

Date: 19 October 2022

Title: Docklands Light Railway Rolling Stock Replacement Programme

This paper will be considered in public

1 Summary

	Existing Financial Authority ³ (£m)	Estimated Final Cost (EFC) (£m)	Existing Programme and Project Authority (£m)	Additional Authority Requested (£m)	Total Authority (£m)
Base ¹	461.1	619.5	602.8	16.7	619.5
HIF ²	60.4	281.0	281.0	0	281.0
Total	521.5	900.5	883.8	16.7	900.5

Table 1: Summary of Authority Request

¹the base programme includes £7.3m of costs which are funded through other third-party contributions.

²The Housing Infrastructure Fund (HIF) Programme is funded through a Grant Determination Agreement (GDA) with the Department for Levelling Up, Housing and Communities (DLUHC). This includes a funding contribution towards the cost of enabling works to support a proposed property development at the Docklands Light Railway (DLR) Poplar depot. This is not covered in this paper but will be covered in a separate update to the Land and Property Committee in 2023.

³ Financial Authority is provided through the two-year Budget for 2022/23 and 2023/24, approved by the Board in March 2022. The existing authority includes commitments that extend beyond the period of the Business Plan and Budget.

1.1 The purpose of this paper is to update the Committee on the DLR Rolling Stock Replacement Programme (RSRP). This includes developments since the previous submissions to the Committee in October 2020 and July 2021. Since our previous updates to the Committee, we have made substantial progress on the scheme, including:

- (a) completing the manufacture of the first four new trains and commencing dynamic testing of trains one and two on the manufacturers test track in Spain;
- (b) progressing significant design packages for the new depot, supporting infrastructure and associated network upgrades for the new trains;

- (c) continued engagement with DLUHC for HIF support, satisfying the initial conditions of the GDA which became unconditional in July 2021;
 - (d) completing the purchase of land to the south of the existing Beckton Depot, which will accommodate the new HIF-funded sidings, and submitting a planning application for the HIF-funded sidings;
 - (e) continuing the construction of the new northern sidings at Beckton Depot, which we expect to bring into use early in 2023;
 - (f) developing train delivery and deployment strategies, working closely with our suppliers and the operator of the DLR (Keolis Amey Docklands (KAD)); and
 - (g) progressing the procurement process for the new train Maintenance Facility Building (MFB), Southern Sidings, and Temporary Fit Out Shed (TFOS), with tenders returned and evaluated during the summer of 2022.
- 1.2 We have managed significant pressures across the programme to date, including the impacts of the coronavirus pandemic, without any increases to the Estimated Final Cost (EFC). Since early 2022, however, we have faced further cost pressures, primarily driven by inflation. While we have taken, and continue to seek, opportunities to manage these pressures, we have been unable to fully offset increased costs and so we now require additional Programme and Project Authority.
- 1.3 This paper, and accompanying paper on Part 2 of the agenda, explain the steps we are taking to offset and mitigate cost pressures. Recognising TfL's overall capital funding envelope, confirmed in the 30 August 2022 funding agreement with government, we will seek funding for any remaining unbudgeted amounts within the programme through our ongoing processes to identify capital efficiencies and prioritise our investment programme in line with strategic objectives. This will be confirmed through the upcoming Business Plan and Revised Budget for 2022/23.
- 1.4 The paper on Part 2 of the agenda contains exempt supplementary information. The information is exempt from publication by paragraph 3 of Schedule 12A of the Local Government Act 1972 in that it contains information relating to the business affairs of TfL. Any discussion of that exempt information must take place after the press and public have been excluded from the meeting.

2 Recommendations

2.1 The Committee is asked to note the paper, and the related paper on part 2 of the agenda, and:

- (a) approve additional Programme and Project Authority of £16.7m, resulting in total Programme and Project Authority of £900.5m; and**
- (b) note that Procurement Authority for the Maintenance Facility Building and associated depot works will be sought at officer level in accordance with Standing Orders.**

3 Background and Strategic Context

- 3.1 The strategic driver for the RSRP is to continue offering a quality public transport experience to existing and growing communities in London, in line with the objectives of the Mayor's Transport Strategy.
- 3.2 A significant portion of the existing DLR fleet, the B90/92 stock, has reached the end of its design life. This presents significant challenges to sustaining reliable service performance for our customers, with the Mean Distance Between Service Affecting Failures continuing to reduce.
- 3.3 While options were explored to "patch and repair" or "life-extend" these trains, our previous work demonstrated the significant value, revenue generation, and whole-life cost savings resulting from a fleet replacement.
- 3.4 Despite some customers switching to the Elizabeth line, the DLR has seen a stronger recovery from the coronavirus pandemic compared to the wider rail network. We therefore introduced timetable changes on 26 September 2022 to support this increasing demand which demonstrates the need to continue prioritising a reliable service on the DLR, and to address capacity issues across the network. Passenger numbers continue to grow, with the number of journeys exceeding our budget forecast by eight per cent in period 6 of 2022/23.
- 3.5 The DLR also runs through areas of London that are expected to accommodate significant growth in housing and employment in the coming years, including major Opportunity Areas in the Isle of Dogs/South Poplar, and the Royal Docks. This growth is forecast to result in significant additional demand across the DLR network, exacerbating existing and creating new capacity issues.
- 3.6 Through the RSRP, we are delivering a new fleet of trains and associated infrastructure improvements, including expansion of the existing Beckton Depot. The new walk-through, air-conditioned trains will improve reliability, provide greater capacity, and offer an improved customer experience. We will also expand the fleet, replacing the equivalent of 33 life-expired trains with a total of 43 new trains, allowing significant capacity uplifts across the network.
- 3.7 We are also working with the Greater London Authority (GLA) and DLUHC to deliver an additional 11 trains and associated infrastructure funded by the HIF. This gives a total of 54 new trains providing even greater capacity uplift and supporting further housing growth across the DLR network.
- 3.8 Following approval by the Committee of Programme and Project Authority and Procurement Authority for the RSRP, on 11 December 2018, Docklands Light Railway Limited (DLRL) entered into a manufacture and supply agreement (MSA) and a fleet support agreement with Construcciones y Auxiliar de Ferrocarriles S.A. (CAF) on 11 June 2019 for the design, manufacture and supply of 43 new trains, including the provision of fleet technical support services and spares supply for 35 years. The status of the additional 11 HIF-funded new trains is explained further below.

- 3.9 At this time, DLRL also entered into a supplemental agreement with Thales Transport and Security Limited and Thales Canada Inc. to support the signalling requirements for the new fleet, as well as letting a number of design and construction contracts for the additional sidings and maintenance facilities at Beckton depot.
- 3.10 As part of our “Safe Stop” in March 2020, we paused all depot and infrastructure works. In response to the financial uncertainty resulting from the coronavirus pandemic, we continued to pause all depot and infrastructure works until late 2020 to enable the programme to fit within the available budget envelope, with around 60 per cent of the project team placed on furlough. With remobilisation, this resulted in a significant delay on depot and infrastructure projects.
- 3.11 We did not pause works on the rolling stock manufacture with CAF and associated activities. This decision was based on a number of factors, the most significant of which was the likely significant prolongation costs.
- 3.12 While significant challenges remain with signalling (as set out further below), we have subsequently made good progress with the manufacture of the new trains, with rolling stock moving off the critical path, which now runs through the depot and infrastructure works which are behind the original schedule.
- 3.13 We have therefore been developing contingency plans to allow early assembly and testing of the new trains, prior to completion of the relevant depot works; previously we planned to assemble trains in the new MFB. The goal has been to ensure the trains are delivered to plan and to enter into service on time to deliver the scheme’s benefits, including revenue uplifts, as soon as practical. These plans are further discussed in section 5 below.

4 Rolling Stock

- 4.1 Through CAF, we completed manufacture and static testing of the first train three months ahead of programme, and have now completed manufacture of the first four trains. We expect to complete manufacture of 12 trains by the end of the financial year.
- 4.2 The first two trains commenced dynamic testing on the manufacturer’s test track in Spain three months ahead of programme. This involves type tests of the onboard systems followed by 20,000km fault free endurance testing to prove reliability. This testing is forecast to conclude by the end of 2022 and the trains will then be delivered to the UK for network testing.
- 4.3 There have been some issues with the integration of the Thales on board signalling software which have been successfully mitigated to date. Significant risk remains in this area of the programme, however, with limited remaining mitigations and so this remains a key area of focus for the RSRP.

5 Beckton Depot

- 5.1 The scope of works at Beckton Depot is now split into a number of packages as set out below. We selected a Managed Package Solution as the preferred procurement route for the depot works. This sees a series of sequential contracts being let for the build of the various packages while we retain responsibility for overall systems integration.
- 5.2 Overall, the depot works are currently 10 months behind our original schedule due to the impacts of the pandemic, and other technical and delivery challenges which are summarised below and in the paper on Part 2 of the agenda.

Northern Sidings

- 5.3 The expanded Northern Sidings will deliver a new test track, train wash, stabling capacity and an Automated Train Scanning System for the new fleet, enable some existing sidings to be removed to allow construction of the new MFB, as well as expanding and migrating the signalling system to a new control unit.
- 5.4 Works are now progressing on site and this year we have decommissioned the existing test track and sidings “D, E & F” which required complex signalling migration over a series of weekend closures.
- 5.5 We expect the Northern Sidings will be brought into use in early 2023 but have faced significant delays to date due to the pause in site works caused by the pandemic, delays in the specification of the signalling scope and issues implementing the new signalling solution on the legacy system. These issues have now been resolved and lessons learnt have been incorporated in our strategy for forward delivery of the remaining depot works.

Maintenance Facility Building (MFB)

- 5.6 A new four road MFB will be the primary facility for maintaining the new fleet. We have experienced delay in the remobilisation of the design contract following the pause in works in response to the coronavirus pandemic, and subsequent supplier performance issues in progressing the revised programme. The design is now complete and we plan to imminently award the build contract.

Temporary Fit Out Shed (TFOS)

- 5.7 To mitigate the effect of the delays to the Northern Sidings construction and MFB design on overall train delivery, we have developed a plan for a TFOS. Our decision to progress this work was driven by analysis which demonstrated that the cost of slowing the train contract, or other alternatives, would exceed the cost of constructing the TFOS by between three to six times. Slowing the train contract would also delay the overall programme and delivery of the programme benefits. We are progressing the design of the TFOS which we plan to construct on the land purchased for the HIF-funded sidings and would allow us to receive and assemble trains in line with the original programme.

Southern Sidings

- 5.8 The Southern Sidings will provide further additional stabling capacity at Beckton depot, supporting deployment of the new fleet. The design of these sidings is now complete and we plan to imminently award the contract for construction.

Substation Expansion

- 5.9 Expansion of the substation will provide two new higher rated transformer rectifiers to power the expanded fleet and provide new low voltage power supplies to the expanded depot. Substation works are currently on site with the expanded substation expected to be in service by summer 2023, although a risk to this is discussed further in the paper on Part 2 of the agenda.

Planned Contracts and Cost Pressures

- 5.10 The build of the MFB has been packaged for procurement with the build of the TFOS and the Southern Sidings. Tenders have been returned and evaluation is complete. Costs for these packages are now higher than originally expected, primarily driven by inflation with significant increases in material prices.
- 5.11 The paper on Part 2 of the agenda explains in further detail the driver for these price increases, how we are seeking to mitigate them, and how we have or otherwise offset cost increases across the RSRP. It also explores the alternative options considered and demonstrates why we are seeking additional authority at this time in order to award the depot contract and secure the overall delivery plan.
- 5.12 Subject to the approval of the Committee, we plan to award the contract for the MFB and associated depot works in November 2022, and appropriate Procurement Authority will be sought in line with standing orders.

6 Signalling and Telecoms

- 6.1 Our signalling and telecoms project will update the Thales Automatic Train Operation signalling system enabling it to communicate with the new Thales Vehicle Onboard Controller on the new train and allow for improved functionality.
- 6.2 Detailed design was completed in 2021 and software development is nearing completion. The new software is scheduled to be deployed for testing on the DLR later in 2022. It will first be tested on the existing trains in possessions before testing with the new train commences in 2023.
- 6.3 We are also progressing works to provide new control centre equipment and software integration required to enable the use of the new train onboard systems. The new onboard systems represent a step change from current DLR systems with remote condition monitoring of the train facilitating more efficient maintenance, on-demand CCTV from the train viewable in the control centre, digital advertising, and modern customer information systems and announcements enhancing the customer experience.

6.4 Feasibility work has been completed for these works, and tender documentation is being prepared for their implementation, which we expect to issue later in 2022.

7 Network Infrastructure

7.1 We are also delivering other infrastructure works across the DLR network to support the RSRP, including:

- (a) **Blackwall Station Second Entrance.** To achieve fire evacuation compliance at Blackwall station resulting from the increased capacity of the new trains, a secondary means of escape is required. Alongside this we are seeking an opportunity to use £2m of section 106 funding from the London Borough of Tower Hamlets to increase non-emergency access through a second station entrance. Concept design was completed in May 2022 and a tender for the design and build of the new entrance has been issued, with the contract planned for award later in 2022. Works are forecast to complete in 2024 prior to the introduction of new trains on this part of the DLR network;
- (b) **Power Upgrade.** We awarded a contract to UK Power Networks for the provision of an increased power supply to Beckton Depot in 2019. A new feed will be run from Axe Street substation in Barking to Beckton Depot. Works have progressed on site with ducting in the roadways nearing completion; and
- (c) **Power Resilience.** This involves works to install additional negative reinforcement cables to ensure network performance is not impacted by the increased power draw of the new train. Feasibility work is complete on the negative reinforcement works and a tender for the design and build of these works was issued in August 2022.

8 Housing Infrastructure Fund (HIF)

- 8.1 The HIF-funded works will provide an additional eleven trains and sidings infrastructure to the south of Beckton Depot, along with other works across the network to accommodate the additional trains.
- 8.2 We signed the GDA with DLUHC in December 2020 and provided a further update to the Committee covering the HIF programme in July 2021. Following the approvals granted by the Committee, the GDA became unconditional in July 2021.
- 8.3 Since then, we have purchased land to the south of Beckton Depot from National Grid that will be the site of the additional sidings, completed a design for these sidings and submitted a planning application to the London Borough of Newham. Planning approval is expected before the end of 2022.
- 8.4 We have submitted a number of claims to DLUHC, having satisfied the conditions for those claims. To date, however, DLUHC have only paid claims for “infrastructure”, including purchase of the land and other supporting infrastructure works at Beckton depot.

- 8.5 DLUHC have not yet paid any of our submitted claims in respect of the rolling stock, and so we have not yet exercised our option with CAF to purchase the additional 11 trains. While this presents limited immediate financial risks to TfL as costs are recoverable from DLUHC, this presents significant challenges for programme delivery and threatens planned housing delivery, particularly in the Royal Docks where we are having to inform developers of capacity constraints on the DLR network which might require conditions limiting development. The matter is discussed further in the paper on Part 2 of the agenda.
- 8.6 Once we receive clarity on the additional trains option, we plan to undertake a further update to our Programme Stage Gate B to fully integrate the HIF-funded scope with the base scope and manage this as a single programme - RSRP.

9 Programme Summary

- 9.1 Key upcoming and significant programme milestones are:

Award depot construction contract	November 2022
Northern sidings bringing into use	Early 2023
First train delivered to UK for testing	Early 2023
First train enters passenger service	Early 2024
All trains in service	2026

10 Programme Assurance

- 10.1 In support of this submission, an integrated assurance review was undertaken by TfL Project Assurance and supported by an External Expert and the Independent Investment Programme Advisory Group. This did not identify any critical issues with the programme and we are actively responding to the recommended actions.

List of appendices to this report:

Appendix 1: images of new train at manufacturer's facility, and northern sidings under construction

Exempt supplementary information is included in a paper on Part 2 of the agenda.

List of Background Papers:

Project Assurance and IIPAG Reports

Contact Officer: Stuart Harvey, Chief Capital Officer
 Email: StuartHarvey@tfl.gov.uk

Contact Officer: David Rowe, Interim Director of Investment Delivery Planning
 Email: DavidRowe@tfl.gov.uk

Appendix 1 – images of new train (top), northern sidings construction (bottom)

