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Edinburgh Tram Project
Full Progress Report No. 21
28th April to 25th May 2013
FINAL

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



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CONTENTS

1	Executive Summary	3
2	Health, Safety & Environment and Quality	5
3	Programme	10
4	Risk	14
5	Commercial	18
6	On Street – Utility and Tram Infrastructure Works	26
7	Off Street Works	29
8	Trams	32
9	Assurance Monitoring	36

Milestone Table

Actual Progress of Master Schedule Plan & Variation of Section Finish Dates

Appendix 1 – Health, Safety & Environment and Consents Tracker

Appendix 2 – Cost Report

Appendix 3 – Change Log

Appendix 4 – Risk Register

Appendix 5 – On Street Schematic

Appendix 6 – Organisation Chart

Appendix 7 – Route Map

Appendix 8 – Acronyms

Rev	Originator	Approved	Date
0	Shirley-Anne Collin	Rob Leech	5 th June 2013
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1 Executive Summary

1.1 Overview

This report covers progress made during the Period from the 28th April to the 25th May 2013. During the last Period there were eight incidents reported on the Edinburgh Tram Project. There were no incidents classified as serious / significant. The incidents comprised two service damages, two minor injuries, one road traffic accident and three near misses. There has been a continued focus of attention on the standard of housekeeping on the on-street worksites which is still giving cause for concern.

Based upon progress up to the 27th of April 2013 the Contract milestones for Sections C and D remain forecast earlier than the contractual dates. The Section C & D Completion dates have not moved this Period and remain forecast as the 15th of January 2014 and 15th of April 2014 respectively.

Progress with Lothian Buses in relation to the operating agreement has remained slow during the Period, particularly in relation to the corporate structuring. Good progress has been made on the legal drafting of the Operating Agreement and technical matters sufficient to provide a competent input to the report being prepared by CEC for the June 2013 Council meeting. Turner & Townsend is working with CEC in developing a submission to the Council in June that allows matters to progress in line with the client programme. An update on this matter will be provided at the Project Delivery Group meeting due to be held on Thursday 6th June 2013.

CEC/T&T and SW have recommenced senior management discussions to allow the final key issues to be resolved between the parties. This will involve a series of weekly discussions to allow the remaining residual issues to be identified and resolved at a meeting of the CEC and SW principals being arranged for the end of June 2013.

Potential DKE clashes between the tram and track alignment on the project are being reviewed. Infraco have received an initial output from the survey from SDS and will issue this to CEC/T&T for review following internal checks. Details of the initial findings and follow up actions will be covered in the next Period report

Turner and Townsend and CEC have commenced discussions with McNicholas regarding a notional final account close out strategy against a scope freeze for Scottish Water and street services delivery together with Infraco access dates. This discussion will be concluded in the next Period and will be aligned with the final account close out strategy for Infraco and their package contractors.

The issue of liability for close out of issues brought about through Road Safety Audits and the requirements of the ICP are currently being discussed with Infraco and Turner and Townsend are preparing an advice note for CEC ahead of final discussions with Infraco.

Some progress has been made with CAF in the Period although there are a number of outstanding issues to be resolved. These include issues in relation to Sub-Contractor Direct Agreements, "Fitness for Purpose" requests and non conformances highlighted in a recent Tram Maintenance service audit, including a specific concern around the timing of CAF's training plans.

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In relation to Safety Verification there were no significant issues raised by CEC in the Period. The regular meeting with the ICP raised a number of technical issues that are being worked through with Infraco and SDS. A Lessons Learned workshop was held during the Period and the actions arising will be dealt with through the regular project meetings.

The financial forecast this Period has increased by £66k, as a result of programme impacts on the final utilities diversions and new diversions at Morrison Street and Torphichen Place as the existing street services are life expired. Uncertainty remains in the works to complete, mainly: Infraco on-street works, Scottish Water, Network Rail supervision and any new items which arise in closing the final accounts with the contractors, although this uncertainty will reduce as works are completed and stakeholders such as Scottish Water and Network Rail take a reasonable position.

In order to increase certainty around the final outturn cost of the project, CEC have confirmed the objective of agreeing a "notional" final account by July 2013 and proposals are included at section 5.1.3 with the aim of providing clarity through entitlement based upon Infraco's current change register. In previous reports we have highlighted the lack of clarity regarding scope e.g. off street utilities diversions and the basis for deductions e.g. track box excavations and prelim mark ups, therefore a number of actions have been agreed with CEC to clarify the various issues in advance of meetings with Infraco and ~~ensure they can be quantified~~ assessed irrespective of the outcome of discussions with Infraco.

A process has been agreed with CEC to confirm budget allocation and management responsibility for residual risks associated with 3rd party obligations and works which will not be undertaken by Infraco.. Management responsibility for completion of each of the work items will be directed by CEC with T&T receiving instruction as and when requested.

1.2 CEC Actions & Decisions

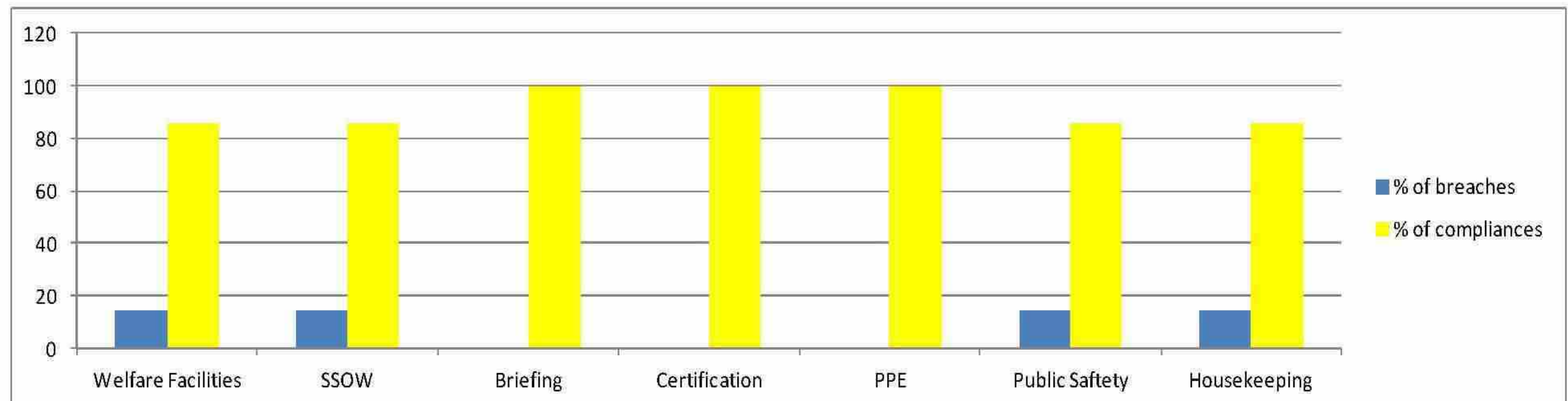
The following issues require CEC action and/or decision:

1. The wayleave agreement at the Haymarket substation is required urgently.
2. The water ingress into the depot building maintenance pits, Wheel Lathe and lifting platform pits remains to be resolved with discussions ongoing between CEC and Edinburgh Tram, Turner & Townsend have been asked to project manage the solution once agreed.

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.



Site inspections during the last Period (both joint inspections and CoCP) have continued to identify inadequate site housekeeping (debris, litter and trip hazards) and inadequate public safety provision (trip hazards and fencing issues). Similar failings have been identified at most sites but particularly Lagan and McNicholas. Whilst concerns have been raised in recent weeks, significant improvements have not been achieved. An escalation in senior management attention to these aspects of site management is proposed during the next Period.

Infraco held their monthly Occupational Health & Safety Meeting on the 28th May which was attended by Turner & Townsend. Agenda items for the meeting focused on 3 key issues that comprised:

1. The need to remain focussed and vigilant as the construction works near completion – there have been a number of incidents which have resulted in injuries occurring.
2. The need to engage with the specialist contractors who are undertaking activities.
3. CoCP issues – highlighting issues relating to housekeeping and the public.

2.2 Incident Management

2.2.1 Incident Reporting

During the last Period there were eight incidents reported on the Edinburgh Tram Project. There were no incidents classified as serious / significant. The incidents comprised two service damages, two minor injuries, one road traffic accident and three near misses.

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2.2.2 Record of Incidents

Incidents reported within this Period comprise:

Serious / significant incident

0

Non Tram Related

0

Date	Location	Detail	Contractor	Classification
10/05/13	Princes Street between South Charlotte Street and Castle Street	RTA on Princes Street inbound. Stage Coach Bus struck Rail Grinding Machine (Siemens) and continued on without stopping. No injuries, no damage to rail grinding machine, suspected damage to bus. Moving traffic management arrangements was in place by Siemens.	BBS	RTA
12/05/13	Princes Street Gardens	MOP broke into site at Princes Street Gardens Manhole works and set fire to 18t excavator – significant damage caused to machine.	McNicholas	Near miss / unsafe condition
13/05/13	Bankhead Drive	Class One operative twisted ankle whilst undertaking drilling to install pedestrian studs at crossing	Crummock	Injury
14/05/13	Balgreen Road	Theft of 2 mobile phones and 1 wallet from Welfare Unit. Police informed	Land & Build	Near miss / unsafe condition
16/05/13	Shandwick Place	Excavator touched OLE span wire. No live overhead equipment at site. No damage. Site controls being reviewed by Infraco	Lagan	Near miss / unsafe condition
16/05/13	York Place	Damage to utilities: - 1no Scottish Water sewer node. - 1 no 22mm dia Scottish Water service pipe. - 1 no 22mm dia SGN service pipe (subsequently identified as being redundant).	Crummock	Service damage
17/05/13	Shandwick Place	Site operative taken to hospital after twisting knee when he slipped on site. Infraco investigating.	Lagan	Injury
22/05/13	York Place	During excavation, McNicholas damaged shallow LV power cable that was encased in concrete. Power outage for approx one hour to one property. Scottish Power attended site and undertook repair. McNicholas investigating.	McNicholas	Service damage

2.2.3 Incident Progress

Following concerns raised by Turner & Townsend over use of 'on-track' RRVs in areas with potentially problematic gradients, Siemens have provided an undertaking that in the absence of additional acceptable controls no on-track RRV will travel on gradients greater than that specified on the Engineering Acceptance Certificate for the machine. This together with further assurances on the training and competency of personnel using this type of on-track plant has allowed Turner & Townsend to close out remaining concerns following 2no RRV runaway incidents in November 2012.

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2.3 CDM Regulations

Following comments from Turner & Townsend the updated Construction Phase Plan has been received from Infracore.

A further meeting was held with Scottish Water regarding the development of the Health and Safety File for the Scottish Water utility diversion works. Work continues to populate the Health and Safety File information for the legacy MUDFA works. A meeting with the Scottish Water Senior Safety Adviser has been requested from Scottish Water to address any queries that Scottish Water have regarding the structure of the Health and Safety File.

Turner & Townsend are liaising with Network Rail on the Gateway project to provide information relating to the future Gateway construction works.

2.4 Environmental

Quotes have now been received from RSK and Envirocentre for the monitoring works at the Gogarburn. These quotes are to be reviewed / addressed by the operator in order that monitoring can commence in accordance with the Controlled Activity Regulation Licence. First monitoring required for July 2013.

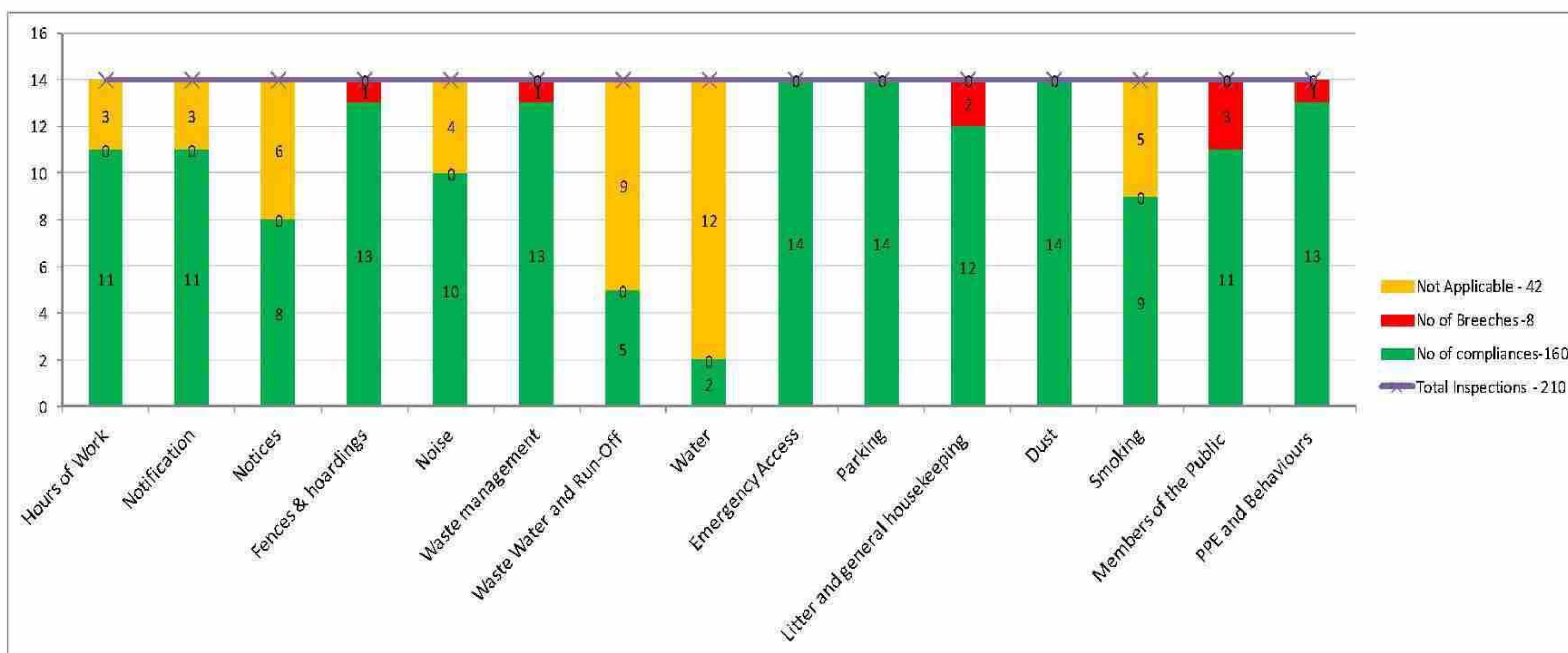
A costing report for the publication of post excavation Archaeological works is being finalised and will be formally issued during the next Period.

No environmental incidents were reported during the Period.

The environmental team are currently investigating the management of Invasive Species along the tram route, particularly at Gogarburn where Giant Hogweed is prevalent.

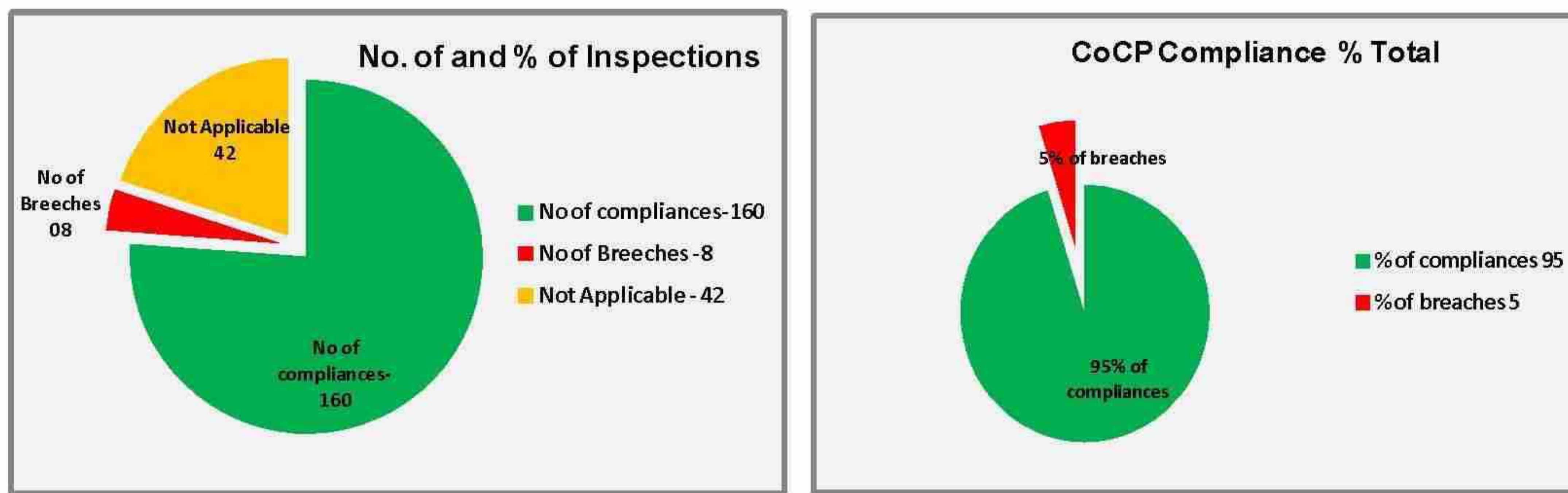
2.5 Code of Construction Practice (CoCP)

CoCP compliance was recorded at 95% during the Period.



Progress Report No. 21 – 28th April to 25th May 2013

FINAL



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	

2.6 Quality

2.6.1 Key Issues

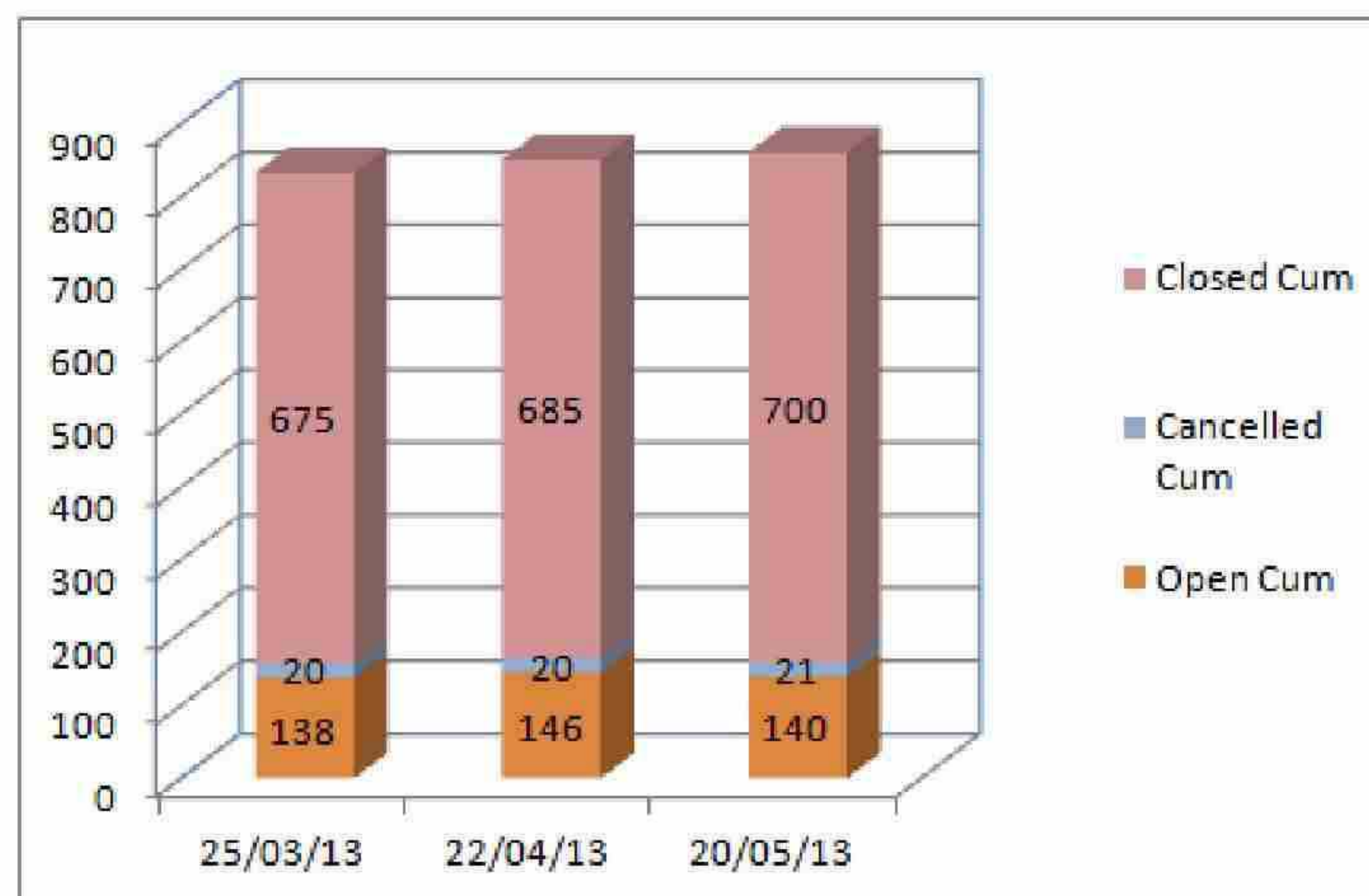
No specific quality issues were identified during this Period.

2.6.2 Non-Conformance Reporting

Monitoring by Turner & Townsend of the NCRs raised on the project continues.

- The number of NCRs raised to date is 861.
- 10 NCRs were raised during the Period and 15 NCRs were closed out during the Period.
- 69 open NCRs are greater than 6 months old and 140 remain open.

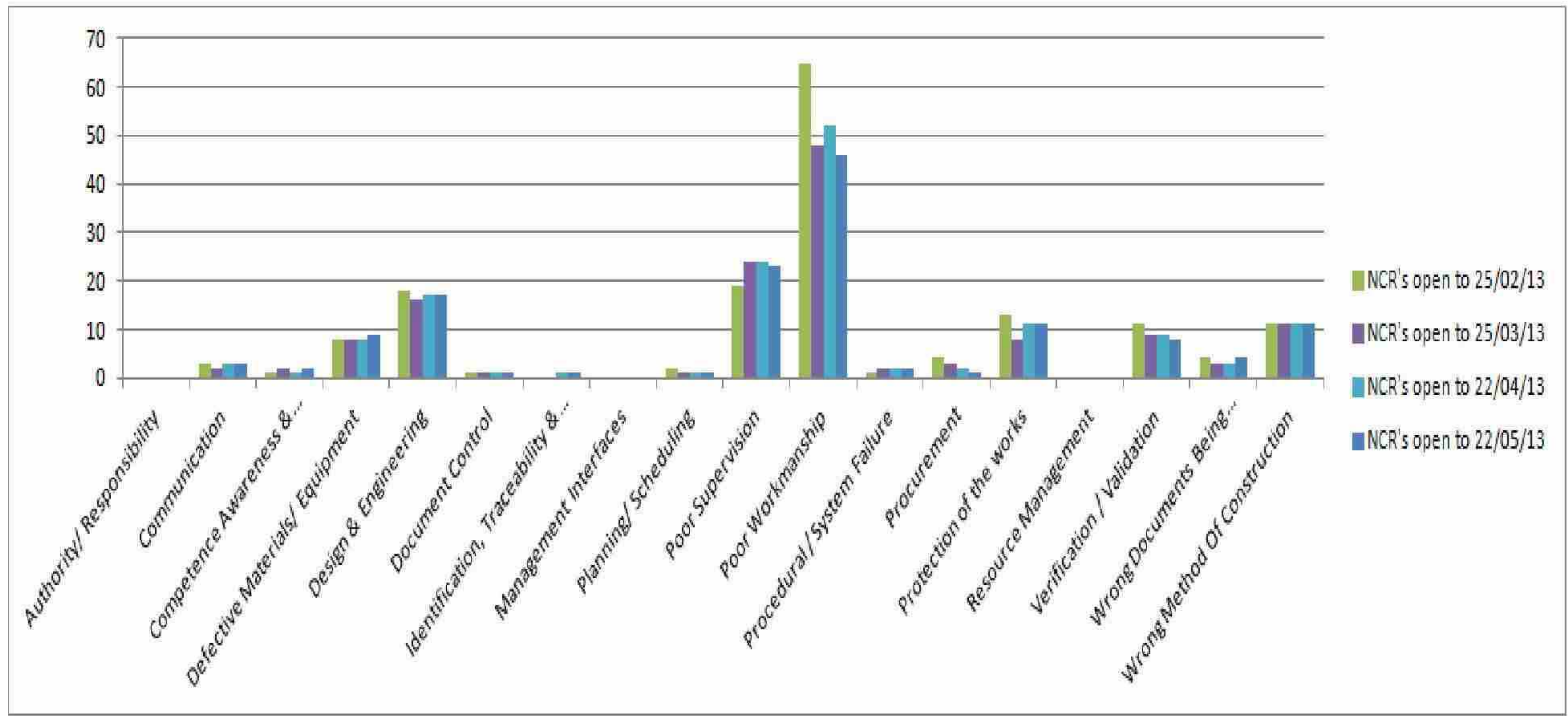
Summary of non conformances



Breakdown of non conformances

There has been a rise in the number of non conformances that were identified as poor supervision. It has been advised by Infracore that a number of the issues relate to snagging items and also the wind down of the civil construction phase of the project. This situation is being monitored by Turner & Townsend to identify trends that may need action.

Classification of open non conformances



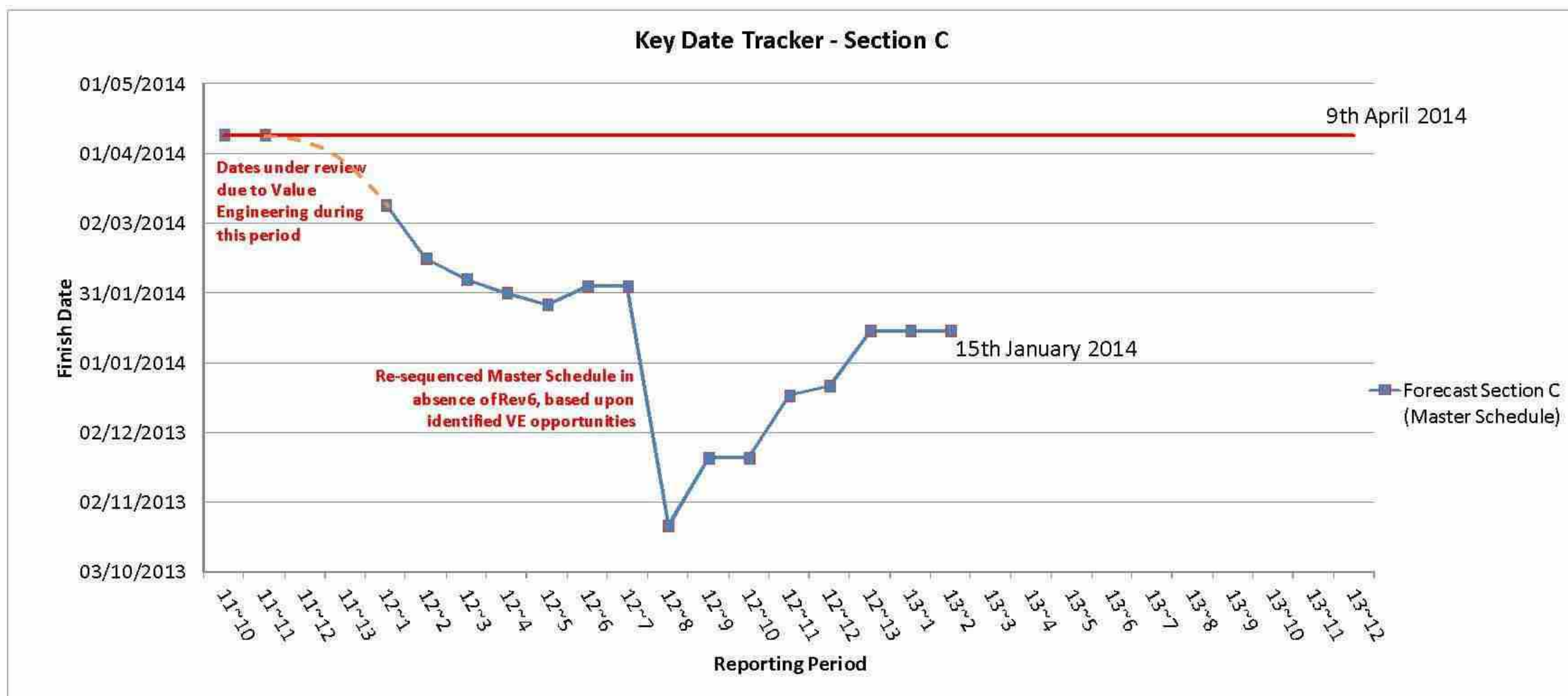
3 Programme

3.1 Programme Overview

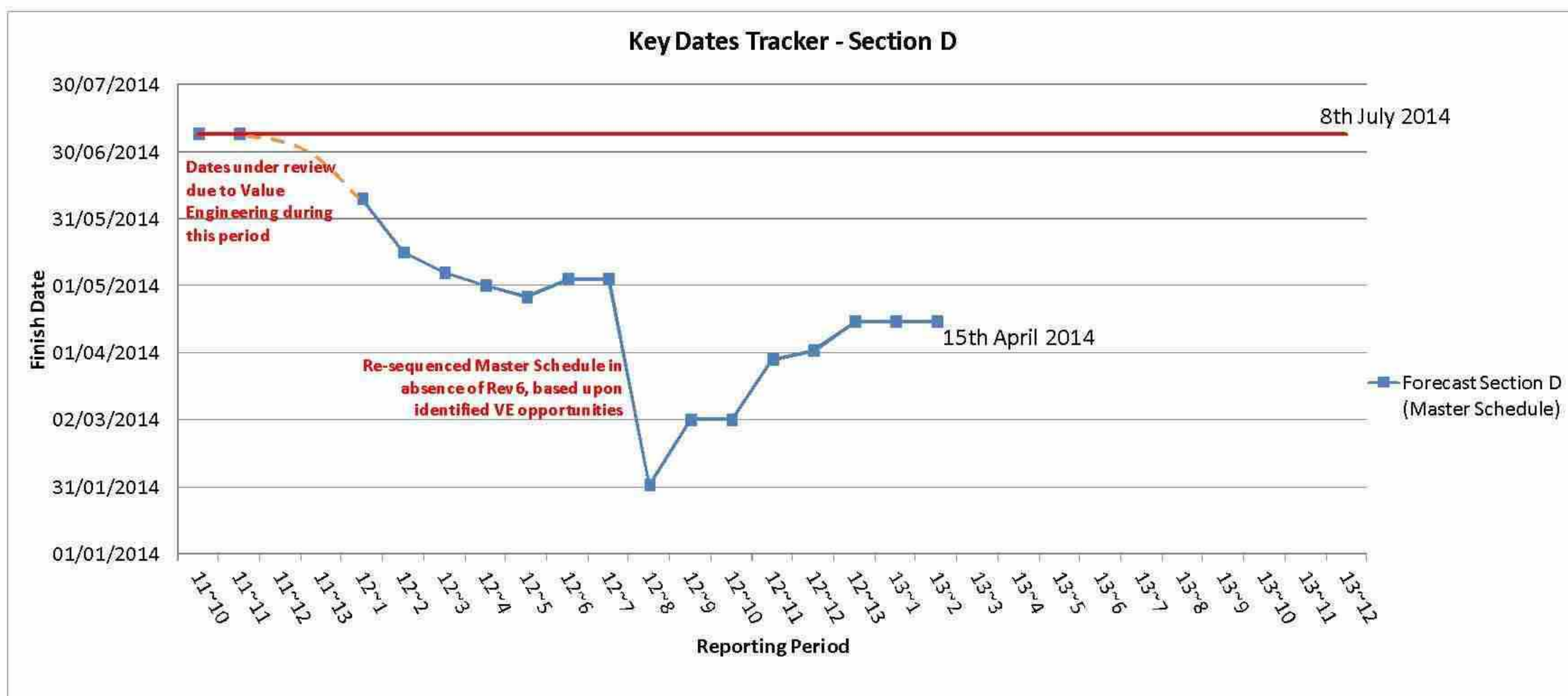
Based upon progress up to the 27th of April 2013 the Contract milestones for Sections C and D remain forecast earlier than the contractual dates. The Section C & D Completion dates have not moved this Period and remain forecast as the 15th of January 2014 and 15th of April 2014 respectively.

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



Section D; Open for Revenue



The Section C and D dates continue to be driven by the earliest forecast energisation dates for the Cathedral Lane substation. This is based upon the Infraco letter which states that the Cathedral HV meter will be required on the 3rd of September 2013. Clarification of forecast on street OHLE has been provided by Siemens and this has been captured in the Master Schedule. The subsequent analysis suggests the sequencing of works for installation of OHLE/traction power through Murrayfield corridor is the next longest float path. These works will run concurrently with and subsequent to the tamper activity.

Further issues have arisen this Period with regards to the completion of all track laying between the Depot and Murrayfield Tram Stop, ahead of the tamper works. Infraco now forecast further delays at Edinburgh Park Station Bridge (S27). The result of this will require the tamper to be road moved around this section in order to meet the tamping dates of the 1st to the 26th of July 2013. In advance of this, there still remains the requirement on Infraco to work simultaneously along three, off-street, track laying fronts.

3.2 Progress this Period

There have been no section completions this Period, the project total number of sections complete remains at seven, with the remaining twenty-three in progress. Good progress has been seen at the gateway and along off-street Section 5B. This has resulted in positive movement to these sections' forecast completion dates.

Works along the tram line in York Place lost a further -10d in Period. Limited progress of track civils at the east end of York Place and non-commencement of the York Place Tramstop continues to push out the forecast completion date. In addition to this Infraco have shown poor progress of Cathedral Lane sub-station works. This has seen a -14d slip to the building works and non-commencement of E&M in the sub station, which Infraco had indicated would start as of the 2nd of April 2013. To date, this slippage has not impacted on the September energisation date for the sub-station.

Along the Murrayfield corridor; subsection 12, Roseburn Junction to Murrayfield tramstop (RbJn-MUS) continue to progress slowly with a further -18d lost in Period. This has been due to non-commencement of track laying around the Network Rail Depot and Roseburn Junction. Based upon the requirement to have track laid before installation of the OHLE, this subsection now shows current available float of 8d and based upon track work being completed by the 4th of July 2013.

Murrayfield corridor subsection 11, Murrayfield tramstop to Balgreen tramstop (MUS-BAL) has started track laying works and progressed well in Period. However, due to the number of track laying fronts Infraco are currently required to undertake, a conservative assessment suggests that subsection 11 works could be prolonged and therefore the forecast completion has slipped by -17d, and now has only 5d free float. It is currently assessed 200% efficiency will need to be achieved with the two off-street track gangs, in order to meet the fixed tamping dates of the 1st to the 26th July 2013. Infraco have stated they recognise that off-street track laying will need to be progressed simultaneously on three fronts (Sections 5A, 5B and 5C). The resource levelling constraint, in the Master Schedule, has been adjusted to account for this.

Track civils and track laying at Edinburgh Gateway has steadily continued in Period, as part of the efforts to meet the fixed tamping dates. In addition to this Infraco have also

progressed with wider site civils works and this has shown a 14d improvement to the forecast completion date for Gateway works.

3.3 22 Week "Time Bank"

This Period saw the Rev5C Section D completion date slip to the 23rd April 2014. Infraco have attributed this 1.5 week movement to delays relating to the Cathedral Lane Sub-station design changes following the changes in site conditions (TNC 641, issued 4th December 2012). This has resulted in the 22 week drawdown increasing to 15.5 weeks.

A review of the 1C tracker was conducted by Turner and Townsend, with Infraco, to agree upon a number of additional delay events relating to St Andrews Square and Waverly Junction which were also not correctly recorded. The review was concluded on the 26th April 2013 where it was agreed as to the changes made in the tracker. It was subsequently also agreed that there was no immediate requirement to undertake a review of previous Rev5C submissions, going as far back as May 2012. This decision was based upon an understanding that at this point in time efforts in managing the 22 week drawdown were better placed with looking forwards, based upon the current commercial position with the time saving exercise.

Despite the movement in the Period it continues to be the view of both Infraco and Turner & Townsend that the likelihood of any future adverse delay events, attributable to client street works, remains significantly low.

3.4 Client Target Programme

CEC is continuing to discuss possible early completion with Infraco. These discussions are not reflected in this report and Turner & Townsend continues to support CEC through this process in line with the protocols agreed previously.

3.5 Critical Path and Key Float Paths (Master Schedule)

The Critical Path relates to the 'Longest Path' through the schedule, which would adversely affect the currently forecast end date if delayed. For the purposes of this project Turner and Townsend monitor the critical path and the next three longest paths, referred to as "Key Float Paths" through the schedule.

This Period there has been no change in the Critical Path or Key Float Paths. The energisation of the Cathedral Substation continues to drive the Master Schedule, followed by the installation and commissioning of the E&M, in particular the OHLE. The adjustment of the resource levelling constraint to Off-Street track gangs has enabled the fixed tamper dates to remain non-critical. However, there is still some further clarification required, from Siemens, as to sequencing of the OHLE catenary line works and tamping of the track. These separate types of works are increasingly likely to be competing for work space along the track, between the Depot and Murrayfield Tram stop.

The current Critical Path is:

- 1. On-Street** Section 1C Cathedral Lane Substation / SAT and SITs

The Key Float Paths are:

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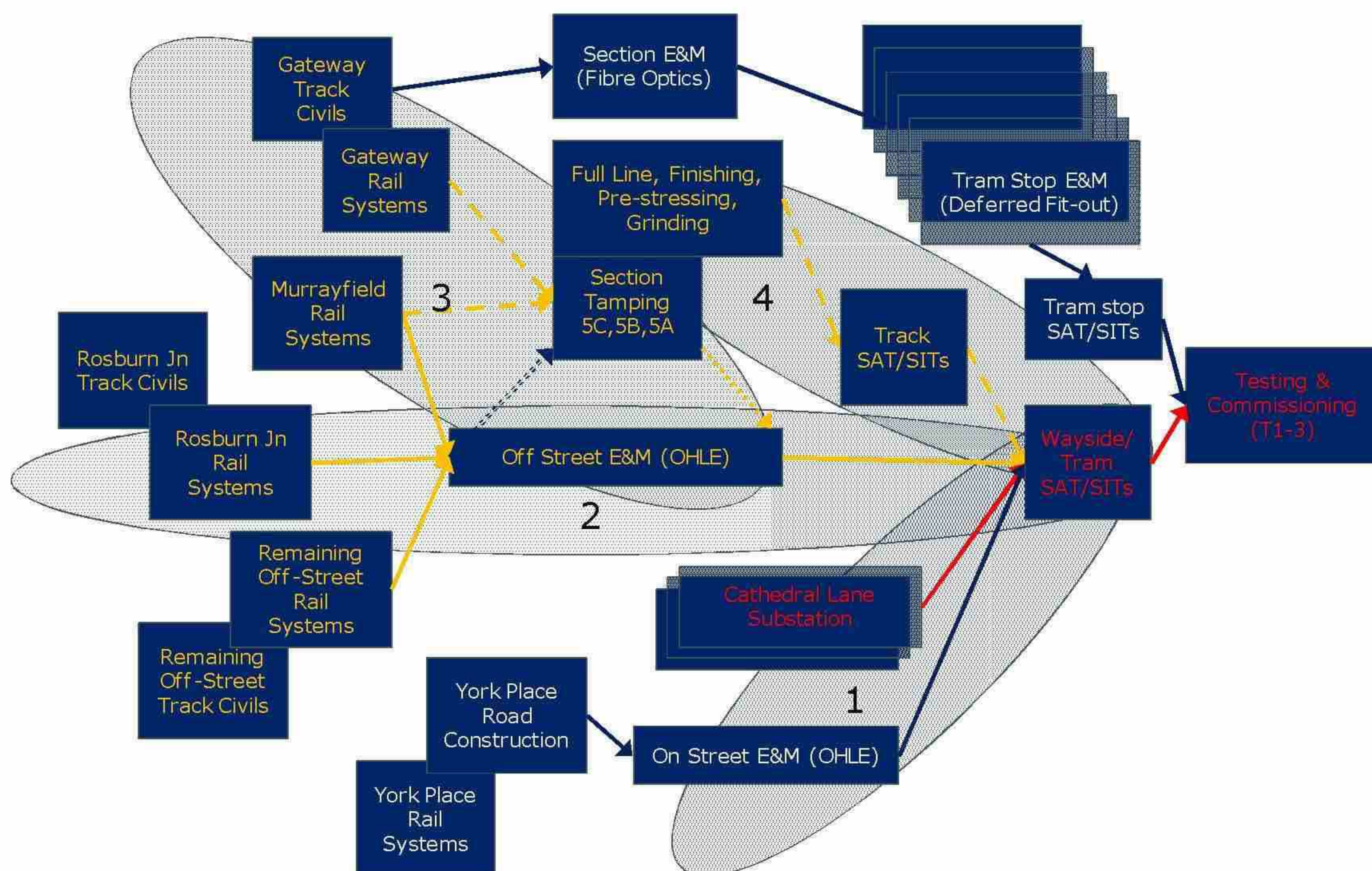
2. Off-Street Section 5A and 5B / E&M (OHLE) / SAT and SITs

3. Off-Street Section 5C Gateway / Tamper/ E&M (OHLE) / SAT and SITs

4. Off-Street Full Line Finishes / SAT and SITs

These float paths are continuously updated and reassessed. Below is a diagram which shows the interdependencies between these packages of work and the four float paths listed above.

Logic Diagram of the Master Schedule Critical and Key Float Paths



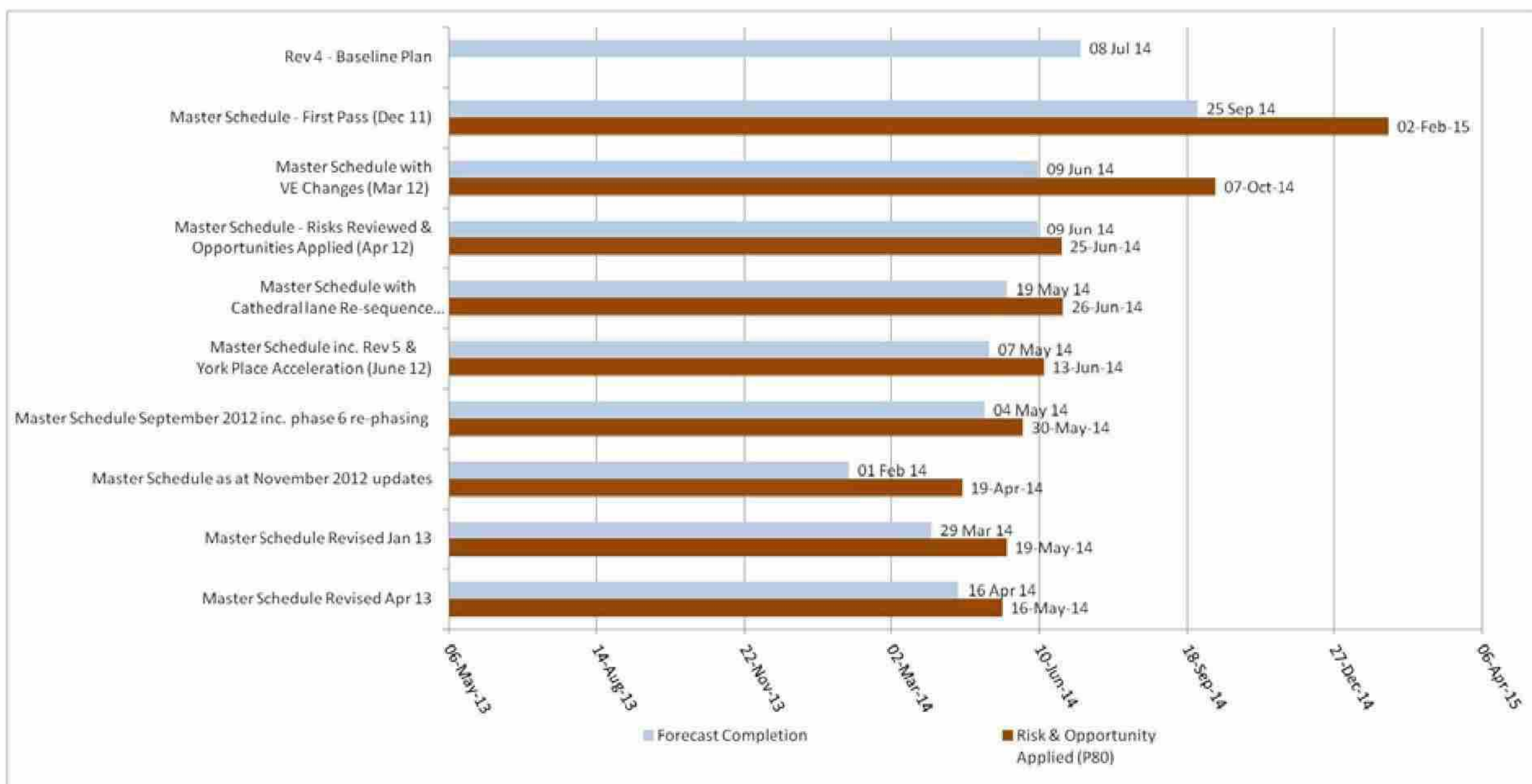
4 Risk

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:

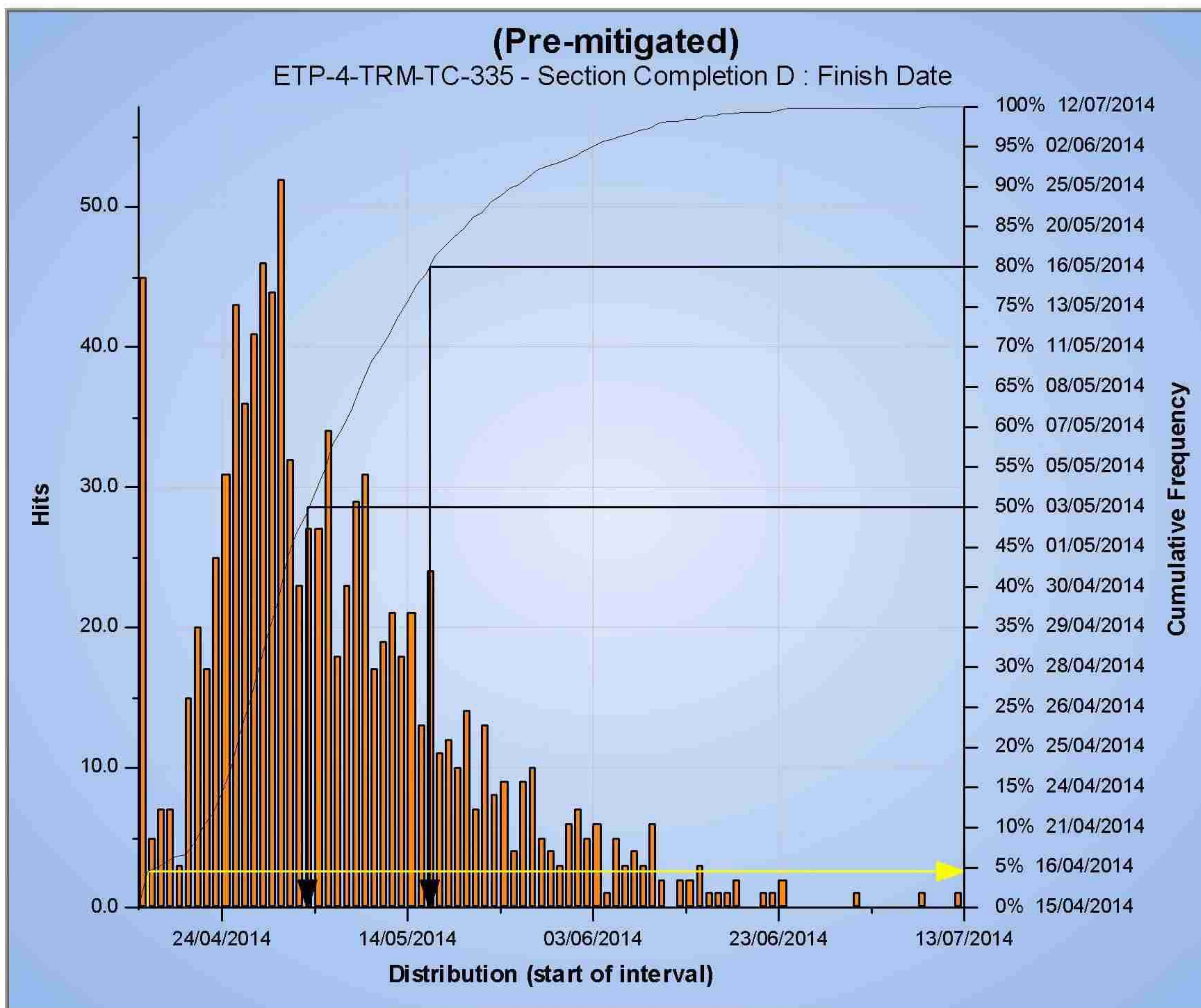
QSRA Trend Analysis



4.1.1 Risk Likelihood (P80)

The latest QSRA was carried out on the most up to date schedule on the 21st of April 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 16th of May 2014** against the current risk and opportunity profile and there is approximately a 4% probability that the current schedule completion date of the 16th of April 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 Cost impact of delays in Haymarket to Depot

As reported previously the Infraco and Turner & Townsend Progress Reports have identified that delays have occurred in Sections 2A/5A and Section 5. The delay has resulted principally from Infraco's delayed commencement of the retaining structures in Section 2A/5A, finalisation of Structures and Edinburgh Gateway in Section 5.

Important Note:

Through reference to the weekly prolongation costs included in the contract, the delay costs could amount to c. £1.8M. A Compensation Event Notice for prolongation costs has not been received nor notified. The QSRA and QCRA does not contain any allowance for these potential delay costs since a Compensation Event Notice has not been received from Infraco and following discussions with CEC, Turner & Townsend also understand that Infraco has confirmed at the Joint Project Forum that no claims are currently being prepared.

4.1.3 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	Programme incorporating progress up to the 5 th January 13.
Master Schedule as at March 2013	Programme incorporating progress up to the 30 th March. Energisation dates for Substations based upon Infraco's requested HV meter dates to CEC (letter dated 14 th Feb 13).

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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 current Master Schedule only and does not contain or quantify any risks associated to any programme acceleration plans. It does not discuss changes to the Collaborative Risk Register (CRR), which is maintained by Turner and Townsend in collaboration with Infraco, 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 the aim to achieve a general trend of a reduction of risks, in both volume and score, as the team continues to mitigate against the potential impact. Following this Period's regular review, there are six new risks identified to report.

4.2.1 New Risks

Risk Description	Cause
CAF not in a position to start maintenance service at Section C completion which may delay shadow running & service commencement	CAF safety management system not implemented by shadow running
Unable to collect passenger fares using TVMs at start of passenger service	Extended development/ testing from Parkeon
Network Rail resource may continue past forecast	Uncertainty regarding Network Rail resource due to recent Siemens access issues and lack of programme definition
Risk that additional scope/work is required to meet <u>road</u> safety requirements owing to difference of interpretation of standards e.g. Eastfield Ave, Gogar Castle Access Road	Similar issues were raised by Infraco at section B Completion and specific issues have arisen in recent weeks regarding design, for example, the planters at Murrayfield.
Risk that additional scope/work is required to meet <u>railway</u> safety requirements owing to difference of interpretation of standards	There will be ambiguity flowing from the RSA Stage 3 audits wherein Infraco seeks to demonstrate compliance with the Employers Requirements. Similarly there are likely to be instances where Infraco seeks to recover costs from CEC in relation to comments raised by the ICP.
Change in TM or logistics arrangements related to improving Siemens site access requirements	Claims may be raised by Infraco in relation to retained Traffic Management left insitu to assist with Siemens programme.

There have been no significant risk movements in the Period and no risks have been closed.

4.2.2 Risk Review Gateways

It had been agreed with CEC, that three risk gateway reviews will be carried out with regards to the timing of the closure of risks relative to the progress of the construction programme. The next gateway review is due to take place at the end of June 2013.

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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	27.52	Includes £4.84M from £6.45M 22 week cost engineering change and £2.36M from £4.5m for Rev 3A to Rev 4 programme change (amounts claimed by Infraco through the application process and instructed by CEC)
changes in progress	4.83	Includes balances of £2.18M for 22 week cost engineering change and £1.61M for Rev 3A to Rev 4 programme change (these figures are the outstanding amounts included in the change issued)
anticipated changes	2.89	Changes required to complete, subject to approval
Contributions	-8.06	Third party contributions received and anticipated. Contributions with Henderson Global, Transports Scotland for Tram Integration Manager and CEC for various public realm work still to be agreed.
Total Committed	506.84	Budget £500.15m
Risk		
risk estimate	1.40	CEC/T&T risk meeting 27 May 2013. CEC have confirmed that 3 rd party obligations will be funded by the CEC Major Project budget. The issues tracker has been modified to clarify budget and management responsibility. Note: payment of ex contract claims to Infraco is excluded as confirmed by CEC. The risk estimate includes 0.5m opportunity allowance for Immunisation as described later in this section of the report.
Risk adjusted forecast	508.24	Budget £500.15m
Opportunities		
utilities	0.00	The current forecast includes for all legacy works agreed to be undertaken with Scottish Water. There are minimal opportunities to reduce this scope.
rev 3A to rev4	0.00	CEC have instructed payment in accordance with Infraco milestone schedule. Post May milestones to be discussed by CEC/Infraco in final account negotiations.
early programme completion	0.00	No agreement in place with Infraco to realise saving. This work subject to CEC/Infraco final account negotiations.
Total Opportunities	0.00	
Total Forecast	508.24	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 excluded as there is no clear entitlement
Total	0.00	
Forecast +Exclusions	508.24	
	504.44	Adjustment if remaining milestones associated with Rev3A to Rev 4 programme change are not paid. CEC to confirm further instruction regarding certification post May 2013

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The forecast committed costs exceed the budget by £6.69M, principally as a result of the instructions regarding the 22 week time buffer resulting from removal of traffic management constraints, programme embargoes and the scope of utilities diversions.

5.1.2 Movement from previous period

The overall forecast has **increased** by £66k in the Period. The principal movements are identified below.

The Infraco contract forecast has **decreased** by £314k from the previous forecast. Significant changes include:

- The requirement to increase the depth of road construction in York Place has increased the costs by £40k
- The transfer of further type 2 work (at St Andrew Square / York Place junction) to McNicholas has reduced the forecast by £30k.
- The increased forecast recovery for surplus materials has **reduced** the forecast by £300k

The forecast for utilities has **increased** by £650k from the previous forecast. Significant movements are described below:

- Additional scope to re-duct Morrison Link junction which is being carried out to mitigate the risk of delaying Infraco due to life expired existing infrastructure has **increased** the forecast by £105k
- Additional scope transferred from the Infraco contract to carry out duct installations at York Place / St Andrew Street Junction has **increased** the forecast by £50k
- Additional of Scottish Water scope previously forming part of excluded works list has **increased** the forecast by £55k
- The increased depth of road reconstruction at York Place has necessitated additional utility protection measures, **increasing** the forecast by £20k.
- Delays to the McNicholas programme resulting from delays to the Infraco completion date have resulted in ongoing preliminary costs for an additional 8 week period resulting in an **increase** to the forecast of £320k
- Disruption to the McNicholas programme resulting from working around Infraco and resolving TQ issues has **increased** the forecast by £100k

The risk allowance has **decreased** by £270k. This is the result of the latest joint CEC/Turner & Townsend Risk meeting. The two main reason for the reduction in the risk allowance are as follows:

- CEC have confirmed that potential works associated with 3rd party obligations will be funded from the CEC Major Project budget. Examples include protective measures to avoid stray current, works required by Network Rail to remedy deficiencies or defects in

FINAL

the Works identified at completion and during the Defects Liability Period. The overall **decrease** for all these works are £197k as identified in the issues tracker.

- Alternative work proposals for matters such as resolution of water ingress to the Depot, graffiti clearance Bankhead substation, no further works to crossing at Eastfield Avenue, reinstatement of illuminated sign at the Gyle has resulted in a decrease of £149k.

The issues tracker is being modified to clarify budget and management responsibility (CEC or Turner & Townsend). The categories are:

1. Work or obligations which should be retained within the core construction project as they will be delivered by the existing contractors and/or are required to be completed by project completion.
2. Work or obligations which should be retained within the overall CEC project budget and may be completed either before or after project completion.
3. Work or obligations which will be funded from other CEC or Edinburgh Tram (Operator) budgets and may be completed either before or after project completion.

Items which fall under category 2 and 3 are no longer included within the forecast reported by Turner & Townsend and will be funded by CEC's contingency fund.

5.1.3 Commercial issues

Final Account Negotiations

CEC have confirmed that they wish to hold meetings in July with Infraco and CAF regarding agreement of a "notional" final account. Turner & Townsend have suggested that clarity is required on the basis of the figures owing to the absence of an agreed contract price baseline for both On-Street, Off-Street works and Infraco's negotiating position in relation to what was agreed at mediation and the basis of the Settlement Agreement (refer items below e.g. Prelims/Overhead Mark Ups and Off-Street Utilities). The recommended approach is to use the Infraco Change Register as follows:

- Confirm the cost adjustments for approved and agreed changes both On-Street and Off-Street;
- Confirm the current assessment of changes in progress;
- Confirm the anticipated final account based upon the current Infraco change register;
- Separately identify the amounts instructed by CEC for the Rev 3A to Rev 4 and Cost Engineering programme changes to identify amounts requested for sub-contractors and Infraco in relation to programme dates and additional payments through the 22 week programme change;
- To aid negotiations, provide a schedule of changes where Infraco's position has been accepted by CEC in order that further requests can be resisted.

FINAL

- Compare the cost assessments described above with provision in the Cost Report and overall Project Budget to determine affordability and funding.

Meetings are also ongoing with McNicholas to agree their final account. The issues include programme changes, prelims and disallowable costs under the Contract.

The above will be provided to CEC in order that the notional final account can be agreed between CEC & Infraco, CEC & CAF and CEC & McNicholas

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. This change and certification is governed by CEC instruction.

Extension of time claims

The Infraco and Turner & Townsend progress reports identify that delayed commencement of retaining structures in Sections 2A/5A and Section 5 has affected completion.

Important Note:

The delay costs amount to c. £1,800k, using the contract prolongation rates. No provision is made in the cost report or QSRA as the delays are principally caused by Infraco and to date, no Compensation Event Notice has been received or notified. Turner & Townsend also understand that Infraco has confirmed at the Joint Project Forum that no claims are currently being prepared.

Prelims / Overhead Mark ups on change

The issue of Infraco prelims and overhead to OLE bases, section 1D drainage and road reconstruction being applied to the cost of change which overlaps with contract prelims has been determined by the escalation process. CEC have confirmed that items will be determined on a case by case basis. Turner & Townsend have requested guidance from CEC on the same issue for Cathedral Lane substation.

On Street Works Estimates

The cost report includes provisions for a total of **£4.6M** 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. The out-turn cost is difficult to predict owing to the retrospective cost collection by Infraco. 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. CEC have also confirmed to Infraco that no costs will be time barred, allowing Infraco to submit costs for additional work from any point during the construction although CEC has confirmed that it will look to request that all costs are brought in by July 2013.

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.

Infraco's sub-contractor Crummock have stated verbally that they will pursue additional costs for disposal of surplus spoil which they have been prevented from re-using in the

FINAL

works owing to the de-scoping road re-construction. CEC is being provided the relevant information pertaining to this matter.

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

The final determination on the matter of payment for the SGN utility diversion off street following the escalation process is awaited.

Immunisation

The Infraco contract includes an allowance of £3m for carrying out immunisation studies and associated work with a pain gain mechanism for payment of 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, which provides a potential saving of £1.7m which may be shared by up to 3 parties.

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 of £0.5M representing CEC's share of the saving. A series of meetings are ongoing with Network Rail to confirm approvals, mitigations, testing arrangements and associated cost impacts. CEC has confirmed that the final allocation will be negotiated directly between CEC and Network Rail

Network Rail

Infraco believe that they are entitled to payment for retaining measures to the Network Rail boundary at the Scotrail Depot. Turner & Townsend have issued an advice note confirming that in our opinion there is no contractual entitlement. Papers have been submitted to the Independent Certifier for resolution. The cost report contains £500k for works associated with additional retaining measures and work to stanchions. We have agreed an assumed contribution of £250k from Network Rail with CEC in the cost report.

There is no guarantee that Network Rail will agree to the contribution and if the Independent Certifier rules in favour of Infraco, the net impact is an additional £250k to the current forecast. This shortfall may be funded from savings to the Immunisation forecast although as noted above, there still remain risks that a saving can be achieved.

Scottish Water

Scottish Water's forecast for their resources 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:

- Scottish Water forecast to June 2013 £1,936k
- Cost Report provision £1,570k
- Risk allowance £260k
- Differences are £366k and include:

FINAL

- A Statutory Utility Company contribution, in accordance with the provisions of the New Roads and Street Works Act. Scottish Water has argued that this should not apply due to the delay in completion.
- A contribution for requested works by Scottish Water. Scottish Water is disputing the value of these works.
- A revised assessment of resources by Turner & Townsend compared with Scottish water.
- An overhead cost included within Scottish Water's costs which we do not believe is applicable.

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.

There is no forecast for works carried out beyond June as instructed by CEC.

Tramco

Tramco have intimated that they do not intend to claim for prolongation beyond their contract programme however they do believe, based on their interpretation of the Settlement Agreement, they are entitled to conservation maintenance from April 2013. A fixed weekly rate of £55k is included in the contract however there is indication of a commencement date for this activity in their programme. Turner & Townsend have queried this along with the actual conservation maintenance that is required and being provided.

Following conclusion of this matter we will advise what amounts if any require to be budgeted for in the maintenance budgets.

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 (£4,361k) (£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, c. £1,000k total
- 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 Risk and Contingency

Quantified Cost Risk Analysis (QCRA)

Following the most recent risk review, the risk allowance included in the forecast amounts to £1,400k, a decrease of £270k from the previous Period. This is based on the outputs of the risk review, 27 May 2013, which follows a review of all project risks. The main reason for the reduction in risk allowance is the allowance for uncertain work scope (as identified on the issues register) has **reduced** by £494k. This is principally a result of risks being transferred into the CEC contingency as instructed by CEC.

5.3 Opportunities

The total value of opportunities in the current forecast is £14,077k. 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 Infracore 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 managed to mitigate additional cost where possible.

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.

Infracore'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 £2.2m for the programme movement at the end of the project. This is also dependent upon Infracore changing their commercial position. It should be noted that Infracore 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.

5.4 Exclusions

The following items are excluded from the Cost Report

- Repairs to pavements and footways
- Further design changes beyond those included in the cost report (Note that 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 Jenners.
- Leith Walk Utilities Diversion – The budget for this work has been reduced to £470k. All items of scope over and above those presently included in the McNicholas contract are, therefore, excluded from the overall costs.
- Any provisions for carrying out manual switching at the depot substation beyond Jan 2014.
- Scottish Water supervision costs beyond June 2013. Further supervision will be dependent on agreement with CEC and on the source of funding.
- Landscaping costs at Shandwick Place
- Issues on the issues register identified as funded from the CEC contingency or a separate funding source (e.g. Operator, CEC)

5.5 Payments and Cashflow

A summary of the certified amounts are provided below.

	Certified £k	Planned £k	Comment
Infraco	386,137	388,000	Planned – based upon current forecast
Utilities	17,743	17,800	McNicholas plus SUC costs
Trams	62,211	62,211	Payments generally in accordance with milestone schedule. Incomplete milestones are not included in certified amounts.

6 On Street – Utility and Tram Infrastructure Works

6.1 Progress in Period

6.1.1 York Place

During the Period Infraco reported the issue of incomplete track excavation, track improvement slab and trackwork between Ch 12680 and 120659. The issue has now been resolved and the trackwork has been completed in the Period. Investigations have confirmed that the issue was as a result of erroneous design information issued by SDS. All parties have worked together to mitigate the impact in terms of programme and cost. This collaborative working has resulted in the commercial impact being restricted to the additional excavation/infill around a redundant tram chamber (approx. £10k) and the programme being maintained, without further delay as a result of this issue.



The critical works in the Period were around carriageway resurfacing works which were extended by approximately 2 weeks as a result of the discovery of an unsuitable formation layer at the VE design depth. This was compounded by the further discovery of utilities that required bespoke protection measures. This issue has resulted in the completion of York Place civil works being delayed to the end July 2013. This will not have an impact on the Section C or D completion date as sufficient float exists to deal with this issue.

In the Period McNicholas have been engaged to complete the street services works at the junction of York Place and North St Andrew Street. This is as a result of discovery of utilities along the route of the street services. The works will be completed in the next Period.

6.1.2 Cathedral Lane Substation

The current Infraco date for energisation of Cathedral Lane Substation is 3rd September 2013. Infraco are currently on target to complete for this date, which is aligned with the contract programme (rev 5). Turner and Townsend have reviewed actual progress in the Period and alignment with the client's target programme for commencement of passenger services by the end December 2013. This has identified that the critical path now resides with completion of the SP ducting repairs which will currently be completed by the end July 2013. This is delayed as a result of the late completion of the York Place carriageway works. In order to improve on the current energisation date agreement will need to be reached with Infraco to install their substation equipment commencing late June 2013 for completion by end July 2013. This will allow a revised energisation date of the 1st August 2013 to be targeted. This will be required to preserve the clients target service commencement date of end December 2013.

FINAL

6.1.3 St Andrews Square

St Andrew Square snagging works have progressed in the Period and are expected to be completed by the end July 2013. No defect issues have been identified in the Period.



6.1.4 Princes Street

An integrated programme is being monitored and works have commenced in the Period dealing with SW chamber failures. This work is expected to be completed by the end July 2013. The programme also identifies that Infracore are due to commence final Tramstop fit out and remedial works together with the installation of the Overhead Line Equipment in the Period. This will be covered in more detail in the next Period report.

6.1.5 Shandwick Place

Progress in Shandwick Place/Lothian Road works have been delayed in the Period as a result of slippages in the Infracore programme associated with completion of the works at Lothian Road Junction. Infracore are now on target to complete the carriageway works at Lothian Road by the 31st May 2013 and the final footpath reinstatement works by end June 2013. This delay has had an impact on the McNicholas street services works which are now not due to complete before the 26th July 2013. The main road carriageway reinstatement works between Palmerston Place and Lothian Road are now due for completion by the end July 2013.



6.1.6 Haymarket

Works between Haymarket and Palmerston Place have been impacted by carriageway reinstatement quality issues and are now due to be completed by the end July 2013. It should also be noted that the Hearts memorial reinstatement works is due to commence by early July with completion by end July 2013.



In the Period the design assumption to reuse the existing ducting infrastructure at the Morrison link junction has been reviewed and it has been accepted that to de-risk this issue the ducts should be re-laid. This work will be completed by McNicholas and is required to ensure the client target programme for passenger service by the end of December 2013 can be achieved. This work will also extend the McNicholas contract to the end of July 2013.

6.2 Key Issues

CEC/T&T and SW have recommenced senior management discussions to allow the final key issues to be resolved between the parties. This will involve a series of weekly discussions to allow the remaining residual issues to be identified and resolved at a meeting of the CEC and SW principals being arranged for the end of June 2013. It should be noted that in order to agree a close out of the McNicholas contract Turner and Townsend have provided CEC with a scope of works for SW which reflects the current discussions and anticipated outcome from the principals discussions. As a result, any further scope agreed between SW and CEC will need to be delivered out-with the current McNicholas contract arrangements. In terms of SW resource beyond June 2013, CEC have confirmed that the Turner and Townsend cost report should exclude any provision for further expenditure beyond the 30th June 2013. Provision will be made by CEC within the overall £776M budget.

Infraco have confirmed that platform alignment remedial measures are required at the Princes Street Stop. These will be dealt with by Infraco during the next phase of Siemens works with the works due to commence in the next Period.

Potential DKE clashes between the tram and track alignment on the project are being reviewed. Infraco have received an initial output from the survey from SDS and will issue this to CEC/T&T for review following internal checks. Details of the initial findings and follow up actions will be covered in the next Period report.

As discussed in item 6.1.2 the Cathedral Lane substation programme is critical to On Street completion and early discussion is advised with Siemens regarding the early installation of the substation plant and equipment.

Turner and Townsend and CEC have commenced discussions with McNicholas regarding a notional final account close out strategy against a scope freeze for Scottish Water and street services delivery together with Infraco access dates. This discussion will be concluded in the next Period and will be aligned with the final account close out strategy for Infraco and their package contractors. It should be noted that should further scope be identified particularly through the SW/CEC close out discussions then an alternative delivery mechanism will be required.

7 Off Street Works

7.1 Progress in Period: Critical Areas

7.1.1 Section B Completion

Section B snagging works are substantially complete and the outputs of the lessons learned workshop were agreed with Infraco in the Period. The workshop has identified key actions and workstreams to ensure documentation is presented ahead of Section C completion. The close out of the actions will be monitored through the Testing and Commissioning Governance meeting.

In the Period Turner and Townsend and CEC have agreed a process to develop a “do minimum” design for the Airport Terminus footprint in the event that CEC/EAL cannot deliver the final Terminus building design. Infraco have completed the initial design and CEC/T&T are in the process of identifying final comments to close out. This minimum design will only be instructed should the overall Terminus design not be achievable for the commencement of passenger service date.

7.1.2 Network Rail Interface

During the Period Turner and Townsend, CEC and Infraco have worked with NWR to close out the remaining design and construction issues. Of the 21no. issues identified some 11 remain to be closed out. The issues to be closed have also been discussed with NWR and it is understood that an agreement has been reached to close these issues out over the next Period.

The key issue for the NWR interface have now moved to the systems design and the performance of Siemens. NWR are concerned by Siemens’ ability to plan their works sufficiently in advance of the agreed possession dates. They are also concerned regarding the outstanding technical and approval issues with respect to the close out of the Immunisation interface. To mitigate NWR concerns Turner and Townsend have developed a tracker which is being used to control the remaining works (on or near the railway) within the agreed 7 day deadline for submissions prior to works commencement. In addition Siemens are working with NWR to close out the final technical details associated with the Immunisation interface. This will be progressed at a meeting on the 6th June 2013 where the final issues of scope, approvals and programme will be resolved. There however remains a risk to programme based on the likely additional track circuits on the Fife line, resubmission of technical documentation to NWR (ISRP) and confirmation of final track possessions for the wheels free immunisation testing. It is recommended that once these discussions are concluded that CEC consider discussion with Infraco to ensure the possession date for the Immunisation testing is aligned with the client target programme.

The commercial discussion on the outstanding Infraco issues relating to the additional retaining measures around the ScotRail depot have continued and Turner and Townsend have recommended that Infraco have no entitlement to recovery through the specific provisions of the contract. The issue has now been referred to the certifier for resolution. There is currently no impact on programme as a result of this issue.

7.1.3 Edinburgh Gateway

The tracklaying works are well underway and are currently on programme for completion for the tamper commencing works in early July 2013.



7.2 Progress Update: General

7.2.1 Haymarket to Balgreen

Murrayfield Tramstop works have been snagged in the Period and Infraco will look to carry out the public safety snagging works ahead of interim handover. An RSA stage 3 audit was carried out in the Period and this has identified various issues with potential contractual liability for CEC which requires further discussion with Infraco. In terms of track installation the replacement works to the inbound track adjacent to NWR platform 0 at Haymarket has been completed and track installation between Murrayfield and Balgreen is now substantially completed and is on schedule for the tamper works commencing in early July 2013.



7.2.2 Balgreen to Edinburgh Park

Cabling works have continued in the Period from the Bankhead substation towards Haymarket and will be completed in the next Period. The track laying at Edinburgh Park Bridge is now critical ahead of delivery of the tamper. Infraco have commenced contingency planning to allow the tamper to be moved by road from the Depot to either Bankhead tramstop or a temporary road/rail entry point on the former "Guided Busway". Turner and Townsend are monitoring this situation and reviewing with CEC at the weekly governance meetings should this contingency require to be implemented.

7.3 Key Issues

The Haymarket Substation Wayleave is being progressed now that the technical access arrangements have been agreed between the parties. NWR are currently looking to provide details of the lease registration number to allow CEC and SP to enter into a sublease and wayleave ahead of programmed energisation on the 10th June 2013. This remains a critical issue for the overall works programme and is being monitored daily.

Edinburgh Airport Limited (EAL) has raised concerns regarding the erosion of the Gogarburn and an investigative study has been commissioned by CEC to review causation and liability. The output from this review will be available in the next Period.

The programme and approvals for the Immunisation work scope have yet to be fully agreed with NWR. A meeting is scheduled for 5th June to reach agreement however the client target programme remains at risk until these discussions are concluded.

The issue of liability for close out of issues brought about through Off Street Road Safety Audits has become apparent in the Period with a number of issues being raised which Infraco are suggesting are out with the Employers requirements. This issue was recognised and is covered in an agreed protocol between the parties however the number and extent of potential issues is greater than first envisaged, particularly on the Off Street section. Turner and Townsend and CEC are working through the individual issues and further discussions are required with Infraco to determine the full extent of the scope of works to close out the audit. This issue has also raised concerns regarding the Infraco's interpretation of their obligation to achieve a "no objection" from the ICP and the commercial liability in achieving this. As such Turner and Townsend are preparing an advice note for CEC ahead of final inspections and discussions with Infraco.

8 Trams

8.1 Trams Progress in Period

Having completed all routine and integration tests to be performed on Section B, CAF and Edinburgh Trams are now operating a 'pseudo timetable' from Gogar Depot to the Airport.

This timetable has been implemented to help develop and verify the operational procedures that have been implemented by both CAF and Edinburgh Trams, as well as to provide an opportunity for operations and maintenance staff to work under a more 'operational' environment.



This is proving to be a successful exercise, as there are issues being identified and discussed regularly, leading to changes in both operating and maintenance practices.

One issue which continues to be raised by Edinburgh Trams is the availability of serviceable trams to fulfil their timetable and training requirements. Edinburgh Trams Controllers now produce a 'Daily Operations Summary' sheet, which identifies (among other things) the availability and technical performance of trams, on a daily basis. This is now being used to identify issues to be discussed and addressed during the weekly technical and monthly Tram Liaison meetings.

The following technical issues were raised and discussed during the Period:

- Battery Charger failures (reported on 7 trams)
CAF have now issued the supplier's report into the failure of the Auxiliary Converters which lead to the trams reporting 'Battery Charger' failures. The report includes a proposed modification to the Auxiliary Converter to address this failure.
Turner & Townsend have submitted the report to the Technical Services Support team and Infracore for review and will respond to CAF with comments when these have been received.
- Overheating of Trailer Bogie brakes
This defect was originally identified in October 2012 and was reported as occurring on two trams only, during conservation maintenance. The defect has now been reported on all seven trams which are being used to run the 'pseudo timetable'.
CAF believe the issue may be related to the tram operating the Trailer Car brakes in Emergency Mode, when normal service braking is requested. CAF have isolated the brakes in the Trailer Cars to allow continued operation and are currently discussing the issue with Faiveley.
Turner & Townsend will continue to monitor the situation with Edinburgh Trams.
- Tram Control & Management System (TCMS) screens freezing
This intermittent defect has been reported previously in isolated occurrences, but is now being reported more regularly.

CAF have performed an initial check of all wiring and connectors, but have as yet been unable to determine the root cause of the defect. They are now discussing the issue with the equipment supplier (SEPSA).

Turner & Townsend have asked CAF to provide information on the number of occurrences of this defect per tram and the action taken in each case, to help determine whether this is a 'Fleet Tram Defect' or a tram specific issue.

- CCTV system performance and visibility (reported on numerous trams)
CAF recently implemented a modification programme to improve the reliability and performance of the Passenger Information (PISPASPA) and CCTV systems. The success of this modification will be determined over the coming months.

The ICP has raised a further issue whereby visibility of passengers alighting or departing a tram via the centre doors is limited. This issue has been raised with CAF and possible solutions are being considered.

CAF have confirmed that although their Test and Commissioning Engineer, Unai Olaciregui, has now left Edinburgh following the completion of the above testing, he has not left the Project and will be available to support ongoing Integration and Acceptance Testing, as required.

The investigation into the cab alignment issues found on 'cab E' of tram #252 during the Dynamic Gauging and Contact Tests is ongoing; with CAF now seeking additional support from their technical office in Spain. It is anticipated that the re-work will be completed in the coming Period. CAF have confirmed that the issues identified on tram #252 do not affect any other trams.

8.2 Tram Maintainer Services

During the last Period, Turner & Townsend undertook an audit to allow CAF to demonstrate readiness to perform the Tram Maintenance Services, in line with the requirements of Mobilisation Milestone payment M7.

While it was accepted that CAF are currently preparing to start the Tram Maintenance Services at Shadow Running, three non conformances were identified in the safety management arrangements currently in place:

- Although CAF are working to a series of safety and quality procedures, there is currently no Safety Management System in place tying all procedures together to ensure a safe operation;
- There is no system in place to manage the calibration of equipment currently being used to perform maintenance; and
- While maintenance procedures have been developed for preventative and corrective tasks currently being undertaken, there is no higher level Technical Maintenance Plan developed detailing how such maintenance will be controlled and managed.

These findings have been documented in the audit report, which has now been submitted to CAF for review, and a new risk has been created as set out in Section 4 of the Report.

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One significant issue identified during the audit was the fact that while Edinburgh Trams are currently preparing to begin Shadow Running in September / October, CAF's recruitment and training plans are geared towards Shadow Running commencing around March / April 2014. Edinburgh Trams have also raised this as an issue, as they have concerns that CAF will not have sufficient resources to provide the number of trams required to meet their timetable and training needs when these are increased over the coming months.

This misalignment of readiness dates could also pose a serious risk to the project should a decision be made to bring forward the date for Passenger Service.

8.3 Vesting of Trams with CEC

Following discussion between CEC and CAF, Turner & Townsend have written to CAF acknowledging that the risk and title for 26 of the 27 trams shall pass from CAF to CEC at 09:00 on the 1st June 2013 and not on the issue of a Certificate of Tram Commissioning, as required by the Tram Supply Agreement (TSA).

Despite previously accepting that the Tram Inspector was unable to issue any Certificate of Tram Commissioning prior to the completion of Type Testing on tram #251, CAF have now requested that certificates for the 26 trams which have completed Routine Testing be issued.

Turner & Townsend have written to CAF proposing a solution which is acceptable to the Tram Inspector and which will allow CAF to be issued with the 26 certificates prior to the trams being vested with CEC.

8.4 Fare Collection System

The Fare Collection project continues to be reported by Parkeon as progressing well, with the requirement specifications and technical documentation now complete, in line with programme requirements.

The manufacturing of the Ticket Vending Machines continues to progress to timetable, with the manufacturing of the Platform Validators scheduled to be completed by the 9th June 2013, after which they will be shipped to Poole to complete their build and initial testing.

The question raised by Parkeon on the level and scope of concessions to be allowed on the tram system has now been answered. CEC has confirmed that the tram system will accept the same level of concessions as are accepted by Lothian Buses; however these will be limited to Edinburgh residents only.

Turner & Townsend has arranged a meeting with Transport Scotland and Lothian Buses to determine the best way to develop and test the system which will be used to manage these concessions.

8.5 Key Issues

Following confirmation from CAF that they are unable to get the final three suppliers to sign up to the Sub-Contractor Direct Agreements, despite having used "...all reasonable

endeavours”, Turner & Townsend were asked to develop a ‘simpler’ document, based on the requirements of the original. This document has now been submitted to CEC for legal review. Following this legal review a decision will need to be taken in conjunction with CEC as to how this matter is progressed.

The water ingress into the depot building maintenance pits, Wheel Lathe and lifting platform pits remains to be resolved. Turner & Townsend have confirmed with Edinburgh Trams that actions to mitigate this ‘residual risk’ are included in their risk register, however rectification action is still immediately 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 written to Turner & Townsend to withdraw letter reference CAF_ETN_0718, which suggested that the move from Revision 2 to Revision 5 of the Infraco Programme could have a financial impact on CAF. In doing so however CAF have stated that they may be seeking monies for conservation maintenance, this is a contractual entitlement but the timing and extent of any such payments will need further investigation. Turner & Townsend will respond to any application for payment following the agreed procedures.

Turner & Townsend have raised concerns with CAF relating to the time it is taking to rectify potential ‘Fleet Tram Defects’, which have been reported on several systems. Time will be given to address the latest defects identified before further action is decided.

During the Period CAF requested that they be provided with a formal letter stating that Section B is ‘fit for purpose’. CAF are not entitled to such a letter and it has been agreed with CEC that no such letter will be issued.

8.6 Look Ahead

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

- 1 Trams:**
 - Realignment of E-cab on tram 252 to be completed
 - CAF to provide availability of trams as agreed with Edinburgh Trams
- 2 Vesting of Trams with CEC**
 - 26 of the 27 trams will be vested with CEC on the 1st June 2013
 - 26 Certificates of Tram Commissioning to be issued, on acceptance of the certificate by CAF
- 3 Fare Collection:**
 - First 4 Ticket Vending Machines to be delivered to Parkeon at Poole
 - Platform Validator manufacturing to be completed in France
 - Parkeon to continue the development of Edinburgh Tram operating software
- 4 Key Issues:**
 - ‘Simplified’ Sub-Contractor Direct Agreement to be proposed to CAF
 - Fleet Tram Defects to be progressed / addressed

9 Assurance Monitoring

9.1 General

Turner & Townsend continue to provide an Assurance Monitoring role on the project, through the identification and reporting of any issues found during site visits or during attendance at the various operational and control meetings.

The Safety Verification and Assurance functions continue to report through the 'Deliver a Safe Tram' (DaST) section in the Edinburgh Tram progress report; with Turner & Townsend providing an update on any issues that Edinburgh Trams highlight as significant in the DaST. A copy of the DaST has been included as an attachment to this report.

9.2 Safety Verification (SV)

Following initial sampling of the Case for Safety evidence for Section B, a general concern was raised that the evidence supplied does not adequately demonstrate successful integration of the system.

In response to this the SV team facilitated a productive discussion with Infraco, the technical representatives and the ICP at the ICP liaison meeting on the 8th May 2013. A common understanding of what is expected from the documentation has been reached and while there are still outstanding responses to the Records of Review, they are currently not a cause for concern.

Turner & Townsend facilitated a 'Lessons Learned' workshop on the 8th May 2013, to determine the most effective and efficient way to manage the submission and review of documentation required for Section C. A record of the workshop including outcomes and actions has been distributed to all participants. A meeting has also been arranged with Infraco, CAF, Edinburgh Trams, the SV Team and the ICP on the 5th June 2013, to discuss expectations on future Case for Safety submissions.

Infraco have carried out a number of configuration changes to Eastfield Avenue junction control, in response to a restriction being imposed by the Operator. The restriction has been lifted following these changes; however there are still responses outstanding to a number of questions raised by the ICP.

The Safety Verification team have scheduled audits on 'The Suitability of Carricknowe Bridge' in June and 'Transition Points at Floating Trackslab' in August 2013.

The ICP has raised an informal concern on the driver's visibility of passengers entering or leaving the tram from the centre of the vehicle. While they are stating that the ICP had already agreed to the current configuration, CAF have been asked to review passenger visibility to confirm whether they believe there is an issue.

9.3 Independent Competent Person (ICP) issues

ICP liaison meeting 15 took place on the 8th May 2013. There were several technical issues identified, which if not addressed and documented fully, may lead to a delay in the verification process. These included:

- Matching the vehicle 'Whole Body Twist' with the track alignment;

FINAL

- Confirmation the track installed satisfies the Manchester Metropolitan University study;
- Identification of potential Dynamic Kinematic Envelope infringements;
- The management and control of signalled junctions; and
- The signalling / track interface.

The above is not an exhaustive list of issues but are specific areas of concern which will be closely reviewed technically. The following areas of concern were also discussed informally:

- 1 Rail lubrication: The curves on Section B are currently being hand lubricated, until the tram-borne flange lubrication system is operating correctly. While the system appears to be functioning, there are still some issues with the allocation of route codes by drivers.
The ICP was satisfied this matter is being dealt with.
- 2 Eastfield Avenue junction control: Although the signals are installed as designed, Edinburgh Trams have concerns regarding their operation.
This may result in a Request for Information (RFI) being issued by the ICP.
- 3 Potential DKE infringement at Eastfield Avenue pedestrian crossing: The potential solutions are still being investigated by Infraco and CAF, with an instruction issued to review the IFC / As-built drawings for Section C, to ensure there are no additional conflicts.
- 4 York Place Tramstop: While the ICP has no concern over the safety of the tramstop, he is requesting that Edinburgh Trams identify and demonstrate how they will use the stop should a second trams be stabled behind it.

Edinburgh Trams are directly involved in the development of solutions to address the above issues and have amended their operating procedures to match current restrictions on the system. They report that there are no safety concerns regarding any of the issues raised.

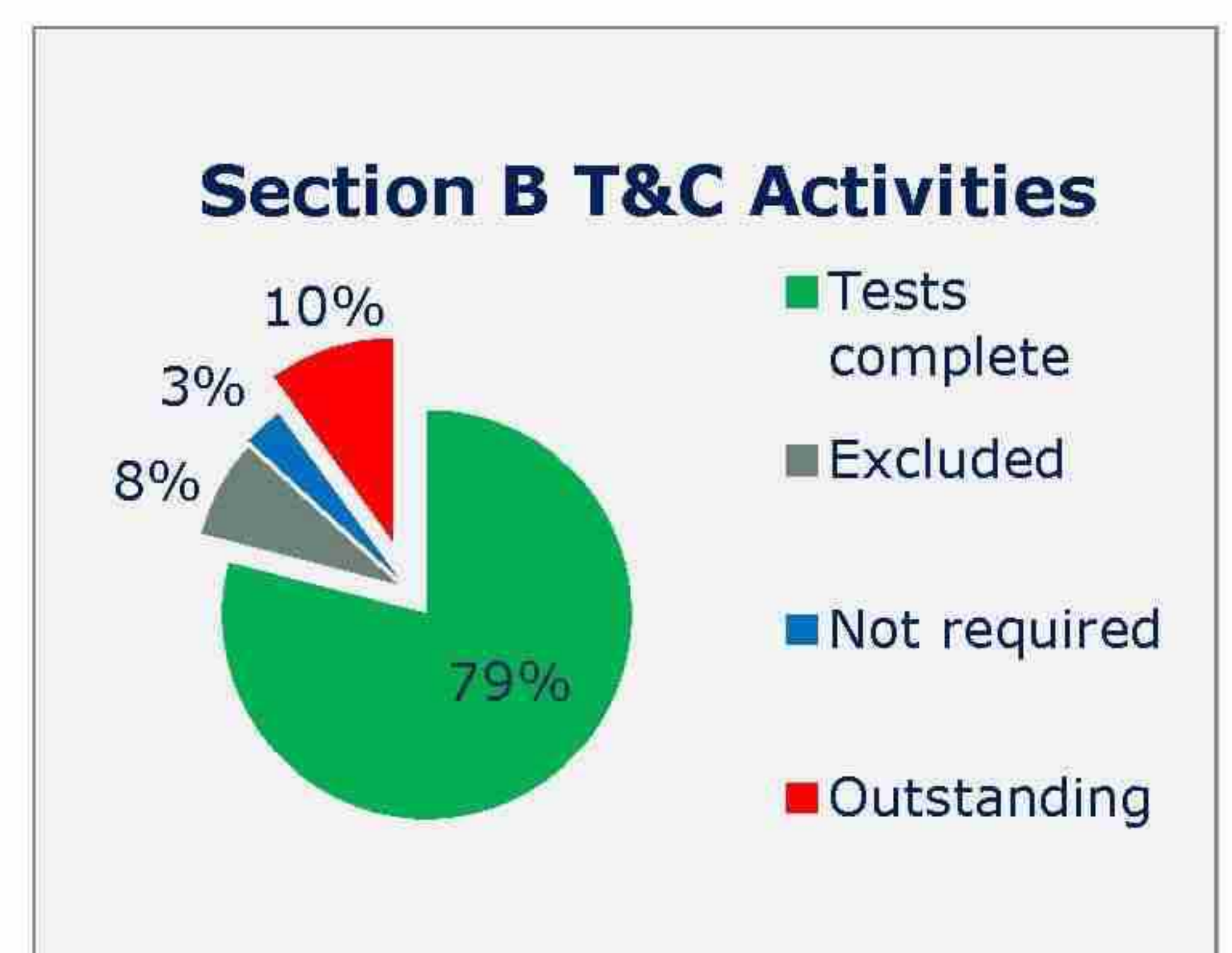
No new ICP correspondence was raised during the reporting Period.

9.4 Body of Evidence File

The evidence file is currently being updated with the information received from Infraco for Section B handover. Infraco are now providing regular updates of their Technical Library.

9.5 Technical Assurance

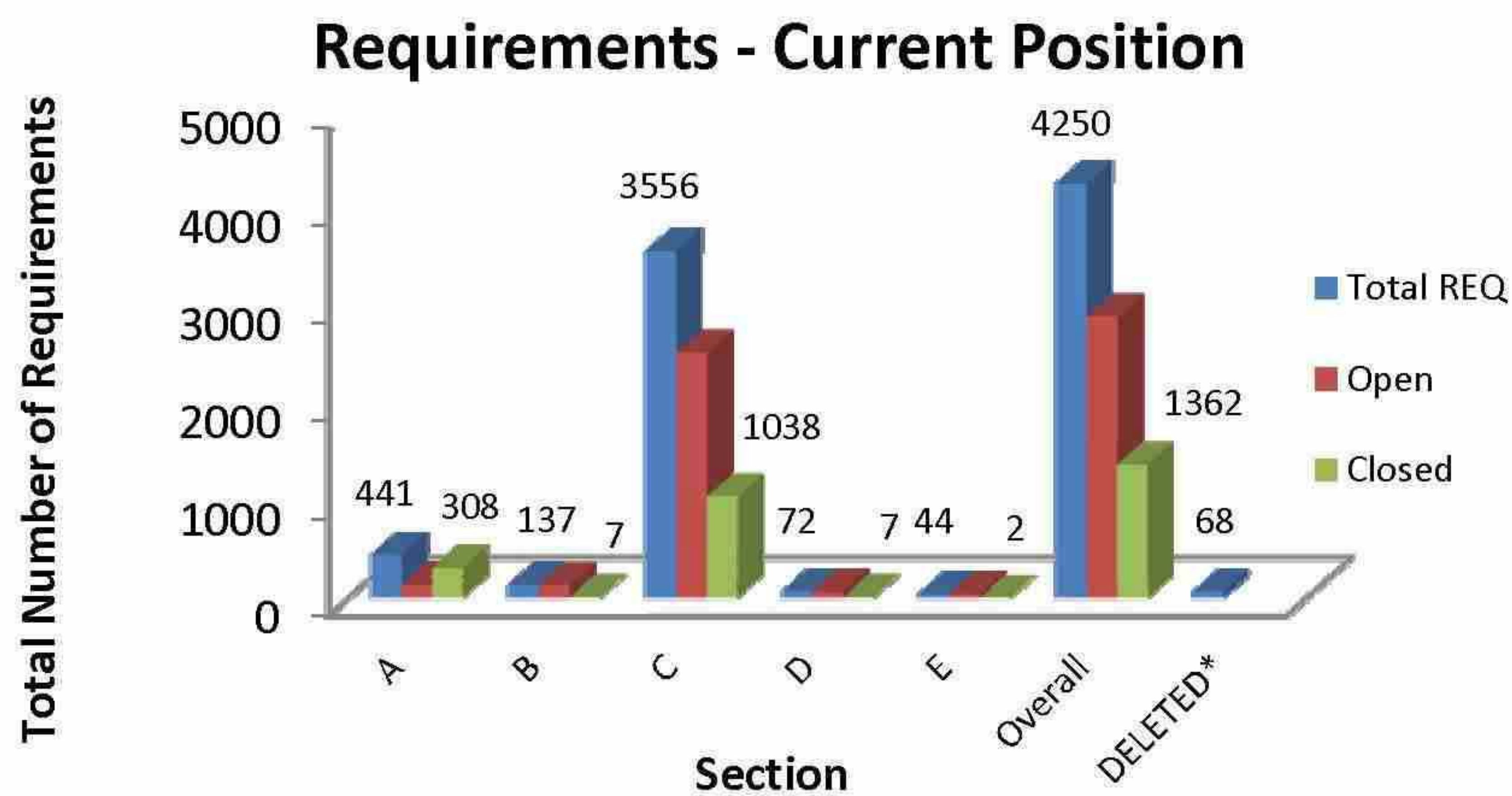
There was no Testing & Commissioning carried out during the Period; with 72 of the 91 proposed tests completed at the time of writing. Of the remaining tests, ten are excluded / not required, six relate to the radio testing which is also excluded from but still being managed under the Section B programme and three relate to the tramstop lighting. Resolution of the lighting issues is being discussed between Infraco, CEC and Scottish Power.



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9.6 Requirements Management

The total number of requirements has decreased from 4320 to 4250, as a result the concessions process. There are now 70% (308 out of 441) of Section A requirements deemed 'compliance confirmed'; with 32% (1362 out of 4250) of the total number of requirements now closed. There were 534 requirements, 13% of the total requirements, closed during the last Period.



During a meeting held between SDS, CEC and Infracore it was agreed that further consideration needs to be given to changes made by CEC through the construction process, which have not been picked up as part of the SDS design. The SV Team are to discuss this matter with CEC.

The concession requested by CAF to deviate from the single Asset Management System defined in the Employer's Requirements is expected to be addressed in the coming Period.

9.7 Project Insurance

Turner & Townsend have received confirmation that the Assessor has no further comments to raise against the mitigations put in place to manage the Risk Improvement Measures identified during the recent 'Risk Assessment Survey' carried out on behalf of the OCIP insurers.