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Edinburgh Tram Project
Abridged Report No. 28
10th November to 7th December 2013
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CONFIDENTIAL – LEGALLY PRIVILEGED AND FOI(S)A EXEMPT
December 2013



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1 Executive Summary

- There were 2 safety incidents recorded in the Period although none were serious or involved members of the public
- Turner & Townsend continue to forecast Section D Completion on 6th June 2014
- Sectional Completion to Edinburgh Park Station is being pursued and likely to be complete by 20 December 2013.
- Overall Forecast reduced by £376k this Period although there are a number of key issues which could affect the overall forecast, principally prolongation resulting from any delay to testing, commissioning and shadow running.
- In the period the dynamic gauging run in Section C has been completed together with the Network Rail Immunisation Test on the 9th and 10th December 2013. Infraco are now preparing for the traffic signal integration test which will commence on the 7th January 2014.
- On 12 December 2013 Turner & Townsend received a written instruction from CEC to formally stand down support to Edinburgh Tram effective from the close of business on 13 December 2013. A handover file is being prepared for Edinburgh Tram and no further work will be carried out in supporting this aspect of the project delivery. There remain a number of key critical Edinburgh Tram activities that CEC will need to manage to ensure the programme can be met. The readiness of Edinburgh Tram remains a key concern.
- Turner & Townsend, CEC and Infraco are continuing to record the closure of snagging works although snagging will not be completed by end December 2013.
- There remain a number of commercial and technical issues with CAF that are a cause for serious concern, little progress has been made in the Period resolving commercial matters and Turner & Townsend has raised concerns with CEC that this may impact on project delivery. Further instruction is awaited in relation to the commercial discussion ongoing between CAF and CEC.
- The maintenance agreements review has continued and concerns remain regarding commercial terms with Infraco

2 Health, Safety & Environment and Quality

2.1 Management of Health & Safety

Energisation of the electrical infrastructure and dynamic gauge testing activity has been undertaken between Edinburgh Park and York Place without any safety incidents.

Compliance with authorisation / permit arrangements for work close to the tramway is being monitored. Proposals are being developed for a related project wide audit. An agreement has been finalised between CEC/Infraco on an amendment to the Work Site Completion Certificate that forms part of the Infraco Contract Interim Handover Protocol. This change avoids unnecessary bureaucracy by acknowledging pre-consent for Infraco for future works at on-street interim handover sites provided safety and traffic management considerations are addressed.

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As previously discussed the wider discussions on the client target programme are not reflected in this report although Turner & Townsend fully supports the stated CEC objectives and is working closely with all parties to meet a revised improved opening date.

3.3 Critical Path and Key Float Paths (Master Schedule)

The Critical Path relates to the 'Longest Path' through the schedule, which would adversely affect the currently forecast end date if delayed. For the purposes of this project Turner and Townsend monitor the critical path and the next three longest paths, referred to as "Key Float Paths" through the schedule. The current Critical Path is Section 5B E&M (OHLE) (Balgreen Rd to Edinburgh Park) SAT and SITs. The Key Float Path on street is Shandwick Place Civils / SAT and SITs and completion of Roads Signs, Markings & Furnishings. Off street the key float paths are Section 5A-12 (MUS-Roseburn junction) Track Works / Section 5A E&M (OHLE) / SAT and SITs and Full Line Finishes / SAT and SIT

4 Commercial & Risk

4.1 Commercial Summary

The overall forecast has **reduced** by £376k in the period, principally due to a reduction of the forecast risk allowance following a joint Turner & Townsend / CEC review held on 29 October 2013. Despite this reduction, there remain a number of key issues which could affect the overall forecast described in more detail below.

Cost Heading	£M	Comment
Base cost forecast	506.32	Total forecast of approved change, change in progress and anticipated change, offset by forecast contributions. Rev3A/Rev 4 programme change: £4.3M from total £4.5M included as instructed by CEC 22 weeks cost engineering: £6.45M from total £6.45M included as instructed by CEC
Risk Forecast	1.95	Forecast risk allowance based on QCRA and minor allowance for schedule risk (1 to 2 weeks). Full QSRA of remaining risks associated with testing, commissioning and bringing into service has not been undertaken this period. We will discuss this matter with the CEC.
Total Forecast	508.27	Total forecast for Infraco, Tramco and Post Mediation Utility costs. Refer to narrative for exclusions to this forecast.
CEC target saving	3.14	CEC are in discussions regarding limiting payment of programme extension costs associated with the Rev 3a to 4 and 22 week changes to £7.857M, a saving of £3.14M from agreed change value of £11.001m. Payments to date amount to £10.76M. There is no evidence from Infraco that they accept this approach.
Adjusted total forecast	505.13	

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4.2 Key issues

Infraco Final Account Negotiations : A status of final account items within the Infraco contract is as follows:

- Off Street Clause 80 change: there are approximately 20 Clause 80 change items that remain to be fully agreed. The forecast contains an allowance for all of these changes although the final amount will be subject to agreement with Infraco
- On Street Schedule 45 change: There has been significant progress made on the close out of this change which general relates to On Street Work items. The outstanding issues can be sub-divided as follows:
 - tNC/PMC closeout – there remains some items which are not fully agreed. However, differences are generally minor and will be resolved between commercial teams
 - Lagan claim: Lagan submitted an ex-contract claim relating to road reconstruction and loss of profit amounting to £577k (£662k after Infraco mark-ups). Turner & Townsend were requested to provide advice to the Independent Certifier in relation to this claim and although we have not had an official response, we believe that a settlement value of £220k has been agreed with Infraco. The risk forecast includes an allowance for this value.
 - Crummock Claim: Crummock submitted an ex-contract claim which after some discussion between commercial teams was reduced to 2 main items relating to surfacing and Scoutmoor paving and amounted to £389k (£526k after mark-ups). Turner & Townsend have provided their advice to the Independent Certifier in relation to this claim. No response from Infraco has been received to date. The risk forecast includes an allowance for the Turner & Townsend advised amounts.
- Independent Certifier Opinions: The following items have been escalated for Independent Certifier opinion:
 - Mark-ups on change values. We consider that the methodology used by Bilfinger to calculate mark-ups on some change results in double recovery.
 - Price indices application to surfacing tender amounts. We believe that the tender price was for a fixed lump sum and not subject to change. Infraco are relying on a clause in the contract which is specifically related to Schedule 45 estimates.
- Immunisation: Final costs for immunisation work are still to be provided by Siemens. This will allow the provisional allowance for immunisation to be closed out and a change raised for any savings to be returned to the Client. The cost report assumes a final cost of £750k resulting in a shared saving of £2,250k (£1,500k to CEC).

As far as we are aware, other than the on street subcontractors, there are no other claims to be submitted from Infraco or any of its subcontractors.

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Programme: There have been some variances to the completion dates for some of Bilfinger's off-street subcontractors, potentially resulting in extension of time claims. However, although there has been some client instruction, potentially contributing to delays, it would be argued that the majority of the delays are not caused by the client and no allowance is included for any future claim. This is a risk to the forecast. CEC have sought to clarify this position at the Joint Project Forum.

Scottish Water: We have provided CEC advice to support their meetings with Scottish Water to close out the commercial issues associated with the pre September 2011 costs. Although Scottish Water have previously advised that they are looking for additional costs of between £3 and £6 million, CEC have advised them that there is a maximum of £700k to conclude matters. We were advised by CEC at the commercial review meeting of 29/10/13 that their expectation is that Scottish Water will settle at this amount and to remove the risk allowance associated with this item.

Tramco: CAF have notified CEC of the "Occurrence of a Compensation Event" which, in accordance with the contract triggers delay payments of €259,340 per month. However, there is some ambiguity in the validity and application of this amount and as a result CEC have held discussions with CAF over a resolution. We have been advised by CEC that the outcome of these discussions is that additional payments will be on a "demonstrable cost" basis. To date we have received nothing further from CAF to support such costs and the resolution of this item remains a significant risk to the forecast. We are awaiting further instructions from CEC on this matter.

4.3 Risk & Contingency

Following the most recent risk review, the risk allowance included in the forecast amounts to £1,980k. This is based on the outputs of the Turner & Townsend risk review of 11 December 2013. While the risk provision is reducing in line with project completion, it should be noted that a number of the remaining risk items have a potential high impact if they occur and as such need careful monitoring. In particular, any risks to programme have potentially significant commercial implications due to the level of delay damages in the Infraco and Tramco contracts which could be in excess of £0.25m per week if triggered. A number of these risks, such as operator performance are out with our control and as such, excluded from our reporting.

5 Tram Infrastructure Works, Testing & Commissioning

5.1 Works Progress

Outstanding Infraco snagging in all areas is ongoing with a target completion date of the end of January 2014. The Shandwick Place Tramstop will remain as an island site until the works are completed by the 20th December 2013.

Parkeon contract works, in conjunction with Infraco, remains scheduled for January 2014. This is to ensure Siemens resource is available for critical project electrical installation and commissioning works along with a reduction in risk associated with vandalism of the Parkeon equipment.

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Remaining civil works include Balgreen Road Toucan crossing, and final landscaping works. The final works resulting from third party agreements and the outputs of the RSA and ICP walkround are being completed by Land Engineering. The remaining items include ScotRail junction speed bumps, NR fencing at Murrayfield TS, handrail to Lord Bodo and the Shandwick Place VMS. Works are expected to be completed by end February 2014.

Siemens are progressing with the final fit out works at the tram stops, final traffic signal installation works and the installation and commissioning of the modifications at the ScotRail access road which are due to be completed by 20th December 2013.

In the period the dynamic gauging run in Section C has been completed together with the NR Immunisation Test on the 9th and 10th December 2013. Infraco are now preparing for the traffic signal integration test which will commence on the 7th January 2014. Infraco are working with the project partners to progress the key issues found through the testing and commissioning to date and these are covered separately through the Assurance process. Turner and Townsend are tracking progress of the Infraco Testing and Commissioning programme in the Testing and Commissioning Governance meeting. The contents of the tracker are being agreed on a weekly basis with Infraco, Edinburgh Trams, CAF and CEC. The tracker is currently aligned to the Infraco contract programme dates and takes account of the interdependencies required to support completion of Section C and D in accordance with the Infraco contract.

5.2 Edinburgh Trams Operational Readiness Progress

On 12 December 2013 Turner & Townsend received a written instruction from CEC to formally stand down support to Edinburgh Tram effective from the close of business on 13 December 2013. Given the short notice period a handover file is now being prepared for Edinburgh Tram and no further work will be carried out in supporting this aspect of the project delivery.

In the period Turner and Townsend have agreed a series of dates for the delivery of the operational procedures that are required to support the SMS. Edinburgh Trams have currently delivered only 30 of the 62 procedures expected by the 20th December 2013. This is as a result of additional time spent completing the Edinburgh Tram case for safety for B1. It is envisaged that Edinburgh Tram will approach their target for procedure outputs in the New Year which is concerning given the client target programme objective of passenger service in May 2014. This will need to be closely monitored by CEC.

The key issue at present is the completion of the operator tests including those that interface with Emergency Services. Turner and Townsend have provided a resource schedule to Edinburgh Trams to allow them to plan and allocate resources for the tests. Final confirmation is still required to confirm they can support the programme. The final issue is that the outputs from the exercises may require further revision of the SMS procedures. This issue will need to be monitored by CEC to ensure it is not highlighting issues with resource levels to close out. CEC have allocated Tom O'Brien to facilitate the Emergency Services tests and he will work with the team to assist with familiarisation ahead of the tests. Turner & Townsend will not take any further part in managing this issue.

CEC have confirmed the EAL Tramstop "Hub" works will be constructed by others and will be completed in time for open for revenue service. In addition CEC have confirmed that the

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slab works will be sufficiently completed by the 20th January 2014 to support the installation of the TVM/Validators by Parkeon. It is noted that the equipment required from Siemens would be vested until required by CEC at the transport 'Hub', these will then be installed by CEC. The final testing and commissioning will be completed by Siemens as a variation to the maintenance contract.

The NWR close out has highlighted issues with additional snagging items that require to be included in the final negotiations. To close this out a meeting has been set up for the 19th December 2013 between CEC, NR and T&T to agree final issues for resolution. Following the successful immunisation test the key issue remains the ISRP sign off of the Safety Case. This has been targeted for mid Feb 2014.

Interim Handover and Snagging: Turner & Townsend, CEC and Infracore are continuing to record the closure of snagging works. A process is in place to escalate snags with Infracore senior management and to date no significant issues have arisen. To date in excess of 5000 snags have been identified and with the current rate of progress snagging will be not be completed by end December 2013.

The readiness of Edinburgh Trams remains a key concern until the operator testing programme is agreed and the final SMS procedures are issued at working draft. Further issues may arise in ensuring the operator has sufficient time on Section C for driver familiarisation ahead of the commencement of Shadow Running. This will not be monitored by Turner & Townsend following CECs instruction to stand down so will need to be managed internally by CEC in order to ensure there are no knock on impacts on the Infrastructure and or vehicle contracts.

6 Trams, Fare Collection & Assurance

6.1 Trams Operation and Test

Following an initial restriction on the number trams able to be run due to a technical issue at Ingliston Park & Ride substation, Edinburgh Trams have now returned to a six tram timetable operation between the Airport and the Depot; with approximately 95% of planned journeys being completed on time.

Edinburgh Trams continue to report that tram availability and reliability has been 'generally good' through the period, albeit with a few technical issues causing concern; however Turner & Townsend remain concerned that the method of reporting defects and the number of spare trams available is contributing to a higher level of performance than would be attained in passenger service.

Turner & Townsend was therefore looking to support Edinburgh Trams in the development of a procedure whereby issues identified during the operation of trams are assessed against their potential to affect operational service and their investigation and rectification prioritised accordingly. This support will no longer be available to Edinburgh Trams following CECs request to stand down and will therefore need to be dealt with directly by CEC.

There are a number of potentially either endemic, or epidemic technical issues currently being managed by Edinburgh Trams through the monthly Tram Liaison Meeting:

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- Battery Charger failures (reported on all operational trams)
CAF supplier currently on-site performing a modification on all trams, which CAF believe should address the issue.
- Tram Control & Management System (TCMS) screens freezing
CAF are currently discussing this issue with their supplier.
- Traction Control Unit (TCU) isolations
CAF are awaiting approval of a modification proposed by their supplier which CAF believe should address this issue.
- Wheel flats (reported on the trailer car of several trams)
CAF are currently investigating this issue. Turner & Townsend have suggested that external support may be necessary if the root cause is not identified quickly.
- CCTV image quality issues
On 18th and 19th November 2013, Turner & Townsend arranged a demonstration / discussion on the CCTV issues raised by the Operator and the ICP; with the ICP, the Tram Inspector, CAF, Edinburgh Trams and CEC in attendance. Following this review, a 'Preliminary Assessment' report was produced which documented the issues as identified and accepted by the participants and their potential risk to the safe and reliable operation of the tram fleet.

This report was provided to all attendees, with actions identified against both Edinburgh Trams and CAF to investigate and proposed solutions to the issues raised.

- Glare from side windows causing visibility issues
This issue was raised during the above demonstrations and its investigation has been raised as an action against CAF.

6.2 Tram Maintenance

Following submission of a CAF maintenance schedule showing that Pre-Service Inspections would not be completed until June 2014; Edinburgh Trams, CAF and Turner & Townsend discussed opportunities to ensure that inspections could be completed in time to allow all trams to complete a reasonable level of operation during Shadow Running.

CAF have subsequently proposed a reduction to the scope of the Pre-Service Inspection, with any tasks removed being captured during subsequent examinations, with a new completion date set as 21st March 2014.

Turner & Townsend and Edinburgh Trams have accepted this approach and requested that the amendment to the Pre-Service Inspection be included in an amendment of the Conservation Maintenance Plan, which should be re-issued formally for information / review.

6.3 Tram Related Incidents

There were no significant tram related incidents reported during the period.

6.4 Operational Incidents

There was one minor road crossing incident during the period, where a car drove across the front of a tram at Eastfield Avenue.

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6.5 Tram Maintainer Services

Turner & Townsend auditors completed a review of non-conformances found during the 'readiness for service' audit undertaken on CAF in May 2013. The completed audit report following this review is expected to be issued imminently.

Turner & Townsend continue to support CEC in a review of the infrastructure and tram maintenance contracts; to identify changes to the scope of services required as a result of the reduced scope of the network and any potential savings in the ongoing maintenance costs associated with this reduced scope.

6.6 Fare Collection System

Following the unsuccessful completion of the Fare Collection System Factory Acceptance Testing (FAT) in November, it was decided by the project team that the Site Acceptance Tests (SAT) scheduled for December could not be progressed. However, in order to reduce any risk of delay to the on-going installation dates agreed with Siemens, the installation of equipment at Ingliston Park & Ride tramstop was completed, as scheduled, on 5th December 2013.

It was agreed that to allow Parkeon a period of time to rectify the issues raised during the FAT, a re-run of the FAT for the Platform Validator (PV) would take place during week commencing 2nd December 2013; prior to undertaking the SAT on the 9th December 2013. It was agreed that the Ticket Vending Machine (TVM) FAT re-run should take place the week after. Due to the significant amount of re-work required for the Hand Held Devices, it was agreed that their FAT re-run shall be rescheduled early in the New Year.

The installation dates for the remainder of the tramstops, currently agreed with Siemens to start on 6th December 2013 remain on schedule.

The installation of a 'Model Office' test facility at the Depot has now been completed; with one TVM and one PV now operational and being used for development and testing. The Model Office gives the project team immediate access to any software or configuration changes made by Parkeon's team in Poole, dramatically improving the efficiency of the testing process and allowing Edinburgh Trams access to equipment to help develop operating procedures and training material.

6.7 Assurance Monitoring

Turner & Townsend continue to provide an Assurance Monitoring role on the project and the Safety Verification and Assurance functions continue to report through the 'Deliver a Safe Tram' (DaST) report. Previously Turner & Townsend provided an update on any issues that Edinburgh Trams highlight as significant in the DaST. Based on the request from CEC however to reduce the volume of the Turner & Townsend report the DaST report will not now be commented upon but will rather be attached for CEC information.

6.8 Key Issues

Having lost a number of technical staff over the last few months, CAF have now employed five new technicians who will, following training, initially support the completion of the Pre-Service Inspection in line with the requirements of the Client Target Programme. CAF are

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currently recruiting an additional five maintenance technicians and a Fleet Performance Engineer, scheduled to start in the middle of January.

During a recent meeting with the Client and CAF, Turner & Townsend raised a concern that the CAF Project Team appear to be spending more time than is necessary raising and debating issues with the contract that will most likely have no real effect on the commencement of Passenger Services or the ongoing operation of the trams; to the detriment of specific technical and operational issues which pose a genuine risk to the project.

Turner & Townsend cited several technical issues which had the potential to prevent the reliable operation of trams in service, yet had been under investigation for more than nine months. The fact that the issues regarding the ability of the driver to clearly see passengers entering and exiting at the middle doors of the tram had been identified and raised with CAF's technical team in April 2013, is an example to support this concern.

Turner & Townsend has committed to ensuring issues identified during the operation of trams are assessed against their potential to affect operational service and their investigation and rectification are prioritised accordingly. Issues which do not appear to be given sufficient priority shall be raised directly with the Client and CAF.

Following discussions between CEC and CAF on CAF's initial claim for recover of 'additional costs' in relation to the Tram Supply Agreement, Turner & Townsend received an application during the period which included costs for the completion of 'Conservation Activities' from April 2013 and 'Schedule 24 Part B' costs from 22nd September; however there was no cost breakdown attached to either of these high level costs as had been expected.

Turner & Townsend is still awaiting a submission from CAF in relation to demonstrable costs incurred in relation to this claim, which Turner & Townsend can then discuss with CAF to establish if a satisfactory commercial settlement can be reached. Turner & Townsend remain concerned that this matter has been unresolved for many months and has the potential to impact on the commencement of passenger service in line with the client target programme.