

## Core Engineering Group meeting on 1 Feb

### Background

This group met on 1 February in response to Matthew Cross's challenge to set out how the engineering process management of the development of the design can be improved across the project. Jim Harries agreed to develop these ideas at the Tram Leadership Meeting on 26 January. He set up a workshop of senior engineers on 1 February.

This paper attempts to record the ideas that were developed at this workshop.

The following were present:

David Powell	<b>tie</b>
Jim Harries	Transdev
Kim Dorrington	SDS
Douglas Leeming	TSS
Roger Jones	Transdev
Gavin Murray	<b>tie</b>

These people were selected because they all have considerable engineering experience from trams projects. The group agreed that their approach will be to address the issues facing the project and not from their own organisation's narrow contractual perspectives.

### Initial Brainstorm

<b>Issues from initial brainstorm</b>	<b>How to be addressed</b>
Poor communication across the project.	See Kim's Design Process Proposals. Temporary relocation of Gavin. Longer term office layout changes.
Silo mentality in certain areas	Office layout change opportunity to be seized.
Processes do not have sufficient buy-in or visibility	<b>Tie's</b> processes in particular are not widely understood.
Decision making process is slow	Core Engineering Team (see below) could assist
Senior people do not/are not sufficiently empowered or authorised	Core Engineering Team could assist
Visibility of what is being done across the project is poor	See Kim's Design Process Proposals.
Stakeholder expectations (CEC)	Becoming less of an issue as CEC are now engaging
Scope definition and integration into procurement process	David developing ideas
Integration of SDS design with the procurement process	David developing ideas
Risk of building several different tramways	David developing ideas
Defensive attitudes	All changes from this workshop will

	help to reduce defensive attitudes
Commercial issues	Addressing the core problem areas should reduce the need to address commercial issues
Risk ownership	See Risk Ownership below. This needs separate discussion with Matthew Crosse.
Allocation of the best quality people to the project	See "People Issues" below
Design reviews are done "too late"	See Kim's Design Process Proposals.
<b>Tie</b> needs to be involved earlier in the design process	Although some of this is now too late to correct, benefits would flow from Kim's Design Process Proposals.
Lack of understanding of how <b>tie's</b> corporate resources contribute to the tram project from an engineering perspective	There appears to be no visible engineering input from above. To be discussed with Matthew Crosse.
Too many people?	See below.
Management processes associated with the SDS - <b>tie</b> contract	See Roger's Proposals below

### **Core Engineering Team**

This team would consist of senior experienced engineers from across the project. One of its roles would be to consider the implications of the difficult issues faced by the project and make recommendations on their resolution. The group believes that this could aid a more rapid and informed decision making process. The authority to decide would remain with the contracting parties.

### **Temporary Relocation of Gavin**

Gavin would be relocated on a temporary basis to work alongside Roger and Jim. This would bring the following:

<b>Advantages</b>	<b>Disadvantages</b>
Concentrate Engineering competency closer together to aid communication	Introduces barriers to communication between Gavin and Trudi, Ailsa and Daniel
Bring SDS's, TSS's and <b>tie's</b> senior engineering resources physically closer together	A small amount of IT reconfiguration – changing some patching cables in the server room.
Promote Engineering integration between Transdev and <b>tie</b>	
A demonstrable, easy to achieve change to improve engineering integration	
Space is available next to Jim at the moment	

This could be achieved with immediate effect.

### **People Issues**

The turnover of people, particularly within **tie**, is a key issue because:

1. Continuity is lost in changeovers
2. The retention of knowledge of the project is undermined. The lack of a rigorous approach to staff induction and knowledge management does not help
3. Time is wasted in revisiting or redoing past work
4. **tie**'s policy is believed to fill vacancies from within, and this reduced the opportunity for TSS to allocate key resources on a long term basis. This reduces TSS's ability and motivation to allocate key competencies to the project.

**Tie** should find a mechanism to retain people (and their knowledge) in the project whenever this is practicable.

### **Number of people involved**

**Tie** operates with a large number of people when compared to other tram procurement projects. The rough team sizes on some other projects at Promoter level were:

Manchester	8
Bordeaux	8
Nottingham	10

Other Promoter's teams tend to have different procurement philosophies (design and build turnkey contracts). **Tie**'s procurement philosophy raised concerns within the group and David will be putting some thoughts together in this respect. Please see below under "Procurement".

### **Kim's Design Process Proposals**

The following concepts are being rolled out by SDS

1. Set up a discipline by discipline reviews with a focus on interfaces between disciplines that involves **tie**.
2. Involvement of **tie** in SDS's IDR (Intermediate Design Review) Process. This is a step in the development of the Detailed Designs, and should result in the identification of issues associated with the design at an earlier stage in the process, less comment on the Detailed Designs as issued to **tie**, less time in reviewing the Detailed Design themselves, and less need for rework by SDS.
3. The Roads Design Working Group is considered to be progressing well, with ownership from CEC. This type of process should be rolled out across the other disciplines that are set out in SDS's interface management process.
4. Encourage engagement with **tie** (plus TSS and Transdev) where there are design options to be evaluated. Difficult decisions can be elevated to the "Core Engineering Group", (see above).

### **Project Management Interface between tie and SDS**

The group identified that a slicker and well defined structure is needed between **tie** and SDS. A programme of integrated meetings within a clear

hierarchical structure is needed between SDS and **tie** to free senior people from attending too many meetings and allow the project to progress more rapidly. The group was not aware of the structure used at present, and Roger agreed to set out an overall meeting structure based on his experiences on what had worked on other similar projects.

### **Risk Ownership**

The risks that are accepted by TSS, SDS and **tie** in terms of the design need further consideration. The group sees little value in TSS man-marking SDS in areas where **tie** has confidence in SDS. **Tie** should be able to rely on SDS in the development of the design without the need for full third party checking. This checking is costly and may do little more than impose delay. TSS's input could be carefully targeted, and integrated with input from Transdev, but the contractual and commercial implications of this are not understood by the group. Consequently there is a need to raise this matter with Matthew.

It is worth noting that the changes proposed by Kim and supported by the group should reduce the need for generating comments in RORs. There should be no surprises to the reviewers when they are presented with the Detailed Design due to their previous involvement in the design development.

### **Procurement process and the interface with the design process**

The group was concerned about the integration of the SDS's emerging design with **tie**'s procurement process. It was concerned that the Infracore procurement process may not be on a design that is entirely consistent with that being developed by SDS. Gaps between SDS's design and Infracore will introduce risks for **tie** to manage. The group asked David to develop further ideas associated with these issues.