

## Programme summary and risk report

### Overview

- ▶ The construction programme has been developed with BBS and tie in conjunction with senior representatives from major stakeholders including City of Edinburgh Council, Lothian Buses and Lothian and Borders Police.
- ▶ The construction programme commences in February 2008 (Off-street – August 2008 On-street with road works at FOW) and delivers Open for Revenue Service of Line 1a in March 2011 with Line 1b (if sanctioned) in December 2011.
  - ▶ Line 1a – Commence Infraco Construction – February 2008
  - ▶ Line 1a – Depot completion November 2009
  - ▶ Line 1a – First Tram delivery December 2009
  - ▶ Line 1a – Shadow running commences November 2010
  - ▶ Line 1a – Open for Revenue Service – March 2011
  - ▶ Line 1b – Commencement of Infraco Construction – July 2009
  - ▶ Line 1b – Shadow running commences September 2011
  - ▶ Line 1b – Open for Revenue Service – December 2011
- ▶ The programme is primarily constrained by the following factors
  - ▶ Delivery of Design to meet construction programme
  - ▶ Delivery of MUDFA to meet construction programme
  - ▶ Consideration of potential resource constraints on particular skills (i.e. rail welders)

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- ▶ The programme is also underpinned by a number of assumptions with the main ones being:

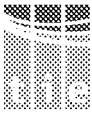
#### EMBARGOS (Limits being Haymarket junction to Picardy Place)

- August Festival Embargo is from 1st Sunday in August to 1st Sunday in September annually.
- Christmas Market Embargo is from the Thursday preceding the 1st Sunday in December to 1st working day after New Year annually.

#### Programme Logic Assumptions

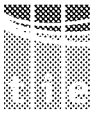
- Temporary Utility diversions across Tower Place Bridge can be carried out in advance of Infraco thus not restricted any programme Infraco works.
- The current design in Section 1a between Ocean Terminal and Newhaven is simplified from the current design i.e. currently designed roundabouts are replaced by T-junctions etc.





- Princes Street Construction is based on planing back the existing road structure to a sound base and replacement with an acceptable roads construction suitable for purpose to suit the revised road surface profile. Full depth reconstruction has not been programmed for.
- In respect of footways, full reuse of existing kerbs and flags and minimal reinstatement behind kerb lines is assumed. i.e. not wall to wall.
- Should full or part re-construction be required it is likely that Princes Street programme would extend after the August embargo. This would then mean that the section between Waverley Bridge and South St Andrews Street would potentially be delayed until after the December 2009 embargo thus clashing with the Picardy place works scheduled to commence Jan 2010. As the traffic management for Picardy place assumes the completion of Princes Street as a diversionary route this would require reconsideration.
- Provision of servicing to business's along Princes Street will be considered during detailed Traffic management procedures.
- The programme assumes a temporary suspension of the embargo for Catenary works in Picardy Place in August 2010 to achieve construction completion of line 1a in September 2010 and subsequent Open for Revenue service in Feb 2011. If the embargo is not lifted then the construction completion and subsequent Open for Revenue Service date will be delayed to March 2011 as above.
- All programmed durations are based on the contractor working within the confines of the Code of Construction Practice.
  - Mon – Fri 7am – 7pm (5x12hrs = 60)
  - Sat 8am – 1pm (5hrs)
  - The programme has assumed a 5 day working week to provide a realistic picture of what may be achieved. Additional contingency is that there is scope to increase working time by approx. 20% by extending Saturday to a full day and including Sunday working. Obviously this would be dependant on the agreement of CEC, the availability of resources and agreement of affected business's
  - The only area's that have so far been considered outside of CoCP hours are major junctions, but this was felt only to be beneficial if it was followed by a holiday Monday as the curing time for concrete even with an accelerant would mean concrete having to be poured by lunchtime on a Saturday. Although not yet included as part of the core programming further detailed planning may re-visit these options.
  - BBS have allowed 5x40hrs for productive output but have not included for breaks, weather, downtime etc





## **Specific Programme Comments** **Lothian Rd Junction to South Charlotte Street**

Enabling works required involve opening the junction between Shandwick Place/Queensferry St/Hope St. which will be undertaken under the MUDFA contract commencing 7 January 2008 but further temporary road surfacing may be required under Infraco along with some permanent surfacing. This will establish a gyratory traffic flow on Princess street / Hope Street / Charlotte Square / South Charlotte street under temporary traffic signal control.

One lane of North bound traffic from Lothian Road will be diverted across Princes Street/Queensferry Street/Hope Street junction into Hope Street merging with the traffic in South Queensferry Street thus allowing the section of Princes Street between Lothian Road and Sth Charlotte St to be closed for Infraco works.

One lane of traffic will remain westbound from Lothian Rd into Shandwick Place.

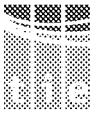
Pedestrian crossing facilities will be maintained across Fraser's corner junction

Additional traffic management will be installed in George Street to facilitate the diversion of traffic away from Princes St. which may involve the temporary suspension of existing central parking and the removal of some monuments.

## **Princes Street**

- The full section between Lothian Road Junction and South St.David Street is all programmed to complete between Jan.2009 and the end of July 2009.
- The only section of Princes Street that will remain after the August 2009 embargo will be the section between Waverley Bridge and South St.Andrew Street which will be constructed after the traffic management is switched from South St.Andrew to the permanent solution to South St.David during September / October 2009  
It should be noted however that further works will be required to install OHL poles and catenary during May/June 2010 along the full length of Princes Street under local traffic management.
- The Princes Street works from South Charlotte Street will move progressively eastwards as twin track culminating at South St David Street in July 2009.
- It is expected that within around 6-8 weeks of starting that the full work section of Princes Street in its entirety will have construction work of some extent ongoing.





- It is unlikely that sections of Princes Street would be considered for re-opening to traffic prior to the completion of the section between Lothian rd and South Charlotte street at the end of July 2009.
- Also in recognising the importance of a north-south traffic flow, the Mound junction will remain open throughout the construction period by switching traffic management between Hanover and Fredrick streets as required.
- Provision of servicing to business's along Princes Street will be considered during detailed Traffic management procedures.
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### **Waverley Bridge Junction**

Waverley Bridge junction to South St.Andrew Square will be constructed following the August 2009 festival embargo. As this is a particularly important construction section in relation to track geometry it is important that the permanent traffic management is in place with traffic flows through South St.David Street to allow this section to be done in a controlled manner.

### **Haymarket to Shandwick Place**

Traffic management will be put in place to divert eastbound traffic away from the A8 prior to Haymarket junction with traffic diverted into either Magdala Crescent, Coates Gardens or Rosebery Crescent and then along Melville Street exiting on South Queensferry Street.

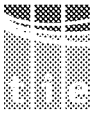
Infraco construction will progress from Haymarket junction eastwards to Shandwick Place. There will be a section left out in West Maitland Place either side of the Palmerston Place / Torphichen Street junction to avoid traffic management clashes with Lothian Road junction. This section will be completed following the completion of Lothian road junction.

### **A8 Underpass**

This section of the programme has been sequenced in such a way as to avoid the Highland Show at Ingliston Showground in 2008. The sequencing has also considered the interaction with the section of track along the guided busway and this has been programmed to reduce as far as possible the overlap between these two areas.

Traffic management for this section has now been agreed with all major stakeholders and preference is for a phased 1-4 as per AIP.





## **Programme Risks**



### Design Delivery fails to meet required programme

Impact – Infracore would be unable to achieve contract close thereby delaying commencement of construction works. (This assumes novation proceeds as planned and Infracore accept design programme risk). The impact to programme could be between 3 to 6 months.

#### Treatment Plan

Regular reviews of design programme to identify critical or near-critical design. Agreed action plans in place by individual design items to align design programme with construction programme. There is an allowance of £3.8 million within the project risk allowance for this risk.

### Utility diversions fail to meet required programme.

Impact – potential delay to specific area's. Unlikely due to programme logic being based on MUDFA Rev.06 Construction programme. Delays within any expected area are anticipated to be less than 4 weeks.

#### Treatment Plan

Micro-management of design ensured timely delivery of designs to meet MUDFA Rev 06 Construction Programme. There is an allowance of £1.35 million within the project risk allowance for this risk.

### Complete road reconstruction required to part or all of Princes Street.

Impact – would potentially delay the section between South Charlotte Street and South St.David Street thus making it unlikely that this could be completed by the August embargo whilst maintaining the Code of Construction Practice working agreements.

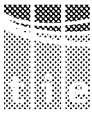
### Princes Street construction programme is delayed

Impact - this would then delay the section between Waverley Bridge junction and South St.Andrew Street as one is dependant on the other for Traffic management. This in turn would delay York Place and Picardy Place as diversionary route for South/West bound traffic is along the completed Princes Street.

#### Treatment Plan

Risk diminishing through design development – potential to increase CoCP working regulations to negate any scope increase. There is a general delay risk within the project risk allowance of £3.1m.





Archaeological discoveries particularly in section 1A Newhaven Road to Foot of the Walk.

Impact – would be on a location by location basis but has the potential to delay this section.

Treatment Plan

Hotspots have been identified to Infraco and advanced works to be carried out by tie in conjunction with CEC Archaeological Officer. There is approximately £400k provisional sum within the contract for archaeological discoveries.

Network Rail Possessions cancelled

Impact – would seriously hamper the constructor's ability to build lineside structures and would undoubtedly delay completion of off-street section.

Treatment Plan

Infraco attendance at regular Network Rail possession meetings to review developing programme requirements. Disruptive possessions booked to December 2009.

Network Rail Immunisation not completed.

Impact – would prevent the energisation of the Gogar Depot with knock-on delay to Tram type testing and driver training.

Treatment Plan

Scope and programme to be confirmed once the modelling and testing strategy has been completed. The initial modelling has established the theoretical baseline for zone of impact between tram and rail networks for the immunisation works and some design mitigation. The modelling further recommends some verification testing of key areas identified and may further refine the model. This will then provide an agreed impact zone to include within safety document being generated as a result of meetings with NR. Resource in this area has been strengthened and the modelling and testing study is progressing well and is expected to be complete by the end of January 08.

Network Rail Haymarket Depot Change

Requirement to meet Depot manager's requirement of only one contractor working at any given time within the limits of Depot Yard unduly affects Infraco's ability to deliver construction programme.

Impact – parallel construction activities programmed in some instances.

Treatment Plan

Infraco Project Manager attending Network Rail Depot meetings to review developing construction programme with Network Rail.



