

## Subway Modernisation – progress update

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**Date of meeting** 13 December 2024

**Date of report** 3 December 2024

### Report by the Director of Transport Operations

#### 1. Object of report

To provide the Partnership with the latest progress update on the Subway Modernisation programme.

#### 2. Background to report

The Subway Modernisation programme is the most significant investment and improvement programme to be undertaken in the Subway within the last 40 years.

The programme was scoped for delivery under five principal workstreams. The first two of these workstreams are now fully complete:

- Stations and accessibility improvements
- New Ticketing System

The three remaining active workstreams are:

- Renewal and Upgrade of Existing Infrastructure & Depot Facilities
- New Rolling Stock, Signalling and Automated Control Systems
- Organisational Change and Employee Relations

This report provides an update on the key areas of progress and emerging issues since the last written report to the Partnership in June 2024.

#### 3. Outline of proposals

##### 3.1 Existing infrastructure

Works have continued on the infrastructure workstream with the ongoing focus of completing key improvement and modification works across tunnel, track and line assets. Progress made since the last update includes:

- The programme of tunnel lining improvements by Freyssinet Ltd continues. Works are currently focussed on a prioritised programme of lining repairs and water ingress management.
- Works to confirm the continued health of legacy electrical, telecoms and IT assets is complete to ensure that sufficient obsolete spares are available, and that SPT

staff have the right knowledge, competence and information available to them, to keep the legacy systems operational.

- The conceptual and functional design process for improvements and/or upgrades of the Subway substations has continued, and efforts will be made during this work to maximise energy efficiency principles for both climate and cost purposes. A technical feasibility study into regenerative braking energy capture was completed, with a positive outcome, and we are now in a position to move to developing a business case and obtaining a more detailed design, to allow for a possible future tender.
- As previously reported, the Traction Power Negative Feeder cable replacements at Byres Road Substation (Hillhead) and at Dundasvale Substation (Cowcaddens) are complete. Broomloan Substation negative feeder works are ongoing and due for completion mid November 2024. Broomloan Substation Transformer replacement works have also started, with one Transformer replaced and second due for replacement in January 2025.

### 3.2 Broomloan Depot facilities

Work activity to ensure the integrity, reliability and longevity of key assets within Broomloan Depot, in conjunction with readiness and new asset introduction, continues. In addition, the key areas of progress on this workstream are:

- Works have continued to improve the condition and secure the long-term integrity of the retaining walls of the ramp access to the sub-surface tunnels at Broomloan Depot. These works are expected to be completed by the end of 2024.
- In summer 2024, a package of track and civil works were completed within the yard, including replacement of sections of embedded track.
- Design has commenced in advance of works planned for 2025 to install a depot protection system to enhance safety provisions for trains entering the maintenance shed.

### 3.3 New Rolling Stock and Control Systems

All of the following activity is delivered by the Hitachi and Stadler joint venture (ANSTA) and their sub-contracted supply chain under the Manufacturing & Supply Agreement (MSA) contract:

- As previously noted, Stadler has completed production and delivery of all seventeen new trains.
- The Fault Free Running (FFR) programme for the new fleet continued throughout the year and the seventeenth train has now successfully passed its FFR phase.
- On successful completion of FFR, each train was then taken through the formal acceptance process. Only when all criteria had been met were the trains formally handed over to SPT, until that time the trains remained the property of ANSTA. Throughout the year, trains have been formally handed over to SPT as they met this criteria. At the time of writing, sixteen out of seventeen trains have been formally accepted. The final train is expected to be accepted in December 2024.
- Three trains have been reserved as dedicated test trains for the testing of the new signalling system and will not be used in regular passenger service until the new signalling system is brought into operation.
- As reported previously, the installation of the new signalling and control equipment in station equipment rooms has been completed in all stations with close out of snags continuing.

- Installation of signalling and communications equipment and cabling within the stations and tunnels is being carried out overnight and is nearing completion in readiness for the start of system testing in December 2024.
- Installation of signalling and communications equipment and cabling within depot and yard areas has commenced and is due to complete in early 2025.
- Installation of the power cabling within the stations and tunnels commenced in November 2024. Ceiling cableways remain exposed in certain parts of the system and ceiling tiles will be replaced as soon as possible after the cable installation works at each station are completed, from the end of 2024.
- Installation of the new fibre optic cabling and relevant “J” hanger supports is complete.
- Work to install the communications backbone ‘waveguide’ cable that will facilitate communication between the new Operational Control Centre (OCC) and the new trains has continued through the year and is now substantially complete.
- Preparatory works for the future installation of the platform screen doors have continued.
- SPT continues to challenge and monitor the evidence provided by ANSTA to demonstrate the safety case required under SPT’s Safety Verification (SV) Scheme. The tunnel testing safety case has been updated in readiness for the testing of the new signalling system.

### 3.4 Subway Sunday closures

As noted previously, SPT has agreed for ANSTA to utilise a number of Sunday closures. These closures allow the contractor extended periods of time to carry out more complex installation activities and also gives the opportunity for other activities such as further FFR or other system testing.

The next Sunday closure will be utilised for future Fault Free Running of the new signalling system towards the end of 2025. We will continue to communicate the forthcoming closures with the public via media outlets and our own social media channels.

In preparation for our transition to the new signalling system at CP4+, a number of Sunday closures are being actively considered to support final readiness preparations for the whole SPT operations team at the conclusion of their training. This activity will be important to maximise readiness across the subway team for when we achieve CP4+. The final requirements and dates are still being confirmed, but it is expected that these dates will be in close proximity to CP4+.

### 3.5 Legacy train disposal

As new trains were handed over and brought into passenger service, the legacy trains were incrementally retired from service and removed from the system. The final passenger service of the legacy fleet was made on 28 June 2024 marking the end of 44 years of service.

SPT agreed with Glasgow Life that one carriage would be retained in the Riverside Museum and this carriage is now on display.

There was significant public interest in obtaining legacy units and interested parties were directed to ANSTA as it holds the commercial agreement for the disposal of the fleet. ANSTA has arranged for a number of parties to take delivery of legacy carriages.

The remainder of the trains have been recycled at a local facility within excess of 90% of the material being recycled.

### 3.6 Technical Support and Spares Supply Agreement (TSSSA)

The Technical Support and Spares Supply Agreement is the other contract to be delivered by ANSTA. This contract supplies all spares and special tools required for the integrated system, defines the maintenance approaches and plans for maintenance activities, and manages the material supplies to SPT stores in relation to the modernised equipment.

As previously reported, the TSSSA contract has continued to require close monitoring at Project Board level to ensure ANSTA is delivering against its contractual obligations. While improvements have been seen in some aspects of performance, we are continually reviewing the performance of the whole contract. This includes the sharing of information and experiences with other transport organisations.

### 3.7 Challenges associated with new fleet introduction

As previously reported, the significant success of new fleet introduction was also accompanied by a level of service disruption which directly affected our customers. We initially saw a rise in complaints and an interest in the overall fleet performance as a result of this disruption.

Increased disruption was a known risk, common with all new fleet introductions and which SPT has focussed on. Our Projects, Engineering, Operations and Maintenance teams have continued to work tirelessly with this new equipment to continuously improve our service and seek to minimise delay and disruption to our customers. The service improvements which have already been delivered are having a material effect on the reliability and performance of the Subway. As our experience in operating and maintaining the new fleet grows, and the expected early reliability challenges are resolved, the fleet performance is expected to rise further. The first twelve months of new train operations have yielded a wealth of information and learning which we continue to review and analyse to continuously improve our service.

### 3.8 Organisational Change and Employee Relations

Planning and delivery of the organisational change component of Subway Modernisation continues in parallel with the technical workstreams. The development of Target Operating Models is progressing in Operations, Maintenance and Engineering. Communications with staff have increased, providing indicative timelines for engagement with specific teams. Early-stage consultations have also now been concluded to allow training programmes for the new Operational Control Centre, the hub of the new operating model, to commence.

As previously shared, the Target Operating Model assumptions include extension of our opening times on a Sunday although periods for extended engineering access will still need to be accommodated. The details of future opening hours are still to be finalised.

Our new system will be capable of 'Unattended Train Operation' (UTO), although we anticipate an ongoing requirement for a level staff presence within the system beyond this point. This is being actively considered as part of our Target Operating Model planning.

### 3.9 Learning and Development

Learning and Development remains a critical component of Subway Modernisation delivery. Over the last six months there have been two Operations Training Weeks, with external training providers called in to supplement mandatory training, such as Fire Evacuation, delivered by our Training Officers.

Subway Operations Training Officers have delivered 21 weeks of induction training over six months for new staff and those undertaking flexible duties, as below:

- Station Assistant course: 2 weeks (2 staff)
- Station Master courses: 11 weeks (13 staff)
- Driver's courses: 8 weeks (9 staff)

Tech Craft Line (TCL) and Tech Craft Rolling Stock (TCRS) staff within Maintenance over the last 6 months have completed training and assessments on a number of Modernisation and Infrastructure Assets.

Tech Craft Line staff have completed a refresher training programme including Depot Operations, ATI (Automatic Train Inspection) and Carriage Wash, DOO (Driver Operator Only monitors), Signalling (LEU (Lineside Electronic Unit) & Balise (the new signalling system) and Carborne Controller. This is the signalling equipment that is onboard the train which controls the automatic operation and protection of the train. It is in charge of braking, accelerating and the door functions. A number of staff have been formally assessed on each of the areas detailed and the remaining assessments will be conducted in the coming months.

Alongside completing refresher training and assessments for Modernisation, business as usual has continued for Tech Craft Line including TCL 1 - Traction Power, TCL 2 – Signalling, TCL 3 – Electrical and PICOI (Person In Charge of Isolations) reassessments.

Tech Craft Rolling Stock are now competent in all 180-day Maintenance Tasks, as are TG2 staff. Similar to Tech Craft Line, Tech Craft Rolling Stock staff are attending faults alongside TSSSA to improve fault finding capabilities. Lead Technical trainer for Rolling Stock is currently delivering a Fault-Finding training programme to all TCRS. Training delivered as part of this programme includes Rescue and Doors training. Loco driving and maintenance assessments have also been conducted over the last six months.

### 3.10 Programme Review

As noted previously, at the completion of CPX, a wider programme review was undertaken as we looked forward to the next stages of delivery. This review focussed on a deeper interrogation of the upcoming activities and a focus on the interdependencies between the ANSTA team and SPT. The exercise yielded a revised programme being issued by the contractor which incorporates a change in strategy. The change should bring greater efficiency in the later stages of delivery. The biggest change from a customer perspective will be the appearance of Platform Screen Doors at three stations earlier than originally programmed. This approach will reduce the number of changes of state of the system and result in one less submission to the ORR.

The programme review is aligned with the Corporate Plan in seeking to achieve the following targets:

<b>Milestone</b>	<b>Description</b>	<b>Planned Date</b>
CPX New Fleet Introduced	Introduction of new fleet to passenger service on old signalling system.	June 2024 (achieved)
CP4+	New signalling system and Operational Control Centre ready for operation.	January 2026
CP5	Platform Screen Doors installed and operational at all stations.	April 2026
CP6	Ready for Unattended Train Operation.	July 2026

The programme remains on track to achieve these targets.

### 3.11 Rules, Regulations and Procedure

Having introduced the new fleet, the Rules, Regulations and Procedures work has transitioned towards the development of CP4+ components and materials. Each major milestone in the programme is accompanied by significant updates to rules and regulations. The team is learning lessons from CPX and applying them to the subsequent delivery phases.

- Rulebook updates

CP4+ Rulebook updates have been the major focus, though updates to current rulebooks continue to be made in line with operational learning and technical updates. Completion of these elements enables the training packages for all staff in readiness for CP4+.

### 3.12 Accessibility in the system

Our Accessibility Strategy and Guidance have been developed and are currently going through review and approvals. A plan of works is well underway to continue to enhance the accessibility of the system through the provision of supporting information and continued training of our staff.

### 3.13 Journey to a Data Driven System

Since our last update, a significant workstream has been successful in developing and implementing a series of dashboards which are now supporting data driven decision making across Subway. The information can now be analysed rapidly and in a variety of different ways which is supporting subsequent decision making based on the data. Some of the most important examples of this benefit are being seen in our Service Affecting Failures dashboard, our Security incident dashboard and service disruption dashboard. These have all facilitated direct interventions based on the data capture and presentation.

A new Operational Management System is also being developed to support the digitisation of more processes across Transport Operations and SPT.

### 3.14 Programme budget

Within the overall Subway Modernisation budget of £288.7m, the 2024/2025 budget stands at £28.0m.

As at Period 8 2024/2025, £240.6m has been incurred against the total budget of £288.7m on the programme. The remaining programme budget, including contingency, will be required and utilised solely for the delivery of the MSA contract and associated programme support costs.

Since the last report, ANSTA has submitted a number of claims which are being reviewed in line with the contractual process. Future Subway Modernisation reports will update on this progress and impact on contingency.

Overall, the Subway Modernisation capital programme remains within the approved budget, including programme contingency and available funding though noting the ongoing assessment of claims received.

Transport Scotland have committed to fund up to £225m for the project. £171.9m of that was received by the end of 2023/2024. The remaining £53.1m will be funded over the remaining life of the project, with £28m of that being received in 2024/2025.

## 4. Conclusion

Progress continues to be made across all Subway Modernisation workstreams, most notably with the completion of the introduction to passenger service of the new train fleet running on the existing signalling system, the completion of 'fault free running' tests and subsequent formal acceptance of the first sixteen trains, and the continued installation of hardware in preparation for the introduction of the new signalling and telecommunications systems.

The achievements of the last six months have been significant and would not have been possible without the focus, drive and professionalism of the SPT delivery, our contractor ANSTA or indeed our wider supply chain.

## 5. Partnership action

The Partnership is asked to note:

- the continued progress made on all Subway Modernisation and improvements works since the last written update to the Partnership in June 2024;
- ongoing progress on the MSA contract including formal acceptance of the first sixteen trains and introduction to passenger service of the first fourteen trains running on the existing signalling system, the completion of Fault Free Running and the ongoing hardware installation work in readiness for the new signalling system;
- the challenges of introducing a new fleet to passenger service and delivering reliability growth;
- continued challenge towards performance improvement on the TSSSA contract;
- progress made on operational readiness and delay mitigation actions including existing infrastructure and fleet maintenance improvements;
- that the modernisation programme remains within overall budget and funding pending the outcome of the assessment of contractor claims;
- the commitment and performance of the SPT, ANSTA and other contractors delivering the work; and
- that a further report on progress will be presented to the Partnership meeting in June 2025.

## 6. Consequences

Policy consequences	<i>The Subway Modernisation is a key objective of the Regional Transport Strategy.</i>
Legal consequences	<i>Reported delays and any proposed mitigation will be managed in accordance with the MSA contract terms and SPT Governance.</i>
Financial consequences	<i>Overall, the proposed works remain within the allocated capital and revenue budgets and Subway Modernisation business case.</i>
Personnel consequences	<i>No significant changes within this report although further changes are expected in the future system migration stages and as the operational readiness programme continues to develop.</i>
Equalities consequences	<i>Ongoing updates to accessibility guidance and information for customers using Subway.</i>
Risk consequences	<i>Delays impact to forward modernisation delivery, operational service delivery and budgeting. Impacts and risks are under assessment based on available</i>

*information and mitigations are being continually reviewed and defined as required.*

Climate Change, Adaptation &  
Carbon consequences

*Seeks to secure the future operation of a sustainably powered public transport option for west of Scotland communities by delivering a state-of-the-art underground railway within Glasgow City.*

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