

Andy,

Design review services from TSS

This note confirms our conversation today and, when completed this week by Tony Glazebrook and myself, forms the requirements definition for Design Review services from TSS. It makes use of data already transmitted in most cases but summarised here for convenience into a single document.

To recap on the principles behind this:

The current timetable for receipt of formal Design Assurance statements has slipped with the general slippage of SDS delivery (for all the reasons previously discussed), the slippage only being halted on 28 June with the removal of the last critical issue.

The current timetable (which should not now slip) for Design Assured packages is based on the V17 programme and is as below:

| Activity Name | V17 to tie | Section | Sub-Section |
|--|-------------------|----------------|--------------------|
| Produce Section Wide Design Assurance Statement | 12-Nov-07 | Section 2 | 2 |
| Produce Design Assurance Statement | 13-Nov-07 | Section 3 | 3B |
| Produce Design Assurance Statement | 15-Nov-07 | Section 3 | 3C |
| Produce Section Wide Design Assurance Statement | 06-Dec-07 | Section 7 | 7 |
| Produce Section Wide Design Assurance Statement | 06-Dec-07 | Section 6 | 6 |
| Produce Design Assurance Statement | 07-Dec-07 | Section 3 | 3A |
| Produce Design Assurance Statement | 11-Dec-07 | Section 1 | 1D |
| Produce Design Assurance Statement | 18-Dec-07 | Section 1 | 1B |
| Produce Section Wide Design Assurance Statement | 21-Dec-07 | Section 3 | 3 |
| Produce Design Assurance Statement | 04-Jan-08 | Section 5 | 5C |
| Produce Design Assurance Statement | 07-Jan-08 | Section 1 | 1C |
| Produce Design Assurance Statement | 29-Feb-08 | Section 5 | 5A |
| Produce Design Assurance Statement | 04-Apr-08 | Section 1 | 1A |
| Produce Design Assurance Statement | 08-Apr-08 | Section 5 | 5B |
| Produce Section Wide Design Assurance Statement | 18-Apr-08 | Section 1 | 1 |
| Detailed Design Verification and Validation Report | 22-Apr-08 | Project wide | |
| Produce Section Wide Design Assurance Statement | 22-Apr-08 | Section 5 | 5 |
| System Detail Design Review | 06-May-08 | Project wide | |

Before this point is reached **tie** will be agreeing with SDS (this week) interim deliverables which will enable faster conclusion of review of the above packages as many of the deliverables which are included in these Design Assurance packages will have been reviewed beforehand.

Taken together there will therefore be two programmes running in parallel – the Interim Design Deliverables and the Design Assurance Deliverables. This is clearly sub-optimal against the original concept but is now necessary as a result of SDS slippage.

Would you please provide an estimate of resources and cost to deliver the scope of work defined here based on the data provided here.

David

Design Review Service Requirements Definition.

Provide Design review services against the following scope and definition:

Volume of design deliverables for review (no. documents or drawings per period)

The attached spreadsheet (Number of Drawings and Docs 9-8-07) details for each period what designs are becoming available for review. The raw numbers are summarised in the table below. Assume that the Interim Design Deliverables will be reviewed by the process defined below in the chart 'Review Process Detail Design'. Note that the very small numbers against Design Assurance Deliverables relate to just the Design Assurance Summary statements – all the detail drawings and designs will have been made available already through the Interim Design Deliverables.

The table below specifies the approximate number of documents/drawings which will be made available per period (which are not necessarily all for review).

In order to price for this work assume that by working against the 'Review Process Detail Design' only 25% of the documents enumerated below will need review, i.e. about **4000** phased pro-rata as indicated, i.e. the approximate number of documents/drawings for review is indicated in blue.

The review process below is intended to make good the lack of the Design Assurance statements which will follow later by ensuring that the SDS design team is represented in the process (i.e. in person) and can provide the insight which the Design Assurance statement would normally provide. Assume that this facility will be available as part of your planning.

Note also that the definition of discipline and the size of each likely document is indicated in the attached spreadsheet (Number of Drawings and Docs 9-8-07) as an aid to your resourcing plans.

| Period | P4/5 = now! | P6 | P7 | P8 | P9 | P10 | P11 | P12 | P13 | Total |
|-------------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|----------------------------|----------------------------|---------------------------|----------------------------|-------------------------------|
| Interim Design Deliverables | 2817 (704) | 3840 (960) | 2980 (745) | 2841 (710) | 1590 (398) | 625 (156) | 520 (130) | 390 (98) | 455 (114) | 16058 (4015) |
| Design Assurance Deliverables | | | | | 6 | 4 | 1 | 1 | 6 | 18 |

Note that the Design Assurance deliverables programme (see above) projects beyond the current financial year but that this programme has been limited to P13 this year. The amount of work beyond year end is minimal.

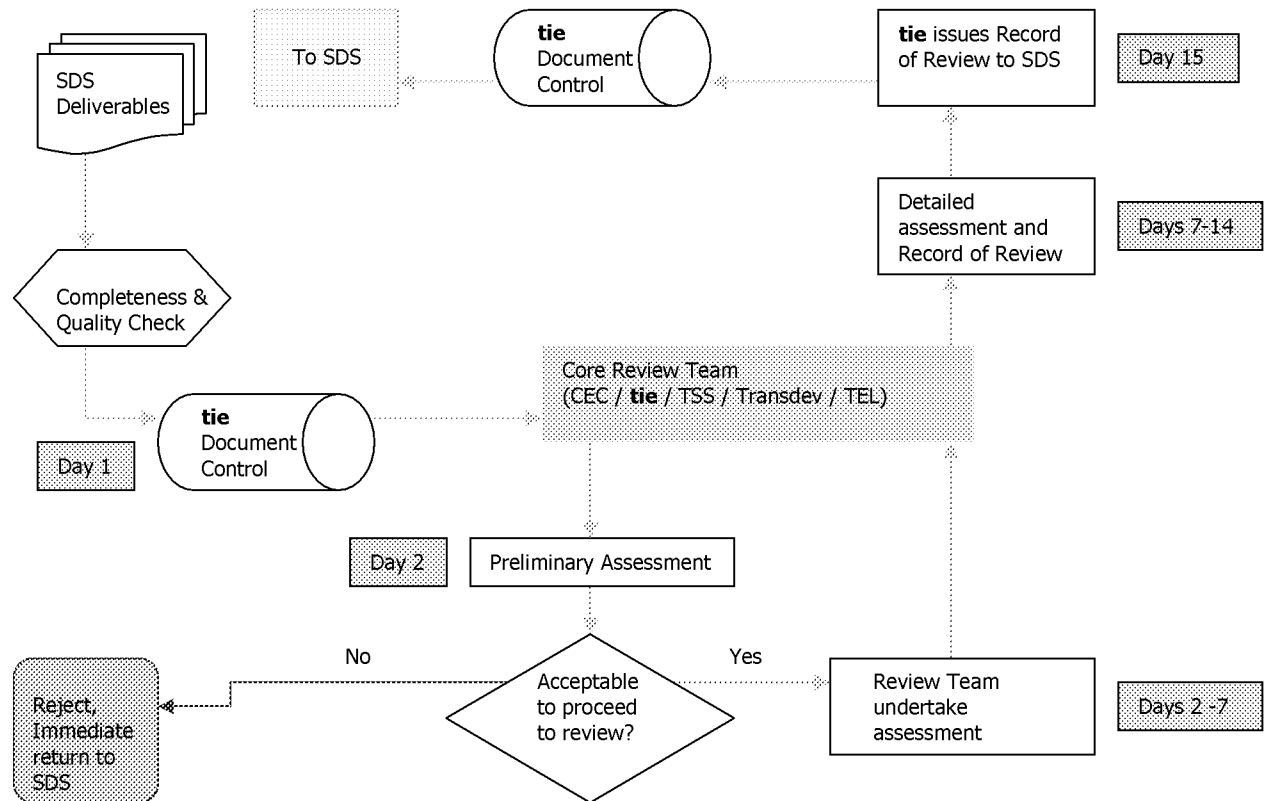
Scope of work applied to these design deliverables

The relevant part is that associated with the TSS deliverables but expectations of other parties are included for completeness. The scope is defined by the 'Review Focus' column in the table below.

| Reviewing Party | Review focus |
|--------------------------------|---|
| TSS (on behalf on tie) | 1. Review of each Design Assurance Package (the chart above gives likely net number of elements in these packages) for compliance with ER's in terms of simple go/no-go acceptability (not interested in opinion engineering, just a statement of compliance |

| | |
|----------|--|
| | <p>with the spec as distinct from 'I wouldn't have done it that way')</p> <ol style="list-style-type: none"> 2. Identification of the interfaces between the different asset types covered by the design deliverables with (1) review for compliance against the ER's where these interfaces are the subject of specification (2) comment on the issues raised by the interface features as designed using the professional judgment of SW. 3. Confirm, or refute, that the claims made by ticking 'Yes' on Attachment 1 are justified by the available evidence (<u>as provided</u> and as distinct from that which may have to be subsequently hunted down). 4. Confirm, or refute, that the mitigations claimed for a 'No' statement on Attachment 1 are justified and that the issues arising are deemed acceptable. This latter point will require the exercise of professional judgment by SW. 5. Confirm, or refute, that the whole design submission is a competent design as a system. This will require the exercise of professional judgment by SW. |
| CEC | <ol style="list-style-type: none"> 1. Confirm, or refute, that the principal features of the design are compliant with the requirements of the Tram Design Manual. 2. Comment on the claims in item (j) of Attachment 1 for a 'No' status and the validity of the supporting comments. |
| Transdev | <ol style="list-style-type: none"> 1. Confirm, or refute, that the principal features of the design package are consistent with the intended operating strategy. 2. Comment, by reference to Transdev operating experience elsewhere, on features of significant risk or opportunity and on preferred changes consequent upon these. |
| TEL | <ol style="list-style-type: none"> 1. Comment on any feature of the design which is of operating relevance, or of 'public-facing' significance. |

REVIEW PROCESS DETAIL DESIGN



Review Process - Detailed Design technical submission packages

1. Delivery of documentation by SDS **Day 1**

2. Completeness and quality check

3. tie document control (registration of submission)

4. Core Review Team Initial assessment **Day 2**

- a. SDS presentation of submission
- b. Assessment of package fitness for review
- c. Identification of key issues for review scrutiny

Note: the core review team membership will consist of at least one member from each of the stakeholders (tie/CEC/TEL/Transdev/TSS)

5. Documentation placed on deposit for scrutiny by reviewers.

Electronic copy of documentation issued to lead reviewer from each stakeholder

(tie/CEC/TEL/Transdev/TSS)

Hard copy placed on Review table within design office for consideration and Markup

6. Review by relevant stakeholder staff. **Days 2 - 7**

Review team to consider documents submitted in preparation for a round table review session to be attended by representatives of all stakeholders.

Where hard copy documents are being reviewed they should be marked up in a colour relevant to that stakeholder, signed and dated such that all comments can be taken forward for consideration and potential inclusion on a Record of review at the formal Review session with SDS.

7. Core Review Team Detailed Assessment **Days 7 - 14**

Following one week of review all stakeholders **(tie/CEC/TEL/Transdev/TSS)** will gather for a formal review session to generate a Record of Review for issue to SDS.

This meeting will be attended by representatives of SDS such that queries raised can be answered so as to avoid unnecessary queries being included within the ROR responses.

8. tie Issues Response to SDS **Day 15**