FETA Risks 28th August 2009

6.1 These reserves are subject to a number of key risks, the most significant of which are;

6.1.1 Future bridge strengthening and improvement works yet to be determined.

6.1.2 Main Cable Strength. The inspection of the main cable in 2008, determined that the cables had lost around 10% of capacity due to corrosion. A system of dehumidification is being fitted to the main cables and is expected to be fully commissioned by the end of 2009. Dehumidification is a well-tried system of preventing corrosion of steel and is already in use in the anchorage chambers of the bridge. However, its application to main cables of suspension bridges is relatively new. Such systems are being fitted to new bridges to protect them from corrosion and retrofitted to older bridges in Japan, Sweden and Denmark where corrosion has been uncovered. Whilst there is good reason to have confidence that dehumidification can slow down or halt corrosion there is no body of evidence yet available to allow an unconditional assurance to be given that this will work on the Forth Road Bridge.

6.1.3 Anchorage Investigation. A total sum of £7.188m has been allocated to this project. However, the work is likely to involve excavation in rock to expose the post-tensioning strand in the anchorage tunnels and will have to be done with extreme care to avoid damaging the strands. It is further complicated by both the proximity of the existing viaduct piers, local housing and access roads. Environmental issues are also a key risk. In addition, full scale testing of the sockets within the anchorage chambers is also being considered and access, containment and designing one off testing equipment will increase the financial risk. The project is also undergoing a peer review and this may change the nature of the investigation.

6.1.4 Viaduct Bearings Replacement. Given the increase in actual tender prices against estimates recently received for the Main Expansion Joint replacement contract, there is a risk that a similar increase in cost will occur for this project. That risk will increase if only a small number of contractors apply for inclusion on the tender list.

6.1.5 Suspended Span Truss Assessment. The checking process for this assessment has commenced and may result in further strengthening work being required on the Truss.

6.1.6 Parapet Investigation. Following the successful completion of the Suspended Span Parapet testing, work on the Viaduct Parapet testing has now commenced. This work may lead to a re-evaluation of containment levels and a further assessment of the need to replace the

Viaduct Parapets. A sum has been included in the Capital Plan for replacement.

6.1.7 Cable Band Bolts. £0.630m has been included in the Capital Plan for this work. However, until the full extent of the cracking is determined the final cost of the remedial works can not be established. Ten cracked nuts in total have been found and replaced. The investigation into the cause of the failures is anticipated to be completed in the Autumn of 2009, and a final report will be brought to the Authority.

6.1.8 Main Cable Dehumidification. The wrapping of both main cables has now been completed and the risk of further delays and subsequent costs due to weather are now low.

6.1.9 Main Expansion Joints. The decision to delay the replacement of the main expansion joints until the opening of the Forth Replacement Crossing in 2016 was made in February 2009. Additional inspection and monitoring regimes to the joints, including the removal of all the plate trains on a rolling programme up until 2016, will be carried out and temporary failsafe devices will be installed along with the replacement or modification of key components such as pins and springs. A new permanent access system is being procured to facilitate both the inspection and monitoring of the joints. The access system will also be used to assist in the future replacement of the joints. However, given their age, there is still a residual risk that, in the event of an unforeseen significant failure of the joints, full replacement would have to be carried out before 2016. There is also a risk of delay to the Forth Replacement Crossing Project and if such a delay occurred then a review of the joint replacement programme would have to be carried out.

6.6.0 Improvements to Deck Half Joints. A sum of £0.401 m has been included for this work in 2009/10 to 2011/12. This is to carry out a trial erection of an improved detail at the orthotropic deck half joints. These joints occur every 18 metres and the original detail is causing both structural problems and issues with ride quality. The maintenance of the existing detail is taking up more and more time and resources. The cost of replacing all 768 of these joints has not been allowed for as further discussion will be required following the trial.

6.6.1 Suspended Spans Underdeck Access. The existing steel and aluminium access system is almost 30 years old and is likely to need considerable remedial work or complete replacement at some stage in the near future. A sum of £0.100m has been included for investigation into either replacement or remedial work. The cost of replacement is likely to be significant but has not yet been allowed for in the Capital Plan.

6.6.2 A8000/M9 Spur – Currently a number of matters have still to be concluded that may impact on the final cost of the scheme. Forecasts

built in are currently based on “Best-Case” settlement assumptions and may be subject to review as highlighted in paragraph 4.3.

6.6.3 It should be noted that the main key risks remain the condition of the Main Cable and the Anchorages. Investigations are continuing into both elements and as results from these investigations become available then the level of risk can be evaluated. No allowance has been made in the Capital Plan for the replacement of the Main Cables or the Anchorages.