial / logistics / distribution uses offering high quality new jobs, a new cultural destination, new community uses (including education and health facilities), and new shops, cafes and restaurants within a landscape-led network of generous, biodiverse and ecologically rich open spaces, served by a new rail station at Ruckholt Road and improved cycle and pedestrian connections from Leyton into the Queen Elizabeth Olympic Park. Our ambitious vision has the existing ecology of the area at its heart, an includes proposals to protect and enhance much loved assets such as Hackney Marshes and the Old River Lea.

Full details of our vision can be found in the Supplementary Planning Document (SPD) for the area, adopted last summer.

In addition to the SPD, we are also progressing Part 2 of our Local Plan, a site allocations document, through examination. Public hearings are scheduled for June and July. This includes the allocation of the New Spitalfields Market site, immediately adjacent to the depot. You can read the whole of Local Plan Part 2 here, or the extracted details of the New Spitalfields Market SPD here.

Whilst we anticipate that any expansion proposal would be treated as a Nationally Significant Infrastructure Project (NSIP), subject to a Development Consent Order (DCO) outside the

usual local planning process, we would welcome the opportunity to work together to ensure that it aligns with, and supports delivery of, the ambitions of the Leyton Mills SPD.

If you would like to meet to discuss this further, or have any questions or queries, please do not hesitate to contact me

Kind regards,

Sarah Parsons I S-AIR-RAH PAR-SONS
Assistant Director - Place and Design
Regeneration, Planning and Delivery

Place Directorate

London Borough of Waltham Forest

London St. Pancras Highspeed's

Response to the Office of Rail and Road's Consultation on

"Temple Mills Depot – Independent Capacity Assessment – 28 March 2025"

28 April 2025

[redacted]

HS1 Limited trading as London St. Pancras Highspeed
Company number: 03539665
5th Floor, Kings Place, 90 York Way, London, England, N1 9AG

1. Key Points

1. We support the findings of the IPEX study. It concludes that there is depot set capacity for 5-9 sets, subject to the removal of decommissioned trains. Additionally, it concludes maintenance shed capacity of 1.6 roads and that there can be more capacity with some operational improvements.

2. We commissioned an independent expert study and technical review of ORR's IPEX report which concluded that the Temple Mills Depot (TMD) can accommodate up to 20 train sets and 2.6 roads can be available on completion of Eurostar International Limited's (EIL) heavy maintenance.

3. The IPEX and BWB studies show that there is capacity for at least one additional operator now with only minor adjustments to the depot.

4. There is an urgent need to give clear certainty now to prospective operators on available capacity.

5. There are options to expand TMD and these should be taken forward **BUT** they should not delay capacity being made available within the existing facility.

6. TMD was designed as a dedicated and purpose-built multi-operator maintenance facility to meet the needs of the existing and future international operators.

2. Introduction

(a) HS1 Limited, trading as London St. Pancras Highspeed, **owns and operates the concession** for the 109km of high-speed rail link connecting London St. Pancras International to the Channel Tunnel portal. This includes the operation of London St. Pancras International, Stratford International, Ebbsfleet International and Ashford International.

(b) Our **interest in Temple Mills Depot** is based on the following:

i. We act on behalf of the Secretary of State for Transport (SoSfT) as the landlord for Eurostar International Limited's (EIL) tenancy of the Temple Mills Depot facility.

ii. We believe we should be considered an 'interested person' in Temple Mills Depot access requests, as defined under Schedule 4 of the Railways Act 1993, by virtue of our commercial interest in revenue from depot usage and the consents we need to grant for any modification of the site. This is also the view of EIL, who nominated us as an interested person.[1]

[1] As per representations made us to ORR in correspondences on 18 November 2024 and EIL on 24 October 2024.

iii. The HS1 route is adjacent infrastructure to the facility and accordingly London St. Pancras Highspeed as Infrastructure Manager must coordinate capacity and operations with EIL under the Railways (Access, Management and Licensing of Railway Undertakings) Regulations 2016 (the 2016 Regulations), associated guidance and safety regulations.

iv. We are a commercial entity that derives most of our revenue from track access charges. We are fully incentivised by the SoSfT in our Concession Agreement to grow traffic, not only for a return on investment for our shareholders, but to maximise the socio-economic, passenger and environmental benefits from the HS1 route, as nationally important rail infrastructure. TMD was designed as the multi-operator dedicated depot facility for international traffic on the HS1 route, capable of absorbing HS1 route capacity as it grows. Accordingly, we have a strong commercial interest in the fair and non-discriminatory allocation of capacity at this facility for our existing and future operators to facilitate this growth.

(c) We welcome ORR's action to date to support the growth of the cross-Channel market. Moreover, **we encourage the ORR's ongoing intervention to assure the fair and non-discriminatory access to Temple Mills Depot (TMD)**, as a critical facility for existing and future operators. We are in regular contact with EIL at all levels and are fully engaged to support its growth, notably on the expansion of London St. Pancras' International Zone. Equally, we are in close contact with prospective operators to support them with their business case development for new international services on the HS1 route. From our regular interaction with potential operators and market assessment it is absolutely clear that access to TMD is a necessary pre-requisite for any investment or commitment by such operators. There are three key requirements from prospective operators as follows:

i. They require **fair and non-discriminatory access to the facility**. Our market engagement confirms the necessity for a new entrant to maintain their sets at TMD. This is based on reported insufficient availability of capacity at SNCF Technicentre Le Landy Paris, the only alternative suitable maintenance site on the route. Accordingly, failure in allocating spare capacity at TMD risks creating a hard barrier to market entry for prospective operators.

ii. **Operators require a high degree of certainty now over the available capacity at TMD to secure the significant capital investment for their ventures**. This is because prospective operators are currently finalising financing requirements. Investors have clearly identified access to TMD as a necessary pre-requisite to completing financing.

iii. They require **timely decision-making** by all parties in relation to the allocation of capacity. Further delay risks depleting their finite start-up funding, effectively preventing competition.

The cross-Channel market is attracting considerable interest. Subject to a prompt adjudication on available capacity at TMD, it is anticipated that there will be significant improvements in passenger benefits from the cross-Channel rail system and its growth trajectory. This includes at least one prospective operator expressing their intent to begin service as early as 2029. Establishing new international rail services necessitates substantial capital investment and risk by a new operator. ORR's timely decision-making regarding spare capacity will enable this investment and facilitate the realisation of significant passenger benefits.

3. Independent Expert Corroboration of IPEX's Study Findings

(a) In anticipation of ORR's consideration of TMD capacity, we commissioned BWB, as recognised experts in railway facility design and assessment, to independently assess available capacity at TMD. To underpin their assessment, we were able to furnish them with detailed information about the site as well as EIL's use of Temple Mills. This was based on information freely available to LPSH, including as landlord to the site, custodians of the CTRL archives which include the design and build of Temple Mills and the holder of timetables and train movements records to and from the site. BWB were also able to combine these insights with their expert knowledge of standard industry practice for a depot and maintenance facility of this type. Accordingly, they **independently reached a conclusion that fully endorses IPEX's findings and indicates that IPEX's assessment is an underestimate of available capacity**. In summary, BWB made the following assessment:

i. That there is room to accommodate one prospective operator immediately, as per their Section 17 applications, at the time of writing.

ii. Two roads out of eight are available for a new operator.

iii. TMD can accommodate a second operator PLUS the current EIL fleet AND the expanded EIL fleet.

The full study is available in appendix and we submit it as primary evidence to aid ORR's deliberations.

(b) To further aid ORR's consideration of the BWB Report, we commissioned BWB to undertake an additional analysis of the IPEX findings, comparing their methodology to ORR's IPEX study to their own. In summary, BWB analysis suggests that **IPEX has been conservative in their assumptions around stabling capacity and internal depot movements** and that therefore more than 1.6 road capacity could be unlocked with minor changes. In short this is because:

i. BWB judges up to 20 trainsets (IPEX's exceptional figure) could be accommodated without affecting depot operations. Based on BWB's analysis, the 20 sets total is

more than what EIL and a potential second operator would require based on the indicative timetables they have supplied.

ii. BWB proposes that improvements to the Lavatory Discharge Area (LDA) facility would enable two trainsets to be serviced at once. This would enable a 4tph arrival rate verses 3tph in the IPEX report.

iii. 2.6 roads could be available once EIL completes its heavy maintenance programme versus 1.6 roads in the IPEX report.

The full BWB analysis is available in appendix and we submit it as primary evidence to aid ORR's deliberations.

3. Requirement for Immediate Adjudication on Available Capacity

(a) ORR's consultation response may lead to further analysis of IPEX's study. While we welcome this in due course, **we urge ORR to make an adjudication forthwith on available capacity at TMD based on initial findings**. This decision will provide prospective operators with much-needed certainty for investment decisions. Though it can be reviewed later, an initial adjudication is preferable to waiting for a full adjudication, as it offers greater assurance to the investment community.

4. Specific Comments on IPEX Report

Over and above BWB's review, we have the following specific observations on the IPEX study. We believe that addressing these issues will lead to a materially greater amount of capacity being available at TMD. We therefore invite ORR's consideration of these matters and to review the IPEX findings accordingly.

(a) We concur that **EIL's storing decommissioned sets is an inefficient use of capacity** and is not in line with standard industry practice, as highlighted by IPEX. However, we would like to highlight that there is a history of storing surplus stock elsewhere on the HS1 route and we are willing to support EIL in identifying alternative potential sites on the HS1 network to allow for maximum availability of capacity at TMD. Accordingly, we invite ORR to direct EIL to remove the decommissioned trains from the site to ensure its efficient use.

(b) We encourage the **ORR to act to ensure the fair and non-discriminatory use of heavy maintenance facilities at TMD**. We note key heavy maintenance facilities are provided to EIL by a third party, as outlined in EIL's Temple Mills International Depot Service Facility Description. [2] Accordingly, as these services are offered to EIL, the service provider should offer these services to others in a non-discriminatory manner, as specified in Section 6 (12) of the 2016 Regulations.

[2] 'Wheel services: Wheel services at TMI are provided by an external third party…' P. 15, https://stpancras-highspeed.com/wp-content/uploads/2025/01/eil-tmi-sfd-final-2022-v1.pdf

(c) We note that the **IPEX report is redacted to remove details of EIL's maintenance regime**. We do not believe this to be commercially sensitive and highlight that prospective operators are required to submit this information to EIL. This non-disclosure prevents open scrutiny of this aspect of TMD use and denies consultees to this study the opportunity to comment on whether EIL's maintenance regime is efficient and in line with industry standards. We encourage ORR to publish this information.

(d) We do not believe IPEX has fully considered all available capacity at the Temple Mills site. Specifically, we note that the **IPEX study does not contemplate available capacity at Orient Way Sidings** (OWS) in its assessment. The section 17 applications are to allocate capacity available to EIL as the facility manager, and the OWS site is fully available to EIL to meet these requests. OWS is an integral part of the Temple Mills site. This is expressly stated in the OWS lease where it indicates, 'the lease is granted for purposes connected with the construction or operation of [Channel Tunnel Rail Link] CTRL'.[3] Moreover, EIL has no impediment to accessing this capacity if required. EIL has the contractual right to evict its current users at any time for the purposes of international rail business, with notice. To meet the needs of a demand from a prospective operator would appear to meet this requirement. Costs for integrating this additional capacity are unlikely to be of a different order of magnitude to the minor enhancements already contemplated in the IPEX report. Therefore, the exclusion of OWS imposes an unwarranted capacity constraint which significantly materially negatively impacts available capacity. To resolve this, ORR should instruct IPEX to review its analysis to include the full Temple Mills site, including Orient Way Sidings.

(e) There are several options for Temple Mills **capacity relief on the HS1 route**, some of which are already used by EIL, notably stabling opportunities available at platforms. We are willing and able to engage with IPEX to highlight these opportunities for inclusion in their study. The inclusion of these additional stabling opportunities is likely to provide relief and greater availability for core essential facilities at TMD. Therefore, we encourage the ORR to instruct IPEX to analyse these options and their impact on available capacity.

(f) More generally, the report is silent on **whether EIL is using the Temple Mills facility efficiently**, e.g. benchmarking against other comparable facilities and standard industry practices, review of EIL maintenance regime, analysis of maintenance and fleet availability choices. In its decision-making, the ORR has a statutory duty to promote efficiency on the part of persons providing railway services.[4] Based on this report, it does not appear that the ORR has sufficient evidence to judge whether the Temple Mills Depot is being used efficiently. We encourage the ORR to gather specific evidence on efficient use. If this reveals inefficiency, ORR should direct for efficient use and for EIL to make this additional capacity available for use to all operators on a fair and non-discriminatory basis.

[3] Section 5.3 in the OWS Lease between the Secretary of State for Transport and HS1 Limited, signed on 4 October 2010, as shared separately with the ORR to aid its understanding of the site.
[4] https://www.orr.gov.uk/sites/default/files/om/our-rail-and-road-duties.pdf

4. Enhancement and Expansion

(a) Questions over the nature of enhancements or who is responsible for financing any enhancements to the capacity **cannot justify delays to the process**. We commend the IPEX's study for identifying reasonable enhancements to expand capacity. EIL can expect clarity on how enhancements are funded and costs recovered, but this should not delay capacity being declared and decided or stall negotiations. We urge the ORR to ensure these negotiations are fair and non-discriminatory through enhanced reporting and monitoring.

(b) We note that **EIL as a facilities manager does not publish or make available any policy relating to the expansion of TMD**. This risks being discriminatory as, in effect, EIL is the only operator that is sighted on the potential, capacity, process for and feasibility of expansion of the site. As highlighted in paragraph 3 (d) above, EIL is the only operator able to understand the capacity potential of OWS and the contract rights that EIL enjoys to take possession of this site. This therefore puts them in a significantly more favourable position than other operators. We therefore strongly encourage ORR to direct EIL to consult on and publish an enhancement policy for TMD to ensure all operators are put on a level footing.

5. Further Action to Address EIL's Conflict of Interest and Competition Implications

(a) We encourage the ORR to consider the **competition implications of the extraordinary commercial set-up at Temple Mills**, where one open access operator must request access to another open access operator to a critical facility. Published correspondence between EIL and ORR record the lack of urgency in the treatment of access requests, given the extended intervening period between the first operator's access to Temple Mills Depot and today.

(b) Additionally, we note that EIL is **subjecting prospective operators to requirements it does not hold itself to**. In particular 13(b) where EIL claim prospective operators "has not demonstrated that rolling stock is technically compatible with TMI".[5] ORR's own records as safety authority will record that EIL did not receive final clearance for introduction of the Velaro fleet until shortly before its operation. We therefore encourage ORR to ensure fair and non-discriminatory requirements are being placed on prospective operators.

(c) Given the inherent conflict of interest for EIL as both the incumbent and sole international operator on the HS1 route and facility manager and the elevated risk of abuse of market dominance, we invite the ORR to consider **additional measures and monitoring** to protect the interests of prospective operators and ensure the timely progression of their applications.

[5] https://www.orr.gov.uk/sites/default/files/2024-12/2024-09-25-eurostars-initial-written-representations.pdf

6. Appropriateness of ORR Intervention

(a) We welcome **and support the ORR's interpretation of its powers under the Railways Act 1993** and the 2016 Regulations and the acceptance of Section 17 requests. The overriding duty in all statute and regulation is to ensure fair and non-discriminatory access for operation and ORR's actions thus far are consummate with this role.

(b) We believe the **ORR's interventions thus far have been fair and proportionate**. Additionally, we believe ORR's approach is fully in line with its statutory duties. In particular, we highlight this Section 17 request enables, 'persons proving railway services to plan the future of their businesses with a reasonable degree of assurance'.[6]

7. Coordination of Capacity Allocation

(a) We invite ORR to ensure the **coordination of depot capacity allocation** with us, particularly with regard assessment of operational integrity.

[6] https://www.orr.gov.uk/sites/default/files/om/our-rail-and-road-duties.pdf

Appendices

1. BWB Report – London St. Pancras Highspeed Depot Study – Phase 2 London Second International Operator Maintenance Facility Study (NB – Phase 1 was a scoping study)

2. Additional BWB Study – 'Technical Note - IPEX Report Analysis - 22nd April 2025'

Technical Note
IPEX Report Analysis
22nd April 2025

Project Name:	LSPH Depot Study
Project No:	244938
Revision:	P02
Reference:	244938-BWB-00-00-RP-CV-000002
Author:	[redacted]
Approver:	

1. INTRODUCTION

1.1 This technical note reviews and assesses the 'Temple Mills Depot - Independent Capacity Assessment 2025' report by IPEX and compare it to the 'Second International Operator Maintenance Facility Study' by BWB.

1.2 Both reports review and assesses the capability of TMI International Depot (TMI) to accommodate a second High Speed Rail operator and associated additional rolling stock for servicing, stabling, maintenance, and wheel profiling.

2. OBJECTIVE

2.1 To compare and critically appraise the Conclusions and Improvement options set out in the IPEX report against the BWB study and provide an analysis of the outcomes.

2.2 To provide a high-level cost estimate for the Improvement Options 1 to 6 proposed in the IPEX report.

3. Analysis

IPEX Report	BWB Report	BWB Analysis
Conclusions		
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.	The TMI facility has 12 dedicated dead end stabling roads within the depot, each of which can hold a full trainset. The stabling facility will also act as a buffer for trainsets to enter the maintenance shed. Assuming that EIL have a maximum of 10 service train arrivals on the depot overnight and 4 of them will be held in the maintenance facility then 6 trainsets would be stabled in the sidings, this would provide 5 spare sidings, assuming 1 siding is used for shunting activities during the night.	The IPEX report refers to Normal and Exceptional depot capacity. The BWB report assumes a total capacity of 20 trainsets is available on the depot, which is the Exceptional capacity in the IPEX report. This level of utilisation is deemed to be operationally acceptable with the other supporting changes recommended in the BWB report. Provided that efficient controls of train movements are in place, utilisation of this available capacity does not pose a risk to operations. The total number of trains on depot inclusive of the initial timetable for the EIL and 2nd Operator, and the increased service in 2030 and 2035 for EIL are all below the 20-trainset capacity for the TMI facility.

IPEX Report	BWB Report	BWB Analysis
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.	The current timetable operated by Eurostar has a maximum of 5 train movements from St Pancras International to Temple Mills International depot at the end of daily service and a similar return number from Temple Mills International depot to St Pancras International for the commencement of service, the timings are included as Appendix 1. The future timetables prosed by EIL for 2030 as shown in Appendix 2 will result in an increase to 8 daily movements to and from TMI depot. From 2035 the EIL timetable as shown in Appendix 3 will result in a further increase to 10 daily moves to and from EIL depot. The timing of movements to and from Temple Mills International depot are driven by the arrival and departure timings of passenger services at St Pancras International and so delay in arrival or departure may impact passenger service punctuality. A 15-minute headway will permit Temple Mills International depot to operate efficiently for both arrivals and departures without any operational constraints, though improvement to the train washing and servicing facility capacity will be required to achieve the throughput for arrivals.	The BWB proposal enhances the trainset throughput rate by removing the operational restrictions on the LDA facility by enabling two trainsets to be serviced at the same time through improvement to the water supply, enabling 2 trains to be serviced in parallel, this will double the current throughput rate for the depot. The improved rate will enable trains to depart from St Pancras International at a faster rate and thus improve station capacity during peak periods. The departure of trains in the morning is not directly affected by any of the facilities but does require the reception roads 1-4 to be available. The IPEX assessment is based on the current timetable, the BWB report uses the data for the current timetable and the enhanced timetables for 2030 and 2035 to compare the service requirements with the available depot capacity. IPEX determined an arrival rate of 3 trains per hour due to restrictions on the train servicing rate, BWB are proposing to enhance this to 4 trains per hour with the improved water supply for tanking arriving trains.

IPEX Report	BWB Report	BWB Analysis
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	The maintenance shed comprises of 8 tracks, with most having been modified for the E320 fleet layout and the remainder for the remaining E300 fleet, the design of the rolling stock selected by the second operator may not be fully compatible with the existing facilities and minor works may be required to accommodate the new fleet. Any expansion of the EIL fleet to meet the 2030 or 2035 timetables may also, similarly be different from the existing fleets of trains. The Preventive and Corrective Maintenance demands of the existing fleet determine utilisation of the facility during the peak overnight period, details of these requirements are as follows. **Rolling Stock Preventive Maintenance** The fleet of 25 trains is assumed to receive preventive maintenance (PM) examinations on a 14-day cycle, giving a requirement for 2 maintenance shed berths per night (A examination), in addition it is assumed that one larger examination (B-E examination) in the PM cycle will be in the depot as part of the maintenance allocation, this would therefore require 3 berths for PM. **Rolling Stock Corrective Maintenance**	The maintenance facility utilisation is described in detail in real time in the IPEX report and the BWB report due to it being a desktop study is based on the assumed requirements of a typical rolling stock maintenance programs. However, the IPEX report supports the assumptions used to generate the BWB report. The BWB report requires 2 maintenance tracks to be allocated to the 2nd Operator, with the remaining 6 being allocated to EIL, the IPEX report shows 1.6 roads available for the 2nd operator with 1 maintenance track allocated to a modification program for EILs Alstom fleet, once the program is complete this will release a further track to match the requirements shown in the BWB report of 2 allocated tracks. Based on the current estimation, 2 tracks is adequate to support the 2nd operators' fleet and 5 tracks will support the EIL fleet. The 2nd operators' fleet is based on 200m long trainsets and EIL with 400m trainsets.

IPEX Report	BWB Report	BWB Analysis
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.	For Corrective Maintenance it is assumed that 2 berths would be adequate to undertake unscheduled minor repairs daily. For more major repairs such as axle changes the works are likely to require more than one shift in the depot and may require a third track to be utilised. Based on the estimations above the maintenance facility would have 6 of the 8 tracks reserved for maintenance of the existing fleet, this would therefore permit a new entrant to have two shed tracks for Preventive and Corrective maintenance, which would accommodate up to 4 trainsets.	
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	The fleet will generally be expected to receive wheelset reprofiling on a planned basis, for this review it has been assumed that all wheels will be reprofiled on a 6 monthly basis, with work completed overnight to prevent loss of service availability. The existing EIL fleet will have around 1,600 axles to maintain, if the reprofiling is undertaken on a six monthly basis (preventive reprofiling) and the downtime is 1 hour per pair of axles (tandem wheel lathe) the fleet would utilise the lathe for 200 shifts per year (assuming an 8 hour night shift for the activity), this would	The IPEX report shows a greater spare capacity than the BWB report assumes, however with any changes to the method of operation from EIL (balanced wheelset reprofiling) the spare capacity will decrease but the remaining availability will still support the 2nd operators' fleet in line with the BWB report requirements.

IPEX Report	BWB Report	BWB Analysis
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.	allow the new trains to also be reprofiled overnight but the final fleet size may impact on this and require spare daytime capacity to be utilised.	
Limitations **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. **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	The TMI facility has 12 dedicated dead end stabling roads within the depot, each of which can hold a full trainset. The stabling facility will also act as a buffer for trainsets to enter the maintenance shed. Assuming that EIL have a maximum of 10 service train arrivals on the depot overnight and 4 of them will be held in the maintenance facility then 6 trainsets would be stabled in the sidings, this would provide 5 spare sidings, assuming 1 siding is used for shunting activities during the night.	The IPEX report supports a similar operating methodology to the BWB report proposal. The movement of trains around the depot can still be undertaken in an effective way as there is always spare stabling capacity available, even with both fleets operating on depot. The use of all available stabling capacity is required to increase depot utilisation whilst maintaining operational flexibility at TMI. Within any depot there is a need for some capacity to ensure flexibility in operations and the proposal in the BWB report to create access to Orient Way sidings have been included to further enhance the operational capacity of the depot in extreme circumstances such as a blockage of the mainline route.

IPEX Report	BWB Report	BWB Analysis
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. **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.		

IPEX Report	BWB Report	BWB Analysis
Improvements options		
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	There are two servicing roads to enable Controlled Emission Toilet (CET) emptying and filling (tanking) of the toilet water system, top up of sanding systems, can windscreen washers etc. to take place, the throughput rate is dependent on both the equipment in use and the staffing level. It should be feasible to complete the servicing activity on a trainset within 20 minutes, this would then provide a key constraint to depot arrivals rates and would set this to a rate of 5 trains per hour (allowing for movement on/off the facility). The proposed rate of arrival is actually 4 trains per hour. If the arrival timings are of a shorter interval, then trains would need to bypass the facility and be moved back to the facility during quieter periods during the night to complete the servicing activities.	The BWB report Includes enhancement of the LDA's with enhanced capability on train water tanking to ensure a reduced throughput time for arriving trainsets. The movement of Sanding and Windscreen Washer fluid replenishment has not been included at this point but further review of the potential to enhance the facility to carry out these activities is required. It is not possible to assess potential benefits from these enhancements without details of the requirements of the EIL fleet, including the periodicity and time to replenish sand and washer fluid to establish if any reduction in maintenance facility utilisation will be achieved. As sanding requires access to both sides of a train additional walkways would also be required to enable the work to be undertaken safely, the layout of the LDA's does appear to support additional walking routes if required. It is proposed that a more detailed investigation be undertaken to establish what services should be provided on the LDA roads.

IPEX Report	BWB Report	BWB Analysis
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.		
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	Upgrading of the reception roads is not included in the report. Consideration was given to enhancing the servicing facilities on the Reception roads but there is a limited clearance between each of the 4 tracks, which appears to enable a walking route to be installed (for train preparation activities) but is not wide enough to permit servicing facilities such as CET, Tanking, Sanding or Screen Wash to be installed without restricting the walking route useable width.	The proposed option is to enhance the throughput of the two LDA tracks with enhanced water supplies to reduce the time taken to service trains, this is a more operationally efficient method of improving trainset throughput rates than the proposal to enhance the reception roads. The addition of walkways to at least part of the reception roads may improve operational utilisation, a proposal for this can be developed to evaluate the cost benefit of the enhancements and a review of the improved operational flexibility of the depot. It is considered unlikely that there is sufficient space around the sidings to install additional servicing such as CET or Tanking, though this is based on the BWB desktop study and therefore a physical site inspection would enable this assumption to be validated.

IPEX Report	BWB Report	BWB Analysis
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.		
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	There are two servicing roads to enable Controlled Emission Toilet (CET) emptying and filling (tanking) of the toilet water system, top up of sanding systems, can windscreen washers etc. to take place, the throughput rate is dependent on both the equipment in use and the staffing level. It should be feasible to complete the servicing activity on a trainset	The BWB proposal enhances the trainset throughput rate by removing the operational restrictions on the LDA facility by enabling two trainsets to be serviced at the same time through improvement to the water supply, enabling 2 trains to be serviced in parallel, this will double the current throughput rate for the depot.

IPEX Report	BWB Report	BWB Analysis
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	within 20 minutes, this would then provide a key constraint to depot arrivals rates and would set this to a rate of 5 trains per hour (allowing for movement on/off the facility). The proposed rate of arrival is 4 trains per hour. If the arrival timings are of a shorter interval, then trains would need to bypass the facility and be moved back to the facility during quieter periods during the night to complete the servicing activities.	The IPEX assessment is based on the current timetable, the BWB report uses the data for the current timetable and the enhanced timetables for 2030 and 2035 to compare the service requirements with the available depot capacity. IPEX determined an arrival rate of 3 trains per hour due to restrictions on the train servicing rate, BWB are proposing to enhance this to 4 trains per hour with the improved water supply for tanking arriving trains. Sanding facilities can be either fixed or mobile, with the fix system comprising of a sand hopper and associated pipework to the point of use. The mobile sander equipment (as currently used within the maintenance facility) requires a good surface to operate on and sufficient width for the equipment to pass down a trainset. The location of sanding equipment on the train, which varies by train design, will determine the frequency of sand filling and the accessibility requirement for the sanding equipment. BWB have not had access to this information for the current fleet and for the new fleet it will be dependant of the train design selected. It is possible that the current method of filling sanding systems up in the main facility can be continued as at present if it does not extend the load on the facility. The ideal location for sander system topping up,

IPEX Report	BWB Report	BWB Analysis
undertaking the existing LDA work) is suitable.		operationally, would be on the two LDA tracks with a fixed hopper system, this option is being examined.
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: 1. Walkways from main shed and welfare facilities to LDA and Reception Roads (although staff make this journey for CET already). 2. Walkways/Concrete Apron around Sets for undertaking preparation, basic interior inspections, and for light maintenance trolleys, staging and steps. 3. Lighting on walkways around Sets. 4. Steps/Staging at either end of Sets to get on and off.	**Walking routes not included.**	Changes to access routes will be dependent on the final operational plan for the depot, there may be a need to add in walking routes, however without agreement on the depot utilisation the new walking routes could range between 1,600m and 9,600m in length with associated pedestrian track crossings. It is not possible without a detailed study on depot to determine where additional walking routes can be installed without any risk to staff, a modular design of walking route with integrated lighting and servicing ducts would be the least intrusive solution.

IPEX Report	BWB Report	BWB Analysis
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		
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	Enhancement of stabling roads with Sanding Capability is not included in the BWB report. A review of the stabling roads was made but it was considered unlikely that any enhancement of facilities could be made due to the restricted width between the tracks, which would support walking routes but not any other facilities. The assessment was based	It is possible that the current method of filling sanding systems up in the main facility can be continued as at present if it does not extend the workload on the facility. The ideal location for sander system topping up, operationally, would be on the two LDA tracks with a fixed hopper system, this option is being examined. Sanding facilities can be either fixed or mobile, with the fix system comprising of a sand hopper and associated pipework to the point of use.

IPEX Report	BWB Report	BWB Analysis
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.	on the desktop study undertaken during the development of the report.	The mobile sander equipment (as currently used within the maintenance facility) requires a good surface to operate on and sufficient width for the equipment to pass down a trainset. The location of sanding equipment on the train, which varies by train design, will determine the frequency of sand filling and the accessibility requirement for the sanding equipment. BWB have not had access to this information for the current fleet and for the new fleet it will be dependant of the train design selected.
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	**Removal of Decommissioned Set not Included.**	The Stabled Alstom trains are assets of the Operator and removal of them is not considered to be associated with the depot infrastructure. There are two options to remove the redundant rolling stock, either by road or rail, if the vehicles have been maintained to a level which is safe to move by rail this would be the preferred option from a cost and time perspective. If the vehicles are not fit for rail

IPEX Report	BWB Report	BWB Analysis
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.		movement, they can be removed by road, though as they are articulated vehicles this will be a more complex movement than for normal rail vehicles.

4. COST ESTIMATES

4.1 This section will offer high level cost estimates which relate to the 6No options proposed within the IPEX report. It will highlight where costs are additional or already included within those detailed in the BWB report document reference 244938-BWB-ZZ-ZZ-RP-RT-0001.

4.2 Inflation has been forecasted and added to the 2025 cost information showing costs comparisons from 2026 through to 2030. Inflation has been assessed at 2.3% for 2026, 2.1% for 2027 - 2028, and 2% for 2029 - 2030[1].

4.3 An allowance of 15% of the construction costs has been included within the cost estimate for professional services during the construction phase. An allowance for professional services during the design phase has also been included.

Option 1 - Upgraded CET capability on LDA1 and LDA2

4.4 As stated in the BWB analysis, the initial report included the costs of enhancement of the LDA's with enhanced capability on train water tanking to ensure a reduced throughput time for arriving trainsets. Table 4.1 is an extract from the costs within BWB report document reference 244938-BWB-ZZ-ZZ-RP-RT-0001 and includes inflation allowances dependant on the proposed year of installation.

Table 4.1 – Cost of Additional Water Tank c/w UTX

Element	2026	2027	2028	2029	2030
Additional Underground Water Tank	[redacted]				

The above table shows costs of the relevant option, dependant on what year the work is carried out – They are not cumulative costs

1.1 [1] Information from Office for Budget Responsibility

4.5 The above costs, whilst not being for the solution proposed in the IPEX report, do provide the solution to the problem of CET emptying and filling more than one train set at a time.

Option 2 - Reception Roads 1-4 Upgrade

4.6 BWB's initial report did not consider the addition of walkways in aiming to enhance the throughput of the two LDA tracks. Enhanced water supplies to reduce the time taken to service trains were a more operationally efficient method of improving trainset throughput rates than the proposal to enhance the reception roads. The cost of providing the additional water supply is considered and costed within Option 1

4.7 The costs herein consider the addition of walkways to part of the reception roads to improve operational utilisation of the depot.

4.8 Notwithstanding the requirement to carry out a physical site to validate this option, the costs of the provision of 3No walkways, each 800m long (the estimated length of the units to be serviced) is included herein. The specification of the walkway is the Trackside Walkway as detailed in the Dura Composite Solutions Brochure (pages 11-12) at **Appendix 3** and includes low level lighting.

Table 4.2 – Cost of Additional Walkways

	2026	2027	2028	2029	2030
New Walkways	[redacted]				
Material Price					
Lighting Price					
Labour					
Contingency/Risk					
Professional Services - Construction Phase					
Professional Services - Design Phase					

The above table shows costs of the relevant option, dependant on what year the work is carried out – They are <u>not</u> cumulative costs

4.9 The above costs are based on 2,400m of new walkway.

Option 3 – LDA Road 1 and LDA Road 2 Upgrade

4.10 The IPEX proposal for this option requires the installation of new /additional sanding facilities, which can be fixed or mobile.

4.11 The cost estimates herein consider both fixed and mobile services. The ideal location for sander system topping up, operationally, would be on the two LDA tracks with a fixed hopper system, this option is being examined.

4.12 The IPEX solution would involve the provision of additional fixed hopper system sanding facility and 800m of walkway. An alternative cost for a Fully Automatic System c/w 8No Central Sand Pumps is also provided herein.

Table 4.3 – Cost of Additional Sanding Facility and 800m of Walkways

	2026	2027	2028	2029	2030
Sanding Facility					
Sylo	[redacted]				
Additional Hopper					
8 Smart Sanders					
Engineering Work					
Walkway Material Price					
Walkway Lighting Price					
Walkway Labour					
Contingency/Risk					
Professional Services - Construction Phase					
Professional Services - Design Phase					

The above table shows costs of the relevant option, dependant on what year the work is carried out – They are <u>not</u> cumulative costs

Table 4.4 – Comparative Cost of Fully Automatic System and no requirement for additional walkways

	2026	2027	2028	2029	2030
Sanding Facility					
Fully Automatic System with 8No Central Sand Pumps	[redacted]				
Engineering Work incl Concrete Base(s)					
Contingency/Risk					
Professional Services - Construction Phase					
Professional Services - Design Phase					

The above table shows costs of the relevant option, dependant on what year the work is carried out – They are <u>not</u> cumulative costs

4.13 The typical silo specification can be found at **Appendix 4**

4.14 The Smart Sander specification can be found at **Appendix 5**

Option 4 - Improved Walking Routes and Facilities

4.15 As stated in the BWB analysis, it is not possible without a detailed study on depot to determine where additional walking routes can be installed without any risk to staff. Whilst the BWB proposal enhances the trainset throughput rate by removing the operational restrictions on the LDA, it does not consider additional walkways. For this costing exercise, we have provided a price per m for new walking routes that can be used as a budget estimate, dependant on the quantity required.

4.16 Table 4.5 provides a per meter cost for a Walkway a[redacted] in 2026 and shows the yearly increases with inflation.

Table 4.5 – Cost of Additional Sanding Facility and 800m of Walkways

	2026	2027	2028	2029	2030
New Walkways Price/m2	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

The above table shows rates of the relevant option, dependant on what year the work is carried out

Option 5 - Stabling Roads 1 – 3, Provision of Sanding Capability

4.17 As with Option 3, this solution was not considered within the initial BWB report. The budget costs associated with this Option mirror those in Option 3.

4.18 Notwithstanding that IPEX proposal for this option may not be achievable, we would reference costs in tables 4.3 and 4.4 for information.

Option 6 - Removal of Decommissioned Sets (Cl 373) from Depot

4.19 Existing rolling stock and the costs for removal thereof have not formed part of BWB report document reference 244938-BWB-ZZ-ZZ-RP-RT-0001.

4.20 The Stabled Alstom trains are assets of the Operator and removal of them is not considered to be associated with the depot infrastructure.

4.21 There are two options to remove the redundant rolling stock, either by road or rail, if the vehicles have been maintained to a level which is safe to move by rail this would be the preferred option from a cost and time perspective.

4.22 As stabled trains are not a depot asset, no costs have been included herein for the removal of rolling stock.

APPENDICES

APPENDIX 1: Temple Mills Depot – Independent Capacity Assessment 2025

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.

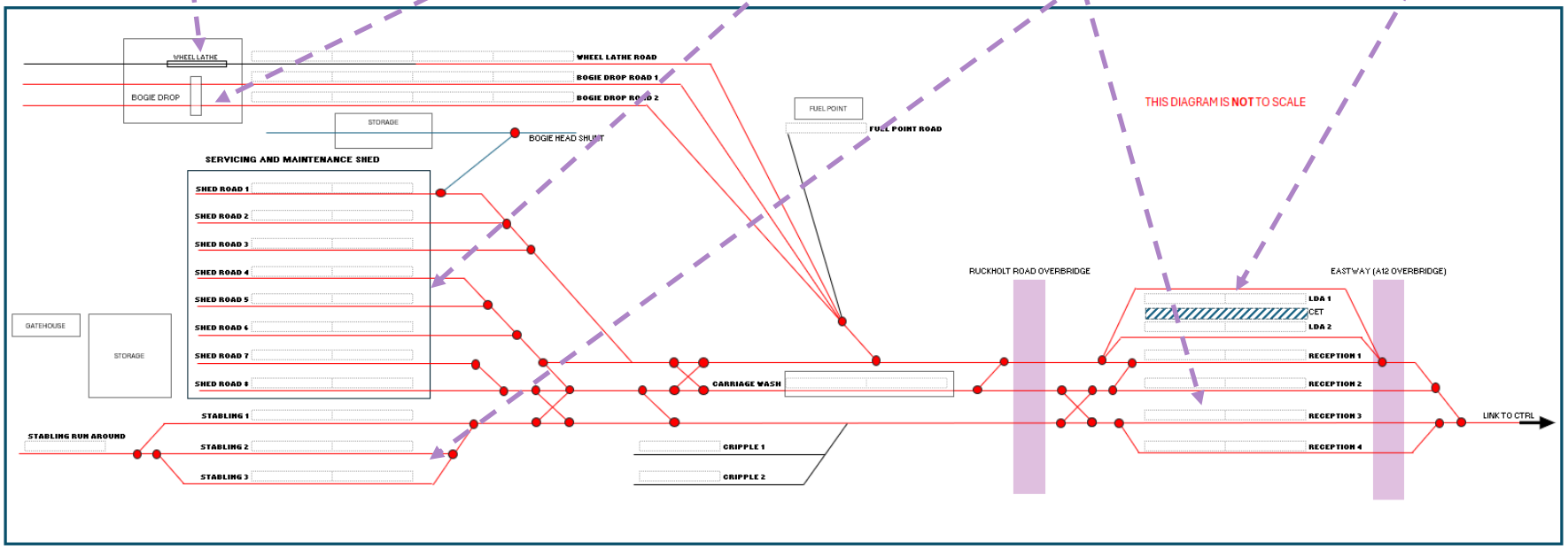
The assessment of the Wheel Lathe Road identified a ***Latent Wheel Lathe Capacity of 2,357 hours equating to an average of 35% availability***.

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.

Contents

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.

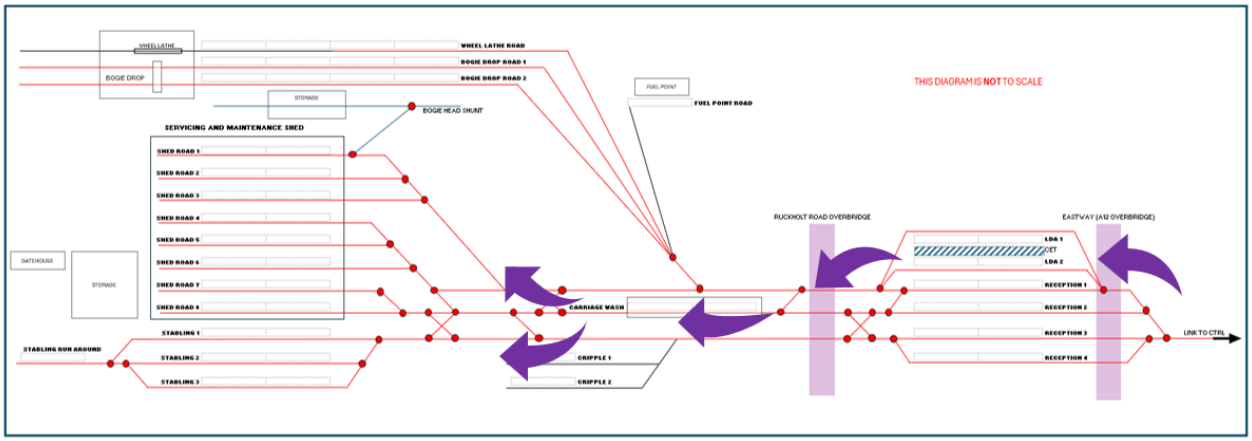
4.1.5 Bogie Drop: This is used for heavy maintenance tasks, including removal and replacement of bogies or large underframe equipment. There are 2 bogie drops. Bogie Drop 1 is fitted with an underframe cleaning facility.

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.

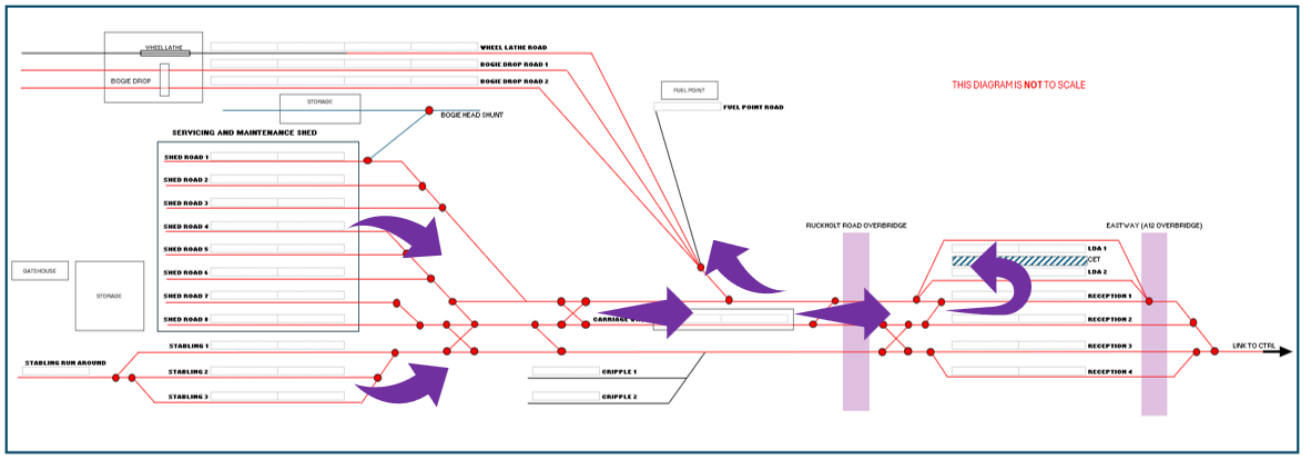
4.2 Movement Flows:

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

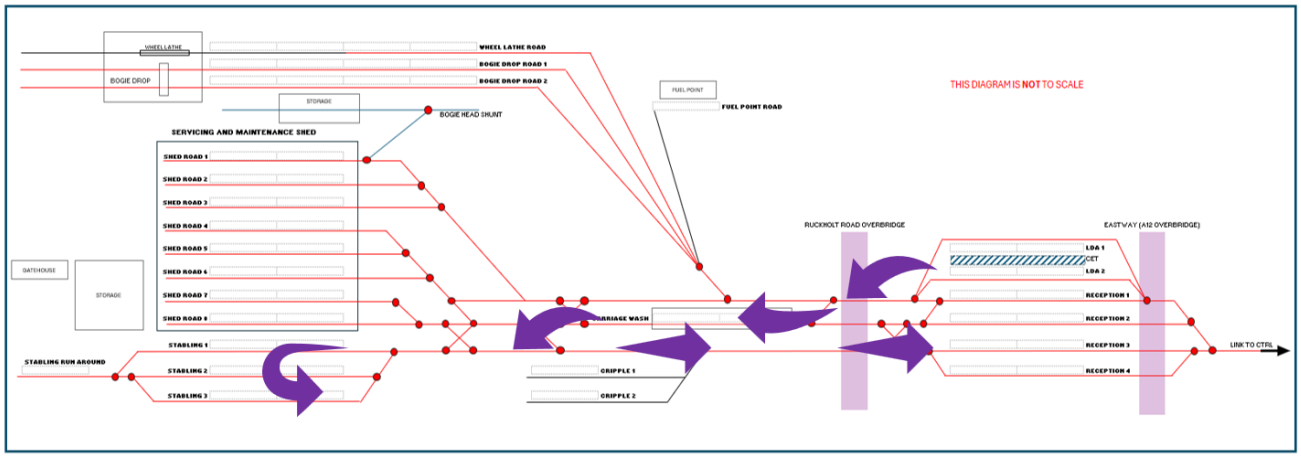
4.2.1 Arrival: Where possible, all EIL arrivals pass through the LDA Roads to CET and be tanked, followed by the Carriage Wash, and then into Maintenance Shed Road 1-8 (maintenance, cleaning and servicing) or onto Stabling Road 1-3 (cleaning and light servicing). Maintenance, cleaning and servicing tasks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



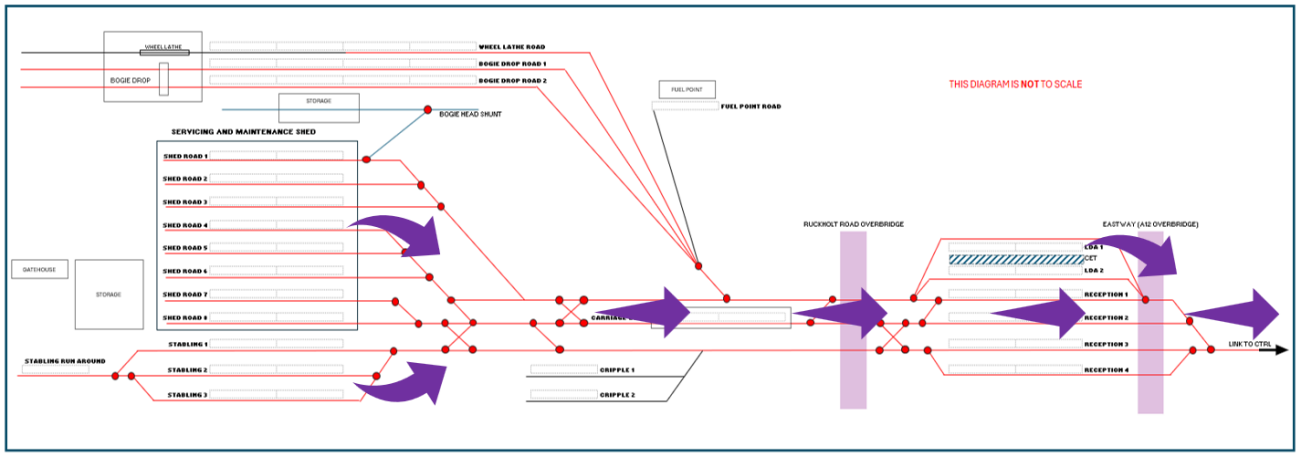
4.2.2 Shunt to Bogie Drop or Wheel Lathe: A double shunt is required if a movement is required from the Main Shed or Stabling 1-3 to the Wheel Lathe or Bogie Drop Roads. It is only possible to reach Wheel Lathe and Bogie Drop Roads in a single movement from the LDA Roads or Reception Road 1. While not 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]

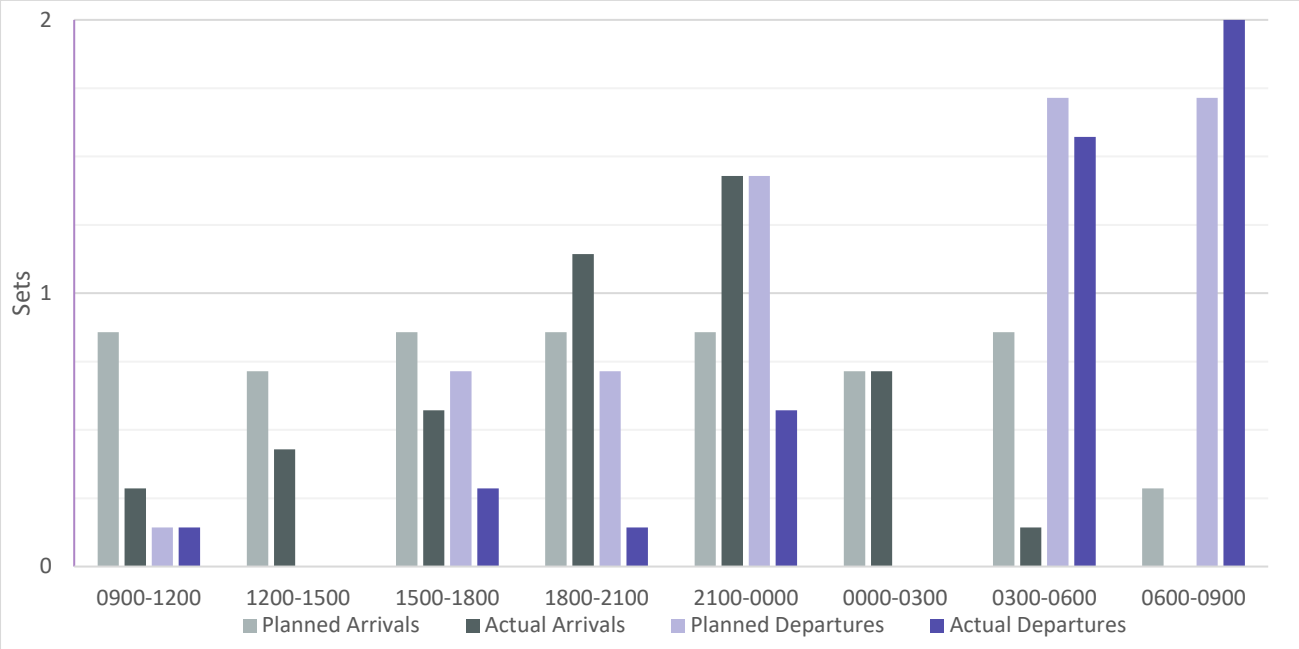
4.6.2 In the week analysed there were 42 planned arrivals and 45 planned departures averaging 6.00 planned arrivals per day and 6.43 planned departures per day. Planned moves are only indicative of observed arrivals and departures and the difference between arrivals and departures does not represent 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.*

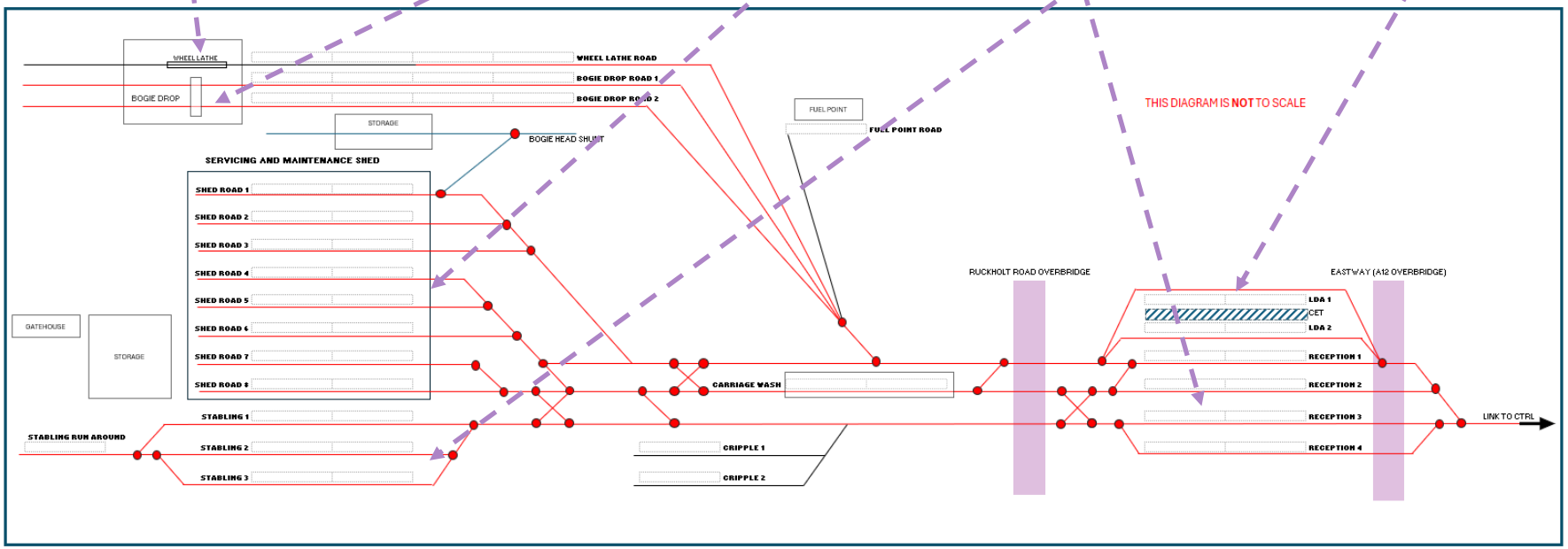
***No sanding facilities. Screen wash top-up and interior cleaning not currently done in this location.*

**** 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:

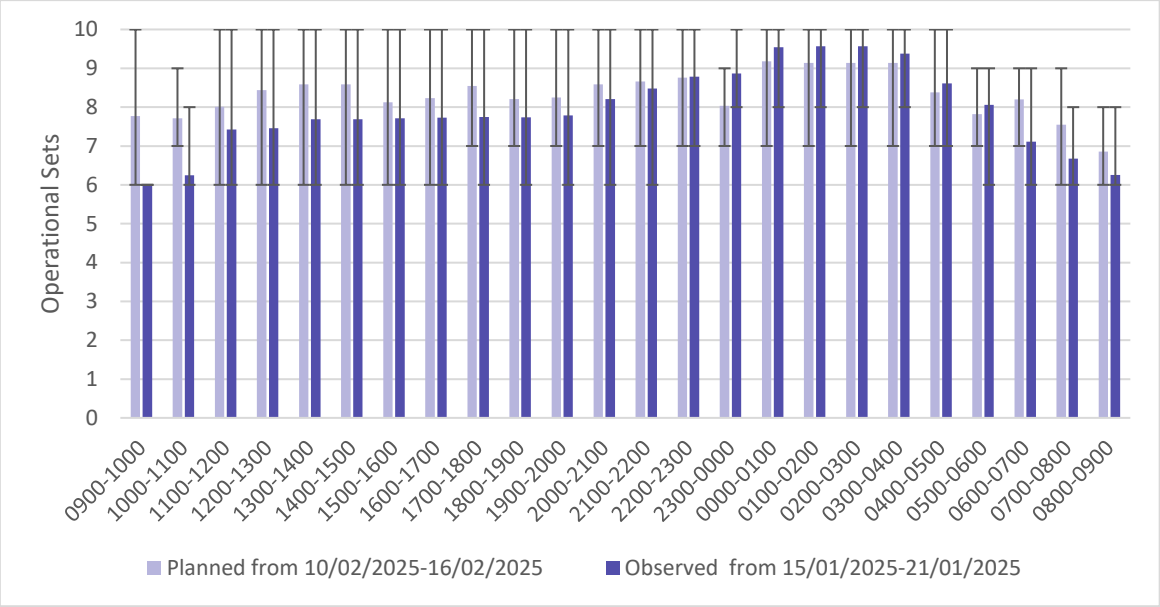
Area	Normal Depot Set Capacity (Sets)	Exceptional Depot Set Capacity (Sets)	Absolute Maximum Depot Set Capacity (Sets)
LDA Roads	1***	1	2
Reception Roads	3***	3	4
Stabling Roads	3	3	3
Maintenance Shed	8	8	8
Wheel Lathe**	0	1	2
Bogie Drop**	0	4	4
Cripple Roads*	0	0	1
TOTAL	**15**	**20**	**24**

** 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.

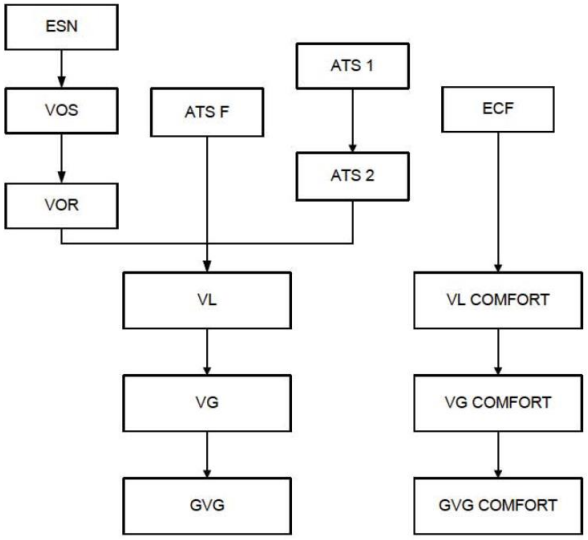
8.1.2 Preventative Maintenance: Consists of four series of exam types:

- 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

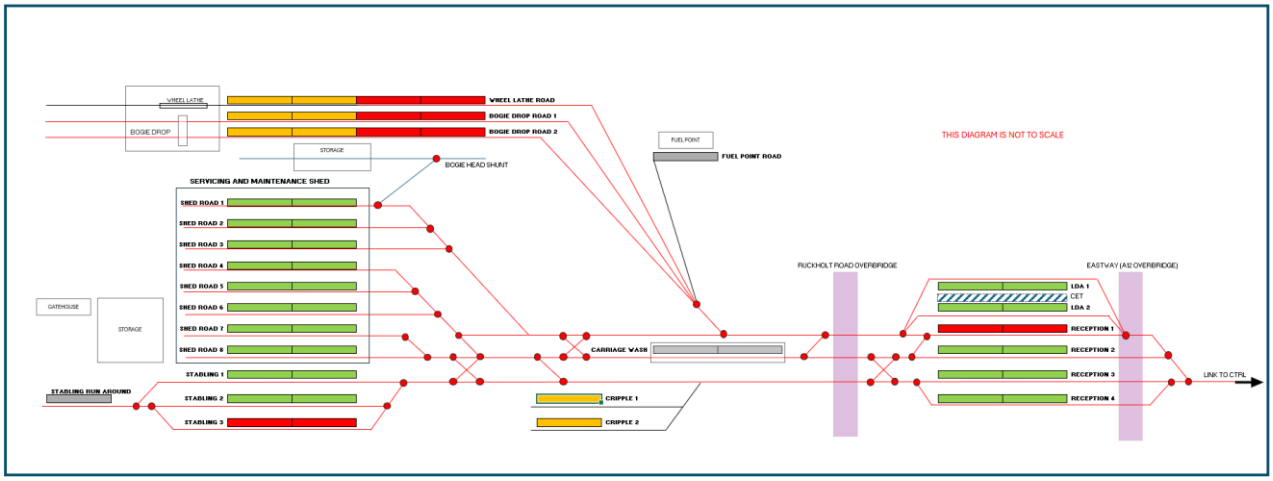
11.1 Normal Depot Set Capacity: is the maximum number of Sets on the depot where the depot can still function normally (meaning that Sets can be swapped between shed and stabling roads and from LDA / receptions to the shed / stabling roads and vice versa). This is counted in Sets and is notionally allocated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

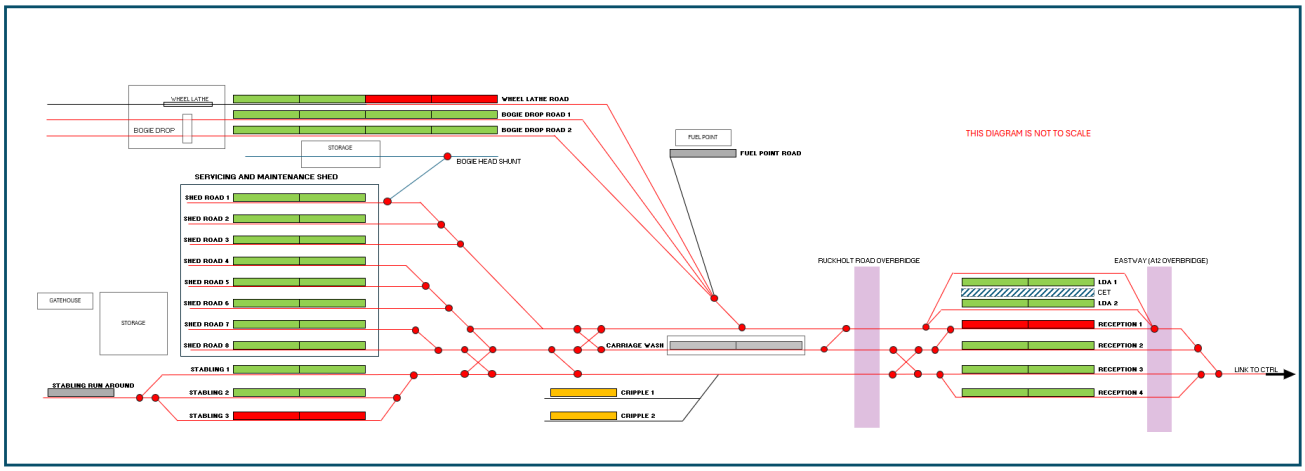
Provided there is at least one road free across Maintenance Shed Roads 1-8 and Stabling Roads 1-3, and there is at least and one road free across LDA roads 1-2 and Reception roads 1-4, the depot can operate normally. Two Sets can be swapped between shed and stabling in four moves and between each side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

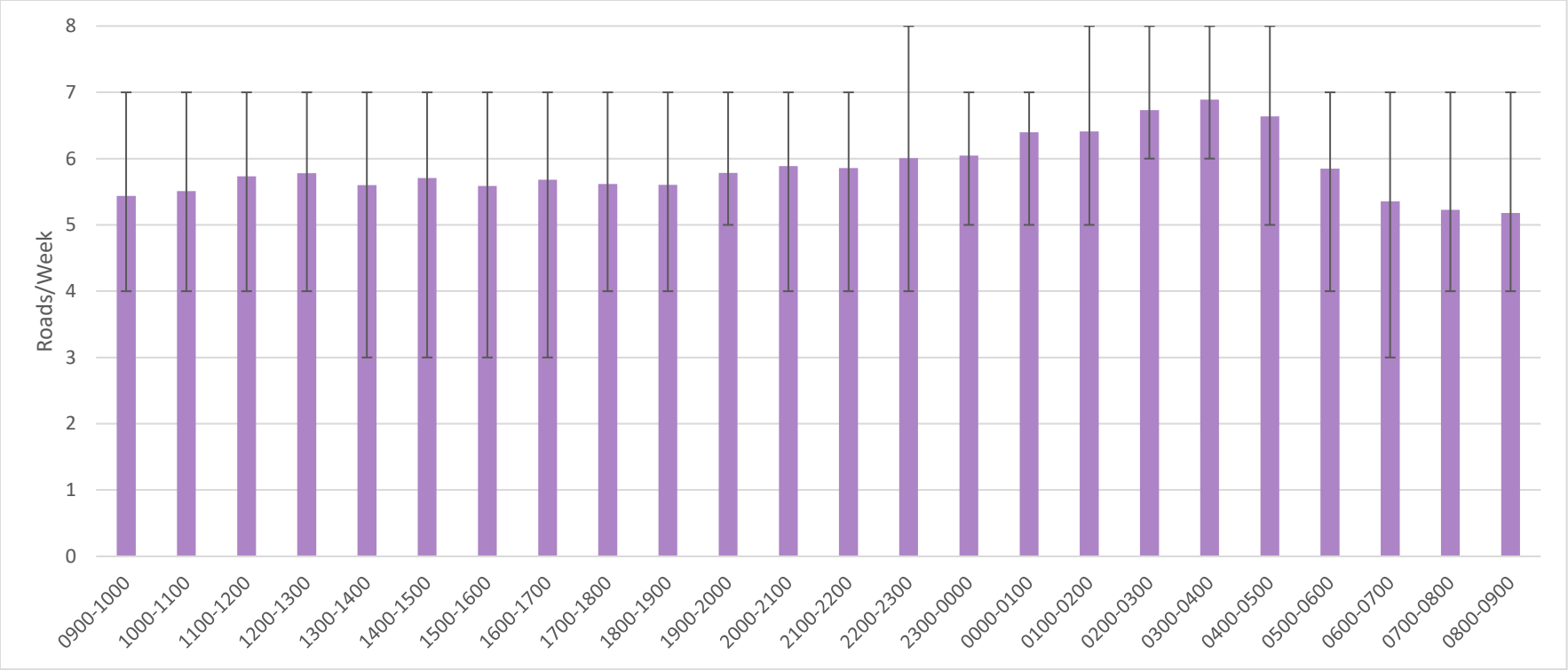
** Wheel Lathe Capacity has been assessed separately and is only used here to assess maintenance shed occupancy for unplanned/reactive wheel reprofiling.*

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.

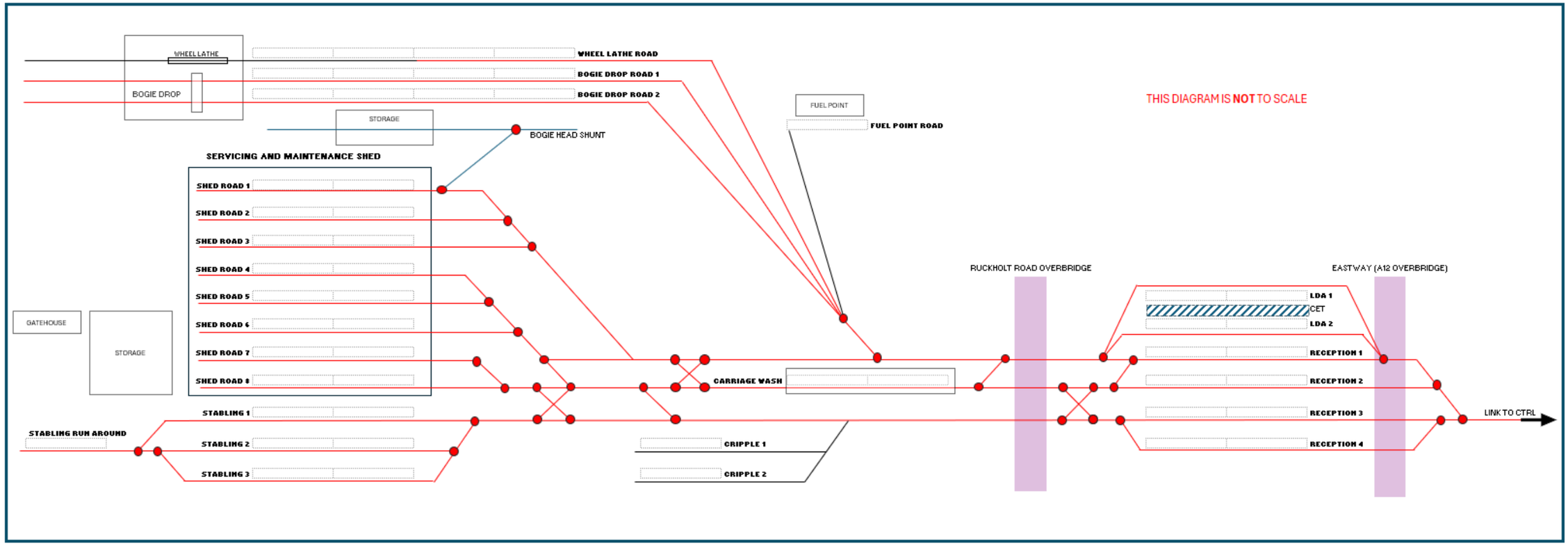
16.6 Option #5 - Stabling Roads 1 – 3, provision of sanding capability: Stabling Roads 1-3 are currently well equipped. Cleaning, light maintenance, driver preparation and washer fluid top-up can all be undertaken on this road. However, there is no sand top-up capability.

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

APPENDIX 2: 244938-BWB-ZZ-ZZ-RP-RT-0001-Second International Operator Maintenance Facility Study

INFRASTRUCTURE

LSPH Limited
LSPH Depot Study – Phase 2
London
Second International Operator
Maintenance Facility Study

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Notice

EXECUTIVE SUMMARY

April 2025 The evaluation is based on a desktop study of information provided and publicly available information, no site visit has been undertaken.

The outcome of the evaluation confirms that there is sufficient capacity within the depot to support a second operators' fleet of the size indicated in the two section 17 submissions provided by the potential second operators. The second operators are proposing to use trainsets of 200m length as opposed to the EIL fleet which comprises solely of 400m long trainsets, TMI has been developed to support trainsets of a 400m length but can also accommodate 200m length trainsets where two 200m trainsets can berth in 1 400m maintenance/stabling berth.

The second operators' fleet will require up to 8 trainsets on the depot on completion of each day's service for stabling, servicing and light maintenance, in addition EIL will have up to 14 trainsets on depot at the same time (2035 timetable). The review indicates that the 8-track maintenance shed will require 6 tracks allocated for the EIL fleet and 2 tracks for the second operators' fleet. The remaining stabling capacity requirement can be accommodated in the existing yard area, and there is still capacity on the depot to allow shunting movements of the trainsets. The second operator fleet with a train length of 200m will only require 4 berths for the 8 trainsets (2 in maintenance depot and 2 in the yard).

To enable effective arrivals and departures at the depot several enhancements are proposed which will enable a faster arrival rate that will enable one trainset arrival every 15 minutes, the proposed infrastructure changes are of a minor nature and should be completed prior to the new fleet utilising the depot to avoid disruption during the transition to the larger fleet.

The option of expanding the maintenance facility from the current 8 roads to 10 or 12 was considered but this would have impacted stabling at the depot, which already has a low ratio of stabling to maintenance berths. The expansion of the maintenance facility will not improve depot capacity, and the existing facility is adequate to support maintenance of the fleets.

At full utilisation, incorporating EIL's 2035 operations and the second operator's entire fleet, TMI would reach maximum capacity. A potential solution to alleviate this constraint involves using Greater Anglia's Orient Way facility for overnight stabling. This approach would significantly expand stabling capacity and potentially support a third operator for stabling and servicing at TMI.

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FIGURES

TABLES

APPENDICES

1. INTRODUCTION

Instruction

1.1 BWB Consulting (BWB) was instructed by LSPH Limited (the Client) to carry out a Second International Operator
Maintenance Facility Study . Details of the project brief are included in BWB proposal reference 244938 dated April 2025 .

Objectives

1.2 The objectives of the report are:

- Investigate if the existing Traction Maintenance Depot (TMD) facility at Temple Mills International (TMI) can be occupied by two separate high-speed operators (namely the existing operator and one additional, new, operator; this forms the proposed expansion plans), outlining what changes to equipment, and/or working practices might be required and how would this work in practice.
- Review and comment on the feasibility of the expansion plans and provide a high-level budget cost estimate and programme.
- Confirm (and comment otherwise) whether the existing TMD has capacity and can accommodate both train stabling for the existing operators' fleet; Eurostar International Limited (EIL), and train stabling for a new second operators' fleet. Additionally, identify suitable locations where additional train stabling could be accommodated, if required.

Scope of Works

1.3 The Scope of works includes:

- The production of a Depot and Stabling Strategy document, based upon the previous Phase 1 report undertaken by BWB in 2022 [Ref: 220288-BWB-ZZ-00-RP-TR-000001 Rev 2] and the Technical Note undertaken by BWB in 2024 [Ref: 244938-BWB-00-00-RP-CV-000001_S1_P03], that can be shared with prospective new operators and stakeholders. The document comprises of:
    - Timetabling and Route Capacity Analysis (high level).
    - Rolling Stock O&M Strategy – including Train Wash, Servicing and Maintenance Road Capacities/Expansion.
    - Maintenance Depot Facility Expansion Study - including additional Roads Feasibility (8 roads existing to max 12 roads proposed).
    - Sharing Considerations for EIL and 2nd Operator.
    - Additional Stabling Requirements Feasibility for Expanded depot, considering nearby site locations also.
    - Programme and cost estimate for the proposed depot expansion and/or any additional or revised stabling requirements (high level budget estimates), including commentary for risks, exclusions and assumptions.

2. THE SITE

Site Location

2.1 The site is located east of London, in Leyton, and is bound by Orient Way to the east and Hackney Marshes and Lee Valley Park to the west and south respectively. The location of the Site is outlined in red in **Figure 2.1.**

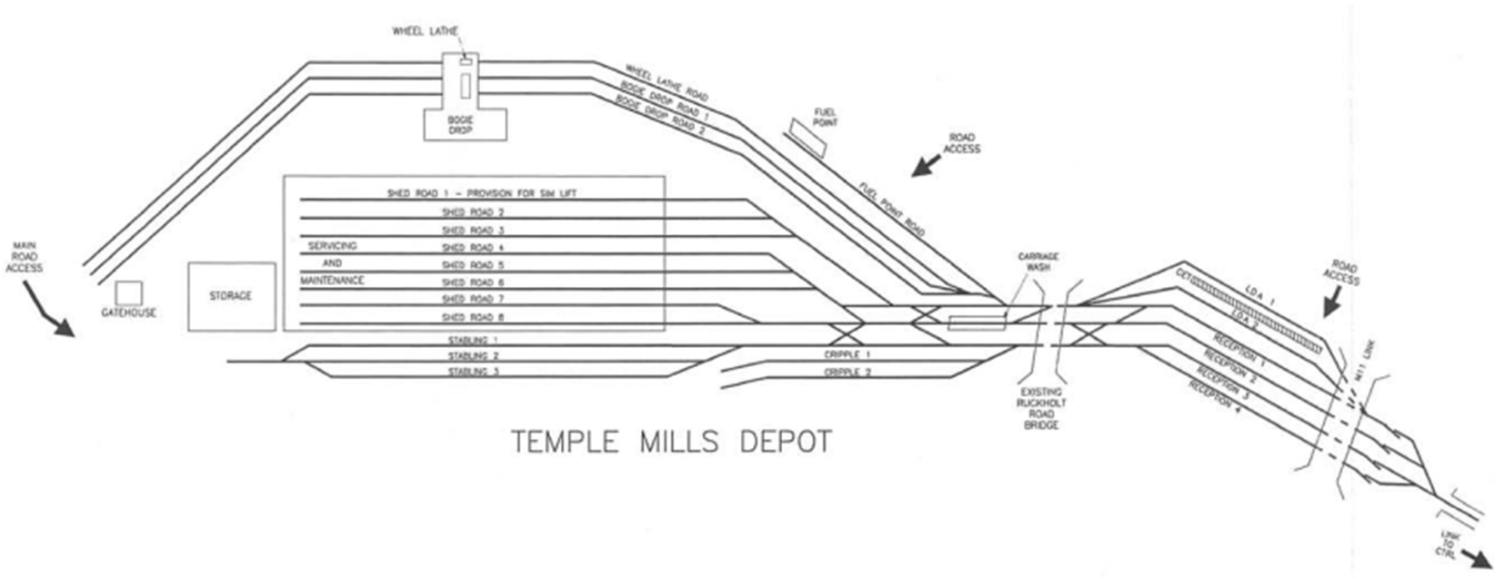
- **Figure 2.1: Site Location Plan**

Site Description

2.2 Temple Mills International (TMI) is a high-speed rail traction maintenance depot (TMD), currently operated by a single operator, EIL, for the maintenance of their high-speed fleet of trains.

2.3 Orient Way is an existing siding adjacent to the LSPH Temple Mills depot. It is current connected to Network Rail infrastructure and is used by Greater Anglia for stabling trains.

Figure 2.2: Site Layout Plan



Temple Mills Depot Diagrammatic track layout

3. TIMETABLING AND ROUTE CAPACITY ANALYSIS

3.1 The current timetable operated by EIL has a maximum of 5 train movements from St Pancras International to TMI depot at the end of daily service and a similar return number from Temple Mills International depot to St Pancras International for the commencement of the next day service, the timings are included as **Appendix 1**.

3.2 The future timetables proposed by EIL for 2030 as shown in **Appendix 2** will result in an increase to 8 daily train movements to and from TMI depot.

3.3 From 2035 the EIL timetable as shown in **Appendix 3** will result in a further increase to 10 daily train movements to and from TMI depot.

3.4 The timing of the train movements to and from Temple Mills International depot are driven by the arrival and departure timings of passenger services at St Pancras International, and so any delays in arrival or departure times have the potential to impact the punctuality of the passenger service.

3.5 The current EIL train timetable, as well as EIL's proposed 2030 and 2035 timetables have all been overlaid with the proposed train timetable from one of the proposed second operators (Virgin Trains). The comparisons and conclusions drawn from this exercise confirms that all these existing, future and proposed timetables can be accommodated at TMI depot, subject to the incorporation of minor timetable adjustments to incorporate a 15-minute headway between arrival and departure timetable scheduling.

3.6 A 15-minute headway will permit Temple Mills International depot to operate efficiently for both arrivals and departures without any operational constraints, though improvement to the train washing and servicing facility capacity will be required to achieve sufficient throughput for arrivals.

4. SHARING CONSIDERATIONS FOR EIL AND 2ND OPERATOR

Provision of office space and stores facilities for a Second Operator

4.1 To support the maintenance of the Second Operators new fleet a contract would need to be put in place to provide the services and to provide spare parts for the fleet, it is understood that this service may be provided by the rolling stock suppliers organisation.

4.2 An alternative would be for the second operator to commission the services of the existing TMI maintenance depot operator, EIL. However, at this early stage in the second operator application we have no knowledge of the eventual arrangements.

4.3 It is assumed that the current staff facilities and stores facilities at TMI depot are fully utilised by EIL and its contractors and so would not be available to the Second Operators maintenance team.

4.4 The Second Operators team would require additional facilities to support the fleet which will require an additional building to provide staff with office space, welfare facilities and for the storage of spare parts for the light maintenance activities. A potential location has been identified within the depot; however, the construction of the facility would reduce the current staff car parking facility on site. A replacement for this lost capacity and provision of additional capacity for the Second Operators would also need to be included.

4.5 The layout for offices and stores is shown in drawing ref 244938-BWB-00-00-DR-CV-000002. This is made up of a modular storage building totalling 750m² and a modular 3 storey office space totalling 1200m².

4.6 The layout of the stores will be dependent upon the operator requirements, but it is envisaged that to maximise usable space, a mezzanine floor will cover part of the total floor space.

4.7 The layout of the office space will also be dependent upon the operator requirements. It is envisaged that this will consist of mess, changing and WC facilities on the ground floor with office and meeting room space occupying the other 2 floors.

4.8 The addition of this office space and stores would result in the loss of approximately 22 car parking spaces. Additional parking would therefore be required elsewhere on the site to replace this and provide for the additional car parking requirements of a second operator.

5. ROLLING STOCK OPERATIONS & MAINTENANCE STRATEGY

Temple Mills

5.1 Temple Mills International is currently used exclusively by EIL for the full life maintenance (Light & Heavy Maintenance) of their passenger fleet which comprises of a mix of train rolling stock from different manufacturers, namely Alstom and Siemens.

5.2 The access for a second operator under a Section 17[1] agreement would only permit the use of TMI depot to undertake Light Maintenance activities, the operator would therefore, be required to undertake Heavy Maintenance at an alternative location unless an agreement could be reached with EIL to undertake Heavy Maintenance at TMI. Discussion with several potential rolling stock suppliers confirmed that they were already aware of this restriction and would look to utilise alternative depot facilities in Europe to accommodate all the maintenance plan Heavy Maintenance requirements.

Fleet size

5.3 The existing EIL fleet operating the current timetable service from St Pancras International to Europe comprises of 17 Siemens E320 trainsets and 8 Alstom E300 trainsets. Considering the current EIL train timetable, as well as EIL's proposed 2030 and 2035 timetables will require train set arrivals into the TMI depot overnight of 5, 8 and 10 trainset arrivals respectively (see **Appendix 1**,**2** and **3** for details).

5.4 Our analysis indicates that the proposed second operators' fleet would require 7 trainsets arriving at the TMI depot overnight (this analysis is based on an example of Virgin Trains as the second operator, however all other operators' proposals are assumed to have similar requirements).

Rolling Stock Maintenance

5.5 The TMI depot maintenance shed comprises 8 number roads (and their associated tracks), with roads already having been modified to accommodate EIL's train rolling stock, namely the Siemens E320 and the Alstom E300 trainsets. The design of the rolling stock selected by the second operator may not be fully compatible with the existing facilities and minor works may be required to accommodate the new fleet. Any expansion of the EIL fleet to meet the 2030 or 2035 timetables may also, similarly be different from the existing fleets of trains.

5.6 The Preventive and Corrective Maintenance requirements for the existing fleet determine utilisation of the facility during the peak overnight maintenance period, further details of these requirements are provided in the following sections 4.7 to 4.18 inclusive.

[1] * A "Section 17 agreement" refers to an access agreement under Section 17 of the Railways Act 1993, allowing companies to apply to the Office of Rail and Road (ORR) for access to a railway facility (i.e a depot facility).

Rolling Stock Preventive Maintenance

5.7 EIL's existing train fleet of 25 trains is assumed to require a Preventative Maintenance (PM) examination every 14-day cycle. The lesser PM examination (known as a Type: An examination) assumes that 2 of the TMI depot roads require trains to be berthed in them each night. The larger PM examination (known as Type: B-E examination) is assumed to require just 1 of the TMI depot roads to have a train berthed in it each night. Therefore, the TMI depot is assumed to have a total of 3 roads with EIL trains berthed each night to accommodate the PM examinations.

Rolling Stock Corrective Maintenance

5.8 EIL's existing train fleet is assumed to require 2 number roads berthed for corrective maintenance every day to accommodate any minor repair requirements.

5.9 For more major repairs such as axle changes the works are likely to require more than one maintenance shift in the depot and may require a third road to be used within the TMI depot.

5.10 Based on the estimations above the maintenance facility would require 6 of the 8 TMI depot roads to be reserved for maintenance of the existing fleet, this would therefore provide 2 number roads within the TMI depot for use by the second operator for both Rolling Stock Preventative and Corrective maintenance. The 2 number roads would provide sufficient capacity to accommodate up to 4 number 200m long train sets for the second.

Train Wash

5.11 The Train Wash is constructed on the depot arrivals track and all trains can pass through the wash without any delay to movements, there are no constraints from this operation. There is no impact on depot capacity from use of the wash, there is additional work required both to improve the performance of the existing train wash and to accommodate any difference in body profile from a new fleet from either EIL or the second operator. The front and rear end of the trainsets and the roof is not normally washed due to the delay it causes in throughput; this would normally be undertaken, when required, in the sidings or TMI depot maintenance shed.

Servicing Facility

5.12 There are two servicing roads (LDA roads) to enable Controlled Emission Toilet (CET) emptying and filling (tanking) of the toilet water system, top up of sanding systems, filling of windscreen washers etc. to take place, the throughput rate is dependent on both the equipment in use and the staffing level. It should be feasible to complete the servicing activity on a trainset within 20 minutes, this would then provide a key constraint to depot arrivals rates and would set this to a rate of 5 trains per hour (allowing for movement on/off the facility). The proposed rate of arrival is 4 trains per hour.

5.13 If the arrival timings are of a shorter interval, then trains would need to bypass the servicing facility and be moved back to the servicing facility in quieter periods during the night to complete the servicing activities.

5.14 To provide sufficient water storage an additional water tank with a capacity of 50,000 litres is proposed as shown in drawing ref 244938-BWB-00-00-DR-CV-000001. This size of tank provides additional capacity over that which is required for a second operator, this allows for future increases in the fleet serviced by the depot. The specification of the proposed tank is as follows:

- Capacity: **50,000 litres**
- Length: **9950mm**
- Diameter: **2700mm**
- Location: **Underground**
- Material: **Filament wound GRP**
- Asset Life Expectancy: **>50 Years**

Wheel Reprofiling

5.15 The fleet will generally be expected to receive wheelset reprofiling on a planned basis, for this review it has been assumed that all wheels will be reprofiled on a 6 monthly basis, with work completed overnight to prevent loss of service availability.

5.16 The existing EIL fleet will have around 1,600 axles to maintain, if the reprofiling is undertaken on a six monthly basis (preventive reprofiling) and the downtime is 1 hour per pair of axles (tandem wheel lathe) the fleet would utilise the lathe for 200 shifts per year (assuming an 8 hour night shift for the activity), this would allow the new trains to also be reprofiled overnight but the final fleet size may have an impact upon this and require spare daytime capacity to be utilised.

Stabling

5.17 The TMI depot facility has 12 dedicated dead end stabling roads within the depot, each of which can hold a full trainset. The stabling facility will also act as a buffer for trainsets to enter the TMI depot maintenance shed.

5.18 If EIL have a maximum of 10 service train arrivals on the depot overnight and 4 of them will be held in the maintenance facility then 6 trainsets would be stabled in the sidings, this would provide 5 spare sidings, assuming 1 siding is used for shunting activities during the night.

6. COMMERCIAL

Cost Estimate

6.1 A budgetary cost estimate is provided for economic appraisal purposes. The estimate takes the form of a composite bill of quantities for each element of the proposed works, namely:

- New Three Storey Office and Amenities Building.
- New Storage Facility to Support 2nd Operators Team.
- New Carriage Wash Machine.
- Depot Rail Connection – Turnout.
- Additional Underground Water Tank.

6.2 Pricing information has been obtained from a selection of currently available rail industry pricing databases and up to date supplier information at the time of writing.

6.3 Inflation has been forecasted and added to the 2025 cost information showing costs comparisons from 2026 through to 2030. Inflation has been assessed at 2.3% for 2026, 2.1% for 2027 & 2028, and 2% for 2029 & 2030*. The yearly increase to the construction cost for each element of the work is shown in Table 9.1 below.

*Information from Office for Budget Responsibility

6.4 The cost estimates of each element of the works are summarised in Table 9.5 c/w the inflation allowance for years 2026 through to 2030.

6.5 The cost estimate for each element of the work includes a 20% allowance for contingency/risk.

6.6 An allowance of 15% of the construction costs has been included within the cost estimate for professional services during the construction phase. An allowance for professional services during the design phase has also been included.

Table 9.1 Cost Summary

Element	[redacted]
New Three Storey Office and Amenities Building	
New Storage Facility to Support 2nd Operators Team	
New Carriage Wash Machine	
Depot Rail Connection - Turnout	
Additional Underground Water Tank	

A breakdown of the summary figures above, can be found in **Appendix 7** and drawings in **Appendix 8.**

Modular Office and Staff Amenities Building

6.7 A modular building to provide the Second Operators team with office space and welfare facilities. A three-storey construction with circa 400m^2 footprint, including substructure, fit out and building services i.e. turnkey package. Suspended ceilings, floor coverings and portioning costs are included within this estimate. The substructure allowance does assume good ground.

Storage Facility to Support 2nd Operators Team

6.8 To support the Second Operators team with storage of spare parts and light maintenance activities, the construction of a 40mm steel clad semi-permanent structure size 50m x 15m x 5m high with thermos insulated roof c/w 2No single personnel doors and 2No electric roller shutter doors. The proposed siting of this facility would remove 22No existing car par spaces, that would need to be replaced elsewhere on the site. The specification for the storage facility is included in **Appendix 5.**

Carriage Wash Machine

6.9 The current train wash plant is not a restraint, but it is recommended that it is replaced or refurbished. The report highlights technical issues with the train wash facility, which can only be addressed by either a replacement machine or overhaul of the existing machine. During discussions with train wash supplier, it was considered that the refurbishment/overhaul option, whilst reducing costs by circa [redacted], would only give a maximum 10-year life and disrupt the current operations whilst being carried out. This cost estimate has therefore, only considered installation of a new wash facility. The specification for a replacement machine is included in **Appendix 6**. This is a Network Rail specification and has the potential to be de-specified if required. The machine specified is a single profile machine, so the cost includes a provisional sum of [redacted] for adjustable brushes, to allow for big differences in train profiles. The cost associated with this element of work assumes that no work is required to the existing wash building, plant room and associated drainage.

Depot Rail Connection - Turnout

6.10 The cost estimate for the connection from Temple Mills Depot to Orient Way sidings include for the realignment of circa 300m of existing plain line to Orient Way, installation of 210m of new plain line and 2No Turn Outs to create connection into Temple Mills Depot. The cost estimate allows for 2No tamping shifts. No signalling drawings are available for the signalling within the depot, but the estimate includes for 2No Point Machines, 3No Signals & Track Circuits and 1No Location Case.

6.11 The signalling estimate is based on the following assumptions /caveats:

- Signalling records for both Network Rail assets and Temple Mills depot are available, complete and in a usable format.
- That signalling power supplies are adequate for any proposed alterations.
- Cable route locations are unknown.
- Design, Installation, Test and Commissioning costs are not included.

- Costs for alterations to interlocking to install/recover affected equipment are not included.
- Bonding alterations are not included.

6.12 No allowance has been made within the estimate for electrification of any lines affected by this connection and possession & possession management costs are also excluded from the estimate.

6.13 Track drainage has not been allowed for, but a drainage study/assessment would need to be carried out following the survey works.

Additional Water Storage Tank

6.14 The low flow rate of the water supply restricts the filling of water to the train toilets and means only on one train at a time can be filled. To address this issue, allowance in the costs estimate has been made for the supply and installation of an additional water tank to provide additional water storage on site.

6.15 The costs estimate includes the supply & Installation of a Filament Wound Glass Reinforced Plastic/Polymer (GRP) water tank, 2.7m diameter, 9.95m long and 50,000 litre capacity.

6.16 The cost estimate includes excavation for both the water tank and an under-track crossing (1No Track) and ancillary pipe work, placing of the water tank, connecting pipework/pump etc and reinstatement. The option to place the water tank underground is purely due to the conservation of space. If the water tank were to be surfaced mounted, the cost would be significantly reduced and any risks involved with excavations would be removed.

7. MAINTENANCE DEPOT FACILITY EXPANSION ADDITIONAL ROADS FEASIBILITY

7.1 The potential to extend the existing TMI maintenance depot facility from the current 8 road capacity workshop to a 10 or 12 road facility has been reviewed to evaluate both the effectiveness of the current facility and the impact of works on current depot operations during construction activity.

7.2 Though the initial design of the depot including the workshop provided an 8 road (as built) and a 12 road option, it appears that the depot facility has been built centrally on the potential 12 road footprint, this would therefore require an extension on one side or the other to create a 10 road facility and an extension on both sides of the facility to create a 12 road facility.

7.3 The effect of an extension to the existing facility would remove a similar number of sidings for train stabling which is already limited to 12 trains being stabled at any time. In design of rolling stock maintenance facilities, it is normal to see a ratio of stabling to maintenance capacity of 3:1 which support the effective movement of vehicles and ensures the maintenance can be planned and undertaken in an efficient way. Temple Mills International depot is already at a ratio of 1.5 :1 and with the extension of the depot this would be reduced to 0.7:1 which would make efficient operation of the depot very difficult.

7.4 Based on our assessment of the TMI maintenance depot facility considering EIL current, 2030 and 2035 proposed timetables and the proposed timetable for a second operator we conclude that the facility has sufficient capacity to accommodate both the existing and future EIL operations in addition to accommodating a proposed second operator.

7.5 To summarise the key issues regarding depot facility extension the following points should be considered when evaluating any enhancement to the existing TMI depot maintenance facility.

- The location of the facility is in a position where it would only be possible to extend the building to generate a maximum of two additional roads on either side of the existing TMI depot maintenance shed structure, this is because to extend beyond this would severe the existing sidings preventing access to other facilities on site and would also require the demolition of other support facilities such as the wheel lathe.
- The extension on either side of the facility would generate major disruption to train movements on site and would require complex phasing including a two stage build to complete the works and to avoid a complete shutdown of TMI operationally.
- The extension of maintenance tracks in the facility by 2 or 4 would remove an equal number of stabling berths and so would not increase overall capacity of the depot.
- It is not known if there is sufficient spare electrical capacity on site to support a larger facility.
- To enable effective utilisation of the maintenance facility it is usual to have adjacent stabling tracks to ensure that minor repairs can be effectively cycled through the facility, this would not be possible if existing sidings capacity is removed.
- The estimation of utilisation of the existing facility indicates that there is already around a 20-25% excess capacity for maintenance activities, this would enable a

similar increase in fleet size without any need to enhance the facility. All timetable options can be supported by the existing maintenance facility.

- Any significant increase in fleet size beyond that identified in the timetables as shown in **Appendices** 1, 2 and 3 would require additional stabling facilities to enable additional EIL or second operator trains, these could not be accommodated at the existing TMI depot facility.
- An option to enable an increase in fleet size would be for the TMI depot to expand into the area currently occupied by Orient Way sidings. This would require a new track connection from the existing TMI depot facility in addition to accommodating the requisite security enhancements required to accept stabling of international high speed rolling stock arriving and departing to the continent. Therefore, Orient Way sidings would need to be dedicated for the sole use only of the LSPH network. The current footprint of Orient Way sidings would only accommodate trainset lengths of up to 200m in length.
- The likely cost of the extension of the facility would be similar to the construction of a new maintenance facility due to the complexity of work phasing and the limited accessibility to the construction areas.
- The existing issues around both the Exterior Train Wash performance and the limited water pressure resulting in only a single train being serviced at any one time would need to be addressed to enable effective management of movements for a larger fleet.
- If the extension to the EIL fleet was of different construction to the existing E320 fleet then it is probable that additional capacity for the storage of spare parts would be required, as EIL have indicated that there is no surplus capacity within the existing storage facility, particularly for major items such as bogies and wheelsets.

8. ADDITIONAL STABLING REQUIREMENTS FEASIBILITY FOR EXPANDED DEPOT

8.1 The current depot layout has limitations regarding train stabling capacity, though it is adequate for the current proposed fleet sizes for both EIL and a second operator, for all three timetable options. However, in the future it may be possible to improve redundancy of facilities and to enable further extension of the fleet sizes by connecting to the Orient Way sidings to use additional stabling of trains to operate on LSPH infrastructure, though the train length will be limited to 200m (as proposed by the second operators). The additional sidings capacity would also permit a third operator to use the facility for stabling and servicing but not for light maintenance.

8.2 The facility can potentially be connected directly to TMI depot and so avoid shunting movements using mainline infrastructure. The sidings have capacity to stable up to 12 trains of 200m length.

8.3 There is potential scope to extend the sidings lines within Orient Way to a length of 400m to avoid any requirement to split trains to fit them into these sidings. At this time the feasibility of this has not been investigated in any detail. There is undeveloped land available behind the buffer stops of the Orient Way Sidings.

8.4 The sidings are currently used by Greater Anglia services for daytime stabling between peak services. Though the HS1 fleet would be overnight activity, the current use by Greater Anglia could not remain due to the security and segregation requirements for a high-speed international cross border rail operation such as LSPH.

8.5 To bring Orient Way sidings into use an additional connection from TMI depot would be required and the security of the sidings area would need to be enhanced to the required standards for international services.

8.6 To provide a connection to Orient Way sidings a single turnout would require to be installed on the reception road leading to Orient Way sidings giving access to the Temple Mills depot. Protection of the Orient Way entry road would be provided in the form of trap points protecting against the risk of unintended movements from the Temple Mills depot fouling the Orient Way reception road.

8.7 The addition of the turnout connecting Temple Mills Depot with Orient Way Sidings (as currently configured) would create a connection between the Anglia Route infrastructure and HS1 infrastructure. Consideration will need to be given to what sort of agreement this connection is implemented under, as well as how security and other systems could be integrated.

9. PROGRAMME

9.1 The programme in **Appendix** 4 was produced using PACE (Project Acceleration in a Controlled Environment) model depicted in the image below. PACE allows a streamlined, milestone-driven structure for project delivery, suitable for infrastructure and rail-related schemes.

Figure 4.1: PACE process diagram

9.2 Due to the nature of the proposed works at the Network Rail Orient Way sidings (assuming this option were to be exercised in the future) this will ensure the project follows the correct governance and assurance processes as detailed in Network Rail's standard NR/L2/P3M/201.

9.3 The critical path for the programme runs through the joint feasibility and option selection phase into the tender process to the appointment of the design and build principal contractor for the project. The assumption has been made that the surveys required for design input will be efficiently undertaken concurrently onsite to minimise disruption. The surveys are logic linked to the start of each design package, the critical path runs through the Ground Investigation survey to the Orient Way Sidings Connection design and construction, which has an extended duration compared to the other works packages due to Network Rail governance and assurance procedures. It has been assumed other works packages will not follow Network Rail processes and standards. During the design process allowance has been made in the programme for engagement with the Network Rail Asset Protection and Optimisation teams, the submission of the asset protection agreement is linked to the acceptance of the 'Approval in Principle (AiP)' design. No allowance has been included for stakeholder engagement with the depot facility operator or facility owner at this stage as these timescales are unknown.

9.4 During the delivery phase it has been assumed the swich and crossing installation at Orient Way sidings will require a 72-hour blockade, the overhead line and security enhancements between Temple Mills depot and Orient Way sidings have not been included for at this stage as the requirements are unknown. The programme has allowed for concurrent day time working for the other work packages during delivery.

10. CONCLUSION AND RECOMMENDATIONS

10.1 The outcome of this review indicates that there is spare capacity within TMI Depot, there being up to 2 maintenance road within the maintenance shed and up to 4 maintenance tracks in the stabling sidings that would be available to accommodate a proposed second operators timetable as well as enabling all three timetable plans for EIL operations.

10.2 The allocation of 2 of the 8 roads within the TMI facility would enable both preventive and corrective maintenance to be undertaken on the second operators' fleet of trains, the remaining 6 roads being dedicated to EIL operations would ensure that the maintenance of their fleet could continue as at present.

10.3 The Train Wash plant would not be a constraint, but it is recommended to refurbish or replace the facility to prevent potential delay to train movements in the future.

10.4 The Train Wash facility currently has technical issues that would need to be addressed either with a replacement machine or enhancement/overhaul of existing machine. The specification for a replacement machine is included as **Appendix** 6.

10.5 The servicing facility is only operation on one track at a time which restricts the rate of arrivals of trains or may require trainsets to be shunted during the overnight stabling, this will have significant impact on depot operations during busy periods.

10.6 The low flow rate of the water supply restricts the filling of water to the train toilets and means only on one train at a time can be filed, this issue would need to be addressed to ensure effective operation of the facility, either through enhancing the water supply flow rate or by the addition of additional water storage on site.

10.7 The wheel reprofiling facility at Temple Mills would also fall under the remit of the Section 17 and evaluation of the workload indicates that the facility can support both the existing EIL fleets and the Second Operators fleets without any changes being required. The lathe access may be restricted during the times when the existing fleet is being maintained and may require trainsets to be stopped during operational hours to use the facility.

10.8 The plant and equipment available within the depot should be suitable to service and maintain a high-speed fleet of similar design to the E320 trainsets currently in use with EIL, there may be a requirement for some modification or adaptation to enable full interoperability to be achieved, this will depend on the design of the rolling stock selected.

10.9 Based on the two Section 17 applications submitted to the ORR TMI depot does appear to have the capacity to support either of the two proposed second operator access requests but would only be able to operate with one of the new second operators in place. It would only be possible to formally confirm this with access to site to verify the assumptions made to create this report.

10.10 The shared use of depot facilities between operators is not unusual, generally the lead operator provides all the movement controls for the depot. Examples of shared facilities

include Longsight in Manchester with Alstom and Northern Rail both sharing the site, also Neville Hill depot in Leeds is shared by Northern Rail and CAF with Siemens also providing maintenance services on site. The complexity of operations at these facilities are far greater than the TMI site would be with two operators.

10.11 For any future expansion of fleet size, the key driver will be Stabling capacity followed by Maintenance capacity, If the maintenance shed is extended to the optional twelve track facility this will not be well supported by the existing twelve track stabling facility which cannot be extended. The development would not provide a balance between the operational requirements of the fleets and the maintenance requirements. Any further enhancement to fleet size should also consider the stabling capacity required.

10.12 The option to provide direct access to Orient Way sidings would future proof any further fleet expansion by allowing the Second Operators fleet to use the facility to stable the 200m trainsets and release 400m long sidings within TMI depot for use by EIL.

11. ASSUMPTIONS

11.1 The following assumptions have been made in compiling this report:

1. The Timetable data for current operations is extracted from open-source data and start of day train operations have been derived from this information based on industry experience.
2. The timetable data for the 2030 and 2035 is provided by LPHS as a St Pancras International (SPI) departure time only, the related information in the Appendices has been assumed based on previous experience of operations.
3. The distribution of the operational fleet is based on the timetable data from item 1timetable data.
4. Current EIL fleet size (25 trainsets) has been derived from open-source data, all trainsets have been assumed to be operational for calculation of availability.
5. The maintenance cycle has been set at a 14-day interval based on previous industry experience, typically the range is within the period of 14 to 90 days dependant of manufacturer and train design.
6. The corrective maintenance requirements are based on industry experience. With typical repairs being a combination of passenger facility and trainset reliability issues.
7. The TMI capacity for each area is based on review of drawings supplied as the initial design of the depot (using the 8-road maintenance shed design).
8. Wheel Reprofiling periodicity is based on industry experience, typically the reprofiling will be in the range of 6 months to 1 year between reprofiling activities.
9. Timing for Servicing of trainsets is based on industry experience; with balance examination the examinations are cumulative and the downtime for the smallest examination on the E320 fleet is under 8 hours.
10. The train wash plant operation has been assumed to be in line with normal industry practice, this allows a trainset through the train wash without stopping and enables a headway of 5 minutes between trainsets as a minimum.
11. It is assumed that the new operator's trainset will be 200m in length, the depot maintenance tracks, and the stabling sidings are all assumed to hold 2 x 200m trainsets interchangeably with a 400m EIL trainset.
12. All drawings and spatial considerations have been based upon open-source mapping as part of the desktop study.

APPENDICES

APPENDIX 1: Current LSPH Operational Timetable

Operational Timetable

Assumed Arrivals & Departures for the existing LSPH EIL service

(Note: This data has been sourced from the EIL online timetable)

St Pancras	Paris	Paris	St Pancras
06:01	09:20	07:12	08:30
07:01	10:19	07:42	09:00
08:01	11:18	08:42	10:00
09:31	12:48	09:12	10:30
		10:11	11:30
St Pancras	**Brussels**	**Brussels**	**St Pancras**
06:25	07:47	06:33	08:05
07:23	08:47	07:43	09:05
08:25	09:47	08:13	09:35
		08:43	10:04
St Pancras	**Lille**	**Lille**	**St Pancras**
07:04	09:26	08:35	08:57
09:01	11:27	09:30	09:57
St Pancras	**Amsterdam**	**Amsterdam**	**St Pancras**
06:16	11:15		
11:04	16:15		

It is assumed that all following services are operated by arriving trains.

Stabling & Maintenance Arrangements – Current Timetable

Assumed Stabling requirement for the existing EIL service and New Operator services

Train	Operator	Location	Comment
Train 1	Eurostar	Sidings 1	Clean & Stable
Train 2	Eurostar	Sidings 2	Clean & Stable
Train 3	Eurostar	Sidings 3	Clean & Stable
Train 4	Eurostar	Sidings 4	Clean & Stable
Train 5	Eurostar	Sidings 5	Clean & Stable
Train 6	Eurostar	Sidings 6	Clean & Stable
Train 7	Eurostar	Sidings 7	Clean & Stable
	Eurostar	Sidings 8	Held Clear for Shunting
	New Operator	Sidings 9	Held Clear for Shunting
Train 1	New Operator	Sidings 10	Clean & Stable
Train 2	New Operator	Sidings 10	Clean & Stable
Train 3	New Operator	Sidings 11	Clean & Stable
Train 4	New Operator	Sidings 11	Clean & Stable
Train 5	New Operator	Sidings 12	Clean & Stable
Train 6	New Operator	Sidings 12	Clean & Stable
Train 9	Eurostar	Shed Road 1	A Examination
Train 10	Eurostar	Shed Road 2	A Examination
Train 11	Eurostar	Shed Road 3	Unscheduled Repair
Train 12	Eurostar	Shed Road 4	Unscheduled Repair
Train 13	Eurostar	Shed Road 5	B Examination and Above#
		Shed Road 6	Held Clear for Shunting

Train	Operator	Location	Comment
Train 7	New Operator	Shed Road 7	A Examination
Train 8	New Operator	Shed Road 7	Unscheduled Repair
Train 9	New Operator	Shed Road 8	B Examination and Above#
		Shed Road 8	Spare Berth for New Operator

Note:

1. Number of trains has been assumed from the timetable.
2. New Operator trains assumed at 200m Length.
3. # B examination and above will be held for more than 1 shift to complete work

APPENDIX 2: 2030 LSPH Operational Timetable

2030 Operational Timetable

EXPECTED TRAIN PLAN FOR SERVICE START UP 2030 TIMETABLE						
FROM	St Pancras	Paris	Brussels	Amsterdam	Return to St Pancras	Comments
TMI1	0601	0919			1230	
TMI2	0616			1120	1700	
	0630					Path for 2nd Operator
	0645					Path for 2nd Operator
TMI3	0701	1019			1430	
TMI4	0704		1005		1157	
TMI5	0731	1049			1400	
	0745					Path for 2nd Operator
TMI6	0801	1119			1430	
TMI7	0816			1320	1957	
	0830					Path for 2nd Operator
	0845					Path for 2nd Operator
TMI8	0904		1205		1357	
	0915					Path for 2nd Operator
PARIS	0931	1249			1600	
PARIS	1031	1349			1630	
PARIS	1101	1419			1735	
BRUSSELS	1104		1201		1557	
PARIS	1231	1609			1730	
BRUSSELS	1304		1605		1805	
PARIS	1331	1649				
PARIS	1401	1719				
PARIS	1501	1819				

Service is return working of arrival at SPI
Service is formend off TMI depot
Service is TMI based slot for second operator

Stabling & Maintenance Arrangements – 2030 Timetable

Assumed Stabling requirement for the 2030 LSPH EIL service and New Operator services

Train	Operator	Location	Comment
Train 1	Eurostar	Sidings 1	Clean & Stable
Train 2	Eurostar	Sidings 2	Clean & Stable
Train 3	Eurostar	Sidings 3	Clean & Stable
Train 4	Eurostar	Sidings 4	Clean & Stable
Train 5	Eurostar	Sidings 5	Clean & Stable
Train 6	Eurostar	Sidings 6	Clean & Stable
Train 7	Eurostar	Sidings 7	Clean & Stable
Train 8	Eurostar	Sidings 8	Clean & Stable
	Eurostar	Sidings 9	Held Clear for Shunting
Train 1	New Operator	Sidings 10	Clean & Stable
Train 2	New Operator	Sidings 10	Clean & Stable
Train 3	New Operator	Sidings 11	Clean & Stable
Train 4	New Operator	Sidings 11	Clean & Stable
Train 5	New Operator	Sidings 12	Clean & Stable
Train 6	New Operator	Sidings 12	Clean & Stable
Train 9	Eurostar	Shed Road 1	A Examination
Train 10	Eurostar	Shed Road 2	A Examination
Train 11	Eurostar	Shed Road 3	Unscheduled Repair
Train 12	Eurostar	Shed Road 4	Unscheduled Repair
Train 13	Eurostar	Shed Road 5	B Examination and Above#
		Shed Road 6	Held Clear for Shunting

Train 7	New Operator	Shed Road 7	A Examination
Train 8	New Operator	Shed Road 7	Unscheduled Repair
Train 9	New Operator	Shed Road 8	B Examination and Above#
		Shed Road 8	Spare Berth for New Operator

Note:

1. Number of trains has been assumed from the timings provided.
2. New Operator trains assumed at 200m Length.
3. # B examination and above will be held for more than 1 shift to complete work

APPENDIX 3: 2035 LSPH Operational Timetable

2035 Operational Timetable

EXPECTED TRAIN PLAN FOR SERVICE START UP 2035 TIMETABLE						
FROM	St Pancras	Paris	Brussels	Amsterdam	Return to St Pancras	Comments
TMI1	0601	0919			1230	
TMI2	0616			1120	1700	
	0630					Path for 2nd Operator
	0645					Path for 2nd Operator
TMI3	0701	1019			1330	
TMI4	0731	1049			1400	
TMI5	0734		1005		1200	
	0745					Path for 2nd Operator
TMI6	0801	1119			1430	
TMI7	0816			1220	1900	
TMI8	0831	1149			1500	
	0845					Path for 2nd Operator
TMI9	0901	1219			1630	
	0915					Path for 2nd Operator
TMI10	0934		1205		1400	
	0945					Path for 2nd Operator
PARIS	1001	1319			1730	
PARIS	1031	1349			1800	
BRUSSELS	1034		1305		1500	
PARIS	1101	1419			1830	
PARIS	1201	1519			1930	
BRUSSELS	1234		1505		1700	
PARIS	1301	1619			2030	
BRUSSELS	1334		1605		1800	
PARIS	1401	1719			2130	
PARIS	1431	1749			2200	
PARIS	1434		1705		1900	

Service is return working of arrival at SPI
Service is formend off TMI depot
Service is TMI based slot for second operator

Stabling & Maintenance Arrangements – 2035 Timetable

Assumed Stabling requirement for the existing LSPH EIL service and New Operator services

TRAIN	OPERATOR	LOCATION	Comment
Train 1	Eurostar	Sidings 1	Clean & Stable
Train 2	Eurostar	Sidings 2	Clean & Stable
Train 3	Eurostar	Sidings 3	Clean & Stable
Train 4	Eurostar	Sidings 4	Clean & Stable
Train 5	Eurostar	Sidings 5	Clean & Stable
Train 6	Eurostar	Sidings 6	Clean & Stable
Train 7	Eurostar	Sidings 7	Clean & Stable
Train 8	Eurostar	Sidings 8	Clean & Stable
Train 9	Eurostar	Sidings 9	Clean & Stable
Train 1	New Operator	Sidings 10	Clean & Stable
Train 2	New Operator	Sidings 10	Clean & Stable
Train 3	New Operator	Sidings 11	Clean & Stable
Train 4	New Operator	Sidings 11	Clean & Stable
Train 5	New Operator	Sidings 12	Clean & Stable
Train 6	New Operator	Sidings 12	Clean & Stable
Train 10	Eurostar	Shed Road 1	A Examination
Train 11	Eurostar	Shed Road 2	A Examination
Train 12	Eurostar	Shed Road 3	Unscheduled Repair
Train 13	Eurostar	Shed Road 4	Unscheduled Repair
Train 14	Eurostar	Shed Road 5	B Examination and Above#
		Shed Road 6	Held Clear for Shunting
Train 7	New Operator	Shed Road 7	A Examination

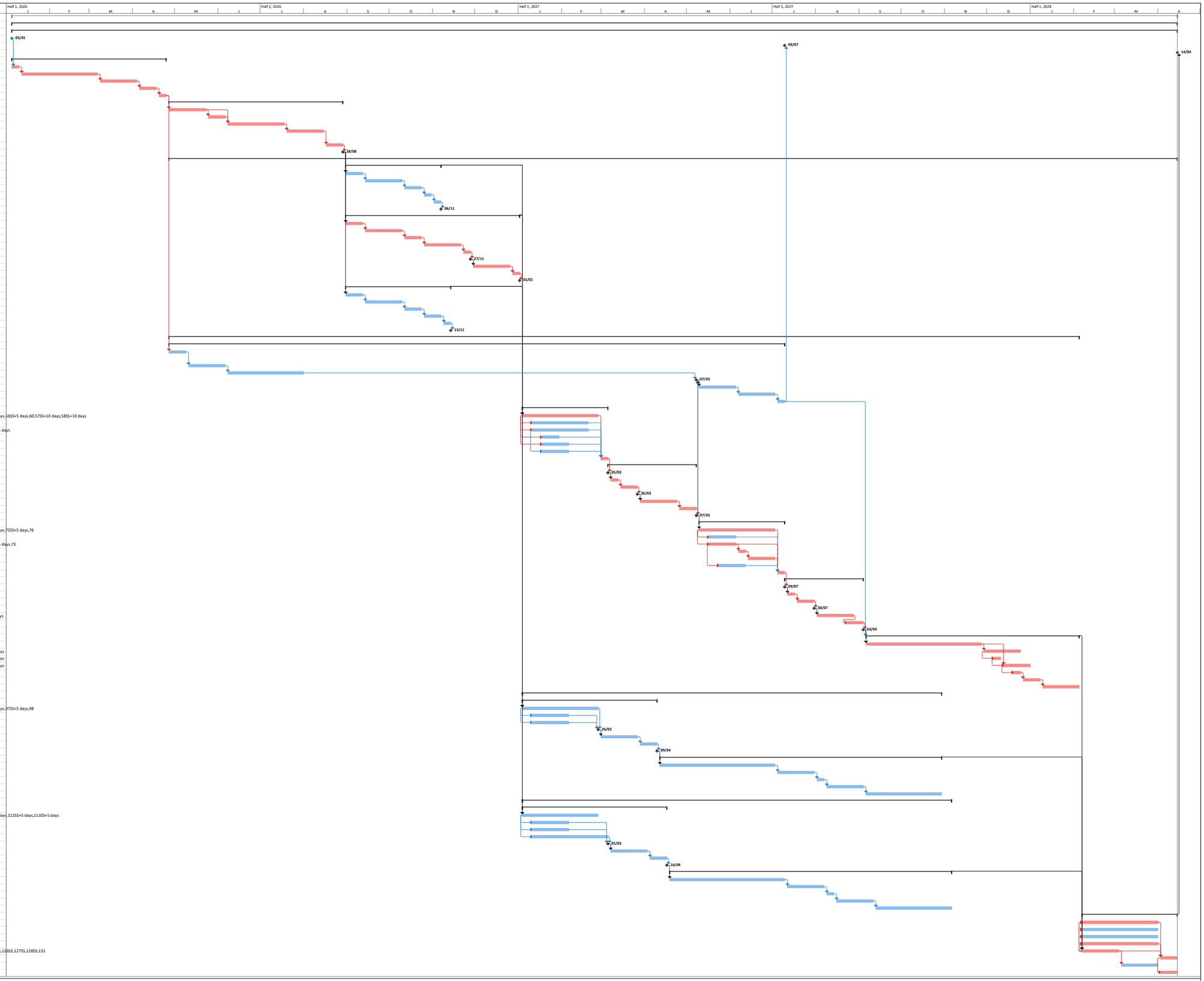
Train 8	New Operator	Shed Road 7	Unscheduled Repair
Train 9	New Operator	Shed Road 8	B Examination and Above#
	New Operator	Shed Road 8	Spare Berth

Note:

1. Number of trains has been assumed from the timings provided.
2. New Operator trains assumed at 200m Length.
3. # B examination and above will be held for more than 1 shift to complete work

APPENDIX 4: Programme

ID	Task Name	Duration	% Complete	Start	Finish	Predecessors	Successors
0	**LSPH Depot Study**	**595 days**	**0%**	**Mon 05/01/26**	**Fri 14/04/28**		
1	**Temple Mills Depot Expansion**	**595 days**	**0%**	**Mon 05/01/26**	**Fri 14/04/28**		
2	**Milestones**	**595 days**	**0%**	**Mon 05/01/26**	**Fri 14/04/28**		
3	Start date	0 days	0%	Mon 05/01/26	Mon 05/01/26		7
4	NR Signed APA	0 days	0%	Fri 09/07/27	Fri 09/07/27	52	
5	Completion date	0 days	0%	Fri 14/04/28	Fri 14/04/28	124	
6	**ES2 Feasibility / ES3 Option Selection Rep**	**80 days**	**0%**	**Mon 05/01/26**	**Fri 24/04/26**		
7	Site Visit	5 days	0%	Mon 05/01/26	Fri 09/01/26	3	8
8	Option Selection Report	40 days	0%	Mon 12/01/26	Fri 06/03/26	7	9
9	Stakeholder Review	20 days	0%	Mon 09/03/26	Fri 03/04/26	8	10
10	Address Comments	10 days	0%	Mon 06/04/26	Fri 17/04/26	9	11
11	Option Selection Report Sign off	5 days	0%	Mon 20/04/26	Fri 24/04/26	10	46,13
12	**Tender**	**90 days**	**0%**	**Mon 27/04/26**	**Fri 28/08/26**		
13	Preparation of Tender Documentation	20 days	0%	Mon 27/04/26	Fri 22/05/26	11	15,14
14	Invitation to Tender	10 days	0%	Mon 25/05/26	Fri 05/06/26	13	15
15	Tender Period	30 days	0%	Mon 08/06/26	Fri 17/07/26	13,14	16
16	Review Tender Responses and Prepare Tender Evaluation Report	20 days	0%	Mon 20/07/26	Fri 14/08/26	15	17
17	Approval Period	10 days	0%	Mon 17/08/26	Fri 28/08/26	16	18
18	Formal Contract Award	0 days	0%	Fri 28/08/26	Fri 28/08/26	17	21,28,38
19	**Design and Build Principal Contractor**	**515 days**	**0%**	**Mon 27/04/26**	**Fri 14/04/28**		
20	**Topographical Survey**	**50 days**	**0%**	**Mon 31/08/26**	**Fri 06/11/26**		**54,95,110**
21	Survey scope	10 days	0%	Mon 31/08/26	Fri 11/09/26	18	22
22	Mobilisation and site access	20 days	0%	Mon 14/09/26	Fri 09/10/26	21	23
23	Survey	10 days	0%	Mon 12/10/26	Fri 23/10/26	22	24
24	Drawing and model production	5 days	0%	Mon 26/10/26	Fri 30/10/26	23	25
25	Quality Assurance	5 days	0%	Mon 02/11/26	Fri 06/11/26	24	26
26	Drawings and model issued	0 days	0%	Fri 06/11/26	Fri 06/11/26	25	
27	**Ground Investigation Survey**	**90 days**	**0%**	**Mon 31/08/26**	**Fri 01/01/27**		**54,95,110**
28	Survey scope	10 days	0%	Mon 31/08/26	Fri 11/09/26	18	29
29	Mobilisation and site access	20 days	0%	Mon 14/09/26	Fri 09/10/26	28	30
30	Survey	10 days	0%	Mon 12/10/26	Fri 23/10/26	29	31
31	Ground Investigation Factual Report	20 days	0%	Mon 26/10/26	Fri 20/11/26	30	32
32	Quality Assurance	5 days	0%	Mon 23/11/26	Fri 27/11/26	31	33
33	Report issued	0 days	0%	Fri 27/11/26	Fri 27/11/26	32	34
34	Geotechnical Design Report	20 days	0%	Mon 30/11/26	Fri 25/12/26	33	35
35	Quality Assurance	5 days	0%	Mon 28/12/26	Fri 01/01/27	34	36
36	Report issued	0 days	0%	Fri 01/01/27	Fri 01/01/27	35	
37	**Ground Penetrating Radar Survey**	**55 days**	**0%**	**Mon 31/08/26**	**Fri 13/11/26**		**54,95,110**
38	Survey scope	10 days	0%	Mon 31/08/26	Fri 11/09/26	18	39
39	Mobilisation and site access	20 days	0%	Mon 14/09/26	Fri 09/10/26	38	40
40	Survey	10 days	0%	Mon 12/10/26	Fri 23/10/26	39	41
41	Report	10 days	0%	Mon 26/10/26	Fri 06/11/26	40	42
42	Quality Assurance	5 days	0%	Mon 09/11/26	Fri 13/11/26	41	43
43	Report issued	0 days	0%	Fri 13/11/26	Fri 13/11/26	42	
44	**Orient Way Sidings Connection**	**465 days**	**0%**	**Mon 27/04/26**	**Fri 04/02/28**		
45	**NR Stakeholder Engagement**	**315 days**	**0%**	**Mon 27/04/26**	**Fri 09/07/27**		
46	Contact Asset Protection and Optimisation teams	10 days	0%	Mon 27/04/26	Fri 08/05/26	11	47
47	ASPRO review period	20 days	0%	Mon 11/05/26	Fri 05/06/26	46	48
48	Asset Protection Agreement productio	40 days	0%	Mon 08/06/26	Fri 31/07/26	47	49
49	APA application submission	0 days	0%	Fri 07/05/27	Fri 07/05/27	48,68	50
50	APA review period	20 days	0%	Mon 10/05/27	Fri 04/06/27	49	51
51	Address comments	20 days	0%	Mon 07/06/27	Fri 02/07/27	50	52
52	APA Sign off	5 days	0%	Mon 05/07/27	Fri 09/07/27	51	4,85
53	**ES4 Approval in Principal Design**	**45 days**	**0%**	**Mon 04/01/27**	**Fri 05/03/27**		
54	Track Design	40 days	0%	Mon 04/01/27	Fri 26/02/27	20,27,37	55SS+5 days,60SS+5 days,60,57SS+10 days,58SS+10 days
55	Signalling Design	30 days	0%	Mon 11/01/27	Fri 19/02/27	54SS+5 days	60
56	Civil Design	30 days	0%	Mon 11/01/27	Fri 19/02/27	54SS+5 days	60,59SS+5 days
57	Calculations	10 days	0%	Mon 18/01/27	Fri 29/01/27	54SS+10 day	60
58	Drawings	15 days	0%	Mon 18/01/27	Fri 05/02/27	54SS+10 day	60
59	AiP Report	15 days	0%	Mon 18/01/27	Fri 05/02/27	56SS+5 days	60
60	Quality Assurance	5 days	0%	Mon 01/03/27	Fri 05/03/27	55,56,54,59	62
61	**Interdisciplinary Check / Design Approv**	**45 days**	**0%**	**Fri 05/03/27**	**Fri 07/05/27**		
62	Issue design for IDC	0 days	0%	Fri 05/03/27	Fri 05/03/27	60	63
63	IDC Meeting	5 days	0%	Mon 08/03/27	Fri 12/03/27	62	64
64	Address IDC comments	10 days	0%	Mon 15/03/27	Fri 26/03/27	63	65
65	AiP design submission	0 days	0%	Fri 26/03/27	Fri 26/03/27	64	66
66	AiP design pack stakeholder review	20 days	0%	Mon 29/03/27	Fri 23/04/27	65	67
67	Address AiP comments	10 days	0%	Mon 26/04/27	Fri 07/05/27	66	68
68	AiP sign off	0 days	0%	Fri 07/05/27	Fri 07/05/27	67	70,49
69	**ES5 Approved for Construction Design**	**45 days**	**0%**	**Mon 10/05/27**	**Fri 09/07/27**		
70	Track Design	40 days	0%	Mon 10/05/27	Fri 02/07/27	68	71SS+5 days,72SS+5 days,76
71	Signalling Design	15 days	0%	Mon 17/05/27	Fri 04/06/27	70SS+5 days	76
72	Civil Design	15 days	0%	Mon 17/05/27	Fri 04/06/27	70SS+5 days	76,75SS+5 days,73
73	Calculations	5 days	0%	Mon 07/06/27	Fri 11/06/27	72	74
74	Drawings	15 days	0%	Mon 14/06/27	Fri 02/07/27	73	76
75	AiC Report	15 days	0%	Mon 24/05/27	Fri 11/06/27	72SS+5 days	76
76	Quality Assurance	5 days	0%	Mon 05/07/27	Fri 09/07/27	70,71,72,75	78
77	**Interdisciplinary Check / Design Approv**	**40 days**	**0%**	**Fri 09/07/27**	**Fri 03/09/27**		
78	Issue design for IDC	0 days	0%	Fri 09/07/27	Fri 09/07/27	76	79
79	IDC Meeting	5 days	0%	Mon 12/07/27	Fri 16/07/27	78	80
80	Address IDC comments	10 days	0%	Mon 19/07/27	Fri 30/07/27	79	81
81	AiC design submission	0 days	0%	Fri 30/07/27	Fri 30/07/27	80	82
82	AiC design pack stakeholder review	20 days	0%	Mon 02/08/27	Fri 27/08/27	81	83FS-5 days
83	Address AiC comments	10 days	0%	Mon 23/08/27	Fri 03/09/27	82FS-5 days	84
84	AiC design sign off	0 days	0%	Fri 03/09/27	Fri 03/09/27	83	86
85	**ES6 Project Delivery (Construction)**	**110 days**	**0%**	**Mon 06/09/27**	**Fri 04/02/28**	**52**	**129**
86	Procurement of Materials	60 days	0%	Mon 06/09/27	Fri 26/11/27	84	89,87
87	Mobilisation	20 days	0%	Mon 29/11/27	Fri 24/12/27	86	88SS+5 days
88	Review of Contractors H&S Document	5 days	0%	Mon 06/12/27	Fri 10/12/27	87SS+5 days	89SS+5 days
89	Prep works onsite	15 days	0%	Mon 13/12/27	Fri 31/12/27	88SS+5 days	90SS+5 days
90	72 hour blockade for S&C installation	5 days	0%	Mon 20/12/27	Fri 24/12/27	89SS+5 days	91
91	Signalling installation	10 days	0%	Mon 27/12/27	Fri 07/01/28	90	92
92	Signalling testing and commissioning	20 days	0%	Mon 10/01/28	Fri 04/02/28	91	
93	**Office Building and Storage Facility**	**215 days**	**0%**	**Mon 04/01/27**	**Fri 29/10/27**		
94	**Design**	**70 days**	**0%**	**Mon 04/01/27**	**Fri 09/04/27**		
95	Civils	40 days	0%	Mon 04/01/27	Fri 26/02/27	20,27,37	96SS+5 days,97SS+5 days,98
96	M&E	20 days	0%	Mon 11/01/27	Fri 05/02/27	95SS+5 days	98
97	Utilities	20 days	0%	Mon 11/01/27	Fri 05/02/27	95SS+5 days	98
98	Design submission	0 days	0%	Fri 26/02/27	Fri 26/02/27	95,96,97	99
99	Design pack stakeholder review	20 days	0%	Mon 01/03/27	Fri 26/03/27	98	100
100	Address comments	10 days	0%	Mon 29/03/27	Fri 09/04/27	99	101
101	Design sign off	0 days	0%	Fri 09/04/27	Fri 09/04/27	100	103
102	**Delivery**	**145 days**	**0%**	**Mon 12/04/27**	**Fri 29/10/27**		**129**
103	Procurement	60 days	0%	Mon 12/04/27	Fri 02/07/27	101	104
104	Mobilisation	20 days	0%	Mon 05/07/27	Fri 30/07/27	103	105
105	Review of Contractors H&S Document	5 days	0%	Mon 02/08/27	Fri 06/08/27	104	106
106	Prep works onsite	20 days	0%	Mon 09/08/27	Fri 03/09/27	105	107
107	Installation	40 days	0%	Mon 06/09/27	Fri 29/10/27	106	
108	**Carriage Wash and Water Tank**	**220 days**	**0%**	**Mon 04/01/27**	**Fri 05/11/27**		
109	**Design**	**75 days**	**0%**	**Mon 04/01/27**	**Fri 16/04/27**		
110	Civils	40 days	0%	Mon 04/01/27	Fri 26/02/27	20,27,37	111SS+5 days,112SS+5 days,113SS+5 days
111	M&E	20 days	0%	Mon 11/01/27	Fri 05/02/27	110SS+5 day	114
112	Utilities	20 days	0%	Mon 11/01/27	Fri 05/02/27	110SS+5 day	114
113	UTX	40 days	0%	Mon 11/01/27	Fri 05/03/27	110SS+5 day	114
114	Design submission	0 days	0%	Fri 05/03/27	Fri 05/03/27	111,112,113	115
115	Design pack stakeholder review	20 days	0%	Mon 08/03/27	Fri 02/04/27	114	116
116	Address comments	10 days	0%	Mon 05/04/27	Fri 16/04/27	115	117
117	Design sign off	0 days	0%	Fri 16/04/27	Fri 16/04/27	116	119
118	**Delivery**	**145 days**	**0%**	**Mon 19/04/27**	**Fri 05/11/27**		**129**
119	Procurement	60 days	0%	Mon 19/04/27	Fri 09/07/27	117	120
120	Mobilisation	20 days	0%	Mon 12/07/27	Fri 06/08/27	119	121
121	Review of Contractors H&S Document	5 days	0%	Mon 09/08/27	Fri 13/08/27	120	122
122	Prep works onsite	20 days	0%	Mon 16/08/27	Fri 10/09/27	121	123
123	Installation	40 days	0%	Mon 13/09/27	Fri 05/11/27	122	
124	**ES7 Handover and ES8 Project Close Out**	**50 days**	**0%**	**Mon 07/02/28**	**Fri 14/04/28**		**5**
125	As Built	40 days	0%	Mon 07/02/28	Fri 31/03/28	129SS	130
126	Maintenance Plan	40 days	0%	Mon 07/02/28	Fri 31/03/28	129SS	
127	Operational Procedures	40 days	0%	Mon 07/02/28	Fri 31/03/28	129SS	
128	H&S File	40 days	0%	Mon 07/02/28	Fri 31/03/28	129SS	130
129	Defects Close Out	20 days	0%	Mon 07/02/28	Fri 03/03/28	85,102,118	130,125SS,126SS,127SS,128SS,131
130	Provide Outturn project spend profile	10 days	0%	Mon 03/04/28	Fri 14/04/28	129,128,125	132SS
131	Lessons Learned Exercise	20 days	0%	Mon 06/03/28	Fri 31/03/28	129	
132	Finalise and close out accounts	10 days	0%	Mon 03/04/28	Fri 14/04/28	130SS	



Project: LSPH Depot Study
Date: Mon 07/04/25

Task · Split · Milestone · Summary · Project Summary · External Tasks · External Milestone · Inactive Task · Inactive Milestone · Inactive Summary · Manual Task · Duration-only · Manual Summary Rollup · Manual Summary · Start-only · Finish-only · Deadline · Critical · Critical Split · Progress · Manual Progress

APPENDIX 5: Storage Facility Specification

Building Specification

Warehouse

- Span/Width 15.0m
- Length 50.0m
- Height (eaves) 5.0m
- Height (Ridge) 7.57m
- Total Area 750.0m^2

Frame

Eurocode Compliance

- BS EN 1991-1-3:2003 – General Actions (Snow Loads)
- BS EN 1991-1-4:2005 – General Actions (Wind Actions)
- BS EN 1993-1-1:2005 – Eurocode 3 – Design of Steel Structures
- BS EN 1993-1-1:2007 – Eurocode 9 – Design of Aluminium Structure

Roof

- Type Thermo roof (insulated)
- Material PVC coated fabric requiring 240v Pump – continuous supply

Walling & Gables

- Type 40mm, Steel Clad Sandwich Panels
- Detail Goosewing Grey

Doors

- Type Single Personnel Exit Doors (2No)
- Detail Height 2.1m x Width 1.06m
- Type Electric Roller Shutter Doors (2No)
- Detail Height 4.5m x Width 4.5m

The cost of the building includes design calculations, costs associated with site surveys, production of existing services drawings, planning applications and council planning fee

APPENDIX 6: Carriage Wash Machine Specification

Supply and installation of a water recycling system, speed display boards & a logging and remote monitoring facility c/w Form B Design.

Scope of Supply

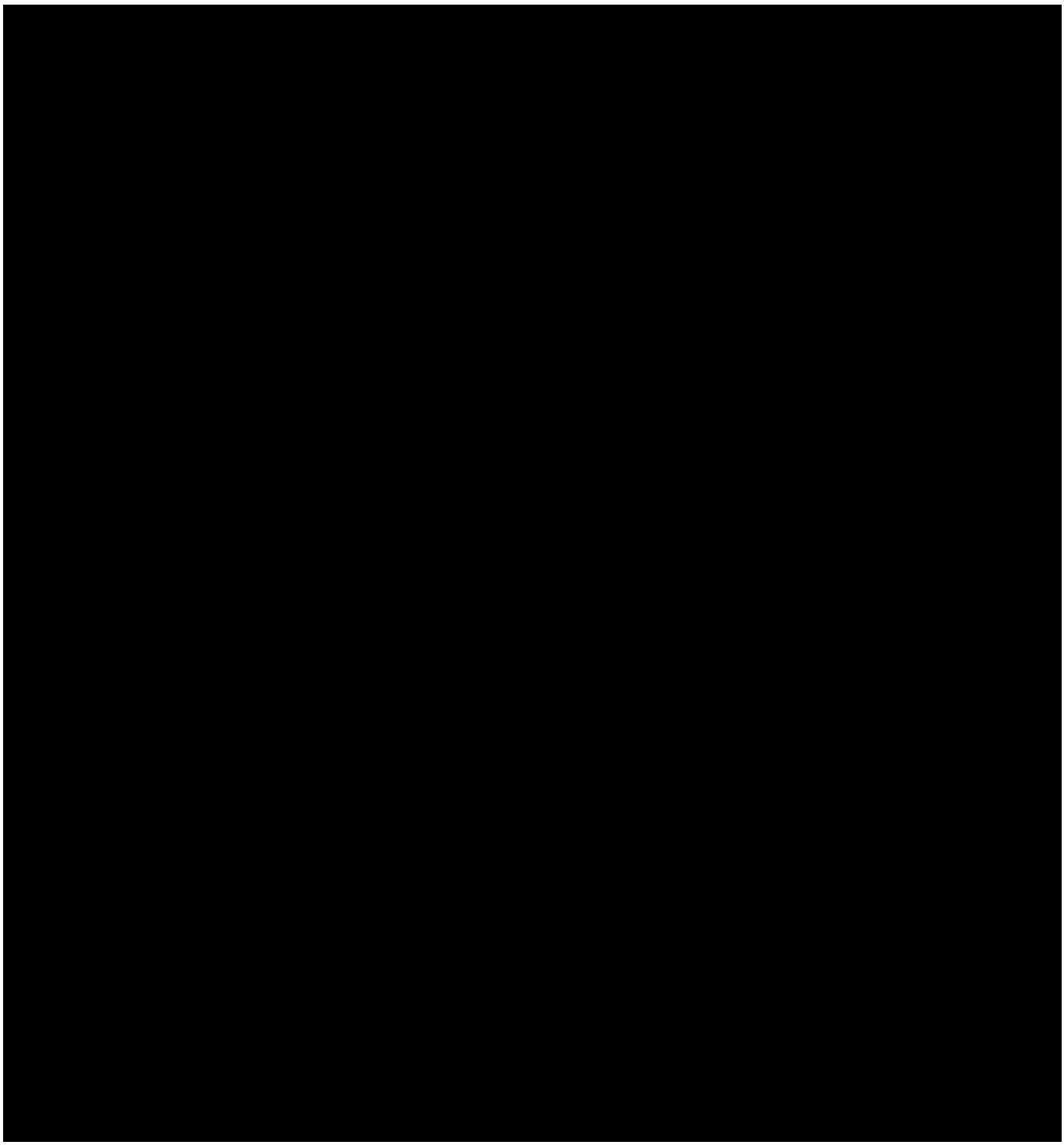
- Machine to operate down to -2°C c/w 1 set air blowers
- 4No Detergent / 8no Water wash bodyside modular assemblies
- 1No set Pre-wet / Final rinse spray stands
- 1No set Air blowers
- 1No Electrical control panel
- 1No Remote monitoring facility via Ewon
- 1No Driver display board
- 1No Speed display system
- 1No set Treadle switches (Machine start-up/ shut down operation & speed logging)
- 1No Water recycling system
- 1No Water storage tank
- 1No Detergent tank
- 1No Detergent pump
- 1No Detergent metering pump
- 1No Pre-wet/ main wash pump
- 1No Final rinse pump
- 1No Detergent off-loading pump
- 1No set ABS pipework, valves and fittings/ cabling etc
- 1No set ABS jet pipes and stainless-steel jet nozzles
- 1No lot Trace heating & lagging
- 1No Emergency drench shower
- Form B CWM design (others to act as CRE/CEM)
- Mechanical, electrical and software design
- Manufacture and procurement of the equipment
- Work package plans / task briefs
- M&E Installation of equipment
- On Track Plant for off-loading and installation
- Trace heating & lagging for low temperature washing (-2°C)
- Equipotential bonding of our equipment

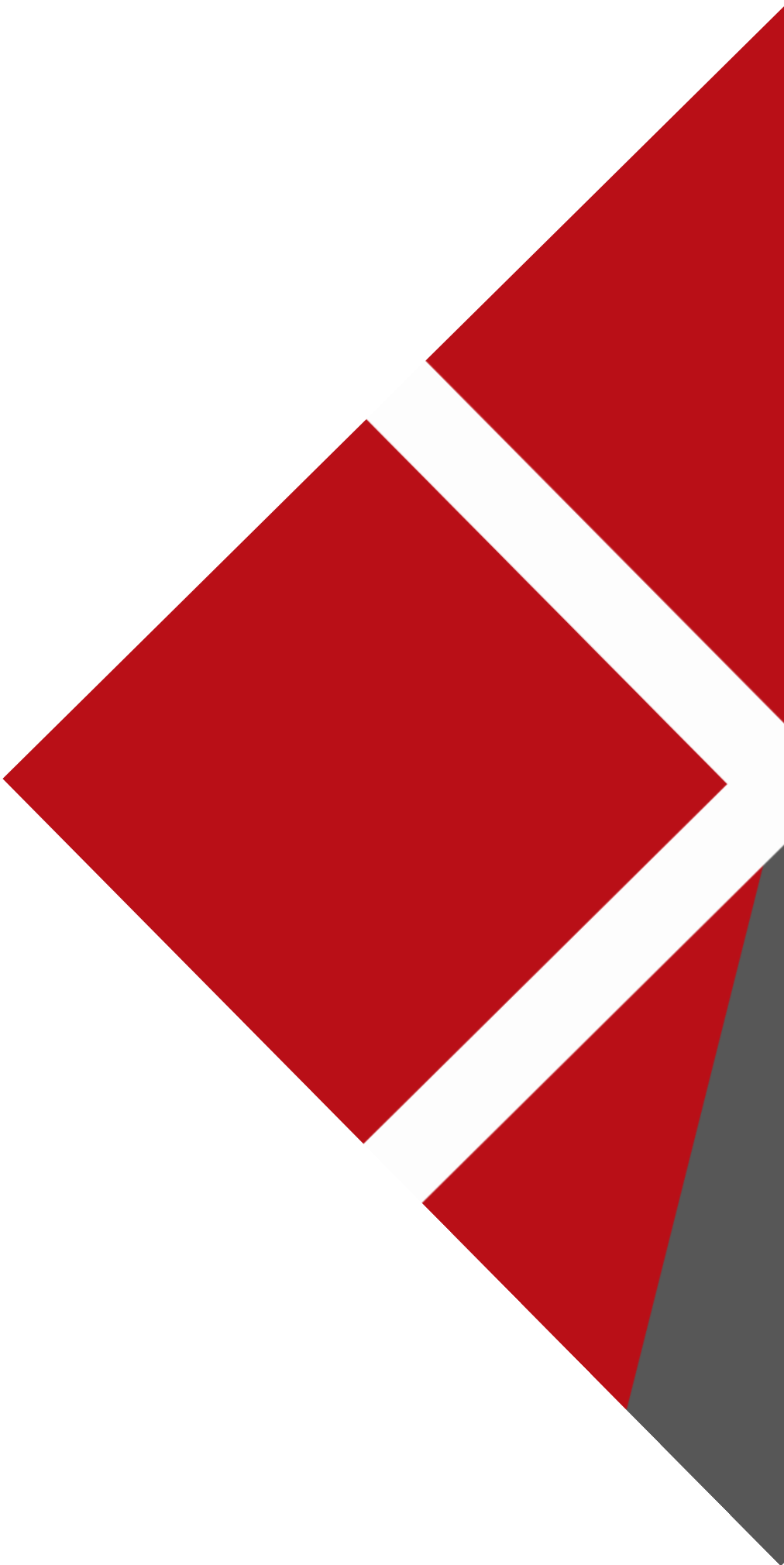
- Testing & commissioning of equipment
- Training of depot operating staff (1 day)
- Operating and maintenance manuals
- Provision of 'as built' drawings

Design Criteria

- Train profiles required for verification of train wash plant proposed design. (Proposed solutions may be subject to change)
- Train speed through wash no more than 3-mph
- Train throughputs to be finalised at detailed design.
- Single direction wash, washing on arrival only
- Bodyside rotors and spray stands to be finished, galvanised.
- Bodyside rotor motor gearboxes to be bottom mounted for ease of maintenance
- Top bearings to be provided with low-level lubrication points for ease of maintenance
- Exact tank sizes and performance criteria will be finalised at detailed design
- Provision of detergent off-loading pump assumes chemical delivery vehicle access adjacent to plant room.
- NB. Vehicle Overspeed. For every 1-mph over the recommended Washing Speed 3-mph through the wash, will reduce the cleaning performance by 10% cleaning efficiency.
- The CWM will be commissioned into service following the issue of completion of installation certificate for power, mains water, drainage, detergent.
- Trains and drivers to be provided by the parties responsible for allowing proper commissioning of the system.

APPENDIX 7: Breakdown Of Cost Estimate Summary



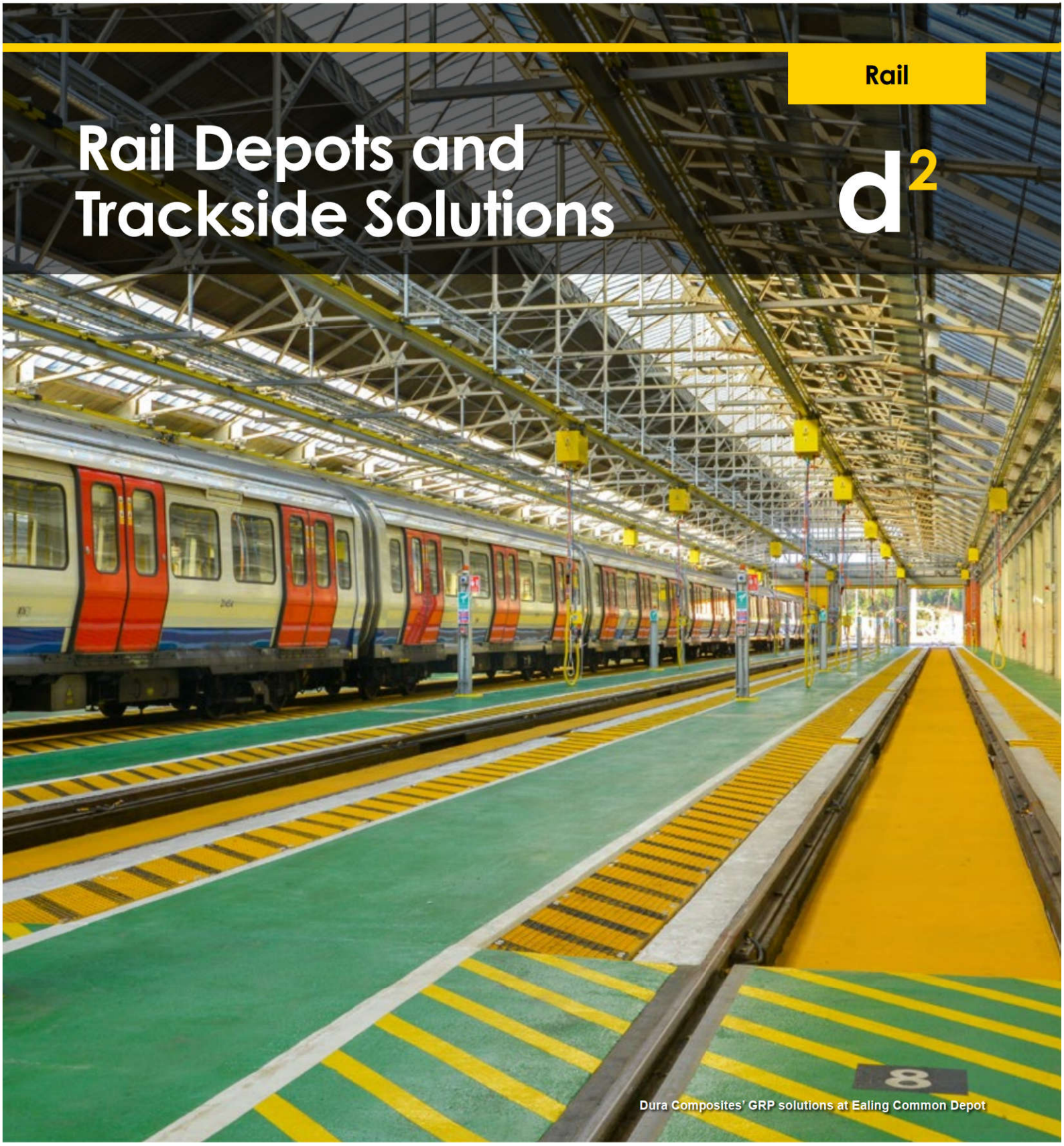


APPENDIX 3: Dura Composite Solutions Brochure

Rail

Rail Depots and Trackside Solutions

d²



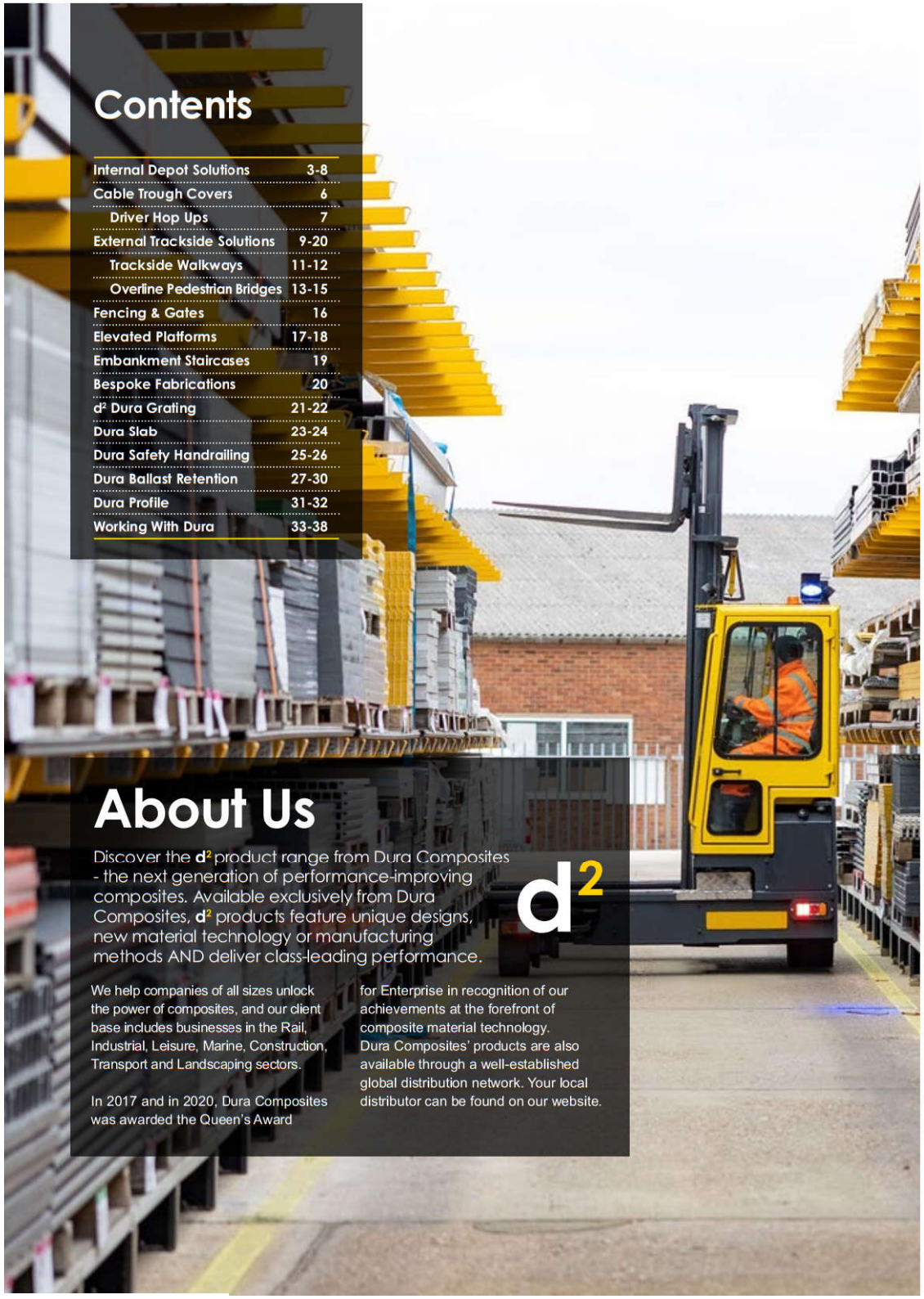
Dura Composites' GRP solutions at Ealing Common Depot

Discover Dura Composites **d²** range, our next generation composites which deliver the greatest level of performance improvement for rail applications such as ballast retention, trackside walkways, trench covers, driver hop ups, access structures and safety handrailing.

Unlocking the Power of Composites™
» for the Rail Industry

dura™ composites

Contents



About Us

Discover the **d²** product range from Dura Composites - the next generation of performance-improving composites. Available exclusively from Dura Composites, **d²** products feature unique designs, new material technology or manufacturing methods AND deliver class-leading performance.

We help companies of all sizes unlock the power of composites, and our client base includes businesses in the Rail, Industrial, Leisure, Marine, Construction, Transport and Landscaping sectors.

In 2017 and in 2020, Dura Composites was awarded the Queen's Award for Enterprise in recognition of our achievements at the forefront of composite material technology. Dura Composites' products are also available through a well-established global distribution network. Your local distributor can be found on our website.

Let Dura Composites Unlock the Power of Composites for Your Next Project

Dura Composites is a designer, manufacturer and supplier of composite products for industry.

Here are a few great reasons to work with us:

1

Unique products backed up by demonstrably better specification

- We can help support your design services across all phases of the project lifecycle by providing detailed technical specifications for our award-winning product range.
- Our live load testing data is available within our searchable Online Product Selector database to help you make decisions based on real data to ensure maximum safety for your project.

2

We only offer the right solution

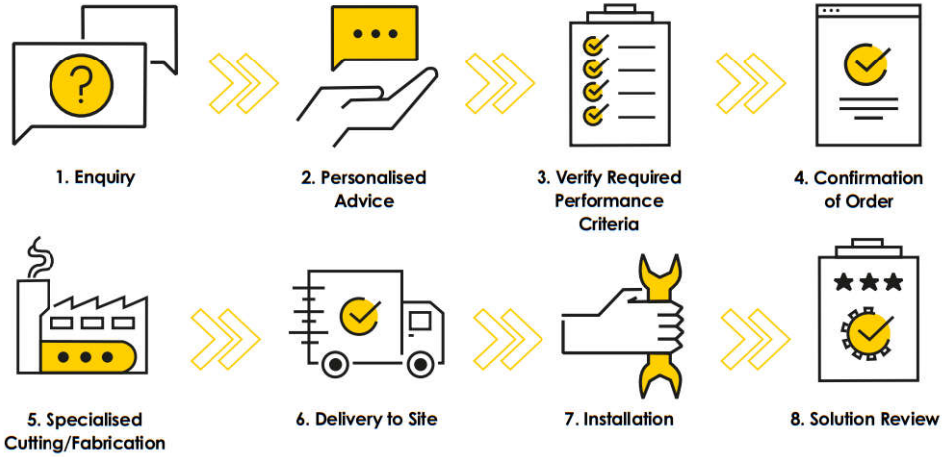
- We believe that decisions on which products to use should be based on facts, not guesses or theories.
- Whatever your scenario, you can be confident that we'll help ensure your project will meet the load performance and specification needed, otherwise we won't supply it!

3

25 Years of Multi-Industry Expertise

- We've had a reputation as leaders in innovation for a quarter of a century and take a collaborative approach to working with our Public and Private sector clients. We were awarded the prestigious Queen's Award for Enterprise in 2017 and 2020 in recognition of our success in growing and championing the use of composite materials across the globe.
- Our added value services include in-house CAD and Structural Engineering teams who can be utilised both for stand-alone design and as part of larger integrated design scheme.
- Our specialist cutting and fabrication teams offer a full range of services to ensure you can install with confidence.

Your process with us at Dura:



Rail Depots

Internal Depot Solutions

We have a wealth of experience in the design and supply of GRP product solutions for internal depot buildings and railway maintenance facilities.

An essential ingredient in the successful running of a railway is a well-maintained system. Dura Composites is well-placed to assist with a range of infrastructure products that help cut the delivery time and cost of projects .

Dura Composites **d²** range of products are our next generation composites which deliver the greatest level of performance improvement for each application and can't be found anywhere else. Our unique Glass Reinforced Polymer (GRP) infrastructure solutions are suited to both indoor and outdoor areas such as train stabling yards, train workshop buildings, inspection lines, wash bays, test tracks, storage facilities and depot control centres.

Thanks to our unique durable, non-conductive and low maintenance material technology, as well as our in-house CAD and structural engineering capability, we can help ensure that hardstanding areas, structures and walkways are designed for the necessary loads. The anti-slip surfaces and corrosion resistant properties of our products also ensure that assets be accessed safely by train drivers and maintenance personnel to prevent downtime and achieve long term cost savings.

This section includes:

Train Maintenance Platforms

GRP Dura Platform cuts installation time by up to 65%

Rapidly deployed to ensure minimal disruption to depot environments, our Queens Award winning GRP Dura Platform can be combined with the strength of a steel foundation to deliver a lasting solution that's safe for maintenance personnel.

Our efficient modular design can eliminate up to 60% of the steel used in other designs, making it more cost effective and faster to install.

Dura Platform 40 achieves a clear span of 1500mm with a 5kN UDL at L/300 deflection and weighs just 35.55kg per m2, making it suitable in many cases for manual handling.

Panels interlock to minimise independent panel deflection, and our discrete CAM fixing system provide a smooth and trip-free aesthetic.

Key Benefits

- Easily Lifted for Access
- Long Design Life
- Anti-Slip Surface
- Non-Conductive
- Fire Resistant
- Corrosion Resistant
- Impact Resistant
- Minimal Maintenance

Main photo: **Dura Platform 40 at Neasden Depot**

Cable Trough Covers

Lightweight Structural Covers for Rail Applications

Dura Composites' GRP trough and cable pit covers help ensure easy access for maintenance & inspection. Low maintenance, durable and simple to install, our composite Glass Reinforced Polymer (GRP) covers are the ideal alternative to heavy & cumbersome steel or concrete covers.

With an innovative design that can include either manual lifting eyes or mechanical lifting arms, the trench cover lids can meet the needs for straight sections, curved sections, right angles and Ts and have an excellent strength to weight ratio. We are the only company who have the ability to test each cover in accordance with BS EN 124 for project specific requirements ,using our in-house test rig.

Moulded Dura Grating Covers

Dura Composites Moulded GRP Trench Covers are made from our Dura Grating and are typically used for areas of pedestrian traffic and are available in a range of load ratings to suit every application and budget.

Lightweight but high-strength, they dramatically reduce the cost of installation, maintenance and transport versus concrete covers. Many of our trench and trough access covers are available from stock for immediate despatch.

Pultruded Dura Grating Covers

Dura Composites' one piece heavy duty trench covers are pultruded in one mass to produce a consistent quality and incredible strength to weight ratio. They are ideally suited to vehicular loading requirements for infrastructure installations including power, telecoms and utility projects.

The covers are easy to lift, transport and install, unlike bulky concrete trough and access covers.

Pultruded Dura Slab Pit Covers

Dura Slab has been specifically engineered for use as high strength covers where an incredible strength to weight ratio is important. The covers are designed for maximum versatility and work with both pre-cast flat top concrete troughs as well as with precast concrete troughs with a factory formed recess which enable fitting flush with the floor surface.

Compliant with BS EN 124, Dura Slab panels are capable of spans ranging from 4000mm in pedestrian traffic areas to 600mm in Class D loads of up to 11 tonnes.*

*Dura Platform 100 product

Pit Cover, Dura Slab 50, Ealing Common Depot, Transport for London

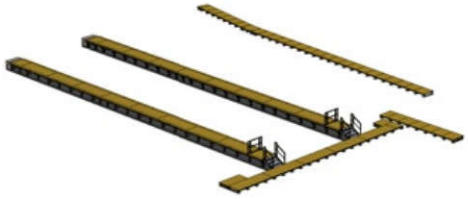
Driver Access Platforms

We offer a range of efficiently-designed GRP Driver Access Platforms (also known as DAPs or Driver Hop-Ups) which can be employed by guards, drivers and maintenance or cleaning crews for safe access to and from trains.

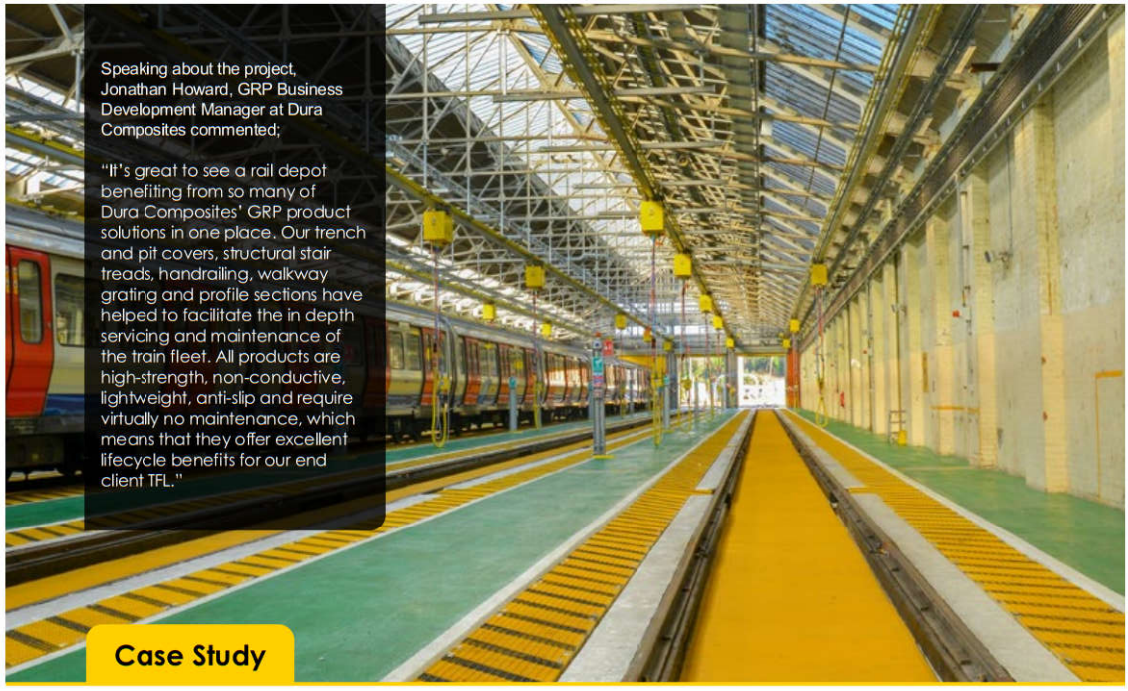
Non-conductive, lightweight and requiring virtually no maintenance, they are ideally suited to locations under OHLE wires where currents can reach 25,000 kV.

All components are individually tested to ensure performance, and can be preassembled in our state-of-the-art UK Fabrication Centre, where Dura Composites is certified to ISO-9001 – the International standard for Quality Management.

d² Dura Driver Access Platform, Broomloan Depot



Maidenhead Sidings, Great Western Main Line



Speaking about the project, Jonathan Howard, GRP Business Development Manager at Dura Composites commented;

"It's great to see a rail depot benefiting from so many of Dura Composites' GRP product solutions in one place. Our trench and pit covers, structural stair treads, handrailing, walkway grating and profile sections have helped to facilitate the in depth servicing and maintenance of the train fleet. All products are high-strength, non-conductive, lightweight, anti-slip and require virtually no maintenance, which means that they offer excellent lifecycle benefits for our end client TFL."

Case Study

Ealing Common Depot

Product	Centre & Outer Pit Covers, Structural Walkways
Installation Type	Refurbishment
Clients	McNealy Brown and TFL

Ealing Common Depot is a London Underground railway depot on the District line, located between Acton Town and Ealing Common stations in west London. It is the oldest of the main depots on the London Underground, having been built in 1905, when the District Railway was upgraded for electric traction.

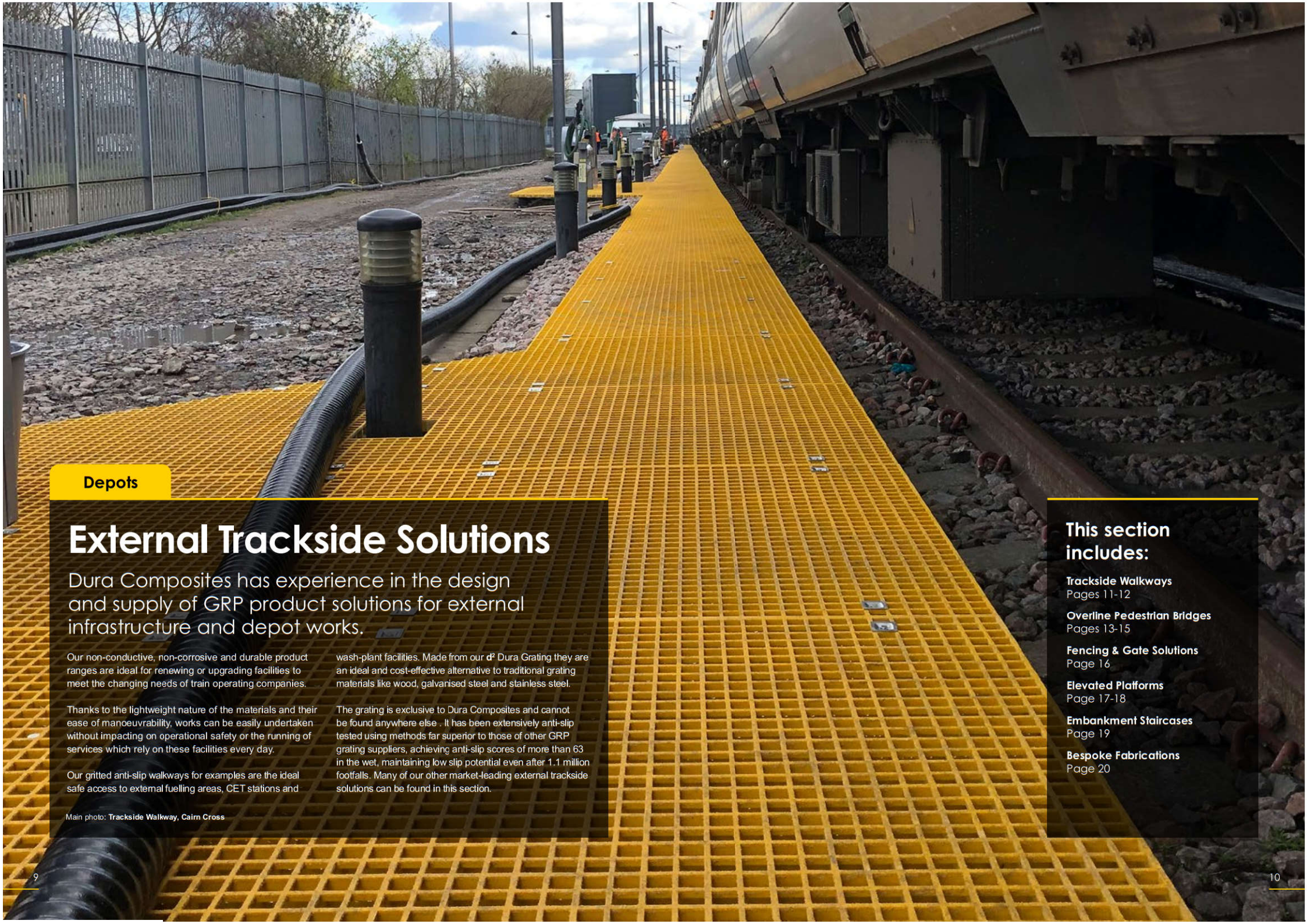
McNealy Brown Limited is an approved supplier for many Main Contractors and Infrastructure Companies operating across the Construction and Rail Sectors and was appointed for the modernisation of the existing Ealing Common Depot. McNealy Brown chose Dura Composites for the supply of a wide range of innovative low-maintenance and safe GRP solutions which could help meet not only the maintenance and cleaning requirements of new trains, but also the operational requirement of increasingly frequent timetables.

Dura Composites' innovative GRP product solutions at Ealing Common Depot included trench covers, structural stair treads, handrailing, walkway grating and profile sections.

Key Benefits

The characteristics of GRP makes it ideal for transforming existing depots into state-of-the-art facilities, with minimal disruption to the depot's operational teams.

- **Save Time**
- **Saves Money**
- **Minimal Operational Disruption**
- **Concealed Fixings**
- **Non Sparking**



Depots

External Trackside Solutions

Dura Composites has experience in the design and supply of GRP product solutions for external infrastructure and depot works.

Our non-conductive, non-corrosive and durable product ranges are ideal for renewing or upgrading facilities to meet the changing needs of train operating companies.

Thanks to the lightweight nature of the materials and their ease of manoeuvrability, works can be easily undertaken without impacting on operational safety or the running of services which rely on these facilities every day.

Our gritted anti-slip walkways for examples are the ideal safe access to external fuelling areas, CET stations and wash-plant facilities. Made from our d² Dura Grating they are an ideal and cost-effective alternative to traditional grating materials like wood, galvanised steel and stainless steel.

The grating is exclusive to Dura Composites and cannot be found anywhere else . It has been extensively anti-slip tested using methods far superior to those of other GRP grating suppliers, achieving anti-slip scores of more than 63 in the wet, maintaining low slip potential even after 1.1 million footfalls. Many of our other market-leading external trackside solutions can be found in this section.

Main photo: **Trackside Walkway, Cairn Cross**

This section includes:

Trackside Walkways

Dura Composites' Trackside walkways are durable, lightweight, chemical and corrosion resistant.

Suitable for many applications in the rail industry our GRP Driver and Trackside Walkways offer a performance-improving alternative to traditional materials such as timber, steel and concrete.

Dura Composites is a market leader in composite open mesh grating walkway systems, having supplied to industry for 25 years.

Our d² Dura Grating is a new patent pending **(Application No: GB 19 04928.7)** GRP grating series which achieves an industry-leading Class B fire rating in accordance with BS EN 13501-1 and has been championed within the rail industry for its performance-to-weight ratio and improved visual inspection capability versus previous generation GRP grating.

Using d² Dura Grating, trackside walkways and walking routes can be easily configured to meet the requirements of accessing the rail site for train-related purposes or for maintenance of infrastructure.

We also offer heavy duty walkways made from our unique pultruded Dura Slab which is the ideal alternative for heavy and cumbersome concrete. It can be fabricated on site using standard cutting tools, with no hot works permits required or cut to size at our East of England Operations Centre to save valuable time on your rail project.

Key Benefits

The use of lightweight trackside walkway materials which are non-sparking, non-conductive and easy to manoeuvre into place aids safety and productivity.

- Lightweight
- Non-Sparking
- Non-Conductive
- Anti-Slip
- Available From Stock

Main photo: **d² Dura Grating Trackside Walkway, Bell Creek Bridge**

Dura Grating

GRP Grating is lightweight and chemical resistant, making it ideal for trackside walkways including pump out and refuelling locations.

Our latest **d²** Dura Grating is a patent pending GRP grating series with a Class B fire rating that is exceptionally slip-resistant and offers excellent traction in wet and icy conditions.

Dura Composites' unique high specification composition has been rigorously tested (in accordance with BS 7976-2:2002+A1:2013) and achieves ultra-low slip potential in both wet and dry conditions.

Lightweight but strong, it can be supplied with a range of stainless steel clips, clamps and various hold-down fixings to suit all situations. Use of hi-tech resin systems and application techniques means **d²** Dura Grating's colour is consistent and long lasting. More details of the full range can be found on pages 21-22.

Dura Slab

Uniquely designed, Dura Slab exhibits an incredible strength to weight ratio producing a heavy duty walkway and cable trough cover solution that is rigid, strong, lightweight, non-corrosive, durable and maintenance free with an anti-slip surface.

Dura Slab is ideal for new constructions but is also well suited for refurbishment applications to replace old, heavy and cumbersome trackside walkway materials. More details of the full range can be found on pages 23-24.

New or refurbishment structural flooring & cable trough covers.

Overline Pedestrian Bridges

With increasing amounts of traffic on the tracks, overline pedestrian bridges can improve safety for those needing to cross the railway line.

Dura Composites' GRP Dura Slab Structural Stair Treads and Landings can be used as part of new build bridge construction and as a replacement for rotting timbers in footbridge refurbishments.

Extremely low-maintenance, the products will not rot, corrode or even lose colour throughout their design life, and are ideally suited to situations where the footbridge or staircase is located in close proximity to overhead power lines or electrified areas, due to their non-conductive properties.

The treads and landings can be easily fixed into position thanks to their single unit construction and feature a built-in riser for rapid installation and an in-built fall to assist with drainage and reduce pooling on stair surfaces.

Key Benefits

Overlay solutions with gritted plate covers on to timber are not a safe and long lasting solution, accelerating the degradation of the timber substructure which is dangerous for both the public and maintenance staff.

- Saving Time
- Strength
- Improved Lifecycle
- Low Maintenance
- Fire Resistant

Structural Landings

Pedestrian Footbridges

Working in conjunction with the NEW Dura Slab Structural Treads, Dura Composites offer landing panels which can span up to 2.4m clear span (50mm thick option), achieving 5kN/m² at L/200 deflection or up to 3.2m (using the 100mm option).

New discreet cams to improve aesthetics

ACHIEVES BS 476 PART 7 CLASS 1 AND EN 13501 B-fl, s1

The Dura Slab Structural Stair Tread finishes flush against the Dura Slab Structural Landing

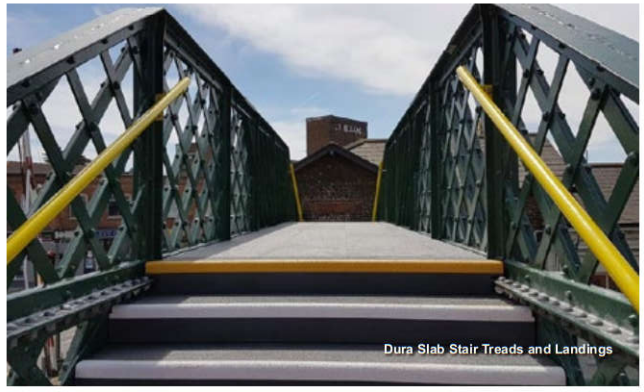
Dura Slab Structural Stair Tread

Dura Slab Structural Landing

Both reduce or eliminate the need for additional supports to break spans down, providing huge advantages over other composite solutions on the market.

Dura Slab Structural Landings are designed as a modular system, allowing the contractor huge flexibility both at the design stage and on site.

Dura Composites' unique high specification composition has been rigorously tested (in accordance with BS 7976-2:2002+A1:2013) and achieves ultra-low slip potential in both wet and dry conditions. For full details please consult our Technical Manual.



Dura Slab Stair Treads and Landings

Structural Stair Treads

Dura Slab Structural Stair Treads and Landings are designed as a modular system, allowing the contractor huge flexibility both at the design stage and on site - speeding up install times and reducing costs and possessions, thereby limiting disruption.

Where previous composite treads on the market have been limited in span capabilities, Dura Composites has the ability to span up to 2.1m clear open span, achieving the required 5kN/m2 at L/200 deflection and meaning that additional supports can be avoided in most scenarios.

The Dura Slab Structural Stair Tread design can be specified with built-in risers, speeding up the install process whilst increasing safety, particularly in scenarios where bridge treads are located near overhead lines or are replacing open risers. Also included is a very slight fall to assist in the prevention of water pooling which can lead to problems with ice in the winter months. No heavy lifting equipment is needed as all panels can be easily manhandled even in full stock lengths.

Stair Tread Nosing Strips

Dura Tread Nosing Strips can be applied to a variety of stair tread materials such as concrete, wood, chequer plate or GRP grating to help mitigate the risk of slipping, tripping and falling. Quick and easy to install, Dura Tread Nosing Strips have a tough anti-slip gritted surface and are available in both Yellow and White to maximise visibility of the stair edge. Each piece is 1830mm long as standard and the profile dimension is 55mm x 55mm with a thickness of 4mm.

Choose Dura Tread Nosings for a quick, cost effective solution to improving safety in slippery or hazardous areas, and for areas used by the public.

Fencing and Gate Solutions

Dura Composites' modular GRP gates and fencing have been developed as an alternative to steel due to their non-conductive properties, making them extremely suitable for electrified rail environments to enable access to specific authorised personnel, whilst preventing others from accessing high-risk areas.

Strong but lightweight, they can be used for a wide range of trackside and depot applications such as removable fencing, permanent fencing and sliding gates.

With a visually appealing mesh design, the fencing can be pre-assembled off site for rapid installation or supplied in component form.

Elevated Platforms

We can design and fabricate a wide range of elevated platforms which withstand the harsh environmental conditions of the trackside and are non-conductive and non-sparking.

Maintenance Wash Bays

Dura Composites supporting framework for maintenance wash bays utilises 203mm GRP channel, versus the commonly used weaker 150mm channel. Uniquely in the market, all our d² GRP profile components meet the E23 grade performance requirement of the BS EN 13706 standard (which covers the specification of GRP pultruded profiles) and provides greater strength and consistent quality.

The flooring components have been anti-slip tested for the equivalent of over 1m footfalls, achieving anti-slip scores of more than 63 in the wet environments found in a wash down, maintaining low-slip potential even after an incredible 1.1 million footfalls.

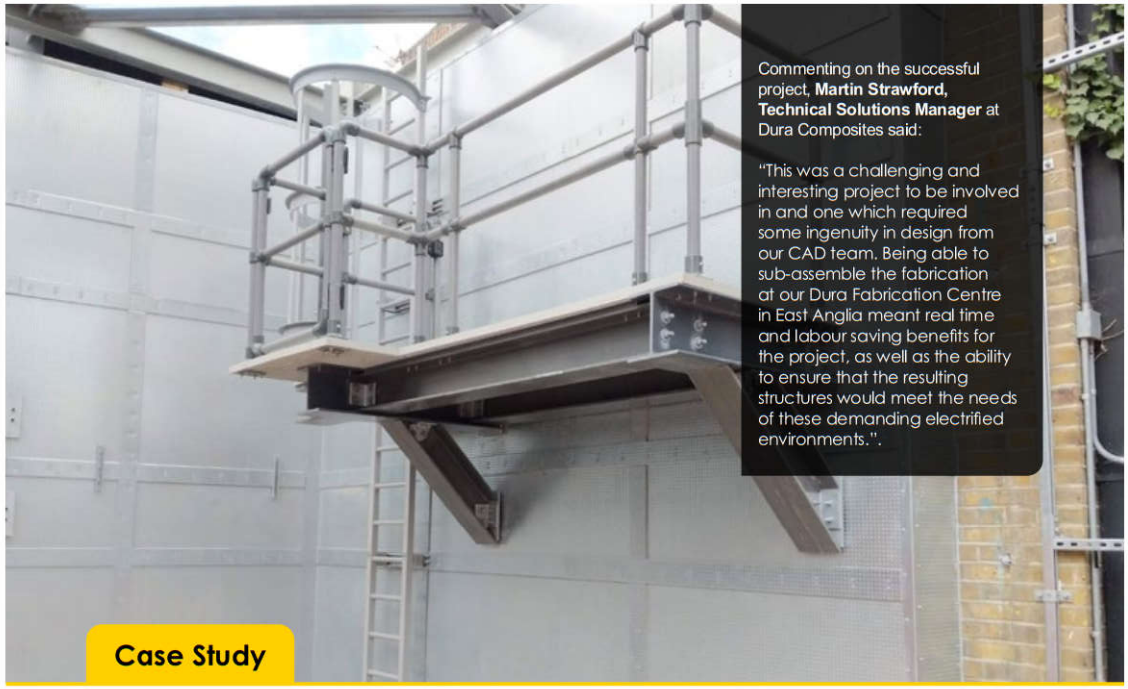
Wash Bay Walkway, **Docklands Light Railway, London**

Refuge Platforms

Our GRP refuge platforms can be employed by maintenance personnel for safe access to signalling equipment and other trackside areas. Thanks to the material's non-conductive properties, it is a safer alternative in OHLE or third rail environments than conventional materials and poses no risk of electrical shock, removing the requirement for earth-bonding.

Modular Access & Inspection Platforms

Dura Composites has in-house design and fabrication capabilities which deliver high-performance GRP depot platforms for virtually any requirement in the depot, including nose end and carriage access. Our popular modular designs allow for re-use over and over again in multiple locations for maximum efficiency and the technological advances of our **d²** technology ensures the safest, most user-friendly and aesthetically pleasing systems on the market.



Commenting on the successful project, **Martin Strawford, Technical Solutions Manager** at Dura Composites said:

"This was a challenging and interesting project to be involved in and one which required some ingenuity in design from our CAD team. Being able to sub-assemble the fabrication at our Dura Fabrication Centre in East Anglia meant real time and labour saving benefits for the project, as well as the ability to ensure that the resulting structures would meet the needs of these demanding electrified environments.".

Case Study

Stockwell Substation, London

Product	Pre-Fabricated Access Platform Solution
Application	Access Platforms
Clients	Northern Line, London Underground

Power upgrade works on the Northern Line began in 2018 to address poor asset condition, provide additional service resilience and enhance network power capacity for service increases on the sub-surface lines of the London Underground. The programme has included replacement of life-expired coupling transformers at Stockwell substation and upgrades to the high voltage network between Stockwell and Clapham Common substations, in a project led by contractor Balfour Beatty.

As a leading designer, manufacturer and supplier of Glass Reinforced Polymer structural products for industry, Dura Composites was chosen to supply two non-conductive access platforms to enable safe access to the transformer areas for qualified maintenance personnel.

Dura Composites have extensive experience in the provision of GRP solutions for the rail and energy sectors, including Machine Access, Gantries, Stepovers and Ladders. Our latest d² range of products deploys unique patented designs and innovative technology to deliver the safest, most cost-effective and durable solutions on the market.

In this case, Dura Composites GRP was chosen for its dielectric properties (due to the proximity to electrical equipment) as well as for its ease of workability on site. Our extensive investment in the latest manufacturing technologies mean that all the Dura Profile sections used exceed the E23 grade, delivering superior performance. The GRP Dura Grating floor surface also provides exceptional anti-slip properties and drainage in all weathers.

Key Benefits

Weighing up to 50% less than the equivalent steel, Dura GRP products offered a high performance structural solution which was, easy to handle, and economic to transport & install.

- **Saves Time**
- **Saves Money**
- **Minimal Passenger Disruption**
- **Lightweight**
- **Rapid Installation**

Embankment Staircases

Dura Composites Embankment Staircases are a ground-breaking pultruded GRP rapid install stair system, ideal for use on embankments to provide safe maintenance access to works staff on mounds and embankments. They are designed as a modular system, allowing the contractor huge flexibility both at the design stage and also on-site.

The gritted GRP walking surfaces cater for all types of footwear, offering excellent anti-slip qualities and feature a high visibility stripe on each stair nosing for maximum pedestrian safety. Lightweight components allow for easy delivery to remote locations and rapid installation at a wide variety of slope angles.

HIGH STRENGTH & ANTI-SLIP SURFACE

Bespoke Fabrications

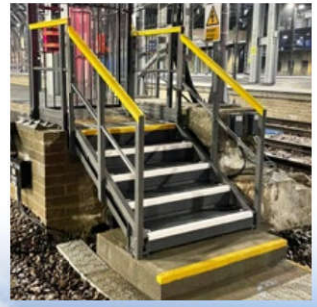
Dura Composites can design fabricated structures to meet customers' unique requirements.

Available exclusively from Dura Composites, the **d²** products from which our fabrications are constructed feature unique designs, new material technology or manufacturing methods and deliver class-leading performance for their applications.

We have a team of CAD experts and an in-house GRP structural design resource to ensure your planned fabrication meets all the safety and loading requirements for your specific application.

All fabricated structures can be supplied with detailed dimensions and weights, including overall footprint size to ensure it will fit within your planned design. The supporting framework of our bespoke fabrications utilises 203mm GRP channel, versus weaker 150mm channel commonly used by competitors.

Uniquely in the market, all our **d²** Dura Profile components meet the E23 grade performance requirement of the BS EN 13706 standard (which covers the specification of GRP pultruded profiles) and provides greater strength and consistent quality.



d² Dura Grating

d² Dura Grating is part of the innovative d² product family which is available exclusively from Dura Composites. Featuring unique grating mesh designs which deliver class-leading product performance.

d² Dura Grating GRP stand mesh, mini mesh and solid top flooring achieves a classification of B-fl, s1 in accordance with BS EN 13501-1, meaning very limited contribution to fire, with the lowest possible smoke emissions.

d² Dura Grating's advanced anti-slip surface also features a high specification composition which achieves ultra low slip potential in both wet and dry conditions. The slip potential of the surface is proven to reduce by a mere 5% after 1 million footfalls (in accordance with BS 7976-2:2002+A1:2013) whilst still achieving an impressive score of 62 in the wet against the low slip potential threshold of just 36. Products are available in Dark Grey, Yellow and Green as standard.

Key Benefits

Available in standard mesh, mini mesh and solid top formats, each variant has a Class B fire rating and offers superb efficiencies versus previous generation GRP grating.

- Unique Design
- Class B Fire Rating
- Proven Anti-Slip
- Consistent Colour
- Value for Money

Available d² Dura Grating Variants

Designed, developed and manufactured by Dura Composites, **d² Dura Grating** offers outstanding safety, performance and durability and is more cost-effective than traditional GRP grating in almost every scenario. Use the table below to find the right panel size for your project.

Product Range	Depth (mm)	Open Hole Size(mm) /Open Area	Panel Sizes (mm)	Colour	Weight (kg/m²)
Standard	26mm d²	32 / 60%	3043 x 993 3699 x 1239	Dark Grey / Yellow / Green	10.3
	38mm d²	31 / 66%	3054 x 996 3663 x 1224	Dark Grey / Yellow / Green	13.2
	50mm d²	28 / 63%	3052 x 1057 3682 x 1267	Dark Grey / Yellow / Green	15.7
Mini Mesh	35mm d²	19.5 / 54%	3030 x 1041 3667 x 1200	Dark Grey / Yellow / Green	13.2
	45mm d²	19.5 / 54%	3030 x 1041 3667 x 1200	Dark Grey / Yellow / Green	15.3
	55mm d²	19.5 / 54%	3030 x 1041 3667 x 1200	Dark Grey / Yellow / Green	19.0
Solid Top	29mm d²	None	3699 x 1239 3043 x 993	Dark Grey	16.7
	41mm d²	None	3663 x 1224 3054 x 996	Dark Grey	21.1
	53mm d²	None	3052 x 1057 3682 x 1267	Dark Grey	22.9

Dura Slab

Dura Slab is designed as a modular structural flooring system, allowing the contractor huge flexibility both at the design stage and on site.

The anti-slip surface is tested in accordance with BS 7976-2:2002 and caters for all types of footwear and so is ideal for passenger environments.

The need for less or no alterations to the sub structure also dramatically reduces the install time, number of possessions and overall disruption to the end user. Again, no heavy lifting equipment is needed as all panels can be easily manhandled even in full stock lengths.

Key Benefits

Dura Slab is a range of one piece heavy duty trench, cable trough and pit covers which are pultruded in one mass to produce a consistent quality and incredible strength to weight ratio.

- Easily Lifted for Access
- Long Design Life
- Anti-Slip Surface
- Non-Conductive
- Fire Resistant

Other Application Examples for Dura Slab

With many items available from stock, the covers are easy to transport to site, lift and install, unlike bulky concrete trough and access covers.

Cable Pits & Wide Span Trenches

Crossing Points: Single

Temporary Crossing Points

Overlay Crossing Points

Product Range	Quick Ref. Code	Length (mm)	Max Width (mm)	Panel Weight (kg) / m²
Light Duty				
45mm	P45A 725 Solid Lap	3660	725	66.6kg / 25.1kg per m²
Medium Duty				
50mm	P50B 500 Solid Lap	3660	500	72.0kg / 39.3kg per m²
Heavy Duty				
75mm	P75C 650 Solid Lap	3800	650	135kg / 54.7kg per m²
100mm	P100D 650 Solid Lap	2800	650	142kg / 78kg per m²

Dura Safety Handrailing

Dura Composites offer a high quality, non-conductive GRP Handrail system complete with all fittings.

Dura Key Clamp Handrailing is lightweight and easy to handle and offers low installation and maintenance costs as it doesn't require painting or galvanising.

Available in high visibility yellow (RAL 1023) or grey (RAL 7043) it can be installed quickly and easily in a variety of industrial and transport environments such as high-voltage areas, rail stations and track-side settings to provide worker or general public safety. Despite its lightweight properties, GRP handrailing offers impressive strength-to-weight and load-bearing performance.

The latest innovation in our d² product portfolio includes pre-assembled components which dramatically speed up on-site installation times.

Key Benefits

The ideal low-maintenance alternative to conventional galvanised steel key-clamp handrail systems, which are not suited to electrified rail environments.

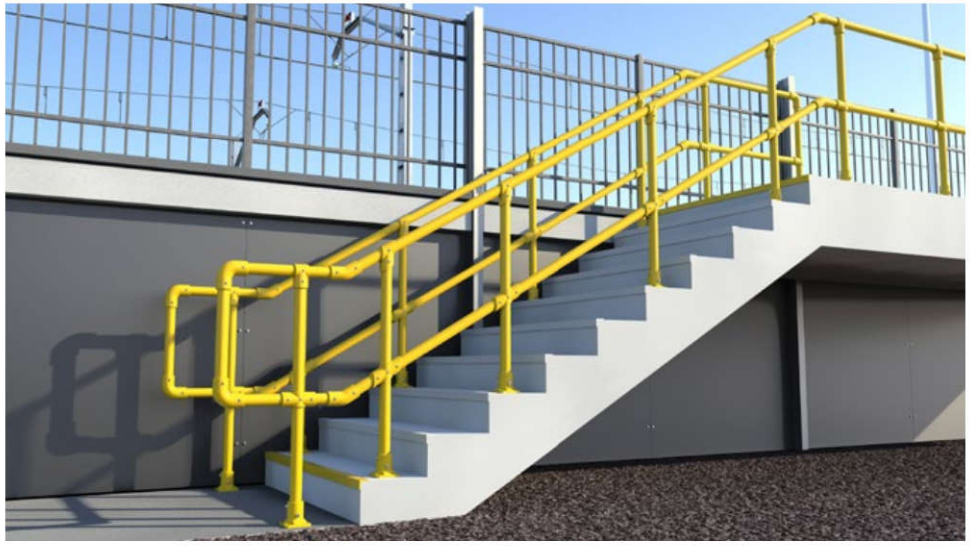
- Modular System
- Part Pre-Assembled
- Non-Conductive
- Warm to Touch
- Corrosion Resistant

Pre-Assembled Parts

Dura Composites now offer pre-assembled 1.1m high handrail components in a waterproof palletised crate system. Pre-assembling 3 key parts (Mid Upright-Side Mount, End Upright-Side Mount, Mid Upright-Top Mount) not only speeds up deliveries but adds huge improvements to on-site installation speed.

Mid Upright | **End Upright** | **Mid Upright** | **Side Upright*** | **Corner Upright***

1. Supplied from stock, arrives partially assembled in a waterproof palletised system.
2. *Longer lead times may apply for these types.



Dura Ballast Retention

Open and closed systems with hatches or lids

Dura Composites innovative GRP Ballast Retention systems allow Network Rail and key contractors greater access to hidden critical parts of structures to facilitate key safety checks and take action where necessary.

Dura Ballast Retention has been successfully implemented on a host of projects nationwide and offers significant advantages over traditional materials, including increased strength to weight ratio, high resistance to impact and resistance to fire and corrosion.

As part of the consultation process, Dura Composites provides all the technical information necessary to obtain Form 3 approval.

Bespoke support is provided for each installation to allow for the inclusion of enhanced speed and safety features such as the supply of GRP handrailing, bespoke lockable HCE inspection hatches, web stiffeners to suit particular dimensions and fabricated access staircases.

Specific Dura Patented Hidden Critical Elements (HCE) products have been developed through on-site experience and feedback from contractors.

The number of components and weight have been optimised to allow for rapid installation and fewer possessions.

Key Benefits

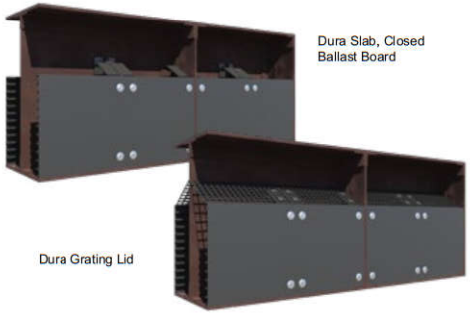
Our patented component forms the core support element of the full system and reduces the time taken to build a whole ballast retention system from weeks to just days.

- Saves Time
- Improves Safety
- Long Lifecycle
- Non-conductive
- Modular System

Ballast Retention Range

Closed Dura Ballast Retention System with Inspection Lid

- Type P40A Solid GRP Ballast Board
- Dura Web Stiffener
- Dura Profile
- Open Mesh Inspection Lid
- Compression Fixings for Front Face Fixing Only



Open Dura Ballast Retention System with no Inspection Lid

- Dura Grating Open Ballast Boards
- Dura Web Stiffener
- Dura Profile
- Compression Fixings

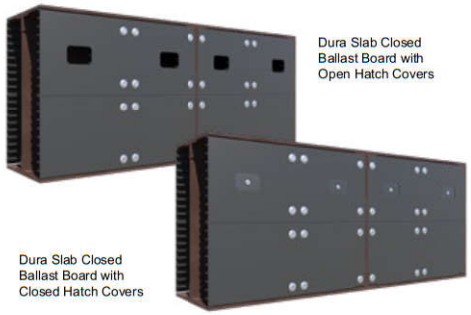

Dura Web Stiffener


Dura Profile


Dura Grating Pultruded, Open Ballast Board

Closed Ballast Retention System with Inspection Hatches

- Type 40 Solid GRP Ballast Board with Inspection Hatch
- Dura Web Stiffener
- Dura Profile
- Dura Hatch Lock Plate



Ballast Retention System Lids only

For applications where the requirement only calls for lids or extensions onto existing Ballast Retention Systems, and full systems are not required, we have developed Pultruded Grating Lids with a 21.6mm open aperture and standard Grating Lids with a 42x42mm open aperture.

Modular Web Stiffener (Patented GB2522039)

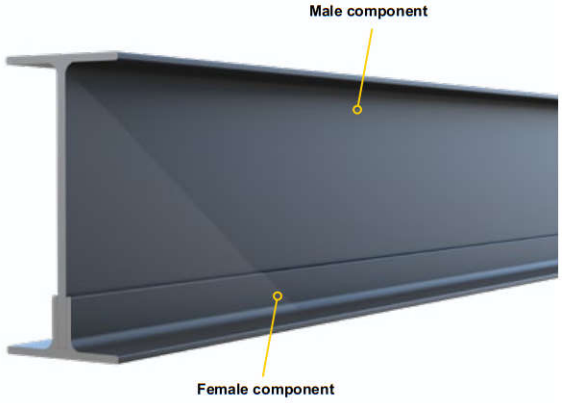
Specifically developed for Hidden Critical Element (HCE) works, the Modular Web Stiffener System is the latest in highly engineered composite technology. Comprising a unique pultrusion system which reduces the number components and weight even further but maintaining the required strength. The reduction in the number of components and weight verses alternatives further improves install time on-site.

Easier and Faster to Install on-site

Significantly reducing the weight and bonding in the factory, has not only increased speed of delivery but has also improved installation time. Based on real site feedback, not only is it easier to handle but the new design also allows for easier on-site adjustments.

Improved Fabrication Lead-times

The average bridge package currently takes 2 weeks to fabricate, whilst Dura Composites' patented design allows the same package to be produced in 2-3 days. As well as investing in the new tooling we have also added significant new machinery including bespoke cutting and bonding equipment to enable this huge speed improvement.



High Strength to Weight Ratio

The solution has been designed as a two-part pultrusion with an advanced glass and roving system. This precision engineering results in significant weight saving versus alternative designs and marked improvements in safety. Dura Composites' Modular Web Stiffener System can be delivered rapidly to site to coincide with last minute possession or urgent line blockages which can be critical in the rail environment, making it the ideal choice over inferior web stiffeners on the market.

Dura's Universal Modular Web Stiffener is fully adjustable and helps speed up install times, resulting in fewer possessions.

Dura Profile

Our d² Dura Profile components meet the E23 grade performance requirement of the BS EN 13706 standard and provide greater strength and consistent quality.

The versatility of d² Dura Profile makes it a logical and cost-effective alternative to carbon, steel, aluminium, wood or other conventional materials that have traditionally been used in rail and trackside environments.

We carry a large stock holding of profile, including Angle, Channel, Box and Tube sections at our UK Operations Centre.

Our new online Interactive Product Selector allows users to confidently select a GRP Dura Profile beam section based on whatever traditional beam may already feature on a drawing.

The specific steel or timber beam type and size can be selected from a drop-down list, the load criteria chosen alongside the span, and the Dura Composites tool will show which d² GRP Dura Profiles meet or exceed the performance of the steel or timber and provide the relevant safety factor data.

Key Benefits

GRP pultruded profiles offer cost-effective, durable and corrosion-resistant protection for rail network structures and can handle different load requirements with ease.

- E23 Grade Performance
- Corrosion Resistant
- High Load Bearing
- Non-Conductive
- Maintenance Free

Working with Dura Profile

According to live test data, d² Dura Profile has an average Tensile Modulus of more than 31GPa - far exceeding the requirement of 23GPa set out by the stringent E23 European standard within BS EN 13706. This means that d² Dura Profile is on average 88% stronger than other GRP profiles, which only meet E17 GPa. The result is smaller sections can be used, saving weight and resulting in more cost-effective product selection.

Fabrication methods used with conventional materials can also be used with Dura Profile. The most common form of connections are made by mechanical fasteners. Bonded joints are also an option and selection of the appropriate method will depend on the:

- Distribution of loads within the assembled structure.
- Necessity to disassemble the structure components at a later stage.
- The environmental conditions during fabrication.
- The environment in which the assembled structure will be used.

Dura Composites can design specific structures made from Dura Profile components around a customer's requirements and can fully support modular installation methods if required.

All fabricated structures can be supplied with detailed dimensions and weights, including footprint size, to ensure it will fit within the overall planned design.

Angle

Channel

Top Rail

Box Channel

I Beam

Tube

Kick Plate

WFB

Box

Box Base Foot

Web Stiffener

What you get when you work with Dura Composites:

1. Online Tools

Using our online tool you can customise, price and specify your own step-over access systems online from our next generation **d²** GRP Access Structure range. Dura Composites are experts in the design, fabrication and supply of composite GRP step-over access systems, up and over stairs and step units to help navigate obstacles such as pipework, plant equipment, bund walling or changes in level and to provide safe access.

We now offer a complete range of **d²** Fabrications (Reg. Design No. 008200554-0001), deploying the latest innovations in GRP technology to deliver the safest, most cost-effective, user-friendly and aesthetically pleasing GRP access systems on the market.
The **d²** GRP Access Structures have been designed to the stair configuration, height, and obstacle width of your specific project. Simply select your project site parameters from the options below to view available step-over designs with indicative pricing*.

All **d²** GRP Access Structures are designed in conjunction with relevant standards for commercial and industrial use and provide a safe, low-maintenance, non-conductive and cost-effective alternative to metal or wooden structures. Visit our website to have a go: www.duracomposites.com/grp-access-structures/d2-grp-access-structure-configurator

2. Design Support

If you're working in rail infrastructure design or if you're simply looking to improve safety and performance for your rail assets, we can help support your design services across all phases of the project lifecycle. We can provide detailed technical specifications for our award-winning product range to help you make data-driven decisions. We have an extensive library of previous projects which have been successfully installed in a wide range of station and trackside locations. Our in-house CAD and Structural Engineering team can be utilised both for stand-alone design and as part of larger integrated design scheme. Whatever your scenario, you can be confident that we'll help ensure your project will meet the load performance and specification needed, otherwise we won't supply it!

3. Cutting – Standard & Specialist

We understand that each rail and transport network project is an individual contract with specific design requirements. Dura Composites' specialist cutting team offer a full range of services to ensure that our product meets your exacting requirements so you can install with confidence.

Our 2D, 3D, and 4-axis CAD team are the best people to help you get a first impression of how you can utilise our market-leading composite products. Once the product is designed, our professional staff can cut it into life, using precision tooling to perform straight lines, cuts, routing – whatever you need.

STANDARD
Drawing on 20+ years' experience Dura's cutting team can cut to a 3mm tolerance.

SPECIALIST
Alternatively, if you require a more specialised cutting service our team can help. We aim to optimise cuts per panel to ensure the best yield and that all panels are used in the most efficient way.

ROUTING
We can router holes suitable for lifting eyes or for other requirements as specified.

4. Material Availability & Same Day Despatch

Meeting the varied demands of railway infrastructure projects is an important part of our business. Our core products are available from UK stock holdings from our 2.5 acre Operations Centre in East Anglia, saving you valuable time when you need to get product to site. Same Day Despatch applies to in-stock standard items of up to 200 panels, ordered before 11 am Monday to Friday – so you can order one day and install the next!*

All our Dura Grating panels can be given a unique ID to allow for complete traceability through the project lifecycle.

We also have one of the largest stock holdings of GRP profiles in the industry, including Angle, Channel, Beam, Box and Tube sections, so you can create bespoke solutions that will stand the test of time.

*Same Day Despatch available on core in-stock items that do not require cutting or fabrication. To qualify, orders must be below 200 panels and be received and processed by 11 am Monday to Friday. The vast majority of the country is covered by next working day delivery. However, there are a few outlying areas where this may not be possible. Please check for service availability to your postcode area.

5. BIM Objects

Our Dura Composites BIM objects are hosted on NBS Source where they are available for use by architects, designers, engineer, contractors and specifiers.

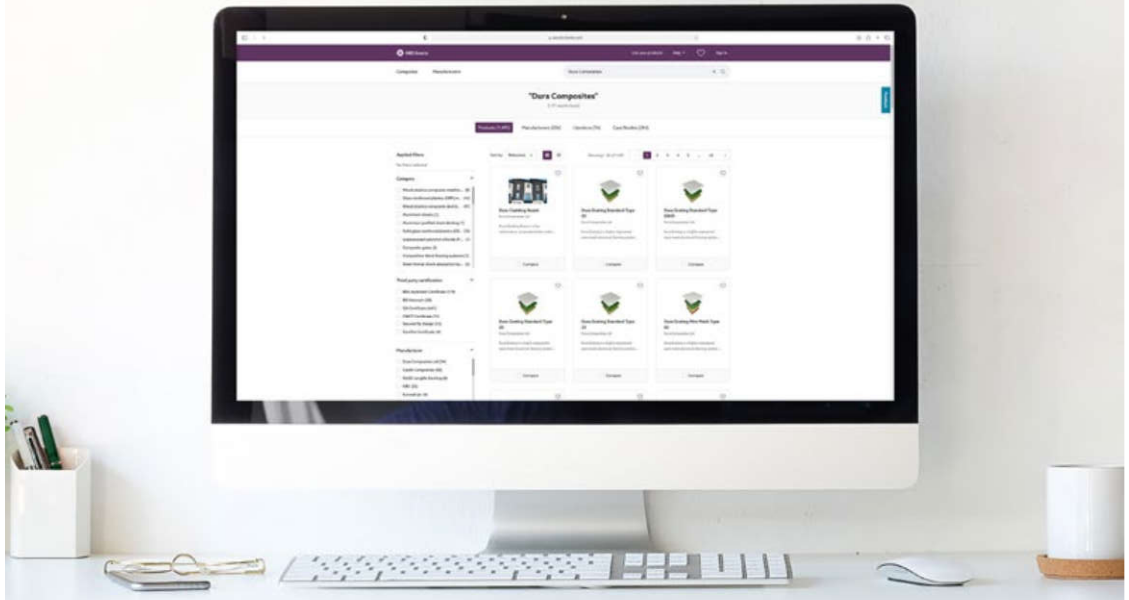
Available free, our data-rich Dura Composites BIM Objects allow specifiers to see up-to-date, accurate data about Dura Composites products and to easily incorporate them into their overall design.

Authored to the trusted NBS standard, each BIM Object details the various surface finishes, profiles, sizes and colour options for each product, and provides specifiers and end clients with detailed information on how the products will perform during their expected lifecycle.

To access the Dura Composites BIM objects visit: https://source.thenbs.com/search-results/products?search=Dura%20Composites.

If you require any additional information or support, please contact us to discuss how our CAD team can work with your sales contact to unlock the power of composites for your project. We also offer a range of CPD training materials which are delivered by our experienced team.

NBS Source PARTNER



6. CPD Training

With budgets under ever increasing scrutiny, it's never been more vital to ensure that the solutions provided to the rail industry are both future proof and have a measurable impact on efficiency.

Dura Composites now offer a series of training sessions for designers and contractors to understand the technical capabilities and install methodology of Dura products in a supportive and engaging environment. We can cater training sessions specifically to the requirements of your project. For more information please speak to a member of the Rail team.

7. Technical Information Manuals

We offer a wide range of accessible technical information regarding our product range to help ensure that your chosen product meets the performance need of your specific rail application.

Our interactive product selector tool allows you to get a GRP grating or profile product recommendation in just a few steps and is the result of years of extensive research and rigorous live and simulated testing.

We also have a number of technical manuals and material safety data sheets which are readily available from your Dura Composites sales representative.

8. Accreditations

From being accredited by the UK Rail Industry's leading professional and industry bodies to establishing and maintaining close working relationships with carefully chosen partners – Dura Composites constantly dedicates time and effort to ensuring our service to you is current, knowledgeable and effective.

Our range of accreditations are gained through a variety of methods, from comprehensive audit assessment to evaluation of approaches to health and safety, BIM and quality management to ensure we meet the highest possible standards.

In 2020, we were proud to have successfully earned recertification to ISO 9001:2015, the internationally recognised standard specifying the requirements for quality management systems.
This is a testament to Dura Composites' team members – from sales and marketing to fabrication, operations and installation – who thrive on improving customer value through quality management.

Railway Industry Association MEMBER

Achilles BuildingConfidence Advanced Member

nqa ISO 9001 ISO 14001 INTEGRATED MANAGEMENT UKAS MANAGEMENT SYSTEMS 0015

Composites UK

RISQS VERIFIED

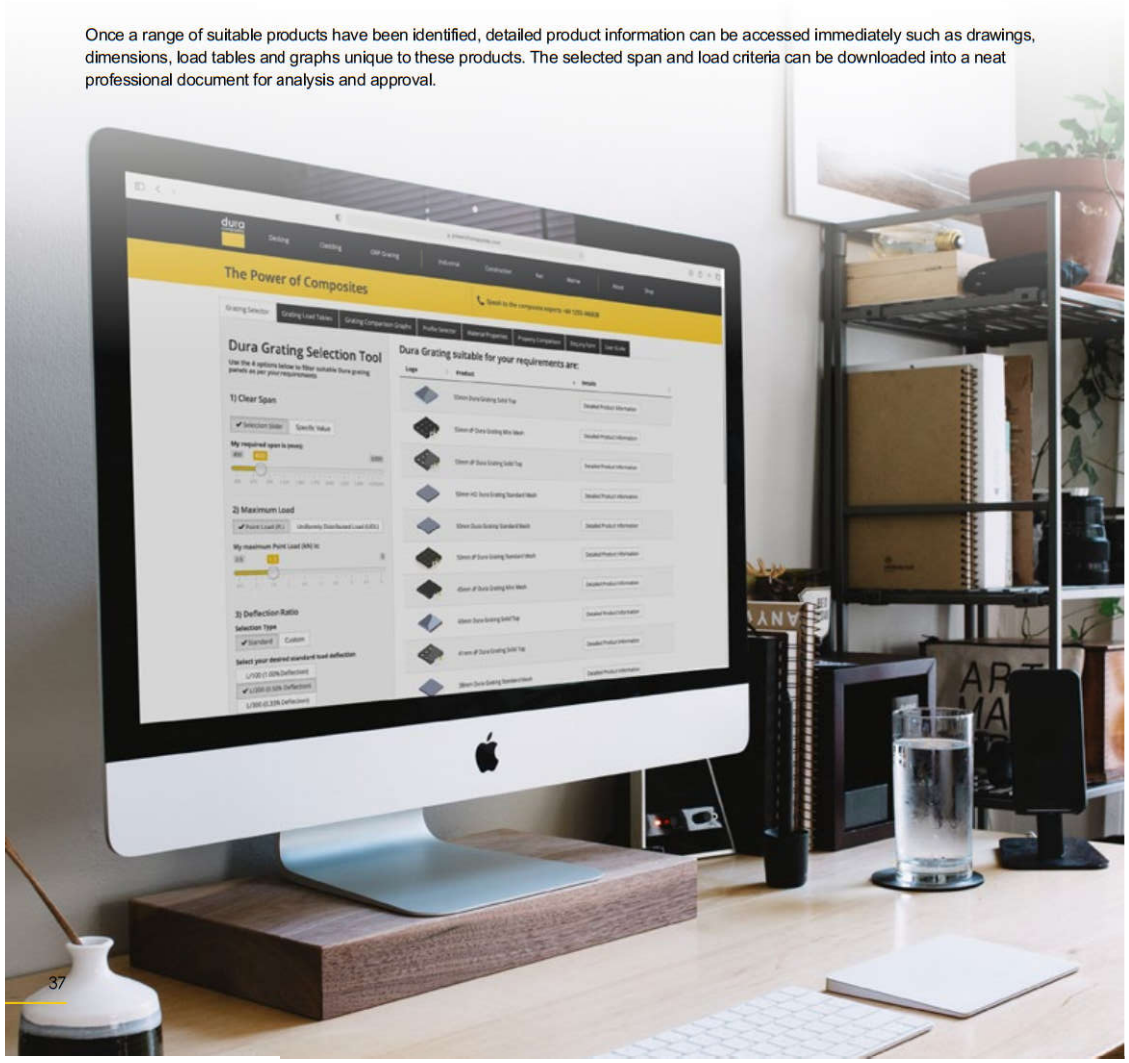
Make Data-Driven Decisions »

This brand-new online tool helps unlock the world of composite products for a vast range of architects, engineers, project managers and designers. The result of years of extensive research and rigorous live and simulated testing, the online Interactive Product Selector is available now at www.powerofcomposites.com to help those within the rail, civils and asset management industries make fast and accurate decisions about the right product specification for their projects.

How to Unlock the Power of Composites for Your Business

Users can compare products across the Dura Composites range with the click of a button, with easy to interpret graphs collated into a single view. BIM data files which feature product information can also be downloaded from the tool, allowing architects and specifiers to streamline the design, build and maintenance process to save time and money.

Once a range of suitable products have been identified, detailed product information can be accessed immediately such as drawings, dimensions, load tables and graphs unique to these products. The selected span and load criteria can be downloaded into a neat professional document for analysis and approval.



What does the Site Feature?

Say goodbye to lengthy technical datasheets, protracted quotes, and sub-par results. Welcome to the future of composite grating. With this one, seamless tool, you are able to input your precise requirements and receive a bespoke GRP grating product to match, complete with market-leading data feedback so you can see the difference for yourself.

GRP Grating Selection Tool

Create a list of grating products that meet your exacting criteria. Adjust the Load, Deflection and Fire Rating parameters accordingly; export detailed information such as Product Variations, Product Dimensions and Full bar guide.

Create Bespoke Grating Load/Deflection Tables and Graphs

Select product and options to display customised information in downloadable assets to back up your specification. Adjust the load and span range and interval to create your very own dynamic load and deflection table.

Grating Comparison Graphs

Compare the performance of grating panels against one another using a graphical format. Set Load Type between Point Load (PL) and Uniformly Distributed Load (UDL) then select an unlimited amount of products to compare.

Profile Selector

Understand the performance of GRP profiles in comparison to traditional materials, for example using GRP instead of timber, steel or aluminium. Understand the specification and suitability of a product based on your intended application.

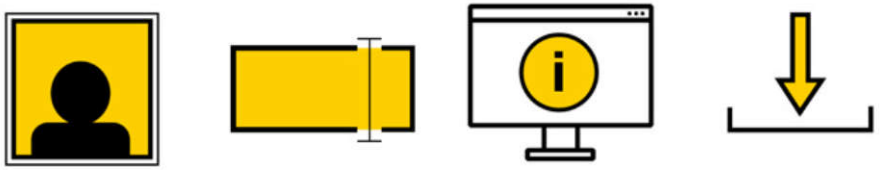
Material Properties

The material data reported has been compiled to allow engineers and specifiers to quantify the material properties with those contained within specifications.

Property Comparison

A visualisation of the difference between various properties for traditional materials versus our products. The values quoted are for representation only and are typical within the range of values for the given material.

So what are you waiting for? Unlock the Power of Composites and discover the Dura difference for yourself.



1. Register | **2. Insert Specifications** | **3. Get Product Recommendations** | **4. Download Technical Data**

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Unlocking the Power of Composites
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dura™ composites

May 2022

APPENDIX 4: Typical Silo Specification

SAND SILO TECHNICAL DESCRIPTION

Silo 30 M³ - mild steel

GENERAL DESCRIPTION

- Approx Height including hand-railing 12m. To be adjusted after detailed design.
- Silo diameter Ø2.4m (EXT)
- Outfeed Cone 1.7m @ 57 °
- Outlet flange Ø140
- Single stage vertical ladder complete with safety hoops and hinged bottom
- Top mounted hand railing, complete with safety hoops and hinged access
- Self-closing gate at top of ladder.
- Two 1.5" BSP bosses welded into the side of the silo for level probes
- Ø 275mm pipe & flange for safety valve N3, mounted to the top of the silo
- Top mounted central Ø787mm pipe and flange for dust filter N2. Optional floor mounted dust filter at no extra cost.
- 4" fill pipe work complete with 3x drum elbows. Pipe to run from outside wall of your building to the top of the silo. Primary support supply and installation on building structure by others
- Ø500mm hinged access hatch N4, mounted in the top of the silo.
- Protecting cover from central cone to the 4 sides (roof) and on 3 sides down to approximately 1.2 m from silo base (side protection).

SILO EQUIPMENT

- Switch on the filling pipe
- Safety valve
- Two level detectors (high level - need to be refilled)
- Radar permanent level reading
- Manuel knife gate valve 6" (for maintenance on the electric knife valve)

DUST FILTER

- WAM silo top filter or equivalent (Optional floor mounted filter)
- Cartridge filters
- Total filtration surface 24 m2
- Cartridge made form spun-bonded polyester material
- Self-cleaning by compressed air (compressed air supply by others)

FILLING PANELS (one for the silo refilling and one for the mobile unit refiling)

- Filling silo panel installed on the outside wall of your building gives to the operator the information levels and allows the refilling silo operation (support of the panel to be supplied and installed by others)
- Level lights (high and low levels) and buzzer for warning the low level
- Filling silo switch (start the filter)
- Pannel for the mobile unit filling operation located underneath the silo
- Filling mobile press switch

FILLING VALVE

- An electrical knife gate valve 6" with speed control
- A connection flexible hose 4"
- Mobile unit manhole adaptor

POWER REQUIREMENT

- POWER SUPPLY 400VACTRI+N+G
- Please note that the power requirement is approx. 3 KW.

APPENDIX 5: Smart Sander Specification

Smart Sander SS 250 Detailed DATA sheet
Fully autonomous

Dimensions:	1,670 mmx 600 mm x 1,290 mm (L x W x H)
Sand capacity:	**250 kg useable capacity**
Power supply:	Maintenance free batteries with on board charger (for travel and sand distribution). Compatible for frequent charge.
Gross weight:	625 kg gross (loaded with 250 kg sand).
Sand delivery:	Stainless steel nozzle tailored to the rolling stock sand box
Sand flow:	**Approx. 15 kg / minute**
Dust extraction:	Extraction integrated into the nozzle, with **Class H filtration**
Travel drive:	**Powered axle with electric drive**, variable speed and automatic breaking. Driving wheels are 380mm inflatable tyres or optional 300 mm puncture proof tyres.
Steering:	**Large swivel braked castors**, operator steered through handles.
Outside turning radius:	**1,500 mm**
Usage Time:	**40 minutes of sand dispensing or 600 kg!**
Charging time:	Less than 2 hours from 10% to full.
Controls:	**User friendly control panel**
Safety first!	All necessary controls and devices for a safe use: emergency stop, **drive only or sand delivery only**, **low level sensor warning**, **automatic pressure relief before refilling**, low pressure operation, safety pressure relief valve, **no possible operation when charging**, no sand spillage, silicate dust extraction, braked castors, possible manual override, **PLC control.**
Refilling alternatives	Optional Mobile sand hopper, big bag sand dispenser or fixed 10t sand silo can be quoted on demand.

INFRASTRUCTURE

LSPH Limited
LSPH Depot Study – Phase 2
London
Second International Operator
Maintenance Facility Study

www.bwbconsulting.com

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April 2025

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1	07/04/25	Issued for Comment	[redacted]	[redacted]	[redacted]
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Notice

EXECUTIVE SUMMARY

April 2025 The evaluation is based on a desktop study of information provided and publicly available information, no site visit has been undertaken.

The outcome of the evaluation confirms that there is sufficient capacity within the depot to support a second operators' fleet of the size indicated in the two section 17 submissions provided by the potential second operators. The second operators are proposing to use trainsets of 200m length as opposed to the EIL fleet which comprises solely of 400m long trainsets, TMI has been developed to support trainsets of a 400m length but can also accommodate 200m length trainsets where two 200m trainsets can berth in 1 400m maintenance/stabling berth.

The second operators' fleet will require up to 8 trainsets on the depot on completion of each day's service for stabling, servicing and light maintenance, in addition EIL will have up to 14 trainsets on depot at the same time (2035 timetable). The review indicates that the 8-track maintenance shed will require 6 tracks allocated for the EIL fleet and 2 tracks for the second operators' fleet. The remaining stabling capacity requirement can be accommodated in the existing yard area, and there is still capacity on the depot to allow shunting movements of the trainsets. The second operator fleet with a train length of 200m will only require 4 berths for the 8 trainsets (2 in maintenance depot and 2 in the yard).

To enable effective arrivals and departures at the depot several enhancements are proposed which will enable a faster arrival rate that will enable one trainset arrival every 15 minutes, the proposed infrastructure changes are of a minor nature and should be completed prior to the new fleet utilising the depot to avoid disruption during the transition to the larger fleet.

The option of expanding the maintenance facility from the current 8 roads to 10 or 12 was considered but this would have impacted stabling at the depot, which already has a low ratio of stabling to maintenance berths. The expansion of the maintenance facility will not improve depot capacity, and the existing facility is adequate to support maintenance of the fleets.

At full utilisation, incorporating EIL's 2035 operations and the second operator's entire fleet, TMI would reach maximum capacity. A potential solution to alleviate this constraint involves using Greater Anglia's Orient Way facility for overnight stabling. This approach would significantly expand stabling capacity and potentially support a third operator for stabling and servicing at TMI.

CONTENTS

FIGURES

TABLES

APPENDICES

1. INTRODUCTION

Instruction

1.1 BWB Consulting (BWB) was instructed by LSPH Limited (the Client) to carry out a Second International Operator
Maintenance Facility Study . Details of the project brief are included in BWB proposal reference 244938 dated April 2025 .

Objectives

1.2 The objectives of the report are:

- Investigate if the existing Traction Maintenance Depot (TMD) facility at Temple Mills International (TMI) can be occupied by two separate high-speed operators (namely the existing operator and one additional, new, operator; this forms the proposed expansion plans), outlining what changes to equipment, and/or working practices might be required and how would this work in practice.
- Review and comment on the feasibility of the expansion plans and provide a high-level budget cost estimate and programme.
- Confirm (and comment otherwise) whether the existing TMD has capacity and can accommodate both train stabling for the existing operators' fleet; Eurostar International Limited (EIL), and train stabling for a new second operators' fleet. Additionally, identify suitable locations where additional train stabling could be accommodated, if required.

Scope of Works

1.3 The Scope of works includes:

- The production of a Depot and Stabling Strategy document, based upon the previous Phase 1 report undertaken by BWB in 2022 [Ref: 220288-BWB-ZZ-00-RP-TR-000001 Rev 2] and the Technical Note undertaken by BWB in 2024 [Ref: 244938-BWB-00-00-RP-CV-000001_S1_P03], that can be shared with prospective new operators and stakeholders. The document comprises of:
    - Timetabling and Route Capacity Analysis (high level).
    - Rolling Stock O&M Strategy – including Train Wash, Servicing and Maintenance Road Capacities/Expansion.
    - Maintenance Depot Facility Expansion Study - including additional Roads Feasibility (8 roads existing to max 12 roads proposed).
    - Sharing Considerations for EIL and 2nd Operator.
    - Additional Stabling Requirements Feasibility for Expanded depot, considering nearby site locations also.
    - Programme and cost estimate for the proposed depot expansion and/or any additional or revised stabling requirements (high level budget estimates), including commentary for risks, exclusions and assumptions.

2. THE SITE

Site Location

2.1 The site is located east of London, in Leyton, and is bound by Orient Way to the east and Hackney Marshes and Lee Valley Park to the west and south respectively. The location of the Site is outlined in red in **Figure 2.1.**

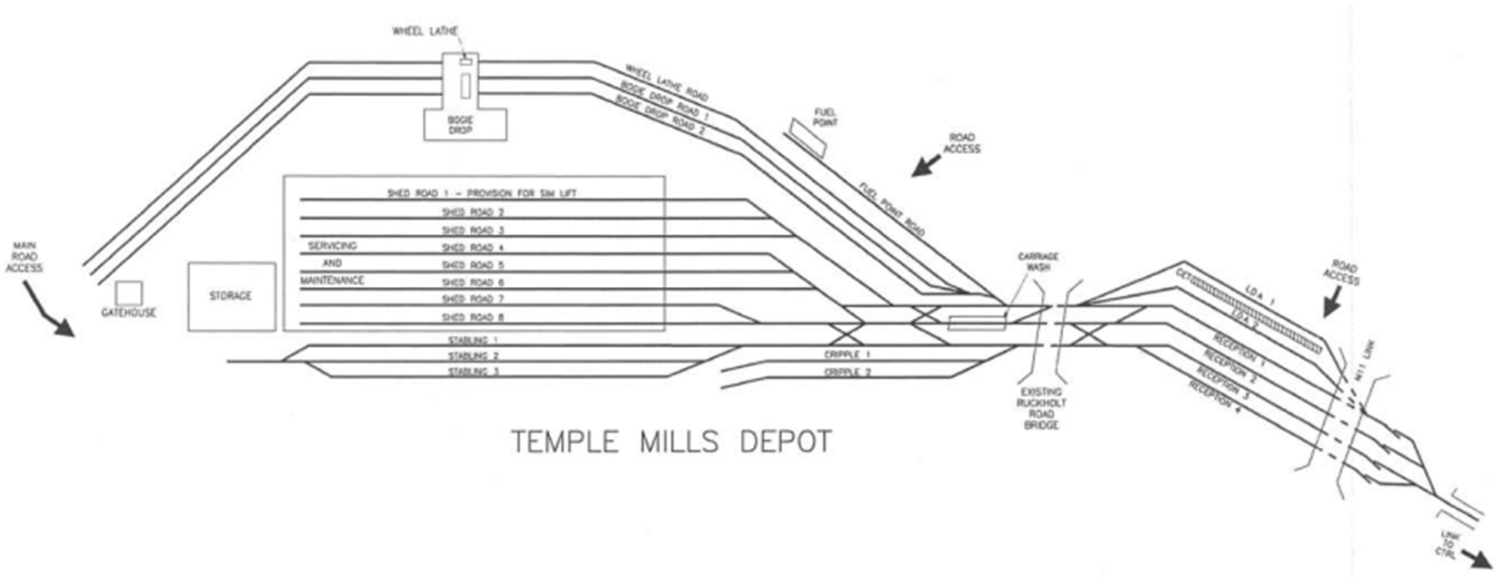
Figure 2.1: Site Location Plan

Site Description

2.2 Temple Mills International (TMI) is a high-speed rail traction maintenance depot (TMD), currently operated by a single operator, EIL, for the maintenance of their high-speed fleet of trains.

2.3 Orient Way is an existing siding adjacent to the LSPH Temple Mills depot. It is current connected to Network Rail infrastructure and is used by Greater Anglia for stabling trains.

Figure 2.2: Site Layout Plan



Temple Mills Depot Diagrammatic track layout

3. TIMETABLING AND ROUTE CAPACITY ANALYSIS

3.1 The current timetable operated by EIL has a maximum of 5 train movements from St Pancras International to TMI depot at the end of daily service and a similar return number from Temple Mills International depot to St Pancras International for the commencement of the next day service, the timings are included as **Appendix 1**.

3.2 The future timetables proposed by EIL for 2030 as shown in **Appendix 2** will result in an increase to 8 daily train movements to and from TMI depot.

3.3 From 2035 the EIL timetable as shown in **Appendix 3** will result in a further increase to 10 daily train movements to and from TMI depot.

3.4 The timing of the train movements to and from Temple Mills International depot are driven by the arrival and departure timings of passenger services at St Pancras International, and so any delays in arrival or departure times have the potential to impact the punctuality of the passenger service.

3.5 The current EIL train timetable, as well as EIL's proposed 2030 and 2035 timetables have all been overlaid with the proposed train timetable from one of the proposed second operators (Virgin Trains). The comparisons and conclusions drawn from this exercise confirms that all these existing, future and proposed timetables can be accommodated at TMI depot, subject to the incorporation of minor timetable adjustments to incorporate a 15-minute headway between arrival and departure timetable scheduling.

3.6 A 15-minute headway will permit Temple Mills International depot to operate efficiently for both arrivals and departures without any operational constraints, though improvement to the train washing and servicing facility capacity will be required to achieve sufficient throughput for arrivals.

4. SHARING CONSIDERATIONS FOR EIL AND 2ND OPERATOR

Provision of office space and stores facilities for a Second Operator

4.1 To support the maintenance of the Second Operators new fleet a contract would need to be put in place to provide the services and to provide spare parts for the fleet, it is understood that this service may be provided by the rolling stock suppliers organisation.

4.2 An alternative would be for the second operator to commission the services of the existing TMI maintenance depot operator, EIL. However, at this early stage in the second operator application we have no knowledge of the eventual arrangements.

4.3 It is assumed that the current staff facilities and stores facilities at TMI depot are fully utilised by EIL and its contractors and so would not be available to the Second Operators maintenance team.

4.4 The Second Operators team would require additional facilities to support the fleet which will require an additional building to provide staff with office space, welfare facilities and for the storage of spare parts for the light maintenance activities. A potential location has been identified within the depot; however, the construction of the facility would reduce the current staff car parking facility on site. A replacement for this lost capacity and provision of additional capacity for the Second Operators would also need to be included.

4.5 The layout for offices and stores is shown in drawing ref 244938-BWB-00-00-DR-CV-000002. This is made up of a modular storage building totalling 750m² and a modular 3 storey office space totalling 1200m².

4.6 The layout of the stores will be dependent upon the operator requirements, but it is envisaged that to maximise usable space, a mezzanine floor will cover part of the total floor space.

4.7 The layout of the office space will also be dependent upon the operator requirements. It is envisaged that this will consist of mess, changing and WC facilities on the ground floor with office and meeting room space occupying the other 2 floors.

4.8 The addition of this office space and stores would result in the loss of approximately 22 car parking spaces. Additional parking would therefore be required elsewhere on the site to replace this and provide for the additional car parking requirements of a second operator.

5. ROLLING STOCK OPERATIONS & MAINTENANCE STRATEGY

Temple Mills

5.1 Temple Mills International is currently used exclusively by EIL for the full life maintenance (Light & Heavy Maintenance) of their passenger fleet which comprises of a mix of train rolling stock from different manufacturers, namely Alstom and Siemens.

5.2 The access for a second operator under a Section 17[1] agreement would only permit the use of TMI depot to undertake Light Maintenance activities, the operator would therefore, be required to undertake Heavy Maintenance at an alternative location unless an agreement could be reached with EIL to undertake Heavy Maintenance at TMI. Discussion with several potential rolling stock suppliers confirmed that they were already aware of this restriction and would look to utilise alternative depot facilities in Europe to accommodate all the maintenance plan Heavy Maintenance requirements.

Fleet size

5.3 The existing EIL fleet operating the current timetable service from St Pancras International to Europe comprises of 17 Siemens E320 trainsets and 8 Alstom E300 trainsets. Considering the current EIL train timetable, as well as EIL's proposed 2030 and 2035 timetables will require train set arrivals into the TMI depot overnight of 5, 8 and 10 trainset arrivals respectively (see **Appendix 1**,**2** and **3** for details).

5.4 Our analysis indicates that the proposed second operators' fleet would require 7 trainsets arriving at the TMI depot overnight (this analysis is based on an example of Virgin Trains as the second operator, however all other operators' proposals are assumed to have similar requirements).

Rolling Stock Maintenance

5.5 The TMI depot maintenance shed comprises 8 number roads (and their associated tracks), with roads already having been modified to accommodate EIL's train rolling stock, namely the Siemens E320 and the Alstom E300 trainsets. The design of the rolling stock selected by the second operator may not be fully compatible with the existing facilities and minor works may be required to accommodate the new fleet. Any expansion of the EIL fleet to meet the 2030 or 2035 timetables may also, similarly be different from the existing fleets of trains.

5.6 The Preventive and Corrective Maintenance requirements for the existing fleet determine utilisation of the facility during the peak overnight maintenance period, further details of these requirements are provided in the following sections 4.7 to 4.18 inclusive.

[1] * A "Section 17 agreement" refers to an access agreement under Section 17 of the Railways Act 1993, allowing companies to apply to the Office of Rail and Road (ORR) for access to a railway facility (i.e a depot facility).

Rolling Stock Preventive Maintenance

5.7 EIL's existing train fleet of 25 trains is assumed to require a Preventative Maintenance (PM) examination every 14-day cycle. The lesser PM examination (known as a Type: An examination) assumes that 2 of the TMI depot roads require trains to be berthed in them each night. The larger PM examination (known as Type: B-E examination) is assumed to require just 1 of the TMI depot roads to have a train berthed in it each night. Therefore, the TMI depot is assumed to have a total of 3 roads with EIL trains berthed each night to accommodate the PM examinations.

Rolling Stock Corrective Maintenance

5.8 EIL's existing train fleet is assumed to require 2 number roads berthed for corrective maintenance every day to accommodate any minor repair requirements.

5.9 For more major repairs such as axle changes the works are likely to require more than one maintenance shift in the depot and may require a third road to be used within the TMI depot.

5.10 Based on the estimations above the maintenance facility would require 6 of the 8 TMI depot roads to be reserved for maintenance of the existing fleet, this would therefore provide 2 number roads within the TMI depot for use by the second operator for both Rolling Stock Preventative and Corrective maintenance. The 2 number roads would provide sufficient capacity to accommodate up to 4 number 200m long train sets for the second.

Train Wash

5.11 The Train Wash is constructed on the depot arrivals track and all trains can pass through the wash without any delay to movements, there are no constraints from this operation. There is no impact on depot capacity from use of the wash, there is additional work required both to improve the performance of the existing train wash and to accommodate any difference in body profile from a new fleet from either EIL or the second operator. The front and rear end of the trainsets and the roof is not normally washed due to the delay it causes in throughput; this would normally be undertaken, when required, in the sidings or TMI depot maintenance shed.

Servicing Facility

5.12 There are two servicing roads (LDA roads) to enable Controlled Emission Toilet (CET) emptying and filling (tanking) of the toilet water system, top up of sanding systems, filling of windscreen washers etc. to take place, the throughput rate is dependent on both the equipment in use and the staffing level. It should be feasible to complete the servicing activity on a trainset within 20 minutes, this would then provide a key constraint to depot arrivals rates and would set this to a rate of 5 trains per hour (allowing for movement on/off the facility). The proposed rate of arrival is 4 trains per hour.

5.13 If the arrival timings are of a shorter interval, then trains would need to bypass the servicing facility and be moved back to the servicing facility in quieter periods during the night to complete the servicing activities.

5.14 To provide sufficient water storage an additional water tank with a capacity of 50,000 litres is proposed as shown in drawing ref 244938-BWB-00-00-DR-CV-000001. This size of tank provides additional capacity over that which is required for a second operator, this allows for future increases in the fleet serviced by the depot. The specification of the proposed tank is as follows:

- Capacity: **50,000 litres**
- Length: **9950mm**
- Diameter: **2700mm**
- Location: **Underground**
- Material: **Filament wound GRP**
- Asset Life Expectancy: **>50 Years**

Wheel Reprofiling

5.15 The fleet will generally be expected to receive wheelset reprofiling on a planned basis, for this review it has been assumed that all wheels will be reprofiled on a 6 monthly basis, with work completed overnight to prevent loss of service availability.

5.16 The existing EIL fleet will have around 1,600 axles to maintain, if the reprofiling is undertaken on a six monthly basis (preventive reprofiling) and the downtime is 1 hour per pair of axles (tandem wheel lathe) the fleet would utilise the lathe for 200 shifts per year (assuming an 8 hour night shift for the activity), this would allow the new trains to also be reprofiled overnight but the final fleet size may have an impact upon this and require spare daytime capacity to be utilised.

Stabling

5.17 The TMI depot facility has 12 dedicated dead end stabling roads within the depot, each of which can hold a full trainset. The stabling facility will also act as a buffer for trainsets to enter the TMI depot maintenance shed.

5.18 If EIL have a maximum of 10 service train arrivals on the depot overnight and 4 of them will be held in the maintenance facility then 6 trainsets would be stabled in the sidings, this would provide 5 spare sidings, assuming 1 siding is used for shunting activities during the night.

6. COMMERCIAL

Cost Estimate

6.1 A budgetary cost estimate is provided for economic appraisal purposes. The estimate takes the form of a composite bill of quantities for each element of the proposed works, namely:

- New Three Storey Office and Amenities Building.
- New Storage Facility to Support 2nd Operators Team.
- New Carriage Wash Machine.
- Depot Rail Connection – Turnout.
- Additional Underground Water Tank.

6.2 Pricing information has been obtained from a selection of currently available rail industry pricing databases and up to date supplier information at the time of writing.

6.3 Inflation has been forecasted and added to the 2025 cost information showing costs comparisons from 2026 through to 2030. Inflation has been assessed at 2.3% for 2026, 2.1% for 2027 & 2028, and 2% for 2029 & 2030*. The yearly increase to the construction cost for each element of the work is shown in Table 9.1 below.

*Information from Office for Budget Responsibility

6.4 The cost estimates of each element of the works are summarised in Table 9.5 c/w the inflation allowance for years 2026 through to 2030.

6.5 The cost estimate for each element of the work includes a 20% allowance for contingency/risk.

6.6 An allowance of 15% of the construction costs has been included within the cost estimate for professional services during the construction phase. An allowance for professional services during the design phase has also been included.

Table 9.1 Cost Summary

Element	2026	2027	2028	2029	2030
New Three Storey Office and Amenities Building	[redacted]				
New Storage Facility to Support 2nd Operators Team					
New Carriage Wash Machine					
Depot Rail Connection - Turnout					
Additional Underground Water Tank					

A breakdown of the summary figures above, can be found in **Appendix 7** and drawings in **Appendix 8.**

Modular Office and Staff Amenities Building

6.7 A modular building to provide the Second Operators team with office space and welfare facilities. A three-storey construction with circa 400m^2 footprint, including substructure, fit out and building services i.e. turnkey package. Suspended ceilings, floor coverings and portioning costs are included within this estimate. The substructure allowance does assume good ground.

Storage Facility to Support 2nd Operators Team

6.8 To support the Second Operators team with storage of spare parts and light maintenance activities, the construction of a 40mm steel clad semi-permanent structure size 50m x 15m x 5m high with thermos insulated roof c/w 2No single personnel doors and 2No electric roller shutter doors. The proposed siting of this facility would remove 22No existing car par spaces, that would need to be replaced elsewhere on the site. The specification for the storage facility is included in **Appendix 5.**

Carriage Wash Machine

6.9 The current train wash plant is not a restraint, but it is recommended that it is replaced or refurbished. The report highlights technical issues with the train wash facility, which can only be addressed by either a replacement machine or overhaul of the existing machine. During discussions with train wash supplier, it was considered that the refurbishment/overhaul option, whilst reducing costs by circa [redacted] would only give a maximum 10-year life and disrupt the current operations whilst being carried out. This cost estimate has therefore, only considered installation of a new wash facility. The specification for a replacement machine is included in **Appendix 6**. This is a Network Rail specification and has the potential to be de-specified if required. The machine specified is a single profile machine, so the cost includes a provisional sum of [redacted] adjustable brushes, to allow for big differences in train profiles. The cost associated with this element of work assumes that no work is required to the existing wash building, plant room and associated drainage.

Depot Rail Connection - Turnout

6.10 The cost estimate for the connection from Temple Mills Depot to Orient Way sidings include for the realignment of circa 300m of existing plain line to Orient Way, installation of 210m of new plain line and 2No Turn Outs to create connection into Temple Mills Depot. The cost estimate allows for 2No tamping shifts. No signalling drawings are available for the signalling within the depot, but the estimate includes for 2No Point Machines, 3No Signals & Track Circuits and 1No Location Case.

6.11 The signalling estimate is based on the following assumptions /caveats:

- Signalling records for both Network Rail assets and Temple Mills depot are available, complete and in a usable format.
- That signalling power supplies are adequate for any proposed alterations.
- Cable route locations are unknown.
- Design, Installation, Test and Commissioning costs are not included.

- Costs for alterations to interlocking to install/recover affected equipment are not included.
- Bonding alterations are not included.

6.12 No allowance has been made within the estimate for electrification of any lines affected by this connection and possession & possession management costs are also excluded from the estimate.

6.13 Track drainage has not been allowed for, but a drainage study/assessment would need to be carried out following the survey works.

Additional Water Storage Tank

6.14 The low flow rate of the water supply restricts the filling of water to the train toilets and means only on one train at a time can be filled. To address this issue, allowance in the costs estimate has been made for the supply and installation of an additional water tank to provide additional water storage on site.

6.15 The costs estimate includes the supply & Installation of a Filament Wound Glass Reinforced Plastic/Polymer (GRP) water tank, 2.7m diameter, 9.95m long and 50,000 litre capacity.

6.16 The cost estimate includes excavation for both the water tank and an under-track crossing (1No Track) and ancillary pipe work, placing of the water tank, connecting pipework/pump etc and reinstatement. The option to place the water tank underground is purely due to the conservation of space. If the water tank were to be surfaced mounted, the cost would be significantly reduced and any risks involved with excavations would be removed.

7. MAINTENANCE DEPOT FACILITY EXPANSION ADDITIONAL ROADS FEASIBILITY

7.1 The potential to extend the existing TMI maintenance depot facility from the current 8 road capacity workshop to a 10 or 12 road facility has been reviewed to evaluate both the effectiveness of the current facility and the impact of works on current depot operations during construction activity.

7.2 Though the initial design of the depot including the workshop provided an 8 road (as built) and a 12 road option, it appears that the depot facility has been built centrally on the potential 12 road footprint, this would therefore require an extension on one side or the other to create a 10 road facility and an extension on both sides of the facility to create a 12 road facility.

7.3 The effect of an extension to the existing facility would remove a similar number of sidings for train stabling which is already limited to 12 trains being stabled at any time. In design of rolling stock maintenance facilities, it is normal to see a ratio of stabling to maintenance capacity of 3:1 which support the effective movement of vehicles and ensures the maintenance can be planned and undertaken in an efficient way. Temple Mills International depot is already at a ratio of 1.5 :1 and with the extension of the depot this would be reduced to 0.7:1 which would make efficient operation of the depot very difficult.

7.4 Based on our assessment of the TMI maintenance depot facility considering EIL current, 2030 and 2035 proposed timetables and the proposed timetable for a second operator we conclude that the facility has sufficient capacity to accommodate both the existing and future EIL operations in addition to accommodating a proposed second operator.

7.5 To summarise the key issues regarding depot facility extension the following points should be considered when evaluating any enhancement to the existing TMI depot maintenance facility.

- The location of the facility is in a position where it would only be possible to extend the building to generate a maximum of two additional roads on either side of the existing TMI depot maintenance shed structure, this is because to extend beyond this would severe the existing sidings preventing access to other facilities on site and would also require the demolition of other support facilities such as the wheel lathe.
- The extension on either side of the facility would generate major disruption to train movements on site and would require complex phasing including a two stage build to complete the works and to avoid a complete shutdown of TMI operationally.
- The extension of maintenance tracks in the facility by 2 or 4 would remove an equal number of stabling berths and so would not increase overall capacity of the depot.
- It is not known if there is sufficient spare electrical capacity on site to support a larger facility.
- To enable effective utilisation of the maintenance facility it is usual to have adjacent stabling tracks to ensure that minor repairs can be effectively cycled through the facility, this would not be possible if existing sidings capacity is removed.
- The estimation of utilisation of the existing facility indicates that there is already around a 20-25% excess capacity for maintenance activities, this would enable a

similar increase in fleet size without any need to enhance the facility. All timetable options can be supported by the existing maintenance facility.

- Any significant increase in fleet size beyond that identified in the timetables as shown in **Appendices** 1, 2 and 3 would require additional stabling facilities to enable additional EIL or second operator trains, these could not be accommodated at the existing TMI depot facility.
- An option to enable an increase in fleet size would be for the TMI depot to expand into the area currently occupied by Orient Way sidings. This would require a new track connection from the existing TMI depot facility in addition to accommodating the requisite security enhancements required to accept stabling of international high speed rolling stock arriving and departing to the continent. Therefore, Orient Way sidings would need to be dedicated for the sole use only of the LSPH network. The current footprint of Orient Way sidings would only accommodate trainset lengths of up to 200m in length.
- The likely cost of the extension of the facility would be similar to the construction of a new maintenance facility due to the complexity of work phasing and the limited accessibility to the construction areas.
- The existing issues around both the Exterior Train Wash performance and the limited water pressure resulting in only a single train being serviced at any one time would need to be addressed to enable effective management of movements for a larger fleet.
- If the extension to the EIL fleet was of different construction to the existing E320 fleet then it is probable that additional capacity for the storage of spare parts would be required, as EIL have indicated that there is no surplus capacity within the existing storage facility, particularly for major items such as bogies and wheelsets.

8. ADDITIONAL STABLING REQUIREMENTS FEASIBILITY FOR EXPANDED DEPOT

8.1 The current depot layout has limitations regarding train stabling capacity, though it is adequate for the current proposed fleet sizes for both EIL and a second operator, for all three timetable options. However, in the future it may be possible to improve redundancy of facilities and to enable further extension of the fleet sizes by connecting to the Orient Way sidings to use additional stabling of trains to operate on LSPH infrastructure, though the train length will be limited to 200m (as proposed by the second operators). The additional sidings capacity would also permit a third operator to use the facility for stabling and servicing but not for light maintenance.

8.2 The facility can potentially be connected directly to TMI depot and so avoid shunting movements using mainline infrastructure. The sidings have capacity to stable up to 12 trains of 200m length.

8.3 There is potential scope to extend the sidings lines within Orient Way to a length of 400m to avoid any requirement to split trains to fit them into these sidings. At this time the feasibility of this has not been investigated in any detail. There is undeveloped land available behind the buffer stops of the Orient Way Sidings.

8.4 The sidings are currently used by Greater Anglia services for daytime stabling between peak services. Though the HS1 fleet would be overnight activity, the current use by Greater Anglia could not remain due to the security and segregation requirements for a high-speed international cross border rail operation such as LSPH.

8.5 To bring Orient Way sidings into use an additional connection from TMI depot would be required and the security of the sidings area would need to be enhanced to the required standards for international services.

8.6 To provide a connection to Orient Way sidings a single turnout would require to be installed on the reception road leading to Orient Way sidings giving access to the Temple Mills depot. Protection of the Orient Way entry road would be provided in the form of trap points protecting against the risk of unintended movements from the Temple Mills depot fouling the Orient Way reception road.

8.7 The addition of the turnout connecting Temple Mills Depot with Orient Way Sidings (as currently configured) would create a connection between the Anglia Route infrastructure and HS1 infrastructure. Consideration will need to be given to what sort of agreement this connection is implemented under, as well as how security and other systems could be integrated.

9. PROGRAMME

9.1 The programme in **Appendix** 4 was produced using PACE (Project Acceleration in a Controlled Environment) model depicted in the image below. PACE allows a streamlined, milestone-driven structure for project delivery, suitable for infrastructure and rail-related schemes.

Figure 4.1: PACE process diagram

9.2 Due to the nature of the proposed works at the Network Rail Orient Way sidings (assuming this option were to be exercised in the future) this will ensure the project follows the correct governance and assurance processes as detailed in Network Rail's standard NR/L2/P3M/201.

9.3 The critical path for the programme runs through the joint feasibility and option selection phase into the tender process to the appointment of the design and build principal contractor for the project. The assumption has been made that the surveys required for design input will be efficiently undertaken concurrently onsite to minimise disruption. The surveys are logic linked to the start of each design package, the critical path runs through the Ground Investigation survey to the Orient Way Sidings Connection design and construction, which has an extended duration compared to the other works packages due to Network Rail governance and assurance procedures. It has been assumed other works packages will not follow Network Rail processes and standards. During the design process allowance has been made in the programme for engagement with the Network Rail Asset Protection and Optimisation teams, the submission of the asset protection agreement is linked to the acceptance of the 'Approval in Principle (AiP)' design. No allowance has been included for stakeholder engagement with the depot facility operator or facility owner at this stage as these timescales are unknown.

9.4 During the delivery phase it has been assumed the swich and crossing installation at Orient Way sidings will require a 72-hour blockade, the overhead line and security enhancements between Temple Mills depot and Orient Way sidings have not been included for at this stage as the requirements are unknown. The programme has allowed for concurrent day time working for the other work packages during delivery.

10. CONCLUSION AND RECOMMENDATIONS

10.1 The outcome of this review indicates that there is spare capacity within TMI Depot, there being up to 2 maintenance road within the maintenance shed and up to 4 maintenance tracks in the stabling sidings that would be available to accommodate a proposed second operators timetable as well as enabling all three timetable plans for EIL operations.

10.2 The allocation of 2 of the 8 roads within the TMI facility would enable both preventive and corrective maintenance to be undertaken on the second operators' fleet of trains, the remaining 6 roads being dedicated to EIL operations would ensure that the maintenance of their fleet could continue as at present.

10.3 The Train Wash plant would not be a constraint, but it is recommended to refurbish or replace the facility to prevent potential delay to train movements in the future.

10.4 The Train Wash facility currently has technical issues that would need to be addressed either with a replacement machine or enhancement/overhaul of existing machine. The specification for a replacement machine is included as **Appendix** 6.

10.5 The servicing facility is only operation on one track at a time which restricts the rate of arrivals of trains or may require trainsets to be shunted during the overnight stabling, this will have significant impact on depot operations during busy periods.

10.6 The low flow rate of the water supply restricts the filling of water to the train toilets and means only on one train at a time can be filed, this issue would need to be addressed to ensure effective operation of the facility, either through enhancing the water supply flow rate or by the addition of additional water storage on site.

10.7 The wheel reprofiling facility at Temple Mills would also fall under the remit of the Section 17 and evaluation of the workload indicates that the facility can support both the existing EIL fleets and the Second Operators fleets without any changes being required. The lathe access may be restricted during the times when the existing fleet is being maintained and may require trainsets to be stopped during operational hours to use the facility.

10.8 The plant and equipment available within the depot should be suitable to service and maintain a high-speed fleet of similar design to the E320 trainsets currently in use with EIL, there may be a requirement for some modification or adaptation to enable full interoperability to be achieved, this will depend on the design of the rolling stock selected.

10.9 Based on the two Section 17 applications submitted to the ORR TMI depot does appear to have the capacity to support either of the two proposed second operator access requests but would only be able to operate with one of the new second operators in place. It would only be possible to formally confirm this with access to site to verify the assumptions made to create this report.

10.10 The shared use of depot facilities between operators is not unusual, generally the lead operator provides all the movement controls for the depot. Examples of shared facilities

include Longsight in Manchester with Alstom and Northern Rail both sharing the site, also Neville Hill depot in Leeds is shared by Northern Rail and CAF with Siemens also providing maintenance services on site. The complexity of operations at these facilities are far greater than the TMI site would be with two operators.

10.11 For any future expansion of fleet size, the key driver will be Stabling capacity followed by Maintenance capacity, If the maintenance shed is extended to the optional twelve track facility this will not be well supported by the existing twelve track stabling facility which cannot be extended. The development would not provide a balance between the operational requirements of the fleets and the maintenance requirements. Any further enhancement to fleet size should also consider the stabling capacity required.

10.12 The option to provide direct access to Orient Way sidings would future proof any further fleet expansion by allowing the Second Operators fleet to use the facility to stable the 200m trainsets and release 400m long sidings within TMI depot for use by EIL.

11. ASSUMPTIONS

11.1 The following assumptions have been made in compiling this report:

1. The Timetable data for current operations is extracted from open-source data and start of day train operations have been derived from this information based on industry experience.
2. The timetable data for the 2030 and 2035 is provided by LPHS as a St Pancras International (SPI) departure time only, the related information in the Appendices has been assumed based on previous experience of operations.
3. The distribution of the operational fleet is based on the timetable data from item 1timetable data.
4. Current EIL fleet size (25 trainsets) has been derived from open-source data, all trainsets have been assumed to be operational for calculation of availability.
5. The maintenance cycle has been set at a 14-day interval based on previous industry experience, typically the range is within the period of 14 to 90 days dependant of manufacturer and train design.
6. The corrective maintenance requirements are based on industry experience. With typical repairs being a combination of passenger facility and trainset reliability issues.
7. The TMI capacity for each area is based on review of drawings supplied as the initial design of the depot (using the 8-road maintenance shed design).
8. Wheel Reprofiling periodicity is based on industry experience, typically the reprofiling will be in the range of 6 months to 1 year between reprofiling activities.
9. Timing for Servicing of trainsets is based on industry experience; with balance examination the examinations are cumulative and the downtime for the smallest examination on the E320 fleet is under 8 hours.
10. The train wash plant operation has been assumed to be in line with normal industry practice, this allows a trainset through the train wash without stopping and enables a headway of 5 minutes between trainsets as a minimum.
11. It is assumed that the new operator's trainset will be 200m in length, the depot maintenance tracks, and the stabling sidings are all assumed to hold 2 x 200m trainsets interchangeably with a 400m EIL trainset.
12. All drawings and spatial considerations have been based upon open-source mapping as part of the desktop study.

APPENDICES

APPENDIX 1: Current LSPH Operational Timetable

Operational Timetable

Assumed Arrivals & Departures for the existing LSPH EIL service

(Note: This data has been sourced from the EIL online timetable)

St Pancras	Paris	Paris	St Pancras
06:01	09:20	07:12	08:30
07:01	10:19	07:42	09:00
08:01	11:18	08:42	10:00
09:31	12:48	09:12	10:30
		10:11	11:30
St Pancras	**Brussels**	**Brussels**	**St Pancras**
06:25	07:47	06:33	08:05
07:23	08:47	07:43	09:05
08:25	09:47	08:13	09:35
		08:43	10:04
St Pancras	**Lille**	**Lille**	**St Pancras**
07:04	09:26	08:35	08:57
09:01	11:27	09:30	09:57
St Pancras	**Amsterdam**	**Amsterdam**	**St Pancras**
06:16	11:15		
11:04	16:15		

It is assumed that all following services are operated by arriving trains.

Stabling & Maintenance Arrangements – Current Timetable

Assumed Stabling requirement for the existing EIL service and New Operator services

Train	Operator	Location	Comment
Train 1	Eurostar	Sidings 1	Clean & Stable
Train 2	Eurostar	Sidings 2	Clean & Stable
Train 3	Eurostar	Sidings 3	Clean & Stable
Train 4	Eurostar	Sidings 4	Clean & Stable
Train 5	Eurostar	Sidings 5	Clean & Stable
Train 6	Eurostar	Sidings 6	Clean & Stable
Train 7	Eurostar	Sidings 7	Clean & Stable
	Eurostar	Sidings 8	Held Clear for Shunting
	New Operator	Sidings 9	Held Clear for Shunting
Train 1	New Operator	Sidings 10	Clean & Stable
Train 2	New Operator	Sidings 10	Clean & Stable
Train 3	New Operator	Sidings 11	Clean & Stable
Train 4	New Operator	Sidings 11	Clean & Stable
Train 5	New Operator	Sidings 12	Clean & Stable
Train 6	New Operator	Sidings 12	Clean & Stable
Train 9	Eurostar	Shed Road 1	A Examination
Train 10	Eurostar	Shed Road 2	A Examination
Train 11	Eurostar	Shed Road 3	Unscheduled Repair
Train 12	Eurostar	Shed Road 4	Unscheduled Repair
Train 13	Eurostar	Shed Road 5	B Examination and Above#
		Shed Road 6	Held Clear for Shunting

Train	Operator	Location	Comment
Train 7	New Operator	Shed Road 7	A Examination
Train 8	New Operator	Shed Road 7	Unscheduled Repair
Train 9	New Operator	Shed Road 8	B Examination and Above#
		Shed Road 8	Spare Berth for New Operator

Note:

1. Number of trains has been assumed from the timetable.
2. New Operator trains assumed at 200m Length.
3. # B examination and above will be held for more than 1 shift to complete work

APPENDIX 2: 2030 LSPH Operational Timetable

2030 Operational Timetable

EXPECTED TRAIN PLAN FOR SERVICE START UP 2030 TIMETABLE						
FROM	St Pancras	Paris	Brussels	Amsterdam	Return to St Pancras	Comments
TMI1	0601	0919			1230	
TMI2	0616			1120	1700	
	0630					Path for 2nd Operator
	0645					Path for 2nd Operator
TMI3	0701	1019			1430	
TMI4	0704		1005		1157	
TMI5	0731	1049			1400	
	0745					Path for 2nd Operator
TMI6	0801	1119			1430	
TMI7	0816			1320	1957	
	0830					Path for 2nd Operator
	0845					Path for 2nd Operator
TMI8	0904		1205		1357	
	0915					Path for 2nd Operator
PARIS	0931	1249			1600	
PARIS	1031	1349			1630	
PARIS	1101	1419			1735	
BRUSSELS	1104		1201		1557	
PARIS	1231	1609			1730	
BRUSSELS	1304		1605		1805	
PARIS	1331	1649				
PARIS	1401	1719				
PARIS	1501	1819				

Service is return working of arrival at SPI
Service is formend off TMI depot
Service is TMI based slot for second operator

Stabling & Maintenance Arrangements – 2030 Timetable

Assumed Stabling requirement for the 2030 LSPH EIL service and New Operator services

Train	Operator	Location	Comment
Train 1	Eurostar	Sidings 1	Clean & Stable
Train 2	Eurostar	Sidings 2	Clean & Stable
Train 3	Eurostar	Sidings 3	Clean & Stable
Train 4	Eurostar	Sidings 4	Clean & Stable
Train 5	Eurostar	Sidings 5	Clean & Stable
Train 6	Eurostar	Sidings 6	Clean & Stable
Train 7	Eurostar	Sidings 7	Clean & Stable
Train 8	Eurostar	Sidings 8	Clean & Stable
	Eurostar	Sidings 9	Held Clear for Shunting
Train 1	New Operator	Sidings 10	Clean & Stable
Train 2	New Operator	Sidings 10	Clean & Stable
Train 3	New Operator	Sidings 11	Clean & Stable
Train 4	New Operator	Sidings 11	Clean & Stable
Train 5	New Operator	Sidings 12	Clean & Stable
Train 6	New Operator	Sidings 12	Clean & Stable
Train 9	Eurostar	Shed Road 1	A Examination
Train 10	Eurostar	Shed Road 2	A Examination
Train 11	Eurostar	Shed Road 3	Unscheduled Repair
Train 12	Eurostar	Shed Road 4	Unscheduled Repair
Train 13	Eurostar	Shed Road 5	B Examination and Above#
		Shed Road 6	Held Clear for Shunting

Train 7	New Operator	Shed Road 7	A Examination
Train 8	New Operator	Shed Road 7	Unscheduled Repair
Train 9	New Operator	Shed Road 8	B Examination and Above#
		Shed Road 8	Spare Berth for New Operator

Note:

1. Number of trains has been assumed from the timings provided.
2. New Operator trains assumed at 200m Length.
3. # B examination and above will be held for more than 1 shift to complete work

APPENDIX 3: 2035 LSPH Operational Timetable

2035 Operational Timetable

EXPECTED TRAIN PLAN FOR SERVICE START UP 2035 TIMETABLE						
FROM	St Pancras	Paris	Brussels	Amsterdam	Return to St Pancras	Comments
TMI1	0601	0919			1230	
TMI2	0616			1120	1700	
	0630					Path for 2nd Operator
	0645					Path for 2nd Operator
TMI3	0701	1019			1330	
TMI4	0731	1049			1400	
TMI5	0734		1005		1200	
	0745					Path for 2nd Operator
TMI6	0801	1119			1430	
TMI7	0816			1220	1900	
TMI8	0831	1149			1500	
	0845					Path for 2nd Operator
TMI9	0901	1219			1630	
	0915					Path for 2nd Operator
TMI10	0934		1205		1400	
	0945					Path for 2nd Operator
PARIS	1001	1319			1730	
PARIS	1031	1349			1800	
BRUSSELS	1034		1305		1500	
PARIS	1101	1419			1830	
PARIS	1201	1519			1930	
BRUSSELS	1234		1505		1700	
PARIS	1301	1619			2030	
BRUSSELS	1334		1605		1800	
PARIS	1401	1719			2130	
PARIS	1431	1749			2200	
PARIS	1434		1705		1900	

Service is return working of arrival at SPI
Service is formend off TMI depot
Service is TMI based slot for second operator

Stabling & Maintenance Arrangements – 2035 Timetable

Assumed Stabling requirement for the existing LSPH EIL service and New Operator services

TRAIN	OPERATOR	LOCATION	Comment
Train 1	Eurostar	Sidings 1	Clean & Stable
Train 2	Eurostar	Sidings 2	Clean & Stable
Train 3	Eurostar	Sidings 3	Clean & Stable
Train 4	Eurostar	Sidings 4	Clean & Stable
Train 5	Eurostar	Sidings 5	Clean & Stable
Train 6	Eurostar	Sidings 6	Clean & Stable
Train 7	Eurostar	Sidings 7	Clean & Stable
Train 8	Eurostar	Sidings 8	Clean & Stable
Train 9	Eurostar	Sidings 9	Clean & Stable
Train 1	New Operator	Sidings 10	Clean & Stable
Train 2	New Operator	Sidings 10	Clean & Stable
Train 3	New Operator	Sidings 11	Clean & Stable
Train 4	New Operator	Sidings 11	Clean & Stable
Train 5	New Operator	Sidings 12	Clean & Stable
Train 6	New Operator	Sidings 12	Clean & Stable
Train 10	Eurostar	Shed Road 1	A Examination
Train 11	Eurostar	Shed Road 2	A Examination
Train 12	Eurostar	Shed Road 3	Unscheduled Repair
Train 13	Eurostar	Shed Road 4	Unscheduled Repair
Train 14	Eurostar	Shed Road 5	B Examination and Above#
		Shed Road 6	Held Clear for Shunting
Train 7	New Operator	Shed Road 7	A Examination

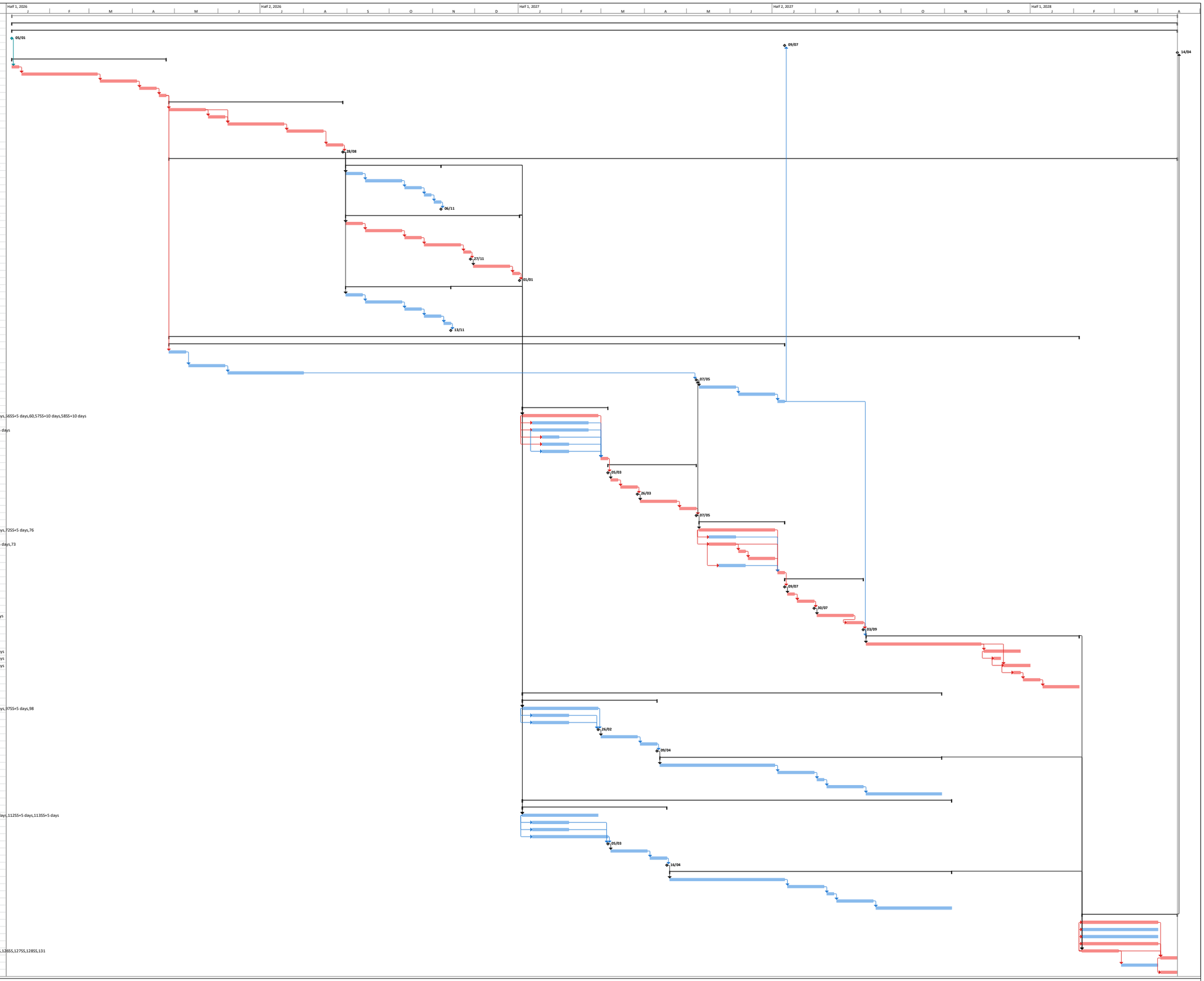
Train 8	New Operator	Shed Road 7	Unscheduled Repair
Train 9	New Operator	Shed Road 8	B Examination and Above#
	New Operator	Shed Road 8	Spare Berth

Note:

1. Number of trains has been assumed from the timings provided.
2. New Operator trains assumed at 200m Length.
3. # B examination and above will be held for more than 1 shift to complete work

APPENDIX 4: Programme

ID	Task Name	Duration	% Complete	Start	Finish	Predecessors	Successors
0	**LSPH Depot Study**	**595 days**	**0%**	**Mon 05/01/26**	**Fri 14/04/28**		
1	**Temple Mills Depot Expansion**	**595 days**	**0%**	**Mon 05/01/26**	**Fri 14/04/28**		
2	**Milestones**	**595 days**	**0%**	**Mon 05/01/26**	**Fri 14/04/28**		
3	Start date	0 days	0%	Mon 05/01/26	Mon 05/01/26		7
4	NR Signed APA	0 days	0%	Fri 09/07/27	Fri 09/07/27	52	
5	Completion date	0 days	0%	Fri 14/04/28	Fri 14/04/28	124	
6	**ES2 Feasibility / ES3 Option Selection Rep**	**80 days**	**0%**	**Mon 05/01/26**	**Fri 24/04/26**		
7	Site Visit	5 days	0%	Mon 05/01/26	Fri 09/01/26	3	8
8	Option Selection Report	40 days	0%	Mon 12/01/26	Fri 06/03/26	7	9
9	Stakeholder Review	20 days	0%	Mon 09/03/26	Fri 03/04/26	8	10
10	Address Comments	10 days	0%	Mon 06/04/26	Fri 17/04/26	9	11
11	Option Selection Report Sign off	5 days	0%	Mon 20/04/26	Fri 24/04/26	10	46,13
12	**Tender**	**90 days**	**0%**	**Mon 27/04/26**	**Fri 28/08/26**		
13	Preparation of Tender Documentation	20 days	0%	Mon 27/04/26	Fri 22/05/26	11	15,14
14	Invitation to Tender	10 days	0%	Mon 25/05/26	Fri 05/06/26	13	15
15	Tender Period	30 days	0%	Mon 08/06/26	Fri 17/07/26	13,14	16
16	Review Tender Responses and Prepare Tender Evaluation Report	20 days	0%	Mon 20/07/26	Fri 14/08/26	15	17
17	Approval Period	10 days	0%	Mon 17/08/26	Fri 28/08/26	16	18
18	Formal Contract Award	0 days	0%	Fri 28/08/26	Fri 28/08/26	17	21,28,38
19	**Design and Build Principal Contractor**	**515 days**	**0%**	**Mon 27/04/26**	**Fri 14/04/28**		
20	**Topographical Survey**	**50 days**	**0%**	**Mon 31/08/26**	**Fri 06/11/26**		**54,95,110**
21	Survey scope	10 days	0%	Mon 31/08/26	Fri 11/09/26	18	22
22	Mobilisation and site access	20 days	0%	Mon 14/09/26	Fri 09/10/26	21	23
23	Survey	10 days	0%	Mon 12/10/26	Fri 23/10/26	22	24
24	Drawing and model production	5 days	0%	Mon 26/10/26	Fri 30/10/26	23	25
25	Quality Assurance	5 days	0%	Mon 02/11/26	Fri 06/11/26	24	26
26	Drawings and model issued	0 days	0%	Fri 06/11/26	Fri 06/11/26	25	
27	**Ground Investigation Survey**	**90 days**	**0%**	**Mon 31/08/26**	**Fri 01/01/27**		**54,95,110**
28	Survey scope	10 days	0%	Mon 31/08/26	Fri 11/09/26	18	29
29	Mobilisation and site access	20 days	0%	Mon 14/09/26	Fri 09/10/26	28	30
30	Survey	10 days	0%	Mon 12/10/26	Fri 23/10/26	29	31
31	Ground Investigation Factual Report	20 days	0%	Mon 26/10/26	Fri 20/11/26	30	32
32	Quality Assurance	5 days	0%	Mon 23/11/26	Fri 27/11/26	31	33
33	Report issued	0 days	0%	Fri 27/11/26	Fri 27/11/26	32	34
34	Geotechnical Design Report	20 days	0%	Mon 30/11/26	Fri 25/12/26	33	35
35	Quality Assurance	5 days	0%	Mon 28/12/26	Fri 01/01/27	34	36
36	Report issued	0 days	0%	Fri 01/01/27	Fri 01/01/27	35	
37	**Ground Penetrating Radar Survey**	**55 days**	**0%**	**Mon 31/08/26**	**Fri 13/11/26**		**54,95,110**
38	Survey scope	10 days	0%	Mon 31/08/26	Fri 11/09/26	18	39
39	Mobilisation and site access	20 days	0%	Mon 14/09/26	Fri 09/10/26	38	40
40	Survey	10 days	0%	Mon 12/10/26	Fri 23/10/26	39	41
41	Report	10 days	0%	Mon 26/10/26	Fri 06/11/26	40	42
42	Quality Assurance	5 days	0%	Mon 09/11/26	Fri 13/11/26	41	43
43	Report issued	0 days	0%	Fri 13/11/26	Fri 13/11/26	42	
44	**Orient Way Sidings Connection**	**465 days**	**0%**	**Mon 27/04/26**	**Fri 04/02/28**		
45	**NR Stakeholder Engagement**	**315 days**	**0%**	**Mon 27/04/26**	**Fri 09/07/27**		
46	Contact Asset Protection and Optimisation teams	10 days	0%	Mon 27/04/26	Fri 08/05/26	11	47
47	ASPRO review period	20 days	0%	Mon 11/05/26	Fri 05/06/26	46	48
48	Asset Protection Agreement productio	40 days	0%	Mon 08/06/26	Fri 31/07/26	47	49
49	APA application submission	0 days	0%	Fri 07/05/27	Fri 07/05/27	48,68	50
50	APA review period	20 days	0%	Mon 10/05/27	Fri 04/06/27	49	51
51	Address comments	20 days	0%	Mon 07/06/27	Fri 02/07/27	50	52
52	APA Sign off	5 days	0%	Mon 05/07/27	Fri 09/07/27	51	4,85
53	**ES4 Approval in Principal Design**	**45 days**	**0%**	**Mon 04/01/27**	**Fri 05/03/27**		
54	Track Design	40 days	0%	Mon 04/01/27	Fri 26/02/27	20,27,37	55SS+5 days,60SS+5 days,60,57SS+10 days,58SS+10 days
55	Signalling Design	30 days	0%	Mon 11/01/27	Fri 19/02/27	54SS+5 days	60
56	Civil Design	30 days	0%	Mon 11/01/27	Fri 19/02/27	54SS+5 days	60,59SS+5 days
57	Calculations	10 days	0%	Mon 18/01/27	Fri 29/01/27	54SS+10 day	60
58	Drawings	15 days	0%	Mon 18/01/27	Fri 05/02/27	54SS+10 day	60
59	AiP Report	15 days	0%	Mon 18/01/27	Fri 05/02/27	56SS+5 days	60
60	Quality Assurance	5 days	0%	Mon 01/03/27	Fri 05/03/27	55,56,54,59	62
61	**Interdisciplinary Check / Design Approv**	**45 days**	**0%**	**Fri 05/03/27**	**Fri 07/05/27**		
62	Issue design for IDC	0 days	0%	Fri 05/03/27	Fri 05/03/27	60	63
63	IDC Meeting	5 days	0%	Mon 08/03/27	Fri 12/03/27	62	64
64	Address IDC comments	10 days	0%	Mon 15/03/27	Fri 26/03/27	63	65
65	AiP design submission	0 days	0%	Fri 26/03/27	Fri 26/03/27	64	66
66	AiP design pack stakeholder review	20 days	0%	Mon 29/03/27	Fri 23/04/27	65	67
67	Address AiP comments	10 days	0%	Mon 26/04/27	Fri 07/05/27	66	68
68	AiP sign off	0 days	0%	Fri 07/05/27	Fri 07/05/27	67	70,49
69	**ES5 Approved for Construction Design**	**45 days**	**0%**	**Mon 10/05/27**	**Fri 09/07/27**		
70	Track Design	40 days	0%	Mon 10/05/27	Fri 02/07/27	68	71SS+5 days,72SS+5 days,76
71	Signalling Design	15 days	0%	Mon 17/05/27	Fri 04/06/27	70SS+5 days	76
72	Civil Design	15 days	0%	Mon 17/05/27	Fri 04/06/27	70SS+5 days	76,75SS+5 days,73
73	Calculations	5 days	0%	Mon 07/06/27	Fri 11/06/27	72	74
74	Drawings	15 days	0%	Mon 14/06/27	Fri 02/07/27	73	76
75	AiC Report	15 days	0%	Mon 24/05/27	Fri 11/06/27	72SS+5 days	76
76	Quality Assurance	5 days	0%	Mon 05/07/27	Fri 09/07/27	70,71,72,75	78
77	**Interdisciplinary Check / Design Approv**	**40 days**	**0%**	**Fri 09/07/27**	**Fri 03/09/27**		
78	Issue design for IDC	0 days	0%	Fri 09/07/27	Fri 09/07/27	76	79
79	IDC Meeting	5 days	0%	Mon 12/07/27	Fri 16/07/27	78	80
80	Address IDC comments	10 days	0%	Mon 19/07/27	Fri 30/07/27	79	81
81	AiC design submission	0 days	0%	Fri 30/07/27	Fri 30/07/27	80	82
82	AiC design pack stakeholder review	20 days	0%	Mon 02/08/27	Fri 27/08/27	81	83FS-5 days
83	Address AiC comments	10 days	0%	Mon 23/08/27	Fri 03/09/27	82FS-5 days	84
84	AiC design sign off	0 days	0%	Fri 03/09/27	Fri 03/09/27	83	86
85	**ES6 Project Delivery (Construction)**	**110 days**	**0%**	**Mon 06/09/27**	**Fri 04/02/28**	**52**	**129**
86	Procurement of Materials	60 days	0%	Mon 06/09/27	Fri 26/11/27	84	89,87
87	Mobilisation	20 days	0%	Mon 29/11/27	Fri 24/12/27	86	88SS+5 days
88	Review of Contractors H&S Document	5 days	0%	Mon 06/12/27	Fri 10/12/27	87SS+5 days	89SS+5 days
89	Prep works onsite	15 days	0%	Mon 13/12/27	Fri 31/12/27	88SS+5 days	90SS+5 days
90	72 hour blockade for S&C installation	5 days	0%	Mon 20/12/27	Fri 24/12/27	89SS+5 days	91
91	Signalling installation	10 days	0%	Mon 27/12/27	Fri 07/01/28	90	92
92	Signalling testing and commissioning	20 days	0%	Mon 10/01/28	Fri 04/02/28	91	
93	**Office Building and Storage Facility**	**215 days**	**0%**	**Mon 04/01/27**	**Fri 29/10/27**		
94	**Design**	**70 days**	**0%**	**Mon 04/01/27**	**Fri 09/04/27**		
95	Civils	40 days	0%	Mon 04/01/27	Fri 26/02/27	20,27,37	96SS+5 days,97SS+5 days,98
96	M&E	20 days	0%	Mon 11/01/27	Fri 05/02/27	95SS+5 days	98
97	Utilities	20 days	0%	Mon 11/01/27	Fri 05/02/27	95SS+5 days	98
98	Design submission	0 days	0%	Fri 26/02/27	Fri 26/02/27	95,96,97	99
99	Design pack stakeholder review	20 days	0%	Mon 01/03/27	Fri 26/03/27	98	100
100	Address comments	10 days	0%	Mon 29/03/27	Fri 09/04/27	99	101
101	Design sign off	0 days	0%	Fri 09/04/27	Fri 09/04/27	100	103
102	**Delivery**	**145 days**	**0%**	**Mon 12/04/27**	**Fri 29/10/27**		**129**
103	Procurement	60 days	0%	Mon 12/04/27	Fri 02/07/27	101	104
104	Mobilisation	20 days	0%	Mon 05/07/27	Fri 30/07/27	103	105
105	Review of Contractors H&S Document	5 days	0%	Mon 02/08/27	Fri 06/08/27	104	106
106	Prep works onsite	20 days	0%	Mon 09/08/27	Fri 03/09/27	105	107
107	Installation	40 days	0%	Mon 06/09/27	Fri 29/10/27	106	
108	**Carriage Wash and Water Tank**	**220 days**	**0%**	**Mon 04/01/27**	**Fri 05/11/27**		
109	**Design**	**75 days**	**0%**	**Mon 04/01/27**	**Fri 16/04/27**		
110	Civils	40 days	0%	Mon 04/01/27	Fri 26/02/27	20,27,37	111SS+5 days,112SS+5 days,113SS+5 days
111	M&E	20 days	0%	Mon 11/01/27	Fri 05/02/27	110SS+5 day	114
112	Utilities	20 days	0%	Mon 11/01/27	Fri 05/02/27	110SS+5 day	114
113	UTX	40 days	0%	Mon 11/01/27	Fri 05/03/27	110SS+5 day	114
114	Design submission	0 days	0%	Fri 05/03/27	Fri 05/03/27	111,112,113	115
115	Design pack stakeholder review	20 days	0%	Mon 08/03/27	Fri 02/04/27	114	116
116	Address comments	10 days	0%	Mon 05/04/27	Fri 16/04/27	115	117
117	Design sign off	0 days	0%	Fri 16/04/27	Fri 16/04/27	116	119
118	**Delivery**	**145 days**	**0%**	**Mon 19/04/27**	**Fri 05/11/27**		**129**
119	Procurement	60 days	0%	Mon 19/04/27	Fri 09/07/27	117	120
120	Mobilisation	20 days	0%	Mon 12/07/27	Fri 06/08/27	119	121
121	Review of Contractors H&S Document	5 days	0%	Mon 09/08/27	Fri 13/08/27	120	122
122	Prep works onsite	20 days	0%	Mon 16/08/27	Fri 10/09/27	121	123
123	Installation	40 days	0%	Mon 13/09/27	Fri 05/11/27	122	
124	**ES7 Handover and ES8 Project Close Out**	**50 days**	**0%**	**Mon 07/02/28**	**Fri 14/04/28**		**5**
125	As Built	40 days	0%	Mon 07/02/28	Fri 31/03/28	129SS	130
126	Maintenance Plan	40 days	0%	Mon 07/02/28	Fri 31/03/28	129SS	
127	Operational Procedures	40 days	0%	Mon 07/02/28	Fri 31/03/28	129SS	
128	H&S File	40 days	0%	Mon 07/02/28	Fri 31/03/28	129SS	130
129	Defects Close Out	20 days	0%	Mon 07/02/28	Fri 03/03/28	85,102,118	130,125SS,126SS,127SS,128SS,131
130	Provide Outturn project spend profile	10 days	0%	Mon 03/04/28	Fri 14/04/28	129,128,125	132SS
131	Lessons Learned Exercise	20 days	0%	Mon 06/03/28	Fri 31/03/28	129	
132	Finalise and close out accounts	10 days	0%	Mon 03/04/28	Fri 14/04/28	130SS	



Project: LSPH Depot Study
Date: Mon 07/04/25

Task · Split · Milestone · Summary · Project Summary · External Tasks · External Milestone · Inactive Task · Inactive Milestone · Inactive Summary · Manual Task · Duration-only · Manual Summary Rollup · Manual Summary · Start-only · Finish-only · Deadline · Critical · Critical Split · Progress · Manual Progress

APPENDIX 5: Storage Facility Specification

Building Specification

Warehouse

- Span/Width 15.0m
- Length 50.0m
- Height (eaves) 5.0m
- Height (Ridge) 7.57m
- Total Area 750.0m^2

Frame

Eurocode Compliance

- BS EN 1991-1-3:2003 – General Actions (Snow Loads)
- BS EN 1991-1-4:2005 – General Actions (Wind Actions)
- BS EN 1993-1-1:2005 – Eurocode 3 – Design of Steel Structures
- BS EN 1993-1-1:2007 – Eurocode 9 – Design of Aluminium Structure

Roof

- Type Thermo roof (insulated)
- Material PVC coated fabric requiring 240v Pump – continuous supply

Walling & Gables

- Type 40mm, Steel Clad Sandwich Panels
- Detail Goosewing Grey

Doors

- Type Single Personnel Exit Doors (2No)
- Detail Height 2.1m x Width 1.06m
- Type Electric Roller Shutter Doors (2No)
- Detail Height 4.5m x Width 4.5m

The cost of the building includes design calculations, costs associated with site surveys, production of existing services drawings, planning applications and council planning fee

APPENDIX 6: Carriage Wash Machine Specification

Supply and installation of a water recycling system, speed display boards & a logging and remote monitoring facility c/w Form B Design.

Scope of Supply

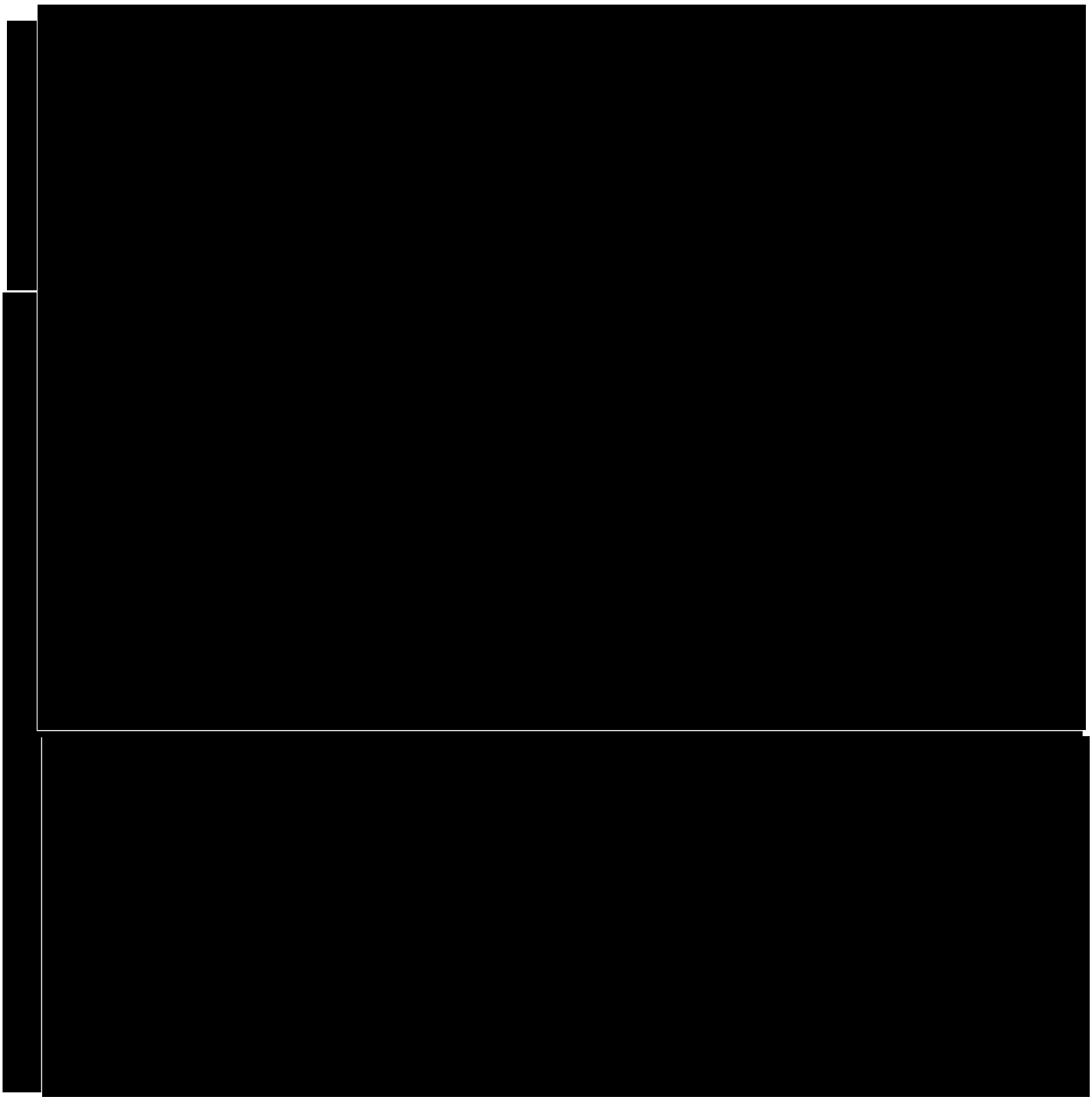
- Machine to operate down to -2°C c/w 1 set air blowers
- 4No Detergent / 8no Water wash bodyside modular assemblies
- 1No set Pre-wet / Final rinse spray stands
- 1No set Air blowers
- 1No Electrical control panel
- 1No Remote monitoring facility via Ewon
- 1No Driver display board
- 1No Speed display system
- 1No set Treadle switches (Machine start-up/ shut down operation & speed logging)
- 1No Water recycling system
- 1No Water storage tank
- 1No Detergent tank
- 1No Detergent pump
- 1No Detergent metering pump
- 1No Pre-wet/ main wash pump
- 1No Final rinse pump
- 1No Detergent off-loading pump
- 1No set ABS pipework, valves and fittings/ cabling etc
- 1No set ABS jet pipes and stainless-steel jet nozzles
- 1No lot Trace heating & lagging
- 1No Emergency drench shower
- Form B CWM design (others to act as CRE/CEM)
- Mechanical, electrical and software design
- Manufacture and procurement of the equipment
- Work package plans / task briefs
- M&E Installation of equipment
- On Track Plant for off-loading and installation
- Trace heating & lagging for low temperature washing (-2°C)
- Equipotential bonding of our equipment

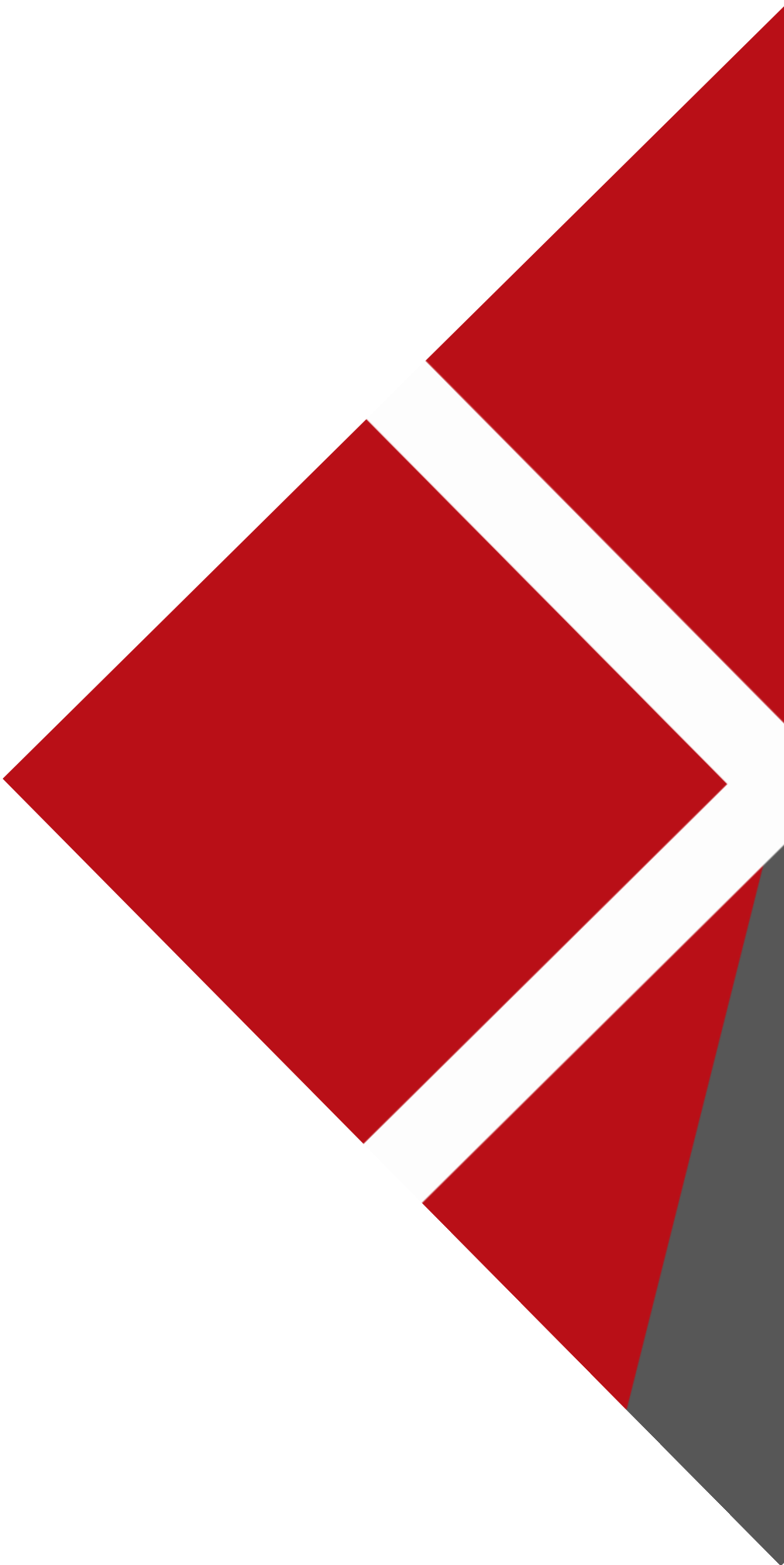
- Testing & commissioning of equipment
- Training of depot operating staff (1 day)
- Operating and maintenance manuals
- Provision of 'as built' drawings

Design Criteria

- Train profiles required for verification of train wash plant proposed design. (Proposed solutions may be subject to change)
- Train speed through wash no more than 3-mph
- Train throughputs to be finalised at detailed design.
- Single direction wash, washing on arrival only
- Bodyside rotors and spray stands to be finished, galvanised.
- Bodyside rotor motor gearboxes to be bottom mounted for ease of maintenance
- Top bearings to be provided with low-level lubrication points for ease of maintenance
- Exact tank sizes and performance criteria will be finalised at detailed design
- Provision of detergent off-loading pump assumes chemical delivery vehicle access adjacent to plant room.
- NB. Vehicle Overspeed. For every 1-mph over the recommended Washing Speed 3-mph through the wash, will reduce the cleaning performance by 10% cleaning efficiency.
- The CWM will be commissioned into service following the issue of completion of installation certificate for power, mains water, drainage, detergent.
- Trains and drivers to be provided by the parties responsible for allowing proper commissioning of the system.

APPENDIX 7: Breakdown Of Cost Estimate Summary





Response to ORR Public Consultation on Capacity at Temple Mills International (TMI) Depot

We welcome the opportunity to respond to the Office of Rail and Road's (ORR) consultation on the availability of capacity at Temple Mills International (TMI) Depot, and to comment on the findings of the independent study commissioned from Ipex.

We note and support the ORR's initial findings that:

- There is currently some available capacity at TMI Depot for the stabling, servicing, and maintenance of additional international rolling stock;
- A portion of this capacity can be made available without any changes to current operational practices;
- Further capacity could be unlocked through targeted investment in changes to current operations (excluding train type compatibility adaptations).

These conclusions represent a meaningful step forward in addressing one of the structural barriers limiting the growth of international open-access rail services via the Channel Tunnel.

The **Channel Tunnel has the potential to accommodate significantly more rail traffic - up to 50% more according to recent estimates -** yet this opportunity remains underexploited due to two key barriers:

1. Limited availability of Channel Tunnel-compatible rolling stock, which is costly and subject to long manufacturing lead times
2. Restricted access to suitable maintenance facilities, which are critical for both operational resilience and for securing the financing necessary to acquire and operate rolling stock.

We welcome the confirmation that capacity exists at TMI and that some of it is immediately accessible. Providing this capacity to new entrants in a fair and transparent manner will be vital to fostering competition and supporting new international operators, including those currently seeking to enter the market.

Depot access is not only an operational requirement but a key enabler of wider policy objectives. Improved access to international maintenance facilities will help:

- **Boost economic growth.** A recent report from the Campaign for Better Transport, has revealed that increasing cross-channel rail traffic could **boost the UK economy by £1 billion a year.**
- **Boost passenger services**: Greater competition typically leads to improved service equality, more travel options, and reduced fares. This will make international rail more attractive and accessible to a wider segment of passengers.

- **Cheaper rail:** as mentioned above, greater competition can decrease fares as this has been the case in France, Spain and Italy. A recent study has found that new competitors could slash Channel Tunnel rail fares by 30 per cent in the next 15 years.

- **Maximise existing infrastructure**: Both the Channel Tunnel and Saint-Pancras High-Speed have substantial unused capacity. Making better use of these strategic assets will increase their return on investment and contribute to more sustainable and efficient transport networks.

- **Deliver environmental benefits**: Encouraging modal shift from air to rail on short and medium-haul international journeys - such as London to Paris or Brussels even Milan as announced by Trenitalia - is critical to meeting decarbonisation targets and reducing aviation-related emissions.

While the current findings are encouraging, we believe it is important to acknowledge the likely limitations of TMI's capacity over the medium to long term. If, as expected, multiple new operators (e.g. Virgin, Heuro, Evolyn/Trenitalia, Gemini, etc.) enter the cross-channel market by 2030, TMI alone is unlikely to meet the resulting demand for maintenance capacity - even with operational improvements.

We therefore recommend that the UK government, takes a forward-looking approach by developing an ambitious and robust international rail strategy to unlock cross-channel rail travel including in the context of this consultation:

- Evaluating the feasibility of developing new international maintenance depots in the UK
- Ensuring that any future depot developments are designed with open-access principles, allowing fair and competitive use by multiple operators;

In conclusion, the identification of available capacity at Temple Mills Depot is a welcome and timely development. It has the potential to remove a significant operational and financial barrier to entry for new international operators, supporting a more competitive and dynamic cross-channel rail market, boosting the UK economy growth and delivering cheaper rail tickets

However, realising the full potential of this opportunity requires forward planning. Without additional depot capacity beyond TMI, the growth of international rail services - and the associated economic, environmental, and passenger benefits - may soon be constrained once again.

We urge the Government to consider both the short-term access solutions and the long-term infrastructure needs of a competitive international rail market.

Thank you for the opportunity to provide our views on this important consultation.

///

We are the UK office of the European clean transport NGO T&E whose aim is to achieve a zero-emission mobility system that is affordable and has minimal impacts on our health, climate and environment and is accessible to all.

[redacted]

TRENITALIA FRANCE
GROUPE FERROVIE DELLO STATO ITALIANE

President et Directeur General

Operation Team

ORR Office of Rail and Road

Email: operations.team@orr.gov.uk

Paris, 20 April 2025

Capacity at Temple Mills International Depot

Dear ORR team,

This letter is intended to provide some comments in response to the consultation on the availability of capacity at Temple Mills International depot (TMI) you launched on 31 March 2025.

First of all, we would like to thank you for the hard work you are doing to support the expansion of rail services between St. Pancras and continental Europe.

We firmly believe that not only increasing services, but also fostering diversification and competition among different rail operators is essential to provide customers with the best possible travel experience.

FS Italiane Group, which owns 100% of Trenitalia France, has already announced plans to launch a new high-speed rail service connecting London and Paris by 2029. With an estimated investment of EUR 1 billion, this new route is a key component of the FS Group's 2025–2029 Strategic Plan, which identifies the expansion of high-speed connections across Europe as a top priority.

We confirm that access to the Temple Mills International depot is essential for operating the route from UK to other European countries. Therefore, as you are aware, we submitted our depot access application on 28 March 2025.

In this regard, we warmly welcome the findings of the independent report you commissioned by Ipex alongside the consultation mentioned above, regarding the

[redacted]

available capacity at the Temple Mills International (TMI) depot for additional trains.

The report results are highly valuable for our operational needs and provide strong support for advancing our business case, unlocking new opportunities to connect London with other European cities.

The assessed available capacity appears adequate for the initial phase of the plan currently under development. However, it will not be sufficient to accommodate any future increase in services. Therefore, we strongly recommend investing in the expansion of the depot's capacity to ensure long-term sustainability.

Moreover, after having carefully reviewed the study, we would like to share the following observations:

1) the quality of the study is very high and professional both for the analysis model and for the overall setup of the study;

2) based on our operational experience, the evidence presented in the study appears to be consistent with the needs of industrial management for a modern rolling stock fleet.

According to the evidence reported in the study, we agree with its overall conclusions. In general, we think that managing the use of an industrial warehouse is complex. Whenplenty of space is available, it becomes inevitable that operators adapt their practices to take advantage of the larger area, often to reduce operational costs and risks (e.g., by minimizing movements). The future of the Temple Mills depot, in our opinion, needs to be carefully planned in coordination with the current operator, in order to optimize the overall industrial activities necessary for the increase of railway services on the London hub.

If you need any clarification or want to schedule a specific meeting, please feel free to contact us.

Thank you for your attention and cooperation.

Kind regards

Marco Caposciutti
CEO of Trenitalia France
[redacted]

28 April 2025

BY EMAIL ONLY

VTE HOLDINGS LIMITED'S SUBMISSION IN RESPONSE TO ORR'S REQUEST FOR STAKEHOLDER EVIDENCE ON AVAILABLE CAPACITY AT TEMPLE MILLS DEPOT

VTE Holdings Ltd (VTE) refers to the Office of Rail and Road's (ORR) publication of its consultation on Capacity at Temple Mills Depot (the Depot) dated 31st March 2025.

VTE submitted a Section 17 Application for capacity at the Depot having been advised by the Facility Manager that space was restricted. We are pleased to see that VTE's assessment that there is space available at the Depot is confirmed by the ORR's initial findings, and that with some minor changes to operational practices to improve the Depot efficiency, more maintenance shed space could be made available.

VTE is keen to provide ORR with information to support and enhance the conclusions in the report, but we have concerns in our ability to provide relevant detailed comparisons, comments and information given that the report, as issued, is heavily redacted. VTE also notes that much of the redacted information would need to be provided by VTE to Eurostar, pursuant to the Eurostar Service Facility Description, under normal circumstances for depot access. It would therefore seem odd if Eurostar now considers such information as commercially sensitive to a potential competitor if it were to be disclosed by them. If Eurostar maintains this position, then VTE should not be required to provide this same information to secure a depot access agreement.

VTE would also like to comment on the scope of the IPEX work. All current Section 17 applicants are planning to use up to 202m rolling stock, and therefore the fact that the report provides no views on the impact that this change would have is a shortcoming of the report. It is also likely that Eurostar themselves will procure shorter trains in future now that 400m long trains are not required for tunnel operation. VTE would expect shorter trains to allow greater flexibility and therefore make more efficient use of capacity at the depot.

VTE has set out below its key concerns about the adequacy of the EIL Maintenance Plan used in the IPEX analysis:

1. The report notes that the IPEX modelling is based on current plans and allocations of EIL maintenance provided by Eurostar themselves and from physical observations in late January 2025 (15th to 21st). Without any further details either being shared directly with us or being provided in the report (or as could be derived from information that is now redacted), it is impossible to ascertain whether these maintenance plans are comparable with modern fleets, or typical of the maintenance experienced throughout the year (or whether are they based on more seasonal/commercial fluctuations).
2. The planned 87 arrivals and departures over the observation period noted in section 4.6.2 were not completed and that over 24% fewer movements (66) were observed as per section 4.6.4. Upon further analysis of Realtime Trains, it would appear that both the planned and actual movements in the observation period were very high. For example, the Working Timetable for 1st April to 7th April 2025 (Appendix 1) showed 28 arrivals and 27 departures at the Depot, a total of 55 movements; and actual movements between 15th April and 21st April (Appendix 2) showed 47 movements on and off the Depot. This would mean respectively 37% and 46% fewer movements than planned during the IPEX observation period. We would recommend that ORR investigates signalling data at the depot to establish whether the observation period was a typical experience. It may be that after reconciling these planned and actual movements there might be significantly better available capacity.

3. VTE also notes that IPEX confirms, *"that the average shed occupancy over the observation period (based on EIL data and IPEX observations) was 5.9"* and that *"this figure is comparable with the bottom-up maintenance plan analysis performed by IPEX"*. We believe the report would benefit from some benchmarking of maintenance activity given IPEX's extensive experience in the sector (noted in section 2.2.3). For example, while we would like to understand (as noted earlier) whether this maintenance plan used is based on a typical week, it would appear on the face of it to VTE that the Eurostar fleet is very maintenance intensive (contractually or by custom/practice) and the efficiency/reality of this is not considered in the report. Based on the assumption that each of the 25 trains in the fleet covers approximately 350,000km on average per annum for the current 25 services each way a day (15 to Paris, 6 to Brussels and 4 to Amsterdam), the report suggests a need for 6.4 roads at the Depot on average every day to maintain the fleet with more maintenance capacity required at other depots (the % performed elsewhere is redacted). Our own Section 17 application, similar to others, seeks a maximum of 3 roads for all maintenance requirements in total despite each train operating over 60% more km on average. Therefore, based on the circa 8.75m km operated by Eurostar, we would predict that our own fleet could only need four shed roads for maintenance, including any heavy maintenance requirements.
4. Section 12.6.6 states that the Realistic Shed Requirement is 6.4 roads based on the maintenance plans shared by EIL. VTE has noted above its views on those plans given the difference in planned and observed movements, and without access to the redacted information VTE cannot comment on the proposed maintenance plan shown and whether this is realistic or not. It appears from the detail of the upgrade options in Section 16 that shed capacity could be utilised more effectively by performing some tasks currently undertaken in the shed on reception and LDA roads.

VTE's other comments of note:

1. VTE notes the assumption that the depot operates under strict 5 kph speed limits. VTE's Group experience is that 5 mph was used on depots on the West Coast Mainline. A safety review of the speed limit at the Depot could be undertaken to improve the efficiency of the depot movements.
2. VTE notes the observation that the Class 373 is considered more maintenance intensive than a Class 374 or comparable new fleet. Eurostar has indicated that these trains will be replaced as part of their new train order, but it is difficult to understand from the report what, if any, assumptions have been made on the future depot performance once these trains no longer operate.
3. VTE notes the improvement options contained in section 16. These all seem pragmatic and of relatively low capital expenditure and should be costed more formally to identify what the financial and commercial impact would be on aspirant operators.
4. VTE notes that there are several roads used for storing equipment. VTE trusts that in preparation for starting services in 2029, this old equipment will be removed
5. VTE notes that one shed road is dedicated to E300 ETCS recommissioning. This will occur for a finite period at which point this road would become available. While the date is redacted, VTE would expect that by 2029 this programme will be finished and the Realistic Shed Requirement reduced by one road to 5.4, which should be more than sufficient to meet VTE's proposals, especially once efficiency improvements have been made.
6. VTE has seen no comment in the report as to whether the staffing arrangements at the Depot are appropriate and consistent with the maintenance plans submitted as the base information. Understanding and reconciling this would enable more comfort to be taken in the base information.

VTE has sought to provide information to support the consultation report or to seek clarity where the report is unclear. VTE is concerned that some large discrepancies between

planned and actual activity exist and may cast doubt over the base information provided to IPEX as the starting point for their modelling. Without access to the detailed redacted information, the work content in maintenance exams and the allocation and extent of maintenance on the Eurostar fleet, VTE has been unable to respond as fully as it would have liked.

VTE is however delighted that the report demonstrates sufficient capacity is currently available to meet our needs and considers it likely that upon once some further investigations are undertaken even more capacity will be available, particularly once E300 commissioning and operational efficiencies have been completed.

Yours sincerely

[redacted]

Phil Whittingham
For and on behalf of VTE Holdings Limited

Appendix 1

Eurostar Temple Mills Arrivals and Departures

April 2024.

Source Network Rail Working Timetable

Day	St P depart	TMI Rec arrival		TMI Rec depart	St P arrival	
Monday	0005 hrs	0016				
				0440	0452	
				0515	0527	
				0706	0718	
	2015	2026				
	2115	2126				
				2253	2305	
	2315	2326	4 TMI arrivals			4 TMI depart
Tuesday				0440	0452	
				0515	0527	
	0544	0555				
				0706	0718	
	2015	2026				
	2115	2126				
				2253	2305	
	2315	2326	4 TMI arrivals			4 TMI depart
Wednesday				0440	0452	
				0515	0527	
	0544	0555				
				0706	0718	
	2015	2026				
	2115	2126				
	2315	2326	4 TMI arrivals			3 TMI depart
Thursday				0440	0452	
				0515	0527	
	0544	0555				
				0706	0718	
	2015	2026				
	2115	2126				
				2253	2305	
	2315	2326	4 TMI arrivals			4 TMI depart
Friday				0440	0452	
				0515	0527	
	0544	0555				
				0706	0718	
				1403	1415	
	2015	2026				
	2115	2126				
	2230	2241				
				2253	2305	
	2330	2341	5 TMI arrivals			5 TMI depart
Saturday				0440	0452	
	0544	0555				
				0559	0611	
				0716	0727	
				1204	1215	
	2015	2026				
	2045	2256	3 TMI arrivals			4 TMI depart
Sunday				0700	0711	
				0903	0915	
				1733	1745	
	1915	1926				
	2115	2126				
	2145	2156				
	2315	2326	4 TMI arrivals			3 TMI depart

Summary - 28 TMI arrivals every 7 days and 27 TMI departures every 7 days

Appendix 2

Realtime Train Times STP - Temple Mills										
Filter	WTT/VAR/STP/CAN									
	Non Passenger									
	Planned									
	ES									
	STP								**TOTAL**	
ST P Depart	15/04/2025			21:15		20:15			2	
ST P Arrivals	15/04/2025		05:27	07:18	04:52				3	
ST P Depart	16/04/2025		23:15	21:15		20:15			3	
ST P Arrivals	16/04/2025		05:27	06:41	04:52	07:18			4	
ST P Depart	17/04/2025		23:15	21:15		20:15			3	
ST P Arrivals	17/04/2025		05:27	23:05	04:52	07:18			4	
ST P Depart	18/04/2025			21:15	22:30		23:30		10:45	4
ST P Arrivals	18/04/2025		05:27	06:41	04:52	07:18	23:05	14:15	10:35	7
ST P Depart	19/04/2025					20:15	22:45			2
ST P Arrivals	19/04/2025		06:11	07:27						2
ST P Depart	20/04/2025				16:15	21:15	21:45	23:15		4
ST P Arrivals	20/04/2025		07:11	09:15						2
ST P Depart	21/04/2025					14:45	21:15	23:00		3
ST P Arrivals	21/04/2025		06:41	07:11	11:38	15:40				4
										47
										Ave Daily
ST P Depart									21	3.00
ST P Arrivals									26	3.71
									47	6.71