

FORTH ESTUARY TRANSPORT AUTHORITY
CAPITAL PLAN - SPENDING REVIEW

Comments on Projects within Capital Plan 1 - Essential 140710

Capital Schemes	Comments
Vehicle Replacement	Rolling programme of vehicle replacement. £100k spend in 2011/12 is to allow for replacement of tower wagon and breakdown recovery vehicle which are no more than 10 years old.
External Repairs to Buildings	Works programmed for 2013/14 deferred until 2015/16
Upgrade CCTV & intruder alarms	N/A
Landscape Works	Works required to trim trees in area around Administration Offices at South Queensferry to maintain views of existing Bridges and FRC.
Refurb Canteen	N/A
Parking Areas Landscaping & reconstruction	Payment in 2011/12 is release of retention for works completed in 2010/11. Committed.
Toll Eq Rep/Plaza Impr/Adm Bld Extension	N/A
Replace FRB VMS System	N/A
Resurface Main Span South	Resurfacing of southbound carriageway on main span programmed for 2012/3. If surfacing on main span deck panels is not acting compositely with waterproofing membrane and deck plate then there is a risk of the deck plates becoming overstressed leading to fatigue cracking at stiffener/plate interface.
Resurface Main/Side Spans North	N/A
Resurface Viaducts and North Approaches	Works programmed for 2013/14 deferred until 2015/16. Viaducts were last resurfaced in 2000 and have no waterproofing membrane. Surfacing has shown increasing signs of distress in recent months. Deferring work will increase interim revenue cost of patching and localised repairs to deck.
Resurface Plaza & Service Road	N/A
Viaduct Gantries Contract	N/A
Viaduct Outrigger Beams	Works programmed for 2013/14 deferred until 2015/16.
Viaducts Painting Access	To achieve full value from applying new paint system work programmed to start 13/14. This would be 30 years + since the last major re painting. Expenditure required to provide full containment system to allow painting of the viaduct box girders, Works will involve the installation of permanent anchors in the underside of the viaduct to allow a hanging scaffold to be installed to undertake the work.
Viaducts S3 platform and access	
Tower Painting/Dropped Objects Canopy	The Dropped Object Canopy, which is a temporary structure, requires to be dismantled and removed from the Bridge once the North Main Tower painting programme has been completed.
Main Cable Acoustic Monitoring	Expenditure in 2011/12 is for installation of permanent cabling system as a present system operates on a temporary cable network. Additional costs required to modify system to increase number of sensors which will improve reliability and accuracy of the system. The existing system was one of the first installed on the main cables of a suspension bridge and these systems have developed since installation.
Main Cable Dehumidification	Costs identified are for ongoing maintenance which was included in the installation contract. Committed.
Main Expansion Joint Replacement	Payment in 2011/12 is release of retention for works completed in 2010/11. Committed.
Viaduct Bearing Replacement	Committed project currently in progress.
Truss End Linkages	An assessment of the connections between the main towers and the suspended structure has identified that several key elements in these connections have overstress indices greater than 1.0 at the ULS even when using the reduction afforded by Bridge Specific Live and Footway Loadings. There is no structural redundancy in these key elements. Historic Scotland likely to have an input which may increase cost.
Tower Wind Barriers/Impact Strengthening	These are in essence two separate projects which given their proximity would likely be carried out by single contractor. Tower impact strengthening/protection is to strengthen or provide a barrier at the towers to the towers to reduce potential impact damage by HGVs. Localised Wind Barriers at main towers are for operational reasons to reduce risk of empty curtain sided vehicles blowing over in high winds. As well as potential risk to other users such incidents are likely to cause significant traffic congestion.
Suspended Span Painting	To achieve full value from applying new paint system, work programmed to start in 14/15.This would be 30 years since the last major re painting of the truss. Expenditure required to provide full containment system to allow painting of the truss. Works will involve the installation of a large temporary gantry system. It should be noted that if the dehumidification of the main cables fails and replacement cables are required then significant additional work would be required to the truss as part of the truss strengthening scheme and painting would have to be delayed until those works were completed.
Suspended Span Gantry Refurbishment	One of the main drivers of this refurb is to change the mode of powering the gantries to remove the need for personnel to walk ahead on the open steelwork.
Suspended Span Truss Strengthening (Capital element)	The full extent of this work is yet to be confirmed by the Cat 3 Checker. It will go ahead slightly in front of the painting works using that access. See also note on main cable replacement.
South Anchorage build ext & storage area	The existing storage shed located within the south anchorage compound will be demolished as part of the anchorage investigation project. The south anchorage compound area will also be unusable during the anchorage investigation works as this area will be required for the works. These facilities will require to be reinstated on completion of the anchorage investigation project.
Aircraft Warning Lights	N/A. Project completed.
Main Towers Cathodic Protection (Piers)	Expenditure is required to repair the existing cathodic protection to the main tower pier defences which is not operating fully.
Replace weigh in motion system	N/A. Project completed.
Comp House Improvements	Project deferred. The existing air compressors which feed the Bridge ring main are approximately 30 years old and will require to be replaced at some point.
Improvements to Deck Half Joints	There is a long term problem with the half joints between the deck panels on the suspended structure. This is due to the original design of these joints which are not accessible for maintenance. As a result the joints have become worn and adjacent deck panels are now misaligned. This affects ride quality and long term structural integrity of the deck; it also requires a large Maintenance input to reduce the effect on the structure. Two prototype designs have been developed and it is intended to install these on the bridge to assess their suitability as a long term replacement for the existing joints.
High Mast Light Replacement	The existing lighting system on the plaza area at the south end of the Bridge dates from the mid1970's and consists of a mixture of high mast lighting supplemented by lower level lighting around the periphery of the area. The high masts are of particular concern as they have exceeded their design life and there are concerns about the structural integrity of the masts. The lighting heads on the masts are maintained by lowering the head via a hoist system built into the mast. Due to the design of the masts we are unable to meet our statutory obligations regarding the inspection of the hoist systems. A feasibility study report has been prepared which recommends the replacement of the existing system with lower level lighting columns which will be easier to maintain, more environmentally friendly, will be cheaper to operate and less visually intrusive.
Cable Band Bolt Replacement	During the main cable dehumidification project a number of nuts on the cable band bolt assemblies were found to be cracked. As access was available as part of the dehumidification project, the damaged nuts were replaced at that time. However, further investigations have identified further nuts which are cracked and which will require replacement. These are highly stressed elements which are critical to the integrity of the structure.
North Approach Rock Cut Stabilisation	The condition of the rock faces in the cutting on the north approach to the Bridge are a cause for concern. A geotechnical report has advised that works to stabilise the rock faces should be undertaken. Part of the rock cut area will be required by Transport Scotland as part of the FRC project but FETA will remain responsible for approximately 50% of the existing length of the cutting.
M9 Spur extension / A8000 upgrade	Committed expenditure. Residual costs from M9 Spur project associated with compensation claims, etc.
Administration Block Upgrade	
Suspended Spans Underdeck Access Improvements	Project deferred. Future project, the extent of which will be determined by the outcome of the Suspended Spans Underdeck Access Study detailed below.

Revenue Schemes	
Main Cable Investigation	An internal inspection of the main cables was carried out in 2004 and 2008 and corrosion of these vital elements was found. A dehumidification scheme was installed and a further inspection is planned in 2012/13.
Parapet Investigation	completed
Bridge Specific Assessment Live Load	Required to enable a reduced loading to be used to assess the structure. Continual monitoring required on two yearly basis.
Suspended Span Truss Strengthening (Revenue element)	completed
Contingencies / Minor Works	as described
Anchorage Investigation	The anchorages on the Forth Road Bridge are of a unique design and this work is considered essential to ascertain the structural integrity of the main cable anchorages
Main Cable Replacement/Augmentation Study	
Suspended Spans Underdeck Access Study	The walkway and staging board system on the suspended structure is approaching 30 years of age and a feasibility study report has been commissioned to ascertain the condition of the existing system and advise on future refurbishment/replacement options. The staging boards, which are removable, have a finite life span and there are also manual handling issues with these elements of the system.