



Removal of the existing Network Rail Access Bridge - Balgreen Road

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Edinburgh Tram Project
Full Progress Report No. 8
29th April to 26th May 2012
FINAL

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May 12



CONTENTS

1	Executive Summary	3
2	Health, Safety & Environment	5
3	Programme	10
4	Commercial	16
5	On Street - Enabling Works & Utility Legacy Works	31
6	On Street - Main Works	33
7	Off Street Works	36
8	Trams	41
9	Assurance	43

Appendix 1 – Dashboards

Appendix 2 – Health, Safety & Environment and Consents Tracker

Appendix 3 – Cost Report and Contingency Analysis

Appendix 4 – Change Log

Appendix 5 – Risk Register

Appendix 6 – Route Map

Appendix 7 – Acronyms

Rev	Originator	Approved	Date
0	Shirley-Anne Collin	Julian Weatherley	31-05-2012
1	Shirley-Anne Collin	Julian Weatherley	01-06-2012
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DOCUMENTS			

1 Executive Summary

This report covers progress made during the period from 29th of April to 26th of May 2012. It incorporates progress reported within Infraco and CAF Progress Reports No. 5-1 to 28th of April 2012.

There were 14 incidents recorded during the period. Two incidents were identified as Serious / Significant. An investigation is currently ongoing to determine the cause of a sewer collapse at Grosvenor Street.

A number of actions have been implemented in response to the concerns raised last period over McNicholas' health and safety practices. McNicholas have responded positively to the issues raised and an improved position is now in place.

The "Think Before You Act" forum was held on 10th of May 2012. As part of the follow up, attendees have provided action plans for the continuous improvement of project health & safety.

Discussions continue between Infraco and SEPA in relation to soil removed from Baird Drive. Further information is to be provided by Infraco to enable conclusion.

Thirty eight days of the 22 week time bank have been confirmed as being eroded as a result of disruption due to utilities works in Shandwick Place and the Waverley end of Princes Street. Infraco have indicated that further erosion has occurred during the reporting period but this has yet to be substantiated.

Infraco have submitted their Rev5 programme for approval and a number of clarifications have been sought prior to acceptance. This programme takes account of the currently envisaged construction sequence and methodology for the Off Street works, the critical path for which is now shown as running through Edinburgh Gateway.

In anticipation of a CEC instruction to move towards the early commencement of works in York place a number of work streams are now being progressed. The installation of ducting works to Cathedral Lane Substation has started and is progressing ahead of programme. Turner & Townsend are developing with McNicholas an accelerated programme for utilities works in York Place.

McNicholas have been continuing with the excavation for tram box construction and the installation of drainage in order to mitigate against disruption to the On Street Infraco works programme.

A number of Scottish Water legacy issues within the On Street section have been identified where a derogation is required. These include addressing Scottish Water's outstanding concerns on manholes within Princes Street. Scottish Water have been advised of the limitations of the scope of works that project will undertake.

Following the collapse of an existing sewer within Grosvenor Street the area of collapse has been excavated and surveyed. Turner & Townsend are preparing a report into the causes of the collapse. Re-instatement of the sewer is anticipated by the 15th of June 2012.

The progression of Infraco Works through Haymarket, Shandwick Place and St Andrew Street has been disrupted as a result of tram ducting clashes with utilities. Infraco have indicated that the commencement of their works in York Place will be impacted as a result. Actions are being taken to minimise the impact of any disruption.

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A solution for the Edinburgh Gateway slope retention has been confirmed as a king post design. Infraco have now advised (through the Rev 5 programme) that these works are on the critical path for the Off Street works but not the project as a whole..

A number of Off Street works items have progressed this period including: completion of secant piling at the airport and soil reinforcement at Gogar Landfill, the commencement of Lochside Avenue crossing and the installation of the bridge deck to Roseburn Street Bridge.

The works to the SGN gas main diversion were completed on programme on the 18th of May 2012.

The progression of sheet piling works through the Murrayfield Corridor has continued to be disrupted by movement within the adjacent embankment and structures. In spite of these challenges the sheet piling works at this location have now been completed.

BAA have raised concerns over the constructed levels of the Eastfield Avenue road crossing. CEC are in discussions with BAA over a resolution.

Fourteen trams have now been delivered to the depot with ten trams having been issued with Tram Routine Test Certificates.

A series of meetings are taking place with Infraco to conclude the way forward on the commercial issues. These include; recovery of costs for utilities off-street, evidence of costs incurred from the delay in signing the contract, evaluation of transfer of work from Infraco to McNicholas and the Princes Street outstanding works/snags. A timeline will be agreed for all of these items and confirmed in the next report.

The draft QSRA/QCRA has been discussed with CEC and further meetings will take place to update the QCRA each period and the QSRA quarterly. The next version of the QSRA will be based upon the Rev 5 programme and will model the opportunities resulting from York Place advancement and potential reductions in the Testing & Commissioning periods. Further discussion is required with CEC regarding the presentation of risk impacts compared with the base case and opportunities.

Further work is ongoing to confirm the scope and estimate for the utilities diversion works, resource requirements and legacy works. It is recognised that unforeseen works emerge when the excavations are opened up and that collaboration is needed with Infraco to enable the tram ducting to be installed within the space available. The specific impacts and mitigations need to be worked into the QCRA/QSRA

2 Health, Safety & Environment

During the last period Turner & Townsend have been working to implement a number of key initiatives regarding health and safety on the project. These have comprised:

- The close out of the BBS HV incident at Gogar Farm road and the gas incident at Edinburgh Airport.
- The close out of the McNicholas HV incident at Princes Street.
- The resolution of issues that resulted in the suspension of McNicholas deep excavation works.
- Holding the 'Think before you act' session
- Developing processes to address the requirements for working on Scottish Water assets.

2.1 Management of Health & Safety

Joint monitoring between Turner & Townsend and the Principal Contractors has progressed well during this period, with a noticeable impact on the McNicholas sites. Key developments relating to the McNicholas sites include the appointment of a temporary works co-ordinator and the introduction of a robust temporary works process. A principle focus has been on the management of the McNicholas works. A process is now in place to review changes instructed to McNicholas, to aid the control of working hours on site and to provide further clarity on the number of operatives and supervisors required to complete each task.

The development of a series of leading indicators has been undertaken with McNicholas to provide a mechanism to undertake active monitoring. Further leading indicators are being developed by Turner & Townsend as an output from the 'Think before you act' event.

A response has been issued to the Health and Safety Executive e-mail regarding the McNicholas 11kV incident. The letter highlighted the initiatives and actions that had been put in place to strengthen the implementation of the client duties under the CDM Regulations.

Meetings have been held between Turner & Townsend and Scottish Water to progress the resolution of the issues that have arisen regarding unauthorised works / damage to Scottish Water assets. This has resulted in a more robust procedure being implemented regarding the issue and use of the Scottish Water ATC.

A procedure has been developed in conjunction with the Principal Contractors to facilitate the access to work sites by regular visitors e.g. representatives from the utility companies.

A process of internal Turner & Townsend coaching has been implemented to ensure that there is a consistent approach to the joint monitoring that is being undertaken with the Principal Contractors.

2.2 Incident reporting

During the last period there were 14 incidents on the Edinburgh Tram Project. Two incidents were identified as Serious / Significant. These were a Gas main strike at West Maitland Street and a sewer collapse at Grosvenor Street.

The incidents that have occurred within this period have identified a number of common issues relating to the other incidents. These comprise:

- Damage to clothing due to catching on heras fencing (2no incidents) – this has been addressed through increased reviews/ inspections of the site perimeters by the contractors and Turner & Townsend through the joint inspections and recorded through the COCP inspection process.
- Fencing has been blown over (3no incidents) – these occurred during a weekend of strong winds. A review of the fencing arrangements has been undertaken by the contractors.

The Grosvenor Street sewer collapse was notified to the on-call number at 20:45 on the 10th May by Scottish Water to advise that there was flooding to the basements of properties in the vicinity of Grosvenor Street due to an incident with a sewer within the tram work site. This has subsequently been identified as the collapse of a section of roof slab from a stone sewer.

An initial response from Turner & Townsend and Scottish Water was on site at 21:15 and over pumping of the sewer initiated.

Subsequently Turner & Townsend and Scottish Water have been working jointly to resolve the issue. This has included undertaking an excavation and cleaning out of the sewer to determine the extent of the and likely cause of the collapse.

The proposal that is currently being developed in conjunction with Scottish Water is for the installation of a new manhole that will be located over the area where the collapse has occurred. The design for the new manhole is being progressed.

Progress Report No. 8 29th April – 26th May 2012

FINAL

Incident Table:

Incidents reported within this period:

Date	Location	Detail	Contractor	Classification
30/04/2012	West Maitland Street	90mm PE gas main struck and damaged by mechanical excavator.	McNicholas	Service damage
10/05/2012	Grosvenor Street	Flooding to properties at Grosvenor Street from collapsed sewer.	McNicholas	Service damage
30/04/2012	Shandwick Place	Member of the Public damage jacket on broken Heras fence panel	Lagan Construction	Member of Public
29/04/2012	St Andrew Square	Member of the Public damaged jacket on broken Heras fence panel	McNicholas	Member of Public
03/05/2012	Edinburgh Park Station	Member of the Public tripped on traffic signal base protruding from pavement.	Crummock	Member of Public
14/05/2012	Grosvenor Street	Mrs Taylor stated that she had a young child and asked when the excavation works outside her flat would be stopping for the night.	McNicholas	Member of public
03/05/2012	Torphican St / West Maitland St	Damage to Traffic Lights cable by sub contractor (Diona)	McNicholas	Service damage
08/05/2012	Bankhead Drive	Damage identified to HV cable (considered previous damage). No injury or loss of supply.	Crummock	Service damage
17/05/2012	Coates Crescent	Street lighting cable damaged at 19 Coates Crescent	McNicholas	Service damage
10/05/2012	Grosvenor Street	Mrs Taylor stated that she had a young child and asked when the excavation works outside her flat would be stopping for the night.	McNicholas	Environmental
13/05/2012	Shandwick Place	Fencing blown over blocking footway outside Rutland Hotel.	McNicholas	Near miss
13/05/2012	Lothian Rd / Princes St	Fencing blown over Lothian Rd / Princes St causing obstruction at Frasers. Rhino fencing blown over Princes St.	McNicholas	Near miss
14/05/2012	Burnside Road	Airport Duty Manager report Heras Fence panels blown over in the vicinity of the Airport tram stop.	Farrans	Near miss
13/05/2012	Section 5	Excavator window broken over weekend 12 - 14 May 2012.	Crummock	Unsafe condition

Top 2 Significant Incidents

2.3 Safety Initiatives

The safety initiative 'Think Before You Act' session was held on the 10th of May 2012 and was attended by representatives from Transport Scotland, City of Edinburgh Council, Turner & Townsend, Bilfinger Berger – Siemens, McNicholas and CAF. The identified a common desire to improved health and safety on the project and a number of areas for improvement were discussed.

The ideas raised during the session and follow up comments identified have been collated by Turner & Townsend into a brief report. The report has been circulated for review and confirmation of each organisation's intent to support and implement the initiatives raised.

On behalf of the client team Turner & Townsend are implementing a number of improvement measures including the development of leading indicators and a project health & safety dashboard to highlight and provide visibility to project wide initiatives.

2.4 CDM Regulations

During the last period the pre-construction activities were undertaken for the demolition works of the toilet block at Cathedral Lane. This included a review of the documentation provided by the asbestos surveying organisations and development of pre-construction information for the demolition tender.

The lifting plan and methodology for the installation of the Russell Road overbridge were reviewed and comments raised were addressed by BBS.

A review was undertaken of the proposed use of a 500T crane in Princes Street as part of the process to erect an observational wheel in Princes Street Gardens. The review highlighted some concerns with the methodology proposed. Subsequently this proposal has not been approved by City of Edinburgh Council.

2.5 Environmental

During this period an inspection of key monuments in storage was carried out. The monuments inspected were the Ocean Terminal Monument, The Hearts War Memorial, The Conan Doyle Monument, The Leith Walk Pigeons and The Leith Walk cast Iron Balls. This took place on the 9th of May 2012. Sheena Smith (CEC), John Lawson (CECAS) and representatives from Land Engineers were present. A brief report of the location and status of each monument was compiled and issued to John Lawson (CECAS) and Paul MaCauley (CEC Monuments).

A subsequent meeting was held with Land Engineering and agreement reached that the Ocean terminal Monument and Conan Doyle Monument could be reinstated. It is intended that these will be returned to their original position in June/July 2012. A meeting has been arranged with CEC for the 29th of May 2012 to discuss programme.

A meeting was held with McNicholas to review the transfer of waste from and within their site boundary. Currently McNicholas have all waste removed from site by Neil Williams Haulage. Certain waste streams are stored at the Leith Depot until a full load can be removed. This waste is also removed by Neil Williams Haulage. A site inspection was arranged with McNicholas for the 24th of May 2012. This inspection has been slightly delayed due to changes in McNicholas staff.

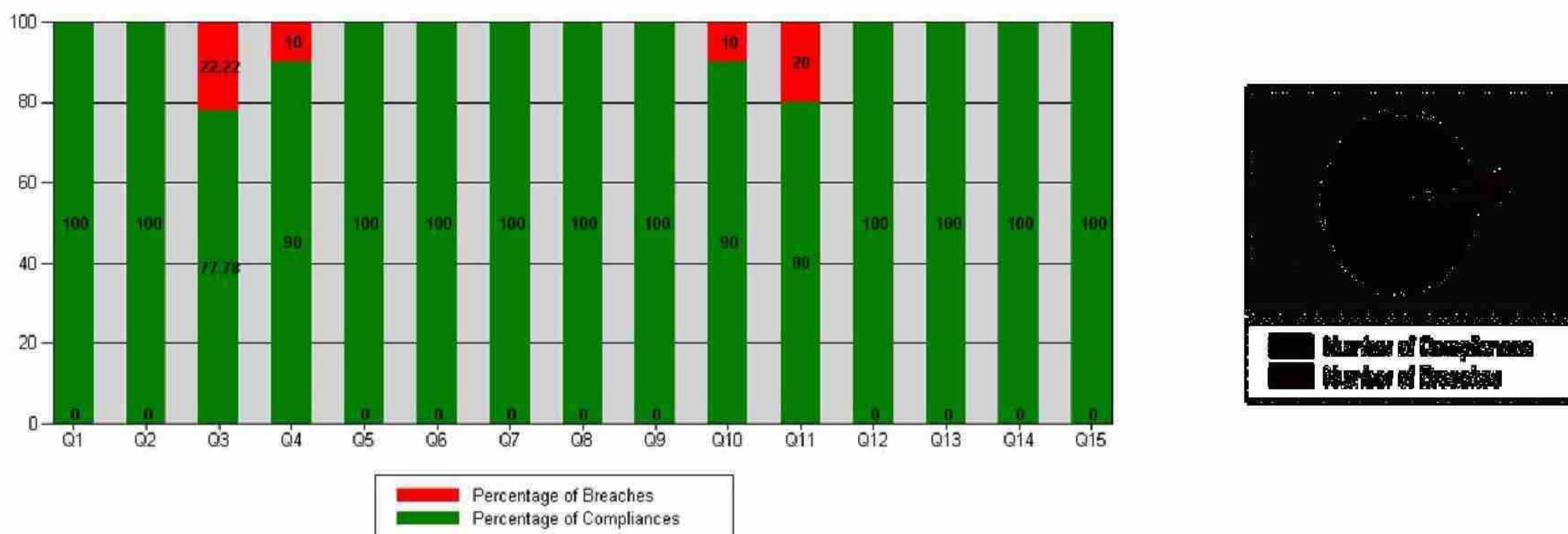
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John Darbyshire of JDC Ecology carried out an ecological inspection of the Cathedral Lane toilets. This inspection was required in order to ensure that no ecology was harmed / present prior to demolition of the toilet block.

BBS are currently reviewing their need for a full time project ecologist. Turner & Townsend Assurance Team advised that a suitably qualified ecologist was required for all ecological related inspections / advice, in line with the requirements of the Code of Construction Practice. BBS Environmental Team will advise Turner & Townsend of the outcome of their review.

2.6 CoCP

CoCP compliance was recorded at 95% during Period 2. The results of the CoCP monitoring have been passed to CEC Communication Team to be uploaded to the project web site. Details of these are contained in Appendix 2.



Q1. Hours of Work	Q9. Emergency Access
Q2. Notification	Q10. Parking
Q3. Notices	Q11. Litter and general housekeeping
Q4. Fencing and Hoarding	Q12. Dust
Q5. Noise	Q13. Smoking
Q6. Waste Management	Q14. Members of the Public
Q7. Waste Water and Run-Off	Q15. PPE and Behaviours
Q8. Water	

3 Programme

3.1 Progress this period

Progress is currently being made across the majority of the length of the route with the exception of Edinburgh Gateway and York Place which have yet to commence.

There have been some delays attributable to utility clashes at Shandwick Place, St Andrews St and South St Andrews St / Waverley Junction. A working group is in place to resolve the conflicts and to minimise any delays in these areas.

It was identified that Cathedral Lane substation was on the critical path for the project and an opportunity was taken to start demolition and ducting works early as part of a drive to de-risk the On Street works programme.

Sheet piling works have started in the Murrayfield Corridor, and despite some disruption due to concerns over the impact on the Network Rail corridor, these works have now re-started and have been completed.

The forecast delays to the completion of Section B have been mitigated and now the Master Programme is predicting that Section B will be completed by the contractual date of 8th March 2013.

Both the Section C & D dates are being forecast to be achieved slightly ahead of the contractual dates, with further opportunities for improvements if the York Place 'Radical Programme' initiative is approved and implemented.

3.2 York Place 'Radical Programme'

Detailed work continues on the initiative to better the delivery dates at York Place. It is expected that the proposed solution will be crystallised in the week beginning the 28th of May 2012. Two options have been developed for the utility diversions in advance of the main Infraco works, these are:

- Full closure of York Place from the 16th of July 2012 to allow utility diversions to be carried out prior to Infraco works starting in the most efficient manner.
- Partial closure of York Place on the 16th of July, maintaining two bus lanes through the work site. This option would result in a longer utility diversion duration than option 1.

McNicholas are developing detailed programmes for each option with a view to enabling early access to Infraco and reducing the overall duration of the On-Street works.

3.3 22 Week Draw Down

Based on Infraco's programme update contained within their period 5-1 progress report, and subsequent agreement in the 'Planners Forum', 38 days of the 22 week cost engineering programme saving had been eroded as a result of utilities works and the re-design of the On Street drainage.

Further erosion has taken place within the current reporting period (ending 26th May), this is currently being assessed by Turner & Townsend and Infraco, and will be discussed following the receipt of the Infraco period 5-2 progress report.

It is to be noted that the 22 week saving is analysed using the Infraco Rev4C programme, which does not contain utility diversion works. The critical path runs through Shandwick Place in this document.

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With respect to the Rev4C programme, the erosion of the 22 weeks is primarily driven by the delays at Shandwick Place, St Andrew Street and Princes Street attributable to drainage works.

Delays have also been evident at South St Andrews/Waverley Junction and also contribute to the erosion of the 22 weeks.

Although delays have been evident with respect to the Infraco works, McNicholas have made significant progress with the drainage and track bed works.

3.4 Critical Path

Turner & Townsend's Master Programme contains all facets of the project and shows the genuine critical path to run through South St Andrews/Waverley Junction and York Place.

Therefore delays in the South St Andrews/Waverley Junction work site could potentially impact the end date of the project. Currently the re-phasing of the project (as a result of On-Street Value Engineering) and delivery of phases concurrently is mitigating against the impact on the project end dates.

The current critical path will change if the York Place 'Radical Programme' initiative is implemented. It is envisaged that the Off-Street section will then become critical. This would then run through the completion of the Murrayfield Retaining Wall (21B) and Edinburgh Gateway.

3.5 Rev5 Programme Development

As a result a number of initiatives, it was agreed that Infraco would review, and amend, the Rev4 programme with the intention of making it more current. This revised programme is being referred to as Rev5. It primarily includes all instructed changes including revisions to:

- Murrayfield Corridor Structures
- Edinburgh Gateway Civils works
- Deletion of Section 1A
- Inclusion of revised section B Test & Commissioning activities.
- Durations to suit current track construction methodology

The Rev5 programme was submitted by Infraco on the 23rd of May 2012. Turner & Townsend have responded on the 30th of May by requesting clarification on several points with the intention of accepting the programme once the clarifications have been received.

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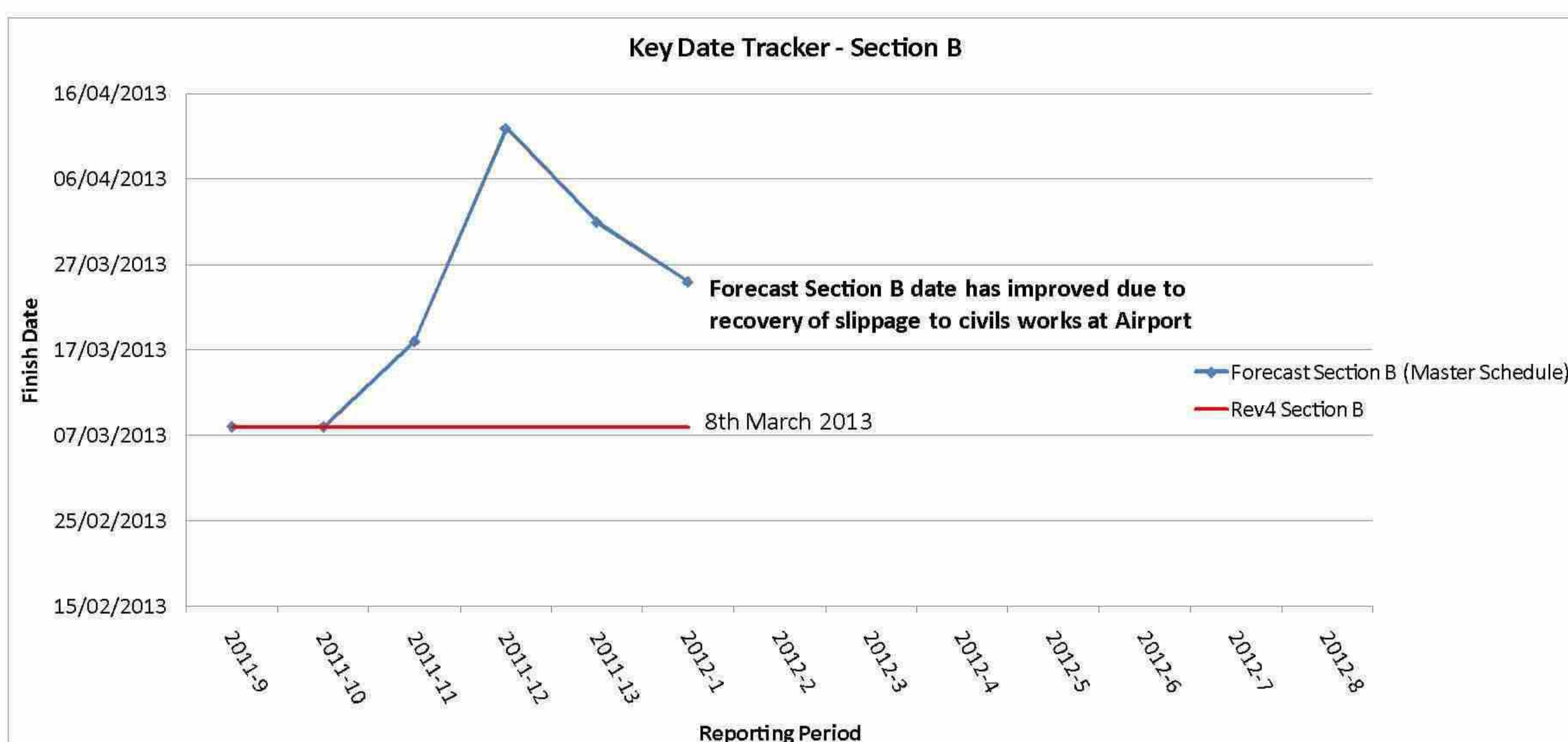
3.6 Key Dates Tracker

Three charts are included below which track the forecast dates (from the Master Schedule) for the Sectional Completion milestones against the contractual dates and the movement throughout the project lifecycle.

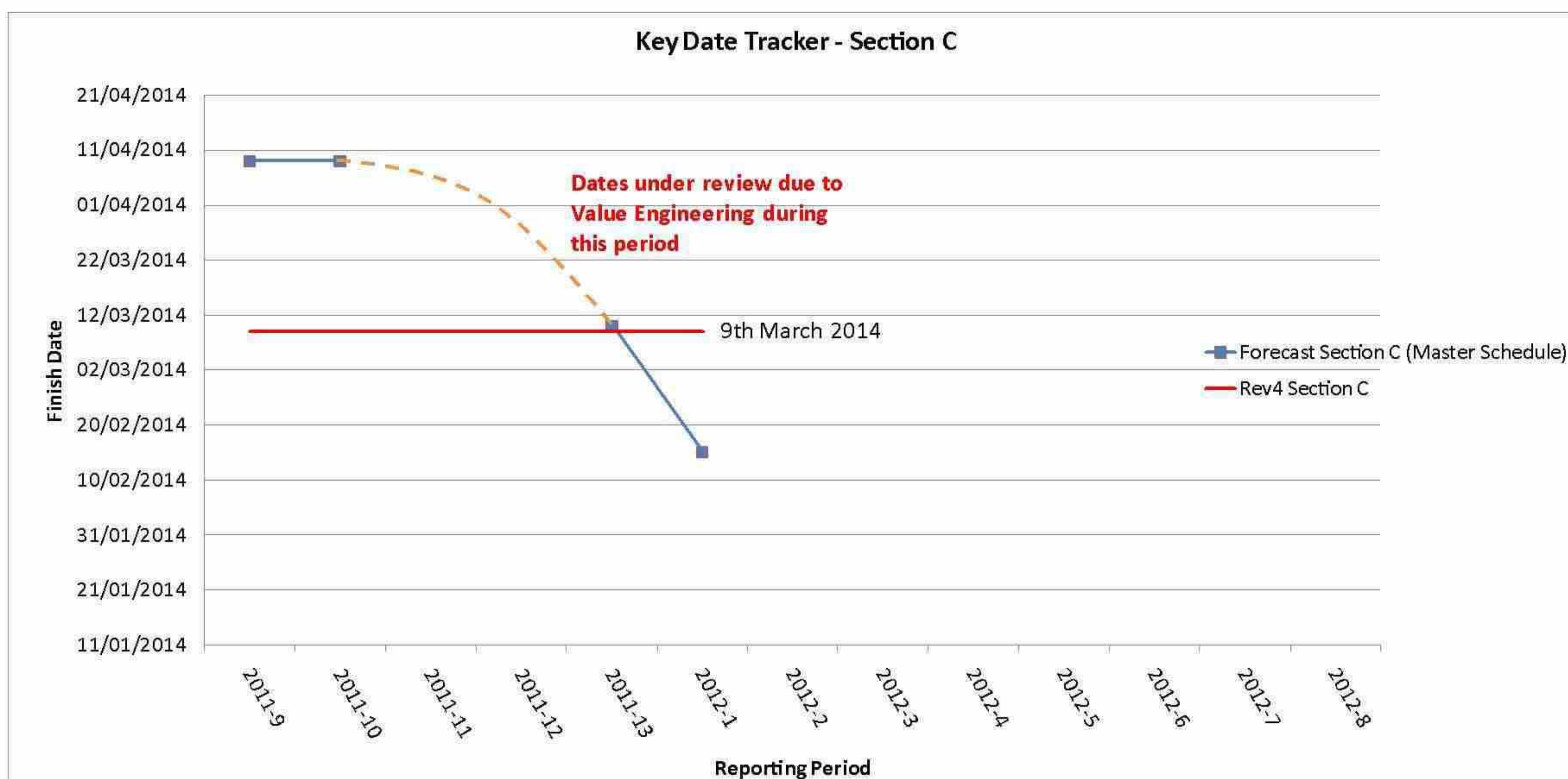
The Master Schedule is updated following receipt of the updated Infracore Full Period Report. Once the Master Schedule is updated, the revised forecast dates are included in the graphs below. Due to the timing of the Infracore submission and our reporting regime, we now include the implications of the Infracore report within our interim presentation.

Therefore the dates for period 2 will be included in the graphs in Turner & Townsend’s next full report.

Section B; Test Track Complete

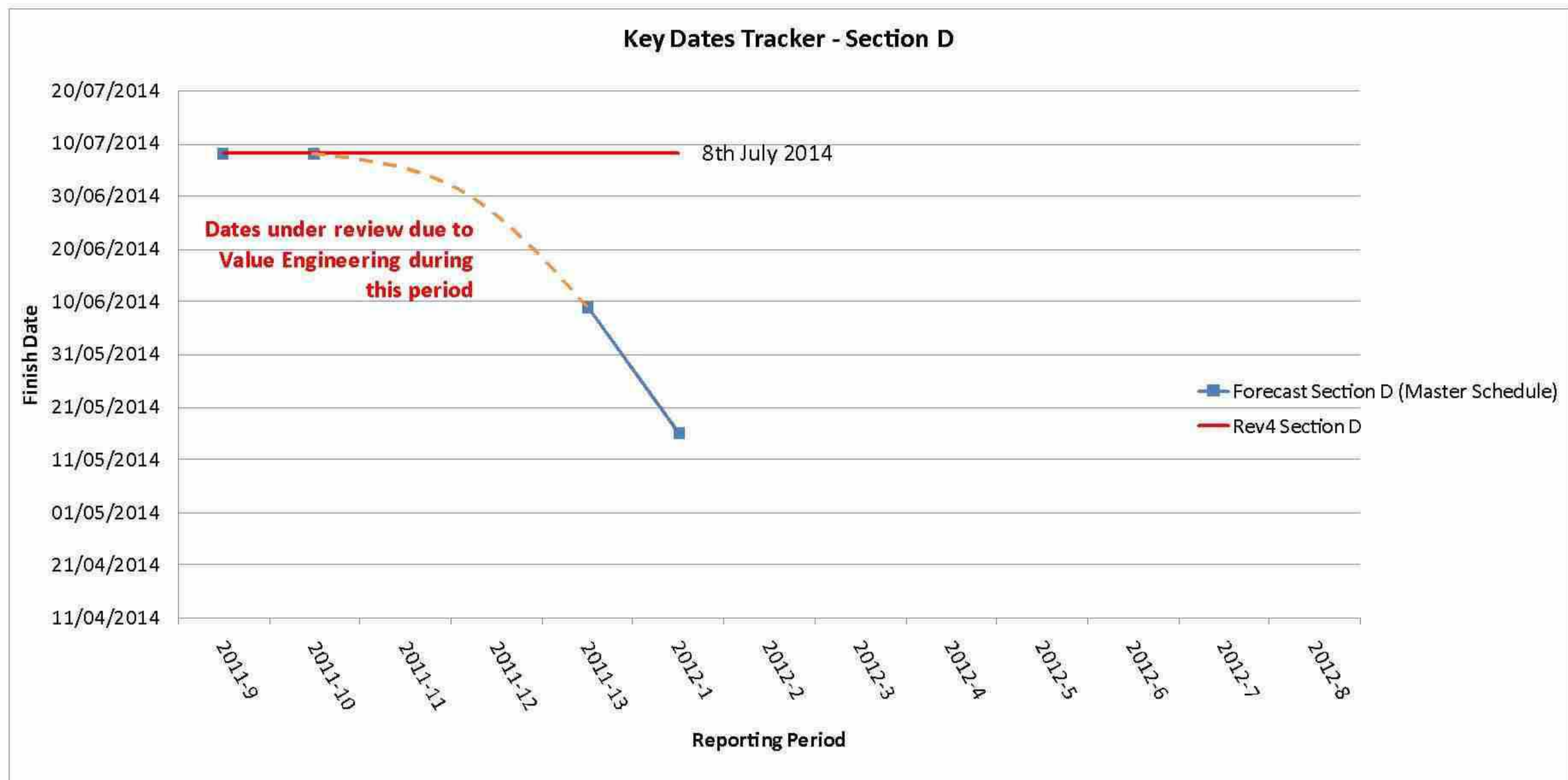


Section C; All Construction Complete (including T1 & T2 testing)



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Section D; Open for Revenue



It is to be noted that whilst the Infracore Rev4C programme is stating a slippage to end dates, the master schedule contains several different aspects, such as the re-sequencing of Cathedral Lane Substation, which results in a positive impact to the forecast project completion.

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3.7 QSRA Tracker

Several iterations of the Quantitative Schedule Risk Analysis have been carried out since September 2011. The table below summarises the process.

P80 represents an 80% likelihood of completing the milestone on that date, it is usual practice to utilise the P80 date as a standard at this stage of the project lifecycle.

The next QSRA will be carried out following the agreement of the Rev5 programme and York Place 'Radical Programme' initiative.

QSRA Iteration	What is Included (Description)
Master Schedule – First Pass	High Level schedule produced for QSRA analysis. Including utilities diversions.
Master Schedule with VE Changes	Post VE exercise Revised On-Street phasing Removal of summer embargoes More mature Risk Register
Master Schedule – Risks Reviewed & Opportunities Applied	Updated programme Detailed Risk review Identification of opportunities and application to the QSRA
Master Schedule with Cathedral Lane Re-Sequence	Further updated programme Early start of Cathedral Lane Sub-Station works Impacted Scottish Water risks Risk Review

Each period the risk register is reviewed and risks are assessed on an ongoing basis, with a general trend of reduction of risks as the team continually mitigate against the potential impact.

At the last major risk review the following risks were positively reduced:

Risk	Mitigations
Discovery of additional track construction conflicts (Type 1 & Type 2)	Utility owners providing dead & live drawings and presence on site Slit trenching float in programme in advance of remedial works Early implementation of TM
Discovery of abandonments during infraco works	McNicholas stand by teams in place (reduces time impact)
Risk that project relationship with Scottish Water deteriorates	Dedicated Scottish Water account Manager appointed Steering Group Set up and attended by Project Director Appointed senior manager to take over all non-infraco works
Tram (CAF) / Infrastructure (Infraco) Integration Risk	Bringing forward of T1 Testing in Off Street

	Interfaces mapped out in programmes Review and Lessons Learnt with other Tram Projects
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A Variety of Opportunities have been identified and included in the QSRA analysis:

- Removal of Tram Kiosk work
- T1 testing of off street section proves successful therefore planned full line testing can be reduced
- McNicholas works (York Place) take less time than planned for at present
- Reduced scope at Edinburgh Gateway

"It is to be noted that the impacted dates are a statistical analysis of the potential impact of risks & potential opportunities, it is not a definitive completion date. Analysis also highlights key critical Activities, Risks and Opportunities, this allows T&T to manage and reduce the risks as well as actively pursuing opportunities with the aim of improving the P80 dates."

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4 Commercial

4.1 Cost Summary (note – presentation of risk and opportunities to be agreed with CEC following review of the draft of this report) (Amount £k)

	Contract Sum	Approved Change	Revised Contract Sum
Infraco	413,103	-993	412,110
Utilities (Post Mediation)	1,812	5,461	7,273
Legacy Utilities (Revised Tram Route)	0	500	500
Legacy Utilities (Leith Walk)	1,100	-1,100	0
Tram vehicles	63,645	5	63,650
Totals	479,660	3,873	483,533
Change in Progress			9,850
Anticipated Change			11,997
Contributions			-7,417
Forecast Change / Contributions			14,430
Forecast Total			497,963
Risks (refer commentary on risk forecast in risk section below)			(presentation to be reviewed with CEC)
Opportunities (refer opportunities section below)			
Risks & Opportunities			
Revised Forecast			
Budget			

- Approved change is now £3, 873k compared with the previous report at £3,546K. The principal changes are additional design associated with resolution of on street utilities conflicts and certification of period ending 31/3/12 on street works change. A detailed summary is provided below.

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- At the Tram briefing meeting, 17th May 2012, the draft cost risk forecast and schedule risk forecast was presented. The risk forecast is based upon P50 (level of confidence) and the schedule forecast is based upon P80 (level of confidence). It should be recognised that the forecast has an accuracy tolerance, i.e. some items may be descoped e.g. Scottish Water legacy and vice versa other items such as the off-street utilities costs paid by CEC may not be recovered from Infraco.
- Schedule opportunities have been incorporated into the schedule risk forecast to provide a net impact. These include potential reductions in duration for the Edinburgh Gateway and 3 months reduction in the Testing & Commissioning period. Advancement of York Place and further reductions in the Off-Street works have not yet been modelled.
- At the 15 May 2012 Programme control meeting a reduction of 5.4 weeks on the original Infraco 22 week cost engineering programme (Rev4c) was reported. When the utilities diversion durations, schedule risks and schedule opportunities are incorporated a forecast service commencement date of 25 June 2014. To enable a firmer forecast the open ended tasks in the programme need to be resolved and the implications of the Rev 5 programme need to be assessed. This assessment and a revised schedule risk and opportunity forecast will be produced week commencing 11 June 2012
- The key sensitivities are additional utilities diversions, the scope of the Scottish Water legacy works and the impact on Infraco's programme.

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4.2 Infraco (including Utility drawdown's and scope changes)

4.2.1 Approved Changes (Movement in the Period)

The changes approved this period at the CEC/Turner & Townsend weekly change meetings are provided below.

Approved Change	Amount (£K)
Approved to 28 April reporting date	3,546
tNC 553: SDS to provide the services of Matt Fell until August 2012	41
tNC 562: On Street Generally - OLE Design Changes for On Street Section (PMC 045) - SIEMENS DESIGN WORKS	115
tNC 563: On Street - Amend pile caps from square / rectangular to circular	-5
tNC 567: On Street Generally - Drainage Design Changes Due to Utilities Conflicts	40
tNC 595: Haymarket Viaduct - Deletion of fitting out of Crew Relief Facility	-74
tNC 616: Haymarket Viaduct - construct wall for blocking off void under the bridge deck as a result of the crew relief facility being omitted	1
ICC07: Independent Certifiers Schedule Part 45 Period End Change Order to 31/3/2012 relating to the following PAV's and On Street Works Estimates	209
	£3,873

4.2.2 Changes in Progress

Changes in Progress include items which cannot be mitigated and the change is agreed in principle. New items included in this section of the cost report during the period are:

- tNC 618: Gogar Depot 1800 mm Diameter Manhole - TQ736: £15k
- tNC 619: Omit Track Welding Equipment: £-3k
- tNC 620: Airport Tram Stop Design: £10k
- tNC 621: Amend the dates of the HV meter installation at substations: £13k
- tNC 623: Repair minor damage to Depot (Intercom, fence panel and broken slabs: £3k
- tNC 624: Compressed Air Supply to Depot Gantry Road and workshop: £5k
- tNC 625: Engineering attendance on site at Cathedral Lane.: £55k

Progress Report No. 8 29th April – 26th May 2012

FINAL

- tNC 626: Advanced procurement of Edinburgh Gateway Materials and Equipment.: £0k
- tNC 627: Delete pedestrian guardrail in the area outside St John's Church (Design): £5k
- tNC 628: Prepare MUDFA As Built drawings: £100k
- tNC 632: Resolve Depot Building water ingress: £0k – assumed to be a BBS liability.
- tNC 636: Twin Crossing at Lochside Avenue: £20k

It should be noted that some items move from Anticipated Change into Changes in Progress. The actual amount has not changed, however it affects the total of this section of the cost report. For example Floating Track slab at £980K is now included in Changes in Progress. Section 8 of the Cost Report identifies all movements in the period.

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4.2.3 Anticipated Changes

The movements in the period are provided below:

Anticipated Change to 27 April reporting date		£13,917K
Infraco Works		
Pricing Assumptions - 6.4.2.1 Floating Track Slab	Costs transferred to Changes in progress	-980
Piled OLE base in lieu of utility diversion	Costs transferred to Changes in progress	-55
Drainage redesign and amendments to numbers / depths of manholes, carrier drains / drainage connections.	Allowance reduced to include for design costs only. Delay and disruption costs coming through On Street Works estimates	-200
Remove drainage from Infraco scope	Forecast deduct associated with the removal of scope from the Infraco contract	-450
Amend road reconstruction depth from Contract Requirements	Costs transferred from Opportunity section	-700
Opportunity to reduce cost associated with the temporary tram stop at York Place	Costs transferred from Opportunity section	-150
Defer tram stop construction	Allowance for Infraco costs associated with re-sequencing fit out of tram stops	30
Install fencing to mini test track		20
Redesign of OLE bases along Roseburn corridor where they are sited outside of the LOD		100
Utility Diversions		
Adjusted forecast for utility conflict core scope, resulting from emerging work	Amended forecast as a result of emerging design and current conflict numbers	-332
Cathedral Lane	Adjustment of forecast following development of scope and detailed resource planning	266
Drainage	Transfer of Networks 1,3, 5 and additional manholes from Infraco. Transfer of gulley drains, IMU drains and accessories. Constraints in methodology –	803

Progress Report No. 8 29th April – 26th May 2012

FINAL

	<p>drainage could not be installed as designed since utilities were found when the work was opened up, alternative locations had to be found to complete work.</p> <p>Depth changes and discovery of rock and foam concrete.</p> <p>Temporary works and H&S implications of revised work scope.</p>	
SUCs	<p>Amended forecast as a result of emerging design and current conflict numbers</p> <p>Introduction of SUC contribution (cost share)</p>	-205
Legacy Works - York Place to Airport	<p>Revised forecast based on COWD and resource based estimate of remaining scope</p>	-67
		£11,997K

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4.2.4 Contributions Register

Contributions from 3rd party, stakeholder or other CEC budgets are being developed in order that the amounts can be finalised. The current position is as follows.

Works	£K	Status / Action
Edinburgh Gateway – legacy design and project management	940	TS have been provided with details and agreement of expenditure is agreed each period
New Ingliston – ducts & crossings	540	This is the Infraco costs associated with future-proofing work carried out for NIL. The value is offset against the agreed settlement amount which covers land and future-proofing work.
Cathedral Lane Sub-station	400	Costs submitted to Henderson Global (HG) amounting to £470K for design and the amended construction scope resulting from HG's requirements. £400K is included in the cost report to provide tolerance should the full amount not be recoverable from HG.
RBS Tramstop	500	The final design and scope has now been confirmed and the estimate has been submitted by CEC to RBS. The estimate is £618K and £500K is included in the cost report to provide tolerance should the full amount not be recoverable from RBS.
St Andrew Sq Public Realm design	133	Contribution to be obtained from separate CEC budget
CEC miscellaneous (George St)	318	Contribution received from separate CEC budget
Haymarket Station redevelopment	36	NR have agreed to undertake removal of staircase and parapet, NR to fund costs of sub-station plinth amendments and re-routing of Scottish Power cable.
Setts in On-Street Works	890	Forecast cost associated with setts in St Andrew Square. Final rates and costs to be agreed with Infraco.
Edinburgh Gateway	4,200	A final construction estimate on the agreed scope is currently being prepared by BBS. Costs will be funded by Transport Scotland.
Total	7,957	

4.2.5 Risk and Contingency Analysis

At the Tram briefing meeting, 17th May 2012, the draft cost risk forecast and schedule risk forecast was presented. The risk forecast is based upon P50 (level of confidence from the cost range) and the schedule forecast is based upon P80. Further discussions can take place regarding the use of a P80 risk forecast which would provide a more prudent view of expected outcome given the issues on utilities diversions and legacy issues.

It should be recognised that the risk simulation forecast provides a tolerance range of outcomes. For example some items may be de-scoped e.g. Scottish Water legacy and vice versa other items such as the off-street utilities costs paid by CEC may not be recovered from Infraco. In future forecasts the probability of some of these key risks will be evaluated in greater detail with the CEC client team to ensure that there is a detailed understanding of what factors will cause the risk and the extent to which the mitigations will be successful or not.

Schedule opportunities have been incorporated into the schedule risk forecast to provide a net impact. These include potential reductions in duration for the Edinburgh Gateway and 3 months reduction in the Testing & Commissioning period. Advancement of York Place and further reductions in the Off-Street works have not yet been modelled.

To help inform the potential range of outcomes it would be possible to compare base case with opportunities only and base case plus risk only.

At the 15 May 2012 Programme control meeting a reduction of 5.4 weeks on the original Infraco 22 week cost engineering programme (Rev4c) was reported. When the utilities diversion durations, schedule risks and schedule opportunities are incorporated a forecast service commencement date of 25 June 2014. To enable a firmer forecast the open ended tasks in the programme need to be resolved and the implications of the Rev 5 programme need to be assessed. This assessment and a revised schedule risk and opportunity forecast will be produced week commencing 11 June 2012.

The key sensitivities are:

- Schedule opportunities – critical path and end date assuming York Place is brought forward and therefore critical path moves to Shandwick Place which is currently being affected by the drainage re-design. Also the presumption that the testing and commissioning period can be reduced by 3 months.
- Commercial principles for securing schedule savings – the cost engineering instructions provided a framework for sharing savings on a 50/50 basis with CEC. Infraco have presented a view that they have re-sequenced their works, incurred additional supervision and therefore should be re-imbursed their share of the saving. This equates to £6M. The counter argument is that the cost report includes all their contract prelims and provided the project is finished on time then no further cost should be authorised.
- Emerging scope on the utilities diversions – when workfaces are opened up, additional or different conflicts emerge.
- Emerging scope on SW legacy – examples include the length of separation of water and gas mains and the extent of defects when work is opened up.

4.2.6 Opportunities and Baseline Project Instructions

A summary of the original amounts included in the cost engineering instructions are provided below. Given that the majority of items have been instructed, are in progress or in the case of the programme savings resulting from the embargo and TM removals, are subject to risk and opportunity from re-scheduling, it is proposed that these items are monitored in other sections of the report. The comment column indicates where the opportunity is tracked.

Progress Report No. 8 29th April – 26th May 2012

FINAL

Note: all figures are net

Item	£K	Comment
Remove embargoes and revised TM	6,460	22 week saving eroded by 5.4 weeks which excludes full extent of utilities diversion works. Master schedule shows 25 June 2014 compared to 8 July 2014. Schedule risk and opportunity forecast to track early / late completion going forward.
Edinburgh Gateway		Instructed, covered in contribution section.
Setts (separate CEC budget)	1,000	Potential saving of £95K for revised. specification (setts, prismo and concrete) and monitored through changes in progress. £888K for setts in St Andrews Square which is included in the contribution register.
De-scope public realm at St Andrew Sq	700	Instructed, monitored through changes in progress
Contributions 3rd Party Agreements	2,500	Note: this is the amount for some contributions in the Cost Engineering report. This amount is not carried forward, refer Contribution Register for current position.
De-scope works at Forth Ports	2,445	Instructed, approved change
Omit Airport Tram Kiosk and Canopy	150	Instructed, monitored through changes in progress
Temporary tram stop at York Place	150	Instructed, monitored through changes in progress
Redeployment of Trams	CEC	Included in CEC budget code
Cancel track York Place to Newhaven	1,100	Instructed, approved change
Omit Siemens works at Tower Place	100	Instructed, approved change
Turner & Townsend / CEC resources		Ongoing
Shared recovery vehicle		Not taken forward
Road re-construction depth	700	Instructed, monitored through changes in progress
Design freeze north of York Place	t.b.c	Infraco design costs expended
Reduced requirement for storage		Included in CEC budget code
Lay off TM at Forth Ports/Leith Walk	t.b.c	TM not included in Infraco budget provision
Roseburn Viaduct Cladding	300	Instructed, monitored through changes in progress
De-scope crew relief facilities (Haymarket)	70	Instructed, monitored through changes in progress
Opportunities secured	8,365	
Opportunities to secure	7,310	

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4.2.7 On Street – Schedule 45 Pricing Assumption Variations and Commercial Issues

In previous reports we have described the basis of pricing assumption variations which enable adjustment to the On-Street contract price and also emerging issues regarding the basis of the settlement agreement. The following classifies agreement of change in the following way:

- Green: variation principle and amount agreed
- Amber: variation principle agreed, work ongoing and amount to be agreed
- Red: variation principle and amount not agreed

PMC	Description	(£K)
	On - Street	
15	Utility conflicts – investigation	17
25, 72 & 87	OLE foundations resulting from discovery of utilities	726
28	Temporary accommodation for utilities contractor	2
29	Road re-construction protocol (opportunity to reduce depth)	0
30	Additional CBR/Plate testing – ground strength	0
32	Utilities affecting site clearance - disconnect power to bus trackers	0
35,79,99,100	Utilities contractor affecting Infracore progress	70
36	BT Fibre Optic affecting progress	83
37	Slit trench to validate utilities	7
38	Move 3 OLE foundations (St Johns Church)	12
40	Scottish Water diversion Princes St	253
43	Christmas embargo – temporary infill Princes St	204
44	BT diversion – Princes St (included PMC 040)	inc
52	Install Traffic Management early Shandwick and St Andrew sq	220
68	Utilities affecting track drainage	80
69	Geotextile liner to Clifton Terrace void	4
	Total On-Street Works Estimate	1,678
	Off Street	
t.b.c	Payment for Utility diversions Off Street outwith BBS's scope	340

61	Temporary footpath and drainage - Roseburn Viaduct	30
t.b.c.	Low voltage supplies to Airport Tramstop cabinet	30
	General	
	Rev3A to Rev 4 programme – evidence of delay costs (BB only, Siemens t.b.c)	600
	Depot doors – new drains to prevent water ingress	t.b.c
	Re-configure ducts at Haymarket Yards owing to fence post foundation within LOD	t.b.c
	Snags/defects in Princes Street – ponding, rutting in road surface, etc (Note: these costs are not included in the cost report)	t.b.c
		2,678

Items within the Red category include:

- Utilities Off-Street £340K – one of the principles of the settlement agreement is that Infracore take the risk for utilities off street. CEC have had to pay utility company invoices and cost recovery has been sought from Infracore. Infracore have provided a position paper outlining why some of the utilities movements should be payable by the Client. We will provide our response by 30th May when a further meeting has been scheduled.
- Rev3A to Rev 4 programme – Infracore have applied for £1.4M, however in our view they have not submitted evidence that the costs have been incurred which is a requirement of the Independent Certifier’s opinion. Infracore have committed to provide further information to evidence that the costs have been incurred.
- Depot doors new drains to prevent water ingress – Infracore are reviewing matters with suppliers, they have also stated that the design is based upon value engineering and design approvals.
- Re-configure ducts at Haymarket Yards owing to fence post foundation within LOD – Infracore installed a bank of ducts and then have stated that they need to be amended owing to conflicts with the Network Rail fence post foundations. Unencumbered access within the LoD should be provided however re-work could have been avoided when the workforce was opened up.
- Snags/defects in Princes Street ponding, rutting in road surface, etc – Infracore claim that they are not responsible for defects resulting from the 2009 works. This is currently being examined.

4.3 Utilities

4.3.1 Budget

The approved budget of £7,773K is unchanged during this period.

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4.3.2 Contract

The contractor has offered a saving from the 11.48% management fee to 9.3% on the basis that as the contract is NEC Option E, cost reimbursable, the costs are audited and concluded on a quarterly basis. A condition of this proposal is that the client takes the risk of the £10K excess should any claims arise from Public Liability Claims. A final proposal has been submitted for approval.

In addition savings of 5% to 10% in labour, plant and material costs have been secured for the cost reimbursable elements.

These changes have been incorporated into our forecast.

4.3.3 Approved Changes

To manage scope changes to the McNicholas contract and govern funding drawdowns the following process has been agreed with CEC:

- Scope changes will be managed through changes being identified and recorded on UNCs (Utility Notice of Change). These change requests will identify an outline scope, the reason for the change, the impact on resources/management team, any impacts on Health & Safety, a budget cost estimate and whether the costs are included in the current out-turn estimate or not. UNCs will be submitted to the client group for approval at the weekly client and change meeting.
- Budget drawdown papers will be submitted separately to provide a quarterly reconciliation on the estimate and drawdown to fund expenditure for the next quarter. Additional drawdown papers will be submitted within the quarter if the additional scope results in the expenditure forecast exceeding the approved funding limit. Drawdown papers will be issued to the client group and a separate meeting will be held to review the details to ensure the scope, costs and reconciliations are clarified and approved.

The following scope changes have been approved by CEC:

- UNC 005 Tower Place Bridge kerb and parapet works;
- UNC 006 Transfer of drainage works from the Infraco works, including proving, utilities diversions associated with drainage;
- UNC 007 Cathedral Lane ducting and duct excavations, including proving and associated utilities diversions;
- UNC 009 Princes St Crawley Tunnel – water mains repairs resulting from Tram works in Princes Street owing to Infraco position that the leaks from the joint between the new pipework and the existing is excluded from the Princes Street remedial works .

4.3.4 Changes in Progress

The contract form is NEC Option E – Cost Reimbursable. The contract is being administered by an NEC change management system which tracks orders/changes for specific items of work. This enables control over commitments and managing expenditure.

4.3.5 Anticipated Change

The cost estimate was originally developed on the basis of a cost per conflict type. Given a greater understanding of the nature of the diversions required a programme with resources to suit the scope and programme sequence. This resource plan has been used to form the basis of the estimate. This estimate is under continual review, comparing actual progress against planned and actual resources against planned. The sequence of work is as follows.

Priority	Original strategy	Revised strategy
Priority 1: works in advance of Infraco	Overhead Line Bases Road Level Conflicts Tram Ducting Chambers Tram Ducting Track Construction	Overhead Line Bases Road Level Conflicts Tram Ducting Chambers Tram Ducting Track Construction Drainage – transfer of drainage networks from Infraco Drainage excavation, proving and identification of new routes owing to utility conflicts Drainage gulley's IMU drains Track box excavation Tram duct excavation Duct excavation Cathedral Lane Some kerb realignment
Priority 2: works in parallel with Infraco through call off or isolated work areas	Traffic Signal Pole Street Lighting Column Road Sign Base Kerb Re-alignment Drainage Drainage Gulley	Traffic Signal Pole Street Lighting Column Road Sign Base Remaining kerb re-alignment

The key issues being addressed in the estimate include:

- There is a high degree of variability in work scope for each conflict, for example: removal of foam concrete, steelwork within the road construction, abortive excavations owing to utilities not in the locations shown on the drawings.
- The unit cost per conflict included in the original cost estimate may not account for inefficiencies resulting in the accelerated programmes for Shandwick and St Andrew Sq.
- Scottish Water has submitted a proposal for management and supervision costs for On-Street, Off-Street and Legacy Works for the project until 2014. These costs are being challenged; however they are in excess of the forecast allowance. It is unlikely that these costs will be agreed in advance of the historical issues associated with betterment and cost share. These potential additional costs have not crystallised and are not included in the cost report and will be reviewed at a meeting with CEC 9th of May 2012. Following this review, additional costs will either be included in the Anticipated Change section of the Cost Report or provision made in the QCRA.

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4.3.6 Legacy “snags” / defect correction Scottish Water assets Haymarket to York Place

The scope of work is being developed through evaluation of the “snagging” lists and engagement with Scottish Water.

The current estimated cost is £1,187K and the scope is being developed and agreed with Scottish Water.

Grade 3, 4 and 5 sewer repairs – Scottish Water claim that tie committed to doing these works however in our view they would fall within the requested works provisions of the 3rd party agreement and therefore be funded by Scottish Water. These are not included in the cost report at this stage.

The sewer collapse in Haymarket is to be recovered through the insurance provisions.

4.3.7 Legacy “snags” / defect correction Scottish Water assets York Place to Newhaven

These works are subject to separate procurement and programme arrangements. Similarly the scope of work is being developed through evaluation of the “snagging” lists and engagement with Scottish Water.

The current estimated cost is £2,700K however the scope and costs are being developed to determine the most cost effective solution.

4.3.8 Legacy works constructed under MUDFA

Following the handover of the tie cost forecasts for utilities works and the respective utility company costs (supervision costs and cost contribution for cost share, betterment, etc), a commercial position paper was submitted to Scottish Water.

Scottish Water has now submitted revised costs for supervision costs and calculations in relation to cost share. A summary of these costs have been presented to CEC and a recommended position statement is being developed for submission and review by CEC prior to issue to Scottish Water. The draft was discussed at the cost review meeting 9th May. An update is being prepared to enable CEC to discuss matters with Scottish Water.

Further discussions or meetings have also been held with Scottish Power, the telecoms companies and also Scottish Gas Networks to progress resolution of cost share and betterment.

4.4 Tram Vehicles

The budget for Tram Vehicles is £62.4M which is lower than the contract sum at £63.6m.

There are no changes to the forecast during the period.

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4.5 Payments and Cash flow

A summary of the certified amounts are provided below.

	Certified £M	Planned £M	Comment
Infraco	287,994	305,688	Planned – based upon Rev 3A programme
Utilities	5,922	5,773	McNicholas plus SUC costs
Trams	57,420	58,007	Payments in accordance with milestone schedule.

5 On Street - Enabling Works & Utility Legacy Works

5.1 General

It was reported previously that a decision had been taken to instruct McNicholas to lay drainage pipes, construct chambers and excavate the "track box" to provide Infraco with the opportunity to commence track slab works as early as possible once sites are handed back. Furthermore it was reported that there continues to be instances where Turner & Townsend has to take remote areas of sites to deal with residual utilities issues that were either not completed prior to handover or which were discovered after the sites were handed back to Infraco. While these instances had appeared to be reducing at the end of the last reporting period there has been an increase in recent weeks as a result of trams ducting/ Utilities conflicts.

While there are relatively few tram ducting clashes along the On Street route they have impacted on Infraco progressing works in some areas. The biggest impact has been through Shandwick Place and this is reflected in a lack of progress through the area. Technical solutions to all tram ducting conflicts are anticipated to be in place by mid June and Turner & Townsend is currently prioritising works to mitigate delays to the Infraco programme wherever possible.

5.2 York Place Planning

Detailed planning of works in York Place progressed well in the period and a number of opportunities have been identified. Turner & Townsend have been tasked with improving on the 16 week programme originally identified for utility conflict works in order to provide Infraco with the opportunity to access to York Place in the early Autumn of 2012. Planning of this work is well underway and in consultation with CEC it has been agreed that the McNicholas scope of work through York Place will increase based on lessons learned from other sections of the works to include the utility conflicts, "track box" excavation, drainage and all tram ducting.

A key driver in facilitating early works in York Place is the completion of some ducting and demolition enabling works at Cathedral Lane/Elder Street and a 12 way BT diversion at Broughton Street. The cabling works have commenced and the target date for completion of all the above enabling works is 8th July 2012.

5.3 Legacy Works

As reported previously there remain some key water issues that have the potential to cause significant difficulty for the project. These include apparatus currently located within the tram Dynamic Kinematic Envelope and the tram DKE+2m that cannot be diverted and apparatus without the necessary separation distance from other utilities as a consequence of congested areas. Progress with Scottish Water on how to best deal with these issues has not been as positive as hoped during this reporting period and Turner & Townsend has raised this and other Scottish Water issues to CEC for discussion with Scottish Water at a senior level.

Regarding the legacy works north of York Place, the tenders are due back on 8 June and arrangements have been made with CEC to ensure the tender opening protocols are being followed. The target date for commencement of the works is currently under review by CEC in the context of other major projects taking place in the city over the summer period although some works may commence at Constitution Street in July 2012.

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The reinforced concrete works at Tower Place Bridge have been delayed due to Forth Ports not issuing the requisite licences. Lindsay Road works are progressing well and are being carried out by CECs term contractor Tarmac. It is likely the Tower Place Bridge Works will be delayed beyond the end of June although Lindsay Road is expected to be completed by this date.

5.4 Grosvenor Street Sewer Collapse

Turner & Townsend was advised on the 10th of May 2012 of a potential sewer problem at Grosvenor Street. It transpired that basements in properties at the south end of Grosvenor Street had flooded as a consequence of the main sewer backing up. An excavation above the sewer, within the tram site, had collapsed and emergency measures had to be put in place to deal with the affected property owners and the immediate flood. Turner & Townsend, McNicholas and CEC dealt with the immediate issues and since the incident have been investigating the likely cause of the flood. No conclusions have been drawn at the time of drafting this report although a full update will be provided to the Tram Briefing meeting on the 7th of June.

Turner & Townsend has undertaken to compile a comprehensive report into the cause of the collapse and has agreed with Scottish Water that it can contribute to the report prior to it being published. It is worth noting that Scottish Water has distanced itself from the cause of the collapse although Scottish Water personnel have been present throughout the investigation process.

5.5 Look Ahead

Focus will be on completing the small remainder of drainage works and resolving the tram ducting conflicts discussed above to allow Infraco to continue work. Planning at York Place will continue with demolition works commencing at Cathedral Lane and BT works commencing at Broughton Street. Turner & Townsend will also continue to react to utility discoveries by Infraco and will work with Infraco in planning any "type 2" conflict works not diverted prior to sites being handed back. These include conflicts in footpaths under sign and signal bases that are best dealt with as Infraco carries out its works.

6 On Street - Main Works

6.1 Progress in Period.

Infraco has continued with track slab construction in areas not affected by the drainage redesign and tram ducting conflicts.

Infraco works however have been disrupted in a number of areas and in particular through Shandwick Place and Haymarket. There is a tangible difference in Infraco's approach to management of the works between this section and the section of works north of Princes Street. While the Infraco management team in St Andrew Square has been very pro-active and assisted in working around issues, the team responsible for the section of On Street works between Lothian Road and Haymarket has been less cooperative and extremely rigid in their approach to problem solving. Despite this Turner & Townsend is continuing to work through conflict issues.

While works in St Andrew Square have progressed in the period the impact of conflicts and residual drainage issues have delayed some Infraco works. In this regard Infraco is continuing to report that the completion date for St Andrew Street is likely to slip to from mid October to early November. This is a significant issue as the project critical path remains through this area. Turner & Townsend is working with Infraco and CEC to assist in recovering any time lost through this area.

Princes Street works are due to be completed by the end of June and Turner & Townsend has developed a detailed tracker to manage the close out in a timely manner. A countdown approach to the opening is being adopted and the details of how this will work are currently being finalised. There are risks in relation to meeting the handover date including resolving a number of outstanding Scottish Water legacy issues and outstanding snags from when Princes Street was previously handed back in 2009.

The pre-planning consultation period in relation to Dublin Street Steps concluded on the 10 May 2012 and the formal planning application has been made. The current target date for the planning committee is the 20th of June 2102.

6.2 Key Issues

6.2.1 Scottish Water Manhole Connections

In parallel with the re-design and drainage works, Turner & Townsend prepared a briefing note setting out the history of the manhole connections issue; and a commentary on the possible apportionment of responsibility. The matter was referred to the Independent Certifier who has opined although the formal report is yet to be issued.

6.2.2 Tram Ducting

The tram ducting issue identified above needs to be resolved as early as possible to minimise the impact on Infraco's programme. Significant resource is now focussed on resolving all outstanding matters and an update will be provided at the Tram Briefing meeting on the 7th of June 2012.

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6.3 Look Ahead

6.3.1 Haymarket

There remain some residual tram ducting issues in this area and the Grosvenor Street collapse has affected progress. It is not anticipated, however, that the overall sectional completion of these works will be delayed.



6.3.2 Shandwick Place

While it was anticipated that Shandwick Place would be handed back to Infracore on the 14th of May 2012 the drainage and tram ducting issues have led to delays in handing back sites. While it is not anticipated that the overall completion of these works will be delayed (when referenced to the Rev4 programme), the lack of progress is of concern and the mitigation actions in relation to tram ducting will concentrate on getting the Shandwick Place Infracore works underway.



6.3.3 Princes Street

Target date for completion and handover on the 29th of June 2012.



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6.3.4 St Andrew Square including Waverley Junction

As set out above Infraco is reporting a delay to completion and anticipates completing works in the area at the beginning of November. Turner & Townsend will be working with Infraco and CEC over the coming weeks to explore ways of improving on this date.



6.3.5 York Place

Planning is well underway and the demolition and BT works in the area are schedule to commence in the period.

7 Off Street Works

7.1 Progress in Period

7.1.1 Edinburgh Gateway

On the 1st of May 2012 Turner & Townsend became aware that Infracore were looking to change the design from the gabion basket solution to a king post wall. This revised proposal was submitted in response to Infracore's revised assessment of site constraints and benefits in construction methodology.

Infracore offered two possible king post wall options:

- A 5 metre high wall with a 1:2.5 slope
- A 2 metre high wall with a 1:1.5 slope, where CEC would take the liability for the design of the slope, due to this being a steeper slope than the designer would normally specify.

The decision in height of the retaining wall was taken on the basis that the Contractor's designer was unwilling to offer and certify a design based on anything other than a 1:2.5 soil slope above the retaining wall, irrespective of whether that slope was engineered or natural. BBS have subsequently advised that a 1:1.5 slope was unacceptable, and the benefit associated with accepting liability for a 1:2 slope (vs 1:2.5) was "negligible" in terms of time and cost.

Following a review of the options by the CEC, TS, TSS and T&T (The Client Team), it was confirmed by Transport Scotland that the King Post solution should be progressed to detailed design.

The change to the design of Edinburgh Gateway has resulted in a prolonged designed period with the detailed design now to be completed by the end of May 2012. Infracore submitted Approval in Principle proposals for review by CEC's Structure Department during week commencing the 28th of May 2012.

A meeting was held with Transport Scotland's Rail department and Network Rail to explain the change from gabions to a king post wall. A further meeting is required to define the boundary of Infracore's site and the timeline by which Network Rail and Scottish Water will be able to access the area. This meeting will take place following submission of the detailed design at the end of May 2012.

CEC has requested that the tram stop equipment originally identified for York Place to Newhaven be utilised for Edinburgh Gateway.

The Revision 5 programme indicates that the Edinburgh Gateway permanent radio mast is to be installed by the 21st of November 2012. Clarification is required from Siemens on whether this is in sufficient time for Section B Test & Commissioning. They would however still continue with tests on the aerial that currently exists within the depot as mitigation to any programme slippage. These tests increase the wattage to the aerial to establish if coverage of Section B can be achieved. Tests that were programmed for week commencing 21st of May 2012 had been disrupted due to the handover of the mini test track and access arrangements not being in place, the tests have now been delayed until July 2012.

7.1.2 Scottish Gas Network Diversion

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The diversion of the Scottish Gas Network pipe was completed on programme on the 18th May 2012 and Infraco's subcontractor has now commenced works in the area. Due to the heavy rainfall during the week ending 18th of May there are some ground reinstatement works required however this has not impacted on the Infraco works.

7.1.3 Roseburn Street Bridge

The bridge beams for Roseburn Street Bridge were successfully lifted into place on the 12th of May 2012. The closing of Roseburn Street was required while the crane was in place.



7.1.4 Other items of progress:

- The secant piling has been completed at the airport.
- Landscaping between Ingliston Park and Ride and the Gogar Burn is complete.
- Road signage foundations are commencing around the Gogar roundabout.
- Lochside Avenue crossing has commenced.
- Soil reinforcement at the Gogar Landfill is complete.
- Bankhead Drive earthworks and drainage works are continuing .
- Abutment works are progressing on South Gyle Access Bridge.
- The track works at Carrick Knowe and from Haymarket Yards to Balbirnie are continuing.
- Works have commenced to enable the removal of Network Rail's Balgreen Road Bridge, this requires a series of road closures at weekends during the upcoming period.
- Progress is being made on the sheet piling works along the Murrayfield corridor and at the ScotRail depot however these works have been disrupted due to movement of the Network Rail Infrastructure and rogue monitoring results. The sheet piling operations were completed on the 29th May despite stoppages.
- Weekend works to complete the road joints at Haymarket Yards have commenced.
- After the initial cladding test panels for the Haymarket Viaduct being rejected due to material and workmanship issues, these works have now commenced.
- Scottish Power have installed the new cable to the Haymarket substation and removed the cable which was interfacing with the Network Rail station foundation.