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Edinburgh Tram Project
Full Progress Report No. 18
3rd February to 2nd March 2013
FINAL

CONFIDENTIAL – LEGALLY PRIVILEGED AND FOI(S)A EXEMPT
March 2013



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Rev	Originator	Approved	Date
1	Shirley-Anne Collin	Rob Leech	13 th March 2013
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1 Executive Summary

This report covers progress made during the Period from the 3rd of February 2013 to the 2nd of March 2013. In drafting the report however up to date information has been provided in relation to some specific key issues including the progress of the Section B milestone.

During the last Period there were twenty incidents reported on the Edinburgh Tram Project. One incident identified was classified as serious / significant relating to a member of the public. The other incidents comprised one injury, six service damages, and twelve near misses / unsafe conditions. This number is inclusive of two service damages related to works on the Leith Walk remedial works. A number of the service strikes occurred when unprotected services were encountered encased in foamed concrete.

A meeting has been held with City of Edinburgh Council to review the arrangements for third parties to access the Tram Infrastructure to undertake works following Section B completion. The proposed arrangement is for Turner & Townsend to assist CEC and be the first point of contact for third parties. On receipt of a request to undertake works Turner & Townsend will notify the requesting organisation of the requirements and contact details of the asset controller (who can be Edinburgh Trams, City of Edinburgh Council or Bilfinger & Siemens).

A report was produced by Turner & Townsend during the Period which reviewed cracking to track slabs. A meeting was held with Infraco to review the report and a way forward has now been agreed in relation to areas that have been handed over on an interim basis.

In relation to the chambers on Princes Street there are currently thirty two chambers requiring some form of remedial work, approximately 50% of these will be remedied by Infraco with the remainder requiring work by others (CEC or McNicholas). It has been agreed that any remedial works will be carried out either in the evening or at weekends to minimise any disruption to the city. It is not yet clear if this issue will manifest itself in other locations although this will be monitored and an update will be provided in the next Period report.

Based upon progress up to the 2nd of February 2013 the milestones for Sections C and D remain forecast earlier than the contractual dates. Section B was completed on its contract date of the 8th of March. The Section C & D Completion dates are forecast in the Master Schedule as the 22nd of December 2013 and the 2nd of April 2014 respectively. Erosion of the 22 week cost engineering programme saving remains unchanged at 14 weeks with 8 weeks remaining. It is the view of both Infraco and Turner & Townsend that the likelihood of any subsequent adverse delay events has reduced significantly.

The commencement date for the tamper has been adjusted from the 27th of June 2013 to the 1st of July 2013. The change is a result of the confirmed booking of the tamping machine, which has directly impacted in a four day movement to the Section C and D dates. Within the schedule there continues to be a period of time between when the sections of track requiring tamping are completed and when tamping commences.

Turner & Townsend continues to support CEC with regards to maximising any programme savings on the project. The agreed methodology for this is using the client target

programme process flow set out in last month's report. Two Planning Forum meetings took place in the Period and a Clearing House meeting has been arranged between Turner & Townsend and CEC for the 12th of March 2013. Following that meeting Turner & Townsend and CEC will be in a position to assess the outputs and the next Period report will provide an update on how matters have progressed.

Discussions took place with CEC during the Period regarding the timing of the closure of risks and how this will affect the value of risk being carried by the project. Turner & Townsend provided a draft note which demonstrated when key risks will start to reduce relative to the construction programme. Following this work it has been agreed with CEC that three gateway reviews will be carried out in April, June and August 2013 to assess the value of risks against programmed activities.

Works in York Place and at Cathedral Lane substation remain on the critical path for On Street completion. Progress in the Period has been good and the civil works completion date of June 2013 remains on target. CEC/Crummock and CEC/McNicholas works are substantially complete at Broughton Street and demobilisation will be completed in the next Period.

The St Andrew Square civil works completion date is on target for the 28th of March 2013. CEC/McNicholas have handed back the last significant area to Infraco at the south side of the square for completion of the road carriageway works.

The Scottish Water interface continues to demand close attention, however the criticality of the issues, from an Infraco delay perspective, are becoming less significant. The majority of the remaining issues relate to legacy Scottish Water utility works. Turner and Townsend are providing a close out report to identify the most appropriate mechanism for dealing with the outstanding issues. It should be noted that there remains a significant commercial gap between the parties.

Section B was handed over by Infraco on the 8th of March 2013. The assurance process put in place at the beginning of 2013 worked well and provided a good opportunity for all parties to "dry run" the process ahead of Section C completion. This involved Turner & Townsend, CEC as duty holder, Infraco and Edinburgh Trams working very closely together. Although the completion date was met there remain a number of documents outstanding which is driven in part by the inevitable teething issues experienced when rolling out a new process and in part by necessity given the fact that Infraco only handed over a relatively small section of the line. Despite this, the safety verification process proved sufficiently robust to allow timely handover and a plan is in place for dealing with any residual issues.

Two key design issues remain to be fully accepted by Network Rail. These relate to the retaining measures adjacent to a Network Rail lighting gantry at the ScotRail depot and final fencing details to ensure AC/DC separation between the two rail systems. It is anticipated these will be agreed in detail in the next Period however there remains a risk to the programme. As a result of the above and other commercial close out issues Turner and Townsend have prepared a paper which CEC will use for discussions on a final commercial settlement with Network Rail.

During the Period CEC has also requested Turner & Townsend provide a proposal to carry out a review of all third party agreements on the project with a view to developing a plan

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to ensure all third party obligations are met in a timely manner. To date third party agreements have not been managed directly by Turner & Townsend.

Issues between CEC and Network Rail were captured in a close out report provided by Turner & Townsend and a meeting was convened by CEC to agree close out plan with Network Rail. Turner & Townsend recorded the actions from this meeting and will manage the issues tracker owned by Network Rail, CEC and Turner & Townsend; this will be revised and managed on a weekly basis.

Following the Section 7 testing Infraco informed Turner & Townsend and CEC that there are potential clashes between the tram and platform edges at Stops. Infraco have confirmed that there are likely to be clashes at Haymarket and Princes Street and have been asked to confirm if any further clashes are likely to be identified on the off street section. It should be noted that any remedial works are to Infraco's account.

CAF have now completed all tram testing required for Section B, following the completion of the Routine Tests, Ride Quality tests and Electromagnetic Compatibility (EMC) testing. There were issues identified although rectification is now scheduled to take place in the coming Period.

The completion of integration testing and the increasing use of the trams for driver training have led to an increase in the number of defects being identified during tram operation. Weekly technical meetings are now being held with members of the CAF project and maintenance teams, Edinburgh Trams engineering and operations teams and Turner & Townsend, to review the defects reported and identify any systemic or endemic failures as they arise. Finding defects early in the process is very useful and will benefit the project through the improvement of tram reliability prior to passenger service.

Turner & Townsend have issued a letter to CAF (INF CORR 8951) instructing that the title and legal ownership of the four trams which have completed Routine Testing as part of Section B Completion; 267, 271, 272 and 275, be transferred immediately to CEC. Following commercial discussions on the terms of the vesting arrangement this is now in place.

Turner & Townsend are still awaiting confirmation on whether the CAF letter detailing potential additional project costs related to the difference in the project completion date between the Rev 2 and Rev 5 project programmes is to be withdrawn. Discussions are ongoing with CEC on how this issue can be formally closed.

Edinburgh Trams have reported no significant issues within the Safety Verification (SV) function this Period, with the Safety Verification System and Safety Assurance Plan documentation to be issued formally in the coming Period. There are no tram related Safety Verification issues. The SV team have reported that there are now no further issues remaining open from the SV audit TSA/12/03 – Section 1C - Slips, Trips, Falls (2 Wheel Vehicles), following a demonstration of the Drainage Box cleaning on the 21st of February 2013. A formal report will be issued to Infraco in due course.

Turner & Townsend, in conjunction with CEC and Edinburgh Trams, is developing a metric to track progress of testing for Section C. This first draft of this metric is included in this

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report but can only be developed fully when Infraco provides a programme of testing. It is anticipated this will not be available until early April 2013.

The overall forecast has reduced by £545k in the period as a result of risks being mitigated and scope and costs are agreed or clarified.

There remains to be a number of key risks to the overall forecast, notably associated with the valuation of on street change, potential claims submitted by Infraco and Tramco for programme change and closeout of cost reimbursable elements of the project, particularly McNicholas and Scottish Water. The forecast includes a provision for these elements of work and the risks are being monitored on a period basis to allow mitigation action to take place if necessary.

Work is ongoing to mitigate the commercial impact resulting from costs associated with work to Network Rail's boundary. During the period we have summarised all of the issues relating to the railway corridor into a paper which will be used in negotiations with Network Rail over a potential contribution towards this work. We have included an assumed contribution of £250k in this period's report.

We have also incorporated potential savings from the Immunisation budget into the forecast in the sum of £500k. This is based on a recent review which indicates there is a likely under spend of this budget. However, it should be noted that there is still a risk that further works will be required, reducing this opportunity.

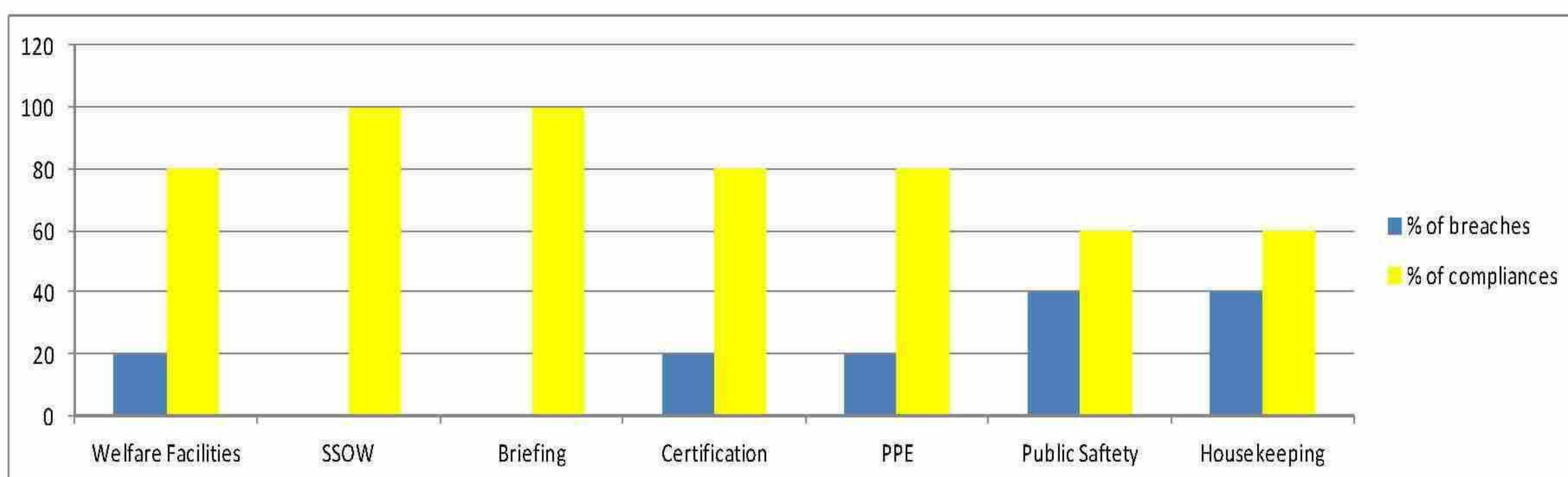
There are a number of other risks and exclusions associated with the forecast which are noted in the commercial section of this report.

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2 Health, Safety & Environment and Quality

2.1 Management of Health & Safety

Joint monitoring of the leading indicators has continued to be undertaken between Turner & Townsend and the Principal Contractors, the results are included using the graphic below. The leading indicators have identified that public safety and housekeeping are the areas with the highest non-compliance. This correlates with the results of an ad-hoc inspection that was undertaken by Turner & Townsend in the Period and reported below. In response to this Turner & Townsend will be targeting these indicators in discussion with the Principal Contractors, with a view to improving compliance in the next Period.



Inadequacies and common failings in hazard identification, risk assessment and control were identified during the review of a number of recent incidents including OLE installation and working at heights. These involved activities being carried out by Siemens and its sub-contractors. Following a review meeting involving Turner & Townsend and Bilfinger & Siemens on the 6th of February 2013, Bilfinger & Siemens undertook to implement the following measures intended to deliver improvement across the Infracore project:-

- Briefings on the risk assessment processes;
- Health and safety focus meetings; and
- Site safety stand down sessions

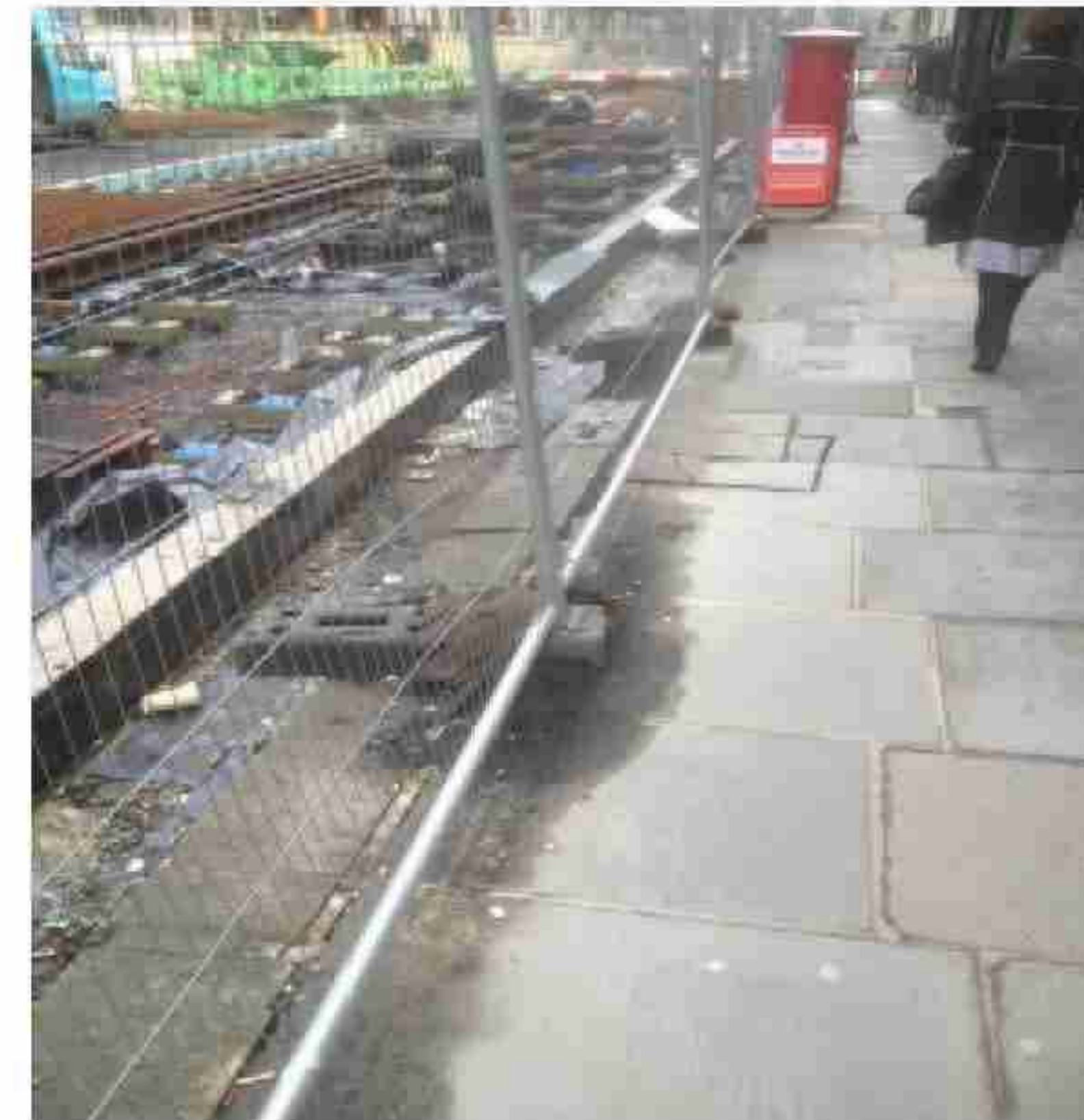
Turner & Townsend will be monitoring activities going forward to test the ongoing success of these measures.

Concern remains over contractor provisions for public safety and general housekeeping around the construction sites. An ad hoc exercise was undertaken by Turner & Townsend in city centre areas on the 25th of February 2013 and this identified a number of issues including trip hazards, inadequately anchored fencing and poor waste/litter control. Output from the exercise has been shared with all the contractors involved and remedial action taken. Assurance has been sought that similar emerging public safety issues are being identified and acted upon locally by site management. Turner & Townsend will conduct repeat checks over coming weeks to verify improvement.

Examples of the issues identified are provided below.



Broken paving slabs and trip hazard
Outside Haymarket Station



Sand bags on bases disintegrated
West Maitland Street



Poor housekeeping – Clifton Terrace



Cable on Surface at road crossing
Trip Hazard – York Place

Infraco held their monthly Occupational Health & Safety Meeting on the 26th of February 2013 which was attended by Turner & Townsend. Agenda items for the meeting focused on occupational health issues and included:

- Two DVDs that addressed risk assessment. The first DVD provided guidance on the risk assessment process itself, the second gave a scenario from a site where a fatality had occurred and tracked the risk assessment process from prior to the accident through to legal interview with company lawyer and prosecution by the Health and Safety Executive;
- A report on the health and safety focus meetings which had been held – a total of 37 persons attended;

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- Turner & Townsend gave an update of an inspection of fencing and housekeeping that had been carried out in the city centre, this highlighted examples of good and poor practice;
- A process for daily site briefings was presented by Bilfinger.

2.2 Incident Management

2.2.1 Incident Reporting

During the last Period there were twenty incidents reported on the Edinburgh Tram Project. One incident identified was classified as serious / significant relating to a member of the public. The other incidents comprised one injury, six service damages, and twelve near misses / unsafe conditions. This number is inclusive of two service damages related to works on the Leith Walk remedial works. A number of the service strikes occurred when unprotected services were encountered encased in foamed concrete.

In response to this Turner & Townsend will be raising the number of incidents with Infracore and McNicholas and will discuss how the number of occurrences can be reduced.

2.2.2 Record of Incidents

Incidents reported within this Period comprise:

Serious / significant incident

1

Non Tram Related

0

Date	Location	Detail	Contractor	Classification
04/02/13	Broughton Street	Scottish Water 125mm Water main struck at an excavation at the junction of Broughton Street and York Place. The main was encased in Foam Concrete.	McNicholas	Service damage
10/02/13	Palmerston Place/West Maitland Street	A large white van travelled against the one way traffic flow, whilst passing the mass barriers it clipped one of the drums.	McNicholas	Near miss / unsafe condition
08/02/13	Carrickknowe	Concrete pump set up 22 meters from NWR railway. Request received from NWR representative to move pump back 3 meters	Crummock	Near miss / unsafe condition
13/02/13	Coates Crescent	Fencing has blown over outside Royal Scottish Country Dancing Club and it was reported that a member of the public has fallen and injured her arm.	McNicholas	Member of Public
14/02/13	South Gyle Access Bridge	Operative walked into a reinforcement which wasn't capped. Operative sustained a scratch to left shin; first aid was administered on site.	Siemens	Injury
04/02/13	Palmerston Place/West Maitland Street.	BT cable buried in concrete, damaged when carrying out excavation works.	McNicholas	Service damage
05/02/13	Palmerston Place/West	SP service cable buried in concrete, damaged when carrying out excavation works.	McNicholas	Service damage

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Date	Location	Detail	Contractor	Classification
	Maitland Street.			
06/02/13	6 Torphichen Street	1" water service damaged, during excavation works.	McNicholas	Service damage
14/02/13	Ryries Bar, Haymarket	Traffic management removed resulting in vehicles driving into site.	BBS	Near miss / unsafe condition
19/02/13	Balburnie Place	MOP driving a silver Ford Focus attempted a three point turn damaging heras fencing.	Grahams	Near miss / unsafe condition
21/02/13	Abercrombie Place / Dublin St	Lothian & Borders Police contacted CEC Care and Response Team traffic, reporting temporary traffic lights all on green at junction.	McNicholas	Near miss / unsafe condition
24/02/13	Ryan's Bar / Hope St	Lothian & Borders Police contacted CEC Care and Response Team to report barriers have been pushed over.	Bilfinger	Near miss / unsafe condition
23/02/13	Balgreen	Break into container over weekend 23/02/13 / 24/02/13. 2 Jackets, 2 pairs of boots and 1 digital camera have been stolen	Land & Build	Near miss / unsafe condition
23/02/13	Balgreen	Damage to excavator (3 windows broken) over weekend 23/02/13 / 24/02/13	Expanded	Near miss / unsafe condition
25/02/13	Dalry, Haymarket (toilet)	Smell of gas reported to SGN, reference no 50448036	McNicholas	Near miss / unsafe condition
27/02/13	Gogar Castle Road	Snagging works being undertaken on the Mini Test Track without permit to work.	BBS	Near miss / unsafe condition
27/02/13	Gogar Castle Road	Whilst undertaking snagging works on the operatives did not close out permit on completion of works on mini test track.	BBS	Near miss / unsafe condition
27/02/13	South Gyle Access Bridge	Operative climbed up to a high point on the retaining wall opposite a street lighting column and slid down the pole.	Crummock	Near miss / unsafe condition
Leith Walk Legacy Works				
20/02/13	Leith Walk	Damage to four inch cast iron water-main at 178 Leith Walks. SW advised.	McNicholas	Service damage
26/02/13	Leith Walk	Unidentified cable hit with shovel whilst hand digging outside 374, Leith Walk. Scottish Power contacted to attend site.	McNicholas	Service damage

2.2.3 Incident Progress

Turner & Townsend have provided constructive comments on the Road Rail Vehicle Incident (RRV) that occurred on the 23rd of November 2012 and have sought clarification on the identified causes and actions to prevent reoccurrence. A copy of the RRV investigation report has now been issued to Turner & Townsend and a meeting is being convened with CEC to close out any outstanding comments.

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In addition Turner & Townsend have been working with Bilfinger & Siemens to implement the lessons learned from their internal review. The production and implementation of suitable and sufficient risk assessments was a key issue that was reviewed.

During a tram test run on the 24th of January 2013 an unexpected manoeuvre by a car at a manually controlled road/rail crossing caused the tram driver to stop the tram as a precaution. Whilst there was no collision the opportunity was taken by Infracore to review the arrangements in place for these operations. Lessons learned and actions taken include a change from 'stop/go' lollipop boards to 'stop' boards. Additional briefings have also been given on positioning of traffic management operatives during these activities.

2.3 CDM Regulations

A meeting was held with the City of Edinburgh Council's Safety Assurance Manager and Bilfinger Siemens to discuss the requirements for documentation to be included within the Health and Safety File for Section B. The review focussed on the number of construction method statements and supporting documents that would be required for future maintenance and deconstruction.

Meetings and discussions have been held with Scottish Water regarding the development of the Health and Safety File for the Scottish Water utility diversion works. It is proposed to develop and issue a Health and Safety File that includes the information relevant to the utility diversion works; and subsequently issue information that relates to the tram construction works.

Dialogue has been held with Edinburgh Trams regarding at which stage in the project the enforcement authority will change from the Health and Safety Executive to the Office of Rail Regulation. A document has been prepared and has been issued to the Health and Safety Executive for their comment. A meeting or discussion with the Health and Safety Executive has been requested to confirm their requirements. The proposals identify the Health and Safety Executive having a joint involvement with the Office of Rail Regulation in the Period post Section B completion and as such it is envisaged that the current arrangements with the Health and Safety Executive will continue as is.

A meeting has been held with City of Edinburgh Council to review the arrangements for third parties to access the Tram Infrastructure to undertake works following Section B completion. The proposed arrangement is for Turner & Townsend to be the focal point for contact by third parties. On receipt of a request to undertake works Turner & Townsend will notify the requesting organisation of the requirements and contact details of the asset controller (who can be Edinburgh Trams, City of Edinburgh Council or Bilfinger & Siemens).

2.4 Environmental

As part of the reorganisation of project assurance, Environmental Assurance is being managed directly by CEC. It has been agreed however that Turner & Townsend will continue to report key environmental issues in each Period report.

An environmental inspection was carried out with McNicholas on the 11th of February 2013. No major issues were identified.

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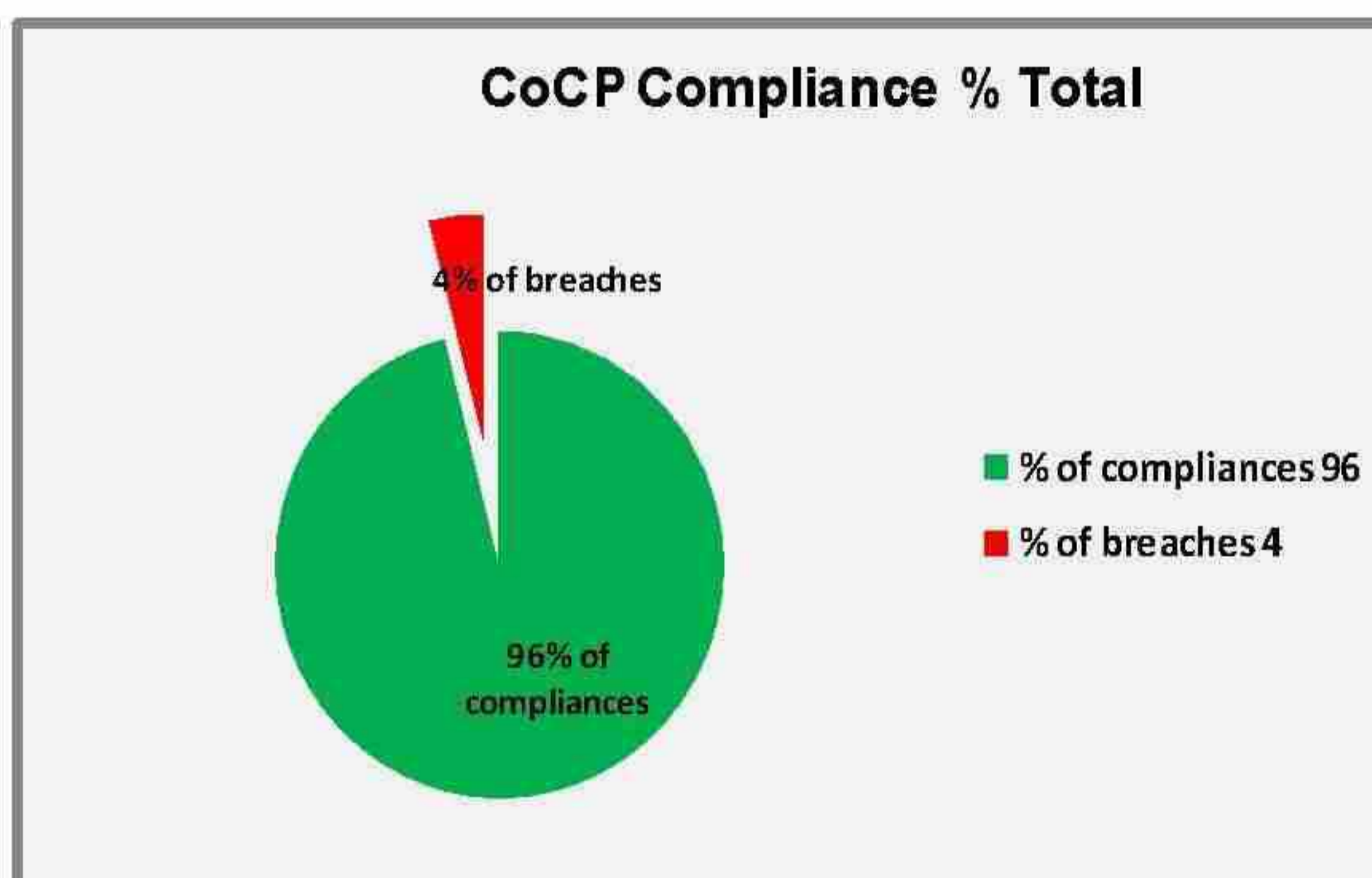
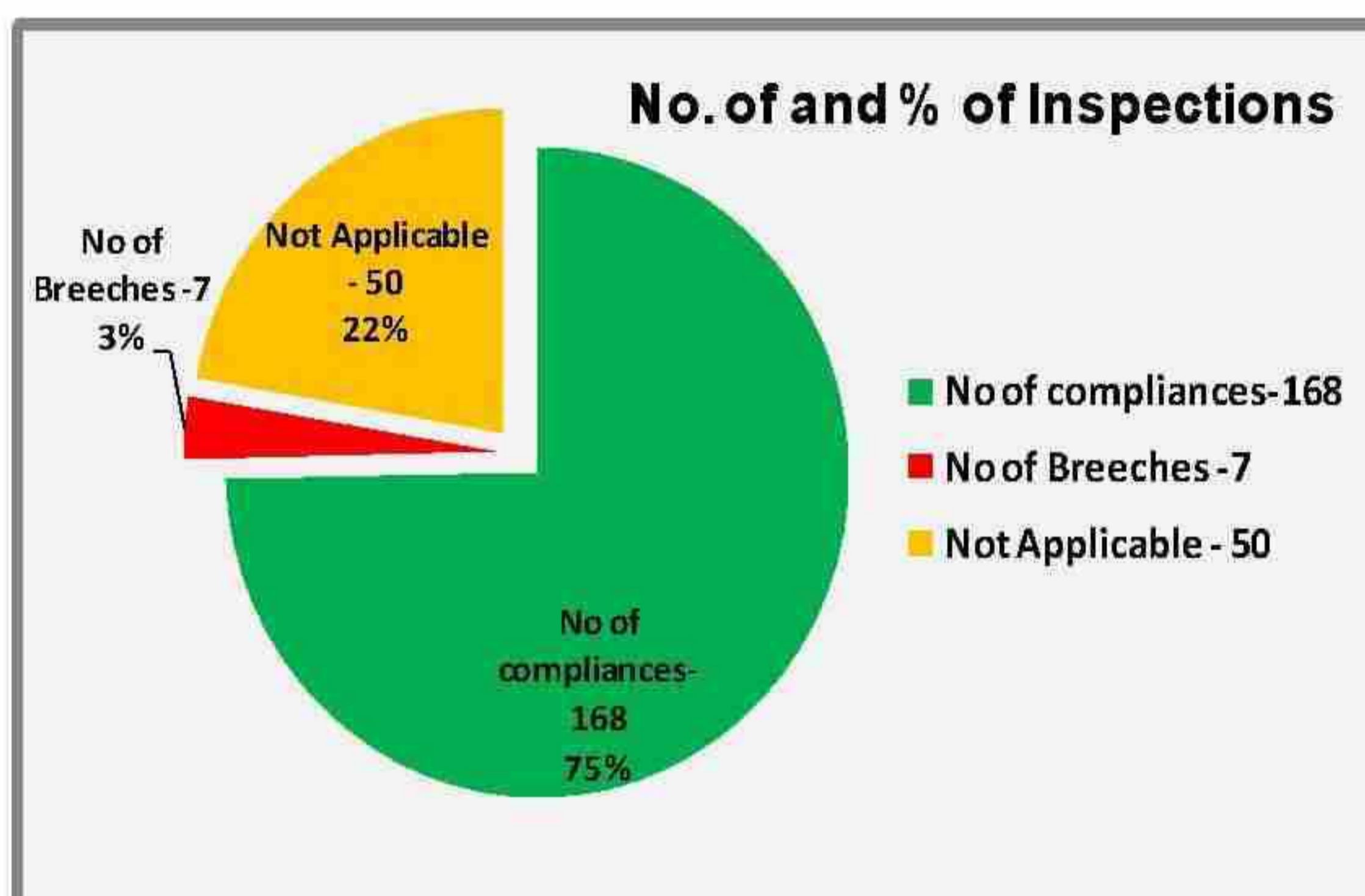
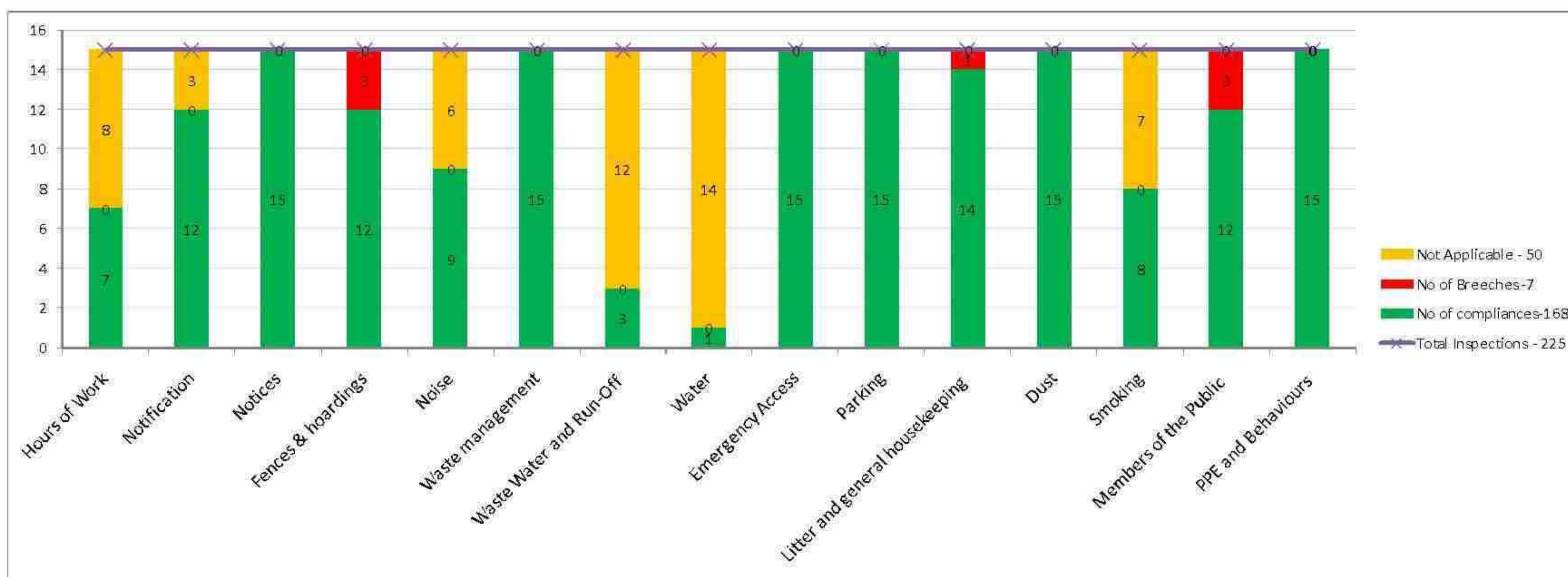
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A meeting was held with John Lawson in order to progress the closure of the Post Excavation Works. John Lawson is to provide details of the compilation of the report required to progress this phase of works to closure.

No environmental incidents were recorded during the Period.

2.5 Code of Construction Practice (CoCP)

CoCP compliance was recorded at 96% during the Period.



Breaches marked in red in table below.

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	

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2.6 Quality

2.6.1 Key Issues

A report was produced by Turner & Townsend during the Period which reviewed cracking to track slabs. A meeting was held with Infraco to review the report and the following way forward has been agreed in relation to areas that have been handed over on an interim basis.

- One crack is deemed high priority by Infraco and remedial works will commence shortly;
- Infraco will put in place any necessary monitoring for all other cracks and will assess if and when cracks require remedial works during the interim defects period;
- Trigger levels will be established by Infraco based on “safety critical” criteria; and
- Turner & Townsend and CEC will be kept informed of any monitoring being carried out by Infraco

It has also been agreed that Turner & Townsend and CEC will continue to carry out regular 3 monthly inspections of the interim handover areas.

In areas that have been formally handed over (Section A and B) cracking will be dealt with through the defects correction provisions in the Infrastructure Contract.

In relation to the chambers on Princes Street there are currently thirty two chambers requiring some form of remedial work, approximately 50% of these will be remedied by Infraco with the remainder requiring work by others (CEC or McNicholas) as they fall outwith the current Infraco liability. It has been agreed that any remedial works will be carried out either in the evening or at weekends to minimise any disruption to the city. The cause of the settlement is yet to be established fully but initial investigations would suggest it relates to a range of issues from poor workmanship to inadequate compaction of the formation layer. It is not yet clear if this issue will manifest itself in other locations, an update will be provided in the next Period report.

The OCIP insurance inspection raised a query regarding to the damage to the rails which had occurred when cuts were being made to the track slab. Infraco have been asked to confirm whether any further cutting is required in areas where rails have been laid, and if so to identify the protection measures to be implemented. Despite chasing Infraco for a response this matter remains open and will be raised in the project control meetings scheduled for week commencing the 18th of March 2013.

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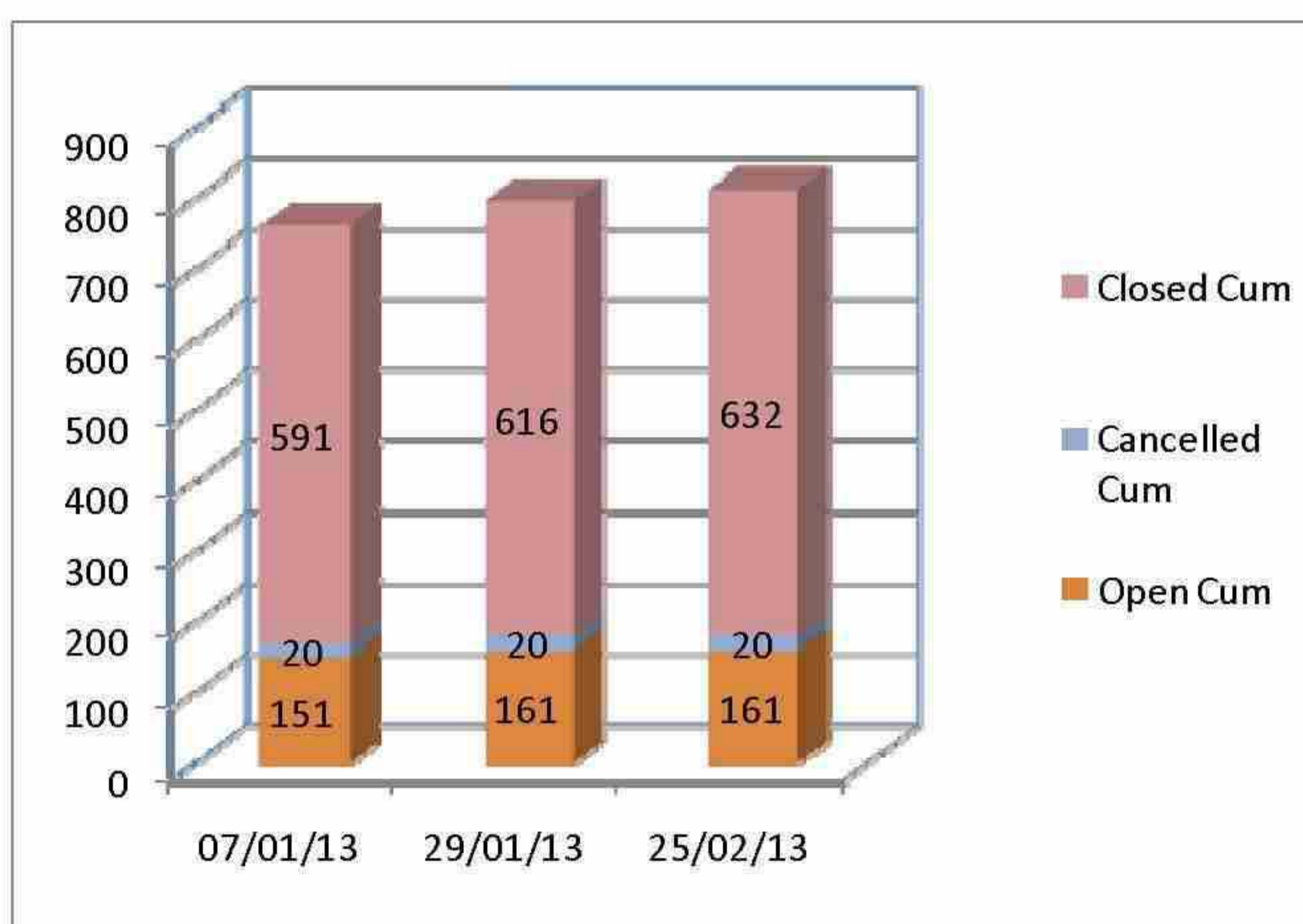
2.6.2 Non-Conformance Reporting

Monitoring by Turner & Townsend of the NCRs raised on the project continues. Details of the NCRs are included below:

- The number of NCRs raised to date is 813. 16 NCRs were raised during the Period and 16 NCRs were closed out during the Period.
- 39 open NCRs are greater than 6 months old and 161 remain open.

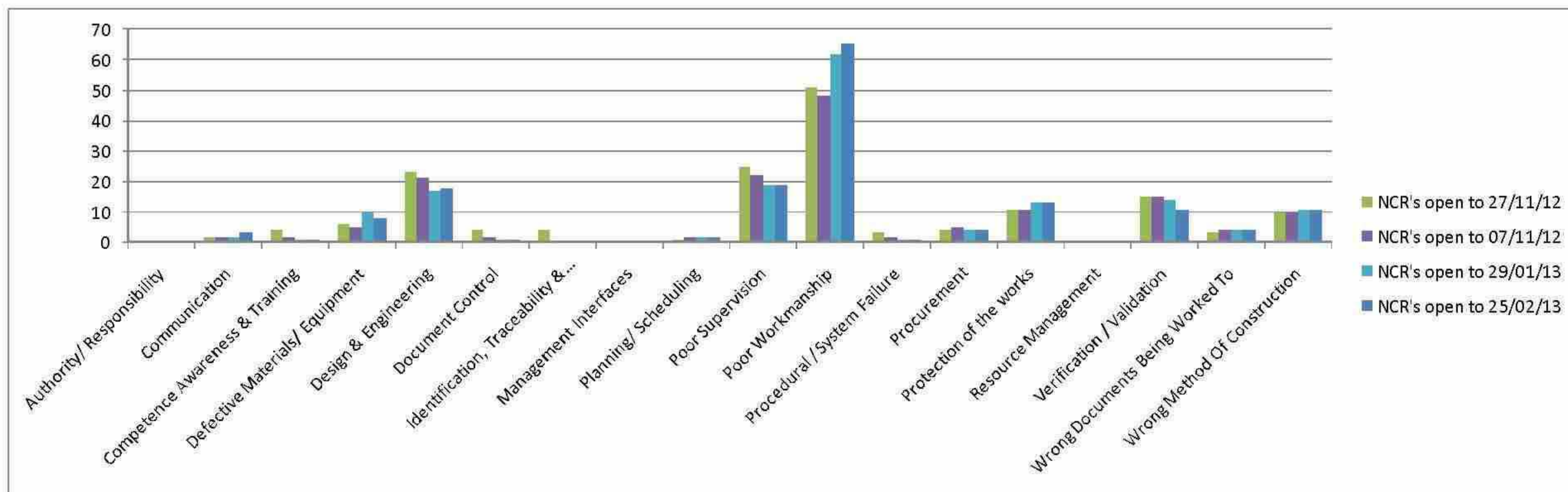
It was reported previously that the number of NCRs on the project may peak in March 2013. There is no evidence in this Period to suggest this is the case however, Turner & Townsend will continue to monitor the trend of NCRs and will raise the matter with Infracore if numbers continue to increase.

Summary of non conformances



Breakdown of non conformances

Classification of open non conformances



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The rise in the number of non conformances that were identified as poor workmanship has risen in the Period due mainly to the snagging and inspections being carried out on Section B. This is to be expected although Turner & Townsend will continue to monitor this trend once Section B is complete and works continue in preparation for Section C handover.

3 Programme

Progress updates against the schedule have resumed the standard monthly project cycle. The figures shown in the Master Schedule this Period are based on the standard one month construction period from the 6th of January to the 2nd of February 2013.

3.1 Programme Overview

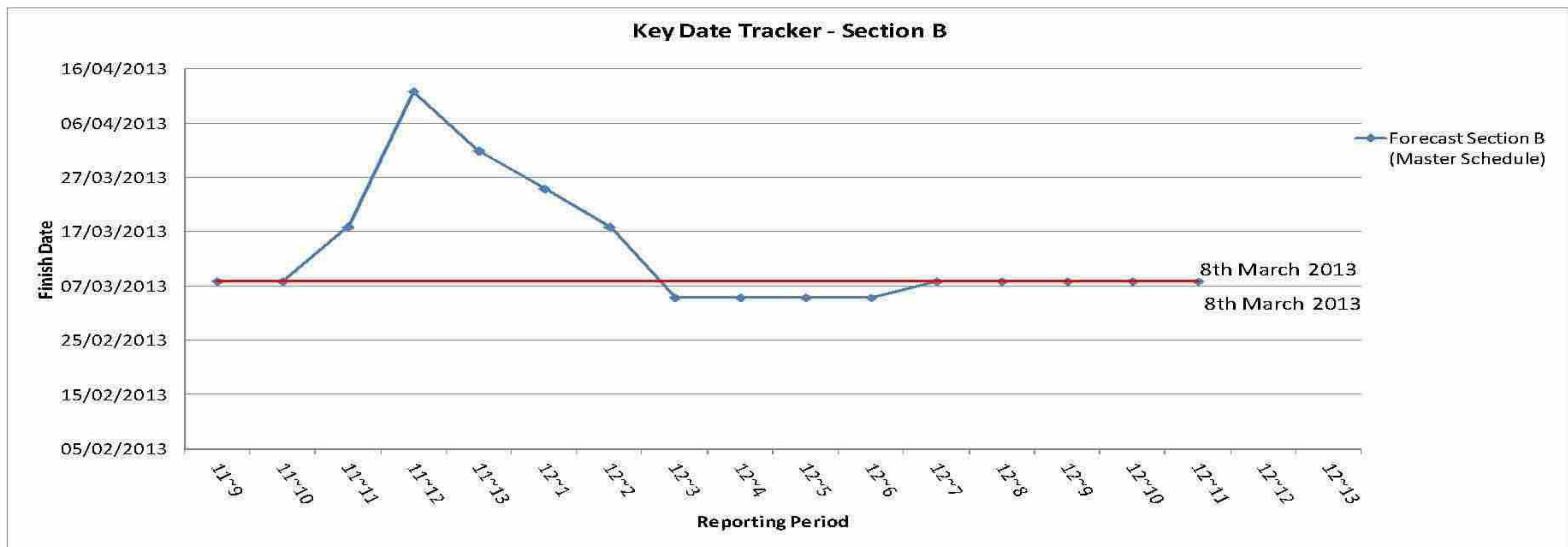
Based upon progress up to the 2nd of February 2013 the Contract milestones for Sections C and D remain forecast earlier than the contractual dates. Section B was completed on target on the 8th of March. Based on the Master Schedule the Section C & D Completion dates are forecast as the 22nd of December 2013 and the 2nd of April 2014 respectively.

The commencement date for the tamper has been adjusted from the 27th of June 2013, as reported in the last Period, to the 1st of July 2013. The change is a result of the confirmed booking of the tamping machine, which has directly impacted in a 4d movement to the Section C and D dates. Within the schedule there continues to be a buffer of float, between when the sections of track requiring tamping are completed and when tamping commences.

Further clarification continues to be sought from Siemens in relation to the works for installation of OHLE/traction power and E&M fit-outs that will run concurrently with and subsequent to the tamper activity. Despite ongoing issues with the E&M fit-out of tram-stops and Section B SAT/SITs, Section B completion date has been kept in line with its contract date through various mitigation measures. Based upon these observations and in advance of receiving, from Infracore, a SAT/SITs schedule for Section C, Turner and Townsend have incorporated the deemed "key" SAT/SITs activities required prior to test running "T1" for Section C into the Master Schedule. Analysis of this has identified a potential critical float path emerging, through the substation at Cathedral Lane, which has the potential to drive the Section C and D dates.

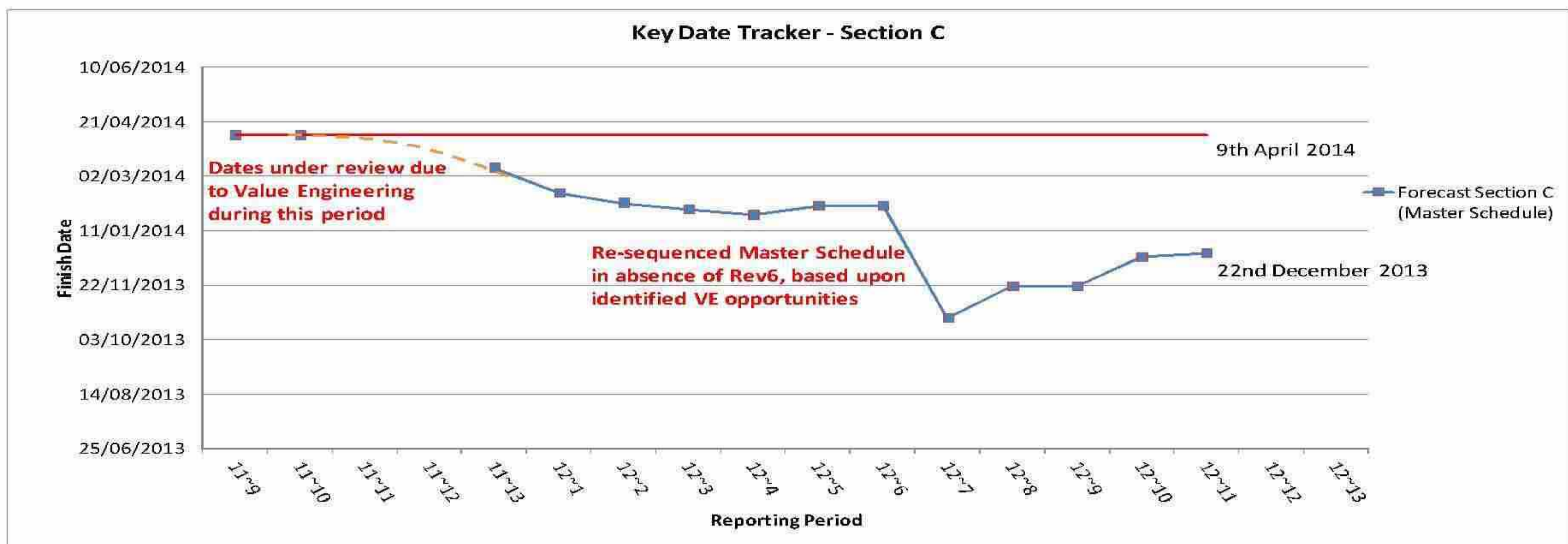
The charts below track the forecast dates (from the Master Schedule) for the Sectional Completion milestones against the contractual dates and their movement throughout the project lifecycle to date. All information and analysis contained in this Programme Section of the report is based upon the Master Schedule, unless otherwise stated.

Section B; Test Track Complete

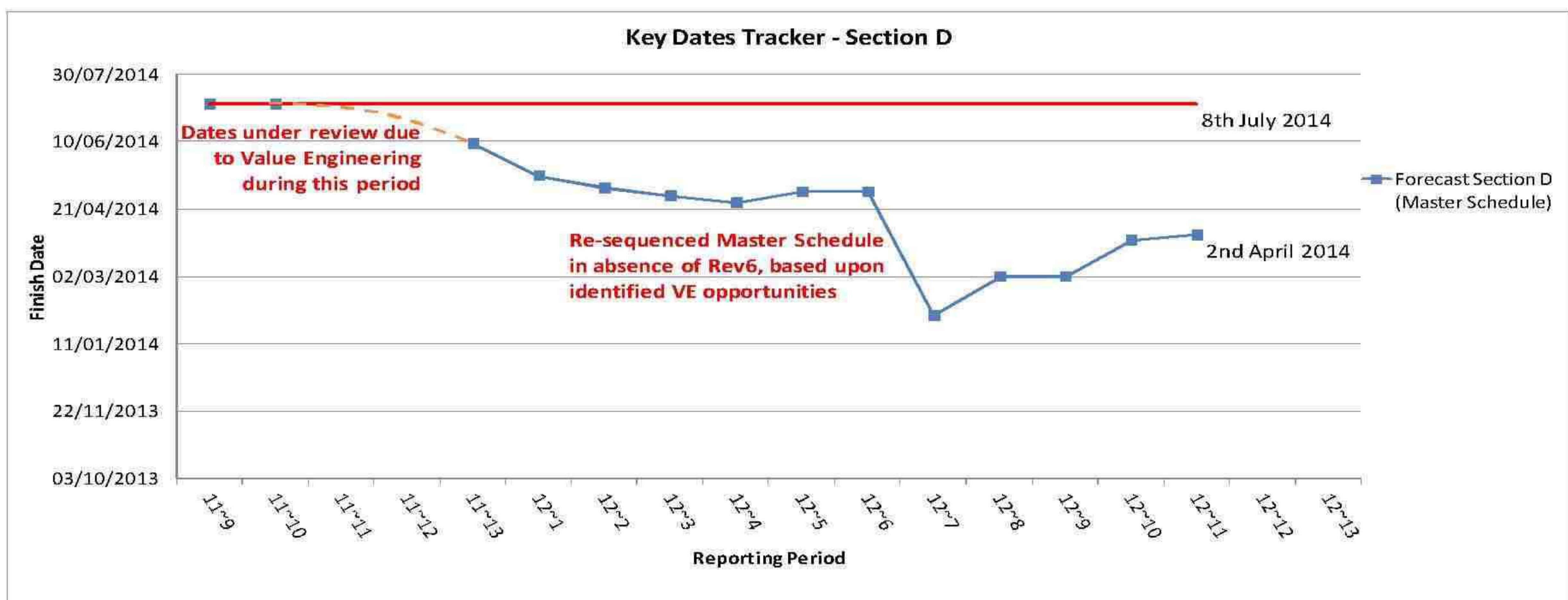


Note: All charts exclude the impact of risk & opportunity

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



Section D; Open for Revenue



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3.2 Progress this Period

Works along the tram line in York Place continue to see good progress, with minimal loss of time being encountered. Completion of Cathedral Lane sub-station is forecast to be the final works in this section. However there have been plant and piling rig problems along with possible concrete quality issues with the building works. This has resulted in only 6days productivity in the Period to the 2nd of February 2013. Infraco continues to report that the sub-station will be wind and weather tight for handover to Siemens on the 2nd of April 2013 and substantial site progress has been witnessed in the subsequent Period to 2nd of March 2013. Turner and Townsend are seeking further clarification from Infraco as to how this date relates to the scope and duration required to complete the remaining building works and subsequent E&M fit-out.

Steady progress at Shandwick Place continues to be made and has resulted in this section dropping from the top four key float paths driving the project completion. To illustrate this, in the Period to the 2nd of March 2013, Infraco have commenced the final tracklaying at Palmerston Junction. Along the Murrayfield corridor; subsection 12, Roseburn Junction to Murrayfield tramstop (RbJn-MUS) is now co-placed; with subsection 11, Murrayfield tramstop to Balgreen tramstop (MUS-BAL) as two of the top four key float paths for the project. Through the RbJn-MUS subsection the schedule shows trackworks progress which indicates current available float of 5 days. This assumes the NWR retaining measures at the lighting gantry can be completed with the track installation completed. This is a critical risk that is currently being mitigated. The MUS-BAL subsection works has continued to slip (another -7 days lost in Period) with the retaining wall (S21B) structure driving the trackworks completion date. This progress however remains consistent with anticipated trackwork progress which currently indicates 33 days float for the tamping operation.

At Edinburgh Gateway, the progress of works for the retaining structure and embankment drainage has been steady this Period. Infraco continue to show an alignment of their forecast Rev5 dates with the forecast Master Schedule, as their current commencement date for track laying is now only 12days later than the Master Schedule date of the 28th March 2013. Turner & Townsend's assessment is that Gateway preparatory works for the tamper should be complete by the 10th of June 2013.

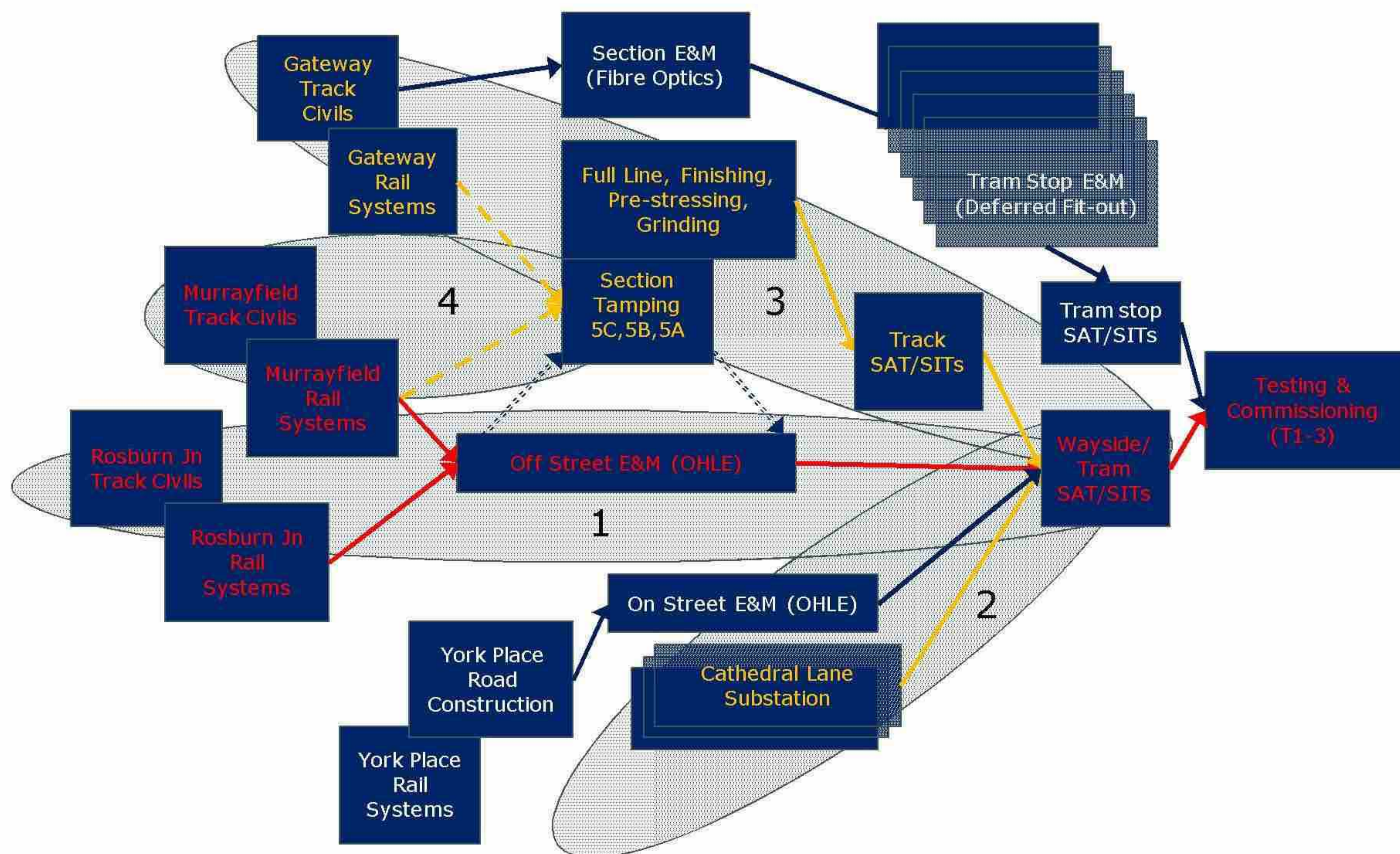
3.3 22 Week "Time Bank"

Despite a slip of 6days to the Rev5C Section D completion date this Period, the 22 week drawdown remains at 14 weeks. Infraco's stated position is that the drawdown should reflect the total impact of departures to the pricing assumptions on programme Rev5C. The consequence of this is that the final drawdown will never be less than the maximum figure recorded. It is the view of both Infraco and Turner & Townsend that the likelihood of any subsequent adverse delay events attributable to the client street works has reduced significantly.

3.4 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 Tuner and Townsend monitor the critical path and the next three longest paths, referred to as "Key Float Paths" through the schedule.

Logic Diagram of the Master Schedule Critical and Key Float Paths



The current Critical Path is:

- 1. Off-Street** Section 5A "Murrayfield Corridor" / E&M (OHLE) / SAT and SITs

The Key Float Paths are:

- 2. On-Street** Section 1C Cathedral Lane Substation / SAT and SITs
- 3. Off-Street** Section 5C Gateway / Tamper / SAT and SITs
- 4. Off-Street** Section 5A "Murrayfield Corridor" / Tamper / SAT and SITs

These float paths are continuously updated and reassessed.

3.5 Client Target Programme

Turner & Townsend continues to support CEC with regards to maximising any programme savings on the project. The agreed methodology for this is using the client target programme process flow set out in last month's report.

Two Planning Forum meetings took place in the Period and a Clearing House meeting has been arranged between Turner & Townsend and CEC for the 12th of March 2013. Following that meeting Turner & Townsend and CEC will be in a position to assess the outputs and the next Period report will provide an update on how matters have progressed.

As reported previously, to achieve a properly coordinated Master Schedule to complete the project, Turner & Townsend will require input from others in relation to the testing and commissioning and operational readiness programme.

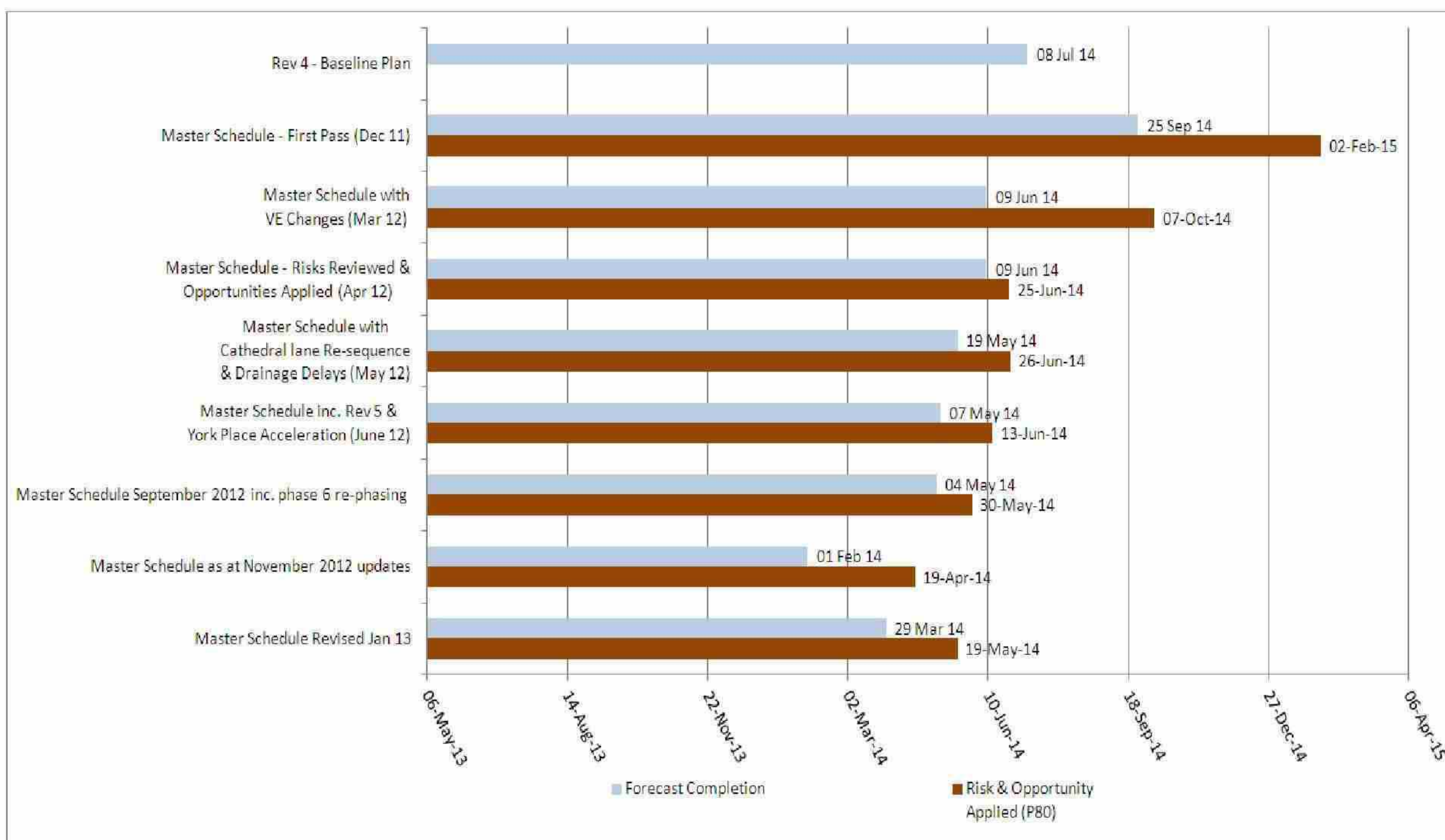
4 Risk

4.1 QSRA Tracker

The QSRA is run every quarter or when there are any new significant changes to programme or delivery strategy occurs. The risk profile used in the QSRA is made up of schedule related risks which form part of the attached Master risk register.

The chart below shows the forecast dates (before risks and opportunities are included) and the 'impacted' dates for all QSRA's:

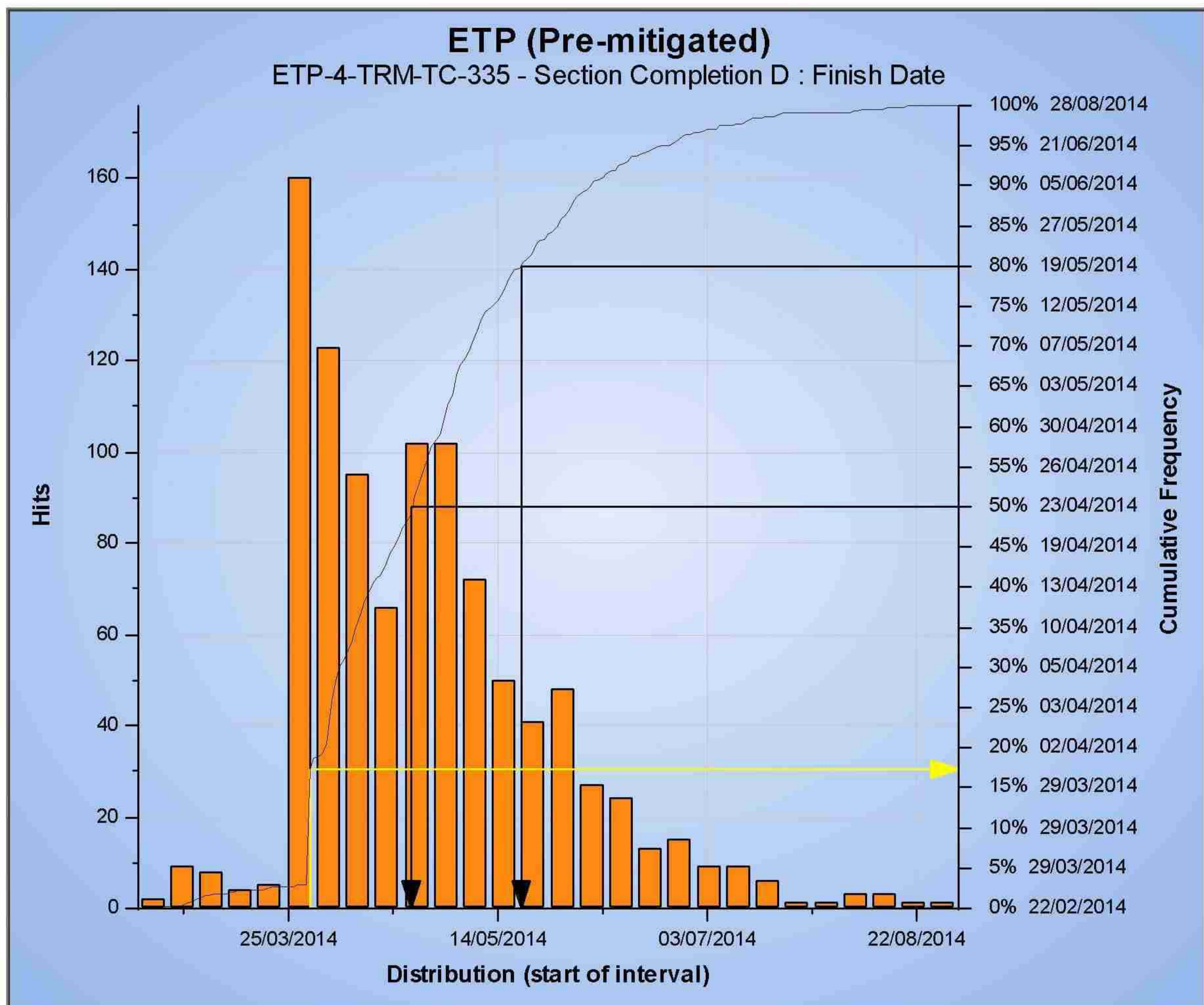
QSRA Trend Analysis



4.1.1 Risk Likelihood (P80)

The latest QSRA was carried out on the most up to date schedule as at the 21st of January 2013. This was analysed with the current Risk and Opportunity profile to calculate the milestone date as shown below. Based on the results of the QSRA carried out on the Master Schedule, the analysis predicts a **P80 Section D completion date of the 19th of May 2014** against the current risk and opportunity profile and there is approximately a 18% probability that the current schedule completion date of the 29th of March 2014 will be achieved as shown in the distribution graph below.

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P80 represents an 80% likelihood of completing the milestone on that date, based on the current schedule and risk profile. It is usual practice to utilise the P80 date as a standard on a project of this size, nature and public profile.

4.1.2 QSRA Iterations

These iterations of the Quantitative Schedule Risk Analysis have been carried out since September 2011, details and progress made are summarised below:

QRA Iteration	What is included
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
Master Schedule – including Rev5 and York Place 'Radical Programme' changes	Further updated programme Rev 5 changes to Off-Street section Early start of utility diversion works at York Place Risk Review
Master Schedule as at September 2012 including phase 6 re-phasing	As above plus progress to date and the re-phasing of section 6 to follow phase 2 instead of 5. This is assumed to be achievable
Master Schedule as at November 2012 updates	As above plus: Works at York Place; Shandwick Place; Murrayfield Corridor; Gateway; as well as for the Depot to Haymarket track finishes, pre-stressing and grinding updated in line with Turner & Townsend's estimate of the as-planned works. Risk & opportunity review in conjunction with the above changes.
Master Schedule as at January 2013	Updated programme incorporating progress up to the 5 th January

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4.2 Project Risk update

This section discusses the changes to the Master Risk Register (MRR) which contains risks against the Master Schedule. It does not discuss changes to the Collaborative Risk Register (CRR), which is maintained by Turner and Townsend in collaboration with Infracore, detailing risks against the contract programme. Changes to the CRR are reported as part of the Programme & Risk meetings which are held every 4 weeks.

Each Period the MRR is reviewed and risks are assessed on an ongoing basis, with a general trend of reduction of risks as the team continues to mitigate against the potential impact.

Discussions took place with CEC during the Period regarding the timing of the closure of risks and how this will affect the value of risk being carried by the project. Turner & Townsend provided a draft note which demonstrated when key risks will start to reduce relative to the construction programme. Following this work it has been agreed with CEC that three gateway reviews will be carried out in April, June and August 2013 to assess the value of risks against programmed activities.

Following this Period's regular review, there is one risk movement, one risk closure and one new risk to be reported.

4.2.1 Risk Movements

Risk	Change
H&S breaches, incidents and stoppages	Probability reduced as so far there has been nothing to suggest that this risk will occur therefore 10% probability seen as more appropriate

4.2.2 Risk Closures

Risk	Reason for Closure
CAF fail to deliver on trams due to financial reasons and potential insolvency	All trams delivered

4.2.3 New Risks

Risk	Cause
SW close out lead to prolongation of resource beyond June 13	Complexity of resolution of SW issues results in SW resource being on project past June 13

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5 Commercial

5.1 Commercial Summary

5.1.1 Cost summary

	£M	Comment
Contract Sum	479.66	
Committed Costs		
approved change	28.11	Includes £4.31m from £6.45m 22 week cost engineering change and £1.88m from £4.5m for Rev 3A to Rev 4 programme change (these figures relate to amounts claimed by B&S through the application process and instructed by CEC)
changes in progress	4.05	Includes balances of £2.15m for 22 week cost engineering change and £2.66m for Rev 3A to Rev 4 programme change (these figures are the outstanding agreed amounts included in the change issued)
anticipated changes	1.78	Changes required to complete, subject to approval
contributions	-8.06	Third party contributions received and anticipated
Total Committed	505.54	Budget £500.15m
Risk		
risk estimate	[2.66]	QCRA: CEC/T&T risk meeting 4 March 2013. Note: payment of ex contract claims to Infraco is excluded as confirmed by CEC. Subject to review prior to Final Report Issue 13th March 2013.
Risk adjusted forecast	508.20	Budget £500.15m
Opportunities		
utilities diversions	0.00	Ongoing monitoring of utility expenditure but no further opportunity identified at present.
rev 3A to rev4	0.00	Infraco have submitted a milestone schedule for full value of this change and are currently being paid against this schedule in accordance with instructions from CEC.
early programme completion	0.00	No agreement in place with Infraco to realise saving. This work covered by MoU (CEC/Infraco).
Total Opportunities	0.00	
Total Forecast	508.20	Budget £500.15m
Excluded risks		
Opportunities, rev 3A to Rev4	0.00	Refer comments in Opportunities section above
disruption	Excl	Ex contract disruption claims for On-Street Sub-Contractors and CAF programme changes have been excluded as we believe there is no clear basis for entitlement
Total	0.00	
Forecast +Exclusions	508.20	
	505.54	Adjustment if remaining milestones associated with Rev3A to Rev 4 programme change are not paid. CEC to confirm further instruction regarding certification.

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The forecast committed costs exceed the budget by £5,377k, principally as a result of the instructions regarding the 22 week time buffer resulting from removal of traffic management constraints and programme embargoes and the scope of utilities diversions.

Opportunities are being sought to realise savings through de-scoping work, value engineering and changes to the execution of the work. A cost engineering workshop was held on 30 January 2013.

5.1.2 Movement from previous period

The overall forecast has **decreased** by £545k in the period. The principal movements are identified below.

The Infraco contract forecast has **increased** by £491k from the previous forecast. Significant changes include:

- The requirement to carry out deeper road reconstruction and over a larger area in York Place has **increased** the forecast by £120k
- The inclusion of allowances for retaining structures along the rail corridor has **increased** the forecast by £502k; this is based on an estimate received from Infraco in the sum of £326k for the works already completed and an estimate prepared by Turner & Townsend for possible future works. The liability for this sum is still under review however and there is the possibility that either Network Rail or Infraco will contribute to this amount. This is reflected in the contribution allowance noted below.
- The inclusion if a contribution from Network Rail for work carried out along the rail corridor has **reduced** the forecast by £250k. An initial meeting to review this item is planned with Network Rail on 6 March 2013.
- The allowance for On Street works items (excluding road reconstruction noted above) has **increased** the forecast by £90k this is the result of a number of issues, the largest being a £32k increase to the forecast for new kerbs in lieu of existing (tNC 687) which has been required in both St Andrew Square and York Place.

The forecast for the York Place direct works contract has **increased** by £50k. This is the result of difficulties encountered in York Place, principally associated with the Broughton Street manhole which has delayed Crummock's completion in this area.

The forecast for utilities has **decreased** by £203k from the previous forecast. Significant movements are described below:

- The addition of the requirement for CCTV surveys to Murrayfield Sewer has **increased** the forecast by £15k
- The addition of non tram related works at Hope Street has **increased** the forecast by £23k
- The forecast for Leith Walk work has **reduced** by £427k

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The risk allowance has **decreased** by £882k. This is the result of the latest QCRA which models all cost and schedule risks to project completion. A summary of the movements is noted in the risk section of this report.

5.1.3 Commercial issues

Rev 3A to Rev 4

A detailed description of the background to the cost impacts of the Rev3A to Rev 4 programme change was included in Progress Report 12. CEC confirmed the requirement to issue a change order for £4,541k and reference is made to the Certifier's opinion which requires that only costs incurred will be payable. £1,881k has been certified to date, as instructed by CEC, although Turner & Townsend have advised that Infracore have not provided sufficient information to demonstrate costs were incurred. Infracore have advised that they will not provide any further information to support this amount.

Prelims / Overhead Mark ups on change

Infracore have applied prelims and overhead and profit to OLE bases, section 1D drainage and Shandwick Place road reconstruction. This overlaps with the indirect costs/prelims included in the contract price. As the matter could not be resolved it was submitted to the escalation process and in this instance, CEC have confirmed that payment should be made. This was agreed *without prejudice* to future changes related to this issue, Turner & Townsend will seek to agree matters with Infracore and advise CEC accordingly.

Turner & Townsend have requested guidance from CEC on the same issue for Cathedral Lane substation. The estimate submitted by Infracore follows the same principles for calculating mark-up (i.e. prelim recovery is claimed on the full value of the work despite the contract already making some allowance for this scope). We have met Infracore to discuss this item and they have confirmed that they will not change their position. The Independent Certifier has confirmed that he will issue guidance in relation to this item.

On Street Works Estimates

The cost report includes provisions for a total of £2.2m additions to the contract sum submitted through the On Street Works Estimates in accordance with Schedule Part 45 of the contract. This captures all changes, delays and disruptions associated with on street work. As B&S do not provide any up front estimates for changes covered by this contract clause, there remains a significant level of uncertainty with the remaining provisions included in this section of the cost report due to the level of change encountered or instructed in the on street section. With the exception of the track alignment and tram stops, all other elements of the on street civils works have changed from the base design information.

Claims

Schedule 45 governs changes to the On-Street Works and no costs have been submitted for disruption associated with the execution of the On Street Works. The intent of the contract is for any legitimate costs to be submitted within the period applications rather than a retrospective claim for additional costs.

Off Street Utilities

Infracore have stated that their contract price does not contain any risk allowance for Off-Street Utilities. Turner & Townsend have advised that there is a lack of visibility regarding

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risk pricing by Infraco and therefore a negotiated settlement could be sought on items (specifically the SGN diversion at Ingliston) where liability is contested. The Independent Certifier has issued notes of the meeting and re-issued the Opinion paper. It is understood that Infraco do not agree with this paper. This matter requires clarification and resolution.

Immunisation

The Infraco contract includes an allowance of £3m for carrying out immunisation studies and associated work with a pain gain mechanism for costs above or below the target. £450k has been drawn down through milestones to date and we have been advised that a further £850k may be required to complete. However, there remains a risk that final testing will necessitate further works which would reduce or eliminate this saving. The current cost report includes an opportunity within the risk allowance for savings against this budget item. Meetings are ongoing with Network rail to confirm approvals, mitigations and testing arrangements. The risk allowance will be updated as this opportunity is realised or expended.

Scottish Water

Scottish Water have recently issued a forecast for their resources which is significantly higher than the reported forecast, both in cost of work done and final forecast. This is in part a result of Scottish Water maintaining their full team throughout the project. Our forecast is based on the following assumptions:

- A reduced resource profile from that proposed by Scottish Water with no resource requirement beyond June 2013 as discussed CEC/SW 30 January 2013.
- A Statutory Utility Company contribution, in accordance with the provisions of the New Roads and Street Works Act, will be payable by Scottish Water on costs incurred modifying its asset during the project. Scottish Water has been asked to confirm this is applicable.
- A contribution will be payable for requested works by Scottish Water.

While we have not included anything in our forecast, we also intend to seek a contribution from Scottish Water for work carried out on Grosvenor Street sewer. While an independent report on the reason for the collapse of this sewer was inconclusive, it indicated that on the balance of probabilities, it was caused by an underlying fault in the asset and was not a result of tram activities. Scottish Water is likely to dispute this interpretation.

Tramco

Tramco have submitted a letter which identifies prolongation costs which would result from the difference between their contract programme and the Rev 5 programme. The periods involved and costs are significant however there is not a significant gap between the contract programme and the forecast dates in the master schedule. There is an anomaly in the contract which identifies a qualifying compensation event resulting from failure to meet and end September 2013 passenger service date. This contradicts the contract programme which shows final activities in December 2013. At present, we consider that the dates in the contract programme can still be achieved and as a consequence have made no provision for costs associated with this claim in the forecast. Tramco have intimated that there will be no claim if testing is completed by December 2013. They have been asked to confirm this in writing.

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Contributions

The forecast includes allowances for a number of contributions from Third Parties. Some of these contributions are not yet secured and are being negotiated by CEC. Specific items which fall into this category are:

- Transport Scotland for Edinburgh Gateway (£4,356k) (£944k paid to date);
- Henderson Global for the Cathedral Lane substation (£470k in current forecast although additional recovery to be sought for design fees and the revised scope of work);
- CEC for public realm costs in St Andrew Square (£1,158k including Scoutmoor paving);
- Network Rail for Scottish Power cable diversion (£22k);
- Network Rail for work along the railway corridor (£250k);
- Transport Scotland for the Tram Integration Manager (£300k).

5.2 Committed Costs

5.2.1 Approved Change

Approved change is items that have been instructed and a commitment value agreed. The total value of approved change to date is £28,106k. This is an increase from the previous period of £3,321k.

Infraco

The total value of approved changes in the Infraco contract is £10,712k. This is an increase of £923k from the previous period. Significant changes are as follows:

Description	Change Amount (£k)
tNC 539: Rev3a to Rev 4 Programme Change	£242
tNC 717: 22 week cost engineering change (previously partly reported in change in progress)	£269
tNC 713: Haymarket corridor – construction works outside the LOD	£117
tNC 714: Additional Earthing & Bonding to demarcation fencing along Network Rail corridor	£100
Independent Certifiers Schedule Part 45 Period End Change Order to 5/1/2013	£152

* Increases from previously approved value

Utilities

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The total value of approved changes in the Utilities budget section is £16,049k. This is an increase of £2,073 from the previous period which reflects drawdown paper 005 (£1,600k) and sign off of Leith Walk budget (£473k).

Tramco

The total value of approved changes in the Tramco budget section is £5k. This is unchanged from the previous period.

5.2.2 Changes in Progress

Changes in progress are known changes that have not yet been incorporated into the contract sum, either because we are awaiting a price from Infraco or the value has not yet been agreed. The total value of change in progress is £4,047k, a reduction of £618k from last period.

Infraco

Change in progress associated with the Infraco contract is £4,012k. This is a decrease of £618k from last period. Significant changes include:

- Miscellaneous Clause 80 tNCs transferred to Approved section: £-675k
- On Street works tNCs £60k

Refer to the cost report for a complete list of change in progress.

5.2.3 Anticipated Change

Anticipated change are variations to the contract that are known about but no change has been raised at this time, either because the scope has not yet properly been defined or the change has not taken place yet. Anticipated change amounts to £1,778k, a reduction of £2,237k during the period. The following describes the main items of change during the period.

Infraco

Anticipated change has increased by £503k which includes:

- Provision for additional retaining walls at Network Rail boundary: £327k
- Provision for additional retaining measures at Network Rail OLE Stanchions : £175k

Both of these issues have emerged despite having a design without retaining walls reviewed and approved by Network Rail. These issues form part of a cost incurred along the Railway corridor that the project is seeking partial recovery from Network Rail for. The recovery is shown in the forecast contribution section of the cost report.

Utility Works – York Place to Haymarket

Anticipated change has reduced by £1,565k which includes:

- Transfer of £1600k into approved section for drawdown number 005.

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- Addition of non tram related works at Hope Street: £23k
- Requirement to carry out CCTV survey to Murrayfield sewer: £15k

Utility Works – Leith Walk

Anticipated change has reduced by £900k which includes:

- Reduction in forecast for Leith Walk works: £-437k
- Transfer of costs into approved section of cost report £-473k

Tramco

Anticipated changes are unchanged during the period.

5.2.4 Contributions

The forecast amount of contributions has increased by £129k in the period. as described below:

- Contribution towards non tram work at Hope Street Junction: £23k
- Additional contribution towards RBS tramstop: £5k
- Contribution towards traffic management costs incurred at York Place and during Christmas 2012 shutdown: £14k
- Contribution towards crossing points at Shandwick Place: £25k
- Forecast contribution from Network Rail for additional retaining measures resulting from changes to accepted Form B designs: £250k
- Removal of allowance for insurance contribution towards cost of remedial work on Grosvenor Street Sewer: £-188k

5.3 Risk and Contingency

Quantified Cost Risk Analysis (QCRA)

Following the most recent risk review, the risk allowance included in the forecast amounts to £2,663, a decrease of £882k from the previous period. This is based on the outputs of the QRA which follows a review of all project risks. The main reasons for the reduction in risk allowance are noted below:

Opportunity ED027o added. This item reflects the opportunity of recovering savings from the immunisation budget and amounts to a **reduction** to the risk total of £498k. A full review of this saving is planned based on a detailed assessment of all risks associated with this work.

ED008 (*Disputed interpretation of contract and valuation of estimates submitted for potential changes*) has been **reduced** by £261k as the risk associated with the additional retaining measures at the ScotRail depot (W3A retaining wall) has been moved into the anticipated change section of the cost report.

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ED123 (Scottish Water scope) has **reduced** by £137k. This has been reduced as certainty around the project completion date improves. There is also a risk allowance associated with Scottish water in the uncertainty totals.

It should be noted that the risk allowance does not make provision for any ex-contract claims which may be issued and or accepted by CEC such as loss of productivity.

The risk includes £213k associated with Legacy Scottish Water settlement in addition to the budget of £750k. This is as agreed with CEC.

5.4 Opportunities

The total value of opportunities in the current forecast is £14,057k. Most of these opportunities are secured. However, there remains a risk to certain items included within this total, identified below:

- Item 03 – St Andrew Square Public Realm: This opportunity is for a non tram budget in CEC to contribute towards the cost of setts and Scoutmoor paving in St Andrew Square. We are still in negotiation with Bilfinger Berger over the rate for the revised specification of setts which may affect the total value for this item although it is assumed that any additional / reduced cost will be part of the contribution and therefore have no overall effect on the tram forecast
- Item 14 – Road Reconstruction depth: The impact of utilities diversions have reduced the area of road which can be preserved however this is compensated by savings in pavements and footways. During the period we have reconciled savings associated with this item, St Andrew Square de-scope and Track box excavation resulting in a net increase in the overall saving although a reduction associated with this item.

A meeting was held on 30 January 2013 to consider further opportunities for savings. These opportunities are currently being investigated and any additional savings will be incorporated into later reports.

Programme Opportunities

Progress report Nr 13 provided details on relationship between the Rev 3A Rev 4 cost movements (also refer above) and prelims costs associated with the difference between an estimated completion dates (based upon relaxation of resource constraints and extrapolation of current progress) with the Rev 4 completion date.

Infraco's position is that they are entitled to contract prelims, plus the £4.5m to Rev3A to Rev 4 movement. Subject to performance and actual completion in advance of Rev 4 dates there may be an opportunity to save part of the £2.5m for the programme movement at the end of the project. This is also depending upon Infraco changing their commercial position. It should be noted that Infraco have submitted a milestone schedule for these amounts which indicate that the full amount should be paid by December 2013. This issue is not resolved at this time.

5.5 Exclusions

The following items are excluded from the Cost Report

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- Repairs to pavements and footways
- Further design changes beyond those included in the cost report (note: production of as built drawings from the MUDFA contract and collation of as built information from current utilities diversions is a significant exercise. Also design costs are beyond the norm since SDS Management Fee at 25.65% and Infraco mark up at 34.9% is applied).
- Claims for disruption from the sub-contractors on the On-Street section as entitlement exists for PAVs.
- Scottish Water manholes at Princes Street Gardens and Jenners.
- Leith Walk Utilities Diversion – CEC has confirmed that the budget for defined scope should be £0.9m (based upon the tender and a general contingency allowance). The intention is to value engineer out the undefined scope e.g. gas water pipe separation and to restrict the work done. Should, for technical reasons this approach not be feasible then additional funding would be required.
- Any provisions for carrying out manual switching at the depot substation beyond April 2013.
- Scottish Water supervision costs beyond June 2013. Further supervision will be dependent on agreement with CEC and on the source of funding.

5.6 Payments and Cashflow

A summary of the certified amounts are provided below.

	Certified £k	Planned £k	Comment
Infraco	370,045	370,000	Planned – based upon current forecast
Utilities	15,761	15,600	McNicholas plus SUC costs
Trams	62,026	62,026	Payments generally in accordance with milestone schedule. Incomplete milestones are not included in certified amounts.

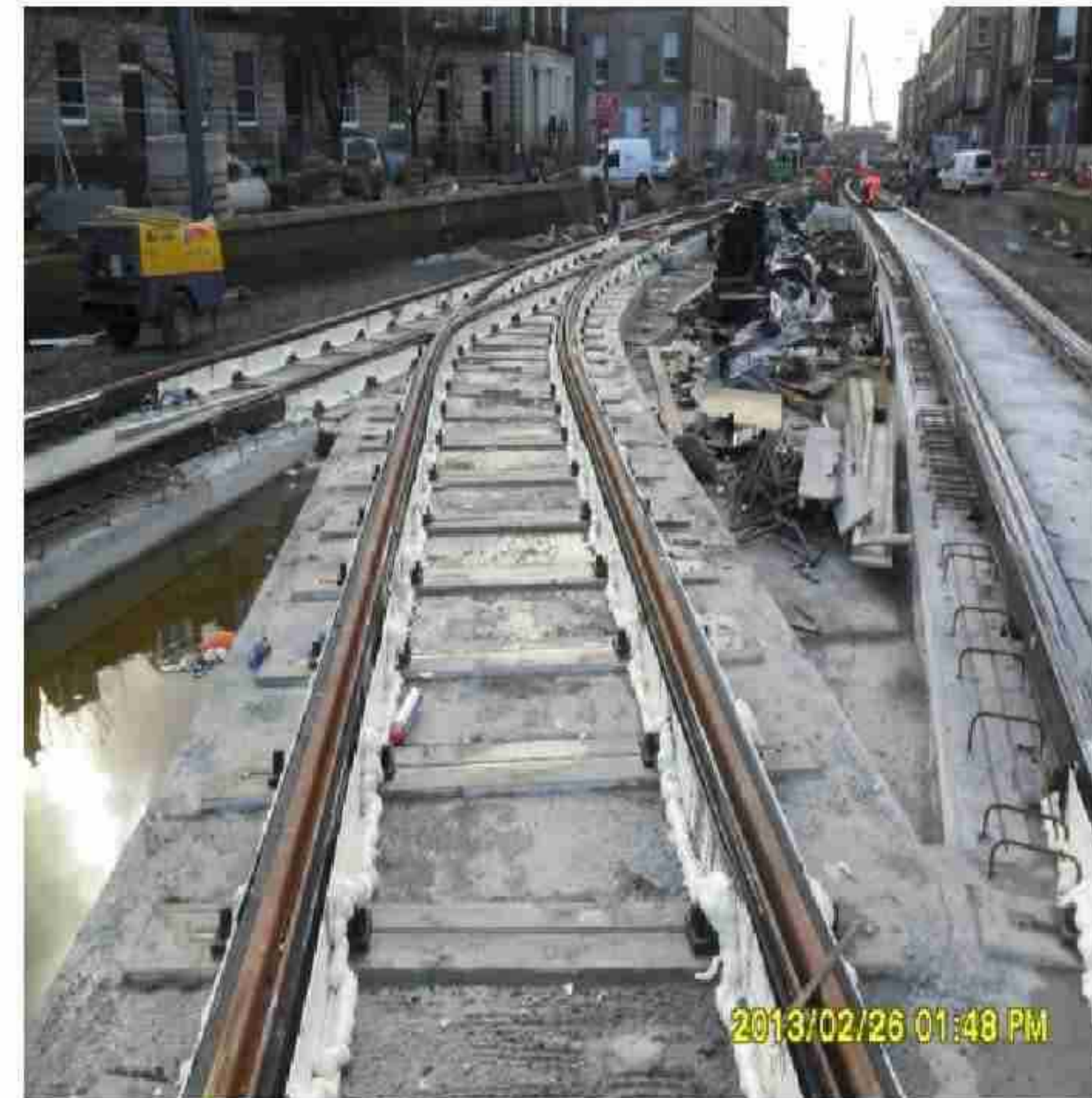
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6 On Street – Utility and Tram Infrastructure Works

6.1 Progress in Period

6.1.1 York Place/Cathedral Lane Substation

Works in York Place and at Cathedral Lane substation remain on the critical path for On Street completion. Progress in the Period has been good and the civil works completion date of June 2013 remains on target. CEC/Crummock and CEC/McNicholas works are substantially complete at Broughton Street and demobilisation will be completed in the next Period. Infracore have completed the track improvement slab with 50% rail installed and 45% track fully installed including 2nd stage concrete.



Turn into York Place From St Andrew Street North

Cathedral Lane substation is currently critical to the completion of the On Street section. Infracore have commenced the superstructure works and are on programme to ensure that the building will be weather tight for handover to Siemens at the beginning of April 2013. The programme however makes no allowance for risk and is being monitored on a weekly basis in conjunction with Infracore.



Cathedral Lane

6.1.2 St Andrews Square

The St Andrew Square civil works completion date is on target for the 28th of March 2013. CEC/McNicholas have handed back the last significant area to Infracore at the south side of the square for completion of the road carriageway works.



St Andrews St

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6.1.3 Princes Street

Infraco Princes Street snagging and Scottish Water snagging works were completed in the Period. Defect liability discussions were concluded with Infraco in the Period and allocations agreed between CEC, McNicholas and Infraco. A programme of defect rectification works is being agreed with the contractors and will be carried out to minimise disruption. Works will be programmed in the evenings or at weekends and wherever possible to suit Siemens traffic management for systems installation.

6.1.4 Shandwick Place

Shandwick Place is progressing well and street service works have commenced in the Period at Lothian Road in conjunction with Infraco works. The target date for completion of the road works from the Crescents to Lothian Road is the end of April 2013.



Shandwick Place

Between the Crescents Infraco have substantially completed track laying and progress on the Tramstop area is nearing completion. In the Period CEC have requested that Turner and Townsend only carry out minimal works to the wall and footway ahead of completion of the final landscaping works.

6.1.5 Haymarket

Works between Haymarket and the Crescents have progressed well in the Period and Infraco have completed the track improvement slab at the Palmerston Junction. Infraco have completed trackwork out-with this area and road carriageway construction is currently 80% complete.



Haymarket

6.2 Key Issues

The Scottish Water interface continues to demand close attention, however the criticality of the issues, from an Infraco delay perspective, are becoming less significant. The majority of the remaining issues relate to legacy Scottish Water utility works. Turner and Townsend are providing a close out report to identify the most appropriate mechanism for dealing with the outstanding issues. It should be noted that there remains a significant commercial gap between the parties.

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The scaffolding at the National Portrait Gallery is required to be removed by the 15th April 2013 at the latest to ensure access is available to McNicholas and Infraco to complete the final street service works and road carriageway works respectively. Negotiations are progressing to ensure this critical interface date will be safeguarded.

There are a number of final road carriageway and footway design issues to be resolved at Dublin Street steps, North Clyde Street Lane and Shandwick place to ensure progress is maintained. Infraco have confirmed that platform alignment remedial measures are required at the Princes Street and Haymarket Tramstops. These will be dealt with by Infraco during the next phase of Siemens works with the Haymarket remedial works due to commence on the 13th of March 2013.

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7 Off Street Works

7.1 Progress in Period: Critical Areas

7.1.1 Section B Completion

Section B was handed over by Infraco on the 8th of March 2013. The assurance process put in place at the beginning of 2013 worked well and provided a good opportunity for all parties to “dry run” the process ahead of Section C completion. This involved Turner & Townsend, Infraco and Edinburgh Trams working very closely together.

Although the completion date was met there remain a number of documents outstanding which is driven in part by the inevitable teething issues experienced when rolling out a new process and in part by necessity given the fact that Infraco only handed over a relatively small section of the line. Despite this the safety verification process proved sufficiently robust to allow timely handover and a plan is in place for dealing with any residual issues.

7.1.2 Network Rail Interface

Two key design issues remain to be fully accepted by Network Rail. These relate to the retaining measures adjacent to a Network Rail lighting gantry at the ScotRail depot and final fencing details to ensure AC/DC separation between the two rail systems. In the Period Network Rail have accepted the fencing details and principle of the retaining measures proposed by Infraco. The key outstanding element is agreeing the temporary works to install the retaining wall measures without impacting on the programme critical track installation programme. This will be agreed in detail in the next Period however there remains a risk to the programme.

The commercial discussion on these issues with Infraco have continued in the Period and agreement on shared liability has been agreed on the fencing proposals. The retaining measures involve construction of various elements of infrastructure through the ScotRail Depot corridor and Turner and Townsend are awaiting clarification from Infraco on the verification of the initial survey data which led to the discrepancy. Agreement has been reached with Infraco to continue with the works while the commercial liability is established.

Issues between CEC and Network Rail were captured in a close out report provided by Turner & Townsend and a meeting was convened by CEC to agree close out plan with Network Rail. Turner & Townsend recorded the actions from this meeting and will manage the issues tracker owned by Network Rail, CEC and Turner & Townsend; this will be revised and managed on a weekly basis.

7.1.3 Edinburgh Gateway;

The construction of the kingpost wall anchor system and OHLE piling works have been completed in the Period. The earthworks and drainage are ongoing and preparation for the track formation works has commenced in the Period. Track laying is expected to commence in the next Period and all works are



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progressing well ahead of the tender commencing works in early July 2013. Final agreement is required with TS and SW regarding the extent of the sewer decommissioning works required to be undertaken by the Tram Project ahead of the final sewer diversionary works to be completed as part of the Edinburgh Gateway project.

7.2 Progress Update: General

7.2.1 Haymarket to Balgreen

Haymarket Tramstop was handed over to CEC in the Period although there are some defects with the street lighting that Infracore is seeking to remedy. Murrayfield Tramstop works are progressing well and the fan steps will be completed and snagged in the period, and the furniture installed. The preparation for track installation between Murrayfield and Balgreen progressed well in the Period. The Murrayfield pitches RTW were completed in the Period and trackworks are on programme to allow commencement of tracklaying on the 15th of March 2013. In addition McNicholas completed the handover of the Murrayfield sewer diversion to Scottish Water in the Period.

7.2.2 Balgreen to Edinburgh Park

Tracklaying is substantially complete from Balgreen Tramstop to Gyle Tramstop and Siemens have commenced cable installation from the Bankhead substation towards the Depot Substation. Cabling works will commence in the next Period from the Bankhead substation towards the Haymarket.

7.3 Other Key Issues

As previously reported cracking has been found on Section 7 track slabs. These will be monitored by Infracore following Section B handover in accordance with the requirements of the Infrastructure Contract.

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8 Trams

8.1 Trams Progress in Period

CAF have now completed all tram testing required for Section B, following the completion of the Routine Tests, Ride Quality tests and Electromagnetic Compatibility (EMC) testing.



There were issues identified with the alignment of 'cab E' on tram #272 during the Dynamic Gauging and Contact Tests carried out during the Period; whereby platform stepping distance measurements were found to be consistently low on the outbound track and high on the inbound track. CAF have subsequently identified the cause of the cab misalignment, with rectification scheduled to take place in the coming Period.

The T1 (Post Commissioning) System Acceptance Test was also completed for Section B this Period, with the runtimes defined in the test specification being successfully met as required. Turner & Townsend are seeking confirmation from Siemens that the runtimes used in this test have been agreed by all parties, as requested in the Employer's Requirements.

The completion of integration testing and the increasing use of the trams for driver training has led to an increase in the number of defects being identified during tram operation. Weekly technical meetings are now being held with members of the CAF project and maintenance teams, Edinburgh Trams engineering and operations teams and Turner & Townsend, to review the defects reported and identify any systemic or endemic failures as they arise. Any issues identified will be dealt with in accordance with the Engineering Change process developed by Turner & Townsend and accepted by CAF and Edinburgh Trams.

It is Edinburgh Tram's intention to further increase the use of specific vested trams following the handover of Section B, to further improve driver experience and to better understand the operation and reliability of the trams. It is anticipated that this will further increase the number of defects reported, which will benefit the project through the improvement of tram reliability prior to passenger service.

8.2 Vesting of Trams with CEC

Turner & Townsend have issued a letter to CAF (INF CORR 8951) instructing that the title and legal ownership of the four trams which have completed Routine Testing as part of Section B Completion; 267, 271, 272 and 275, be transferred immediately to CEC.

Following several discussions between Turner & Townsend, CAF and CEC, CAF have submitted a letter (CAF_ETN_0723) citing their acceptance of an offer made by CEC to vest the four trams, based on a number of conditions regarding the transfer of the Owner Controlled Insurance Programme (OCIP) insurance risk.

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Turner & Townsend will issue a letter to CAF confirming the agreement on when future trams are to be vested and how OCIP insurance risk is to be managed for all vested trams, as soon as discussions have been finalised with all parties.

Turner & Townsend are currently discussing contractual requirements for the award of Certificates of Tram Commissioning with the Tram Inspector and CAF and in particular, the assurance required by the Tram Inspector that the trams have been built to the Employer's Requirements. The Tram Inspector has identified a number of specific requirements where compliance assurance is sought through the Requirements Verification process. The evidence provided by CAF to validate that these requirements have been met is now being reviewed by the Tram Inspector, with further discussions scheduled to take place in the coming Period.

8.3 Fare Collection System

Parkeon are reporting that the project is currently on schedule, as far as the development of specifications and the initial manufacturing of equipment is concerned; with all requirements for the next milestone payment (Authority Specific Design Documentation acceptance) having been completed.

Turner & Townsend have issued a change notice for the purchase of additional Ticket Vending Machines and Platform Validators for Edinburgh Gateway platform, following instruction from CEC. A purchase order has now been placed for this equipment, which will be manufactured with the existing batch and delivered when Edinburgh Gateway becomes available for fit-out.

Parkeon have produced drawings showing the arrangement of the brackets to be used to locate Platform Validators onto the CCTV poles on city centre tramstops. Confirmation was sought on the suitability of the poles from the manufacturer, due to the need to drill mounting holes in the pole. The suitability was confirmed by the manufacturer, however Turner & Townsend have requested that the designer review the design, to ensure they are satisfied that the poles are indeed suitable for this purpose.

8.4 Key Issues

Turner & Townsend are still awaiting confirmation on whether the CAF letter detailing potential additional project costs related to the difference in the project completion date between the Rev 2 and Rev 5 project programmes is to be withdrawn. Discussions are ongoing with CEC on how this issue can be formally closed.

As mentioned previously, there have been several tram technical issues identified during the operation of trams for testing and training. One such issue was the failure of the tram battery charger circuits, whereby seven trams reported the same failure mode in a very short period of time. Initial investigations by the supplier (SEPSA) indicates that the current auxiliary converter system design offers limited protection to the battery charger circuitry during periods when the supply voltage is increased beyond a known threshold.

SEPSA will carry out further investigations over the coming weeks to confirm the results of their initial investigation and propose a permanent solution to the problem. In the mean time, CAF are continuing to monitor the ongoing performance of the remainder of the fleet.

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The water ingress into the depot building maintenance pits and Wheel Lathe remains to be resolved by Infraco. Immediate rectification action is now required as CAF have raised this as a safety concern and confirmed that it is affecting the efficiency of their operation. This action lies with CEC.

CAF have submitted a number of Sub-Contractor Direct Agreements which they have developed with their suppliers, as required by the Tram Supply Agreement; however some of the wording has deviated from that in the relevant Contract Schedule. These amendments are currently being reviewed by CAF, with an update expected in the coming Period.

CAF have written to Turner & Townsend stating that the date of expiry of the Tram Supply Agreement Performance Bond has been extended to 15th May 2013, in line with "agreements reached with CAF at Marhall". Turner & Townsend are currently discussing why the Performance Bond has not been extended until the final Certificate of Tram Commissioning is issued, in line with contractual requirements and whether this poses any additional risk to CEC.

8.5 Look Ahead

Section B Completion and handover took place on the 8th of March 2013. Turner & Townsend continues to work with Edinburgh Trams to ensure the implementation of a safe and operable system through the management of safety and technical assurance processes.

The following items will also be progressed during the coming Period(s):

- 1 Test and Commissioning:**
 - All Tram routine testing will be completed by CAF as soon as Section B becomes available for their use
- 2 System Acceptance and Integration:**
 - Ride Quality and dynamic EMC measurement test reports to be reviewed
 - T1 Post Commissioning Test report to be reviewed
- 3 Vesting of Trams with CEC:**
 - Agreement on how and when additional Trams can be vested with CEC to be reached with CEC, CAF and Turner & Townsend
- 4 Fare Collection:**
 - Monthly project report updated
 - Milestone payment made (Authority Specific Design Documentation accepted)
 - User Interface Specifications completed (initial draft only)
 - Manufacturing of equipment ongoing