

A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	Value Engineering Opportunities For Tram Project Structures												
2	ACTION PLAN												
3	Following Week beginning 1st October 2007												
4													
5													
6		Plan will be implemented once approved by CEC											
7		Plan implemented											
8		Plan prepared											
9		Major issue to resolve risk catastrophic to option											
10	SDS Ref	be VE Ref	Structure	Proposal	Value Est	Depot VE	Phase 1A	Phase 1B	Assumption	Action Plan (L. Murphy Lead)	CEC Structures Position	CEC Planning Position	Other
11	1a		Edinburgh Park-Viaduct	Standard Cladding to South side	0.15		0.15		The cladding to the north must by agreement be natural stone however The agreement only relates to the North and could be standardised to the south if the right balance of colours were used	SDS to be instructed to use sympathetic but cheaper cladding to Earth retention on North (£190k saving)	No concerns over cladding type as long as it meets design codes	Different materials on either side would require careful consideration (palette of colours)	
11	1a	S27	Edinburgh Park-Viaduct	Steel Structure	tbc		tbc		Concern over price of steel however bidders concerned over availability and constructability of concrete beams	Edinburgh Park workshop to be arranged to engage help of their architects to find a VE solution. Ed Park warmed up to idea at last meeting, discussions commenced with I Spence. Master Programme impact to be assessed for any change considered.	Would be pleased with weathered steel as long as carefully designed with appropriate clearances as per spec to avoid splash from road grit avoided - Grit from the vehicle will be less of a problem and as the track - grit street - will not require gritting + for maintenance. They appreciate the need to reduce costs so would consider high spec painted steel with additional sacrificial weight. Whole life cost must be considered rather than just capex. May be more of an issue to Network Rail.	Edinburgh Park Side Agreement requires concrete support columns. A steel structure if designed sympathetically and detailed efficiently would be acceptable. In theory a steel structure would provide a more elegant solution and would therefore be desirable. Detailing to avoid staining if weathered steel would be required. This is a keynote structure. Edinburgh Park and Planning should be included fully in any optioneering	Bidders still keen to explore
12	1a	S27	Edinburgh Park-Viaduct	Side poles	tbc		tbc		Requires side poles agreement	Edinburgh Park workshop to be arranged to engage help of their architects to find a VE solution. Ed Park warmed up to idea at last meeting, discussions commenced with I Spence. Master Programme impact to be assessed for any change considered.	No issue as long as supports adequately designed to Network Rail satisfaction. Consideration to maintenance over railway if ever require replacement or painting.	Planning concern Edinburgh Park desire to reduce visual impact though use of centre poles. If Side poles can be shown to be not unattractive within the context of the whole bridge through colour and scale Centre poles could be considered desirable not essential.	
13	1c	S27	Edinburgh Park-Viaduct	Reduction maintenance footways	tbc		tbc		This may cause difficulty accommodating the banks of ducts required for power and comms (these require separation) at present a bank of 8 is designed into each footway, cost saving would be in the reduction of the structure width by approx 1m and therefore the volume of concrete.	Edinburgh Park workshop to be arranged to engage help of their architects to find a VE solution. Ed Park warmed up to idea at last meeting, discussions commenced with I Spence. Master Programme impact to be assessed for any change considered.	As long as operationally this could be accommodated this would not concern CEC Structures	Planning concern this would not concern CEC Planning.	
14	1d	S27	Edinburgh Park-Viaduct	Parapet	tbc		tbc			Consider in the context of whole bridge. Change would probably not receive prior approval. J.M.C.E. to close out whether worth pursuing further with I Spence.	No issue as long as final option meets NR requirements and is anticlimb	considerable effort has gone into agreeing design the intention is to draw the eye to the flowing line that this will provide. Fits with context of surroundings loss of this would make side poles less acceptable.	
15	2	W16	A8 retaining wall - adjacent Depot	Simplify/abolish by Northwards depot move	2	2			Depot move north and rotate.	SDS Redesign Depot. Order issued Change estimate CN067	Not a bridge - structure	Prefer to move opportunity for painting	
16	3	S17	Tower Place Bridge (docks)	No walkways from tram budget - Walkers and cyclists to use existing adjacent bridge!!!	2		2		Funding to be provided from non-Train sources as these are not budget items, i.e. this is cost avoidance rather than a saving on a budgeted item.	SDS Redesign. Order issued BC Leading Negotiations with FP	Structures will assess design at appropriate time. TR and VO bridges are to be transferred from both Ports and now handling the possible loss of rail walkways for the TR and VO bridges. CEC require the structures to be of adaptable standard. Proceed on the basis discussed with Design (I Spence) (one-way) and Strategy (I Spence) (two-way) and already communicated to RB (Scott New)	Planning will continue consultation with SDS regarding transfer of walkways. TR and VO bridges are to be transferred from both Ports and now handling the possible loss of rail walkways for the TR and VO bridges. CEC require the structures to be of adaptable standard. Proceed on the basis discussed with Design (I Spence) (one-way) and Strategy (I Spence) (two-way) and already communicated to RB (Scott New)	
17	4	S16	Victoria Dock Bridge (docks)	No walkways from tram budget- Walkers and cyclists to use anticipated until future nearby	0.5		0.5		Funding to be provided from non-Train sources as these are not budget items, i.e. this is cost avoidance rather than a saving on a budgeted item.	CEC instruction no change to Victoria Dock Bridge as 1 footway exists	CEC instruction no change to Victoria Dock Bridge as 1 footway exists	CEC instruction no change to Victoria Dock Bridge as 1 footway exists	
18	5		Eight maintenance walkway structures	No walkways - Total cost of structures - per average Bidders figs:	0.99		0.99		Confirm Operationally acceptable. Assess impact on whole project cost prepare change to SDS design. Inform bidders) of intention	No issue as long as long as maintenance and operation can be accommodated with adequate procedures	No issue planning prefer to concentrate on keynote structures walkways no visual impact	Note from Murrayfield Halt to Balgreen approx 1km would give longest walking distance of 500m	
19	6	S22	Balgreen Road										
20	7	S20	Russell Rd bridge & IM2										
21	8	W5&M4	Russell Rd Retaining Walls & M5										
22	9	S21A	Roseburn St Bridge & M										
23	10	S21B	Murrayfield Stadium retaining wall & IM5										
24	11	S21D	Murrayfield Training pitches retaining wall & OM7										
25	12	S21E	Water of Leith Bridge & IM6										
26	13	W8	Baird Drive retaining wall										
27	14		Depot Access bridge	Simplify as a result of Northwards depot move	0.39	0.39			Depot move north and rotate.	No room so only on south 1	Reduction requires 2 smaller structures in place of 1 big difficult one SDS estimate increase. Still beneficial as will help realise other Depot VE savings Change estimate given	Structures will assess design at appropriate time	Planning will continue consultation with SDS through design process within context of Depot. Not a keynote structure
28	15	S32	Lindsay Rd retaining wall	Simplify/abolish through FP agreement to area works	1		1		Agreement of Forth Ports	Barry Cross Leading Negotiation FP will fund differential from Preliminary Design	Final design will be managed by Agreement with Forth Ports. FP will fund any delta from preliminary design	Planning will continue consultation with SDS through design process within context of Depot	
29	16		Carrick Knowe bridge	Simple parapet	0.085		0.085		Ensure that appropriate safety standards are provided.	Change would probably not receive prior approval. J.M.C.E. to close out whether worth pursuing further with I Spence.	No issue as long as final option meets NR requirements and is anticlimb	It is considered to be a keynote structure. Considerable effort has gone into agreeing design the intention is to draw the eye to the flowing line that this will provide. Planning have resisted any further change.	
30	17	S23	A8 underpass	Reduce headroom from 5m to 4.4m also revise construction methodology	2		2		Major cost element is construction - traffic diversion arrangements likely to be key and dependent on which bidder is appointed. Choose least cost option - but may be most attractive option for structure	Instruction to SDS. Clarify with bidder(s) whether headroom already banked take forward construction method through PB stage	No issue on Headroom. Train only. Comfort given that if repair required to north possession would be required in either respect. Any major additional disruption to A8 traffic would be undesirable	No issue	
31	18	S28	Haymarket Viaduct	Reduce deck length from 5 spans to 2 and replace those 3 spans with retaining wall	0.25		0.25		The design can be produced to satisfy CEC Planning	Clarify legal position on parliamentary submission. Discuss with I Brown whether this can be rationalised. Does use of these spans release land back to network rail and therefore give better savings?	No issue	CEC Planning requirement for crisp design otherwise not wedded to 5 span structure	SDS raised concern that use has been found for all 5 spans Parliamentary submission states 9 spans
32	19	S19	Russell Rd Bridge	Adopt "Roley" suggestion for cladding changes	0.1		0.1		Larger excavated footprint during construction will prove acceptable.	Requires instruction - further consultation through design process to give comfort	Normal situation as long as solution meets design standards ok.	Not an issue as long as this does not affect the permanent look	
33	20	S20	Crew Rd Gardens Bridge	Move Tram alignment Eastwards and adopt shared running over approx 1km. Allow deletion of bridge and reduction of adjacent retaining walls.	3		3		No impact on CEC Planning, Policy or Maintenance issues	Requires instruction - further consultation through design process to give comfort	No concern Existing structure was designed to be extended on street running no issue	less retaining walls will theoretically be more attractive	Tram Run time decision
34	21	S12	Coltbridge Viaduct	Interface tracks over viaduct to eliminate need for structural change	0.8		0.8		No impact on CEC Planning, Policy or Maintenance issues	requires instruction - further consultation through design process to give comfort	Desirable less maintenance issue	Desirable structure not listed but important in cityscape proposal would be less obtrusive	Tram Run time and expandability decision
35	22	S2	Gogar Burn Bridge, South Gyle Access Road Bridge, Roseburn Terrace Bridge	5% of cost of structures to reduce their cost through VE - details yet to be specified	0.12		0.12		Further assessment through detailed design process to give comfort		as long as there is no departure from standards requested no concern.	as long as there is no detriment to visual impact and functionally requested no concern.	these could be added to no footway list
36	23												
37	24												
38	25				12.608	1.61	7.195	3.8					
39	26				0.335		0.335						
40	27				12.271		6.86	3.8					
All statements above confirmed with CEC wb - 08/10/07													

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11				Rough Estimate of SDS										
12				redesign cost 100k/structure	2.9		1.1	0.2						
13					9.805		5.76	3.6						