



Subway Modernisation - progress update

Date of meeting 18 June 2021

Date of report 31 May 2021

Report by Director of Subway

1. Object of report

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

2. Background

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, namely:

- Stations and accessibility improvements (complete);
- New Ticketing System (complete);
- Renewal and Upgrade of Existing Infrastructure & Depot Facilities;
- New Rolling Stock, Signalling and Automated Control Systems; and
- 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 December 2020.

The COVID-19 pandemic continues to have a significant impact on modernisation progress. Lockdowns across UK & Europe have restricted and delayed our contractors' and suppliers' progress, and the restrictions on international travel have prevented or prolonged factory testing activity and delivery of key equipment. COVID safe working arrangements within SPT and contractor premises has allowed site works to move forward, albeit slower than otherwise forecast. With remote working now established as an effective norm for both SPT and the supply chain, modernisation design and office based activity has been able to continue despite the ongoing restrictions. Efforts continue to be made across SPT and its supply chain to manage ongoing and emerging issues and minimise impacts to delivery.

As in 2020, due to COVID-19 challenges experienced, there has been less progress overall than originally planned. The updates given within this report focus on the achievements and progress made. Given the ongoing and variable restrictions, guidance and requirements in support of public health protection across EU countries, forward forecasting remains uncertain.

3. Progress to date

3.1 Existing Infrastructure

Works have continued on the infrastructure workstream with the ongoing focus of completing key improvement and remedial works across tunnel, track and line assets, in readiness for the new system and mainline train testing. Progress made since the last update is as follows:

- Initial works to improve structural clearances within the tunnels is now complete. The follow up assurance laser survey has highlighted residual areas for further improvement, in the main associated with existing equipment positions. The laser survey results are now being analysed to define the required programme of works. Works also continue to complete improvements to a limited number of conductor rail positions.
- Works to gain improved segregation between the tunnels in advance of train testing are now complete. Following the first phase of work to close off the interconnecting cross passages, works to close off larger open areas including the three double flank platform stations at Govan, Partick and St Enoch are complete. The open areas remaining (including station platforms and the turnout chambers) have now been risk assessed to determine procedural mitigations and access rules.
- The programme of further tunnel lining improvements awarded to Freyssinet Ltd has now commenced. A campaign of baseline surveys and exploratory drilling began in February. The resulting information is currently being assessed to inform prioritisation of the programme for void grouting and lining repair works.
- Survey and condition assessment of a sub-tunnel drain in the north-west of the Subway system is ongoing. To facilitate inspection, historic debris build-up is being removed from the drain, which has the additional benefit of improving throughput and capacity of the drain. The resulting data will provide assurance of integrity and identify any requirements for improvement works.
- Works to confirm and improve the condition and longevity of legacy electrical, telecoms and IT assets has continued with the primary focus of agreeing extensions to the various supply and service contracts required to support the existing infrastructure through to the end of life.
- The conceptual design process for improvements and/or upgrades of the Subway substations is now underway and will continue into the autumn. As reported previously, this work will look to define what is required in order to utilise the new trains regenerative braking system; align with other modernisation needs, improve long-term maintainability, lifecycle costs and improve safety controls.

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. The key areas of progress on this workstream are:

- Excavation and installation of new cable ducts and draw pit chambers through the operational yard area is now complete. These significant excavation works were to facilitate the installation of new cable and trackside equipment as part of the new signalling and control system works. Some limited cabling installation has commenced though the majority of the installation is not due until later in the year.
- Physical works for the stabling shed extension commenced at the start of the year, with head driven piles to support the foundations for the building. This

required effective stakeholder engagement with nearby residents and monitoring of the tunnels, as well as engagement with Operations in order to have agreed phased working within isolated possessions at the entrance to the existing stabling shed. This ensured both adequate stabling of the current fleet and minimal impact to operations. The existing gable wall foundation was strengthened by underpinning in order that old lintels were removed and replaced with new lintels forming a wider opening to accommodate extended platforms into the new part of the building. The steelwork structure and associated wall and roof cladding has been added, with services extended into the new part of the stabling shed. Works are shortly due for completion. Work to construct a new siding road to provide additional stabling space for track based vehicles by Volker Rail Ltd was completed to a point where the rails and points were positioned before access to the stabling shed took priority. A review of any requirements to finish off the infill concrete will be made on completion of the stabling shed.

- Plans for the installation of the mechanical and electrical fit out for the Automatic Train Inspection (ATI) equipment are now agreed and once installation is complete, testing and commissioning of both this and the train-wash will follow in the autumn.
- Fit out of the new control and signalling equipment with the new Operational Control Centre (OCC) building has continued to progress albeit with some constraints and delays.
- Following survey of the retaining walls of the ramp access to the sub-surface tunnels at Broomloan Depot, the improvement works scope has now been defined and appropriate repair designs developed. The tendering process to award a works contract is imminent at the time of writing.
- Activities to strengthen in-house competence and supply chain resilience for wheel set maintenance has continued. The wheel lathe provided through the Manufacturing & Supply (MSA) Contract is commissioned and is progressing towards final acceptance. A check of the full legacy fleet wheelsets has been completed to determine the forecast requirements until the end of life, with new gauges procured to improve accuracy and completeness of measurements. Discussions with another potential supplier for wheelset overhauls as a contingency offering is ongoing.

3.3 New Rolling Stock and Control Systems

All of the following activity is delivered by ANSTA JV and their sub-contracted supply chain, under the MSA Contract:

- Off-line dynamic testing of the first three trains delivered to Glasgow has continued on the test track at the Manufacturer Depot and Testing Facility at Edmiston Drive. Remedial works for any issues raised by the testing have been undertaken on site as required.
- The issue with traction power when new trains were deploying their electrodynamic brakes as highlighted in the previous report has now been resolved, with a retrofit of additional components on the trains.
- The ongoing design and factory testing work for the various signalling, telecoms and controls systems and software has progressed albeit with some impacts/delays to plans due to COVID-19 travel restrictions.
- ANSTA JV has continued to progress design and installation work to change the sequence of system migration to allow new trains to run on the existing signalling and control systems, until the new control system commissioning is complete. Additional trackside equipment and some software changes for the new trains

are in the process of being implemented, following the agreement of revised concept designs earlier in the year.

- Installation of the new signalling and control equipment has continued, with works now progressing in the south side and city centre Subway stations.
- Replacement of the Subway CCTV system has continued with platform level camera installation being prioritised in advance of mainline testing.
- SPT continues to challenge and monitor the evidence provided by ANSTA JV to demonstrate the safety case required under SPT's Safety Verification (SV) Scheme. An assurance review of adherence to the process and specific evidence needs for mainline testing has been undertaken to ensure there is full clarity on requirements between all parties and direct focus to meet the programme demands.

3.4 Manufacturing & Supply Agreement

Progress on the ANSTA JV delivery of the Manufacturing & Supply Agreement contract remains subject to significant ongoing delays as previously reported. SPT continue to challenge and negotiate a resolution whilst protecting our contractual position.

As reported in the December update, works to change to the integrated system migration sequencing, to assist in minimising passenger service delays has continued. The re-design and re-planning exercises for this strategy change are now nearing completion and system installation activity has commenced.

SPT also continues to monitor any impacts COVID-19 may have in the contractual delay position and all ongoing board level contract performance and claims discussions, consider the continued impacts of the pandemic on SPT and ANSTA JV progress.

ANSTA JV continues to propose that SPT accept a change to key contract dates based on their revised forecasting and claims. SPT position on this and associated claims remains unchanged, and is unaccepted. These issues continue to be subject to discussion at corporate board level across the contract parties, given ongoing programme performance issues and an eagerness by all to resolve without contractual dispute. As yet there is no agreement. SPT will inform the Partnership on further progress to agree a workable and realistic forward programme and advise on how delays and mitigations are being dealt with contractually in due course.

3.5 Technical Support and Spares Supply Agreement (TSSSA)

Following limited progress, SPT has challenged ANSTA to improve performance against and management of the TSSSA contract. This has resulted in an improved focus of the tasks which will be faced in the year ahead. A joint Steering Group has been established to manage the key workstreams including: Team Collaboration, Spares and Supply Chain, Performance Management and Reliability Growth.

Agreement has been reached regarding an extension to the TSSSA to account for the delays experienced via the MSA.

3.6 Organisational Change and Employee Relations (including Operational Readiness)

Efforts continue to ensure Subway Modernisation operational readiness plans align with upcoming significant changes to the current operation. Current focus remains on readiness planning for new train testing starting in the tunnels (mainline testing).

Activity to ensure our processes and people are ready to facilitate the safe access and testing of new trains in the tunnels for testing is progressing well. The following summarises key readiness progress since the last update:

- Authorisation & Certification
 - Engagement with the Office of Road and Rail (ORR) has continued on the usual basis and notification requirements for mainline testing have now been agreed.
 - SPT's technical and safety verification processes have been further strengthened to enhance the capture of a clear audit trail of assurance evidence to support the upcoming mainline testing 'go-live' decision.

- Rules, Regulation & Procedure
 - The review and revision of the current Subway operational rule book, regulations, process and procedure into a set of new Operational Procedures is nearing completion. All documentation has been finalised and plans are underway to brief the changes out to staff prior to the formal launch of the new document suite in the coming months.
 - As part of the review, the strengthening of processes and procedures to ensure continued safe system access and control during mainline testing (traction power energised during nightshift and test trains moving around the system) is also nearing completion. Control Staff have been engaged in redefining these processes and a series of live trial exercises have been undertaken. This has allowed process changes to be validated and also has allowed all Control Staff to gain experience and familiarity of the revised ways of working, prior to formal roll out.

- People, Resources and Structures
 - Assessment of the future staffing needs and structures required to run the future new 'digital railway' has continued.
 - With resource requirements for the support of the start of mainline testing now generally understood and prepared for, focus has switched to needs and profiling for staff and support needs through future system migration stages. Assessment is currently underway to establish and plan the driving resource requirements to support the testing of each new train as they are delivered to site and training of all driving staff on the new fleet in the system in advance of passenger service. Resource needs and training for the future maintenance of new trains is also under review with requirements and timelines being established and agreed with ANSTA JV.
 - Strengthening of structures within the Subway departments is also underway to ensure that training, production management and quality control is robust and resilient for the challenges ahead, with appointments made via external recruitment campaigns and internal secondments.
 - Work on our Fleet Reliability Action Plan on the legacy fleet, using a skilled team of contracted agency resources, has continued with 25% of priority vehicles receiving significant defect rectification work. Additional work has been identified during the initial assessments and a continuous programme of work is now expected for the remainder of the year. In our efforts to align Subway fleet performance management with the wider industry and set a benchmark for future performance, our managers and supervisors are being coached towards using more data driven, proactive planning approaches and techniques. To support the effectiveness of this, we have also extended and widened the supply chain with the aim of providing greater resilience, quality and efficiency for spares and materials provision.

- Clear “role and responsibility” mapping to enhance the safe operation of the system against regulatory safety requirements has been completed for core Subway departments/functions. A further mapping exercise to clarify ownership and responsibility lines between SPT Subway and Corporate departments is now underway.
- Competence, Development & Engagement
 - Driver familiarisation of the new fleet has continued, with a number of drivers gaining experience in moving trains, under test conditions, at the ANSTA JV testing facility. The familiarisation and training roll out for the drivers who will form the ‘test driving pool’ for mainline testing has been impacted by delays in the MSA programme. This is beginning to be turned around with SPT leading a review of requirements and ANSTA JV delivering further ‘train the trainer’ sessions. This has now allowed SPT trainers to develop and deliver training exercises relevant to upcoming mainline testing plan needs. The formal training programme continues and is expected to complete over the summer. There has also been the opportunity to allow others from the passenger service driving pool to visit and experience the new trains.
 - As part of the emergency scenario planning for mainline testing, procedures and training of SPT Maintenance staff in support of recovery of failed or broken down test trains has also been developed with ANSTA JV and roll out is underway.
 - As per resource requirements for the next migration stage, training focus has now moved to SPT’s ability to operate and maintain the new fleet and system. Current competencies have been assessed and training needs identified. SPT has led a review of the training proposed under the MSA contract and courses and coverage is now agreed. A significant push by SPT is now underway with ANSTA JV for improved delivery dates that meet operational constraints.
 - Two Maintenance personnel remain on full secondment to ANSTA JV in support of the TSSSA and off-line train testing and commissioning. Discussions continue with ANSTA JV to achieve similar staff secondments or early access opportunities for the control and signalling systems, though there has been limited progress given the ongoing restrictions and delays in the MSA delivery.
 - The Maintenance apprentices have continued with their academic training qualifications and practical work experience.
 - Efforts to reduce the impacts to training from COVID-19 restrictions continued with more in-house training material being moved to online courses. This is being undertaken by SPT trainers after becoming competent on the appropriate software packages. With a loosening of restrictions, it has been possible to re-start some in-person training to maintain competencies but class numbers remain limited and previously reported work-arounds and mitigations remain in place.
 - Employee engagement across Subway continues. Staff newsletters communicating modernisation updates have been issued as part of a regular programme. Staff continue to be actively involved and engaged on the development of new processes and procedures and associated live trials and test exercises. Modernisation remains very visible to staff through ongoing works in the depot and stations. A staged communication plan for the route to mainline line testing ‘go live’ has been established and is currently being rolled out.

- Trade Union and Safety representatives continue to be regularly briefed on progress as part of our standing local Information and Consultation of Employees (ICE) meetings and Safety Committee.
- Routine liaison with the Department for Transport, Transec, British Transport Police and the Fire Service has continued and briefings on upcoming changes from system testing will be delivered over the summer.

3.7 Programme budget

Within the overall Subway Modernisation budget of £288.7m, the 2021/22 budget was set at £17.1m at the Partnership meeting on 12 March 2021.

To the end of financial year 2020/21, £178.5m has been incurred against the total budget of £288.7m on the programme. As previously noted the remaining programme budget, including contingency, will be required and utilised solely for the delivery of the MSA contract and associated programme support costs.

Overall, the Subway Modernisation capital programme remains within the approved budget, including programme contingency and available funding.

4. Conclusions

In conclusion, progress continues to be made across all Subway Modernisation workstreams although COVID-19 has had, and continues to, have an impact on progress, as summarised below:

- Overall programme progress is ongoing, but remains impacted and subject to delays given COVID-19 restrictions and impacts;
- New control and signalling cabling & equipment installation is underway in the stations, depot and tunnels;
- Structural clearance activity within the tunnels is complete and works are now being assessed and planned to improve clearances associated with existing in-tunnel equipment;
- Works to improve physical segregation between the tunnels is complete;
- The contract for further tunnel lining improvements has commenced with surveys and works planning underway;
- Complex works to install new cable crossings and containment within the depot yard is complete and ready for cable installation later in the year;
- Stabling shed construction is now well underway after the challenging groundworks being completed;
- Equipment installations for the Automatic Train Inspection system continues;
- The wheel lathe commissioning is complete and final acceptance is in progress as is establishment of wheel set overhaul service contract(s);
- Off-line train testing continues with the first three train units and works to resolve issues with the electrodynamic braking system are now complete;
- The change to the signalling migration strategy has moved from design into implementation, with new signalling equipment to tie-into the existing system now being installed;
- Designs and factory testing of new system technologies continues;
- Fit out of new operational systems within the new OCC has continued;

- Efforts continue to ensure that SPT's processes and procedures are ready for mainline testing and new operational procedures and access rules will be rolled out over the summer;
- Drivers are now gaining experience and training on the new fleet in advance of mainline testing;
- Operational Readiness activity continues to focus on activities in support of mainline testing however forward planning for the next migration stages has also commenced;
- Continued engagement with staff, trade unions and key external stakeholders regarding future operational changes;
- Ongoing progress on the safety verification and validation of project and readiness activity in support of the upcoming ORR regulatory notification;
- Senior management actions and discussions have continued with ANSTA JV to address and mitigate their forecast delays and cost claims on the MSA contract. A separate briefing will be provided to members at an appropriate time; and
- The Subway Modernisation capital programme remains within the approved budget of £288.7m and available funding.

5. Partnership action

The Partnership is recommended to note:

- The ongoing impacts of the COVID-19 pandemic on modernisation activity;
- The continued progress made on all Subway Modernisation and improvements since the last written update to the Partnership in December 2020;
- Ongoing progress (with delays) on the MSA contract;
- Successful challenge towards performance improvement on the TSSSA contract;
- Impacts and likely further delay and claims to both MSA and TSSSA contracts from COVID-19 as a Force Majeure event;
- The ongoing discussions with the ANSTA JV on MSA claims and delays;
- Progress made on operational readiness and delay mitigation actions including existing infrastructure and fleet maintenance improvements; and
- The modernisation programme remains within overall budget and funding.

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 significant changes are expected in the future system migration stages and as the operational readiness programme continues to develop.</i>

Equalities consequences

None within this report.

Risk consequences

COVID-19 and ANSTA JV delays impact to forward modernisation delivery, operational service delivery and budgeting. Impacts and risks are under assessment based on available information and mitigations are being continually reviewed and defined as required.

Name **Antony Smith**
Title **Director of Subway**

Name **Gordon MacLennan**
Title **Chief Executive**

For further information, please contact *Antony Smith, Director of Subway* on 0141 333 3484.