

## Edinburgh Tram Network – Infraco Contract

### Design Due Diligence Summary Report

2B	18/02/2008	Minor error corrected - Issue for onwards submission to tie
2A	15/02/2008	Issue for onwards submission to tie
2	15/02/2008	First Issue
1	08/02/2008	Draft Issue for Comments
-	06/02/2008	First Draft Issue for Comments (TB Internal)
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## Content

1	Executive Summary.....	3
2	Introduction.....	4
3	Methodology.....	4
3.1	Relevant Documents.....	4
3.2	Responsibilities.....	6
3.3	Interface with Siemens.....	6
4	Design Programme.....	6
5	Design Review Results.....	7
5.1	Design Availability / Approval Status.....	7
5.2	Design Quality.....	8
5.3	Quantities.....	8
6	Conclusion.....	9
	Not used.....	Appendix 1
	Design Due Diligence Matrix.....	Appendix 2
	Not used.....	Appendix 3

## 1 Executive Summary

In order to determine the design status prior to contract award a technical due diligence has been carried out for the design of the Edinburgh Tram Network Project. The due diligence process has been based on the relevant design information received by BBS by 14 Dec 2007.

Contrary to the **tie**'s original intention for this project stage, the design is incomplete and will require significant further development. Several sections are currently under re-design and the final concepts for these are unknown to us. According to the SDS document tracker more than 40% of the detailed design information has not been issued to BBS at all by the above mentioned cut-off date.

Where the detailed design is available, it is mostly of acceptable standard. However, this does not apply throughout. Particular areas of concern are the geotechnical and earthworks design, the pavement design as well as the design of tram stops and certain structures.

No geotechnical interpretative reports and earthworks design has been made available. The factual ground investigation report has only been issued in November 2007. There is a risk that the design of bridges, retaining walls and embankments, which was completed prior to this factual GI information being available, will change.

Over a large extent of the project the tram line runs at grade on existing roads. For cost, programme, traffic management and sustainability reasons it is desirable to retain as much existing road construction as possible. However, the necessary pavement surveys have not been carried out. Therefore, the current design does only allow for full pavement re-construction and no overlay. Provided that SDS are prepared to move away from full reconstruction everywhere, it is likely that it will take very long until an approved overlay design will be available.

For many areas the 3<sup>rd</sup> party approval status is not clear. Formal **tie** / CEC design approvals are generally outstanding. Not a single design element has received final approval and has been issued for construction.

The latest available SDS programme is version V23. This shows a slippage of more than a year compared to the programme in the SDS agreement. It schedules the release of issue for construction information from April 2008 to the end of 2008. This is based on optimistic approval periods for which no contractual reference could be found.

In accordance with **tie**'s original procurement concept a complete and issued for construction design would have been novated to the Infraco. The current design is far from meeting these requirements and, as consequence, a novation is considered to present significant and unforeseeable risks to the project.

## 2 Introduction

In October 2007 the client **tie** selected a Bilfinger Berger – Siemens Consortium (BBS) as preferred bidder for the Infraco Contract of the Edinburgh Tram Network Project (ETN).

**Tie** has previously appointed Parsons Brinkerhoff as the Systems Design Service (SDS) provider to produce the complete design for the ETN project. As part of the Infraco contract **tie** intends to novate the SDS agreement to BBS, which would result in BBS taking over the client role with regards to SDS and consequently become responsible for the design.

In order for BBS to understand the risks associated with the SDS novation at this stage the BB project team decided to carry out a design due diligence whereby the currently available design for the civil works has been assessed.

This report provides a summary of the results of the design due diligence.

## 3 Methodology

### 3.1 Relevant Documents

In addition to the preliminary design documents available during tender, **tie** provided numerous documents on CDs / DVDs and by means of an extranet data base during the preferred bidder stage. This data room contains several thousand documents of which only a limited number presents detailed design information relevant for the Infraco scope of works.

Therefore, only documents with the following discipline codes have been considered for the design due diligence:

- ACC - Accommodation works
- BRG - Bridge structures
- CND - Construction details
- DEP - Depot
- DNE - Drainage
- DRA - Designer's risk assessment
- DRG - Drawings (code predominately used for track details)
- GEO - Geotechnical / earthworks
- HRL - Highway and roads layouts
- LDS - Landscape drawings
- LTG - Lighting
- OLE - Overhead line equipment
- REP – Reports (partly considered only)
- RRR - Register (partly considered only)
- RTW - Retaining walls

- \* SCC - Supervisory, control & communications
- \* SCH - Schedules (partly considered only)
- \* SCL - Site clearance
- \* SPN - Specifications
- \* STP - Tram stops
- \* SUB - Sub-station
- \* TAL - Track alignment layout
- \* TMG - Traffic management drawings (traffic signal drawings)
- \* TVA - Track vertical alignment
- \* TSU - Track sub-station

Documents contained in the data room that have the following discipline codes do not present design information and have therefore not been considered for the design due diligence:

- \* IMG - Photographs
- \* FOR - Forms
- \* LET - Letters
- \* LND - GVD plans
- \* MEM - Memos
- \* MST - Method Statements
- \* PLG - Planning Drawings
- \* PPN - Project plan
- \* PPP - Presentation
- \* PRE - Procedure
- \* PRO - Programme
- \* REV - Review Sheets

Also all design documents with the following discipline codes have not been considered for the design due diligence, as SDS produced these for the Multiple Utility Diversion Framework Agreement (MUDFA) contract and they relate to utility diversion works, which are outwith the Infraco scope of works:

- \* UTL - Utility Diversions
- \* UBT - BT Utility Diversions
- \* CAL - Calculations / Conflict spreadsheets

In addition all uncontrolled documents, i.e. documents that are not labelled in accordance with the Project Plan, and all documents that have the random discipline code PDF, have been ignored for the purposes of the design due diligence. There are numerous such documents, which following a cursory review appear to refer predominately to utility diversion works, which are outwith the Infraco scope of works. The purpose of any other documents that fall into the 'uncontrolled documents' category is unknown to us thus we could not reasonably consider these in the design due diligence process.

The client has not provided BBS with a list of documents that shall be relevant to the Infraco contract. The BB document controller has therefore produced our own

document register, which was used to define the documents considered to be relevant for the due diligence process.

Tie continues to add documents to the data room. However, for the purposes of the design due diligence only documents received by BBS up to and including 14 Dec 2007 (design freeze date) have been considered.

### 3.2 Responsibilities

For each design element, review responsibilities have been allocated to the relevant competent member of the ETN project team.

The design due diligence process has been coordinated by the BB Civil Structural Design Department.

### 3.3 Interface with Siemens

Our consortium partner Siemens reviews and assesses the design relevant for their scope of works, i.e. the track and OLE design as well as the various M+E design elements.

These elements have therefore been excluded from the due diligence carried out by Bilfinger Berger.

## 4 Design Programme

On 19 Sep 2005 tie entered the SDS agreement with Parsons Brinkerhoff. The design delivery programme contained in this agreement showed the detailed design to be complete by 25 Oct 2007.

Consequently, it was assumed by BBS that a complete, fully approved and issued for construction design would be available for due diligence prior to novation to the Infraco.

As part of the design due diligence we have reviewed the latest SDS programme dated 05 Dec 2007 reference 'SDS V23 Full Programme'. When compared to the programme contained in the SDS agreement this now shows significant slippages.

The SDS V23 programme shows that in 2007 not a single design element has been issued for final approval. Consequently, no design element has been issued for construction.

The first packages are scheduled to be issued for construction in April 2008 (section 1B) and the last ones are not due before 28 November 2008 (section 1A). It should be noted that in our opinion these dates even assume very optimistic approval periods for which no contractual basis could be found. At the beginning of December

2007 a tender query (BBS TQ3050) was raised on this subject. To this date tie's response remains outstanding.

During due diligence it became also apparent that the design priorities do not correspond to the construction priorities. This means for example that the design of Phase 1b (Sections 3A to 3C) is quite far advanced, whereas for some sections of Phase 1a, which will be constructed first, only preliminary and concept design information is available.

In summary, during 26 months of design development the target date for the design completion has slipped by 13 months.

It appears that tie and SDS agree revised programmes at regular intervals. There is a risk that further slippage will occur as a result of this. Also we are aware that for certain design elements (e.g. A8 underpass, depot access bridge) tie and SDS are still in discussions about a feasible concept, which may lead to further delays.

It is also worth noting that tie and BBS have a mutual interest in carrying out significant value engineering. So far there is no allowance in the SDS programme for VE. Any re-design due to value engineering would lead to further delays, which would have to be considered when making the decisions whether or not to proceed with certain VE alternatives.

## 5 Design Review Results

The 'Design Due Diligence Matrix' included in Appendix 2 contains detailed comments to items that have been reviewed and assessed in the due diligence process.

The following sections provide a summary of the key risks identified. For further details refer to Appendix 2.

### 5.1 Design Availability / Approval Status

In accordance with the SDS document tracker dated 06 Dec 2007 only approximately 60% of the detailed design has been issued to BBS. Depending on geographical section and design discipline the design is more or less advanced.

Many approvals by relevant authorities and 3<sup>rd</sup> parties (e.g. planning authority, technical approval authority, SEPA, Network Rail) are outstanding. Also no design element has received final tie / GEC approval and has been issued for construction.

The following items are key risks identified in relation with design availability and approval status:

- Sections 1A, 6 (depot) and 7A are under re-design. Final concepts for these areas are unknown.

- The various aspects of road works design (e.g. site clearance, drainage, lighting, traffic signs and signals, road markings, landscaping) are incomplete.
- Accommodation works requirements are unclear.
- No cross sections at regular intervals available (crucial for road works and earthworks).
- Alignment model file not provided in acceptable format (design could therefore not be checked in detail)
- Design for some structures missing, others under re-design.
- No geotechnical interpretative reports (i.e. the 'geotechnical design') available.
- No earthworks design available.
- No specific track details available. In particular formation requirements have not been defined.
- Key specification appendices (e.g. piling spec, earthworks spec and testing spec) missing, others incomplete (e.g. concrete spec).
- Status of 3<sup>rd</sup> party consultation is generally unclear.

## 5.2 Design Quality

Where detailed design is available it is mostly of acceptable standard. However, refer to the following list for key concerns regarding design quality, constructability and drawings standard:

- No survey of existing pavement carried out thus current design does not allow for pavement overlay.
- Pavement option for full re-construction appears to be uneconomic, as the existing ground conditions have not been investigated.
- No evidence that departures necessary for alignment in urban areas have been formally approved.
- Geotechnical and earthworks design not available hence quality could not be assessed.
- Ground investigation carried out after design for certain elements was completed. Risk that new findings have not been considered.
- Survey of existing drainage network incomplete and heavily qualified.
- SDS design for re-use of existing drainage network in sections 1A to 2A. May not be practical / feasible in combination with full road re-construction.
- Constructability issues with structures, in particular S7, S23 and S27.
- Many drawings only legible in colour, which is not in accordance with good industry practice and will lead to problems on site.
- SDS design based on superseded ER version plus tie changes both of which are unknown to BBS.

## 5.3 Quantities

For certain design elements and sections no information has been provided or the information is insufficiently detailed to allow pricing. For some areas currently under re-design, in particular sections 1A and 6, conflicting information is available.



There is a risk that quantities and requirements have been underestimated, both cost and programme wise, or that elements that are not shown clearly on the available preliminary drawings have been overlooked.

Without knowing the final details we understand that some CEC requirements are likely to change, e.g. Picardy Place layout or finishes for tram stops and urban spaces. The current design does not reflect these new requirements.

Insufficient design for pricing does not only affect the Infraco contract with tie but would also prevent BBS from letting comprehensive subcontract packages. From experience, any design variations that occur after a subcontract is placed are likely to lead to excessive claims from subcontractors.

## 6 Conclusion

Whilst parts of the design are far advanced and of acceptable quality, the design of other elements and sections is still at preliminary / concept stage or even completely missing. The available design for certain sections is subject to change, as we understand that these areas are currently under re-design.

Consultations with key third parties, such as CEC, Scotrail / Network Rail and the Scottish Environmental Protection Agency, have not been concluded by SDS. There is a risk that the design, as envisaged by SDS, may not gain the required 3<sup>rd</sup> party approvals.

Contrary to the original design delivery programme, not a single design element has received final tie / CEC approval and has been issued for construction. Issue for construction information for the final elements is now not scheduled to become available before the end of 2008.

The evolution of the design programme and the fact that the target design completion date has slipped by 13 months over 2 years suggests that the design development process is not running smoothly and that there are significant risks that further slippages will occur.

In accordance with tie's original procurement concept a complete and issued for construction design would have been novated to the Infraco. The current design is far from meeting these requirements and, as consequence, a novation is considered to present significant and unforeseeable risks to overall success of the project.

WI, 18/02/2008  
BB Civil Structural Design, DGoe

## Appendix 1

Not used

## **Appendix 2**

### **Design Due Diligence Matrix**

Structures (BRG, RTW drawing series)			Design Availability						Design Quality				Quantities			
Phase	Subst	Structure	Design Status / Completeness		Design Approval Status (StE / CEC)		Design Approval Status (Relevant Authorities and Third Parties)		Feasibility / Constructability / VE Opportunities		Plausibility / Drawing Standard / Clarity of Documents		Compliance with Contract Requirements and Specifications		Status Quantity take-off	
[*]	[*]	Ref number - Name	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk
		Testing Specification	Document not available.		All formal approvals outstanding.		3rd party approval for this type of document is considered to be not required.		Document not available. No check possible.		Document not available. No check possible.		Document not available. No check possible.		Document not available. Not possible to take off quantities.	
		Concrete Specification	Available spec only covers section 3, structures S19, S20 and the Gogardum culverts. It can only be assumed that the requirements for the other areas will be similar.		All formal approvals outstanding.		3rd party approval for this type of document is considered to be not required.		The specified min/wc ratio of 0.4 is too low and will cause problems on site. Pig concrete would be a big concern. CFA piles in particular, as concrete consistency would reduce rebar cages to be pushed down. Given the fact that the soil / ground water is not very aggressive (DC-1 only) the permissible max/wc value should be increased to min 0.45 generally and to 0.5 for piles.	Acceptable.						
		Piling Specification	Document not available.		All formal approvals outstanding.		3rd party approval for this type of document is considered to be not required.		Document not available. No check possible.		Document not available. No check possible.		Document not available. No check possible.		Document not available. Not possible to take off quantities (e.g. monitoring equipment, pile tests, etc).	
		S11 - Lindsey Road Retaining Wall	No additional information received since Aug 07. Only superseded AIP info available. Re-design scheduled for Jun 08 (RFC).		All formal approvals outstanding. Prior Approval (Planning) required. Technical Approval (TAA) required.		All formal approvals outstanding.		Proposal generally buildable / constructable.		An detailed design available. No check possible. As yet the following items have been identified: No S.O.P. for piled wall available, no details for piles shown, no RC details shown no elevation shown. No details for pile caps shown. No concrete outlines or RC details. No details for bottom slab shown. No concrete outlines or RC details. No vertical alignment to indicate elevation and location of different retaining structures available. No parson details shown.				Tender BoQ, detailed design missing, without temporary works design	2
		S16 - Victoria Dock Entrance Bridge	No significantly new information received since Aug 07 (number of added piles and beams revised). Only superseded AIP info available. Re-design scheduled for Oct 08 (RFC).		All formal approvals outstanding. Technical Approval (TAA) required.		All formal approvals outstanding. Multiple services in existing bridge. Temporary and permanent diversions will require state approval.		As yet only 2 drawings for tender purposes only available; detailed design drawings not issued. Basically the structure is constructable. A proper risk evaluation can only be carried out when detailed design drawings have been made available.		No detailed design drawings available as yet. No check possible.				Tender BoQ, detailed design missing, without temporary works design	2
		S17 - Tower Place Bridge	No significantly new information received since Aug 07 (number of added piles and beams revised). Only superseded AIP info available. Re-design scheduled for Nov 08 (RFC).		All formal approvals outstanding. Technical Approval (TAA) required.		All formal approvals outstanding. Multiple services in existing bridge. Temporary and permanent diversions will require state approval.		As yet only 2 drawings as preliminary design with two different solutions available. Solution 1 comprises widening of the existing bridge deck to allow incorporation of a roadway; solution 2 comprises the construction of a separate new footbridge. A proper risk evaluation can only be carried out when detailed design drawings have been made available.		No detailed design drawings available as yet. No check possible.				Tender BoQ, detailed design missing, without temporary works design	2
		S18 - Leith Walk Railway Bridge	No additional information received since Aug 07. Only assessment report AIP info available. The SDS programme V23 indicates that no detailed design is envisaged, which suggests that assessment report concludes that no structural works are required. To be confirmed.		Technical Approval (TAA & Planning Department) required for assessment AIP. In accordance with SDS programme V23 the detailed assessment report has been issued to CEC in Mar 2007, which implies that Technical Approval was received previously. It is not clear if final CEC approval was received / is required.	2	Existing bridge crossing Network Rail Infrastructure. SDS programme V23 records AIP's response in assessment report as outstanding. Services might be present in existing bridge and might require relocation to facilitate track work. Temporary and permanent diversions will require state approval. 3rd party approval status is unclear.	2	As yet only 2 preliminary design drawings available. A proper risk evaluation can only be carried out after one solution has been selected and the detailed design drawings have been made available.		No detailed design drawings available as yet. No check possible.				Tender BoQ, detailed design missing, without temporary works design	2
		Section 1C	none	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
		Section 1D	none	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

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Structures (BAG, RTW drawing series)			Design Availability						Design Quality				Quantities			
Phase	Section	Structure	Design Status / Completion		Design Approval Status (ie / CEC)		Design Approval Status (Relevant Authorities and Third Parties)		Feasibility / Constructability / VE Opportunities		Reasonability / Drawing Standards / Clarity of Documents		Compliance with Contract Requirements and Specifications		Starts Quantity Take-Off	
[ - ]	[ - ]	Ref number - Name	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk
	Section 2A	S18 - Haymarket Station Viaduct	Detailed design now available. Changes since Aug 07. Tender design replaced by proper detailed design & GA revised to meet interfaces. Design programmed to be IFC by end of Mar 08.	2	Prior approvals for section 2A outstanding and not due before end of Feb 08, refer to SDS programme V22. Technical Approval (TAA) for S18 outstanding. Was due at the end of Dec 07. (refer to SDS programme V23). Under 3rd party approval outstanding.	2	New structure that interfaces with Network Rail / First Scot Rail infrastructure. Their approvals are outstanding and not due before mid Feb 08.	2	Buildable / constructible in principle subject to the following comments: No information about construction and condition of adjacent existing masonry wall, which has to be retained. No information about foundation of existing masonry wall. Foundation of abutment east end pier 4 in the range of 15m to be demolished public building. No information about soil level of building foundations and hence formation level after demolition. Special foundation arrangements may be required.	2	Notes item 10: Max. water content ratio of 0.4 not acceptable, minimum 0.45. No as-built drawings available. Comments, indicative information and their confirmation by others in "notes" on the drawings have to be clarified. Selection regarding configuration of deck slab sections and signs not economic construction of pier / abutments including part of deck slab.			BoQ according to detailed design incl. reinforcement schedules, without temporary works design.		
		S20 - Russell Road Bridge	Detailed design now available. However, several elements are on-hold and many details are missing. These issues would prevent the drawings from being used for construction. Changes since Aug 07. Tender design replaced by detailed design & GA revised to meet interfaces. Design programmed to be IFC by end of Feb 08.	2	Prior approvals for section 2A outstanding and not due before end of Feb 08, refer to SDS programme V23. Technical Approval (TAA) for S20 was received in Nov 07. (refer to SDS programme V23). Final tie / CEC approval outstanding.	2	New structure that interfaces with Network Rail infrastructure. Their approval was due to be received in Dec 07. Unclear if this has happened.	2	Proposal generally buildable / constructible. Small risk due to adjacency to existing Network Rail structure.	2	Comments, on holds, indicative information and their confirmation by others in "notes" on the drawings have to be clarified. Partial constructive technical descriptions of works on several drawings. Notes item 10: Max. water content ratio of 0.4 not acceptable, minimum 0.45. Drawings partial incomplete as regards content deficient. Miscellaneous members not shown on drawings (see detailed report about design check of this structure). Party reference drawings not available.			BoQ according to detailed design incl. reinforcement schedules, without temporary works design.		
		S21A - Roseburn Street Viaduct	Detailed design now available. However, many details are missing from the drawings and bar bending schedules are not available. These issues would prevent the design from being used for construction. Changes since Aug 07. Tender design replaced by detailed design. Design programmed to be IFC by end of Mar 08.	2	All formal approvals outstanding. Prior approvals for section 2A outstanding and not due before April 08, refer to SDS programme V23. Technical Approval (TAA) for S21A is programmed for Mar 08, (refer to SDS programme V23). Final tie / CEC approval outstanding.	2	New bridge carrying road over road, roads and public square. Existing services might clash with foundations for new structure. Temporary and permanent diversions will require state approval, 3rd party approval status is unclear.	2	Proposal generally buildable / constructible but following risks: Small risk due to adjacency to existing Network Rail in the west abutment area, third party restrictions at Scotiabank Rugby Union, cramped location of construction site and flow traffic through site.	2	Comments, on holds, indicative information and their confirmation by others in "notes" on the drawings have to be clarified. Partial constructive technical descriptions of works on several drawings. Notes item 10: Max. water content ratio of 0.4 not acceptable, minimum 0.45. Drawings partial incomplete as regards content deficient. Miscellaneous members not shown on drawings (see detailed report about design check of this structure). Party reference drawings not available.			BoQ according to detailed design, reinforcement schedules missing, without temporary works design.		
		S21B - Murrayfield Stadium Retaining Wall	Only some detailed layout drawings available. Detailed design package outstanding. Design programmed to be IFC by end of Apr 08.	2	All formal approvals outstanding. Prior approvals for section 2A outstanding and not due before April 08, refer to SDS programme V23. Technical Approval (TAA) for S21B is programmed for Apr 08, (refer to SDS programme V23). Final tie / CEC approval outstanding.	2	Reinforced soil retaining wall required to support new embankment with train line on. Existing services might be present in the foot of old new structure. Temporary and permanent diversions will require state approval, 3rd party approval status is unclear.	2	Proposal generally buildable / constructible but following risks: Demanding existing masonry retaining wall to be re-use as facing material after finishing reinforced earth wall and tankseat. Geogrid "Arrangement E" not specified. Working class in existing rail network.	2	Drainage pipe not shown or required lower (JL 500/30-05-RTW-0044). No outline for retaining wall blockwork facing shown. No parent detail shown. No RC details and outlines for RTW can show.			Tender BoQ, detailed design missing, without temporary works design.		
		S21C - Murrayfield Stadium Underpass	Detailed design now available. Changes since Aug 07. Tender design replaced by proper detailed design. Design programmed to be IFC by end of Mar 08.	2	All formal approvals outstanding. Prior approvals for section 2A outstanding and not due before April 08, refer to SDS programme V23. Technical Approval (TAA) for S21C was programmed for Apr 08, (refer to SDS programme V23). Not clear if this has happened. Final tie / CEC approval outstanding.	2	New RC underpass underpass under proposed embankment, which supports the new train line. The new underpass effectively extends an existing underpass under a railway embankment. Consultation with Network Rail required. Network Rail approval is outstanding and not due before Mar 08.	2	Proposal generally buildable / constructible but following risks: Small risk due to adjacency to existing Network Rail in the west abutment area. Third party restrictions of Scotiabank Rugby Union.	2	In places information about drainage connection and dimensions missing.			BoQ according to detailed design, reinforcement schedules missing, without temporary works design.		

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Structures (BRG, RTW drawing series)			Design Availability					Design Quality			Compliance with Contract Requirements and Specifications		Quantities			
Phase	Section	Structure	Design Status / Completeness		Design Approval Status (ie / CEC)		Design Approval Status (Reliant Authorities and Third Parties)		Feasibility / Constructability / VE Opportunities		Feasibility / Drawing Standard / Clarity of Occurrences		Compliance with Contract Requirements and Specifications		Status Quantity Take-Off	
[-]	[-]	Ref number - Name	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk
	Section 5A	S21D - Murrayford Training Pitches Retaining Wall	Only AIP information available. Detailed design package outstanding. No new information received since Aug 07. Design programmed to be IPC by Jul 08.		All formal approvals outstanding. Prior approvals for section 5A outstanding and not due before April 08. (refer to SDS programme V23). Technical Approval (TAA) for S21D is programmed for May 08. (refer to SDS programme V23). Final tie / CEC approval outstanding.		Reinforced earth slope required to support new embankment with train line on. Network Rail approval is outstanding and not due until Jan 08. Existing services (combined sewers) are present in the foot print of new structure. Temporary and permanent diversions will require static approval. 3rd party approval status is unclear.		Proposal generally buildable / constructible but following risks: Only small area for site vehicles like excavators or tipper trucks available.	2	No detailed design drawings available as yet. No check as yet following items: No vertical alignment shown to indicate elevation. No railroads dimensions and RC details for coping shown.				Under BOD, detailed design missing, without temporary works design.	3
		S21E - Water of Leith Bridge	Detailed design now available. Changes since Aug 07: A.F. info now supplemented by proper detailed design. Design programmed to be IPC by end of Mar 08.		All formal approvals outstanding. Prior approvals for section 5A outstanding and not due before April 08. (refer to SDS programme V23). Technical Approval (TAA) for S21E is programmed for Jan 08. (refer to SDS programme V23). Final tie / CEC approval outstanding.		New underbridge over Water of Leith river and lockways on both banks. New bridge is adjacent and parallel to existing railway bridge. Consultation with Network Rail required. Network Rail approval is outstanding and not due before Mar 08. Consultation with Scottish Environmental Protection Agency may be required.		Proposal generally buildable / constructible but following risks: Small risk due to an agency in existing structure of Network Rail. Third party restrictions of Scottish Rugby Union (regarding main access to stadium east). Access to site to west abutment in relation to earth- and trackworks on train route between Balgreen Road and S21E and construction of Balgreen Road Bridge. Installation of structural steel works. Complex collection at intermediate pier location. VE option to replace with monopiles subject to not gain considering additional design fee and sufficient load in construction programme.	2	Information about bearing types and loads missing. Information about jacking points (loads, dimensions, type) missing.			BOD according to detailed design incl. reinforcement schedules, with temporary works design.		
		S22 - Balgreen Road Bridge	Only preliminary layout information. Pre-design ongoing. Bridge structure has to be split as a result of consultation with Network Rail. Design programmed to be IPC by mid Aug 08.		All formal approvals outstanding. Prior approvals for section 5A outstanding and not due before April 08. (refer to SDS programme V23). Technical Approval (TAA) for S22 is programmed for Jun 08. (refer to SDS programme V23). Final tie / CEC approval outstanding.		New underbridge over road and pedestrian gateway. New structure is adjacent to Network Rail bridge. Network Rail approval is outstanding and not due before Jun 08.		Complex collection at intermediate pier location. VE option to replace with monopiles subject to not gain considering additional design fee and sufficient load in construction programme.		No detailed design drawings available as yet. No check possible.				Under BOD, detailed design missing, without temporary works design.	3
		W03 - Russell Road Retaining Wall 1	Detailed design now available. Changes since Aug 07: AIP info now supplemented by proper detailed design. Design programmed to be IPC by end of Mar 08.		All formal approvals outstanding. Prior approvals for section 5A outstanding and not due before April 08. (refer to SDS programme V23). Technical Approval (TAA) for W03 was programmed for Dec 07. (refer to SDS programme V23). Not clear if this was received. Final tie / CEC approval outstanding.		New retaining wall supporting train line embankment. Structure adjacent to railway. Consultation with Network Rail required. Network Rail approval is outstanding and not due before Feb 08.		Proposal generally buildable / constructible but following risks: Damaging of existing services placing rebar for piles in order to put rebar in correct place and achieve required concrete cover.		Transfer of utility diversion scope to us by this week if so - information missing.		According to AIP infra PRC retaining walls proposed in Drawing ULE-00130-05-RTW-00014 WSA General Arrangement reinforced earth is designed. Some detail acc. to ULE-00130-05-RTW-00014 process elements, acc. AIP infra structure proposed.		BOD according to detailed design, reinforcement schedules missing, without temporary works design.	
		W04 - Russell Road Retaining Wall 2	Detailed design now available. Changes since Aug 07: AIP info now supplemented by proper detailed design. Design programmed to be IPC by end of Mar 08.		All formal approvals outstanding. Prior approvals for section 5A outstanding and not due before April 08. (refer to SDS programme V23). Technical Approval (TAA) for W04 is programmed for Jan 08. (refer to SDS programme V23). Final tie / CEC approval outstanding.		New retaining wall supporting train line embankment. Structure adjacent to railway. Consultation with Network Rail required. Network Rail approval is outstanding and not due before Mar 08.		Proposal generally buildable / constructible but following risks: Placing rebar for piles in order to achieve required concrete cover and keep reinforcement in correct position. Excavation close to existing Network Rail an associated facilities.		Details for parapet in section 4B and 4C not available.	2			BOD according to detailed design, reinforcement schedules missing, without temporary works design.	

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Structures (BRG, RTW drawing series)			Design Availability					Design Quality				Quantities			
Phase	Section	Structure	Design Status / Completeness	Design Approval Status (file / OEC)	Design Approval Status (Patent Authorities and Third Parties)	Feasibility / Constructability / VE Opportunities	Flexibility / Drawing Standards / Clarity of Documents	Compliance with Contract Requirements and Specifications	Status	Quantity	Take-Off				
[ - ]	[ - ]	Ref number - Name	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk					
Phase 1a		W08 - Balgresh to Water of Leck / Balgresh Drive Retaining Wall	Only AIP information available. Detailed design package outstanding. No new information received since Aug 07. Design programmed to be IPC by Jul 08.	2	All formal approvals outstanding. Prior approvals for section 5A outstanding and not due before April 08. (refer to SDS programme V23) Technical Approval (TAA) for W08 is programmed for May 06. (refer to SDS programme V23) Final file / OEC approval outstanding.	2	New retaining wall supporting main line embankment. Structure adjacent to railway. Consultation with Network Rail required. Network Rail approval is outstanding and not due before Jun 08.	2	Proposal generally buildable / constructible.	2	No detailed design drawings available as yet. No check possible. As yet the following items have been identified: Drawing LLE-80130-RTW-05-00202, Revision No 1 available twice but with different content. Vertical alignment missing to indicate elevation of retaining structure.			1	Tender BoQ, detailed drawings missing, without temporary works design
		W09 - Balgresh Road (West of Balgresh Rd) Retaining Wall	Only AIP information available. Detailed design package outstanding. No new information received since Aug 07. Design programmed to be IPC by Jul 08.	2	All formal approvals outstanding. Prior approvals for section 5A outstanding and not due before April 08. (refer to SDS programme V23) Technical Approval (TAA) for W09 is programmed for May 06. (refer to SDS programme V23) Final file / OEC approval outstanding.	2	New retaining wall supporting main line embankment. Structure adjacent to railway. Consultation with Network Rail required. Network Rail approval is outstanding and not due before Jun 08.	2	Proposal generally buildable / constructible.	2	No detailed design drawings available as yet. No check possible. As yet the following items have been identified: Vertical alignment missing to indicate elevation of retaining structure.			2	Tender BoQ, detailed drawings missing, without temporary works design
		W10 - Merryfield Trossop Retaining Wall	Only AIP information available. Detailed design package outstanding. No new information received since Aug 07. Design programmed to be IPC by May 08.	2	All formal approvals outstanding. Prior approvals for section 5A outstanding and not due before April 08. (refer to SDS programme V23) Technical Approval (TAA) for W10 is programmed for Apr 08. (refer to SDS programme V23) Final file / OEC approval outstanding.	2	New retaining wall supporting main line embankment. Structure adjacent to Merryfield Station and rail way line. Consultation with Station and Network Rail required. No other major 2nd parties identified at this stage.	2	Proposal generally buildable / constructible.	2	Only GAs and drawings in DRAFT status available. As yet the following items have been identified: Retaining wall cross sections are not consistent. Levelling and details and heights arrangement vary in drg LLE-80130-05-RTW-03082 & 03084. Clear height from top of levelling pad to station edge level varies in drg 80130-05-RTW-00502 & 00504. No retaining wall outline shown. No piling details shown (S.O.P., dimensions, reinforcement details, etc). No details for stake shown.		No compliance with AIP. AIP proposes spread foundation, drg LLE 80130-05 RTW-00570 shows piled foundations.	2	Tender BoQ, detailed drawings missing, without temporary works design
Section 9E		S23 - Carrick Knowe Underbridge	Only AIP information available. Detailed design package outstanding. Bridge under review. Changes since Aug 07: Revised AIP into revised (cycle path added). Design programmed to be IPC by end of Jul 08.	2	All formal approvals outstanding. Prior approvals for section 9E outstanding and not due before Jun 08. (refer to SDS programme V23) Technical Approval (TAA) for S23 is programmed for May 06. (refer to SDS programme V23) Final file / OEC approval outstanding.	2	New underbridge over railway line. Consultation with Network Rail required. Network Rail approval is outstanding and not due before Jul 08.	2	Alteration of initial design. For new modified design as yet only draft or unperfected drawings available. No detailed check possible. However, foundations of abutments encroach into railway clearance zone - critical constructability.	2	No detailed design drawings available as yet. No check possible.			2	Tender BoQ, detailed drawings missing, without temporary works design
		S24 - Saughin Road Bridge	No additional information received since Aug 07. Only assessment report AIP info available, which concludes that no structural works are required.	1	No works required (thus no approvals necessary).	1	Existing underbridge over local road, which was built in 2009 for the proposed bus way and allows for retrofitting of tram line.	1	No works required.	1	No works required.				No BoQ required
		S25 - Broomhouse Road Bridge	No additional information received since Aug 07. Only assessment report AIP info available, which concludes that no structural works are required.	1	No works required (thus no approvals necessary).	1	Existing underbridge over local road, which was built in 2003 for the proposed bus way and allows for retrofitting of tram line.	1	No works required.	1	No works required.				No BoQ required
		S26 - Strath Tayside Access Bridge	Only tender design drawings available. No new information received since Aug 07. Design programmed to be IPC by end of Mar 08.	2	All formal approvals outstanding. Prior approvals for section 9E outstanding and not due before Jun 08. (refer to SDS programme V23) Technical Approval (TAA) for S26 is programmed for Feb 06. (refer to SDS programme V23) Final file / OEC approval outstanding.	2	New underbridge over road. New structure is adjacent to Network Rail Bridge. Network Rail approval may be required not currently reflected in SDS programme V23.	2	Proposal generally buildable / constructible but following risks: Small risk due to adjacency to existing structure of Network Rail.	2	Dimensioning in some drawings incomplete e.g. BM400 - 00491: 10 material below retaining walls. Corrosion susceptibility of pile extension unclear (discrepancy between dwg's 00432S and 00437).			2	Tender BoQ, detailed drawings missing, without temporary works design

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Structures (BRG RTW drawing series)		Design Availability						Design Quality				Quantities	
Phase	Structure	Design Status / Completeness	Design Approval Status (ie / CEC)	Design Approval Status (Relevant Authorities and Third Parties)	Feasibility / Constructability / VE Opportunities	Plausibility / Drawing Standard / Clarity of Documents	Compliance with Contract Requirements and Specifications	Quantity Take-Off					
[+]	[-]	Comment / Residual Risk	Comment / Residual Risk	Comment / Residual Risk	Comment / Residual Risk	Comment / Residual Risk	Comment / Residual Risk	Comment / Residual Risk					
	S27 - Edinburgh Park Station Bridge	Detailed design now available. However, many details are missing from the drawings. This would prevent the design from being used for construction. Changes since Aug 07: Tender design replaced by detailed design. Design programmed to be IFC by Apr 08.	All formal approvals outstanding. Prior approvals for section 5B outstanding and not due before Jun 08, (refer to SDS programme V23) Technical Approval (TAA) for S27 is programmed for Feb 08 (refer to SDS programme V22) Final tie / CEC approval outstanding.	Issue associated with railway line. Coordination with Network Rail required. Network Rail approval is outstanding and not due before Apr 08.	Proposal not buildable / constructible as the details of piers 3 and 4 encroach into railway clearance zone. Following additional risks: Construction above railway tracks. Handicap due to newly constructed hotel complex on the north side. VE potential (steel composite deck instead of precast beams or simply supported PC beams with modified span lengths) subject to tie / CEC approval, a not gain constituting additional design fee and sufficient lead in construction programme.	Comments, indicative information and their confirmation by others in "notes" on the drawings have to be identified. Dimensioning of superstructure sections generally missing. Drawings partly incomplete and as regards content deficient, as miscellaneous members not shown on drawings (see detailed report about design check to this structure, which was issued as a TQ).		BoQ according to detailed design incl. reinforcement schedules, with temporary works design.					
	W11 - Bankhead Drive Retaining Wall	Only AIP information available. Detailed design package outstanding. No new information received since Aug 07. Design programmed to be IFC by Mar 08.	All formal approvals outstanding. Prior approvals for section 5B outstanding and not due before Jun 08, (refer to SDS programme V23) Technical Approval (TAA) for W11 is programmed for Mar 08, (refer to SDS programme V23) Final tie / CEC approval outstanding.	New retaining wall supporting main line embankment. Embankment adjacent to existing railway embankment. Network Rail approval may be required (not currently reflected in SDS programme V23).	Proposal generally buildable / constructible.	Only General Arrangements and drawings in DIRAFT status available. As yet the following items have been identified: vertical alignment missing to indicate elevation of retaining structure. Outline of b between not shown.							
	S2B - AE Underpass	Re-design in progress to allow major utilities to remain in place. Only preliminary layout drawings and superseded AIP information available. Detailed design package outstanding. Changes since Aug 07: Preliminary construction requirements and services drawings received. Design programmed to be IFC by May 08.	All formal approvals outstanding. Prior approvals for section 5C outstanding and not due before Apr 08, (refer to SDS programme V23) Technical Approval (TAA) for S2B is programmed for May 08, (refer to SDS programme V23) Final tie / CEC approval outstanding.	New underpass conveying main line under dual carriageway. Existing services are present and clash with foundations for new structure. Temporary and permanent diversions will require state approval. SD party approval status is unclear.	Proposal generally buildable / constructible but following risks: Construction adjacent to and in an traffic road zone. Construction in so-called "red line" required over 4 construction phases. Structures under re-design due to presence of existing services that cannot be relocated. The comments above relate to the previous, now superseded proposal.	The detailed design drawings available as yet; only superseded design for tender purposes. No check possible. Structure under re-design due to presence of existing services that cannot be relocated. The comments above relate to the previous, now superseded proposal.		Tender BoQ, detailed drawings missing, without temporary works design.					
	S3C - Depot Access Bridge	No additional information received since Aug 07. Only superseded AIP info available. Re-design in progress with a view to modify structure to allow it to tie in with revised depot layout. SDS programme V28 does not provide a date for the IFC submission of the revised detailed design for the structure. However, this cannot be sooner than the programmed TAA approval, i.e. Jul 08.	All formal approvals outstanding. Prior approvals for section 5C outstanding and not due before Apr 08, (refer to SDS programme V23) Technical Approval (TAA) for S3C is programmed for Jul 08, (refer to SDS programme V23) Final tie / CEC approval outstanding.	New overbridge carrying the depot access road over train line 2 (airport - city centre) as well as the train entry / exit lines into the depot. Existing services might be present in the foot print of new structure. Temporary and permanent diversions will require state approval. The party approval status is unclear.	Proposal generally buildable / constructible but following risks: Construction adjacent to busy AS road. Construction in the vicinity of Edinburgh Airport. Certain restrictions may apply with regards to cranes etc. Re-design in progress with a view to modify structure to allow it to tie in with revised depot layout. The comments above relate to the previous, now superseded proposal.	No detailed design drawings available as yet; only design for tender purposes. No check possible. Re-design in progress with a view to modify structure to allow it to tie in with revised depot layout. The comments above relate to the previous, now superseded proposal.		Tender BoQ, detailed drawings missing, without temporary works design.					
	W19 - Gyle Stop Retaining Wall	Only AIP information available. Detailed design package outstanding. No new information received since Aug 07. Design is programmed to be IFC by Dec 07. However, this was not received, i.e. the design is late and obsolete.	Prior approvals for section 5C outstanding and not due before Apr 08, (refer to SDS programme V23) Technical Approval (TAA) for W19 was received in Nov 07, (refer to SDS programme V28) Final tie / CEC approval outstanding.	Low height RC retaining wall supporting cut along the slope of new tram stops. No major third party issues identified at this stage.	Proposal generally buildable / constructible.	Technical details not available. No detail available. No reinforcement details for track slab; only retaining wall shown. No concrete cutlines shown.		Tender BoQ, detailed drawings missing, without temporary works design.					
Section 5	W18 - AB Retaining Wall	N/A - Structure deleted	N/A - Structure deleted	N/A - Structure deleted	N/A - Structure deleted	N/A - Structure deleted	N/A - Structure deleted	N/A - Structure deleted					

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Structures (BRG, RTW drawing series)			Design Availability						Design Quality						Quantities	
Phase	Section	Structure	Design Status / Completions		Design Approval Status (IE / CEC)		Design Approval Status (Related Authorities and Third Parties)		Feasibility / Constructability / VE Opportunities		Plausibility / Drawing Standards / Clarity of Documents		Compliance with Contract Requirements and Specifications		Status Quantity Take-Off	
(-)	(-)	Ref number / Name	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk
		S29 - Gogsburn Bridge	Only final detailed design not available. Changes since Aug 07. Tender design partly replaced by detailed design. Alignment revised to reflect cancellation of EARL project. Design programmed to be IFC by Apr 08.	2	All formal approvals outstanding. Prior approvals for section 7A outstanding and not due before Jun 08. (refer to SDS programme V23) Technical Approval (TAA) for SDS is programmed for Mar 08. (refer to SDS programme V23) Final IE / CEC approval outstanding.		New underbridge over water course. Consultation with Scottish Environmental Protection Agency may be required. Existing services might be present in the foot print of new structures. Temporary and permanent diversions will require static approval, 3rd party approval status is unclear.	2	Proposal generally buildable / constructible.		Drawing 09043 missing in drawing schedule. Drawings partly as "based for external approval", partly as "for tender purposes" and partly as "draft". Detailed design not complete.				BoQ according to detailed design, incl. reinforcement schedules, without temporary works design	2
		S30 - Gogsburn Culvert One	Detailed design now available. In accordance with note on drawings the design will be subject modified earthworks outlines. Changes since Aug 07. Tender design replaced by proper detailed design. Alignment revised to reflect cancellation of EARL project. Design programmed to be IFC by Apr 08.	2	All formal approvals outstanding. Prior approvals for section 7A outstanding and not due before Jun 08. (refer to SDS programme V23) Technical Approval (TAA) for SDS is programmed for Jul 08. (refer to SDS programme V23) Final IE / CEC approval outstanding.		New reinforced concrete culvert through farm line embankment. Scottish Environmental Protection Agency approval is required and not due before Jun 08. (refer to SDS programme V23) 3rd party approval status is unclear.	2	Proposal generally buildable / constructible.		Information about location (dimensions) and invert levels of drainage missing. Some details about sealing and joints missing.				BoQ according to detailed design, incl. reinforcement schedules missing, without temporary works design. Revised design may be available in Apr 08	2
		S31 - Gogsburn Culvert Two	Detailed design now available. In accordance with note on drawings the design will be subject modified earthworks outlines. Changes since Aug 07. Tender design replaced by proper detailed design. Alignment revised to reflect cancellation of EARL project. Design programmed to be IFC by Apr 08.	2	All formal approvals outstanding. Prior approvals for section 7A outstanding and not due before Jun 08. (refer to SDS programme V23) Technical Approval (TAA) for SDS is programmed for Jul 08. (refer to SDS programme V23) Final IE / CEC approval outstanding.		New reinforced concrete culvert through farm line embankment. Scottish Environmental Protection Agency approval is required and not due before Jun 08. (refer to SDS programme V23) 3rd party approval status is unclear.	2	Proposal generally buildable / constructible.		Information about location (dimensions) and invert levels of drainage missing. Some details about sealing and joints missing.				BoQ according to detailed design, reinforcement schedules missing, without temporary works design. Revised design may be available in Apr 08	2
	Section 7A	S32 - Earth Underbridge	N/A - Structure deleted		N/A - Structure deleted		N/A - Structure deleted		N/A - Structure deleted		N/A - Structure deleted		N/A - Structure deleted		N/A - Structure deleted	
		S34 - Gogsburn Culvert Three	Detailed design now available. In accordance with note on drawings the design will be subject modified earthworks outlines. Changes since Aug 07. Tender design replaced by proper detailed design. Alignment revised to reflect cancellation of EARL project. Design programmed to be IFC by Apr 08.	2	All formal approvals outstanding. Prior approvals for section 7A outstanding and not due before Jun 08. (refer to SDS programme V23) Technical Approval (TAA) for SDS is programmed for Jun 08. (refer to SDS programme V23) Final IE / CEC approval outstanding.		New reinforced concrete culvert through farm line embankment. Scottish Environmental Protection Agency approval is required and not due before May 08. (refer to SDS programme V23) 3rd party approval status is unclear.	2	Proposal generally buildable / constructible.		Information about location (dimensions) and invert levels of drainage missing. Drawing 09071 - details of wing wall connection to culvert unclear. Some details about sealing and joints missing.				BoQ according to detailed design, reinforcement schedules missing, without temporary works design. Revised design may be available in Apr 08	2
		W14 - Gogsburn Retaining Wall One	Only superseded AIP drawings (preliminary layouts) available. Re-design in progress to adjust structural design to reflect cancellation of EARL project. Detailed design package outstanding. No new information reached since Aug 07. Design is programmed to be IFC by Aug 08.		All formal approvals outstanding. Prior approvals for section 7A outstanding and not due before Jun 08. (refer to SDS programme V23) Technical Approval (TAA) for W14 is programmed for Aug 08. (refer to SDS programme V23) Final IE / CEC approval outstanding.		Retaining wall supporting farm line embankment along existing water course. There appears to be a requirement to design retaining wall / earth bank as flood defence measure. Consultation with Scottish Environmental Protection Agency may be required. 3rd party approval status is unclear.	2	Proposal generally buildable / constructible but following risks: Construction close to Gogsburn difficult because of small available site area.		No vertical alignment available to locate the type of retaining system along Retaining wall. No details shown. No RC details, outlines for rope and brackwood, no brickwork outline, sample details shown.				Tender BoQ, detailed design missing, without temporary works design	2
		W15 - Gogsburn Retaining Wall Two	New structure. No information available. Design is programmed to be IFC by Aug 08.		All formal approvals outstanding. Prior approvals for section 7A outstanding and not due before Jun 08. (refer to SDS programme V23) Technical Approval (TAA) for W15 is programmed for Aug 08. (refer to SDS programme V23) Final IE / CEC approval outstanding.		New structure. No information available thus no judgement possible with respect to 3rd party issues.		New structure. No information available, for check possible.		New structure. No information available. No check possible.				New structure. No information available. No BoQ	

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Structures (BRG, RTW drawing series)			Design Availability						Design Quality						Quantities	
Phase	Section	Structure	Design Status / Completeness		Design Approval Status (IE / CEC)		Design Approval Status (Relevant Activities and Third Parties)		Feasibility / Constructability / V/E Opportunities		Useability / Drawing Standards / Clarity of Documents		Compliance with Contract Requirements and Specifications		Status Quantity Take-Off	
[ - ]	[ - ]	Ref number - Name	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk
Phase 1b	Section 2A	S07 - Holiday Inn Access Bridge	Detailed design now available. However, design appears to be erroneous. Refer to columns 'constructability' for further details. Changes since Aug 07: AIP info now supplemented by proper detailed design. Design programmed to be IFC by mid Feb 08.	2	Prior approvals for combined section 2A outstanding and not due before start of May 08. (refer to SDS programme V23) Technical Approval (TAA) for S07 was received in Sep 07. (refer to SDS programme V23) Final IE / CEC approval outstanding.	2	Existing overbridge carrying a local access road over tram and footway. Bridge provides access to hotel, which may need to consult with. No other major relevant parties identified at this stage.	2	If section A-A on drawing 00383 Rev. 1 is correct, the proposal is not buildable / constructible. Alignment of tracks not coordinated with existing bridge (pier seat). Kirk / soap in trough wall underneath the bridge protrudes into the frame envelope. Type and shape of pier foundations unknown (see AIP 5.2); level and dimensions of foundations to investigate using trial pits according to note on drawing 00383 (not done as yet) - risk. The current design would require the existing bridge pier foundations to be partially demolished. In this case the integrity of the bridge is at risk. According to AIP formation level of trough must not be lower than the level of existing bridge foundations - in design it appears to be approx. 0.60 m lower.	2	Notes item 10. Min. water cement ratio of 0.4 not acceptable, minimum 0.45. No as-built drawings available. Constraints, indicative information and their confirmation by others in 'notes' on the drawings have to be clarified. Design is not complete and appears to be erroneous in some cases relating to column constructability. In drawing 00383 the walls of the trough are shown as sloped, in other drawings the walls are vertical: what is correct?	2		2	BOC according to detailed design incl. reinforcement schedules, excavations and backfill missing, without temporary works design	2
		S05 - Queensway Road Bridge	Detailed design now available. However, standard is not acceptable. Refer to columns 'useability'. Changes since Aug 07: AIP info now supplemented by proper detailed design. Design programmed to be IFC by mid Feb 08.	2	Prior approvals for combined section 2A outstanding and not due before start of May 08. (refer to SDS programme V23) Technical Approval (TAA) for S05 was received in Sep 07. (refer to SDS programme V23) Final IE / CEC approval outstanding.	2	Existing overbridge carrying a road over tram and footway. No major relevant parties identified at this stage.	2	Proposal generally buildable / constructible but following risks: Foundation level of existing arch. sec. AIP 5.1 approx. 6.60 m below EGL = 44.65 m. Assumption of level in drawing 00423 = 43.74 m (incorrect). Bottom edge of trough is approx. 43.00 m - underpinning required. Additional investigations required (trial pits).	2	No information provided about underpinning of existing arch. No as-built drawings available. Constraints, indicative information and their confirmation by others in 'notes' on the drawings have to be clarified.	2		2	BOC according to detailed design incl. reinforcement schedules, without temporary works design	
		S08 - Goshill Road South Bridge	Detailed design now available. However, concrete outline drawing missing and standard not acceptable. Also refer to columns 'useability'. Changes since Aug 07: AIP info now supplemented by proper detailed design. Design programmed to be IFC by mid Feb 08.	2	Prior approvals for combined section 2A outstanding and not due before start of May 08. (refer to SDS programme V23) Technical Approval (TAA) for S08 was received in Sep 07. (refer to SDS programme V23) Final IE / CEC approval outstanding.	2	Existing bridge carrying tram, cycleway and footway over a local road. Services might be present in existing bridge and might require relocation or protection to facilitate structural and track work. Temporary and permanent diversions will require state approval. 3rd party approval status is unclear.	2	Proposal generally buildable / constructible but following risks: Provision of required Retention Flexible Structures (RFS) from existing structures, which are to be demolished. Difficult works (partial demolition, excavation, installation network etc.) immediately adjacent to existing structure.	2	10-numbers of references drawings missing. Drawings partly incomplete (e.g. dimensions missing). No as-built drawings available. Constraints, indicative information and their confirmation by others in 'notes' on the drawings have to be clarified. Drawing no. 00484 missing.	2	AIP states that track slab will be constructed from precast reinforced concrete units.	2	Tender BOC, retained drawings cannot be used for quantity take-off, as concrete profiles are missing, without temporary works design	2
		S10 - Telford Road Bridge	Detailed design now available. However, standard is not acceptable. Refer to columns 'useability'. Changes since Aug 07: AIP info now supplemented by proper detailed design. Design programmed to be IFC by mid Feb 08.	3	Prior approvals for combined section 2A outstanding and not due before start of May 08. (refer to SDS programme V23) Technical Approval (TAA) for S10 was received in Oct 07. (refer to SDS programme V23) Final IE / CEC approval outstanding.	3	Existing overbridge carrying a road over tram and footway. No major relevant parties identified at this stage.	3	Proposal generally buildable / constructible but following risks: Provision of required support blocks to match material of steps on existing structure. No accurate information about foundation level and form of existing structure (ie determined by trial pits). Determining of safe angle for excavation. Underpinning of bridge walls may be required, no accurate information.	2	10-numbers of references drawings missing. Drawings partly incomplete - e.g. dimensions missing, drawing 00548 (construction accessories) is completely missing, drawing 00542 information about bridge frame (retaining?) etc. No as-built drawings available. Constraints, indicative information and their confirmation by others in 'notes' on the drawings have to be clarified.	2		2	BOC according to detailed design incl. reinforcement schedules, repair works at the existing structure not included	2
		S11 - Drylaw Drive Bridge	Only AIP information available. No new information received since Aug 07. Detailed design is late (with issue was programmed for Aug 07 in accordance with SDS programme V25). Design programmed to be IFC by end of Mar 08.	3	Prior approvals for combined section 2A outstanding and not due before start of May 08. (refer to SDS programme V23) Technical Approval (TAA) for S11 was received in Nov 06. (refer to SDS programme V23) Final IE / CEC approval outstanding.	2	Existing overbridge carrying a footpath over tram and footway. No significant works to structure envisaged thus no major relevant parties identified at this stage.	2	Proposal generally buildable / constructible.	2	No comments.	2		2	No significant works. Tender BOC	

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Structures (BFG, RTW drawing series)			Design Availability				Design Quality				Quantities					
Phase	Section	Structure	Design Status / Completeness		Design Approval Status (to / CEC)		Design Approval Status (Relevant Authorities and Third Parties)		Feasibility / Constructability / VE Opportunities		Usability / Drawing Standard / Clarity		Compliance with Contract Requirements and Specifications		Status Quantity Take-Off	
[ - ]	[ - ]	Ref number - Name	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk
		W102 - Fenny Road Retaining Wall	Only AIP information available. No new information received since Aug 07. Detailed design is not included in SDS programme (assumed to be supplied as design element).	2	Prior approvals for combined section 3A outstanding and not due before start of May 08. (refer to SDS programme V23) Technical Approval (TAA) for W102 was received in Oct 07. (refer to SDS programme V23) Final tie / CEC approval outstanding.	2	New modular retaining wall required to form a bank slope. No major relevant parties identified at this stage.	2	No detailed design drawings available as yet. No check possible.	2	No detailed design drawings available as yet. No check possible. Only general arrangement available. As yet the following items have been identified: Two drawings with same Revision number but different content available.	2	Not compliant with AIP. CFA bored piles are proposed but design is only held modular blockwork wall with mass concrete backing.	2	Tender BoQ. Detailed design missing, without temporary works design.	2
		W100 - Roseum Retaining Wall	Only conceptual / preliminary drawings available. Changes since Aug 07. Revised conceptual CFA drawings and typical cross sections received. Detailed structural design outstanding (does SDS consider these to be supplier design items????). Design programmed to be IFC by mid Feb 08, which seems unachievable considering the fact that TAA comments on AIP were only received in Nov 07.	2	Prior approvals for combined section 3A outstanding and not due before start of May 08. (refer to SDS programme V23) Technical Approval (TAA) for W100 was received in Nov 07. (refer to SDS programme V23) Final tie / CEC approval outstanding.	2	W100 combines various minor retaining structures along the Roseum corridor. Extensive consultation with owners of adjacent properties will be required to agree access arrangements for piling etc. 3rd party approval status is unclear.	2	Proposal generally buildable / constructible but following risks: No detailed design concerning soil nailing, bored pile retaining wall.	2	Differences between alignment section and challenge. Caster rail, bored pile retaining wall (reference 302.120) not shown in section approx. 302.1137. Detailed design for bored pile retaining wall is completely missing. RC drawings, dimensions, sections and elevation are required. Only typical detail available. Detailed design for soil nailing is completely missing. Only typical detail available.	2	Not compliant with AIP. According to AIP bored pile retaining wall is NOT PREFERRED OPTION but shown in drawing at several places (changes): Inner rail at 302.085 to 302.120. Outer rail at 300.656 to 300.820; at 300.647 to 300.854; at 300.840 to 300.880; at 302.115 to 302.200; at 302.206 to 302.208.	2	Tender BoQ. Detailed design missing, without temporary works design.	2
	Section 3B	S12 - Cross Road Gaters Bridge	Detailed design now available. Changes since Aug 07. AIP info now supplemented by proper detailed design. Design programmed to be IFC by start of Feb 08.	2	Prior approvals for combined section 3B outstanding and not due before mid Feb 08. (refer to SDS programme V23) Technical Approval (TAA) for S12 was received in Oct 07. (refer to SDS programme V23) Final tie / CEC approval outstanding.	2	Existing overbridge carrying a road over a road and a footpath. A second span is to be added to allow the new form to cross under existing bridge parallel to road at low level. Services are present in existing bridge / road, which will require relocation or protection to facilitate structural and track work. Temporary and permanent diversions will require state approval. Long retaining walls on either side of new bridge span. Extensive consultation with owners of adjacent properties will be required to agree access arrangements for piling etc. 3rd party approval status is unclear.	2	Proposal generally buildable / constructible but following risks: 5th (at limitations on settlement and permissible lateral movement of the retained ground (proximity of housing) during construction and in the permanent case. Connection proposed track slab reinforcement using couplers in existing bridge track reinforcement.	2	No information on 2nd's about construction or proposed part of track slab to existing track slab. Construction joint in track slab not detailed shown. Components of existing structure in details not shown. No as-built drawings of existing structure available. Constraints, indicative information and their combination by others in "notes" on the drawings have to be clarified.	2	Not compliant with AIP. According to AIP bored pile retaining wall is NOT PREFERRED OPTION but shown in drawing at several places (changes): Inner rail at 302.085 to 302.120. Outer rail at 300.656 to 300.820; at 300.647 to 300.854; at 300.840 to 300.880; at 302.115 to 302.200; at 302.206 to 302.208.	2	BoQ according to detailed design. Reinforcement schedules, excavation and piling missing, without temporary works design.	2
	Section 3C	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes: 1) All comments are based on the documents available at the 14th Dec 2007 design freeze date.  
 2) Dates highlighted in blue before freeze date, and in red after.

Risk definition:

1	High
2	Medium
3	Low

Roads, Track, Traffic Signals & Lighting (CND, DRG, HRL, LTG, TAL, TMC and TVA drawing series)			Design Availability						Design Quality						Quantities		
Phase	Section	Element	Design Status / Completeness		Design Approval Status (H2)		Design Approval Status (Relevant Authorities and Third Parties)		Feasibility / Constructability / VE Opportunities		Plausibility / Drawing Standard / Clarity of Documents		Compliance with Contract Requirements and Specifications		Status Quantity Take-Off		
[+]	[+]	[+]	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	
	Section 1A	Alignment (Track & Roads)	Only suppressed track alignment drawings (TAL & TVA series) available, as section 1A is currently under re-design thus available information cannot be considered. No roads alignment drawings available.						No alignment design based on latest GA proposals available. However, one has to assume that, once the re-design becomes available, it will have similar issues with respect to placement nearby as the design of section 1B. Refer to comments on section 1B.		No current design available hence no comments possible.				Section under re-design. No take-off of latest proposal possible. Current price is based on sub-contractor's quotation, which is based on the tender BOC's adjusted with contractor's items. All prices based on old scheme.		
		General Arrangement (Track & Roads)	Only suppressed route design drawings (HRL series) available, as section 1A is currently under re-design thus available information cannot be considered. No further roads design information available.						Section currently under re-design hence no detailed comments possible. However, we know from indicative drawings (planning) that layout of some junctions will change radically. This has created a situation where we have conflicting information.		No current design available hence no comments on layouts possible. Comments only relate to standard details and notes. Residual requirements for new and given not yet defined. Dimensions for kerbs and roadway details missing. Detailed cross sections at 10m interval required but missing.				Section under re-design. No take-off of latest proposal possible. Current price is based on sub-contractor's quotation, which is based on the tender BOC's adjusted with contractor's items. All prices based on old scheme.		
		Track details	Generic indicative track details (DRG drawing series) available. However, as section 1A is under re-design, it is not clear as to which typical detail applies where. Structural and construction details, such as base concrete, reinforcement and waterproofing requirements for track forms, are missing.		All formal approvals outstanding.			3rd party approval status is unclear. It is likely that Forth Port Authority, residents and developers as well as OEC will be the major relevant 3rd parties. However, as a full re-design is in progress, which is not due to be completed before Oct 08, it is assumed that 3rd party approvals are outstanding.		Some track details available. However, as section 1A is under re-design it is not clear, which details will apply where. Track details are likely to change in line with system (Phase City) or Siemens' track contractor. Generally, it appears that SDS have not assessed the existing pavement. There is a risk that substructure might require substantial strengthening before track can be constructed.		Only outline details available, which are likely to change in line with system (Phase City) or Siemens' track contractor. No comments possible at this stage.			Section under re-design. No take-off of latest proposal possible. Current price is based on sub-contractor's quotation, which is based on the tender BOC's adjusted with contractor's items. All prices based on old scheme.		
		Pavement	The available draft specification appendix 774 (permitted pavement options) does not include section 1A, after no drawings defining the areas where specific pavement options shall be applied are available. No pavement standard details available.		Prior approvals for section 1A, roadworks are outstanding and not due before Oct 08, (refer to SDS programme V23). Technical Approval (TAA) for section 1A roadworks is programmed for Jun 09, (refer to SDS programme V23). Final H2 / CPC approval outstanding.			Also, due to urban environment, separations from approved will be required for each alignment. It is not clear if these have been approved by the relevant authorities.		No pavement design available, one has to assume that, once the re-design becomes available, it will have similar issues as the design of section 1B. Refer to comments on section 1B.		No info.			Section under re-design. No take-off of latest proposal possible. Current price is based on assumption that existing pavement will be kept and overlaid. All prices based on old scheme.		
		Lighting	No information available for this section.							No info. However, risk that proposals will not be constructable is considered to be low.		No info. However, risk that design documents will not be up to standard is considered to be low.				Section under re-design. No take-off of latest proposal possible. Current price is based on sub-contractor's quotation, which is based on the tender BOC's adjusted with contractor's items. All prices based on old scheme.	
		Traffic Signs and Road Markings	No traffic sign and road marking drawings available. Scheme wide specification appendices 1271 (traffic signs) and 1273 (road markings) available. However, this excludes section 1A.							No info. However, risk that proposals will not be constructable is considered to be low.		No info. However, risk that design documents will not be up to standard is considered to be low.				Section under re-design. No take-off of latest proposal possible. Current price is based on sub-contractor's quotation, which is based on the tender BOC's adjusted with contractor's items. All prices based on old scheme.	
		Traffic Signals	Scheme wide specification appendix 1265 (traffic signals) missing. Traffic signal design (layout drawings, standard details and controller specifications) missing. Section under re-design.							No info. However, risk that proposals will not be constructable is considered to be low.		No info. However, risk that design documents will not be up to standard is considered to be low.				Section under re-design. No take-off of latest proposal possible. Current price is based on sub-contractor's quotation, which is based on the tender BOC's adjusted with contractor's items. All prices based on old scheme.	

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Roads, Track, Traffic Signals & Lighting (CND, DRG, HRL, LTC, TAL, TMG and TVA drawing series)			Design Availability				Design Quality				Quantities					
Phase	Section	Element	Design Status / Completeness		Design Approval Status (If)		Design Approval Status (Relevant Authorities and Third Parties)		Feasibility / Constructability / VE Opportunities		Usability / Drawing Standard / Clarity of Documents		Compliance with Contract Requirements and Specifications		Status Quantity Take-Off	
[+]	[+]	[+]	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk
		Alignment (Track & Roads)	Detailed track alignment drawings (TAL & TVA series) available. No roads alignment drawings available. Settling out / alignment information not currently available in an electronic format that we can read.					3	It appears that the track alignment has been developed in isolation and has not been sufficiently coordinated with the roads design. However, this iterative optimisation process would have been required to maximise pavement overlay savings. As it stands, the current design proposal is for full reconstruction of carriageway and footway pavements and is not feasible / constructable to current budget and programme. Traffic management would become more complex for full reconstruction. Post-innovation the alignment design will have to be revised accordingly. This will have a knock-on effect (re-design) on design elements such as structures. No roads alignment design available hence no comments possible.		2	The drawings do not contain sufficient information to allow construction. According to GDS this info will be supplied electronically through model files. However, to date, these were not provided in a format that we can read hence no detailed comments possible at this stage. Navigation agreement to state that design information to be provided in format suitable for the contractor.			Available drawings generally used for quantity take-offs. However, all small items (e.g. signs, markings, signals) are based on the tender BoCs.	2
		General Arrangement (Track & Roads)	Detailed roads design drawings and typical cross sections (both HRL series) available. Detailed road restraint system layout drawings (HRL drawing series) available. However, these do not include RRS schedules, which should be provided. Detailed kerb and footway layout drawings (HRL layout drawings) as well as standard kerb details (HRL & CND drawing series) and speed app (117) available.					2	Full footway reconstruction (i.e. from nose to nose) for many areas. This seems over the top and is not what GDS have priced for. Speed app (117) defines option for new footway construction only. However, we want to keep at least the base layers. No info about existing base layers of footways - is it granular, blacktop or concrete. This will have a knock-on effect on possible re-use or removal costs.	1	2	The information contained in the drawings appears to be of acceptable standard. However, only colour drawings available, which is not acceptable for construction drawings. In accordance with industry standard all drawings have to be provided such that all information becomes available when printed in black and white and is readable in A3 format. Aesthetics requirements for new pad guard rail not defined. Dimensions for kerb and footway details missing. The cross cut of start of infraco works is not clear, e.g. central reserve kerbs might have been observed by MUDFP but infraco assumes re-use of existing kerbs. Detailed cross sections at 10m intervals required for missing.		Available drawings generally used for quantity take-off. However, all small items (e.g. signs, markings, signals) are based on the tender BoCs.	2	
	Section 1B	Track Details	Generic in location track details (DRG drawing series) available. Structural and construction details, such as sub-base, concrete, reinforcement and waterproofing requirements for track form, are missing.	2	All formal approvals outstanding. Prior approvals for section 1B are outstanding and not due before Apr 26. (refer to SES programme V23) Technical Approval (TA 81) No		3rd party approval status is unclear. Due to the urban environment this section is in it is assumed that multiple authorities and interested 3rd party need to be consulted. Depending on the								Available drawings generally used for quantity take-offs. However, all small items (e.g. signs, markings, signals) are based on the tender BoCs.	2

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Roads, Track, Traffic Signals & Lighting (CND, DRG, HRL, LTG, TAL, TMG and TVA drawing series)			Design Availability				Design Quality				Quantities					
Phase	Section	Element	Design Status / Completeness		Design Approval Status (If)		Feasibility / Constructability / VE Opportunities		Plausibility / Drawing Standard / Clarity of Documents		Compliance with Contract Requirements and Specifications		Stated Quantity Take-Off			
[-1]	[-]	[-]	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk		
		Pavement	The available draft specification appendix 7/1 (permitted pavement options) includes section 18 Detailed pavement design and detailed pavement surface colour drawings (HRL series) available. Typical cross sections (HRL series) for section 18 show existing road pavement to be retained as 'unknown', which would make overlay option impossible. The current design therefore conflicts with BBS' qualification that our price does not allow for full depth reconstruction. No pavement standard details available.	2	1 typical pavement cross-section 18 roads to be programmed for Apr 08, (refer to SDS programme V23) Final tie / CEC approval outstanding.	2	Acceptance of the new Pavement. Also, due to urban environment, departures from standard will be required for track alignment. It is not clear if these have been approved by the relevant authorities.	2	Available drawings show new pavement construction throughout even where new levels are higher than existing, i.e. overlay would be possible. This means that there is no real pavement design journey of any pavement, analysis of residual design life, determination of required overlays, Pavement survey and resulting interpretative report is essential and its absence is big risk. Pavement levels rarely to existing (above / below) vary too often over short sections to permit efficient pavement construction. Pavement works shown outside LOD areas. The permissible pavement option specified in spec app 7/1 appears to be excessive with a total thickness of 300mm. From experience this is a value more common for motorway pavements and a total thickness of 200mm would appear more suitable for the urban environment of this section.	2	Pavement drawings need dimensions on it. Drawings not clear. Different matchlines should refer to pavement options rather than levels. Document required that specifies concrete surface colour requirements for 'tram only', bus only, etc areas. Relevant drawings should make reference to this document. Only colour drawings available, which is not acceptable for construction drawings, in accordance with industry standard all drawings have to be provided such that all information becomes available when printed in black and white and is readable in A3 format.	2	Available drawings generally used for quantity take-offs. Current price is based on assumption that existing pavement will be kept and overlaid where proposed levels are equal higher than existing levels.	2		
		Lighting	Detailed lighting layout drawings available. Electrical schematics and calculations missing. Specification appendices 13 and 14 missing. Only spec app 14/1 available.	2					2	Electrical schematics missing. Only colour drawings available, which is not acceptable for construction drawings. In accordance with industry standard all drawings have to be provided such that all information becomes available when printed in black and white and is readable in A3 format.	2		2	Awaiting Engineer-Build subcontractor proposal, which should include BQ.	2	
		Traffic Signs and Road Markings	Detailed traffic signs and road markings drawings (HRL drawing series) available. Scheme wide specification appendices 12/1 (traffic signs) and 13/3 (road markings) available.	2				2	No comments.	2	Only colour drawings available, which is not acceptable for construction drawings. In accordance with industry standard all drawings have to be provided such that all information becomes available when printed in black and white and is readable in A3 format.	2		2	Available drawings generally used for quantity take-offs. However, all small items (e.g. signs, markings, signals) are based on the tender BQs.	2
		Traffic Signals	Scheme wide specification appendix 12/5 (traffic signals) missing. Traffic signal layout drawings and routing drawings (TMG series) available. Standard details and controller specifications missing.	2				2		2	Standard details and controller specs missing. Otherwise no comments.	2		2	Available drawings generally used for quantity take-offs. However, all small items (e.g. signs, markings, signals) are based on the tender BQs.	2

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Roads, Track, Traffic Signals & Lighting (CND, DRG, HRL, LTG, TAL, TMG and TVA drawing series)			Design Availability						Design Quality				Quantities						
Phase	Section	Element	Design Status / Completeness		Design Approval Status (Rt)		Design Approval Status (Relevant Authorities and Third Parties)		Feasibility / Constructability / Vc Opportunities		Flexibility / Drawing Standard / Clarity of Documents		Compliance with Contract Requirements and Specifications		Status Quantity Take-Off				
(-)	(+)	(-)	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk			
		Alignment (Track & Road)	Detailed track alignment drawings (TAL & TVA series) available. No roads alignment drawings available. Setting out / alignment information not currently available in an electronic format that we can read.						1	It appears that the track alignment has been developed in isolation and has not been sufficiently coordinated with the roads design. However, the iterative optimisation process would have been required to maximise pavement crossley areas. As it stands, the current design proposals for full reconstruction of carriageway and footway pavements and is not feasible / constructable to current budget and programme. Traffic management would become more complex for full reconstruction. Post-ovation the alignment design will have to be revised accordingly. This will have a knock-on effect (re-design) on design elements such as structures. No roads alignment design available hence no comments possible.		2	The drawings do not convey sufficient information to allow construction. According to BDS this info will be supplied electronically through model files. However, to date these were not provided in a format that we can read hence no related comments possible at this stage. Flowline agreement to state that design information to be provided in format suitable for the contractor.				2	Available drawings generally used for quantity take-offs. However, all small items (e.g. signs, markings, signals) are based on the tender BDS.	
		General Arrangement (Track & Roads)	Draft detailed roads design drawings (HRL series) available. However, some sections are superseded and under re-design, e.g. Pitzerey Place. Typical cross sections (HRL series) only available for St Andrews Square area. Remainder missing. No detailed road restraint system layout drawings or HRL schedules (HRL drawing series) available. Detailed kerb and footway layout drawings (HRL layout drawings) are only available for the St Andrews Square area of section 10. Remainder missing. Standard kerb details (HRL A GNG drawing series) and spec (sup 11) available.						2	Full footway re-construction (i.e. from house to house) for many areas. This seems over the top and is not what BDS have priced for. Specs approx 10% reliance option for new footway construction only. However, we want to keep at least the base layers. No info about existing base layers of footways - i.e. if granular, blacktop or concrete. This will have a knock-on effect on possible re-use or removal costs.	4	2	No information contained in the drawings appears to be of acceptable standard. However, only colour drawings available, which is not acceptable for construction drawings. In accordance with industry standards all drawings have to be provided such that all information becomes available when printed in black and white and is readable in A3 format. Resonance requirements for new post guard rail not defined. Dimensions for kerb and footway details missing. The status quo at start of bridge work is not clear, e.g. central reserve kerbs might have been removed by MUDFA but bridge assumes re-use of existing kerbs. Detailed cross sections at 10m interval required but missing.		2	Available drawings generally used for quantity take-offs. However, all small items (e.g. signs, markings, signals) are based on the tender BDS.			
		Track details	General indicative track details (DRG drawing series) available. Structural and construction details, such as base, concrete, reinforcement and waterproofing requirements for track form are missing.		All formal approvals outstanding.		3rd party approval status is unclear. Due to the urban environment								2	Available drawings generally used for quantity take-offs. However, all small items (e.g. signs, markings, signals) are based on the tender BDS.			

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Roads, Track, Traffic Signals & Lighting (CND, DRG, HRL, LTG, TAL, TMG and TVA drawing series)			Design Availability						Design Quality						Quantities			
Phase	Section	Element	Design Status / Completeness		Design Approval Status (If)		Design Approval Status (Relevant Authorities and Third Parties)		Feasibility / Constructability / VE Opportunities		Plausibility / Drawing Standard / Clarity of Documents		Compliance with Contract Requirements and Specifications		Status Quantity Take-Off			
[+]	[-]	[-]	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk		
	Section 1C	Pavement	The available draft specification appears 7/1 (permitted pavement options) does only include the St Andrews Square area of section 1C. Remainder missing. Detailed pavement design and detailed pavement surface colour drawings (HRL series) are only available for the St Andrews Square area of section 1C. Remainder missing. No pavement standard details available.		Final approvals for section 1C are outstanding and not due before mid Apr 08. (refer to SDS programme V23) Technical Approval (TAA) for section 1C roadworks is programmed for Apr 08. (refer to SDS programme V23) Final 10 / 03 G approval outstanding.		This section is in, it is assumed that multiple authorities are interested and need to be consulted. Depending on the design element the risk varies. Also, due to urban environment, departures from standards will be required for track alignment. It is not clear if these have been approved by the relevant authorities.	2	Available drawings show new pavement construction throughout even where new levels are higher than existing. i.e. overlay would be possible. This means that there is no need to reconstruct design features of existing pavement, analysis of structural design live, determination of required overlay). Pavement survey and resulting interpretative report is essential and if its absence is high risk. Pavement levels relative to existing (above / below) vary too often over short sections to permit efficient pavement construction. Pavement works shown outside LDD areas. The permissible pavement option specified in spec app 7/1 appears to be excessive with a total blocktop thickness of 300mm. From experience this is a value more common for minorway pavements and a total thickness of 200mm would appear more suitable for the urban environment of the section.		Pavement drawings need dimensions on it. Drawings not clear. Different hatching should refer to pavement options rather than levels. Document required that specifies concrete surface colour requirements for 'grass only', 'bus only', etc areas. Relevant drawings should make reference to this document. Only colour drawings available, which is not acceptable for construction drawings. In accordance with industry standard all drawings have to be provided such that all information becomes available when printed in black and white and is readable in A3 format.	2			Available drawings generally used for quantity take-offs. Current price is based on assumption that existing pavement will be kept and overlaid where proposed roads are equal higher than existing levels.	2		
		Lighting	Only some draft detailed lighting layout drawings available (Princess Street section is missing). Electrical schematic and calculations missing. Specification appendices 13 and 14 missing.								Electrical schematics missing. Only colour drawings available, which is not acceptable for construction drawings. In accordance with industry standard all drawings have to be provided such that all information becomes available when printed in black and white and is readable in A3 format.	2					Awakening / separate from subcontractor proposal, which should include BoQ.	
		Traffic Signs and Road Markings	Detailed traffic signs and road marking drawings (HRL drawing series) are only available for the St Andrews Square area. Remainder missing. Scheme wide specification appendices 12/1 (traffic signs) and 12/2 (road markings) available. However, this does only include the St Andrews Square area of section 1C.						No comments.		Only colour drawings available, which is not acceptable for construction drawings. In accordance with industry standard all drawings have to be provided such that all information becomes available when printed in black and white and is readable in A3 format.	2					Available drawings generally used for quantity take-offs. However, all small items (e.g. signs, markings, signals) are based on the tender BoQs.	2
		Traffic Signals	Scheme wide specification appendices 12/3 (traffic signals) missing. Traffic signal layout drawings and ducting drawings (TVA and HRL series) available for some junctions. Standard details and controller specifications missing. As some areas of section 1C are under re-design (e.g. Fleetside Place), it is assumed that information is missing.								Standard details and controller specs missing. Otherwise no comments.						Available drawings generally used for quantity take-offs. However, all small items (e.g. signs, markings, signals) are based on the tender BoQs.	2

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Roads, Track, Traffic Signals & Lighting (CND, DRG, HRL, LTG, TAL, TMG and TVA drawing series)			Design Availability						Design Quality						Quantities			
Phase	Section	Element	Design Status / Completeness		Design Approval Status (If)		Design Approval Status (Relevant Authorities and Third Parties)		Feasibility / Constructability / VE Opportunities		Feasibility / Drawing Standard / Clarity of Documents		Compliance with Contract Requirements and Specifications		Status Quantity Take-Off			
[-]	[-]	[-]	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk		
		Alignment (Track & Roads)	Detailed track alignment drawings (TAL & TVA series) available. No roads alignment drawings available. Setting out / alignment information not currently available in an electronic format that we can read.					2	It appears that the track alignment has been developed in isolation and has not been sufficiently coordinated with the roads design. However, the iterative optimisation process would have been required to maximise pavement overlay areas. As it stands, the current design proposal is for full reconstruction of carriageway and footway pavements and is not feasible / constructible to current budget and programme. Traffic management would become more complex for full reconstruction. Post-installation the alignment design will have to be revised accordingly. This will have a knock-on effect to design on design elements such as structures. No roads alignment design available hence no comments possible.		3	The drawings do not convey sufficient information to allow construction. According to SGS this info will be supplied electronically through model files. However, to date these were not provided in a format that we can read hence no detailed comments possible at this stage. Position agreement to state that design information to be provided in format suitable for the contractor.				2	Available drawings generally used for quantity take-offs. However, all small items (e.g. signs, markings, signals) are based on the tender BoQs.	2
		General Arrangement (Track & Roads)	Detailed roads design drawings and typical cross sections (both HRL series) available. Detailed road restraint system layout drawings (HRL drawing series) available. However, these do not include FRTS schedules, which should be provided. Detailed kerb and footway layout drawings (HRL layout drawings); as well as standard kerb details (HRL & CND drawing series) and spec app 11/1 available.					2	Full footway reconstruction (i.e. from base to finish) for many areas. This spans over the top and is not what SBS have priced for. Spec app 11/1 defines collection for new footway construction only. However, we want to use at least the base layers. We also about existing base layers of footways - is it granular, blacktop or concrete. This will have a knock-on effect on possible to use or removal costs.	2	The information contained in the drawings appears to be of acceptable standard. However, only colour drawings available, which is not acceptable for construction drawings. In accordance with industry standard all drawings have to be provided with the all information becomes available when printed in black and white and is readable in A3 format. Aesthetic requirements for road guard rail not defined. Dimensions for kerb and footway details missing. The status quo at start of interface works is not clear, e.g. partial reserve kerbs might have been removed by MUDPA but interface assume re-use of existing kerbs. Detailed cross sections of 10m interval required but missing.	2			2	Available drawings generally used for quantity take-offs. However, all small items (e.g. signs, markings, signals) are based on the tender BoQs.	2	
	Section 1D	Track details	Generic indicative track details (DRG drawing series) available. Structural and construction details, such sub-base, concrete, reinforcement and waterproofing requirements for track form, are missing.	2	All formal approvals outstanding. Prior approvals for section 1D are outstanding and not due before end of Feb 08. (refer to SGS programme V23) Detailed structural drawings for		3rd party approval status is unclear. Due to the urban environment this section is in, it is assumed that multiple authorities and interested 3rd party need to be consulted. Depending on the									2	Available drawings generally used for quantity take-offs. However, all small items (e.g. signs, markings, signals) are based on the tender BoQs.	2

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Roads, Track, Traffic Signals & Lighting (CND, DRG, HRL, LTG, TAL, TMG and TVA drawing series)			Design Availability						Design Quality						Quantities	
Phase	Section	Element	Design Status / Completeness		Design Approval Status (Ref)		Design Approval Status (Relevant Authorities and Third Parties)		Feasibility / Constructability / VE Opportunities		Flexibility / Drawing Standard / Clarity of Documents		Compliance with Contract Requirements and Specifications		Status Quantity Take-Off	
(-)	(+)	(+)	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk
		Pavement	The available draft specification appendix 7/1 (proposed pavement options) includes section 10. Detailed pavement design and detailed pavement surface finish drawings (HRL series) available. Typical cross sections (HRL series) for section 10 show existing road pavement to be retained as 'unknown', which would make overlay option impossible. The current design therefore conflicts with B65' qualification that our price does not allow for full depth reconstruction. No pavement standard details available.	2	Technical Approval (TVA) for section 10 (roadworks) is programmed for Apr 05. (refer to SDS programme V22) Final tie / CEC approval outstanding.	2	Design Authority (HRL) works. Also, due to urban environment, departure from standard will be required for track alignment. It is not clear if these have been approved by the relevant authorities.	2	Available drawings show how pavement construction throughout even where new levels are higher than existing. i.e. overlay would be possible. This means that there is no real pavement design (survey of existing pavement, analysis of residual design life, determination of required overlay). Pavement survey and resulting Interpretative Report is essential and its absence is a big risk. Pavement levels relative to existing (above / below) vary too often over short sections to permit efficient pavement construction. Pavement works shown outside LUD areas. The permissible pavement option specified in spec app 7/1 appears to be excessive with a total thickness of 300mm. From experience this is a value more common for motorway pavements and a total thickness of 200mm would appear more suitable for the urban environment of this section.	2	Pavement drawings need dimensions on 2. Drawings not clear. Different drawings should refer to pavement options rather than levels. Document required that specifies concrete surface finish requirements for 'lean only' 'low only' areas. Relevant drawings should make reference to this document. Only colour drawings available, which is not acceptable for construction drawings. In accordance with industry standard all drawings have to be provided such that all information becomes available when printed in black and white and is readable in A3 format.	2	Available drawings generally used for quantity take-offs. Current price is based on assumption that existing pavement will be kept and overlay where proposed levels are equal higher than existing levels.	2		
		Lighting	Detailed lighting layout drawings available. Electrical schematics and calculations missing. Specification appendices 13 and 14 missing. Only spec app 14/1 available.	2		2		2		2	Electrical schematics missing. Only colour drawings available, which is not acceptable for construction drawings. In accordance with industry standard all drawings have to be provided such that all information becomes available when printed in black and white and is readable in A3 format.	2	Available drawings generally used for quantity take-offs. However, all small items (e.g. signs, markings, signals) are based on the former books.	2		
		Traffic Signs and Road Markings	Detailed traffic signs and road marking drawings (HRL drawing series) available. Scheme wide specification appendices 12/1 (traffic signs) and 12/2 (road markings) available.	2		2		2	In compliance.	2	Only colour drawings available, which is not acceptable for construction drawings. In accordance with industry standard all drawings have to be provided such that all information becomes available when printed in black and white and is readable in A3 format.	2	Available drawings generally used for quantity take-offs. However, all small items (e.g. signs, markings, signals) are based on the former books.	2		
		Traffic Signals	Scheme wide specification appendix 12/2 (traffic signals) missing. Traffic signal layout drawings and timing drawings (TMG series) available. Standard details and controller specifications missing.	2		2		2		2	Standard details and controller specs missing. Otherwise in compliance.	2	Available drawings generally used for quantity take-offs. However, all small items (e.g. signs, markings, signals) are based on the former books.	2		

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Roads, Track, Traffic Signals & Lighting (CND, DRG, HRL, LTG, TAL, TMG and TVA drawing series)			Design Availability				Design Quality				Quantities					
Phase	Section	Element	Design Status / Completeness		Design Approval Status (If)		Design Approval Status (Relevant Authorities and Third Parties)		Feasibility / Constructability / VE Opportunities		Flexibility / Drawing Standard / Clarity of Documents		Compliance with Contract Requirements and Specifications		Status Quantity Take-Off	
[-]	[-]	[-]	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk
Phase 1a	Section 2A	Alignment (Track & Roads)	Detailed track alignment drawings (TAL & TVA series) available. No roads alignment drawings available. Setting out / alignment information not numerically available from electronic format that we can read.				3	It appears that the track alignment has been developed in isolation and has not been sufficiently coordinated with the roads design. However, this iterative coordination process would have been required to maximise pavement overlay savings. As it stands, the current design proposal is for full reconstruction of carriageway and footway pavements and is not feasible / constructable in current budget and programme. Traffic management would become more complex for full reconstruction. Post-rotation line alignment design will have to be revised accordingly. This will have a knock-on effect (re-design) on track elements such as structures. No roads alignment design available hence no comments possible.		2	The drawings do not convey sufficient information to allow construction. According to SDS this info will be supplied electronically through model files. However, to date these were not provided in a format that we can read hence no detailed comments possible at this stage. Navigation agreement to state that design information to be provided is format suitable for the contractor.					
		General Arrangement (Track & Roads)	Detailed roads design drawings and typical cross sections (both HRL series) available. No detailed road restraint system level drawings (HRL drawing series) and RRS schedule available. However, it is unclear if any RRS will be required in this section. Detailed kerb and footway layout drawings (HRL layout drawings) as well as standard kerb details (HRL & CND drawing series) and spec app 117 available.				2	Full footway reconstruction (i.e. from house to house) for many areas. This seems over the top and is not what BUS were priced for. Spec app 117 defines option for new footway construction only. However, we want to hear at least the base layers, tie info about existing base layers or footways - is it granular, blacktop or concrete. This will have a knock-on effect on possible re-use or removal costs.		2	The information contained in the drawings appears to be of acceptable standard, however, only colour drawings available, which is not acceptable for construction drawings. In accordance with industry standard all drawings have to be provided such that all information becomes available when printed in black and white and is readable in A3 format. Aesthetic requirements for raised guard rail not defined. Dimensions for kerb and footway details missing. The status quo at start of infraco works is not clear, e.g. kerb and road markings have been removed by MUDPA but infraco assume re-use of existing kerbs. Detailed cross sections at 10m interval required but missing.					
		Track details	Generic indicative track details (DRG drawing series) available. Structural and construction details, such as sub-base, concrete, reinforcement and waterproofing requirements for track form, see missing.		All formal approvals outstanding. Prior approvals for section 2A are outstanding and not due before Mar 08 (refer to SDS programme V22) Track layout (TAL) for		2nd party approval status is unclear. Due to the urban environment this section is in, it is assumed that multiple authorities and interested 3rd party need to be consulted, depending on the									

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Roads, Track, Traffic Signals & Lighting (CND, DRG, HRL, LTG, TAL, TMG and TVA drawing series)			Design Availability					Design Quality					Quantities			
Phase	Section	Element	Design Status / Completeness		Design Approval Status (Ref)		Design Approval Status (Referent Authorities and Third Parties)		Feasibility / Constructability / VE Opportunities		Feasibility / Drawing Standard / Clarity of Documents		Compliance with Contract Requirements and Specifications		Status Quantity Take-Off	
			Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk
		Pavement	The available draft specification appendix 771 (permitted pavement options) includes section 2A. No detailed pavement design and detailed pavement surface colour drawings (HRL series) available. However, it appears that there are only 2 scenarios in section 2A(1) track bed spans across the full width of the road which results in full reconstruction of road and no specific pavement drawings would be required or 3) track bed is away from road and does not affect pavement design. Consequently, further pavement drawings may not be required. To be confirmed. No pavement standard details available.	2	Technical specification for section 2A roadworks is programmed for Apr 05. (refer to SDS programme V23) Finalie / DEC approval outstanding.	2	Design comment in task sheet. Also, due to urban environment, departures from standard will be required for track alignment. It is not clear if these have been approved by the relevant authorities.	2	Available drawings show new pavement construction throughout even where new levels are higher than existing. i.e. overlay would be possible. This means that there is no road pavement design (jurisdiction of existing pavement, analysis of residual design life, determination of required overlay). Pavement survey and resulting interpretative report is essential and it's absence is a big hit.	2	Pavement drawings need consistency on it. Drawings not clear. Different materials should refer to pavement options rather than levels. Document required that specifies concrete surface colour requirements for tram only, bus only, etc areas. Pavement drawings should make reference to this document. Only colour drawings available, which is not acceptable for construction drawings. In accordance with industry standard all drawings have to be provided such that all information becomes available when printed in black and white and is readable in A3 format.	2				
		Lighting	Detailed lighting layout drawings including electrical schematics available. Specification appendices 13 and 14 missing. Only spec app 14(1) available.	2		2		2		2	Electrical schematics missing. Only colour drawings available, which is not acceptable for construction drawings. In accordance with industry standard all drawings have to be provided such that all information becomes available when printed in black and white and is readable in A3 format.	2				
		Traffic Signs and Road Markings	Detailed traffic signs and road marking drawings (HRL drawing series) available. Scheme wide specification appendices 12(1) (traffic signs) and 12(2) (road markings) available.	2		2		2	No comments.	2	Only colour drawings available, which is not acceptable for construction drawings. In accordance with industry standard all drawings have to be provided such that all information becomes available when printed in black and white and is readable in A3 format.	2				
		Traffic Signals	Scheme wide specification appendix 12(3) (traffic signals) missing. Traffic signal layout drawings and timing drawings (HRL series) available. Standard details and controller specifications missing.	2		2		2		2	Standard details and controller specs missing. Otherwise no comments.	2				
		Alignment (Track & Roads)	Detailed track alignment drawings (TAL & TVA series) available. No road alignment drawings available for street crossings in the Rossburn Viaduct area. Setting out alignment information not currently available in an electronic format that we can read.	2		2		2	No comments.	2	The drawings do not convey sufficient information to allow construction. According to SDS this info will be supplied electronically through model files. However, to date these were not provided in a format that we can read hence no detailed comments possible at this stage. No variation agreement to state that design information to be provided in format suitable for the contractor.	2				

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Roads, Track, Traffic Signals & Lighting (CND, DRG, HRL, LTG, TAL, TRM and TVA drawing series)			Design Availability				Design Quality				Quantities				
Phase	Section	Element	Design Status / Completeness		Design Approval Status (Ref)		Feasibility / Constructability / VE Opportunities		Flexibility / Drawing Standard / Clarity of Documents		Compliance with Contract Requirements and Specifications		Status Quantity Take-Off		
[+]	[+]	[+]	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	
	Section 5A	General Arrangement (Track & Roads)	Detailed roads design drawings and typical cross sections (both HRL series) available. No detailed road restraint system layout drawings (HRL drawing series) and FRS schedules available. However, it is unclear if any FRS will be required in this section. Detailed kerb and footway layout drawings (HRL layout drawings) as well as standard kerb details (HRL & CND drawing series) and spec app V17 available.	2		2	3	No comments.	2	The information contained in the drawings appears to be of acceptable standard. However, only colour drawings available which is not acceptable for construction drawings. In accordance with industry standard all drawings have to be provided such that all information becomes available when printed in black and white and is readable in A3 format. Aesthetic requirements for new post guard rail not defined. Detailed cross sections at time interval required but missing.					
		Track details	General indicative track details (DRG drawing series) available. Structural and construction details, such sub-base, concrete, reinforcement and waterproofing requirements for track form, are missing.	2	All formal approvals outstanding. Prior approvals for section 5A are outstanding and not due before May 08. (refer to SDS programme V23)	2	3	3rd party approval status is outstanding. The tram line runs along the corner of the main Edinburgh to Glasgow rail line, which makes Network Rail together with CEG a key 3rd party for this section. The tram line has also a significant interface with the Murrayfield Stadium. Depending on its design element the risk varies.							
		Pavement	The available draft specification appendix 71 (permitted pavement options) includes section 5A. Detailed drawings available for proposed footway / cycleway along tram line as well as for proposed paved access ramps to tram stops. No detailed pavement drawings available for works required on roads. No pavement standard details available.	2	Technical Approval (TAA) for section 5A roadworks is programmed for May 08. (refer to SDS programme V22) Final to CEG approval outstanding.	2	4	The permissible pavement option specified in spec app 71 appears to be excessive with a 300mm thickness of 300mm. From experience this is a value more common for motorway pavements and a total thickness of 200mm would appear more suitable for the urban environment of this section.	2	Only colour drawings available which is not acceptable for construction drawings. In accordance with industry standard all drawings have to be provided such that all information becomes available when printed in black and white and is readable in A3 format.					
		Lighting	Detailed lighting layout drawings available. However, from these drawings it is not clear how new lighting fits in with existing circuits. Also cable routes and feeder pillars are not shown. Electrical schematics and calculation missing. Specification appendices 13 and 14 missing. Only spec app 14M available.	2		2								Awaiting Ferguson Bear substructure proposal which should include B&D.	
		Traffic Signs and Road Markings	Detailed traffic signs and road marking drawings (HRL drawing series) available. Scheme wide specification, appendices 12/1 (traffic signs) and 12/3 (road markings) available.	2		2			No comments.	2	Only colour drawings available which is not acceptable for construction drawings. In accordance with industry standard all drawings have to be provided such that all information becomes available when printed in black and white and is readable in A3 format.				
		Traffic Signals	Scheme wide specification appendix 12/5 (traffic signals) missing. Traffic signal layout and timing drawings (HRL series) available. Standard details and controller specifications missing.	2		2					Standard details and controller spec missing. Otherwise no comments.				

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Roads, Track, Traffic Signals & Lighting (CND, DRG, HRL, LTG, TAL, TMG and TVA drawing series)			Design Availability						Design Quality						Quantities		
Phase	Section	Element	Design Status / Completeness		Design Approval Status (Ref)		Design Approval Status (Referent Authorities and Third Parties)		Feasibility / Constructability / VE Opportunities		Plausibility / Drawing Standard / Clarity of Documents		Compliance with Contract Requirements and Specifications		Status / Quantity Take-Off		
[+]	[+]	[+]	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	
		Alignment (Track & Roads)	Detailed track alignment drawings (TAL & TVA series) available. No roads alignment drawings and alignment drawings for the proposed footway / cycleway along the tram line available. Station / JCT alignment information not currently available in an electronic format that we can read.	2					No comments.		The drawings do not convey sufficient information to allow confirmation. According to SDS this info will be supplied electronically through next Res. However, to date files were not provided in a format that we can read hence no detailed comment possible at this stage. Navigation agreement to state that design information to be provided in format suitable for the contractor.	2					
		General Arrangement (Track & Roads)	Draft roads design drawings (HRL series) available. Typical cross sections missing. No detailed road restraint system layout drawings (HRL, concrete curbs) and RRS not available. However, it is unclear if any RRS will be required in this section. No detailed kerb and footway layout drawings (HRL layout drawings) available. Standard kerb details (HRL & CND drawing series) and spec app 11/1 available.	2					No comments.		The information contained in the drawings appears to be of acceptable standard. However, only colour drawings available, which is not acceptable for construction drawings. In accordance with industry standard all drawings have to be provided such that all information becomes available when printed in black and white and is readable in A3 format. Asphaltic requirements for new and guard not defined. Detailed cross sections of turn interval required but missing.	2					
		Track details	Generic indicative track details (DRG drawing series) available. Structural and construction details, such as sub-base, concrete, reinforcement and water pooling requirements for track form, not defined.	2	All formal approvals outstanding. Prior approvals for section 5B are outstanding and not due before Jun 08. (refer to SDS programme V23)												
	Section 5B	Pavement	This available draft specification appendix 7/1 (permitted pavement options) includes section 5B. No detailed pavement drawings available for works required on roads. Also no detailed drawings available for proposed footway / cycleway along tram line or for proposed paved access ramps to tram stops. No pavement standard details available.	2	Technical Approval (TAA) for section 5B roadworks is programmed for Apr 08. (refer to SDS programme V23) Final Ref / CEC approval outstanding.				The tram route coincides with the guided bus route. There will be requirements from CEC and the bus operator to keep this open for as long as possible, whereas we want to construct this section early. Depending on the design element the risk varies.		The permeable pavement option specified in spec app 7/1 appears to be excessive with a total blactop thickness of 300mm. From experience this is a value more common for motorway pavements and a total thickness of 200mm would appear more suitable for the urban environment of this section.	2					
		Lighting	Detailed lighting layout drawings available. However, details for Edinburgh tram stop areas missing and to be raised. Electrical schematics and calculations missing. Specification appendices 13 and 14 missing. Only spec app 1/41 available.	2													
		Traffic Signs and Road Markings	No detailed traffic signs and road marking drawings (HRL drawing series) available. However, a traffic sign register for section 5C is included in spec appendix 12/1 (traffic signs) and a road markings register in 12/3.	2					No comments.		Only colour drawings available, which is not acceptable for construction drawings. In accordance with industry standard all drawings have to be provided such that all information becomes available when printed in black and white and is readable in A3 format.	2					

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Roads, Track, Traffic Signals & Lighting (CND, DRG, HRL, LTG, TAL, TMG and TVA drawing series)			Design Availability				Design Quality				Quantities						
Phase	Section	Element	Design Status / Completeness		Design Approval Status (1a)		Design Approval Status (Relevant Authorities and Third Parties)		Feasibility / Constructability / VE Opportunities		Feasibility / Drawing Standards / Clarity of Documents		Compliance with Contract Requirements and Specifications		Status Quantity Take-Off		
[-]	[-]	[-]	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	
		Traffic signals	Scheme wide specification appendix 12/5 (traffic signals) missing. Traffic signal layout drawings, ducting drawings, standard details and controller specifications missing.								Standard details and controller specs missing. Otherwise no comments.						
		Alignment (Track & Roads)	Detailed track alignment drawings (TAL & TVA series) available. However, track alignment is to be reviewed / adjusted following recent changes to depot. No road alignment drawings and alignment drawings for the proposed sections of footway / cycleway available. Setting out / alignment information not currently available in an electronic format that we can read.					No comments.			The drawings do not convey sufficient information to allow construction. According to SD6 this info will be supplied electronically through model files. However, to date these were not provided in a format that we can read hence no detailed comments possible at this stage. Navigation agreement in place that design information to be provided in format suitable for the contractor.						
		Utility Arrangements (Track & Roads)	Detailed roads design drawings and typical cross sections (both HRL series) available. No detailed road restraint system layout drawings (HRL drawing series) and RRS schedule available. However, it is unclear if any RRS will be required in this section. Detailed road and highway layout drawings (HRL layout drawings) as well as standard kerb details (HRL & CND drawing series) and spec app 14/1 available.					No comments.			The information contained in the drawings appears to be of acceptable standard. However, only colour drawings available, which is not acceptable for construction drawings. In accordance with industry standard all drawings have to be provided such that all information becomes available when printed in black and white and is readable in A3 format. Aesthetic requirements for new and ground not defined. Detailed cross sections at 10m interval required but missing.						
		Track details	Generic inductive track details (DRG drawing series) available. Structural and construction details, such as sub-base, concrete, reinforcement and waterproofing requirements for track form, are missing.	1													
	Section 5C	Pavement	The available draft specification appendix 7/1 (permitted pavement options) includes section 5B. Detailed drawings available for proposed footway / cycleway along park line as well as for proposed paved access ramps to tram stops. No detailed pavement drawings available for works required on roads. No pavement standard details available.	2	All formal approvals outstanding. Prior approvals for section 5C are outstanding and not due before Apr 08 (refer to SD6 programme V23)	3rd party approval status is unclear. The tram line passes through suburbs and runs along predominantly rural roads. On its route it crosses major roads, which makes the Roads Authority and other CEC departments key 3rd party for this position. Depending on the design element the risk varies		The permeable pavement option specified in spec app 7/1 appears to be excessive with a total blanksp thickness of 200mm. From experience this is a value more common for motorway pavements and a total thickness of 200mm would appear more suitable for the urban environment of this section.			Only colour drawings available, which is not acceptable for construction drawings. In accordance with industry standard all drawings have to be provided such that all information becomes available when printed in black and white and is readable in A3 format.						
		Lighting	Detailed lighting layout drawings available. However, details for some leader pillars in the Edinburgh Park area unclear. Also cable routes and leader pillars are not shown in the Glasgow area. Electrical schematics missing for the majority of sites. Specification appendices 13 and 14 missing. Only spec app 14/1 available.	2											Missing Glasgow-BoC subcontractor proposal, which should include BoC.		

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Roads, Track, Traffic Signals & Lighting (CND, DRG, HRL, LTG, TAL, TMG and TVA drawing series)			Design Availability				Design Quality				Quantities					
Phase	Section	Element	Design Status / Completeness		Design Approval Status (If)		Design Approval Status (Relevant Authorities and Third Parties)		Feasibility / Constructability / VE Opportunities		Plausibility / Drawing Standard / Clarity of Documents		Compliance with Contract Requirements and Specifications		Status/Quantity Take-Off	
[-]	[-]	[-]	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk
		Traffic Signs and Road Markings	Detailed traffic signs and road marking drawings (HRL drawing series) available. Scheme wide specification appendices TR1 (traffic signs) and TR3 (road markings) available.	2					No comments.		Only colour drawings available, which is not acceptable for construction drawings. In accordance with industry standard of drawings have to be provided such that all information becomes available when printed in black and white and is readable in A3 format.					
		Traffic Signals	Scheme wide specification appendix 12/5 (traffic signals) missing. Traffic signal layout and detailing drawings (HRL series) available. Standard details and controller specifications missing.	2							Standard details and controller specs missing. Otherwise no comments.					
		Alignment (Track & Roads)	Detailed track alignment drawings (TAL & TVA series) available. No roads alignment drawings available. Setting out / alignment information not currently available in an electronic format that we can read.	2					Track alignment currently under review / re-design with a view to optimise depot design.	2	The drawings do not convey sufficient information to allow construction. According to SDB lists info will be supplied electronically through model file. However, to date these were not provided in a format that we can read hence no detailed comments possible at this stage. Revision agreement to state that design information to be provided in format suitable for the contractor.					
		General Arrangement (Track & Roads)	Detailed road design drawings and typical cross sections (both HRL series) available. However, western part of depot access road missing. No detailed road restraint systems layout drawings (HRL drawing series) and RRS schedules available. However, it is unclear if any RRS will be required in this section. Detailed kerb and footway layout drawings (HRL layout drawings) as well as standard kerb details (HRL & CND drawing series) and speed slip 1/1 available.	2					General Arrangement currently under review / re-design with a view to optimise depot design.	2	The information contained in the drawings appears to be of acceptable standard. However, only colour drawings available, which is not acceptable for construction drawings. In accordance with industry standard of drawings have to be provided such that all information becomes available when printed in black and white and is readable in A3 format. Asphaltic requirements for new pad guard rail not defined. Detailed cross sections at 10m interval required but missing.					
		Track Details	General indicative track details (DRG drawing series) available. Structural and construction details, such as sub-base, concrete, reinforcement and waterproofing requirements for track form, are missing.	2	All formal approvals outstanding. Prior approvals for section 6 are outstanding and not to be used. Aug 08. Refer to SDB programme V23.			2nd party approval status is unclear. The depot is located in a rural area in direct vicinity to Edinburgh Airport, which makes the Airport together with DfC a key 3rd party for the section. Depending on the design/element the risk varies.								
	Section 6	Pavement	The available track specification appendix 7/1 (permitted pavement options) includes section 6. Detailed drawings available for proposed footways along depot access road. However drawings does not include details for footways along western part of depot access road. No detailed pavement drawings available for carriageway works. No pavement standard details available.	2	Tactical Approval (TAA) for section 6 roadworks is programmed for Oct 08. (refer to SDB programme V23) Final 3rd / CEC approval outstanding.				The permissible pavement option specified in spec app 7/1 appears to be excessive with a total thickness of 500mm. From experience this is a value more common for motorway pavements and a total thickness of 200mm would appear more suitable for the urban environment at this section.	2	Only colour drawings available, which is not acceptable for construction drawings. In accordance with industry standard of drawings have to be provided such that all information becomes available when printed in black and white and is readable in A3 format.					

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Roads, Track, Traffic Signals & Lighting (CND, DRG, HRL, LTG, TAL, TMG and TVA drawing series)			Design Availability				Design Quality				Quantifies						
Phase	Section	Element	Design Status / Completeness		Design Approval Status (Rf)		Design Approval Status (Relevant Authorities and Third Parties)		Feasibility / Constructability / VE Opportunities		Reliability / Driving Standard / Clarity of Documents		Compliance with Contract Requirements and Specifications		Status Quantity Take-Off		
[-]	[-]	[-]	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	
		Lighting	Detailed lighting layout drawings including electrical schematics available. Specification appendices 13 and 14 missing. Only spec on 12/3 available.													Awaiting Regional Board subcontractor proposal, which should include BoO.	
		Traffic Signs and Road Markings	Proposed traffic signs and road marking drawings (HRL drawing series) available. Scheme wide specification appendices 12/3 (traffic signs) and 12/3 road markings available.						No comments.		Only colour drawings available, which is not acceptable for construction drawings. In accordance with input 3) standard all drawings have to be provided such that all information becomes available when printed in black and white and is readable in A3 format.						
		Traffic Signals	Scheme wide specification appendix 12/3 (traffic signals) missing. Traffic signal ducting drawings (HRL series) available. However, traffic signal layout drawings, standard details and controller specifications missing.								Standard details and controller specs missing. Otherwise no comments.						
		Alignment (Track & Roads)	Detailed track alignment drawings (TAL & TVA series) available. However, some areas of section 7A are under re-design following omission of EARL project. No road alignment drawings available. Setting out / alignment information not currently available in an electronic format that we can read.						Track alignment currently under re-design with a view to reflect cancellation of EARL project.		The drawings do not convey sufficient information to allow construction. According to SDS this info will be supplied electronically through model files. However, to date these were not provided in a format that we can read hence no detailed comments possible at this stage. Novation agreement to state that design information to be provided in format suitable for the contractor.						
		General Arrangement (Track & Roads)	Roads design missing from many of the available roads scheme layout drawings (HRL series) available. Typical cross section only available for one side road. Remainder missing. Track design to be revised in some areas of section 7A following omission of EARL project. No detailed road restraint system layout drawings (HRL drawing series) and RRS schedules available. However, it is unclear if any RRS will be required. This section: Detailed feet and footway layout drawings (HRL layout drawings), as well as standard kerb details (HRL & CND drawing series) and some app 11/1 available.						General arrangement currently under re-design with a view to reflect cancellation of EARL project. Section 7 is envisaged to be the last track and requires early completion. Due to late design this may now be in conflict.		The information contained in the drawings appears to be of acceptable standard. However, only colour drawings available, which is not acceptable for construction drawings. In accordance with input 3) standard all drawings have to be provided such that all information becomes available when printed in black and white and is readable in A3 format. Aesthetic requirements for road bed, guard rail not defined. Detailed cross sections at 10m interval required but missing.						
	Section 7A	Track details	Generic illustrative track details (DRG drawing series) available. Structural and construction details, such as sub-base, concrete reinforcement and waterproofing requirements for track form, are missing.		All formal approvals outstanding. Prior approvals for section 7A are outstanding and not due before Jun 05. (refer to SDS programme V23) (Refer to Appendix 1 (R&G) for		3rd party approval status is unclear. Section 7A presents the link from the depot to the Airport. Can it route the bus line, bypass several labor courses										

DLA00006338\_0034

Roads, Track, Traffic Signals & Lighting (CND, DRG, HRL, LTC, TAL, TWC and TVA drawing series)			Design Availability					Design Quality					Quantities			
Phase	Section	Element	Design Status / Completeness		Design Approval Status (If)		Design Approval Status (Relevant Authorities and Third Parties)		Feasibility / Constructability / VE Opportunities		Flexibility / Drawing Standard / Clarity of Documents		Compliance with Contract Requirements and Specifications		Status / Quantity Take-Off	
[-]	[-]	[-]	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk
		Pavement	The available draft specification appendix 71 (permitted pavement options) includes section 7. Detailed drawings available for proposed footways. No detailed pavement drawings available for carriageway works. No pavement standard details available.	2	Minor scope for section 7A roadworks is programmed for Jul 23, refer to GDS programme V20 Final to / CEC approval outstanding.	2	Edinburgh Airport, SEPA and CEC are likely to be the major relevant 3rd parties. Depending on the design element the risk varies.	2	The permeable pavement option specified in spec app 71 appears to be excessive with a total blocking thickness of 200mm. From experience this is a value more common for motorway pavements and a total thickness of 200mm would appear more suitable for the urban environment of this section.	2	Only colour drawings available, which is not acceptable for construction drawings. In accordance with industry standard all drawings have to be provided such that all information becomes available when printed in black and white and is readable in A3 format.	2				
		Lighting	Dist lighting layout drawings available. In some areas re-design required to reflect position of EAPL, present cable routes and feeder pillars not shown. Electrical schematics and calculations missing. Specification appendices 18 and 14 missing. Only spec app 14/1 available.	2		2									Working Pagesub-Bow subcontractor proposal, which should include SoQ.	2
		Traffic Signs and Road Markings	Detailed traffic signs and road marking drawings (HRL drawing series) available. Scheme wide specification appendices 121 (traffic signs) and 122 (road markings) available.	2		2			No comments.	2	Only colour drawings available, which is not acceptable for construction drawings. In accordance with industry standard all drawings have to be provided such that all information becomes available when printed in black and white and is readable in A3 format.	2				
		Traffic Signals	Scheme wide specification appendix 125 (traffic signals) missing. Traffic signal detail drawings (HRL series) available. However, traffic signal layout drawings, standard details and controller specifications missing.	2		2					Standard details and controller specs missing. Otherwise no comments.	2				
		Alignment (Track & Roads)	Detailed track alignment drawings (TAL & TVA series) available. Track alignment appears to mesh with proposed trough structure underneath S07 tralisley int access bridge. It appears that no structural works are required to roads crossing the tram line thus no inter alignment drawings would be required. However, alignment drawings for footpath / cycleway along tram line and access ramps to tram stops missing. Setting out / alignment information not currently available in an electronic format that we can read.	2		2										

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Roads, Track, Traffic Signals & Lighting (CND, DRG, HRL, LTG, TAL, TMG and TVA drawing series)			Design Availability				Design Quality				Quantities						
Phase	Section	Element	Design Status / Completeness		Design Approval Status (if)		Design Approval Status (Relevant Authorities and Third Parties)		Feasibility / Constructability / VE Opportunities		Reliability / Drawing Standard / Clarity of Documents		Compliance with Contract Requirements and Specifications		Status Quantity Take-Off		
[-]	[-]	[-]	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	
	Section 3A	General Arrangement (Track & Roads)	Detailed roads design drawings and typical cross sections (both HRL series) available. No detailed road restraint system layout drawings (HRL drawing series) and RRS schedule available. However, it is unclear if any RRS will be required in this section. Detailed kerb and footway layout drawings (HRL layout drawings) as well as standard kerb details (HRL & CND drawing series) and spec app 11/7 available.	1													
		Track details	Generic restorative track details (DRG drawing series) available. Structural and construction details, such as sub-base, concrete, sub-structure and waterproofing requirements for track form, are missing.	2	All formal approvals outstanding. Prior approvals for section 3A are outstanding and not due before May 08, refer to SDG programme V23) Technical Approval (TAA) for section 3A roadworks is programmed for May 08, (refer to GDB programme V23) Final file / CEO approval outstanding.	1	Final approval status is unclear. Due to the taken alignment this section is in, it is assumed that multiple authorities and interested 3rd party need to be consulted. Depending on the design element the risk varies. Also, due to urban environment, departing from standard will be required for track alignment. It is not clear if these have been approved by the relevant authorities.	1									
		Pavement	The available draft specification appendix 7/1 (permitted pavement options) does not include any requirements for section 3A and also no detailed pavement drawings are available for works needed on roads. It is assumed that this is because no roadworks are required in section 3A. Detailed pavement treatment drawings available for proposed footway / cycleway along mainline as well as for proposed paved access ramps to tram stops. No pavement standard details available.	2													
		Lighting	Detailed lighting layout drawings available. Electrical schematics and calculations missing. Specification appendices 13 and 14 missing. Only spec app 14/1 available.	2												Awaiting Regulus bear submission for proposal which would include B&C.	1
		Traffic Signs and Road Markings	Detailed traffic signs and road marking drawings (HRL marking series) available. Scheme wide specification appendices 12/1 (traffic signs) and 12/5 (road markings) available.	1													
		Traffic Signals	Scheme wide specification appendix 2/5 (traffic signals) missing. Traffic signal layout drawings, standard details and controller specifications missing. Only timing drawings (HRL series) available for some sections.	2													

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Roads, Track, Traffic Signals & Lighting (CND, DRG, HRL, LTG, TAL, TMG and TVA drawing series)			Design Availability				Design Quality					Quantities					
Phase	Section	Element	Design Status / Completeness		Design Approval Status (If)		Design Approval Status (Relevant Authorities and Third Parties)		Feasibility / Constructability / NE Opportunities		Plausibility / Drawing Standard / Clarity of Documents		Compliance with Contract Requirements and Specifications		Status Quantity Take-Off		
[ - ]	[ - ]	[ - ]	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	
Phase 1b	Section 3B	Alignments (Track & Roads)	Detailed track alignment drawings (TAL & TVA series) available. Roads alignment drawings required for some areas in section 3B. These are missing. Alignment drawings for footpath / cycleway and access ramps to train stops missing. Setting out / alignment information not currently available in an electronic format that we can read.	2		2		2									
		General Arrangement (Track & Roads)	Detailed roads design drawings and typical cross sections (both MFL series) available. The design for the Alderson's Supermarket Junction Junction 102A) is subject to change. No detailed road restraint system layout drawings (HFL drawing series) and RRS schedules available. However, it is unclear if any RRS will be required in this section. Detailed work and layout drawings (HFL layout drawings) as well as standard zero details (HFL & CND drawing series) and spec app 3 (T) available.	2		2		2									
		Track Details	Generic indicative track details (DRG drawing series) available. Structural and connection details, such as supports, concrete reinforcement and waterproofing requirements for track, low, are missing.	2	All formal approvals outstanding. Prior approvals for section 3B are outstanding, and not due before Mar 09, refer to SRS programme V28)	2	3rd party approval status is unclear. Due to the urban environment this section etc, it is assumed that multiple authorities and interested end user need to be consulted. Depending on the design element the risk varies. Also, due to urban environment, departures from standard will be required for track alignment. It is not clear if these have been approved by the relevant authorities.	2									
		Pavement	The available draft specification appendix 7:1 (permitted pavement options) includes section 3B. Detailed drawings available for proposed footway / cycleway along tram lane as well as for proposed paved access ramps to train stops. No detailed pavement drawings available for works required in roads. No pavement standard details available.	2	Final DRG / CEC approval outstanding.	2											
		Lighting	Detailed lighting layout drawings available. Electrical subframes only provided for some areas. Remainder missing. Specification appendices 13 and 14 missing. Only spec app 14(1) available.	2		2											
		Traffic Signs and Road Markings	Detailed traffic signs and road marking drawings (HFL drawing series) available. Scheme site specification appendices 12/1 (traffic signs) and 12/3 (road markings) available.	2													

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Roads, Track, Traffic Signals & Lighting (CND, DRG, HRL, LTG, TAL, TMG and TVA drawing series)			Design Availability				Design Quality				Quantities					
Phase	Section	Element	Design Status / Completeness		Design Approval Status (if)		Design Approval Status (Relevant Authorities and Other Parties)		Feasibility / Constructability / VE Opportunities		Flexibility / Drawing Standards / Clarity of Documents		Compliance with Contract, Requirements and Specifications		Status Currently Take-Off	
[-]	[-]	[-]	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk
		Traffic Signals	Scheme wide specification appendix 12/5 (traffic signals) missing. Traffic signal layout and lighting drawings (HRL series) available. Standard details and controller specifications missing.	2				2								
		Alignment (Track & Roads)	Detailed track alignment drawings (TAL & TVA series) available. No roads and footpath / cycleway alignment drawings available. Setting out / alignment information not currently available in an electronic format that we can read.	2				2								
		General Arrangement (Track & Roads)	Draft track design drawings (HRL series) available. Typical cross sections missing. No detailed road restraint system layout drawings (HRL drawing series) and FPS schedules available. No detailed kerb and footway layout drawings (HPL layout drawings) available. Standard kerb details (HRL & CND drawing series) and spec app V171 available.	2				2								
		Track details	Generic indicative track details (DRG drawing series) available. Structural and construction details, such as sub-base, concrete, reinforcement and waterproofing requirements for track form, are missing.	2				2								
	Section 3C	Pavement	The available draft specification appendix 7/1 (permitted pavement options) includes section 3C. Detailed drawings missing for proposed footway / cycleway along train line as well as for proposed gated access ramps to tram stops. Area re detailed pavement drawings available for works required on roads. No pavement standard details available.	2	All formal approvals outstanding. Prior approvals for section 3C are outstanding and not due before Apr 08. (refer to SDS programme V23) Technical Approval (TA) for section 3C to streets is programmed for Apr 08. (refer to SDS programme V23) Final tie / C&E approval outstanding.	2	2	Due to the urban environment this section is in, it is assumed that multiple authorities and interested 3rd parties need to be consulted. Depending on the design element the risk varies. Also, due to urban environment, dispatches from standard will be required for track alignments. It is not clear if these have been approved by the relevant authorities.								
		Lighting	Draft lighting layout drawings available. Cable routes and feeder pillars not shown. Electrical schematics and calculations missing. Specification appendices 13 and 14 missing. Only spec app 14/1 available.	2				2								
		Traffic Signs and Road Markings	No detailed traffic signs and road marking drawings (HRL drawing series) available. However, a traffic sign register for section 3C is produced in spec appendix 12/1 (traffic signs) and a road markings register is 12/3.	2				2								
															Awaiting P&S and 3rd party approval, which should include BoQ.	2

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Roads, Track, Traffic Signals & Lighting (CND, DRG, HRL, LTG, TAL, TMG and TVA drawing series)			Design Availability						Design Quality						Quantities	
Phase	Section	Element	Design Status / Completeness		Design Approval Status (if)		Design Approval Status (Referent Authorities and Third Parties)		Feasibility / Constructability / VE Opportunities		Plausibility / Drawing Standard / Clarity of Documents		Compliance with Contract Requirements and Specifications		Status Quantity Take-Off	
(-)	(-)	(-)	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk
		Traffic Signals	Scheme wide specification appendix G/S (traffic signals) missing. No traffic signal layout drawings and drafting drawings (DPL series) available. Standard details and controller specifications missing.													

Notes: 1) All comments are based on the documents available at the 14th Dec 2007 design freeze date.  
2) Cells highlighted in blue indicate require further investigation.

Risk definition:

High	Medium	Low
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Geotech, Earthworks & Drainage (GEO, DNE & SCH drawing series)			Design Availability						Design Quality				Quantities			
Phase	Section	Element	Design Status / Completeness		Design Approval Status (If)		Design Approval Status (Relevant Authorities and Third Parties)		Feasibility / Constructability / VE Opportunities		Plausibility / Drawing Standard / Clarity of Documents		Compliance with Contract Requirements and Specifications		Status / Quantity Take-Off	
[-]	[+]	[+]	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk
		Testing Specification	Spec appendix 1.5 (testing) to be carried out by the contractor, not available.		Design not complete thus all formal approvals outstanding.		No 3rd parties relevant for testing spec have been identified. However, document will require CEO approval.	2	Document not available thus no comments possible. The key will be how to prove OBR on made ground. More technical and physical testing will be required, as this was not included in the SI carried out by SDS. Other important information will be guidance on blocktop and concrete testing.		Document not available thus no comments possible. We expect a standard spec appendix as per MCHW highways specification.		Document not available hence no comment possible.		Document not available thus no exact take-off possible. Some allowance is made for testing in the BBS tender offer. That spec is not available is very problematic, as we have no guidance as to the number, the frequency, and type (hence the cost) of tests required.	
	Reference Wide	Earthworks Specification	Spec appendix 6 (earthworks) not available. No technical information to classify suitable sections.		Design not complete thus all formal approvals outstanding.		No 3rd parties relevant for earthworks spec have been identified. However, document will have to be coordinated with stake and get CEO approval.	2	Document not available thus no comments possible. It will be crucial to know the conditions and constraints, which will apply with regards to re-using site won (obtained) material as structural embankment fill, not offer is based on assumption that class 2c (bedrock clay) fill from depot is permitted to be used as general fill. Also important are monitoring and testing requirements.		Document not available thus no comments possible. We expect a standard spec appendix as per MCHW highways specification.		Document not available hence no comment possible.		Document not available thus no exact take-off possible.	
		Geotechnical	Only factual SI reports and SI summary report (desk study) possible. Interpretive geotechnical design (i.e. the geotechnical design) is not available thus it is not possible to assess how SI reports have been considered in the design and which residual risks are associated with geotechnical design. As the majority of the factual SI reports have only been issued in Nov 2007, there is a risk that structural and road / trackwork design will have to be revised to take into account of the new findings.		Design not complete thus all formal approvals outstanding.		No 3rd parties relevant for geotechnical design have been identified. However, geotechnical design will require CEO approval.	2	No geotechnical interpretative reports, the geotechnical design is not available. We do not know how existing tunnels (utilities and railway) in section 1A will affect the works. They might interfere with OLE foundations and track foundations. Cables and power ducts shown to be in the zone of influence of traffic immediately below the track bed base road. Special treatment to ducts may be required. Also current design would require multiple separate operations to take place prior to casting of track slabs (top soil stripping, installation of pre earthworks drainage, installation of cable drains, installation of cables & power ducts, placing of sub-base). As all this will happen within a very narrow corridor, this is not really practical.		Sub-formation requirements not defined. Not possible to upgrade construction not due to missing interpretive report. Only some (potentially superseded) typical cross sections available. These do not show services, ducts, OLE poles, services, tunnels in sufficient clarity. For majority of section 1A no cross sections at all. Due to missing geotechnical design there is a risk that the design for foundations to structures may change once geotechnical design has been completed.	2	Document not available hence no appraisal possible. Risk noted that design will be in accordance with MCHW and CEO standards.		No detailed geotechnical and earthworks design available. Therefore quantities can only be based on track alignment photo-interpretations regarding typical cross sections. Anything below earthworks outline cannot be considered due to unavailability of design.	
	Section 1A	Earthworks	In section 1A the train line runs primarily at grade at existing road level. Only a 2m high embankment in Newhaven area. Consequently, detailed earthworks plans and sections may not be required for the whole section. However, information is required for treatment of track and roads formation (ground improvements, treatment of soft soils, etc). Specification appendix 6 (Earthworks) and earthworks standard details missing.	2	Earthworks design not available / complete thus it is assumed that all formal approvals are outstanding.		No 3rd parties relevant for earthworks design have been identified. However, design will have to be coordinated with stake and will require CEO approval.	2	In accordance with the geotechnical long sections there is an approx 2m embankment in the Newhaven area (Lindsey Road Retaining Wall). No geotechnical and structural details available for this structure. SDS have not carried out sufficient physical formation testing along the whole route to provide information about formation stresses and therefore sub-base requirements. BBS will have to carry out further testing (CBR, Dynamic Cone Penetration) to allow works planning. This may have programme and cost implications.		Sub-formation requirements not defined. Typical cross section do not show all elements, e.g. filter drains, carrier drains, OLE foundations, ducts, cables, etc. Detailed cross sections required at 10m intervals (refer to comment on roadworks design). Standard earthworks details not available. There is a risk that required typical CBR values below track slab might be higher than the 10% value that we have assumed for our offer.		Earthworks design not available, therefore no comment possible.		No detailed geotechnical and earthworks design available. Therefore quantities can only be based on track alignment and assumptions regarding typical cross sections. Anything below earthworks outline cannot be considered due to unavailability of design.	

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Geotech, Earthworks & Drainage (GEO, DNE & SCH drawing series)			Design Availability				Design Quality				Quantities					
Phase	Section	Element	Design Status / Completeness		Design Approval Status (St)		Design Approval Status (Relevant Authorities and Third Parties)		Feasibility / Constructability / VE Opportunities		Plausibility / Drawing Standard / Clarity of Documents		Compliance with Contract Requirements and Specifications		Status Quantity Take-Off	
[-]	[-]	[-]	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Quantity	Risk
		Drainage	No drainage details available for the barnd of section 1A, i.e. the area between Coblen Drive and Newberry Road. Draft drawings available for remainder of section, which show large sections of the existing drainage network as to be re-used. However, the designer has specified the survey information and states that further survey will be required prior to finalisation of design. Also, the general notes indicate that drainage design has not been coordinated with related road alignment, i.e. final utility / drainage levels are in absence. No drainage schedules available for section 1A. Section 1A is currently under no design. Consequently the little information that has been provided to date will be subject to change. Scheme wide specification appendix 5 and standard details available. The latest SDS design programme V23 does not state when drainage design is		All formal approvals outstanding. Final approvals for section 1A drawings are outstanding and not due before Oct 06. (refer to SDS programme V22). Technical Approval (TAA) for section 1A roadworks is programmed for Jun 06. (refer to SDS programme V22). Final tie / CEC approval outstanding.		Site party approval status unclear. Discharge consents will not be required from relevant statutory authorities (e.g. Scottish Water) or relevant authorities (e.g. SEPA, CEC). Note on drawings states that discharge consents are outstanding.		It is assumed that design will show scope of existing drainage system wherever physically possible. There is a risk that existing drainage may not be fit for purpose over the required design life.		No details available. (No comments possible).					
		Geotechnical	Only limited SI reports and SI summary report (deck study) available. Interpretative geotechnical report (i.e. the geotechnical design) is not available thus it is not possible to assess how SI results have been considered in the design and which residual risks are associated with geotechnical design. As the majority of the featured SI reports have only been tested in Nov 2007, there is a risk that structural and road / trackwork design will have to be revised to take into account of the new findings.		Design not complete thus all formal approvals outstanding.		No 3rd parties relevant to geotechnical design have been identified. However, geotechnical design will require CEC approval.		No geotechnical interpretative reports (the geotechnical design) available. Current test power tests shown to be in the zone of influence of traffic immediately below the track bed and road. Special treatment to slabs may be required. Also current design would require multiple repairs / operations to take place prior to casting of track slabs (top soil stripping, installation of pre-earthworks drainage, installation of corrugated drains, placing of sub-base). As all this will happen within a very narrow corridor, this is not really practical.		Sub-formation requirements not defined. Not possible to appraise contamination risk due to missing interpretative report. Only some typical cross sections (DRG series) available. These do not show services, ducts, OLE poles in sufficient clarity. Due to missing geotechnical design there is a risk that the design for foundations to structures may change once geotechnical design has been completed.		Document not available hence no appraisal possible. It is crucial that design will be in accordance with MCRW and CEC standards.		No detailed geotechnical and earthworks design available. Therefore quantities can only be based on track alignment plus assumptions regarding typical cross sections. Anything below earthworks outline cannot be considered due to unavailability of design.	
	Section 1B	Earthworks	In section 1B the firm has run all grade at existing road level. Consequently no cuts or embankments are present in this section and detailed earthworks plans and sections may not be required. However, information is required for treatment of track and made formation (ground improvement, treatment of soft spots, etc). Specification appendix 6 (Earthworks) and earthworks standard details missing.	2	Earthworks design not available / complete thus it is assumed that all formal approvals are outstanding.		No 3rd parties relevant for earthwork design have been identified. However, design will have to be coordinated with state and will require CEC approval.		SDS have not carried out sufficient physical formation testing along the whole route to provide information about formation stiffness and therefore sub-base requirements. BBS will have to carry out further testing (CBR, Dynamic Cone Penetration) to allow works planning. This may have programme and cost implications.		Sub-formation requirements not defined. Typical cross sections do not show all elements, e.g. filter drains, corner drains, DLE foundations, cists, kerbs, etc. Detailed cross sections required at 10m intervals. (refer to comments on roadworks design). Standard earthworks details not available. There is a risk that required typical CBR value below track slab might be higher than the 100% value that we have assumed for our other		Earthworks design not available therefore no comment possible.		No detailed geotechnical and earthworks design available. Therefore quantities can only be based on track alignment plus assumptions regarding typical cross sections. Anything below earthworks outline cannot be considered due to unavailability of design.	

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Geotech, Earthworks & Drainage (GEO, DNE & SCH drawing series)			Design Availability						Design Quality						Quantities	
Phase	Section	Element	Design Status / Completeness		Design Approval Status (Ifs)		Design Approval Status (Relevant Authorities and Third Parties)		Feasibility / Constructability / VE Opportunities		Plausibility / Drawing Standard / Clarity of Documents		Compliance with Contract Requirements and Specifications		Status Quantity Take-Off	
[-]	[-]	[-]	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk
		Drainage	Preliminary drawings available, which show to go sections of the existing drainage network to be required. However, the designer has qualified the survey information and states that survey is incomplete and that further survey will be required prior to finalisation of design. Also, notes indicate that drainage design has not been coordinated with latest road alignment. i.e. final pit / manhole levels are in relevance. No drainage schedules available for section 1B. Scheme wide specification appendix 5 and standard details available. The latest SDS design programme V23 does not state when drainage design is programmed to be IFC.	2	All formal approvals outstanding. Prior approvals for section 1B are outstanding and not due before Apr 08. Refer to SDS programme V23. Technical Approval (TAA) for section 1B roadworks is programmed for Apr 08. Refer to SDS programme V23. Final tie / CEC approval outstanding.		2nd party approval status unclear. Discharge consents will be required from relevant statutory authorities (e.g. South Wales) or relevant authorities (e.g. SEPA, CEC). Note on drawing states that discharge consents are outstanding.		Design is based on re-using existing drainage system wherever possible. There is a risk that existing drainage may not be fit for purpose over the required design life.	2	Drawings are preliminary only and are based on unverified survey. Not usable without provision of drainage schedules.					
	Section 1C	Geotechnical	Only factual SI reports and SI summary report (desk study) available. Interpretative geotechnical report i.e. the geotechnical design is not available thus it is not possible to assess how SI results have been considered in the design and which residual risks are associated with geotechnical design. As the majority of the factual SI reports have only been issued in Nov 2007, there is a risk that structural acc. road / trackwork design will have to be revised to take into account of the new findings.	2	Design not complete thus all formal approvals outstanding.		No 3rd parties relevant for geotechnical design have been identified. However, geotechnical design will require CEC approval.		No geotechnical interpretative reports (i.e. geotechnical design) available. Cables and power ducts shown to be in the zone of influence of traffic immediately below the track bed and race. Special treatment to ducts may be required. Also current design would require multiple separate expansions to take place prior to casting of track slabs (top soil stripping, installation of pre-earthworks drainage, installation of gullies/drains, installation of combs & power ducts, paving of sub-base). As all this will happen within a very narrow corridor, this is not really practical.	2	Sub-instruction requirements not defined. Not possible to approve contamination risk due to missing interpretative report. Only some typical cross sections (DSD series) available. These do not show services, ducts, OLE poles in sufficient clarity. Due to missing geotechnical design there is a risk that the design for foundations to structures may change once geotechnical design has been completed.	2	Document not available hence no appraisal possible. This crucial that design will be in accordance with MCHIV and CEC standards.		No detailed geotechnical and earthworks design available. Therefore quantities can only be based on track alignment plus assumptions regarding typical cross sections. Anything below earthworks outline cannot be considered due to unavailability of design.	
		Earthworks	In section 1C the tram line runs at grade at existing road level. Consequently no cuts or embankments are present in this section and detailed earthworks plans and sections may not be required. However, information is required for treatment of track and roads formation/ground improvements, treatment of soft spots, etc. Specifications parts 6 (Earthworks) and earthworks standard details missing.	2	Earthworks design not available / complete thus it is assumed that all formal approvals are outstanding.		No 3rd parties relevant for earthworks design have been identified. However, design will have to be coordinated with others and will require CEC approval.		SDS have not carried out sufficient physical formation testing along the whole route to provide information about formation stiffness and therefore sub-base requirements. BBS will have to carry out further testing (CBR, Dynamic Cone Penetration) to allow earthworks design. This may have programme and cost implications.	2	Sub-instruction requirements not defined. Typical cross section do not show all elements, e.g. flow drains, carrier drains, OLE locations, ducts, kerbs, etc. Detailed cross sections required at 10m intervals, prior to completion of roadworks design. Standard earthworks details not available. There is a risk that required typical CBR value below track slab might be higher than the 10% value that we have assumed for our offer.	2	Earthworks design not available therefore no quantities possible.		No detailed geotechnical and earthworks design available. Therefore quantities can only be based on track alignment plus assumptions regarding typical cross sections. Anything below earthworks outline cannot be considered due to unavailability of design.	
		Drainage	No drainage drawings available for section 1C. Only one drawing available that indicates drainage for SI Andrew's Square area. No drainage schedules available for section 1C. Scheme wide specification appendix 5 and standard details available. The latest SDS design programme V23 does not state when drainage design is programmed to be IFC.	2	All formal approvals outstanding. Prior approvals for section 1C are outstanding and not due before Apr 08. Refer to SDS programme V23. Technical Approval (TAA) for section 1C roadworks is programmed for Apr 08. Refer to SDS programme V23. Final tie / CEC approval outstanding.		2nd party approval status unclear. Discharge consents will be required from relevant statutory authorities (e.g. South Wales) or relevant authorities (e.g. SEPA, CEC). As no drawings are available it is assumed that discharge consents are outstanding.		It is assumed that design will show re-use of existing drainage system wherever physically possible. There is a risk that existing drainage may not be fit for purpose over the required design life.	2	No details available thus no comments possible.					

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Geotech, Earthworks & Drainage (GEO, DNE & SCH drawing series)			Design Availability				Design Quality				Quantities					
Phase	Section	Element	Design Status / Completeness		Design Approval Status (file)		Design Approval Status (Review Authorities and Third Parties)		Feasibility / Constructability / VE Opportunities		Plausibility / Drawing Standard / Clarity of Occurrences		Compliance with Contract Requirements and Specifications		Status/Quantity Take-Off	
(-)	(-)	(-)	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk
	Section 1D	Geotechnical	Only basic SI reports and SI summary report (desk study) available. Interpretative geotechnical report (i.e. the geotechnical design) is not available thus it is not possible to assess how SI results have been considered in the design and which residual risks are associated with geotechnical design. As the majority of the recent SI reports have only been issued in Nov 2007, there is a risk that structural and road / trackwork design will have to be revised to take into account of the new findings.	2	Design not complete thus all formal approvals outstanding.		No SI reports relevant for geotechnical design have been identified. However, geotechnical design will require CEC approval.		No geotechnical interpretative reports (the geotechnical design) available. Comments sewer data shown to be in the zone of influence of traffic immediately below the track bed and road. Special treatment to ducts may be required. Also current design would require multiple separate operations to take place prior to casting of track slabs (i.e. soil stripping, installation of new earthworks drainage, installation of carrier drains, installation of covers & power ducts, placing of sub-base). As all this will happen within a very narrow corridor, this is not really practical.		Sub-formation requirements not refined. Not possible to approve confirmation risk due to missing interpretative reports. Only some typical cross sections (DPC series) available. These do not show services, ducts, OLE poles in sufficient clarity. Due to missing geotechnical design there is a risk that the design for foundations to structures may change once geotechnical design has been completed.	2	Document not available hence no approval possible. It is crucial that design will be in accordance with MCHW and CEC standards.		No detailed geotechnical and earthworks design available. Therefore quantities can only be based on track alignment plus assumptions regarding typical cross sections. Anything below earthworks outline cannot be considered due to unavailability of design.	
		Earthworks	In section 1D the tram sits on an existing road level. Consequently no cuts or embankments are essential in this section and detailed earthworks plans and sections may not be required. However, information is required for treatment of track and road formation (ground improvements, treatment of soft spots, etc). Specification appendix E (Earthworks and earthworks standard details missing.	2	Earthworks design not available / complete thus it is assumed that all formal approvals are outstanding.		No SI reports relevant for earthwork design have been identified. However, design will have to be coordinated with state and will require CEC approval.		SI's have not carried out sufficient physical formation testing along the whole route to provide information about formation stiffness and therefore sub-base requirements. SDS will have to carry out further testing (CBR, Dynamic Cone Penetration) to allow works planning. This may have programme and cost implications.		Sub-formation requirements not refined. Typical cross section do not show all elements, i.e. filter drains, carrier drains, OLE boundaries, ducts, kerbs, etc. Detailed cross sections required at 4m intervals. Refer to comment on roadworks design). Standard earthworks details not available. There is a risk that required typical CBR value below track also might be higher than for SDS value that we have assumed for site offer.		Earthworks design not available therefore no assessment possible.		No detailed geotechnical and earthworks design available. Therefore quantities can only be based on track alignment plus assumptions regarding typical cross sections. Anything below earthworks outline cannot be considered due to unavailability of design.	
		Drainage	Preliminary drawings available, which show large sections of the existing drainage network, as to be re-used. However, the designer has qualified the survey information and states that survey is incomplete and that further survey will be required prior to finalisation of design. Also, notes indicate that drainage design has not been coordinated with latest road alignment, i.e. final gully / manhole levels are in abeyance. No drainage schedules available for section 1D. Scheme wide specification appendix B and standard details available. The latest SDS design programme V23 does not state when drainage design is programmed to be final.	2	All formal approvals outstanding. Prior approvals for section 1D are outstanding and not due before end of Feb 08. (refer to SDS programme V23). Technical Approval (TAA) for section 1D roadworks is programmed for Apr 08. (refer to SDS programme V23). Final file / CEC approval outstanding.		3rd party approval status unclear. Discharge consents will be required from relevant statutory undertakers (e.g. Scottish Water) or relevant authorities (e.g. SEPA, CEC). Note on drawings states that discharge consents are outstanding.		Design is based on re-using existing drainage system wherever possible. There is a risk that existing drainage may not be fit for purpose over the required design life.		Drawings are preliminary only and are based on insufficient survey. Not usable without provision of drainage schedules.					

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Geotech, Earthworks & Drainage (GEO, DNE & SCH drawing series)			Design Availability						Design Quality						Quantities	
Phase	Section	Element	Design Status / Completeness		Design Approval Status (If)		Design Approval Status (Relevant Authorities and Third Parties)		Feasibility / Constructability / VE Opportunities		Plausibility / Drawing Standard / Clarity of Documents		Compliance with Contract Requirements and Specifications		Status Quantity Take-Off	
[-]	[-]	[-]	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk
		Geotechnical	Only factual SI reports and SI summary report (rock study) available. Interpretative geotechnical report (i.e. the geotechnical design) is not available thus it is not possible to assess how SI results have been considered in the design and which residual risks are associated with geotechnical design. As the majority of the factual SI reports have only been issued in Nov 2007, there is a risk that structural and road / trackwork design will have to be revised to take into account of the new findings.		Design not complete thus all formal approvals outstanding.		Geotechnical design for elements adjacent to railway will be subject of Network Rail approval. No other major 2nd party relevant for geotechnical design have been identified. However, geotechnical design will require O&G approval.	2	No geotechnical interpretative reports (the geotechnical design) available. Corrosion and power stress design to be in the zone of influence of traffic immediately below the track bed and road. Special treatment to ducts may be required. Also current design would require multiple separate operations to take place prior to casting of track slabs (top soil stripping, installation of new earthworks drainage, installation of barrier drains, installation of concrete & power ducts, placing of sub-base). As all this will happen within a very narrow corridor, this is not really practical.		Sub-formation requirements not defined. Not possible to appraise construction risk due to missing interpretative report. Only some typical cross sections (D&E series) available. These do not show services, ducts, O&E pipes in sufficient clarity. Due to missing geotechnical design there is a risk that the design for foundations to structures may change once geotechnical design has been completed.		Document not available hence no appraisal possible. It is crucial that design will be in accordance with MSHW and O&E standards.		No detailed geotechnical and earthworks design available. Therefore quantities can only be based on track alignment plus assumptions regarding typical cross sections. Anything below earthworks outline cannot be considered due to unavailability of design.	
	Section 2A	Earthworks	In the majority of section 2A the tram line runs at grade at existing road level. Consequently, no cuts or embankments are present in these areas and detailed earthworks plans and sections may not be required. However, in the delta junction areas cuts and embankments are present, which need to be shown on drawings. These drawings are missing. Also, information is required for treatment of track and roads formation (ground improvements, treatment of soft spots, etc). Specification appendix B (Earthworks) and earthworks standard details missing.	2	Earthworks design not available / complete thus it is assumed that all formal approvals are outstanding.		Network Rail approval may be required for the earthworks sections adjacent to railway line. Otherwise no 2nd parties relevant for earthworks design in this section have been identified. However, design will have to be coordinated with utility assessor will require DEP approval.	2	SDS have not carried out sufficient physical formation testing along the whole route to provide information about formation stiffness and therefore sub-base requirements. BBS will have to carry out further testing (CPT, Dynamic Cone Penetration) to allow works planning. This may have programme and cost implications.		Sub-formation requirements not defined. Typical cross section do not show all elements, e.g. filter drains, former drains, D&E (excavation, ducts, kerbs, etc). Detailed cross sections required at 10m intervals (refer to comment on roadworks design). Standard earthworks details not available. There is a risk that required typical DSR value below track slab might be higher than the 10% value that we have assumed for our price.		Earthworks design not available therefore no comment possible.		No detailed geotechnical and earthworks design available. Therefore quantities can only be based on track alignment plus assumptions regarding typical cross sections. Anything below earthworks outline cannot be considered due to unavailability of design.	
		Drainage	Preliminary drawings available, which show key sections of the existing drainage network to be re-used, however, the designer has qualified the survey information and states that survey needs to be verified. Also, no drainage infrastructure is indicated between ch 20063+000 and ch 20020+000, which appears to be required. Drainage schedules available for section 2A. Scheme wide specification appendix 5 and standard details available. The latest SDS design programme V23 does not state when drainage design is programmed to be IPC.	2	All formal approvals outstanding. Prior approvals for section 2A are outstanding and not due before Mar 08. (refer to SDS programme V23). Technical Approval (TAA) for section 2A roadworks is programmed for Apr 08. (refer to SDS programme V23). Final 1st / O&G approval outstanding.		3rd party approval status unclear. Discharge consents will be required from relevant statutory undertakers (e.g. Scottish Water) or relevant authorities (e.g. SERA, GEC). Note on drawings states that discharge consents are outstanding.		Design is based on re-using existing drainage system wherever possible. There is a risk that existing drainage may not be fit for purpose over the required design life.		Drawings are preliminary only and are based on insufficient survey.					

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Geotech, Earthworks & Drainage (GEO, DNE & SCH drawing series)			Design Availability						Design Quality						Quantities	
Phase	Section	Element	Design Status / Completeness		Design Approval Status (No)		Design Approval Status (Relevant Authorities and Third Parties)		Feasibility / Constructability / VE Opportunities		Plausibility / Drawing Standard / Clarity of Documents		Conformance with Contract Requirements and Specifications		Status Quantity Take-Off	
[+]	[+]	[+]	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk
Phase 2a	Section 5A	Geotechnical	Only focused SI reports and SI summary report (desk study) available. Interpretive geotechnical report (i.e. the geotechnical design) is not available thus it is not possible to assess how SI results have been considered in the design and what residual risks are associated with geotechnical design. As the majority of the factual SI reports have only been issued in Nov 2007, there is a risk that structural and road / trackwork design will have to be revised to take into account the new findings.	2	Design not complete thus all formal approvals outstanding.	2	Geotechnical design for elements adjacent to railway will be subject of Network Rail approval. Geotechnical design will require CEC approval and consultation with SEPA will be required due to expected contamination issues.	2	No geotechnical interpretative reports the geotechnical design available. It is assumed that the ground is extensively contaminated (leach, metals, nitrate) in the area around the Scotrail Haymarket Depot. Corros. and power ducts shown to be in the zone of influence of traffic immediately below the track bed and road. Special treatment to ducts may be required. Dered piles specified for retaining walls between Haymarket and Murrayfield. This is a very narrow corridor and it will be difficult / impossible to get them with piling rig. Also large piling rigs adjacent to railway require possessions. Soft ground and artesian ground water pressure problems in Murrayfield from steep areas.	2	Sub-formation requirements not defined. Not possible to appraise contamination risk due to missing interpretive report. Only some typical cross sections (DRG sensor) available. These do not show services, ducts, DLE poles in sufficient clarity. Due to missing geotechnical design there is a risk that the design for foundations to structures may change once geotechnical design has been completed.	2	Document not available hence no appraisal possible. It is crucial that design will be in accordance with MCHW and CEC standards. It would appear that WAC contamination testing has not been carried out, even though there is clear evidence that ground will be contaminated around the Scotrail Haymarket Depot.	2	No detailed geotechnical and earthworks design available. Therefore quantities can only be based on track alignment plus assumptions regarding typical cross sections. Anything below earthworks outline cannot be considered due to unavailability of design.	
		Earthworks	There are gaps on embankment over majority of section 5A. Detailed earthworks plans and sections are required. These drawings are missing. Also, information is required for treatment of track and roads formation (ground improvements, treatment of soil spots, etc). Specification appendix 5 (earthworks) and earthworks standard details missing.	2	Earthworks design not available / complete thus it is assumed that all formal approvals are outstanding.	2	Network Rail approval may be required for the earthworks sections adjacent to railway line. Otherwise no third parties relevant for earthworks design in this section have been identified. However, design will have to be coordinated with state and will require CEC approval.	2	SDS have not carried out sufficient physical formation testing along the whole route to provide information about formation stiffness and therefore sub-base requirements. SDS will have to carry out further testing (CBR, Dynamic Cone Penetration) to allow works planning. This may have programming and cost implications. Very narrow corridor between buildings and Network Rail infrastructure (railway and Haymarket Depot) - Access problems. Reinforced embankments proposed. Design will need to be verified by specialist supplier (e.g. Tensar, Mosaicform). Offer is based on assumption to use class 20/18 from depot. As earthworks usage is not available, it is not clear if this is permissible.	2	Sub-formation requirements not defined. Typical cross sections do not show all elements, e.g. filter drains, carrier drains, DLE foundations, abutts, kerbs, etc. Detailed cross sections required at 10m intervals, refer to comment on roadworks design. Standard earthworks details not available. There is a risk that required typical CBR value below track slab might be higher than the 10% value that we have assumed for our offer. High water table. Blaster layer 100m / thickness of reinforced earth sections not specified. Class 6C material required? If so, volume of non-splittable stone class 20 would be reduced.	2	Earthworks design not available therefore no comment possible.	2	No detailed geotechnical and earthworks design available. Therefore quantities can only be based on track alignment plus assumptions regarding typical cross sections. Anything below earthworks outline cannot be considered due to unavailability of design.	
		Drainage	Detailed drainage drawings available, which show carrier drain running alongside new track line. Connections from track drainage to carrier drain not shown. The designer has grabbed the survey information of the existing drainage system and states that survey needs to be verified. Drainage schedules available for section 5A. Scheme with specification appendix 5 and standard details available. The latest SDS design programme V23 does not state when drainage design is programmed to be IPC.	2	All formal approvals outstanding. Prior approvals for section 5A are outstanding and not due before May 08, refer to SDS programme V23. Technical Approval (TAA) for section 5A roadworks is programmed for May 08, refer to SDS programme V23. Prior to CEC approval outstanding.	2	3rd party approval status unclear. Discharge consents will be required from relevant statutory undertakers (e.g. Scottish Water) or relevant authorities (e.g. SEPA, CEC). Note on drawings states that discharge consents are outstanding.	2	No proposal shown for drainage on top of reinforced earth embankments. Filterdrains will be required. There may be constraints as to which drainage system will be permissible due to contamination issues, e.g. filter drains may be a problem.	2	No pre-earthworks drainage shown. Interface with back drainage system not clear. Survey of existing drainage system heavily outdated.	2	2	2	2	2

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Geotech, Earthworks & Drainage (GEO, DNE & SCH drawing series)			Design Availability						Design Quality						Quantities	
Phase	Section	Element	Design Status / Completion		Design Approval Status (%)		Design Approval Status (Relevant Authorities and Third Parties)		Feasibility / Constructability / VE Opportunities		Plausibility / Drawing Standard / Clarity of Documents		Compliance with Contract Requirements and Specifications		Status Quantity Take-Off	
[-]	[-]	[-]	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk
		Geotechnical	Only factual SI reports and SI summary report (class study) available. Interim geotechnical report (i.e. the geotechnical design) is not available thus it is not possible to assess how SI results have been considered in the design and which residual risks are associated with geotechnical design. As the majority of the factual SI reports have only been issued in Nov 2007, there is a risk that structural and road / trackwork design will have to be revised to take into account of the new findings.	2	Design not complete thus all formal approvals outstanding.		Geotechnical design for elements adjacent to railway will be subject of Network Rail approval. Documentation for counter required. Geotechnical design will require CEC approval.	2	No geotechnical interpretative reports (the geotechnical design) available. Corries and power ducts shown to be in the areas of influence of traffic immediately below the track bed and road. Special treatment to ducts may be required. Railway property existing embankments in poor condition. No info available. Risk of damage against its even through damage was there before. We may want to use alternative fill materials (PFA) for reinforced earth structures to reduce cost.	2	Sub-formation requirements not defined. Not possible to appraise contamination risk due to missing interpretative report. Only some typical cross sections (DBS series) available. These do not show services, ducts, OLE poles etc sufficient clarity. Railway not shown on cross sections. However, this is crucial given the sensitivity of rail way infrastructure. Due to missing geotechnical design there is a risk that the design for foundations to structures may change once geotechnical design has been established.	2	Document not available hence no appraisal possible. It is crucial that design will be in accordance with MR/MW and CEC standards.		No detailed geotechnical and earthworks design available. Therefore quantities can only be based on track alignment plus assumptions regarding typical cross sections. Anything below earthworks outline cannot be considered due to unavailability of design.	
	Section 5B	Earthworks	In the majority of section 5B the best line runs of grade parallel to the railway line. Consequently, no significant cuts or embankments are present in these areas and detailed earthworks plans and sections may not be required. However, at numerous locations large embankments are present, which need to be shown on drawings. These drawings are missing. Also, information is required for treatment of track and made formation ground improvements, treatment of soft spots, etc. Specification appendix 6 (Earthworks) and earthworks standard details missing.	2	Earthworks design not available / complete thus it is assumed that all formal approvals are outstanding.		Network Rail approval may be required for the earthworks sections adjacent to railway line. Otherwise no 3rd parties relevant for earthworks design in the section have been identified. However design will have to be coordinated with stps and will require CEC approval. Operational issues will have to be coordinated with the last bus operators, as tram route overlaps with the guide bus way.	2	SI's have not carried out sufficient physical formation testing along the whole route to provide information about formation stiffness and therefore sub-base requirements. BDS will have to carry out further testing (CBR, Dynamic Cone Penetration) to allow works planning. This may have programme and cost implications. Very narrow corridor between buildings and Network Rail infrastructure (railway). Also route follows guided bus way. -> Access and traffic management problems. Reinforced embankments proposed. Design will need to be verified by specialist supplier (e.g. Tensar Maccaferri). Offer is based on assumption: to use site was class 20 fill from depot. As earthworks design is not available, it is not clear if this is permissible.	2	Sub-formation requirements not defined. Typical cross sections do not show all elements, e.g. filter drains, carrier drains, OLE foundations, ducts, kerbs, etc. Detailed cross sections required of 10m intervals, rather to comment on roadworks design. Standard earthworks details not available. There is a risk that required typical CBR values below track slab might be higher than the 10% value that we have assumed for our other. High water table. Stagger layer width / thickness of reinforced earth sections not specified. Class 60 material required? If so, volume of reusable site won class 20 would be reduced. We will require site near and fill sites for cut material available as fill. Space between railway embankment and new lane embankments in section 5B would be ideal.	2	Earthworks design not available therefore no comment possible.		No detailed geotechnical and earthworks design available. Therefore quantities can only be based on track alignment plus assumptions regarding typical cross sections. Anything below earthworks outline cannot be considered due to unavailability of design.	
		Drainage	Detailed drainage drawings available, which show carrier drains running alongside new tram line. Where the tram line follows the existing guideway over the existing drainage shall be re-used. Connections from track drainage to carrier drain / existing drainage system not shown. The designer has qualified the survey information of the existing drainage system and states that survey needs to be verified. Drainage schedules available for section 5B. Scheme wide operation appendix 5 and standard details available. The latest SDS design programme v23 does not state when drainage design is programmed to be IFC.	2	All formal approvals outstanding. Prior approvals for section 5B are outstanding and not available Jun 08, have to SDS programme v23. Technical Approval (TAA) for section 5B roadworks is programmed for Apr 08, (refer to SDS programme v23) Final tie / CEC approval outstanding.		3rd party approval status unclear. Discharge consents will be required from relevant statutory organisations (e.g. Scottish Water) or relevant authorities (e.g. SEPA, CEC). Risk on drawings states that discharge consents are outstanding.	2	No proposal shown to drainage on top of reinforced earth embankments. Restrictions will be required.	2	No pre-earthworks drainage detail interface with track drainage system not clear. Survey of existing drainage system hourly qualified.					

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Geotech, Earthworks & Drainage (GEO, DNE & SCH drawing series)			Design Availability						Design Quality				Quantities			
Phase	Section	Element	Design Status / Completeness		Design Approval Status (DA)		Design Approval Status (Relevant Authorities and Third Parties)		Feasibility / Constructability / VE Opportunities		Plausibility / Drawing Standards / Clarity of Drawings		Compliance with Contract Requirements and Specifications		Status / Quantity Take-Off	
[-]	[-]	[-]	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk
		Geotechnical	Only factual SI reports out of summary report (desk study) available. Interpretative geotechnical report (i.e. the geotechnical design) is not available thus it is not possible to assess how SI results have been considered in the design and which residual risks are associated with geotechnical design. As the majority of the factual SI reports have only been issued in Nov 2005, there is a risk the structural and road / trackwork design will have to be revised to take into account of the new findings.		Design not complete (No all formal approvals outstanding).		Geotechnical design will require CEC approval and coordination with SEPA will be required due to potential contamination issues.	3	No geotechnical interpretative reports (i.e. geotechnical design) available. It is assumed that the ground is extensively contaminated, as Edinburgh Park and Gogar area were used as tip / landfill sites previously. Not possible to appraise contamination risk due to missing interpretative report. Also factual soil investigation is insufficient to allow appraisal of bearing capacity of soils (shown in Edinburgh Park and Gogar areas). Cable and power ducts shown to be in the zone of influence of traffic immediately below the track bed and road. Special treatment to ducts may be required.		Sub-formation requirements not defined. Only some typical cross sections (DRG series) available. These do not show services, ducts, OLE poles in sufficient clarity. Due to missing geotechnical design there is a risk that the design for foundations to structures may change once geotechnical design has been completed.		Document not available hence no appraisal possible. It is crucial that design will be in accordance with MCHW and CEC standards.  It would appear that WAC contamination testing has not been carried out even though there is clear evidence that ground is contaminated in several areas.		No detailed geotechnical and earthworks design available. Therefore quantities can only be based on track alignment plus assumptions regarding typical cross sections. Anything below earthworks outline cannot be considered due to unavailability of design.	
	Section SC	Earthworks	In the south-eastern section of section SC the tram line runs through or less at grade. Consequently, no significant cuts or embankments are present in these areas and detailed earthworks plans and sections may not be required. However, in the section towards the airport the tram runs in cuts (A&B underpass and depot retaining walls), which need to be shown on drawings. These drawings are missing. Also, information is required for treatment of track and roads formation (ground improvement, treatment of soft spots, etc). Specification appendix 6 (Earthworks) and earthworks standard details missing.		Earthworks design not available / complete thus it is assumed that all formal approvals are outstanding.		Earthwork design will have to be coordinated with stairs and will require CEC approval. Consultation with BAA required at least regarding operational aspects.	2	BSS have not carried out sufficient physical formation testing along the likely route to provide information about formation stiffness and therefore sub-base requirements. BSS will have to carry out further testing (CBR, Dynamic Cone Penetration) to allow works planning. This may have programme and cost implications. Reinforced embankments proposed. Design will need to be verified by specialist engineer (e.g. Tensar, Mecoliner). Offer is based on assumption to use site won class 2c fill from depot. As earthworks design is not available, it is not clear if this is permissible.		Sub-formation requirements not defined. Typical cross sections do not show all elements, e.g. filler drains, carrier drains, OLE foundations, ducts, kerbs, etc. Detailed cross sections required at 10m intervals, refer to comment on roadworks design). Standard earthworks details not available. There is a risk that required typical CBR value below track slab might be higher than the 10% value that we have assumed by our offer. High water table. Starter layer width / thickness of proposed earth sections not specified. Class 3C material required? If so, volume of re-usable site won class 2c would be reduced.		Earthworks design not available therefore no comment possible.		No detailed geotechnical and earthworks design available. Therefore quantities can only be based on track alignment plus assumptions regarding typical cross sections. Anything below earthworks outline cannot be considered due to unavailability of design.	
		Drainage	Obtained drainage drawings available, which show carrier drains connecting into track drainage to carrier drain not shown. The designer has qualified the survey information of the existing drainage system and states that survey needs to be verified. Drainage design in AB underpass area not complete. Drainage schedules available for section SC. Scheme wide specification appendix 5 and standard details available. The latest SDS design programme V23 does not state when drainage design is programmed to be IFC.	3	All formal approvals obtained (SDP prior approval for section SC are outstanding and not due before Apr 06, refer to SDS programme V23). Technical Approval (TAM) for section SC (earthworks) is programmed for May 06, refer to SDS programme V23. Final CEC approval outstanding.	3	3rd party approval status unclear. Drainage consents will be required from relevant statutory undertakers (e.g. Scottish Water) or relevant authorities (e.g. SEPA, CEC). Note on drawings states that discharge consents are outstanding.		No proposal shown for drainage on top of reinforced earth embankments. Field drains will be required. There may be constraints as to which drainage system will be permissible due to contamination issues, e.g. filler drains may be a problem.	3	No pre-earthworks drainage shown. Interface with track drainage system not clear. Survey of existing drainage system heavily qualified.					

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Gentech, Earthworks & Drainage (GEO, DNE & SCH drawing series)			Design Availability				Design Quality				Compliance with Contract Requirements and Specifications		Quantities				
Phase	Section	Element	Design Status / Completeness		Design Approval Status (IE)		Design Approval Status (Relevant Authorities and Third Parties)		Feasibility / Constructability / VE Opportunities		Plausibility / Drawing Standard / Clarity of Documents		Compliance with Contract Requirements and Specifications		Status Quantity Take-Off		
[-]	[-]	[-]	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	
	Section 5	Geotechnical	Only factual SI reports and SI summary report (desk study) available. Interpretative geotechnical report (i.e. the geotechnical design) is not available thus it is not possible to assess how SI results have been considered in the design and which residual risks are associated with geotechnical design. As the majority of the factual SI reports have only been issued in Nov 2007, there is a risk that structural and road / trackwork design will have to be revised to take into account the new findings.		Design not complete thus all formal approvals outstanding.		Geotechnical design will require CEC approval and consultation with SEPA will be required due to associated contamination issues.	1	No geotechnical interpretative reports (the geotechnical design) available. It is assumed that the ground is reasonably homogeneous, as the works were previously present on the site. Not possible to quantify contamination risk due to missing interpretative report. We have loosened with ground and removed large quantities of soil as part of the MUDFA works. BBS had assumed to use all site wear class 2.0 fill (boulder clay) from the depot site as present all site where. Also, as we have broken the surface and exposed the clay, the quality deteriorates by the day due to water ingress and deficient drainage (met).		Sub-formation requirements not defined. Only some typical cross sections (DPS series) available. There do not show services, ducts, CLE poles in sufficient clarity. Due to missing geotechnical design there is a risk that the design for depot foundations may change once geotechnical design has been completed.		Documents not available hence no appraisal possible. It is crucial that design will be in accordance with MCHW and CEC standards. It would appear that WAC contamination testing has not been carried out even though there is clear evidence that ground is contaminated in several areas.		No detailed geotechnical and earthworks design available. Design currently under re-design. Levels will change. MUDFA have changed the existing condition. No survey available for state that BBS will take over.		
		Earthworks	Significant earthworks are required in section 5, as the proposed depot FGL is much lower than the EGL. Detailed earthworks plans and sections are required. These drawings are missing. The depot design is currently being developed. The change includes lifting the proposed depot level. Information is required for treatment of track and roads formation (ground improvements, treatment of soil areas, etc). Specification appendix 6 (Earthworks) and earthworks standard details missing.		Earthworks design not available / complete thus it is assumed that all formal approvals are outstanding.		Earthwork design will have to be coordinated with sites and will require CEC approval. Consultation with SAA required re least regarding operational issues.	2	Earthwork are currently under re-design, i.e. depot level will change. This will have a knock-on effect on earthworks and structures (e.g. all retaining wall). No detailed earthwork possible due to missing design info.		Sub-formation requirements not defined. Detailed cross sections required at 10m intervals. Refer to comment on roadworks design. Standard earthworks details not available. There is a risk that required typical CBR values within track slip might be higher than the 10% value that we have assumed for our other MUDFA have changed the existing condition. No survey available for state that BBS will take over.		Earthworks design not available therefore no comment possible.		No detailed geotechnical and earthworks design available. Design currently under re-design. Levels will change. MUDFA have changed the existing condition. No survey available for state that BBS will take over.		
		Drainage	Detected drainage drawings available, which show carrier drains running alongside new depot access road. Drainage likely to change due to ongoing re-design of section 5. Drainage schedules for section 5 missing. Scheme wide specification appendix 6 and standard details available. The latest SDS design programme V23 covers all sites when drainage design is programmed to be IFC.		All formal approvals outstanding. Prior approvals for section 5 are outstanding and not due before Aug 08, refer to SDS programme V23. Technical Approval (TAA) for section 5 earthworks is programmed for Oct 08, refer to SDS programme V23. Final tie / CEC approval outstanding.		3rd party approval status unclear. Discharge consents will be required from relevant statutory undertakers (e.g. Scottish Water) or relevant authorities (e.g. SEPA, CEC). Note on drawings states that discharge consents are outstanding.										
		Geotechnical	Only factual SI reports and SI summary report (desk study) available. Interpretative geotechnical report (i.e. the geotechnical design) is not available thus it is not possible to assess how SI results have been considered in the design and which residual risks are associated with geotechnical design. As the majority of the factual SI reports have only been issued in Nov 2007, there is a risk that structural and road / trackwork design will have to be revised to take into account the new findings.		Design not complete thus all formal approvals outstanding.		Geotechnical design will require CEC approval and consultation with SEPA will be required due to presence of water courses / culverts.	1	No geotechnical interpretative reports (the geotechnical design) available. The factual report indicates section 7A as an area of low CBRs (less than 5%). However, SDS do not offer an engineering solution for this problem. Columns and power ducts shown to go in the zone of influence of traffic immediately below the track bed very road. Special treatment to ducts may be required.		Sub-formation requirements not defined. Only some typical cross sections (DPS series) available. There do not show services, ducts, CLE poles in sufficient clarity. Due to missing geotechnical design there is a risk that the design for foundations to structures may change once geotechnical design has been completed. Section under re-design due to cancellation of EBR1 project.		Documents not available hence no appraisal possible. It is crucial that design will be in accordance with MCHW and CEC standards.		No detailed geotechnical and earthworks design available. Therefore quantities can only be based on track alignment plus assumptions regarding typical cross sections. Anything below earthworks will be cannot be considered due to unavailability of design.		

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Geotech, Earthworks & Drainage (GEO, DNE & SCH drawing series)			Design Availability					Design Quality					Quantities			
Phase	Section	Element	Design Status / Completeness		Design Approval Status (Ria)		Design Approval Status (Relevant Authorities and Third Parties)		Feasibility / Constructability / VE Opportunities		Plausibility / Drawing Standard / Clarity of Documents		Compliance with Contract Requirements and Specifications		Status Quantity Take-Off	
[+]	[+]	[+]	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk
	Section 7A	Earthworks	In large areas of section 7A the ground level is not at grade. Consequently, no significant cuts or embankments are present in these areas and detailed earthworks plans and sections may not be required. However, at numerous locations large embankments are present, which need to be shown on drawings. These drawings are missing. Also, information is required for treatment of track and roads, lamellar ground improvements, treatment of soft spots, etc. Specification standard 5 (Earthworks) and earthworks standard details missing.	2	Earthworks design not available / complete plus it is assumed that all formal approvals are outstanding.		Earthworks design will have to be coordinated with state and will require CEC approval. Consultation with BAA required at least regarding operational issues.	1	SOS have not carried out sufficient physical formation testing along the whole route to provide information about formation stiffness and therefore sub-base requirements. BBS will have to carry out further testing (CBR, Dynamic Cone Penetration) to allow works planning. This may have programme and cost implications. The factual report identifies section 7A as an area of low CBRs (less than 3%). However, SDS do not offer an engineering solution for the problem.		No useful information available. Sub formation requirements not defined. Typical cross sections do not show all elements, e.g. filter drains, confining drains, OLE, foundations, ducts, kerbs, etc. Detailed cross sections required at 10m intervals. Refer to comment on roadworks design. Standard earthworks details not available. There is a risk that required typical CBR value below track slab might be higher than the 10% value that we have assumed for our offer. No engineering solution for low CBR region available. Design may change as result of changed alignment due to cancellation of EARL project.		Earthworks design not available therefore no comment possible.		No detailed geotechnical and earthworks design available. Therefore quantities can only be based on track alignment plus assumption regarding typical cross sections. Anything below earthworks outline cannot be considered due to unavailability of design.	
		Drainage	Most of drainage drawings available, which show carrier drains running alongside new tram line. Connections from track drainage to carrier drain not shown. The designer has modified the survey information of the existing drainage system and stated that survey needs to be verified. Connections of new drainage to proposed subverts is unclear. Drainage schedules for section 7A are missing. Subordinate specification standard 5 and standard details available. The latest SDS design programme V23 does not state when drainage design is programmed to be IFC.	2	All formal approvals outstanding. Prior approvals for section 7A are outstanding and not due before Jun 08. (refer to SDS programme V23) Technical Approval (TAA) for section 7A roadworks is programmed for Jul 08. (refer to SDS programme V23) Final IFC / CEC approval outstanding.		2nd party approval status unclear. Discharge consents will be required from relevant statutory undertakers (e.g. Scottish Water) or relevant authority (e.g. SEPA, CEC). Note on drawings states that discharge consents are outstanding.									
		Geotechnical	Only factual SI reports and SI summary report (desk study) available. Interpretative geotechnical report (i.e. the geotechnical design) is not available thus it is not possible to assess how SI results have been considered in the design and which residual risks are associated with geotechnical design. As the majority of the factual SI reports have only been issued in Nov 2007, there is a risk that structural and road / trackwork design will have to be revised to take into account of the new findings.		Design not complete thus all formal approvals outstanding.		2nd party approval status is unclear. Consultations will be required with track owners whose properties will be affected by the works. Also, design will have to be coordinated with other SEPA, Cycles Group and will require CEC approval.	2	No geotechnical interpretative reports (i.e. geotechnical design) available. Curves and power ducts shown to be in the zone of influence of baffle immediately below the track bed. Special treatment to ducts may be required. Also current design would require multiple separate operations to take place prior to casting of track slabs (top soil stripping, installation of pre-earthwork drainage, installation of carrier drains, installation of concrete & carrier ducts, stacking of sub-structure). As all this will happen within a very narrow corridor, this is not really practical. Route follows old railway corridor. Contamination and environmental problems (e.g. gaslines, overheads) to be expected but not yet identified by the designer.		Factual SI is insufficient. Only shallow hand dug trial pits and no SPT testing. Sub-formation requirements not defined. Not possible to appreciate contamination risk due to missing interpretative report. Only some typical cross sections (DRG series) available. These do not show services, ducts, OLE poles in sufficient clarity. Due to missing geotechnical design there is a risk that the design for foundations to structures may change once geotechnical design has been completed.	2	Document not available hence no approval possible. It is crucial that design will be in accordance with MCHN and CEC standards.		No detailed geotechnical and earthworks design available. Therefore quantities can only be based on track alignment plus assumption regarding typical cross sections. Anything below earthworks outline cannot be considered due to unavailability of design.	

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Geotech, Earthworks & Drainage (GEO, DNE & SCH drawing series)			Design Availability						Design Quality				Compliance with Contract Requirements and Specifications		Quantities		
Phase	Section	Element	Design Status / Completeness		Design Approval Status (Use)		Design Approval Status (Risk/RAI, Authorities and Third Parties)		Feasibility / Constructability / VE Opportunities		Plausibility / Drawing Standard / Clarity of Documents		Compliance with Contract Requirements and Specifications		Status Quantity Take-off		
[ - ]	[ + ]	[ - ]	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	
	Section 3A	Earthworks	In the majority of section 3A the track line runs either at a fall or on an embankment. Retaining structures are proposed at numerous locations. Consequently, detailed earthworks plans and sections are required. However, these drawings are missing. Also, information is required to treatment of bank and roads formation (ground) improvements, treatment of soft spots, etc. Specification appendix 6 (Earthworks) and earthworks standard details missing.		Earthworks design not available / complete plus it is assumed that all formal approvals are outstanding.		3rd party approval status is unclear. Consultations will be required with track owners whose properties will be affected by the works. Also, design will have to be coordinated with state, SEPA, Cyclists Groups and will require CEC approval.		SDS have not carried out sufficient physical formation testing along the whole route to provide information about formation stiffness and therefore sub-base requirements. BES will have to carry out further testing (CBR, Dynamic Cone Penetration) to allow works planning. This may have to programme and cost implications. Piling and soil nailing will be difficult in tight working corridor. Extensive temp works close to houses.		Sub-formation requirements not defined. Typical cross section do not show all elements, e.g. filter drains, cover drains, CLE foundations, ducts, kerbs, etc. Detailed cross sections required at 10m intervals, cross of treatment on roadworks design. Standard earthworks details not available. There is a RUK that required typical CBR values below track slab might be higher than the 10% value that we have assumed for our offer.		Earthworks design not available therefore no comment possible.		No detailed geotechnical and earthworks design available. Therefore quantities can only be based on track alignment plus assumptions regarding typical cross sections. Anything below earthworks surface cannot be considered due to unavailability of design.		
		Drainage	Detailed drainage drawings available, which show carrier drain running alongside new track line. Connections from track drainage to carrier drain not shown. The designer has qualified the survey information of the existing drainage system and states that survey needs to be verified. Drainage schedules available for section 3A. Scheme wide specification appendix 5 and standard details available. The latest SDS design programme V23 does not state when drainage design is programmed to be IFD.	2	All formal approvals outstanding. Prior approvals for section 3A are outstanding and not due before May 09. refer to SDS programme V23. Technical Approval (TAA) for section 3A roadworks is programmed for May 09. (refer to SDS programme V23) Panel 12 / CEC approval outstanding.		3rd party approval status unclear. Discharge consents will be required from relevant statutory undertakers (eg. Section Water) or relevant authorities (eg. SEPA, CEC). Note on drawings states that discharge consents are outstanding.										
		Geotechnical	Only factual SI reports and SI summary report (risk study) available. Interpretation geotechnical report (i.e. the geotechnical design) is not available thus it is not possible to assess how SI results have been considered in the design and which residual risks are associated with geotechnical design. As the majority of the factual SI reports have only been issued in Nov 2007, there is a risk that designers and road / trackwork design will have to be revised to take into account of the new findings.	3	Design not complete thus all formal approvals outstanding.		3rd party approval status is unclear. Consultations will be required with track owners whose properties will be affected by the works. Also, design will have to be coordinated with state, SEPA, Cyclists Groups and will require CEC approval.		No geotechnical interpretative reports (ie geotechnical design) available. Cables and power ducts shown to be in the zone of influence of traffic immediately beside the track bed. Special treatment to ducts may be required. Also current design would require multiple separate operations to take place prior to casting of track slab (top soil stripping, installation of pre-assembly drainage, installation of carrier drains, installation of cables & power ducts, placing of sub-base). As all this will happen within a very narrow corridor, this is not really practical. Route follows old railway corridor. Contamination and environmental problems (e.g. trees) considered to be expected but not yet identified by the designer.		Factual SI into insufficient. Only shallow hand dug 1-3' pits and no soil testing. Sub-formation requirements not defined. Not possible to appraise construction risk due to missing interpretative report. Only some typical cross sections (DMS) sheets) available. These do not show sections, ducts, CLE poles in sufficient clarity. Due to missing geotechnical design there is a risk that the design for foundations to structures may change once geotechnical design has been completed.		Document not available hence no appraisal possible. It is assumed that design will be in accordance with MCHW and CEC standards.		No detailed geotechnical and earthworks design available. Therefore quantities can only be based on track alignment plus assumptions regarding typical cross sections. Anything below earthworks surface cannot be considered due to unavailability of design.		

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Geotech, Earthworks & Drainage (GEO, DNE & SCH drawing series)			Design Availability					Design Quality					Quantities			
Phase	Section	Element	Design Status / Completeness		Design Approval Status (Rt)		Design Approval Status (Relevant Authorities and Third Parties)		Feasibility / Constructability / VE Opportunities		Plausibility / Drawing Standard / Clarity		Compliance with Contract Requirements and Specifications		Status / Quantity Take-Off	
[-]	[-]	[-]	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk
Phase 1b	Section 2B	Earthworks	In the majority of section 2B the track bed runs at existing road level (partly on the east and partly parallel to the road). Consequently, no large number of cuts or embankments are present in this section and detailed earthwork plans and sections may not be required everywhere. However, in the areas where earthworks are required, these need to be shown on drawings. These drawings are missing. Also, information is required for treatment of track and road formation (ground improvements, treatment of soft spots, etc). Specification appendix 6 (Earthworks) and earthwork standard details missing.	2	Earthwork design not available / complete thus it is assumed that all formal approvals are outstanding.		3rd party approval status is unclear. Consultations will be required with land owners whose properties will be affected by the works. Also, design will have to be coordinated with state, SEPA, Cyclists Groups and will require CEC approval.		SDS have not carried out sufficient physical formation testing along the whole route to provide information about formation stiffness and therefore sub-base requirements. BBS will have to carry out further testing (CBF, Dynamic Cone Penetration) to allow works planning. This may have programme and cost implications. Piling and soil nailing will be difficult in tight working corridor. Extensive temporary works close to houses.		Sub-formation requirements not defined. Typical cross section do not show all elements, e.g. filter drains, carrier drains, OLE foundations, ducts, kerbs, etc. Detailed cross sections required at 10m intervals, (refer to comment on roadworks design). Standard earthwork details not available. There is a risk that required typical CBR values below track slab might be higher than the 10% value that we have assumed for cost offer.		Earthwork design not available therefore no comment possible.		No detailed geotechnical and earthwork design available. Therefore quantities can only be based on track alignment plus assumption regarding typical cross sections. Anything below earthwork outline cannot be considered due to unavailability of design.	
		Drainage	Detailed drainage drawings available, which show carrier drain running alongside new main line. Connections from track drainage to carrier drain not shown. The designer has qualified the survey information of the existing drainage system and states that survey needs to be verified. Drainage schedules available for section 2B. Schemes with specification appendix 6 and standard details available. The latest SDS design programme V23 does not state when drainage design is programmed to be IFC.	2	All formal approvals outstanding. Prior approvals for section 2B are outstanding and not due before Mar 05, (refer to SDS programme V23). Technical Approval (TAA) for section 2B roadworks is programmed for Apr 05, (refer to SDS programme V23). Final file / CEC approval outstanding.		3rd party approval status unclear. Earthwork consents will be required from relevant statutory undertakers (e.g. Scottish Water) or relevant authorities (e.g. SEPA, CEC). Note on drawings states that discharge consents are outstanding.									
	Geotechnical	Only factual SI reports and SI summary report (risk study) available. Interpretative geotechnical report (i.e. the geotechnical design) is not available thus it is not possible to assess how SI results have been considered in the design and which residual risks are associated with geotechnical design. As the majority of the factual SI reports have only been issued in Nov 2007, there is a risk that structural and road / trackwork design will have to be revised to take into account the new findings.		Design not complete thus all formal approvals outstanding.		3rd party approval status is unclear. Consultations will be required with land owners whose properties will be affected by the works. Also, design will have to be coordinated with state, SEPA, Cyclists Groups and will require CEC approval.		No geotechnical interpretations reports (the geotechnical design) available. Conduits and power ducts shown to be in the zone of influence of traffic immediately below the track bed. Special treatment to ducts may be required. Also current design would require multiple separate operations to take place prior to casting of track slabs (top soil stripping, installation of pre-earthworks drainage, installation of carrier drains, installation of conduit & power ducts, placing of sub-base). As all this will happen within a very narrow corridor, this is not easily practical. Route follows old railway corridor. Contamination and environmental problems (e.g. Japanese involvement) to be expected but not yet identified by the designer.		Factual SI info insufficient. Only shallow hand dug test pits and no soil testing. Sub-formation requirements not defined. Not possible to appraise / confirmation risk due to missing interpretative report. Only some typical cross sections (DRG series) available. These do not show services, ducts, OLE poles in sufficient clarity. Due to missing geotechnical design there is a risk that the design for foundations to structures may change once geotechnical design has been completed.	2	Document not available hence no appraisal possible. It is crucial that design will be in accordance with MCHN and CEC standards.		No detailed geotechnical and earthwork design available. Therefore quantities can only be based on track alignment plus assumption regarding typical cross sections. Anything below earthwork outline cannot be considered due to unavailability of design.		

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Geotech, Earthworks & Drainage (GEO, DNE & SCH drawing series)			Design Availability						Design Quality						Quantities	
Phase	Section	Element	Design Status / Completeness		Design Approval Status (Itc)		Design Approval Status (Relevant Authorities and Third Parties)		Feasibility / Constructability / VE Opportunities		Plausibility / Drawing Standard / Clarity of Documents		Compliance with Contract Requirements and Specifications		Status Quantity Take-Off	
[ - ]	[ - ]	[ - ]	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk
	Section 3C	Earthworks	In the majority, of section 3C, the main line runs at existing road level (partly on the road and partly parallel to the road). Consequently, no large number of cuts or embankments are present in this section and detailed earthworks plans and sections may not be required everywhere. However, in the areas where earthworks are required, these need to be shown on drawings. These drawings are missing. Also, information is required for treatment of track and roads formation (ground improvements, placement of soil spurs, etc). Specified standards B (Earthworks) and earthworks standard details missing.		Earthworks design not available / complete thus if it is assumed that all formal approvals are outstanding.		3rd party approval status is unclear. Consultations will be required with land owners whose properties will be affected by the works. Also, design will have to be coordinated with strbs, SEPA, Cyclists Groups and will require CEG approval.		SDS have not carried out sufficient physical formation testing along the whole track to provide information about formation stiffness and therefore sub-base requirements. BBS will have to carry out further testing (CBR, Dynamic Cone Penetration) to allow works planning. This may have programme and cost implications. Piling and soil nailing will be difficult in tight working corridor. Extensive temp works close to houses.		Sub-formation requirements not defined. Typical cross section do not show all elements, e.g. that drain, carrier cross, CLE foundations, ducts, kerbs, etc. Detailed cross sections required at 10m intervals, (refer to comment on roadwork design). Standard earthworks details not available. There is a risk that required typical CBR values below track slab might be higher than the 10% value that we have assumed for our CBR.		Earthworks design not available therefore no quantity possible.		No detailed geotechnical or earthworks design available. Therefore quantities can only be based on track alignment plus assumptions regarding typical cross sections. Anything below earthworks outline cannot be considered due to unavailability of design.	
		Drainage	Detailed drainage drawings available, which show carrier drain running alongside new tram line. Connections from track drainage to carrier drain not shown. The designer has qualified the survey information on the existing drainage system and states that survey needs to be verified. Drainage schedules available for section 3C. Scheme wide specification appendix and standard details available. The latest SDS design programme v20 does not state when drainage design is programmed to be I-C.	2	All formal approvals outstanding. Price approvals for section 3C are re-establishing and not due before April 08. Refer to SDS programme V20. Technical Approval (TAA) for section 3C roadworks is programmed for April 08. Refer to SDS programme V20. Final I-C / CEG approval outstanding.		3rd party approval status unclear. Discharge consents will be required from relevant statutory undertakers (e.g. Scottish Water) or relevant authorities (e.g. SEPA, CEG). Note on drawings states that discharge consents are outstanding.									

Notes: 1) All comments are based on the documents available at the 14th Dec 2007 design freeze date.  
 2) Cells highlighted in blue letters require 100% by appropriate person.

Risk definition:

1	2	3	4
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Acc works, Lscp & Noise Fencing (ACC, LDS & SCL drawing series)			Design Availability						Design Quality						Quantities		
Phase	Section	Element	Design Status / Completeness		Design Approval Status (if)		Design Approval Status (Relevant Authorities and Third Parties)		Feasibility / Constructability / VE Opportunities		Plausibility / Drawing Standard / Clarity of Documents		Compliance with Contract Requirements and Specifications		Status Quantity Take-Off		
[-]	[-]	[-]	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	
Scheme Wide	Accommodation Works		Draft versions of so-called 'boundary and accommodation works' drawings for all sections together with a scheme wide accommodation works schedule have been produced by SDS. However, these documents merely define the design scope and are insufficient for construction purposes as stand alone documents, as they only provide brief descriptions of the works required and make reference to 'internal consultations and agreements between 1st and 3rd parties'.  All requirements arising from 3rd party agreements need to be incorporated in the design and translated into construction details, which should be produced by SDS and must be shown on the appropriate drawings. Reference to the text of agreements are insufficient for construction, in particular standard details for fencing, street furniture and landscaping are required. Also earthwork design to take account of steps, access ramps, boundary retaining walls, etc.  Detailed and complete property owners / tenants schedule of acc works required.		It is not possible in effect if all accommodation works requirements are already reflected in the various design elements (e.g. site clearance, services, roadworks, structures, etc). However, as all formal approvals for each of these individual disciplines are outstanding, it has to be assumed that accommodation works details have also not been approved.												
Section 1A	Accommodation Works		Draft 'boundary and accommodation works' drawings available. Refer to general comment above.  Also, drawings state that Part 1B of section 1A is under revision, which means that drawings are superseded and subject to change.		Refer to general comment above.		3rd party approval status unclear.										
			No design drawings available. Spec appendix 2 site clearance does not include section 1A. Archaeological design missing. No info about site constraints such as Japanese Knotweed available.		Design not available hence all approvals outstanding.	2	3rd party approval status unclear.										
			No design drawings available. No landscape area schedule available. No spec appendix 2b (landscape and ecology) available.		Design not available hence all approvals outstanding.	2	3rd party approval status unclear.										
			no info		Design not available hence all approvals outstanding.	2	3rd party approval status unclear.										
			Draft 'boundary and accommodation works' drawings available. Refer to general comment above.	2	Refer to general comment above.		3rd party approval status unclear.										

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Acc works, Lscp & Noise Fencing (ACC, LDS & SCL drawing series)			Design Availability						Design Quality						Quantities	
Phase	Section	Element	Design Status / Completeness		Design Approval Status (ie)		Design Approval Status (Relevant Authorities and Third Parties)		Feasibility / Constructability / VE Opportunities		Flawability / Drawing Standard / Clarity of Documents		Compliance with Contract Requirements and Specifications		Status Quantity Take-Off	
[+]	[+]	[+]	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk
	Section 1B	Site Clearance	Detailed drawings (HFL series) available. Spec appendix 2 (site clearance) available, which includes details for section 1B. Archaeological design missing. No info about site constraints such as Japanese Knotweed available.	2	Site clearance drawings are part of roads design design package in accordance with SDS programme v23. All formal approvals for roads design are outstanding.	2	3rd party approval status unclear.	2								
		Landscaping	No design drawings available. No landscape area schedule available. No spec appendix 30 (landscape and ecology) available.	2	Design not available hence all approvals outstanding.	2	3rd party approval status unclear.	2								
		Noise Fencing	No info	2	Design not available hence all approvals outstanding.	2	3rd party approval status unclear.	2								
	Section 1C	Accommodation Works	Draft boundary and accommodation works drawings available. Refer to general comment above.	2	Refer to general comment above.	2	3rd party approval status unclear.	2								
		Site Clearance	Detailed drawings (HFL series) only available for St Andrews Square area. Spec appendix 2 (site clearance) available, which includes details for section 1C. Archaeological design missing. No info about site constraints such as Japanese Knotweed available.	2	Site clearance drawings are part of roads design design package in accordance with SDS programme v23. All formal approvals for roads design are outstanding.	2	3rd party approval status unclear.	2								
		Landscaping	No design drawings available. No landscape area schedule available. No spec appendix 30 (landscape and ecology) available.	2	Design not available hence all approvals outstanding.	2	3rd party approval status unclear.	2								
	Section 1D	Accommodation Works	Draft boundary and accommodation works drawings available. Refer to general comment above.	2	Refer to general comment above.	2	3rd party approval status unclear.	2								
		Site Clearance	Detailed drawings (HFL series) available. Spec appendix 2 (site clearance) available, which includes details for section 1D. Archaeological design missing. No info about site constraints such as Japanese Knotweed available.	2	Site clearance drawings are part of roads design design package in accordance with SDS programme v23. All formal approvals for roads design are outstanding.	2	3rd party approval status unclear.	2								
		Landscaping	No design drawings available. No landscape area schedule available. No spec appendix 30 (landscape and ecology) available.	2	Design not available hence all approvals outstanding.	2	3rd party approval status unclear.	2								
	Section 2A	Noise Fencing	No info	2	Design not available hence all approvals outstanding.	2	3rd party approval status unclear.	2								
		Accommodation Works	Draft boundary and accommodation works drawings available. Refer to general comment above.	2	Refer to general comment above.	2	3rd party approval status unclear.	2								
		Site Clearance	Detailed drawings (HFL series) available. Spec appendix 2 (site clearance) available, which includes details for section 2A. Archaeological design missing. No info about site constraints such as Japanese Knotweed available.	2	Site clearance drawings are part of roads design design package in accordance with SDS programme v23. All formal approvals for roads design are outstanding.	2	3rd party approval status unclear.	2								

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Acc works, Lsep & Noise Fencing (ACC, LDS & SCL drawing series)			Design Availability						Design Quality						Quantities		
Phase	Section	Element	Design Status / Completeness		Design Approval Status (If)		Design Approval Status (Relevant Authorities and Third Parties)		Feasibility / Constructability / VE Opportunities		Plausibility / Drawing Standard / Clarity of Documents		Compliance with Contract Requirements and Specifications		Status Quantity Take-Off		
[-]	[-]	[-]	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	
Phase 1a	Section 5A	Landscaping	Design drawings available. No landscape area schedule available. No spec appendix 30 (landscape and ecology) available.	2	not approved	2	3rd party approval status unclear.	2									
		Noise Fencing	no info		Design not available hence all approvals outstanding.	2	3rd party approval status unclear.	2									
		Accommodation Works	Draft 'boundary and accommodation works' drawings available. Refer to general comment above.	2		2	3rd party approval status unclear.	2									
		Site Clearance	Detailed drawings (SCL series) available. Spec appendix 2 (site clearance) available, which includes details for section 5A. Archaeological design missing. No info about site constraints such as Japanese Knotweed available.	2	Site clearance drawings are part of roads design design package in accordance with SDS programme v23. All formal approvals for roads design are outstanding.	2	3rd party approval status unclear.	2									
		Landscaping	No design drawings available. No landscape area schedule available. No spec appendix 30 (landscape and ecology) available.	2	Design not available hence all approvals outstanding.	2	3rd party approval status unclear.	2									
	Section 5B	Noise Fencing	no info		Design not available hence all approvals outstanding.	2	3rd party approval status unclear.	2									
		Accommodation Works	Draft 'boundary and accommodation works' drawings available. Refer to general comment above.	2		2	3rd party approval status unclear.	2									
		Site Clearance	Detailed drawings (SCL series) available. Spec appendix 2 (site clearance) available, which includes details for section 5B. Archaeological design missing. No info about site constraints such as Japanese Knotweed available.	2	Site clearance drawings are part of roads design design package in accordance with SDS programme v23. All formal approvals for roads design are outstanding.	2	3rd party approval status unclear.	2									
		Landscaping	Design drawings available. No landscape area schedule available. No spec appendix 30 (landscape and ecology) available.	2	not approved	2	3rd party approval status unclear.	2									
		Noise Fencing	no info		Design not available hence all approvals outstanding.	2	3rd party approval status unclear.	2									
Section 5C	Accommodation Works	Draft 'boundary and accommodation works' drawings available. Refer to general comment above.	2		2	3rd party approval status unclear.	2										
	Site Clearance	Detailed drawings (SCL series) available. Spec appendix 2 (site clearance) available, which includes details for section 5C. Archaeological design missing. No info about site constraints such as Japanese Knotweed available.	2	Site clearance drawings are part of roads design design package in accordance with SDS programme v23. All formal approvals for roads design are outstanding.	2	3rd party approval status unclear.	2										
	Landscaping	Design drawings available. No landscape area schedule available. No spec appendix 30 (landscape and ecology) available.	2	not approved	2	3rd party approval status unclear.	2										
	Noise Fencing	no info		Design not available hence all approvals outstanding.	2	3rd party approval status unclear.	2										

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Acc works, Lscp & Noise Fencing (ACC, LDS & SCL drawing series)			Design Availability						Design Quality						Quantities	
Phase	Section	Element	Design Status / Completeness		Design Approval Status (Rc)		Design Approval Status (Relevant Authorities and Third Parties)		Feasibility / Constructability / VE Opportunities		Usability / Drawing Standard / Clarity of Documents		Compliance with Contract Requirements and Specifications		Status Priority Take-Off	
[-]	[-]	[-]	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk
Section 6	Accommodation Works		Draft boundary and accommodation works drawings available. Refer to general comment above.	2	Refer to general comment above.		3rd party approval status unclear.									
	Site Clearance		No design drawings available. Spec appendix 2 (site clearance) does not include section 6. Archaeological design missing. No info about site constraints such as Japanese Knotweed available.		Design not available hence all approvals outstanding.	2	3rd party approval status unclear.									
	Landscape		No design drawings available. No landscape area schedule available. No spec appendix 30 (landscape and ecology) available.		Design not available hence all approvals outstanding.	2	3rd party approval status unclear.									
	Noise Fencing		no info		Design not available hence all approvals outstanding.	2	3rd party approval status unclear.									
Section 7A	Accommodation Works		Draft boundary and accommodation works drawings available. Refer to general comment above.  Section is under re-design following omission of EAPL project, which means that drawings may be subject to change.		Refer to general comment above.		3rd party approval status unclear.									
	Site Clearance		Detailed drawings (SCL series) available. Spec appendix 2 (site clearance) available, which includes details for section 7A. Section is under re-design due to omission of EAPL project, which may affect site clearance in some areas. Archaeological design missing. No info about site constraints such as Japanese Knotweed available.	2	Site clearance drawings are part of roads design design package in accordance with SDS programme v25. All formal approvals for roads design are outstanding.	2	3rd party approval status unclear.									
	Landscape		No design drawings available. No landscape area schedule available. No spec appendix 30 (landscape and ecology) available.		Design not available hence all approvals outstanding.	2	3rd party approval status unclear.									
	Noise Fencing		no info		Design not available hence all approvals outstanding.	2	3rd party approval status unclear.									
Section 3A	Accommodation Works		Draft boundary and accommodation works drawings available. Refer to general comment above.	1	Refer to general comment above.		3rd party approval status unclear.									
	Site Clearance		Detailed drawings (SCL series) available. Spec appendix 2 (site clearance) available, which includes details for section 3A. Archaeological design missing. No info about site constraints such as Japanese Knotweed available.		Site clearance drawings are part of roads design design package in accordance with SDS programme v25. All formal approvals for roads design are outstanding.	2	3rd party approval status unclear.									
	Landscape		Design drawings available. No landscape area schedule available. No spec appendix 30 (landscape and ecology) available.	2	not approved	2	3rd party approval status unclear.									
	Noise Fencing		no info		Design not available hence all approvals outstanding.	2	3rd party approval status unclear.									

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Acc Works, Lscop & Noise Fencing (ACC, LDS & SCL drawing series)			Design Availability						Design Quality						Quantities	
Phase	Section	Element	Design Status / Completeness		Design Approval Status (file)		Design Approval Status (Relevant Authorities and Third Parties)		Feasibility / Constructability / VE Opportunities		Plausibility / Drawing Standard / Clarity of Documents		Compliance with Contract Requirements and Specifications		Status Quantity Take-Off	
[+]	[+]	[+]	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk
Phase 1b	Section 3B	Accommodation Works	Draft boundary and accommodation works drawings available. Refer to general comment above.	2	Refer to general comment above.	2	3rd party approval status unclear.	2								
		Site Clearance	Detailed drawings (SCL series) available. Spec appendix 1 (site clearance) available, which includes details for section 3B. Archaeological design missing. No info about site constraints such as Japanese Knotweed available.	2	Site clearance drawings are part of roads design design package in accordance with SDS programme v03. All formal approvals for roads design are outstanding.	2	3rd party approval status unclear.	2								
		Landscaping	Design drawings available. No landscape area schedule available. No spec appendix 3B (landscape and ecology) available.	2	not approved	2	3rd party approval status unclear.	2								
		Noise Fencing	no info	2	Design not available hence all approvals outstanding.	2	3rd party approval status unclear.	2								
	Section 3C	Accommodation Works	Draft boundary and accommodation works drawings available. Refer to general comment above.	2	Refer to general comment above.	2	3rd party approval status unclear.	2								
		Site Clearance	Detailed drawings (SCL series) available. Spec appendix 2 (site clearance) available, which includes details for section 3C. Archaeological design missing. No info about site constraints such as Japanese Knotweed available.	2	Site clearance drawings are part of roads design design package in accordance with SDS programme v03. All formal approvals for roads design are outstanding.	2	3rd party approval status unclear.	2								
		Landscaping	Design drawings available. No landscape area schedule available. No spec appendix 3C (landscape and ecology) available.	2	not approved	2	3rd party approval status unclear.	2								
		Noise Fencing	no info	2	Design not available hence all approvals outstanding.	2	3rd party approval status unclear.	2								

Notes: 1) All comments are based on the documents available at the 14th Dec 2007 design freeze date.  
 2) Risk Register to be updated in accordance with SDS programme v03.

Risk definition:

1	High
2	Medium
3	Low

Tram stops, Substations & Depot (DEP, STP, SUB & TSU drawing series)			Design Availability						Design Quality						Quantities	
Phase	Section	Element	Design Status / Completeness		Design Approval Status (ite)		Design Approval Status (Relevant Authorities and Third Parties)		Feasibility / Constructability / VE Opportunities		Plausibility / Grading Standard / Clarity of Documents		Compliance with Contract Requirements and Specifications		Stacked Quantity Take-Off	
[+]	[+]	[+]	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk
	Section 1A	TS Neuhaven	tender design During PB negotiations the available design is superseded and will have to be revised.		Detailed design not available hence all approvals outstanding.	2	3rd party approval status unclear.	2								
		Tram North Leith Sands Substation (NLE)	tender design		Detailed design not available hence all approvals outstanding.	2	3rd party approval status unclear.	2								
		TS Ocean Terminal	tender design During PB negotiations the available design is superseded and will have to be revised.		Detailed design not available hence all approvals outstanding.	2	3rd party approval status unclear.	2								
		TS Port of Leith	tender design During PB negotiations the available design is superseded and will have to be revised.		Detailed design not available hence all approvals outstanding.	2	3rd party approval status unclear.	2								
		TS Bernard Street	tender design During PB negotiations the available design is superseded and will have to be revised.		Detailed design not available hence all approvals outstanding.	2	3rd party approval status unclear.	2								
		TS Foot of the Walk	tender design During PB negotiations the available design is superseded and will have to be revised.		Detailed design not available hence all approvals outstanding.	2	3rd party approval status unclear.	2								
	Section 1B	Tram Leith Walk 163 Substation (LWE)	tender design		Detailed design not available hence all approvals outstanding.	2	3rd party approval status unclear.	2								
		TS Balfour Street	tender design During PB negotiations the available design is superseded and will have to be revised.		Detailed design not available hence all approvals outstanding.	2	3rd party approval status unclear.	2								
	Section 1C	TS McDiarmid Road	tender design During PB negotiations the available design is superseded and will have to be revised.		Detailed design not available hence all approvals outstanding.	2	3rd party approval status unclear.	2								
		TS Picardy Place	tender design During PB negotiations the available design is superseded and will have to be revised.		Detailed design not available hence all approvals outstanding.	2	3rd party approval status unclear.	2								
		Tram Cathedral Lane Substation (CAL)	tender design		Detailed design not available hence all approvals outstanding.	2	3rd party approval status unclear.	2								
		TS St Andrew Square	detail design, incomplete During PB negotiations the available design is superseded and will have to be revised.		Final detailed design not available hence all approvals outstanding.	2	3rd party approval status unclear.	2								

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Tram stops, Substations & Depot (DEP, STP, SUB & T&U drawing series)			Design Availability						Design Quality						Quantities		
Phase	Section	Element	Design Status / Completeness		Design Approval Status (No)		Design Approval Status (Relevant Authorities and Third Parties)		Feasibility / Constructability / VE Opportunities		Flexibility / Drawing Standards / Clarity of Documents		Compliance with Contract Requirements and Specifications		Status Quantity Take-Off		
1-1	1-1	1-1	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	
Phase 1a	Section 1D	T6 Princess Street	detail design, incomplete During PB negotiations the have changed the tram stop requirements. Consequently the available design is superseded and will have to be revised.	2	Final detailed design not available hence all approvals outstanding.	2	3rd party approval status unclear.	2									
		T6 Shandwick Street	tender design During PB negotiations the have changed the tram stop requirements. Consequently the available design is superseded and will have to be revised.	2	Detailed design not available hence all approvals outstanding.	2	3rd party approval status unclear.	2									
	Section 2A	Tram Haymarket Terrace 1 Substation (HTE)	tender design	2	Detailed design not available hence all approvals outstanding.	2	3rd party approval status unclear.	2									
		T3 Haymarket	tender design During PB negotiations the have changed the tram stop requirements. Consequently the available design is superseded and will have to be revised.	2	Detailed design not available hence all approvals outstanding.	2	3rd party approval status unclear.	2									
		Russell Road TPE Substation (RRE)	tender design	2	Detailed design not available hence all approvals outstanding.	2	3rd party approval status unclear.	2									
	Section 5A	T5 Manlyfield Stadium	tender design During PB negotiations the have changed the tram stop requirements. Consequently the available design is superseded and will have to be revised.	2	Detailed design not available hence all approvals outstanding.	2	3rd party approval status unclear.	2									
		T6 Dalgreen	tender design During PB negotiations the have changed the tram stop requirements. Consequently the available design is superseded and will have to be revised.	2	Detailed design not available hence all approvals outstanding.	2	3rd party approval status unclear.	2									
	Section 5B	Tram Jermers Opposite Substation (JEE)	tender design	2	Detailed design not available hence all approvals outstanding.	2	3rd party approval status unclear.	2									
		T5 Slaughter	tender design During PB negotiations the have changed the tram stop requirements. Consequently the available design is superseded and will have to be revised.	2	Detailed design not available hence all approvals outstanding.	2	3rd party approval status unclear.	2									
		Tram Buchanan Drive Substation (BDE)	tender design	2	Detailed design not available hence all approvals outstanding.	2	3rd party approval status unclear.	2									
		T6 Bankhead	tender design During PB negotiations the have changed the tram stop requirements. Consequently the available design is superseded and will have to be revised.	2	Detailed design not available hence all approvals outstanding.	2	3rd party approval status unclear.	2									
		T6 Edinburgh Park Station	tender design During PB negotiations the have changed the tram stop requirements. Consequently the available design is superseded and will have to be revised.	2	Detailed design not available hence all approvals outstanding.	2	3rd party approval status unclear.	2									

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Tram stops, Substations & Depot (DEP, STP, SUB & TSU drawing series)			Design Availability						Design Quality						Quantities	
Phase	Section	Element	Design Status / Compliances		Design Approval Status (H)		Design Approval Status (R/levant Authorities and Third Parties)		Feasibility / Constructability / VE Opportunities		Plausibility / Drawing Standards / Clarity of Documents		Compliance with Contract Requirements and Specifications		Status Quantity Take-Off	
[ - ]	[ - ]	[ - ]	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk
	Section 50	TS Edinburgh Park Central	tender design. During PB negotiations the have changed the tram stop requirements. Consequently the available design is superseded and will have to be revised.	2	Detailed design not available hence all approvals outstanding.	2	3rd party approval status unclear.	2								
		TS Gyle Centre	tender design. During PB negotiations the have changed the tram stop requirements. Consequently the available design is superseded and will have to be revised.	2	Detailed design not available hence all approvals outstanding.	2	3rd party approval status unclear.	2								
		TS Gogarburn	tender design. During PB negotiations the have changed the tram stop requirements. Consequently the available design is superseded and will have to be revised.	2	Detailed design not available hence all approvals outstanding.	2	3rd party approval status unclear.	2								
	Section 6	Depot - Building and Infrastructure	re-design expected for raised depot level, current detail design similar and incomplete	2	Detailed design not available hence all approvals outstanding.	2	3rd party approval status unclear.	2								
		Tram Gogar Depot Substation (GDE)	re-design expected for raised depot level, current detail design similar and incomplete	2	Detailed design not available hence all approvals outstanding.	2	3rd party approval status unclear.	2								
	Section 7A	Tram Eastfield Road Substation (ERE)	tender design, re-design expected for EAPL deletion	2	Detailed design not available hence all approvals outstanding.	2	3rd party approval status unclear.	2								
		TS Ingliston Park & Ride	tender design, re-design expected for EAPL deletion. During PB negotiations the have changed the tram stop requirements. Consequently the available design is superseded and will have to be revised.	2	Detailed design not available hence all approvals outstanding.	2	3rd party approval status unclear.	2								
		TS Edinburgh Airport	tender design, re-design expected for EAPL deletion. During PB negotiations the have changed the tram stop requirements. Consequently the available design is superseded and will have to be revised.	2	Detailed design not available hence all approvals outstanding.	2	3rd party approval status unclear.	2								
	Section 5A	TS Roseburn	tender design. During PB negotiations the have changed the tram stop requirements. Consequently the available design is superseded and will have to be revised.	2	Detailed design not available hence all approvals outstanding.	2	3rd party approval status unclear.	2								
		TS Rosehill	tender design. During PB negotiations the have changed the tram stop requirements. Consequently the available design is superseded and will have to be revised.	2	Detailed design not available hence all approvals outstanding.	2	3rd party approval status unclear.	2								
		TS Craigleith	tender design. During PB negotiations the have changed the tram stop requirements. Consequently the available design is superseded and will have to be revised.	2	Detailed design not available hence all approvals outstanding.	2	3rd party approval status unclear.	2								
		Tram South Gogarhill Avenue Substation (SGSE)	tender design, incomplete	2	Detailed design not available hence all approvals outstanding.	2	3rd party approval status unclear.	2								

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Tram stops, Substations & Depot (DEP, STP, SUB & TSU drawing series)			Design Availability						Design Quality						Quantities		
Phase	Section	Element	Design Status / Completeness		Design Approval Status (ITE)		Design Approval Status (Relevant Authorities and Third Parties)		Feasibility / Constructability / VE Opportunities		Plausibility / Timing / Standard / Clarity of Documents		Compliance with Contract Requirements and Specifications		Status / Quantity Take-Off		
[+]	[-]	(-)	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	
Phase 1b	Section 08	TS Telford Road	<p>tender design</p> <p>During PB negotiations the have changed the tram stop requirements. Consequently the available design is superseded and will have to be revised.</p>	3	<p>Detailed design not available hence all approvals outstanding.</p>	3	<p>3rd party approval status unclear.</p>	3									
		TS Grove Tiel for Western General Hospital	<p>tender design</p> <p>During PB negotiations the have changed the tram stop requirements. Consequently the available design is superseded and will have to be revised.</p>	3	<p>Detailed design not available hence all approvals outstanding.</p>	3	<p>3rd party approval status unclear.</p>	3									
		TS West Piton	<p>tender design</p> <p>During PB negotiations the have changed the tram stop requirements. Consequently the available design is superseded and will have to be revised.</p>	3	<p>Detailed design not available hence all approvals outstanding.</p>	3	<p>3rd party approval status unclear.</p>	3									
	Section 09	Tram Graniton Main East TS Substation (GME)	<p>tender design</p>	3	<p>Detailed design not available hence all approvals outstanding.</p>	3	<p>3rd party approval status unclear.</p>	3									
		TS Calder Park	<p>tender design</p> <p>During PB negotiations the have changed the tram stop requirements. Consequently the available design is superseded and will have to be revised.</p>	3	<p>Detailed design not available hence all approvals outstanding.</p>	3	<p>3rd party approval status unclear.</p>	3									
		TS Saburo Square	<p>tender design</p> <p>During PB negotiations the have changed the tram stop requirements. Consequently the available design is superseded and will have to be revised.</p>	3	<p>Detailed design not available hence all approvals outstanding.</p>	3	<p>3rd party approval status unclear.</p>	3									
	Section 0C	TS Graniton	<p>tender design</p> <p>During PB negotiations the have changed the tram stop requirements. Consequently the available design is superseded and will have to be revised.</p>	3	<p>Detailed design not available hence all approvals outstanding.</p>	3	<p>3rd party approval status unclear.</p>	3									
		Tram Graniton West Substation (GWC)	<p>tender design</p>	3	<p>Detailed design not available hence all approvals outstanding.</p>	3	<p>3rd party approval status unclear.</p>	3									

Notes: 1) All comments are based on the documents available at the 14th Dec 2007 design freeze date.  
 2) Risk register to be updated after completion of appropriate review.


Risk definition:

High	Medium	Low
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Utilities (UTL & UBT drawing series)			Design Availability				Design Quality				Quantities						
Phase	Section	Element	Design Status / Completeness		Design Approval Status (file)		Design Approval Status (Relevant Authorities and Third Parties)		Feasibility / Constructability / VE Opportunities		Plausibility, Drawing Standard / Clarity of Documents		Compliance with Contract Requirements and Specifications		Status / Quantity Take-Off		
[ - ]	[ - ]	[ - ]	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	Comment	Residual Risk	
Phase 1b	Section 3A	Telewest															
		Thrus															
		Transco															
		Verizon															
	Section 3B	Scottish Power	Utility descriptions are complete and scope of work is defined.	Consistently no design approval has been carried out for this aspect of 3D/2D design.	Utility descriptions are complete and scope of work is defined.	Consistently no design approval has been carried out for this aspect of 3D/2D design.	Utility descriptions are complete and scope of work is defined.	Consistently no design approval has been carried out for this aspect of 3D/2D design.	Utility descriptions are complete and scope of work is defined.	Consistently no design approval has been carried out for this aspect of 3D/2D design.	Utility descriptions are complete and scope of work is defined.	Consistently no design approval has been carried out for this aspect of 3D/2D design.	Utility descriptions are complete and scope of work is defined.	Consistently no design approval has been carried out for this aspect of 3D/2D design.	Utility descriptions are complete and scope of work is defined.	Consistently no design approval has been carried out for this aspect of 3D/2D design.	Utility descriptions are complete and scope of work is defined.
		Scottish Water	Utility descriptions are complete and scope of work is defined.	Consistently no design approval has been carried out for this aspect of 3D/2D design.	Utility descriptions are complete and scope of work is defined.	Consistently no design approval has been carried out for this aspect of 3D/2D design.	Utility descriptions are complete and scope of work is defined.	Consistently no design approval has been carried out for this aspect of 3D/2D design.	Utility descriptions are complete and scope of work is defined.	Consistently no design approval has been carried out for this aspect of 3D/2D design.	Utility descriptions are complete and scope of work is defined.	Consistently no design approval has been carried out for this aspect of 3D/2D design.	Utility descriptions are complete and scope of work is defined.	Consistently no design approval has been carried out for this aspect of 3D/2D design.	Utility descriptions are complete and scope of work is defined.	Consistently no design approval has been carried out for this aspect of 3D/2D design.	Utility descriptions are complete and scope of work is defined.
		Gas	Utility descriptions are complete and scope of work is defined.	Consistently no design approval has been carried out for this aspect of 3D/2D design.	Utility descriptions are complete and scope of work is defined.	Consistently no design approval has been carried out for this aspect of 3D/2D design.	Utility descriptions are complete and scope of work is defined.	Consistently no design approval has been carried out for this aspect of 3D/2D design.	Utility descriptions are complete and scope of work is defined.	Consistently no design approval has been carried out for this aspect of 3D/2D design.	Utility descriptions are complete and scope of work is defined.	Consistently no design approval has been carried out for this aspect of 3D/2D design.	Utility descriptions are complete and scope of work is defined.	Consistently no design approval has been carried out for this aspect of 3D/2D design.	Utility descriptions are complete and scope of work is defined.	Consistently no design approval has been carried out for this aspect of 3D/2D design.	Utility descriptions are complete and scope of work is defined.
		British Telecom	Utility descriptions are complete and scope of work is defined.	Consistently no design approval has been carried out for this aspect of 3D/2D design.	Utility descriptions are complete and scope of work is defined.	Consistently no design approval has been carried out for this aspect of 3D/2D design.	Utility descriptions are complete and scope of work is defined.	Consistently no design approval has been carried out for this aspect of 3D/2D design.	Utility descriptions are complete and scope of work is defined.	Consistently no design approval has been carried out for this aspect of 3D/2D design.	Utility descriptions are complete and scope of work is defined.	Consistently no design approval has been carried out for this aspect of 3D/2D design.	Utility descriptions are complete and scope of work is defined.	Consistently no design approval has been carried out for this aspect of 3D/2D design.	Utility descriptions are complete and scope of work is defined.	Consistently no design approval has been carried out for this aspect of 3D/2D design.	Utility descriptions are complete and scope of work is defined.
	Section 3C	Cable & Wireless	Utility descriptions are complete and scope of work is defined.	Consistently no design approval has been carried out for this aspect of 3D/2D design.	Utility descriptions are complete and scope of work is defined.	Consistently no design approval has been carried out for this aspect of 3D/2D design.	Utility descriptions are complete and scope of work is defined.	Consistently no design approval has been carried out for this aspect of 3D/2D design.	Utility descriptions are complete and scope of work is defined.	Consistently no design approval has been carried out for this aspect of 3D/2D design.	Utility descriptions are complete and scope of work is defined.	Consistently no design approval has been carried out for this aspect of 3D/2D design.	Utility descriptions are complete and scope of work is defined.	Consistently no design approval has been carried out for this aspect of 3D/2D design.	Utility descriptions are complete and scope of work is defined.	Consistently no design approval has been carried out for this aspect of 3D/2D design.	Utility descriptions are complete and scope of work is defined.
		Telewest															
		Thrus															
		Verizon															

Notes: 1) All comments are based on the documents available at the 14th Dec 2007 design freeze date.  
 2) Cells highlighted in blue indicate items that are not available for review.

Risk definitions: 

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## Appendix 3

Not used