



Edinburgh Tram Project

Utility Management Plan

Issue & Revision Schedule

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DOC.NO.	VERSION	STATUS:	DATE:	PROJECT:	SHEET
COM-PROJECT CONTROLS-328	2.0	Under Review	21/01/2008	Edinburgh Tram Project	2 of 88



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Utility Management Plan



DOC. NO.	VERSION	STATUS:	DATE:	PROJECT:	SHEET
COM-PROJECT CONTROLS-328	2.0	Under Review	21/01/2008	Edinburgh Tram Project	3 of 88



- 1 PURPOSE..... 7**
 - 1.1 PLAN OBJECTIVES 7
 - 1.2 WORKSTREAM OBJECTIVES 7
 - 1.3 DOCUMENTATION STRUCTURE..... 8
- 2 OVERVIEW 9**
 - 2.1 WORKSTREAM DESCRIPTION..... 9
 - 2.2 KEY RESPONSIBILITIES..... 10
 - 2.2.1 The Tram Project Team..... 10
 - 2.2.2 The MUDFA Project Team..... 10
 - 2.2.3 The SDS Utilities Team..... 11
 - 2.2.4 The MUDFA Contractor..... 11
 - 2.3 DEFINITIONS..... 11
 - 2.4 WORKSTREAM PERFORMANCE INDICATORS..... 12
- 3 KEY ACTIVITIES..... 12**
 - 3.1 OVERVIEW 12
 - 3.2 APPROVED MUDFA WORKS DESIGNS..... 12
 - 3.2.1 Scope Definition..... 12
 - 3.2.2 Responsibilities..... 13
 - 3.2.3 Tools and Reference Documentation 13
 - 3.2.4 Deliverables..... 14
 - 3.3 APPROVED NON-MUDFA SU WORKS DESIGNS 14
 - 3.3.1 Scope Definition..... 14
 - 3.3.2 Responsibilities..... 14
 - 3.3.3 Tools and Reference Documentation 14
 - 3.3.4 Deliverables..... 14
 - 3.4 WORKS ORDER..... 14
 - 3.4.1 Scope Definition..... 14
 - 3.4.2 Responsibilities..... 15
 - 3.4.3 Tools and Reference Documentation 15
 - 3.4.4 Deliverables..... 15
 - 3.5 SITE SUPERVISION 16
 - 3.5.1 Scope Definition..... 16
 - 3.5.2 Responsibilities..... 16
 - 3.5.3 Tools and Reference Documentation 16
 - 3.5.4 Deliverables..... 16
 - 3.6 COST MANAGEMENT 17
 - 3.6.1 Scope Definition..... 17
 - 3.6.2 Responsibilities..... 17
 - 3.6.3 Tools and Reference Documentation 17
 - 3.6.4 Deliverables..... 17
 - 3.7 CHANGE MANAGEMENT..... 17
 - 3.7.1 Scope Definition..... 17
 - 3.7.2 Responsibilities..... 18
 - 3.7.3 Tools and Reference Documentation 18
 - 3.7.4 Deliverables..... 18
 - 3.8 PROGRAMME MANAGEMENT 18
 - 3.8.1 Scope Definition..... 18
 - 3.8.2 Responsibilities..... 18
 - 3.8.3 Tools and Reference Documentation 19

DOC.NO.	VERSION	STATUS:	DATE:	PROJECT:	SHEET
COM-PROJECT CONTROLS-328	2.0	Under Review	21/01/2008	Edinburgh Tram Project	4 of 88



- 3.8.4 Deliverables 19
- 3.9 HEALTH ,SAFETY, QUALITY AND ENVIRONMENTAL MANAGEMENT..... 19
 - 3.9.1 Scope Definition..... 19
 - 3.9.2 Responsibilities 19
 - 3.9.3 Tools and Reference Documentation 19
 - 3.9.4 Deliverables..... 20
- 3.10 AS- BUILT RECORD MANAGMENT 20
 - 3.10.1 Scope Definition 20
 - 3.10.2 Responsibilities..... 20
 - 3.10.3 Tools and Reference Documentation..... 20
 - 3.10.4 Deliverables 21
- 4 COMMUNICATIONS 21**
 - 4.1 MEETINGS 21
 - 4.2 REPORTING..... 22
 - 4.2.1 Project Manager Reports 22
 - 4.2.2 AMIS Progress Reports 22
 - 4.2.3 MUDFA Sub-Committee Reports..... 22
- 5 MONITORING, REVIEWING AND AUDITING 22**
- 6 PROGRAMME..... 23**
- 7 BUDGET 23**
- 8 PROCEDURES 23**
- 9 REFERENCES 24**
- 10 APPENDICES 24**
- APPENDIX 1 26**
- AGREEMENTS WITH UTILITES, FPA AND BAA STATUS - MAY 2007 26**
- APPENDIX 2 28**
- NRSWA APPENDIX C PROCESS..... 28**
- APPENDIX 3 33**
- MULTI-UTILITY DIVERSIONARY WORKS STRATEGY..... 33**
- APPENDIX 4 44**
- ETN PROJECT TEAM ORGANISATION CHART 44**
- APPENDIX 5 45**
- MUDFA PROJECT TEAM ORGANISATION CHART 45**

DOC.NO.	VERSION	STATUS:	DATE:	PROJECT:	SHEET
COM-PROJECT CONTROLS-328	2.0	Under Review	21/01/2008	Edinburgh Tram Project	5 of 88



APPENDIX 6 47

MUDFA PROJECT TEAM JOB DESCRIPTIONS 47

APPENDIX 7 74

SDS UTILITIES TEAM ORGANISATION CHART 74

APPENDIX 8 77

AMIS CONSTRUCTION SERVICES ORGANISATION CHART..... 77

APPENDIX 9 79

MUDFA RACI CHART 79

APPENDIX 10 81

CHECKLIST FOR TIE REVIEW OF IFA DOCUMENTATION 81

APPENDIX 11 85

PROGRAMME 85

APPENDIX 12 87

UTILITY DEMARCATION SCHEDULE..... 87

DOC.NO. COM-PROJECT CONTROLS-328	VERSION 2.0	STATUS: Under Review	DATE: 21/01/2008	PROJECT: Edinburgh Tram Project	SHEET 6 of 88
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1 Purpose

1.1 Plan Objectives

Utility diversions are a key work stream of the overall Edinburgh Tram Project (ETP). This Utility Management Plan (UMP) sets out the management arrangements for delivery of the ETP utility diversions. The intention of this document is to provide the reader with a clear understanding of how the various utility diversion objectives will be met and how the project will be managed to ensure that these are achieved.

The plan sets out the work stream organisation and governance, the roles and responsibilities of all project team members, and the way team members will work together and communicate with each other. It also describes what documentation, processes and systems will be adopted by the project and why. In addition, the UMP includes a copy of the tie utility diversions project programme and describes how the project will be deemed to be complete.

The UMP is a 'live' document' and will be updated on a regular basis to reflect the development of the project as it progresses from the current Design Phase, through to Implementation and work stream close out.

The UMP should be read in conjunction with the Tram Project Management Plan as this describes the overall project delivery management.

1.2 Workstream Objectives

The utility diversion workstream overall objective is to create a utility free zone, where practicable and cost effective, in advance of the main construction programme to be undertaken by the InfraCo Contractor. Where it is not possible to move them in advance, they will be diverted during the main construction programme by the InfraCo contractor. Such utilities will be identified by this workstream and detailed in the Utility Diversions Transferred from MUDFA to InfraCo (DEL.MUDFA.6717). Works to be included are defined by the current MUDFA/InfraCo demarcation schedule, which is given in Appendix 12.

The purpose of diverting utilities in advance of the main construction programme is to reduce the risk of programme and cost runs during the main construction phase.

The associated objectives are:

DOC.NO.	VERSION	STATUS:	DATE:	PROJECT:	SHEET
COM-PROJECT CONTROLS-328	2.0	Under Review	21/01/2008	Edinburgh Tram Project	7 of 88

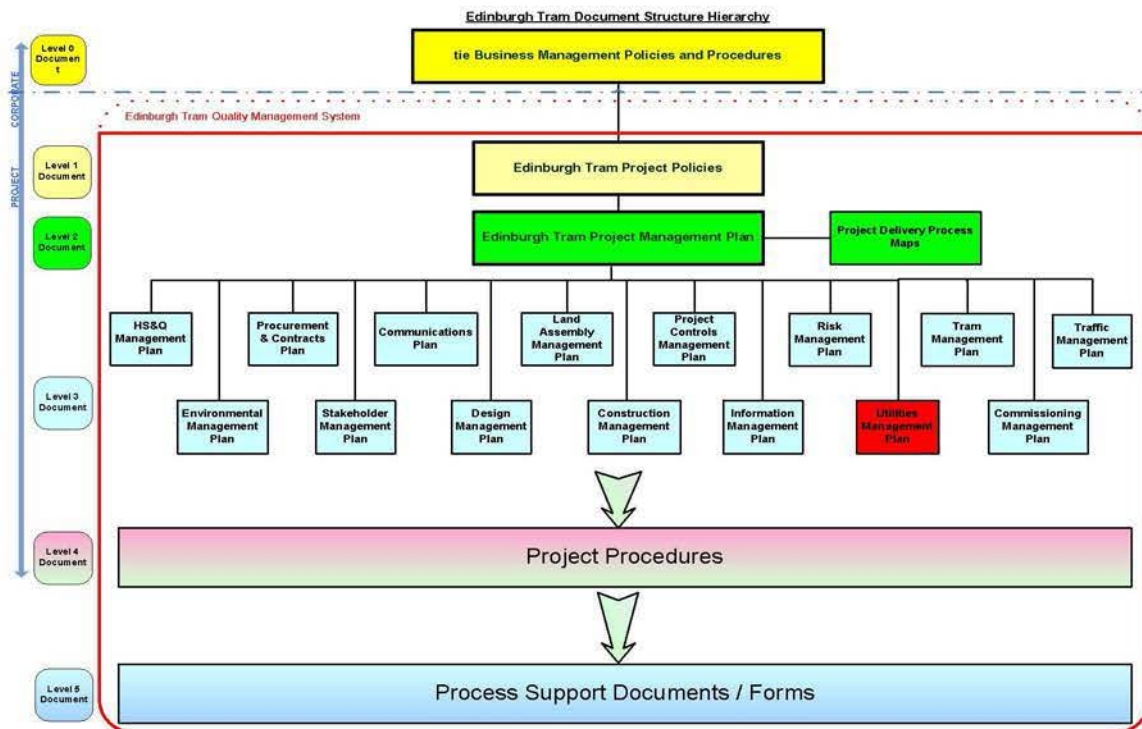


- to arrive at an agreement with all of the SUs, such that **tie** has adequate and clear control over and understanding of, the diversions' scope and costs, which will enable the MUDFA Contractor to perform associated diversionary and protection works. – see Appendix 1 for summary of agreements in place.
- to adapt the NRSWA Appendix C process to suit the specific requirements of this unconventional approach. A paper setting out the proposed alternative protocol is attached in Appendix 2.
- to develop a suite of contract conditions and pricing schedules based on a bespoke, single framework contract, the Multi-Utilities Diversion Framework Agreement. This has been completed.
- to incorporate best practice and deliver value for money, a strategy is in operation to engage SUs to ensure that maximum benefit is derived from the existence of industry standards and specifications and SUs' existing suppliers. This will also assist in ensuring that the SUs are satisfied with the competence of both **tie** and its contractors in carrying out works on the SUs' apparatus.
- to procure a MUDFA Contractor, which will be pre-qualified as a competent main contractor in the field of utility diversions. Alfred McAlpine Infrastructure Services was appointed on 3rd October 2006.
- to derive maximum benefit from SUs by the development of strong and positive relationships with key SU representatives. This objective will be achieved by implementing a series of interface meetings and workshops that will be tasked with the open exchange of information, objectives, ideas and concerns.
- to deliver the necessary utility diversions and protection works safely to the required quality, within budget and programme.

1.3 Documentation Structure

This document is a Level 3 document and is identified in the document hierarchy below:

DOC.NO.	VERSION	STATUS:	DATE:	PROJECT:	SHEET
COM-PROJECT CONTROLS-328	2.0	Under Review	21/01/2008	Edinburgh Tram Project	8 of 88



2 Overview

2.1 Workstream Description

Diverting utilities in advance of the main construction works were identified by tie at an early stage as a key tool in reducing risks to the project. The MUDFA Utility Diversionary Works Strategy (see Appendix 3) was developed and contains 5 main threads as follows:

- Design of utility diversions to be carried out by the SDS designer
- Design and approval of Temporary Traffic Road Orders (TTROs) for the diversion works
- MUDFA Multi Utility Diversion Framework agreement – an agreement with SUs for tie to enter into a contract for the diversion of utilities and an accompanying contract for this delivery of this work to be awarded and managed by tie.
- InfraCo utilities– utility diversions which were not possible under MUDFA but can be picked up under the main InfraCo
- Non – MUDFA – utility diversions where utilities had to be diverted early or no agreement reached with the utilities in relation to MUDFA,

This UMP covers the c) MUDFA and d) Non-MUDFA works and also the identification of works to be carried out under InfraCo but not the physical works themselves and not the design or TTRO activities.

DOC.NO.	VERSION	STATUS:	DATE:	PROJECT:	SHEET
COM-PROJECT CONTROLS-328	2.0	Under Review	21/01/2008	Edinburgh Tram Project	9 of 88

2.2 Key Responsibilities

2.2.1 The Tram Project Team

The ETN Project Team Organisation Chart is shown in Appendix 4

The Team members have the following accountabilities:

- **Project Director** is responsible for provision of strategic leadership, management of project within governance arrangements.
- **Engineering and Delivery Director** is responsible for safely delivering advance works, MUDFA, InfraCo and Tramco, and delivery of the ETP to programme and budget.
- **Programme Director** is responsible ensure that all aspects of the ETP are delivered to programme.
- **Engineering, Approvals and Assurance Director** is responsible for the delivery of the MUDFA utility diversion design to the correct quality.
- **The Commercial, Procurement and Risk Director** is responsible for the control and management the ETN budget, change control and risks, and control and management of contracts for delivery of ETP, ensuring best value.
- **The HSQE Manager** is responsible for promoting a safe and injury free working environment, ensuring compliance of all HSQE systems, procedures, processes and outputs.
- **The Traffic Management Director** is responsible for delivery of the TTRO process and temporary and permanent traffic management solutions.
- **HR and Corporate Affairs Director** responsible for providing initiatives that deliver positive interface between project and stakeholders, ensuring consequences on stakeholders are managed.

2.2.2 The MUDFA Project Team

Reporting to the Engineering and Delivery Director, the **MUDFA Construction Director** is accountable for the successful delivery of the utility diversions lying outside the main InfraCo works and has clear authority and accountability. The MUDFA Project team organisation chart is shown in Appendix 5.

The other key members for the team are primarily responsible for:

- **Commercial Manager:** Delivery of the MUDFA Contract to budget

DOC.NO.	VERSION	STATUS:	DATE:	PROJECT:	SHEET
COM-PROJECT CONTROLS-328	2.0	Under Review	21/01/2008	Edinburgh Tram Project	10 of 88

- **HSQE Advisor:** Health, Safety, Quality and Environment.
- **Project Manager Line 1 and SGN/SP:** Delivery of Scotland Gas Networks and Scottish Power Works and responsible for the oversight of Line 1.
- **Project Manager Line 2 and SW/Telecoms:** Delivery of Scottish Water and Communications Works and responsible for the oversight of Line 2.
- **Traffic Manager:** Delivery of Traffic Management plans
- **Planning Manager:** Responsible for analysis of MUDFA programmes to ensure they meet **tie's** needs.
- **Design Manager:** Delivery of designs and Issue for Construction documentation by SDS.
- **Technical Manager:** Delivery of Works Orders, Change Orders and technical review of SU approval drawings through formal Record of Review (RoR)

Job descriptions for each of the roles are given in Appendix 6

2.2.3 The SDS Utilities Team

SDS are the appointed designers for the MUDFA works and InfraCo works. SDS comprises Parson's Brinkerhoff as main consultant with Halcrow as sub-consultant.

The SDS Utilities Team organisation chart is shown in Appendix 7. The Team is responsible for identifying all utilities works required to accommodate the ETN Project, for designing and obtaining the necessary SU approvals in accordance with the MUDFA Utility Diversionary Works Strategy.

Parsons Brinkerhoff are responsible for the overall delivery of the design, Halcrow have been allocated Line 1.

2.2.4 The MUDFA Contractor

Alfred McAlpine Infrastructure Services (AMIS) have been appointed as the MUDFA Contractor for this workstream. Their primary responsibility is to carry out works as instructed by **tie** in accordance with the MUDFA. Their responsibilities are defined in Section 2 of the Agreement.

The AMIS Project Organisation for Construction Services is given in Appendix 8.

2.3 Definitions

NRSWA: New Roads Street Works Act 1991

DOC.NO.	VERSION	STATUS:	DATE:	PROJECT:	SHEET
COM-PROJECT CONTROLS-328	2.0	Under Review	21/01/2008	Edinburgh Tram Project	11 of 88

MUDFA: Multi-Utility Diversionary Framework

ETN: Edinburgh Tram Network

SDS: System Design Services (Parsons Brinkerhoff)

SU: Statutory Utility.

TTRO: Temporary Traffic Regulation Order

IFA: Issue for Approval

IFC: Issue for Construction

RoR: Record of Review

2.4 Workstream Performance Indicators

The Performance Indicators for the MUDFA Project Team are as follows, all to be measured against the Construction Services Programme Revision 6.

No	KPi	Target	Source
1	Works Orders Delivered within programmed period following issue of IFC.	98%	Work Order Register
2	Operating licences relating to utility works delivered on time	95%	Work Order Check List
3	Release of IFC design on time	95%	Document Register
4	Completion of Work Sites on time	95%	Completion Certificates
5	Response to Technical Queries on time	95%	TQ Register

3 Key Activities

3.1 Overview

The RACI Chart shown in Appendix 9 should be read in conjunction with the MUDFA Project Team job descriptions given in Appendix 6.

3.2 Approved MUDFA Works Designs

3.2.1 Scope Definition

- Obtaining SU technical and commercial approvals for MUDFA Works Designs.

DOC.NO.	VERSION	STATUS:	DATE:	PROJECT:	SHEET
COM-PROJECT CONTROLS-328	2.0	Under Review	21/01/2008	Edinburgh Tram Project	12 of 88

- Production of Issue for Construction Drawings, schedules and specifications
- Client review of Issue for Approval Documentation and Issue for Construction Residual Risk Register.

3.2.2 Responsibilities

- SDS are primarily responsible for obtaining technical approval from the SUs for the proposed MUDFA Works and for production of the associated Issue for Construction documentation. The **tie** Project Managers shall assist, when necessary, SDS in gaining approvals.
- AMIS is responsible for commenting on buildability.
- **tie** is responsible for obtaining commercial approval from the SUs for the proposed MUDFA Works.
- **tie** is responsible for checking that the required quality is being produced.

3.2.3 Tools and Reference Documentation

- Agreements with SUs, FPA and BAA (See Appendix 1)
- NRSWA Appendix C Process (See Appendix 2)
- SDS Utilities Strategy. (Ref. ULE90130-SW-REP-00319 V1)
- MUDFA
- SDS Contract
- MUDFA Record of Review Procedure (DEL.MUDFA.6713)
- Design, Work Order, Construction and InfraCo Handover Procedure (See DEL.MUDFA.228)
- **tie** Review Procedure and Checklist for **tie** Review of Issue for Approval Documentation (see Appendix 10)
- Design TQ Procedure (see DEL.MUDFA.461)
- Design Programme
- MUDFA Programme
- Design Status Tracker
- Utilities Technical Liaison (UTL) Meeting (see Section 4.1)

DOC.NO.	VERSION	STATUS:	DATE:	PROJECT:	SHEET
COM-PROJECT CONTROLS-328	2.0	Under Review	21/01/2008	Edinburgh Tram Project	13 of 88

3.2.4 Deliverables

- IFC Drawings, Schedules, Specifications and Residual Risk Register, approved technically and commercially by the SUs. These shall have also been checked, to ensure they meet both tie's and SUs' current requirements before issue to the MUDFA Contractor. The ICD design is based on the track alignment at the time of issue. If there is a subsequent change to the track which affects the utilities design, this shall be resolved through the change process (see MUDFA Clause 46 and SDS Contract Clause 15)

3.3 Approved Non-MUDFA SU Works Designs

3.3.1 Scope Definition

- Necessary diversions/ protection works for apparatus owned by SUs who are not in MUDFA and are doing the works themselves.

3.3.2 Responsibilities

- The responsibilities of each of the SU and tie (as Transport Authority) are defined in NRSWA.
- The SUs are responsible for the design and construction of the works.
- tie is responsible for agreeing the timescale and commercial arrangements.
- AMIS is responsible for co-ordinating the works on site.

3.3.3 Tools and Reference Documentation

- Provisions of NRSWA
- MUDFA Construction Programme
- SU Status Tracker

3.3.4 Deliverables

- Agreed scope and programme of Non-MUDFA Utilities' Works.

3.4 Works Order

3.4.1 Scope Definition

- Production of Works Order Requirements
- Production of Works Order Proposals

DOC.NO.	VERSION	STATUS:	DATE:	PROJECT:	SHEET
COM-PROJECT CONTROLS-328	2.0	Under Review	21/01/2008	Edinburgh Tram Project	14 of 88

- Review of Work Order Proposals
- Issue of Work Order Confirmation Notice

3.4.2 Responsibilities

- **tie** Utility Technical Manager is responsible for production of Works Order Requirements and review of the Work Order Proposals.
- **tie** Commercial Manager is responsible for the issue of the Works Order Confirmation Notice.
- AMIS is responsible for production of the Works Order Proposals

3.4.3 Tools and Reference Documentation

- MUDFA
- Works Order Requirements Guidelines (see DEL.MUDFA.)
- Design, Work Order, Construction and InfraCo Handover Procedure (See DEL.MUDFA.228)
- Design Programme
- TTRO and Traffic Management Procedure
- **tie** document review procedures (MUDFA, Schedule 5)
- Provisions of Side Agreements with Third Party Land Owners for obtaining Operating licences (MUDFA, Schedule 13)
- Construction Programme
- Works Order Register and Checklist
- Traffic Management Plan Tracker
- Operational Licence Tracker

3.4.4 Deliverables

- Approved Works Orders include:
 - Agreed Scope of Works
 - Environmental Risk Assessment/Plans
 - H&S Method Statements
 - Traffic Management Plans

DOC.NO.	VERSION	STATUS:	DATE:	PROJECT:	SHEET
COM-PROJECT CONTROLS-328	2.0	Under Review	21/01/2008	Edinburgh Tram Project	15 of 88

- Operating Licences
- Agreed programme
- Agreed target cost

3.5 Site Supervision

3.5.1 Scope Definition

- Ensuring compliance with H&S Plan
- Ensuring Compliance with Works Orders
- Maintenance of site records
- Monitoring of progress against agreed construction programme
- Assist in resolution of Site TQs

3.5.2 Responsibilities

- **tie** MUDFA Project Managers are responsible for site supervision

3.5.3 Tools and Reference Documentation

- H&S Plan
- Construction Management Plan
- Traffic Management Plan
- IFC Documentation
- Method Statements
- MUDFA Site Technical Query Procedure (See DEL.MUDFA.464)

3.5.4 Deliverables

- Safe site
- Good site records for measurement and dealing with claims.
- Progress records
- Prompt response to Site TQs

DOC.NO.	VERSION	STATUS:	DATE:	PROJECT:	SHEET
COM-PROJECT CONTROLS-328	2.0	Under Review	21/01/2008	Edinburgh Tram Project	16 of 88

3.6 Cost Management

3.6.1 Scope Definition

- Final Cost share with SUs
- Re-measurement and valuation of works
- Cost reporting and forecasting

3.6.2 Responsibilities

- **tie** Commercial Manager is responsible for cost management

3.6.3 Tools and Reference Documentation

- Provisions of NRSWA
- Agreements with the Utilities, FPA and BAA.
- NRSWA Appendix C Process (See Appendix 2)
- Provisions of MUDFA
- Bill of Quantities
- **tie** Reporting Procedures
- Agreed MUDFA Budget

3.6.4 Deliverables

- Agreed measurement and costs with MUDFA Contractor
- Agreed final cost share with SUs
- Cost reports and forecasts

3.7 Change Management

3.7.1 Scope Definition

- Technical and commercial input to **tie** Changes
- Response to Technical Queries
- Record of Confirmation of Verbal Instruction (CVI)

DOC.NO.	VERSION	STATUS:	DATE:	PROJECT:	SHEET
COM-PROJECT CONTROLS-328	2.0	Under Review	21/01/2008	Edinburgh Tram Project	17 of 88

3.7.2 Responsibilities

- **tie** Technical Manager, Project Managers and Assistant Project Managers are responsible for technical input to Changes and managing response to Technical Queries.
- **tie** Commercial is responsible for managing costs associated with changes and recording of CVIs

3.7.3 Tools and Reference Documentation

- MUDFA Change Procedure (MUDFA Schedule 5)
- MUDFA Design Technical Query Procedure. (See DEL.MUDFA.461)
- MUDFA Site Technical Query Procedure (See DEL.MUDFA.464)
- Change Register (This is held by AMIS and issued to **tie** weekly)

3.7.4 Deliverables

- Timely response to Technical Queries
- Auditable record of changes
- Assessment of impact of change

3.8 Programme Management

3.8.1 Scope Definition

- Production of P3e Programmes to Activity Level (level 3)
- Reviewing and reporting against P3e Programme
- Resource monitoring per section and overall

3.8.2 Responsibilities

- The **tie** Construction Director is responsible for the construction programme.
- The **tie** Planning Manager is responsible for analysis of the construction programmes to ensure they meet **tie's** needs. The Planning Manager is also responsible for reporting on actual progress against forecasts.
- AMIS are responsible for the production of the construction programme.

DOC.NO.	VERSION	STATUS:	DATE:	PROJECT:	SHEET
COM-PROJECT CONTROLS-328	2.0	Under Review	21/01/2008	Edinburgh Tram Project	18 of 88

3.8.3 Tools and Reference Documentation

- AMIS Construction Programmes
- **tie** Edinburgh Tram Project Programme
- SDS Design Programme
- P3e
- **tie** Reporting Procedures
- Progress Trackers
- UTL Meeting (see Section 4.1)

3.8.4 Deliverables

- Progress reports
- Up to date programmes
- Trackers

3.9 Health, Safety, Quality and Environmental Management

3.9.1 Scope Definition

- Induction of new staff
- Quality and Safety Audits
- Environmental Audits

3.9.2 Responsibilities

- AMIS is responsible for production of the Construction H&S Plan and Construction Environmental Plans
- **tie** is responsible for inducting its own new staff.
- The HSQE Advisor is responsible for carrying out Health, Safety and Quality Audits
- The HSQE Advisor and Project Managers are responsible for checking contractor's method statements (see CP7101)

3.9.3 Tools and Reference Documentation

- **tie** HSQ Management Plan and Procedures including audit procedures.

DOC.NO.	VERSION	STATUS:	DATE:	PROJECT:	SHEET
COM-PROJECT CONTROLS-328	2.0	Under Review	21/01/2008	Edinburgh Tram Project	19 of 88



- **tie** Environmental Management Plan
- Construction Health and Safety Plan
- Utility Specifications
- Access Permits
- Method Statement Review Procedure (See CP7101)

3.9.4 Deliverables

- Safe working environment
- Audit reports
- RoR of Method Statements
- **tie** staff receive **tie** Site Induction and AMIS Site Visitor induction, as a minimum (there are further induction for the Gogar depot and site supervision).

3.10 As- Built Record Management

3.10.1 Scope Definition

- Production of Redline (RL) drawings for issue to the SUs
- Production of As-Built (AB) drawings for issue to SDS and SUs that specifically request them
- Production of Post Utilities (PUTL) drawings for issue to InfraCo

3.10.2 Responsibilities

- AMIS is responsible for the production of the RL drawings
- **tie** are responsible for production of AB drawings
- SDS are responsible for production of the PUTL drawings
- **tie** are responsible for approving/accepting the RL, AB and PUTL drawings and ensuring they are disseminated to the appropriate parties

3.10.3 Tools and Reference Documentation

- MUDFA RoR Procedure (DEL.MUDFA.6713)

DOC.NO.	VERSION	STATUS:	DATE:	PROJECT:	SHEET
COM-PROJECT CONTROLS-328	2.0	Under Review	21/01/2008	Edinburgh Tram Project	20 of 88

- MUDFA As-Built and Redline Procedure (DEL.MUDFA.6715)
- tie Review Procedure and Checklist for tie Review of Issue for Approval Documentation (see Appendix 10)
- SU specifications

3.10.4 Deliverables

- Record drawings, suitable for the SUs to update their records
- Detailed information site information which shall allow SDS to produce the PUTL drawings
- PUTL drawings for InfraCo

4 Communications

4.1 Meetings

The following regular meetings are held:

Meeting	Frequency	Purpose
1:1s with Construction Director	Regular basis	Monitor staff performance and ensure staff have clear direction.
MUDFA Project Team meetings.	Weekly	Review progress, plan next weeks activities.
MUDFA Sub-committee	4 weekly	Monitor progress, steering group for dealing with issues.
MUDFA Progress Meeting	4 weekly	Monitor performance of Contract.
Utilities Technical Liaison Meeting	2 Weekly	Monitor SDS progress, address issues related to design, Utilities approvals and programme.
Meeting with Construction Director and Project Managers	Weekly	To update the CD on progress and to allow the CD to give direction.
Critical Issues	Weekly	Addresses Tram wide issues

DOC.NO.	VERSION	STATUS:	DATE:	PROJECT:	SHEET
COM-PROJECT CONTROLS-328	2.0	Under Review	21/01/2008	Edinburgh Tram Project	21 of 88

4.2 Reporting

4.2.1 Project Manager Reports

The MUDFA Construction Director submits a Project Manager Report to the Tram Delivery Director monthly.

4.2.2 AMIS Progress Reports

AMIS produce monthly Progress Reports in accordance with the MUDFA Schedule 1, Sections 3.1 for the Constructions Services.

4.2.3 MUDFA Sub-Committee Reports

The MUDFA Construction Director produces a 4 weekly report for the MUDFA Sub-Committee. The document covers work carried out in the reporting period, looks ahead at works in future periods and actions from the previous Sub-committee Meeting. The report includes period updates from all the key staff in the MUDFA Team.

The areas covered are in the reporting section are: Construction Progress, Health and Safety, Design, Traffic Management, Commercial and Communications. The forecast section outlines: Construction, Design, Key Issues and Blockers, Programme, and Initiatives.

5 Monitoring, Reviewing and Auditing

Reports

The following reports are in place to record the key activities of the MUDFA Project Management team:

Reports	Owner
Works Orders Register	Technical Manager
Change Orders Register	Commercial Manager
Traffic Management Plans	Traffic Manager
Design and SU Tracker	Design Manager
Operational Licences	Construction Manager

Review of AMIS Deliverables etc.

All documentation submitted by AMIS that requires to be reviewed, approved, agreed, or consented is carried out in accordance with the

DOC.NO.	VERSION	STATUS:	DATE:	PROJECT:	SHEET
COM-PROJECT CONTROLS-328	2.0	Under Review	21/01/2008	Edinburgh Tram Project	22 of 88



Review Procedure given in Schedule 5 of MUDFA and in accordance with the **tie** Review Procedure.

Review of SDS Deliverables

IFA and/or IFC documentation submitted by SDS for construction will be reviewed in accordance with the Checklist given in Appendix 10.

6 Programme

For programme information see MUDFA Construction Programme (DEL.MUDFA.).

7 Budget

MUDFA budget is currently £68,853,441 consisting of £39,946,227 in respect of AMIS works (includes £140,000 in respect of EAL/ EARL design capture phase 1 and £3,085,956 in respect of contingency), £5,180,000 in respect of Gogar Depot Earthworks, £11,627,214 in respect of Utilities, £12,100,000 in respect of Risk.

The current budget excludes any allowance for **tie** project specific overheads/personnel, **tie** corporate overheads and EARL utility diversion works.

8 Procedures

The following procedures and guidance documentation have been developed:

MUDFA Design and Works Order Process. Document Reference DEL.MUDFA.228.

Checklist for **tie** Review of Detailed Design/ IFC Documentation. [Document Reference], see Appendix 10

MUDFA Technical Query Procedure during Design Phase. Document Reference DEL.MUDFA.461.

MUDFA Site Technical Query Procedure. Document Reference DEL.MUDFA.464.

MUDFA Record of Review Procedure. Document Reference DEL.MUDFA.6713

MUDFA Risk and Trade-off Procedure. Document Reference DEL.MUDFA.6714

Method Statement Review Procedure. Document Reference CP7101.

DOC.NO.	VERSION	STATUS:	DATE:	PROJECT:	SHEET
COM-PROJECT CONTROLS-328	2.0	Under Review	21/01/2008	Edinburgh Tram Project	23 of 88

9 References

	<u>Document Number</u>	<u>Title</u>
1.	ULE90130-SW-REP-00319 V1	Utilities Strategy
2.	HSQE.99	Environmental Management
3.	HSQE.100	Health & Safety and Quality Management Plan
4.	40-92-PLA-002014	Project Management Plan
5.	DEL.MUDFA.6717	Utility Diversions Transferred from MUDFA to InfraCo
6.	DEL.MUDFA.	MUDFA Construction Programme
7.	DEL.MUDFA.6716	Information Flow from MUDFA to InfraCo

10 Appendices

1.	Agreements with Utilities, FPA and BAA Status
2.	NRSWA Appendix C Process
3.	Multi- Utility Diversionary Works Strategy
4.	ETN Project Team Organisation Chart
5.	MUDFA Project Team Organisation Chart
6.	MUDFA Project Team Job Descriptions
7.	SDS Utilities Team Organisation Chart
8.	AMIS Construction Services Organisation Chart.
9.	MUDFA RACI Chart
10.	Checklist for tie Review of Detailed Design/ IFC Documentation
11.	Programme

DOC.NO.	VERSION	STATUS:	DATE:	PROJECT:	SHEET
COM-PROJECT CONTROLS-328	2.0	Under Review	21/01/2008	Edinburgh Tram Project	24 of 88



12.	Utility Demarcation Schedule
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DOC.NO. COM-PROJECT CONTROLS-328	VERSION 2.0	STATUS: Under Review	DATE: 21/01/2008	PROJECT: Edinburgh Tram Project	SHEET 25 of 88
-------------------------------------	----------------	-------------------------	---------------------	------------------------------------	-------------------



Utility Management Plan
Appendices



APPENDIX 1

AGREEMENTS WITH UTILITIES, FPA and BAA STATUS - May 2007

DOC.NO.	VERSION	STATUS:	DATE:	PROJECT:	SHEET
COM-PROJECT CONTROLS-328	2.0	Under Review	21/01/2008	Edinburgh Tram Project	26 of 88



Utility Management Plan Appendices



AGREEMENTS WITH UTILITIES, FPA and BAA STATUS - May 2007

Utility	Status	tie Document Reference
Scottish Water	Signed	tbc
Scotland Gas Networks	Signed	tbc
Scottish Power	Un-signed pending resolution of joint and several responsibility issues.	tbc
BT Openreach	Signed	tbc
Virgin Media	NTL part of business signed, Telewest part is in discussion.	tbc
Easynet	Signed	tbc
Thus	Signed	tbc
Cable and Wireless	Signed	tbc
FPA	Signed	tbc
BAA	Signed	tbc

DOC.NO.	VERSION	STATUS:	DATE:	PROJECT:	SHEET
COM-PROJECT CONTROLS-328	2.0	Under Review	21/01/2008	Edinburgh Tram Project	27 of 88



Utility Management Plan Appendices



APPENDIX 2 NRSWA APPENDIX C PROCESS

DOC.NO.	VERSION	STATUS:	DATE:	PROJECT:	SHEET
COM-PROJECT CONTROLS-328	2.0	Under Review	21/01/2008	Edinburgh Tram Project	28 of 88



Utilities Financial Protocol Document

This document is intended as a starting discussion point for review with the Statutory Utility Companies (SUC).

Financial Matters

C3's have been received from the majority of the SUC's, for Line 1 therefore current involvement and scheme development on this line is at tie's cost.

Allowance for Betterment

Regarding Betterment (including increasing capacity or enhancing the duty of the apparatus) SUC's are to keep full accounts of the betterment & deferment renewal, including deductions for the full value of any recovered materials (including scrap), which tie propose to claim during the diversionary works.

Apparatus upgraded to a greater capacity or to make provision for future demand;

- a) can be carried out under the MUDFA Contract, but paid for by the SUC;
- b) it may also be economically cost effective to undertake some works before the tram is installed.
- c) if this is the case, costs over and above a like for like movement will not be tie's liability.

Allowance for Deferment of Time for Renewal of Apparatus [DofR]

Regarding DofR (the actuarial allowance to recognise the replacement of time-served apparatus) tie will expect claims to be calculated in accordance with the Bacon and Woodrow formula in Appendix E to the CoP.

Cost Share

Tie intend to invoke the cost sharing provisions of the Act and NRSWA, this cost sharing applying to the "allowable cost" of the agreed and necessary measures and applies irrespective of whether you have reserved your rights to work on your own apparatus or have allowed others (MUDFA) to undertake the work on your behalf.

To invoke the cost share on works undertaken, tie will make staged payments to you, in accordance with the regulations, based on the detailed estimate (C4). Advance payments may be made in specific instances, where, for example, long lead times are involved and early placement of orders is necessary.

The sums and timing of payments will be agreed as part of the development and agreement process.

For works to be undertaken on your behalf by the MUDFA Contractor, we will, if required, provide the equivalence of a C4 estimate.

DOC.NO.	VERSION	STATUS:	DATE:	PROJECT:	SHEET
COM-PROJECT CONTROLS-328	2.0	Under Review	21/01/2008	Edinburgh Tram Project	29 of 88

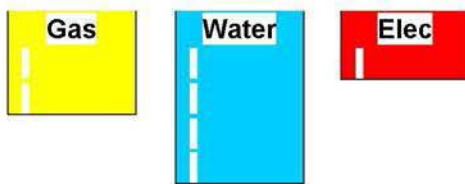
All SUC's will be treated equally and in accordance with tie's obligations under the Act, NRSWA & any specific agreement. As monies are likely to flow in both directions, tie will operate an open book approach to ensure complete transparency.

Distribution of cost liability for Multi Trenching

Tie are aware that this could potentially be an extremely complex issue; therefore a simple solution is suggested (see below).

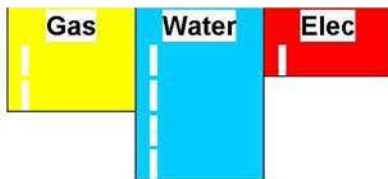
Cost to be ascertained for works to be carried out on an individual utility trench basis, these costs will include for the individual trenching, traffic management, prelims, etc for each utility. Costs will be based on MUDFA Contractors Prices.

Example



Gas	=	£350	Therefore	350/1000 = 35%
Water	=	£550		550/1000 = 55%
Elec	=	£100		100/1000 = 10%
Total	=	£1000	Total	= 100%

Actual cost for multi trenching will then be provided by the MUDFA Contractor.



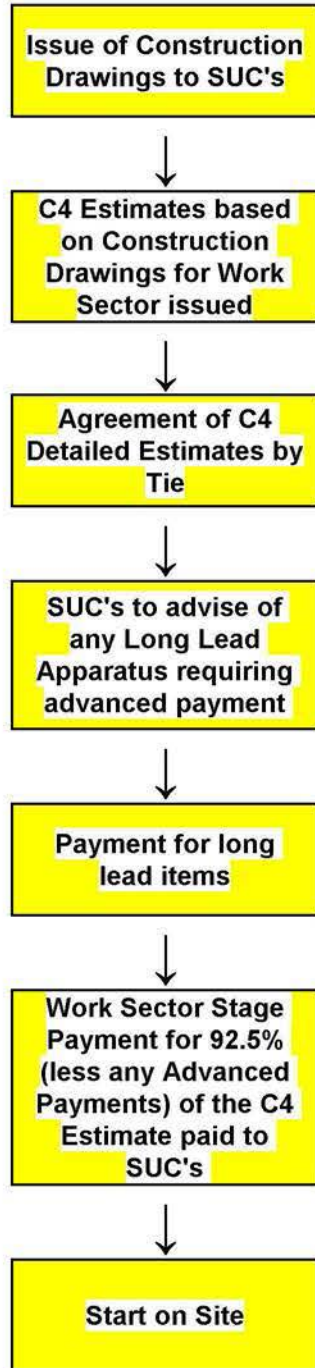
Therefore if the actual cost for the multi trenching on the above example was say £800, then;

Gas	=	35% of actual cost £800 = £280
Water	=	55% of actual cost £800 = £440
Elec	=	10% of actual cost £800 = £80

The above example is a simplistic one, however in reality; there will be other factors at work. Trench widths may vary due to a variety of circumstances. Apparatus may not be present or may vary in density (for e.g.) along the length of a 'shared trench'. Other apparatus (private or public) may be able to take advantage of a combined trench for part of its length, as well as problems in costing apparatus crossing the line of the trench. In actuality it may not be possible to develop this formula for cost sharing and therefore we may have to assess and agree the cost apportionment with you, post-completion of site work. However where practically possible we propose to use the above formula.

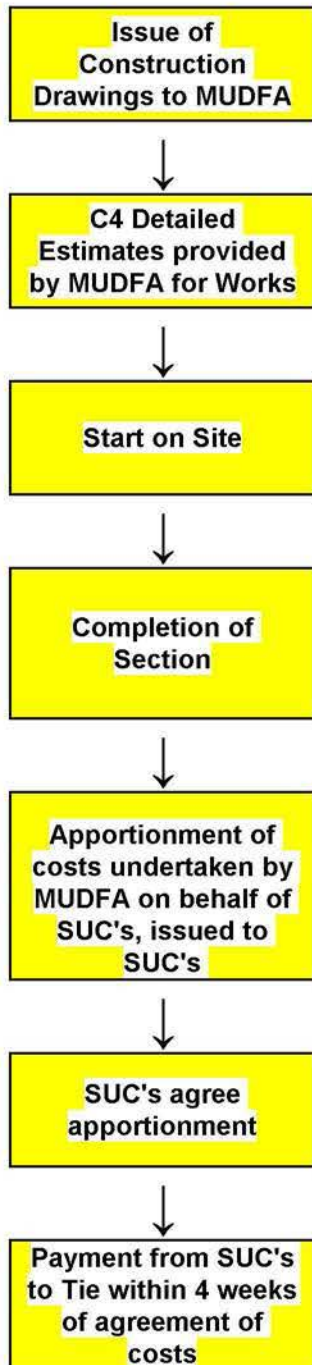
DOC.NO. COM-PROJECT CONTROLS-328	VERSION 2.0	STATUS: Under Review	DATE: 21/01/2008	PROJECT: Edinburgh Tram Project	SHEET 30 of 88
-------------------------------------	----------------	-------------------------	---------------------	------------------------------------	-------------------

**C4 Detailed Estimates from SUC's
Flow Chart**



DOC.NO.	VERSION	STATUS:	DATE:	PROJECT:	SHEET
COM-PROJECT CONTROLS-328	2.0	Under Review	21/01/2008	Edinburgh Tram Project	31 of 88

**C4 Detailed Estimates from MUDFA
Flow Chart**



DOC.NO.	VERSION	STATUS:	DATE:	PROJECT:	SHEET
COM-PROJECT CONTROLS-328	2.0	Under Review	21/01/2008	Edinburgh Tram Project	32 of 88



Utility Management Plan Appendices



APPENDIX 3

MULTI-UTILITY DIVERSIONARY WORKS STRATEGY

DOC.NO.	VERSION	STATUS:	DATE:	PROJECT:	SHEET
COM-PROJECT CONTROLS-328	2.0	Under Review	21/01/2008	Edinburgh Tram Project	33 of 88



Edinburgh Tram

MUDFA Utility Diversionary Works: Strategy Document Progress Update May 2006



DOC.NO.	VERSION	STATUS:	DATE:	PROJECT:	SHEET
COM-PROJECT CONTROLS-328	2.0	Under Review	21/01/2008	Edinburgh Tram Project	34 of 88



Utility Management Plan
Appendices



Edinburgh Tram

**MUDFA Utility Diversionary Works:
Strategy Document
Progress Update May 2006**

Issue and Revision Record

Rev	Date	Originator	Checker	Approver	Description
A		D Ramsay 14 Nov-05	P Douglas 14 Nov-05	I Kendall	First Draft
C	24/5/06	J Low A Slessor			Progress update

DOC.NO.	VERSION	STATUS:	DATE:	PROJECT:	SHEET
COM-PROJECT CONTROLS-328	2.0	Under Review	21/01/2008	Edinburgh Tram Project	35 of 88



Utility Management Plan Appendices



List of Contents

Page

1	INTRODUCTION AND OBJECTIVES	37
2	STAKEHOLDERS	2
3	THE WAY FORWARD: A STRATEGY	5
4	METHODOLOGY	6
5	RISK TO DELIVERY	7
6	MITIGATION	7

DOC.NO.	VERSION	STATUS:	DATE:	PROJECT:	SHEET
COM-PROJECT CONTROLS-328	2.0	Under Review	21/01/2008	Edinburgh Tram Project	36 of 88



Utility Management Plan Appendices



11 Introduction and Objectives

The objectives of this paper are to clearly set out the strategy for the development of the Multi Utility Diversionary Framework Agreement (MUDFA) for Edinburgh Tram Lines 1 & 2 and any future tram extension.

The key objectives of the strategy are to develop a single frame work contract , minimise the need to divert utilities, support the overall project timescales and on- going requirements, in relation to the programme, to ensure value for money, and to minimise disruption to the public.

Due consideration will be given to the future proposal to construct the Edinburgh Airport Rail Link (EARL) in maximising the benefits of co-ordinated activities in areas of mutual interface.

A further objective of this report, will be to establish the requirements regarding Value Management and Value Engineering techniques, with due consideration of the risks associated with diversionary works.

This paper covers the procurement of MUDFA (Single Frame Work Contract); Royal Assent for the tram acts (lines 1 and 2) was obtained during April 2006

The key objectives of this strategy are:

1. To arrive at an agreement with all of the Utility Providers, such that **tie** has adequate and clear control over and understanding of, the diversions' scope and costs, which will enable MUDFA to perform associated diversionary and protection works.
2. Adapt the NRSWA Appendix C process to suit the specific requirements of this unconventional approach. A paper setting out the proposed alternative protocol is attached in an appendix.
3. To develop a suite of contract conditions and pricing schedules based on a bespoke, single framework contract. The timeframe for the development of this contract is as follows:- PQQ December 2005. ITT was issued on 24th February 2006. Tenders are due to be returned on 2 June 2006. Construction is intended to start in early 2007, to allow a pre-construction period. This will allow the contractor, tie and SDS to jointly refine the designs and develop methods, details and programme. Consideration will be given to carrying out various enabling works during this period.
4. To incorporate best practice and deliver value for money, a strategy is in operation to engage PUs to ensure that maximum benefit is derived from the existence of industry standards and specifications and PUs' existing suppliers. This will also assist in ensuring that the PUs are satisfied with the competence of both tie and its contractors in carrying out works on the PUs' apparatus.
5. To procure a MUDFA contractor, which will be pre-qualified as a competent main contractor in the field of utility diversions. The PUs view will be sought on the capabilities of the contractors and subcontractors proposed, however while their views will be taken into consideration, they will not be entitled to a veto or other contractual authority.
6. Derive maximum benefit from PU's by the development of strong and positive relationships with key PU representatives. This objective will be achieved by implementing a series of interface meetings and workshops that will be tasked with the open exchange of information, objectives, ideas and concerns.

DOC.NO.	VERSION	STATUS:	DATE:	PROJECT:	SHEET
COM-PROJECT CONTROLS-328	2.0	Under Review	21/01/2008	Edinburgh Tram Project	37 of 88

12 Public Utilities and major affected 3rd parties

This table sets out the position in respect of the PUs and certain other 3rd parties affected by the utility diversion works.

Name	Agreement	Main tie liaison contact	Main PU liaison contact	In MUDFA	Land access agreement	Estimated value of MUDFA works (from C3 estimate)	Estimated value of non-MUDFA works
Scottish Power	Expected May 2006	John Low (8344)	Neil Aitken [REDACTED]	Yes	n/a	£3.6M	£1.7M
Scotland Gas Networks	Yes	John Low (8344)	Roger Ferguson [REDACTED]	Yes	n/a	£5.1M	£2.4M
Scottish Water	Yes	John Low (8344)	Ed Irvine [REDACTED]	Yes	n/a	£21.1M	£0.2M
Openreach (BT)	Yes	John Low (8344)	Alan Renton [REDACTED]	Yes	n/a	£9.9M	£0.3M
BAA/EAL	Expected June 2006	Phil Douglas (8305)	Colin Crighton [REDACTED]	Yes			
Forth Ports	Expected June 2006	Phil Douglas (8305)	Malcolm Butchert [REDACTED]	Yes			
Cable & wireless	Expected June 2006	Phil Douglas (8305)	David Price [REDACTED]	Yes	n/a	£1.3M	<£0.1M

DOC.NO. COM-PROJECT CONTROLS-328	VERSION 2.0	STATUS Under Review	DATE 21/01/2008	PROJECT Edinburgh Tram Project	SHEET 38 of 88
-------------------------------------	----------------	------------------------	--------------------	-----------------------------------	-------------------



Utility Management Plan Appendices



Name	Agreement	Main tie liaison contact	Main PU liaison contact	In MUDFA	Land access agreement	Estimated value of MUDFA works (from C3 estimate)	Estimated value of non-MUDFA works
Easynet	Yes	John Low (8344)	Stephen Dicken [REDACTED]	Yes	n/a	<£0.1M	<£0.1M
NTL	Yes	John Low (8344)	Roddy Mcarthur [REDACTED]	Yes	n/a	<£0.1M	<£0.1M
Telewest	Expected May 2006	John Low (8344)	Bob Tait [REDACTED]	Yes	n/a	£2.3M	£0.1M
Thus	Yes	John Low (8344)	Eric Lyall [REDACTED]	Yes	n/a	£1.7M	<£0.1M
Energis	No	Richard Hookham (8344)	Kim Lumb [REDACTED]	No	n/a		<£0.1M
ES Pipelines	No	Richard Hookham (8344)	Alan Slee	No	n/a		<£0.1M
Independent Pipelines Ltd	No	Richard Hookham (8344)		No	n/a		<£0.1M
Geo Networks	No	Richard Hookham (8344)		No	n/a		<£0.1M
Verizon	No	Richard Hookham (8344)	Jim Igoe [REDACTED]	No	n/a		Not known at present

DOC.NO. COM-PROJECT CONTROLS-328	VERSION 2.0	STATUS Under Review	DATE 21/01/2008	PROJECT Edinburgh Tram Project	SHEET 39 of 88
-------------------------------------	----------------	------------------------	--------------------	-----------------------------------	-------------------



Utility Management Plan Appendices



Name	Agreement	Main tie liaison contact	Main PU liaison contact	In MUDFA	Land access agreement	Estimated value of MUDFA works (from C3 estimate)	Estimated value of non-MUDFA works
Global Crossing	No	John Low (8344)	none	No	n/a	No underground interface	
T-Mobile	No	John Low (8344)	None	No	n/a	No underground interface	
Vodafone	No	John Low (8344)	None	No		No underground interface	
Network Rail	Yes	Jeff Lloyd (8393)	n/a	No			
SRU	Yes	Gavin Murray (8341)	n/a	n/a			
CEC	Yes	Barry Cross (8355)	n/a	n/a			
Royal Bank of Scotland	Yes	Gavin Murray (8341)	n/a	n/a			
Edinburgh Park				Yes (landowner)	Yes		

There are many small independent utility companies in the UK, the majority of which are telecommunications companies. Also many PUs have changed identity recently following mergers, acquisitions and rebranding. An exercise is underway to identify any such PUs that the tram will affect but are hitherto undiscovered.

DOC.NO. COM-PROJECT CONTROLS-328	VERSION 2.0	STATUS Under Review	DATE 21/01/2008	PROJECT Edinburgh Tram Project	SHEET 40 of 88
-------------------------------------	----------------	------------------------	--------------------	-----------------------------------	-------------------



13 Continuing to move forward: Strategy

As we move into the Pre-Construction Phase, the strategy is to integrate MUDFA, SDS AND TSS.

- It is not tie's intention to duplicate roles.
- The role of Supervisor lies firmly with MUDFA
- The role of Designer lies firmly with SDS
- Tie's role is to manage by support and audit
- SDS continue to work on Preliminary Design. First iteration of design process to include feedback from PU technical meetings, radar survey results from SDS Survey Contractors.
- It is important SDS communicate effectively during preliminary and final design stages, as ultimately we strive to avoid PU delay, (or refusal) to sign off final design .
- Tie will continue PU liason and monitor frequency and quality of SDS/PU interaction particularly during design iterations
- TSS/tie to issue Section 144 notices, C5 notices and C4 notices (part)
- SDS continue to establish "worst case scenario" for preliminary design purposes. Requirement to "down grade" diversionary works as track formation, close working proximity, and further consultation, become available.
- SDS to produce final design based on hierarchy of utility works:
 - Leave Utility in place
 - Slew and Lower
 - Basic Concrete Protection
 - Provision of reserve capacity duct
 - Concrete "slab" protection
 - Internal reinforcement (eg relining of sewers)
 - Divert services outwith DKE and Working area.
- SDS to create TTRO's in conjunction with development of final (utility) diversionary design
- TSS/tie to establish and chair all working groups associated with utility works. Input from SDS and MUDFA .

14 Methodology

To facilitate progress, the following work streams are being progressed / developed:

- Heads of Terms with all PUs – **DLA**, tie and **TSS** have opened lines of communication with all PUs reaching agreements relating to the PUs' involvement in MUDFA. The outstanding agreements (see table above) are being pursued as a priority.
- Regular consultations with PUs to exchange views build confidence and gain mutual understanding. A series of meetings has been arranged in order to facilitate this: Utility Liaison Working Group, meetign approximately every two months; specific workign

DOC.NO.	VERSION	STATUS:	DATE:	PROJECT:	SHEET
COM-PROJECT CONTROLS-328	2.0	Under Review	21/01/2008	Edinburgh Tram Project	41 of 88



Utility Management Plan Appendices



parties on (to start with) stray current, safe distance for utility installation, cost allocation for shared work; 1:1 design review and development meetings; 1:1 liaison meetings.

- Access agreements with relevant Stakeholders. DLA, tie and TSS have opened lines of communication with all stakeholders and have drawn up or are drawing up appropriate agreements.
- Implement Health and Safety Policy to facilitate site works. Work has commenced on drawing up a Health and Safety Policy that can be rolled out to cover all existing and future site works.
- Separate the C4 process into two streams – work done by MUDFA and work done by the utilities. For work done by MUDFA, SDS is responsible for developign the C4 estimates. For work done by the utilities, SDS is responsible for obtaining C4 quotes from them.
- Develop a glossary of PU specifications. The contractors and subcontractors to be employed will not require to be on any existing utility’s list of approved contractors; however efforts will be made to accommodate the PUs’ views in this respect, although they will have no right of veto over the appointment.
- Detailed design works to develop final scope of MUDFA contract. This will carried out be in parallel with the tendering process and into the preconstruction phase.
- Develop SDS/MUDFA liaison to maximise benefit of experience in design process.
- Programme of key deliverables and critical sequencing of works – this will be developed through the preconstruction phase.
- A developed schedule of draft TTRO’s – final approval of which will be sought durign the preconstruction phase.

15 Risks to Delivery

The principal risks to the achievement of the required outputs are:

- The prompt conclusion of the outstanding utility agreements.
- Market “buy in” to contracting strategy.
- PU “buy in” to diversionary strategy.
- SDS design capability – the correct capability is needed to cope with a demanding programme.
- Design execution to schedule.

16 Mitigation

The on-going mitigation measures are:

- Ongoing discussions and negotiations with laggardly utility companies.
- Continuous development of relationships with PUs and other affcted parties through working parties and 1:1 meetings.

DOC.NO.	VERSION	STATUS:	DATE:	PROJECT:	SHEET
COM-PROJECT CONTROLS-328	2.0	Under Review	21/01/2008	Edinburgh Tram Project	42 of 88



Utility Management Plan Appendices



- Monitoring and reporting of SDS design progress against schedule. Continuing and close inspection of the quantity and quality of designers and design outputs, including constant feedback to SDS project managers and **tie** senior management.
- Appendix A

Draft proposal for equivalent to NRSWA Appendix C process

DOC.NO.	VERSION	STATUS:	DATE:	PROJECT:	SHEET
COM-PROJECT CONTROLS-328	2.0	Under Review	21/01/2008	Edinburgh Tram Project	43 of 88



APPENDIX 4

ETN PROJECT TEAM ORGANISATION CHART

DOC.NO.	VERSION	STATUS:	DATE:	PROJECT:	SHEET
COM-PROJECT CONTROLS-328	2.0	Under Review	21/01/2008	Edinburgh Tram Project	44 of 88

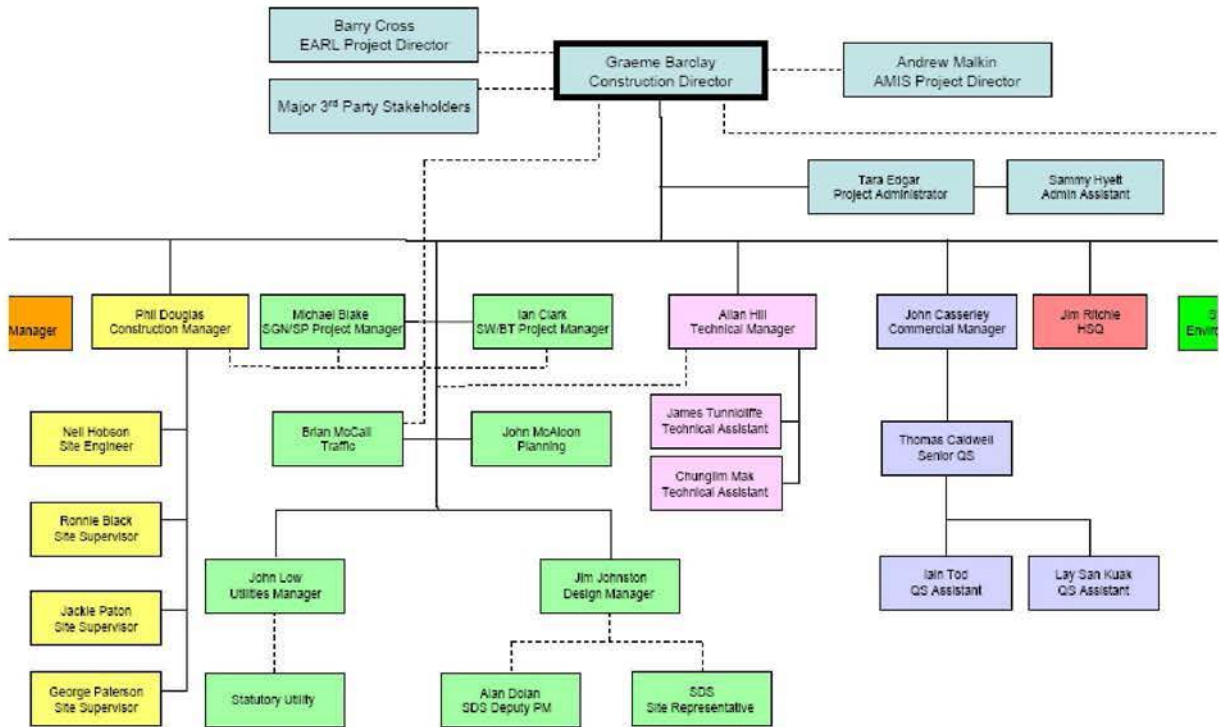


APPENDIX 5

MUDFA PROJECT TEAM ORGANISATION CHART

DOC.NO.	VERSION	STATUS:	DATE:	PROJECT:	SHEET
COM-PROJECT CONTROLS-328	2.0	Under Review	21/01/2008	Edinburgh Tram Project	45 of 88

MUDHA Project Team Organisation Chart



DOC.NO.	VERSION	STATUS:	DATE:	PROJECT:	SHEET
COM-PROJECT CONTROLS-328	2.0	Under Review	21/01/2008	Edinburgh Tram Project	46 of 88



APPENDIX 6

MUDFA PROJECT TEAM JOB DESCRIPTIONS

DOC.NO.	VERSION	STATUS:	DATE:	PROJECT:	SHEET
COM-PROJECT CONTROLS-328	2.0	Under Review	21/01/2008	Edinburgh Tram Project	47 of 88



Utility Management Plan Appendices



Job descriptions for tie MUDFA staffing

Jobs are individually detailed on the following page:

Job Title	Holder	Page
MUDFA Construction Director	Graeme Barclay	47
Project Administrator	Tara Edgar	48
Administration Assistant	Alana Morrison	49
Project Manager SGN/SP/Line 1	Michael Blake	50
Project Manager SW/Telecomms/Line 2	Ian Clark	51
Technical Manager	Allan Hill	52
Commercial Manager	John Casserley	53
HSQE Advisor	Jim Ritchie	54
Environmental Advisor	Shelagh Brian	55
Site Engineer	Neil Hobson	56
Site Supervisor	Ronnie Black	57
Site Supervisor	Jackie Paton	58
Site Supervisor	George Paterson	59
Traffic Manager	Brian McCall	60
Planning Manager	John McAloon	61
Design Manager	Jim Johnston	62
Technical Assistant	Sonya Cheung	63
Technical Assistant	Michael Cheung	64
Technical Assistant	Harry Ogilvie	65
Senior QS	Thomas Caldwell	66
QS Assistant	Iain Tod	67
QS Assistant	Lay San Kuak	68
Assistant Project Manager	Kevin Grey	69
Assistant Project Manager	Norrie Dunsmuir	70
Telecoms Engineer	Jim Gordon	71

Position:	MUDFA Construction Director
------------------	------------------------------------

DOC.NO.	VERSION	STATUS:	DATE:	PROJECT:	SHEET
COM-PROJECT CONTROLS-328	2.0	Under Review	21/01/2008	Edinburgh Tram Project	48 of 88



Utility Management Plan Appendices



Holder:	Graeme Barclay
Reports to:	Delivery Director
Responsible for staff:	Construction Manager Project Manager SGN/SP/Line 1 Project Manager SW/Telecomms/Line 2 Technical Manager Commercial Manager HSQE Advisor Environmental Advisor Traffic Management Lead Planning Manager Design Manager Utilities Manager Project Administrator
Interfaces With:	MUDFA Project Team AMIS Stakeholders tie Communications tie Commercial tie Executive Board

Key Responsibilities	
1	Successful completion of MUDFA Project to time, cost and performance
2	Manage, lead and motivate team.
3	Maintain and ensure safety is priority of project
4	Manage development of MUDFA team and individuals
5	Maximise commercial opportunities
6	Minimise commercial exposure
7	Manage stakeholder expectations

Position:	Project Administrator
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DOC.NO.	VERSION	STATUS:	DATE:	PROJECT:	SHEET
COM-PROJECT CONTROLS-328	2.0	Under Review	21/01/2008	Edinburgh Tram Project	49 of 88



Utility Management Plan Appendices



Holder:	Tara Edgar
Reports to:	Construction Director
Responsible for staff:	Administration Assistant
Interfaces With	MUDFA Project Team tie Document Control

Key Responsibilities	
-----------------------------	--

1	Manage MUDFA team diaries
2	Register incoming/ outgoing mail, uploading to MUDFA extranet.
3	Manage office accommodation
4	Manage office stationary
5	Support team administration needs.

Position:	Administration Assistant
Holder:	Alana Morrison

DOC.NO. COM-PROJECT CONTROLS-328	VERSION 2.0	STATUS: Under Review	DATE: 21/01/2008	PROJECT: Edinburgh Tram Project	SHEET 50 of 88
-------------------------------------	----------------	-------------------------	---------------------	------------------------------------	-------------------



Utility Management Plan Appendices



Reports to:	Project Administrator
Interfaces with:	MUDFA Project Team

Key Responsibilities	
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1	Carry out tasks as delegated by the Project Administrator
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Position:	Project Manager SGN/SP/Line 1
Holder:	Michael Blake

DOC.NO. COM-PROJECT CONTROLS-328	VERSION 2.0	STATUS: Under Review	DATE: 21/01/2008	PROJECT: Edinburgh Tram Project	SHEET 51 of 88
-------------------------------------	----------------	-------------------------	---------------------	------------------------------------	-------------------



Utility Management Plan Appendices



Reports to:	Construction Director		
Responsible staff:	for	Traffic Manager Planning Manager Design Manager Utilities Manager Assistant Project Manager (Kevin Grey)	SGN/SP/Line 1 aspects SGN/SP/Line 1 aspects SGN/SP/Line 1 aspects SGN/SP/Line 1 aspects
Interface with:	Construction Manager Project Manager SW/Telecomms/Line 2 Technical Manager Utilities Manager Design Manager Traffic Manager		

Key Responsibilities	
-----------------------------	--

1	Successful delivery of SGN and SP works to time, cost and performance.
2	Ensure Health and Safety plans are adhered to.
3	Contribute to resolution of TQs.
4	Co-ordination of design, SUs, Planning, Traffic

Position:	Project Manager SW/BT
Holder:	Ian Clark
Reports to:	Construction Director

DOC.NO. COM-PROJECT CONTROLS-328	VERSION 2.0	STATUS: Under Review	DATE: 21/01/2008	PROJECT: Edinburgh Tram Project	SHEET 52 of 88
-------------------------------------	----------------	-------------------------	---------------------	------------------------------------	-------------------



Utility Management Plan Appendices



Responsible staff:	for	Traffic Manager Planning Manager Design Manager Utilities Manager Assistant Project Manager (Norrie Dunsmuir)	SW/Telecomms/Line 2 aspects SW/Telecomms/Line 2 aspects SW/Telecomms/Line 2 aspects SW/Telecomms/Line 2 aspects
Interface with:		Construction Manager Project Manager SP/SGN/Line 1 Technical Manager Utilities Manager Design Manager Traffic Manager	

Jobs covered	
1	Successful delivery of SW and BT works to time, cost and performance.
2	Ensure Health and Safety plans are adhered to.
3	Contribute to resolution of TQs.
4	Co-ordination of design, SUs, Planning, Traffic

Position:	Technical Manager
Holder:	Allan Hill
Reports to:	Construction Director

DOC.NO. COM-PROJECT CONTROLS-328	VERSION 2.0	STATUS: Under Review	DATE: 21/01/2008	PROJECT: Edinburgh Tram Project	SHEET 53 of 88
-------------------------------------	----------------	-------------------------	---------------------	------------------------------------	-------------------



Utility Management Plan Appendices



Responsible staff:	for	Technical Assistants (3)
Interface with:		MUDFA Project Team AMIS SDS

Key Responsibilities	
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1	Delivery of Works Orders including maintenance of Works Order tracker
2	Delivery of technical aspects of Change Orders
3	tie Review of Detailed Design/ IFC documentation.
4	Management of Technical Queries including maintenance of register

Position:	Commercial Manager
Holder:	John Casserley
Reports to:	Construction Director
Responsible for	Senior QS

DOC.NO. COM-PROJECT CONTROLS-328	VERSION 2.0	STATUS: Under Review	DATE: 21/01/2008	PROJECT: Edinburgh Tram Project	SHEET 54 of 88
-------------------------------------	----------------	-------------------------	---------------------	------------------------------------	-------------------



Utility Management Plan Appendices



staff:	2 Assistant QSs
Interfaces with:	tie Commercial AMIS Commercial MUDFA Project Team

Key Responsibilities	
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1	Re-measurement and valuation of works
2	Cost reporting and forecasting
3	Management of Change Process
4	Management of Risk
5	Establishing cost share with the SUs.
6	Optimising Commercial Opportunities
7	Minimising Client Exposure

DOC.NO. COM-PROJECT CONTROLS-328	VERSION 2.0	STATUS: Under Review	DATE: 21/01/2008	PROJECT: Edinburgh Tram Project	SHEET 55 of 88
-------------------------------------	----------------	-------------------------	---------------------	------------------------------------	-------------------



Utility Management Plan Appendices



Position:	HSQE Advisor
Holder:	Jim Ritchie
Reports to:	Construction Director
Responsible for staff:	N/A
Interfaces with:	MUDFA Project Team tie HSQE AMIS HSQE Stakeholders HSE SDS

Key Responsibilities

1	Client review of Contractor's and Designers method statements and risk assessments.
2	Induction of staff.
3	Quality and safety audits
4	Provision of day to day H&S advice.

DOC.NO. COM-PROJECT CONTROLS-328	VERSION 2.0	STATUS: Under Review	DATE: 21/01/2008	PROJECT: Edinburgh Tram Project	SHEET 56 of 88
-------------------------------------	----------------	-------------------------	---------------------	------------------------------------	-------------------



Utility Management Plan Appendices



Position:	Environmental Advisor
Holder:	Shelagh Brian
Reports to:	Construction Director
Responsible for staff:	N/A
Interfaces with:	MUDFA Project Team tie HSQE AMIS HSQE Stakeholders SEPA SDS

Key Responsibilities	
-----------------------------	--

1	Client review of Environmental Plan, method statements, procedures.
2	Carry out environmental audits as required.
3	Provide day to day advice on environmental matters.

DOC.NO. COM-PROJECT CONTROLS-328	VERSION 2.0	STATUS: Under Review	DATE: 21/01/2008	PROJECT: Edinburgh Tram Project	SHEET 57 of 88
-------------------------------------	----------------	-------------------------	---------------------	------------------------------------	-------------------



Utility Management Plan Appendices



Position:	Site Engineer
Holder:	Neil Hobson
Reports to:	Assistant Project Managers
Responsible for:	N/A
Interfaces with:	PMs for Gogar and Ingleston AMIS InfraCo Contractor MUDFA Project Team

Responsibilities	
-------------------------	--

1	Ensure compliance with Health and Safety Plan
2	Ensure compliance with Works Order/ Change Order
3	Keeping site records as required.
4	Management of site issues.
5	Dealing with site TQs.

Position:	Site Supervisor
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DOC.NO. COM-PROJECT CONTROLS-328	VERSION 2.0	STATUS: Under Review	DATE: 21/01/2008	PROJECT: Edinburgh Tram Project	SHEET 58 of 88
-------------------------------------	----------------	-------------------------	---------------------	------------------------------------	-------------------



Utility Management Plan Appendices



Holder:	Ronnie Black
Reports to:	Assistant Project Managers
Responsible for staff:	N/A
Interfaces with	AMIS SUs SDS Site Representative Utilities Manager Project Manager SW/ BT Project Manager SP/ SGN Technical Manager

Key Responsibilities

1	Ensure compliance with Health and Safety Plan
2	Ensure compliance with Works Order/ Change Order
3	Keeping site records as required.
4	Management of site issues.
5	Dealing with site TQs.

DOC.NO. COM-PROJECT CONTROLS-328	VERSION 2.0	STATUS: Under Review	DATE: 21/01/2008	PROJECT: Edinburgh Tram Project	SHEET 59 of 88
-------------------------------------	----------------	-------------------------	---------------------	------------------------------------	-------------------



Utility Management Plan Appendices



Position:	Site Supervisor
Holder:	Jackie Paton
Reports to:	Assistant Project Managers
Responsible for staff:	N/A
Interfaces with	AMIS SUs SDS Site Representative Utilities Manager Project Manager SW/ BT Project Manager SP/ SGN Technical Mananager

Jobs covered	
1	Ensure compliance with Health and Safety Plan
2	Ensure compliance with Works Order/ Change Order
3	Keeping site records as required.
4	Management of site issues.
5	Dealing with site TQs.

Position:	Site Supervisor
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DOC.NO. COM-PROJECT CONTROLS-328	VERSION 2.0	STATUS: Under Review	DATE: 21/01/2008	PROJECT: Edinburgh Tram Project	SHEET 60 of 88
-------------------------------------	----------------	-------------------------	---------------------	------------------------------------	-------------------



Utility Management Plan Appendices



Holder:	George Paterson
Reports to:	Assistant Project Managers
Responsible for staff:	N/A
Interfaces with	AMIS SUs SDS Site Representative Utilities Manager Project Manager SW/ BT Project Manager SP/ SGN Technical Mananager

Jobs covered	
1	Ensure compliance with Health and Safety Plan
2	Ensure compliance with Works Order/ Change Order
3	Keeping site records as required.
4	Management of site issues.
5	Dealing with site TQs.

DOC.NO. COM-PROJECT CONTROLS-328	VERSION 2.0	STATUS: Under Review	DATE: 21/01/2008	PROJECT: Edinburgh Tram Project	SHEET 61 of 88
-------------------------------------	----------------	-------------------------	---------------------	------------------------------------	-------------------



Utility Management Plan Appendices



Position:	Traffic Manager		
Holder:	Brian McCall		
Reports to:	Construction Director Project Manger SGN/SP Project Manger SW/BT		SGN/SP aspects SW/BT aspects
Responsible staff:	for	Technical Assistant (1)	
Interfaces with:	CEC Traffic Management AMIS Traffic Construction Manager SDS HSQ Advisor		

Key Responsibilities

1	Review of Traffic Management Plans
2	Advise team on Traffic Management requirements
3	Review of AMIS Traffic Management proposals

Position:	Planning Manager
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DOC.NO. COM-PROJECT CONTROLS-328	VERSION 2.0	STATUS: Under Review	DATE: 21/01/2008	PROJECT: Edinburgh Tram Project	SHEET 62 of 88
-------------------------------------	----------------	-------------------------	---------------------	------------------------------------	-------------------



Utility Management Plan Appendices



Holder:	John McAloon
Reports to:	Construction Director Project Manger SGN/SP SGN/SP aspects Project Manger SW/BT SW/BT aspects
Responsible for staff:	N/A
Interfaces with:	MUDFA Project team tie Planning Manager AMIS SDS

Key Responsibilities	
1	Production of P3e programmes to activity level
2	Maintenance of progress tracker
3	Reviewing and reporting on progress

DOC.NO. COM-PROJECT CONTROLS-328	VERSION 2.0	STATUS: Under Review	DATE: 21/01/2008	PROJECT: Edinburgh Tram Project	SHEET 63 of 88
-------------------------------------	----------------	-------------------------	---------------------	------------------------------------	-------------------



Utility Management Plan Appendices



Position:	Design Manager	
Holder:	Jim Johnston	
Reports to:	Construction Director Project Manger SGN/SP Project Manger SW/BT	SGN/SP aspects SW/BT aspects
Responsible for staff:	N/A	
Interfaces with:	tie SDS Project Manager SDS AMIS Technical Manager Utilities Manager PM Manager SGN/ SP PM Manager SW/ BT	

Key Responsibilities	
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1	Drive Design delivery of MUDFA Works to programme
2	Review of IFC Documentation
3	Liaison with SDS to priorities design outputs
4	Deal with SU design issues

Position:	Technical Assistant
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DOC.NO. COM-PROJECT CONTROLS-328	VERSION 2.0	STATUS: Under Review	DATE: 21/01/2008	PROJECT: Edinburgh Tram Project	SHEET 64 of 88
-------------------------------------	----------------	-------------------------	---------------------	------------------------------------	-------------------



Utility Management Plan Appendices



Holder:	Sonya Cheung
Reports to:	Technical Manager
Responsible for staff:	N/A
Interfaces with:	AMIS person responsible for Works Orders. SDS tie Land team MUDFA Project team members.

Key Responsibilities	
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1	Assist with tie Technical Review of Detailed Design/ IFC documentation.
2	Assist with Co-ordination of SDS IFC documentation, and other tie inputs into Works Order proposal.
3	Maintain Works Order progress tracker.
4	Technical input into Change Orders.
5	Other activities as directed.

Position:	Technical Assistant
Holder:	Michael Cheung

DOC.NO. COM-PROJECT CONTROLS-328	VERSION 2.0	STATUS: Under Review	DATE: 21/01/2008	PROJECT: Edinburgh Tram Project	SHEET 65 of 88
-------------------------------------	----------------	-------------------------	---------------------	------------------------------------	-------------------



Utility Management Plan Appendices



Reports to:	Technical Manager
Responsible for staff:	N/A
Interfaces with:	AMIS person responsible for Technical Queries. AMIS person responsible for Sewer Surveys MUDFA Project team members.

Key Responsibilities

1	Assist with tie Technical Review of Detailed Design/ IFC documentation.
2	Technical Input to Change Orders
3	Monitor progress of Sewer Surveys
4	Act as TQ Champion
5	Other activities as directed.

Position:	Technical Assistant
Holder:	Harry Ogilvie
Reports to:	Technical Manager / Traffic Manager

DOC.NO. COM-PROJECT CONTROLS-328	VERSION 2.0	STATUS: Under Review	DATE: 21/01/2008	PROJECT: Edinburgh Tram Project	SHEET 66 of 88
-------------------------------------	----------------	-------------------------	---------------------	------------------------------------	-------------------



Utility Management Plan Appendices



Responsible staff:	for	N/A
Interfaces with:		AMIS person responsible for Traffic Management AMIS person responsible for Sewer Surveys MUDFA Project team members.

Key Responsibilities	
-----------------------------	--

1	Assist with tie Technical Review of Detailed Design/ IFC documentation.
2	Technical Input to Change Orders
3	Monitor progress of Sewer Surveys and Design
4	Assist with Traffic Management works
5	Other activities as directed.

DOC.NO. COM-PROJECT CONTROLS-328	VERSION 2.0	STATUS: Under Review	DATE: 21/01/2008	PROJECT: Edinburgh Tram Project	SHEET 67 of 88
-------------------------------------	----------------	-------------------------	---------------------	------------------------------------	-------------------



Utility Management Plan Appendices



Position:	Senior QS
Holder:	Thomas Caldwell
Reports to:	Commercial Manager
Responsible for staff:	QS Assistants (2)
Interfaces with:	AMIS Commercial Commercial Manager Site Supervisors

	Key Responsibilities
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1	Re-measurement and valuation of completed works
2	Valuation of Changes
3	Risk evaluation
4	Cost reporting and forecasting

Position:	QS Assistant
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DOC.NO. COM-PROJECT CONTROLS-328	VERSION 2.0	STATUS: Under Review	DATE: 21/01/2008	PROJECT: Edinburgh Tram Project	SHEET 68 of 88
-------------------------------------	----------------	-------------------------	---------------------	------------------------------------	-------------------



Utility Management Plan Appendices



Holder:	Iain Tod
Reports to:	Senior QS
Responsible for staff:	N/A
Interfaces with:	AMIS Commercial Commercial Manager Site Supervisors

Key Responsibilities

1	Assist with re-measurement and valuation of completed works
2	Assist with valuation of Changes
3	Assist with risk evaluation
4	Assist with cost reporting and forecasting

Position:	QS Assistant
Holder:	Lay San Kuak

DOC.NO. COM-PROJECT CONTROLS-328	VERSION 2.0	STATUS: Under Review	DATE: 21/01/2008	PROJECT: Edinburgh Tram Project	SHEET 69 of 88
-------------------------------------	----------------	-------------------------	---------------------	------------------------------------	-------------------



Utility Management Plan Appendices



Reports to:	Senior QS
Responsible for staff:	N/A
Interfaces with:	AMIS Commercial Commercial Manager Site Supervisors

Key Responsibilities

1	Assist with re-measurement and valuation of completed works
2	Assist with valuation of Changes
3	Assist with risk evaluation
4	Assist with cost reporting and forecasting

Position:	Assistant Project Manager
Holder:	Kevin Gray

DOC.NO. COM-PROJECT CONTROLS-328	VERSION 2.0	STATUS: Under Review	DATE: 21/01/2008	PROJECT: Edinburgh Tram Project	SHEET 70 of 88
-------------------------------------	----------------	-------------------------	---------------------	------------------------------------	-------------------



Utility Management Plan Appendices



Reports to:	Project Manager (Line 1)
Responsible for staff:	Site Inspectors (4)
Interfaces with:	AMIS SUs Planning Manager Technical Manager SDS

Key Responsibilities

1	Interfacing with SUs, AMIS and Stakeholders, at a site level.
2	Ensure all access issues are identified and addressed in advance of the works, including operating licences.
3	Keeping site records as required, management of site issues and dealing with site TQs
4	Ensure compliance with Health and Safety Plan and Work Orders

Position:	Assistant Project Manager
Holder:	Norrie Dunsmuir
Reports to:	Project Manager (Line 2)

DOC.NO. COM-PROJECT CONTROLS-328	VERSION 2.0	STATUS: Under Review	DATE: 21/01/2008	PROJECT: Edinburgh Tram Project	SHEET 71 of 88
-------------------------------------	----------------	-------------------------	---------------------	------------------------------------	-------------------



Utility Management Plan Appendices



Responsible staff:	for	Site Inspectors (4)
Interfaces with:		AMIS SUs Planning Manager Technical Manager SDS

Key Responsibilities	
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1	Interfacing with SUs, AMIS and Stakeholders, at a site level.
2	Ensure all access issues are identified and addressed in advance of the works, including operating licences.
3	Keeping site records as required, management of site issues and dealing with site TQs
4	Ensure compliance with Health and Safety Plan and Work Orders

Position:	Telecoms Engineer
Holder:	Jim Gordon
Reports to:	Project Manager (Telecoms)

DOC.NO. COM-PROJECT CONTROLS-328	VERSION 2.0	STATUS: Under Review	DATE: 21/01/2008	PROJECT: Edinburgh Tram Project	SHEET 72 of 88
-------------------------------------	----------------	-------------------------	---------------------	------------------------------------	-------------------



Utility Management Plan Appendices



Responsible staff:	for	N/A
Interfaces with:		SUs AMIS SDS Technical Manager Design Manager

Key Responsibilities	
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1	Coordination of telecoms site work
2	Technical review of telecoms designs
3	Resolution of telecoms TQs

DOC.NO. COM-PROJECT CONTROLS-328	VERSION 2.0	STATUS: Under Review	DATE: 21/01/2008	PROJECT: Edinburgh Tram Project	SHEET 73 of 88
-------------------------------------	----------------	-------------------------	---------------------	------------------------------------	-------------------



APPENDIX 7

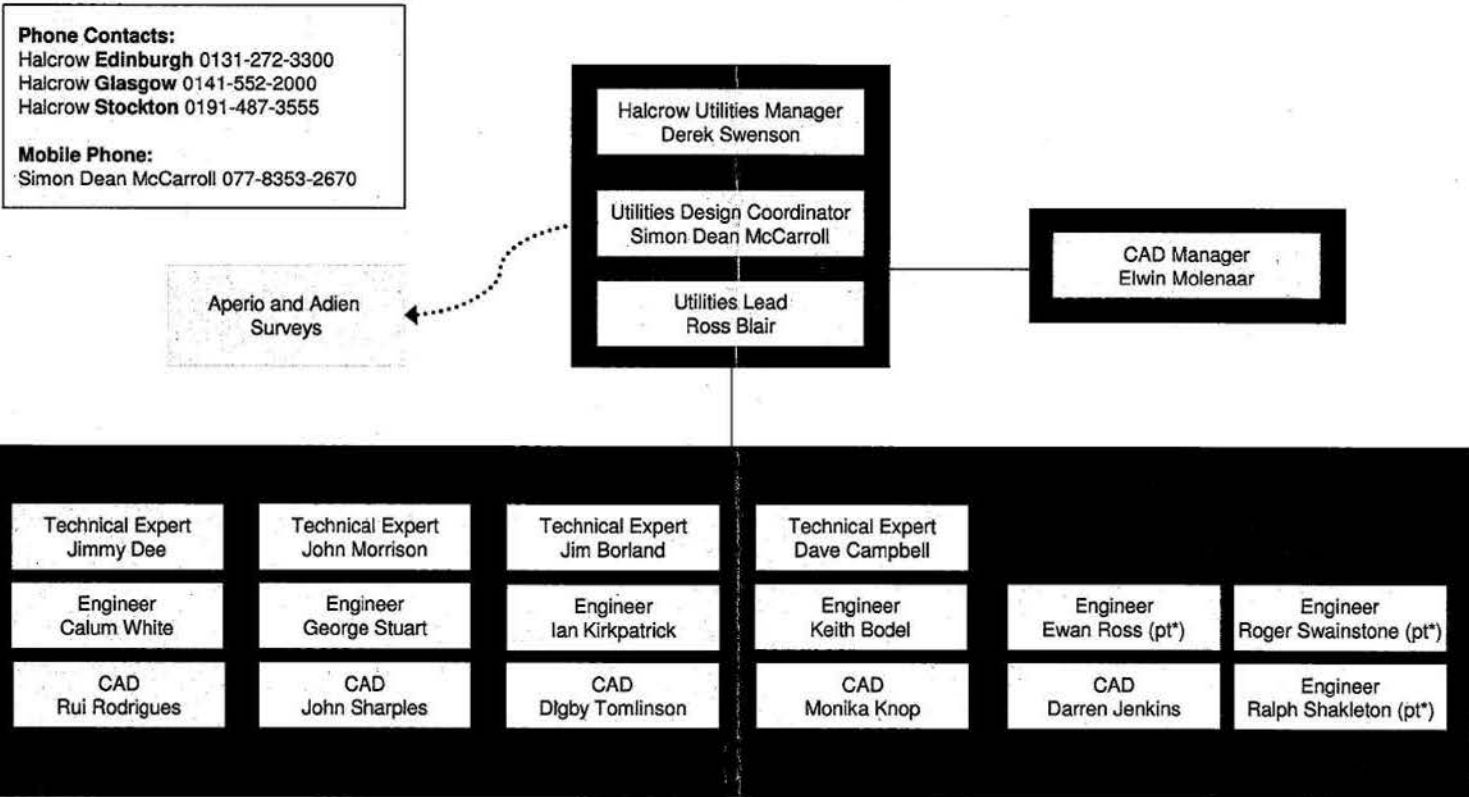
SDS UTILITIES TEAM ORGANISATION CHART

DOC.NO.	VERSION	STATUS:	DATE:	PROJECT:	SHEET
COM-PROJECT CONTROLS-328	2.0	Under Review	21/01/2008	Edinburgh Tram Project	74 of 88



Edinburgh Tram Project
Halcrow Line 1 Utilities

Team Structure and Contacts for Sections 1A, 1B, 1C, 1D, 3A, 3B and 3C



pt* - part time

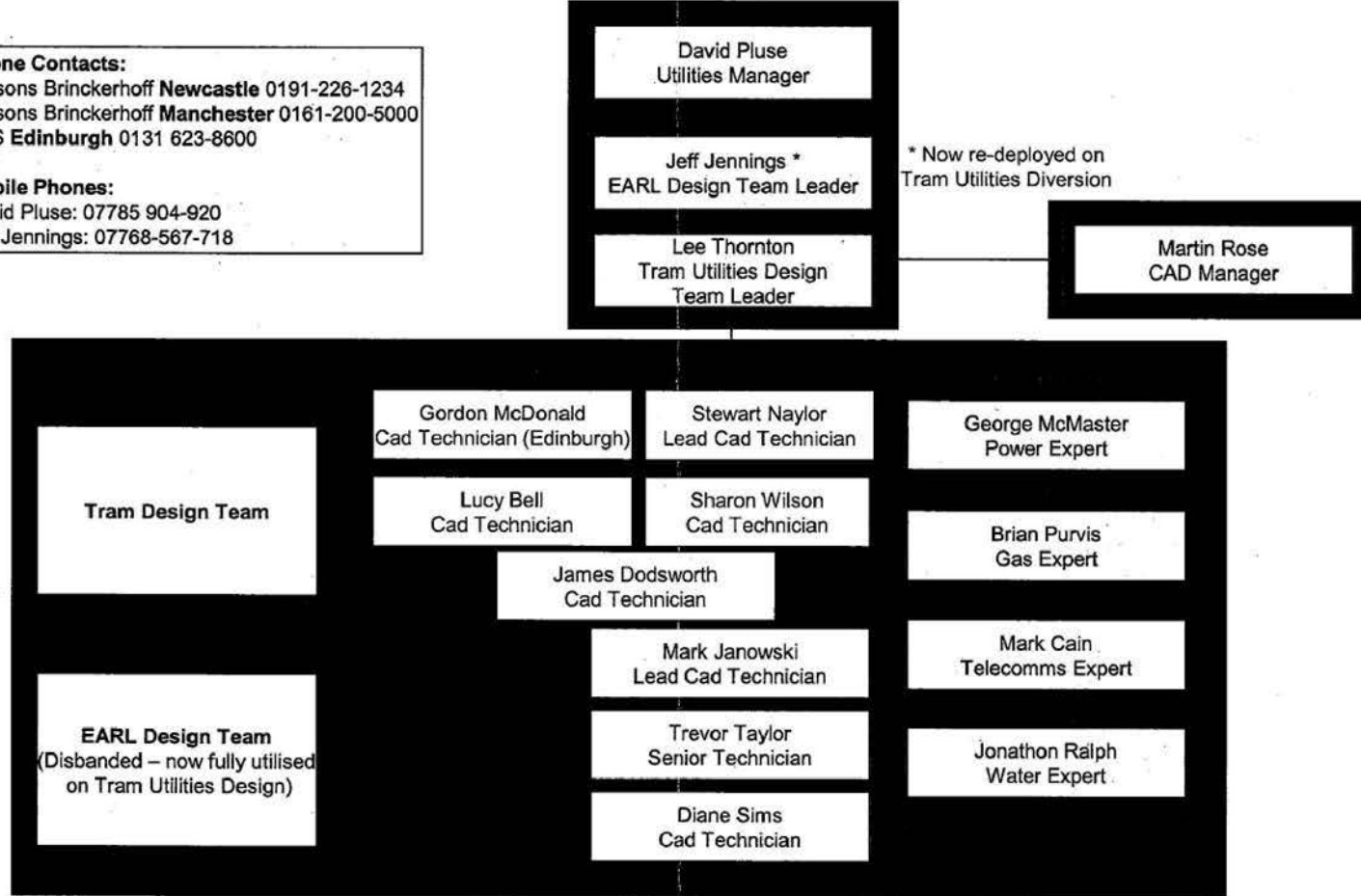
DOC NO: COM-PROJECT CONTROLS-328	VERSION 2.0	STATUS: Under Review	DATE: 21/01/2008	PROJECT: Edinburgh Tram Project	SHEET: 75 of 88
-------------------------------------	----------------	-------------------------	---------------------	------------------------------------	--------------------

Edinburgh Tram Project Line 2 Utilities

Team Structure and Contacts for Sections 2A, 5A, 5B, 5C, 6, and 7A

Phone Contacts:
 Parsons Brinckerhoff **Newcastle** 0191-226-1234
 Parsons Brinckerhoff **Manchester** 0161-200-5000
 SDS **Edinburgh** 0131 623-8600

Mobile Phones:
 David Pluse: 07785 904-920
 Jeff Jennings: 07768-567-718



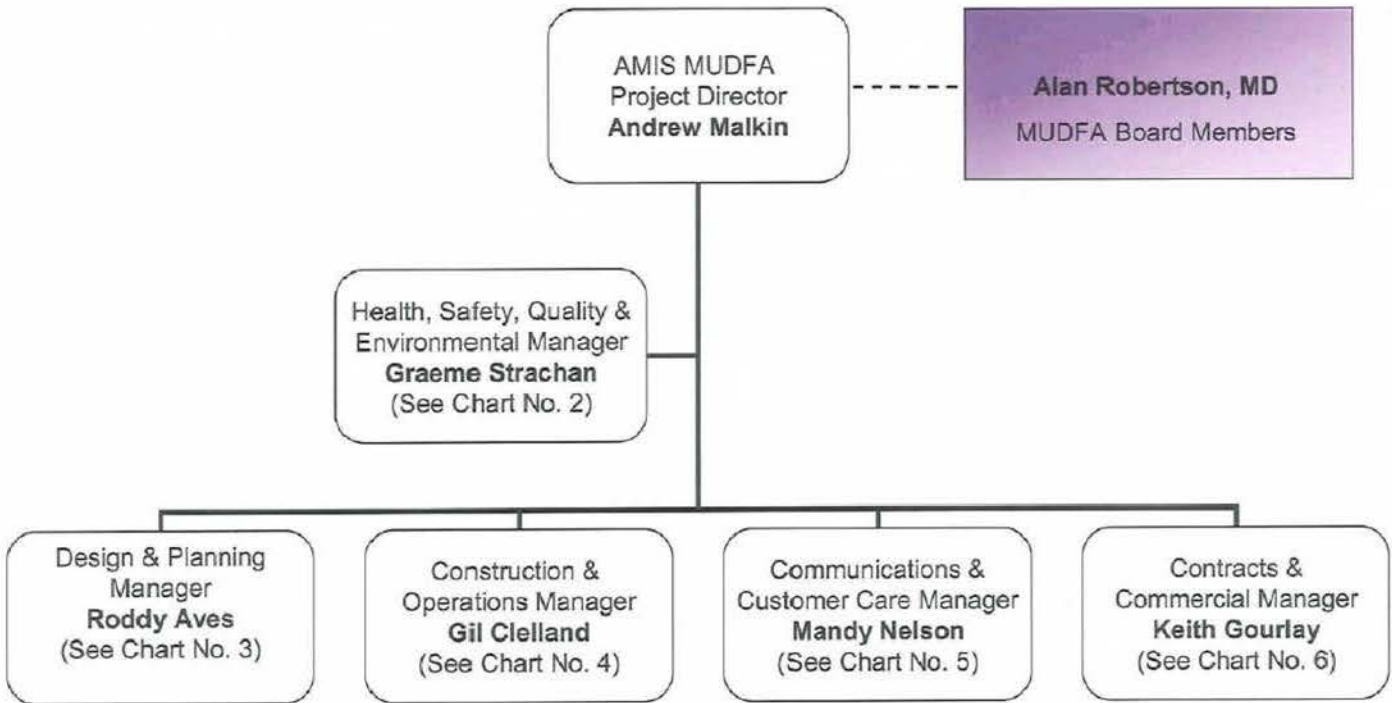
DOC NO: COM-PROJECT CONTROLS-328	VERSION 2.0	STATUS: Under Review	DATE: 21/01/2008	PROJECT: Edinburgh Tram Project	SHEET: 76 of 88
-------------------------------------	----------------	-------------------------	---------------------	------------------------------------	--------------------



APPENDIX 8

AMIS CONSTRUCTION SERVICES ORGANISATION CHART

DOC.NO.	VERSION	STATUS:	DATE:	PROJECT:	SHEET
COM-PROJECT CONTROLS-328	2.0	Under Review	21/01/2008	Edinburgh Tram Project	77 of 88



MUDFA Project Management & Control : Chart No. 1, Rev 02

DOC NO: COM-PROJECT CONTROLS-328	VERSION 2.0	STATUS: Under Review	DATE: 21/01/2008	PROJECT: Edinburgh Tram Project	SHEET: 78 of 88
-------------------------------------	----------------	-------------------------	---------------------	------------------------------------	--------------------



Utility Management Plan Appendices



APPENDIX 9 MUDFA RACI CHART

DOC.NO.	VERSION	STATUS:	DATE:	PROJECT:	SHEET
COM-PROJECT CONTROLS-328	2.0	Under Review	21/01/2008	Edinburgh Tram Project	79 of 88



No.	Activity	Construction Director	Construction Manager	Project Manager SGN/ SP	Project Manager SW/ BT	Traffic Manager	Planning Manager	Design Manager	Utilities Manager	Technical Manager	Commercial Manager	H50 Advisor	Environmental Advisor	tie Comms Manager	tie Land	tie SDS PM	SDS	AMIS	Third Parties	Comments
1	Delivery of MUDFA works design	R	I	R	R	I	R	R	R	R	I	C	C	I		R	AP	C		
2	Obtain SU approval of MUDFA works (technical acceptance)	R	I	R	R	I	C	R	R	R	I	I	I	I		R	AP	I		
3	Obtain SU approval of MUDFA works (commercial acceptance)	A	I	R	R	I	I	R	R	I	R	I	I	I		R	R	R		
4	Delivery of Non-MUDFA SU works	A	I	C	C	I	R	C	R	C	R	I	I	C		I	C	R		
5	Client review of detailed design – IFC documentation	A	C	C	C	I	I	R	C	R	C	R	R	I		C	C	C		Consultation as required
6	Works Order Requirements	A	C	C	C	C	C	C	C	R	C	C	C	C		C	C	C		
7	Works Order Proposal																	AP		
8	Works Order Confirmation Notice	A	C	C	C	C	C	C	C	R	R	C	C	C	C	I	C	C		Consultation as required
8.1	Client Review of the Contractor's Environmental Method Statement / Plans	A								I			R							
8.2	Client Review of the Contractor's Health and Safety Method Statement	A								I		R								
8.2	Client Review of the Contractor's Traffic Management Plans	A				R				I										
6.1	Delivery of Operating Licences	A	R												C			C	C	
9	Ensuring compliance with H&S Plan	A	R									R								
10	Ensuring compliance with Works Order	A	R			C		C	C	C				C	C	C		C	C	Consultation as required
11	Maintenance of Site Records – Measurement of works done, plant labour on site etc	A	R																	
12	Delivery of SGN and SP Works to Time Cost and Performance	A		R																
13	Delivery of SW and BT Works to Time Cost and Performance	A			R															
14	Remeasurement and valuation of works	A	R							C	R									
15	Cost Reporting and Forecasting	A					C		C	C	R								C	
16	Establish Cost Share with SUs	A							R		R									
17	Delivery of Technical Input of Changes	A	C	C	C	C	C	C	C	R	C	C	C	C	C		C	C		Consultation as required
18	Delivery of Commercial Input of Changes	A	C	C	C	C	C	C	C	C	R	C	C	C	C		C	C		Consultation as required
19	Response to Design Phase Technical Queries	A	C	C	C	C	C	C	C	R	C	C	C	C	C	C	C	C	C	Consultation as required
20	Response to Site Technical Queries	A	C	C	C	C	C	C	C	R	C	C	C	C	C	C	C	C	C	Consultation as required
21	Production of P3e Programmes to Activity Level	A	C	C	C	C	R	C	C	C	C	C	C	C	C	C	C	C	C	Consultation as required
22	Reviewing and Reporting Against P3e Programme	A	C	C	C	C	R	C	C	C	C	C	C	C	C	C	C	C	C	Consultation as required
23	Induction of Staff	A										R								
24	Quality and Safety Audits	A										R								
25	Environmental Audits	A											R							

Page 1

DOC.NO. COM-PROJECT CONTROLS-328	VERSION 2.0	STATUS: Under Review	DATE: 21/01/2008	PROJECT: Edinburgh Tram Project	SHEET 80 of 88
-------------------------------------	----------------	-------------------------	---------------------	------------------------------------	-------------------



APPENDIX 10

CHECKLIST FOR TIE REVIEW OF IFA DOCUMENTATION

DOC.NO.	VERSION	STATUS:	DATE:	PROJECT:	SHEET
COM-PROJECT CONTROLS-328	2.0	Under Review	21/01/2008	Edinburgh Tram Project	81 of 88



Utility Management Plan Appendices



Document Number:

Title: Checklist for tie Review of Detailed Design/ IFC Documentation.

Originator: Allan Hill

Issue status:

Revision:

Required review date:

Reviewer:

Role

Date of review:

Reference	Comment	Advisory	Mandatory	Actioned	Response
1	Have all the conflicts been identified on the schedule? Purpose: check in overall scope.				
2	Has the solution for each conflict been approved by the SUs? Purpose: tie has to differentiate between works that have been approved and works that they would carry out at risk as part of RATS. [SDS will need to provide evidence that the SUs have approved the solution for each conflict.]				
3	Have Required Works been clearly identified? Purpose: Required works are paid for by tie with appropriate contribution from NRSWA. The scope of Required Works therefore needs to be clear.				
4	Have Requested Works been clearly identified? Purpose: Requested Works are paid for in full by the relevant SU, therefore scope requires to be clearly defined.				

DOC.NO. COM-PROJECT CONTROLS-328	VERSION 2.0	STATUS: Under Review	DATE: 21/01/2008	PROJECT: Edinburgh Tram Project	SHEET 82 of 88
-------------------------------------	----------------	-------------------------	---------------------	------------------------------------	-------------------



Utility Management Plan Appendices



5	<p>Is it clear which works are to be carried out by the MUDFA Contractor?</p> <p>Purpose: This confirms demarcation. The MUDFA Works Order needs to make it clear what works are included in the MUDFA Works to be carried out by AMIS.</p>				
6	<p style="text-align: right;">Is</p> <p>it clear which works are to be carried out by the InfraCo Contractor?</p> <p>Purpose: This confirms demarcation and the works that need to be included in the InfraCo contract. [This information needs to be relayed to the InfraCo team in some way. E.g, by copy of the Review Report??] The MUDFA Works order needs to list these works, confirming that they do not form part of the MUDFA Works.</p>				
7	<p>Is it clear which works are to be carried out by the Non-MUDFA SUs and are to be co-ordinated by MUDFA.</p> <p>Purpose: The MUDFA Works Order needs to list these works, confirming that the MUDFA Contractor is to co-ordinate these works.</p>				
8	<p>Have notices been placed for works outwith the LOD?</p> <p>Purpose: to check that Notices have been placed, if appropriate. [This may not be evident from SDS's documentation. Check with tie Land team.]</p>				
9	<p>Is there enough detail on drawings and in schedules and specification to enable AMIS to order materials and equipment.</p> <p>Purpose: To ensure that the Works Order Requirements give enough detail to for AMIS to price and place orders for long lead items. To reduce the number of Technical Queries from AMIS and subsequent delays.</p>				
10	<p>Have the co-ordinates for the LOD and DKE been provided?</p> <p>Purpose: To allow informed decisions to be made on site for setting out changes.</p>				

DOC.NO. COM-PROJECT CONTROLS-328	VERSION 2.0	STATUS: Under Review	DATE: 21/01/2008	PROJECT: Edinburgh Tram Project	SHEET 83 of 88
-------------------------------------	----------------	-------------------------	---------------------	------------------------------------	-------------------



Utility Management Plan Appendices



11	<p>Is the Designer's Residual Hazards schedule available and adequate?</p> <p>Purpose: To ensure that AMIS is properly informed of the residual risks.</p>				
12	<p>Have sufficient crossing ducts been provided for accommodating future development?</p> <p>Purpose: To ensure that future developments can be serviced without having to excavate below the DKE.</p>				

Additional comments

1.

Review sign off

Name: Signature:

Organisation

Date 15 November 2006

DOC.NO. COM-PROJECT CONTROLS-328	VERSION 2.0	STATUS: Under Review	DATE: 21/01/2008	PROJECT: Edinburgh Tram Project	SHEET 84 of 88
-------------------------------------	----------------	-------------------------	---------------------	------------------------------------	-------------------



Utility Management Plan Appendices



APPENDIX 11 PROGRAMME

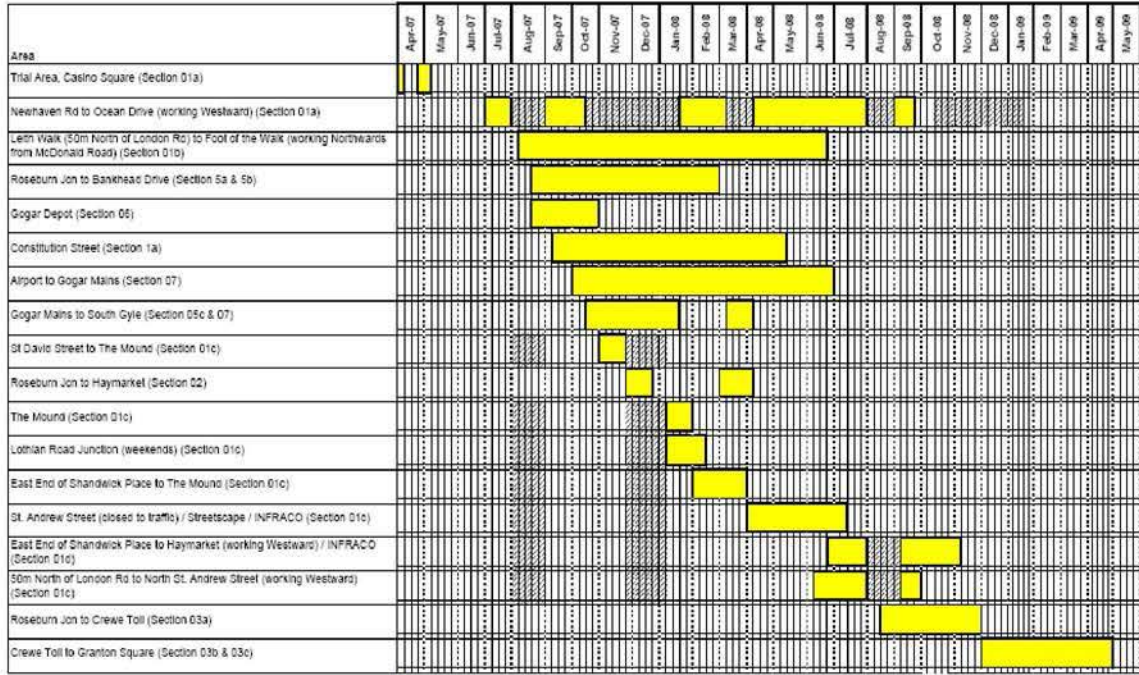
DOC.NO.	VERSION	STATUS:	DATE:	PROJECT:	SHEET
COM-PROJECT CONTROLS-328	2.0	Under Review	21/01/2008	Edinburgh Tram Project	85 of 88



Utility Management Plan Appendices



MUDFA (AMIS) Construction Programme Revision 05



Revision 05 Schedule

DOC.NO. COM-PROJECT CONTROLS-328	VERSION 2.0	STATUS: Under Review	DATE: 21/01/2008	PROJECT: Edinburgh Tram Project	SHEET 86 of 88
-------------------------------------	----------------	-------------------------	---------------------	------------------------------------	-------------------



APPENDIX 12

UTILITY DEMARCATION SCHEDULE

DOC.NO.	VERSION	STATUS:	DATE:	PROJECT:	SHEET
COM-PROJECT CONTROLS-328	2.0	Under Review	21/01/2008	Edinburgh Tram Project	87 of 88



Utility Management Plan Appendices



This table sets out the responsibility for diversion/protection work on the utilities for the Edinburgh Tram project. While the presumption is that the utility work will be carried out by MUOFA, there are certain elements of the work that would not be practical or possible for MUOFA to do, and certain elements where there would be a significant avoidance of re-work if Infraco does it.

Service	Description	Definitely in MUOFA (reasons)	Maybe in MUOFA (reasons)	Maybe in Infraco (reasons, and mitigations where this is at risk)	Definitely in Infraco (Reasons)
Water	Connections	Connections to new mains will be required before old main can be decommissioned. This is part of the advance diversion scope of MUOFA.		If any connections are missed by MUOFA and subsequently identified by Infraco, they would have to be carried out at the time of Infraco. However, this risk is small as missed connections would usually lead to immediate customer complaints when the old service was decommissioned. Note that this is not intended to be the primary mitigation of this risk: site investigation and planning should ensure that connections are identified and dealt with by MUOFA.	
	Diversion (other than 500mm at Depot)	Part of the advance diversion scope of MUOFA.		If any apparatus is discovered by Infraco that was not identified at the time of the utility advance diversion works, the diversion would have to be carried out by (or at the same time as) Infraco. Extensive site investigation has been / will be carried out to reduce this risk, but it cannot practically be eliminated.	
	Diversion of 500mm at Hoagie Depot.				Requires substantial excavation of depot before diversion can be carried out. May be possible to include in MUOFA if the diversion is redesigned.
	External Protection	Part of the advance diversion scope of MUOFA.		(NB Long longitudinal protection (see below) would not be acceptable for water mains)	
	Insurance Pipes	Part of the advance diversion scope of MUOFA.			
Waste water	Diversion and manhole construction	Part of the advance diversion scope of MUOFA.		If any apparatus is discovered by Infraco that was not identified at the time of the utility advance diversion works, the diversion would have to be carried out by (or at the same time as) Infraco. Extensive site investigation has been / will be carried out to reduce this risk, but it cannot practically be eliminated.	
	Internal Refurbishment	Part of the advance diversion scope of MUOFA.			
	External protection	Where crossing or short longitudinal - part of the advance diversion scope of MUOFA allowing Infraco a 'clear run'. However would necessitate double excavation of a long length of the tram foundation area.	Where long longitudinal: would be part of the advance diversion scope of MUOFA allowing Infraco a 'clear run'. However would necessitate double excavation of a long length of the tram foundation area.	Where long longitudinal: would be relatively easy to incorporate into Infraco - for a section, excavation would be deeper with (reg) concrete placed - this would avoid double excavation by MUOFA and Infraco.	
	Connections to new sewers	Connections to new mains will be required before old main can be decommissioned. This is part of the advance diversion scope of MUOFA.		If any connections are missed by MUOFA and subsequently identified by Infraco, they would have to be carried out at the time of Infraco. However, this risk is small as missed connections would usually lead to immediate customer complaints or evidence of flooding when the old service was decommissioned. Note that this is not intended to be the primary mitigation of this risk: site investigation and planning should ensure that connections are identified and dealt with by MUOFA.	
	Existing connections	An existing connection to an existing (and left in place) sewer may have to be repositioned. This would be part of the advance diversion scope of MUOFA.		A connection may not be identified at the time of MUOFA, and uncovered by Infraco. The connection would then have to be repositioned at the time of Infraco.	
	Manhole access level change (eg raise height of access cover)				This could only be done at the same time as the road construction was carried out as the manhole lid would have to be flush with the road surface when the road is in use. Note that this will mean that new manholes installed by MUOFA may have to be modified by Infraco.
	New (ully) connections		If a new road gully is required at a place where the road level is not to be changed, MUOFA could install it. However this situation is unlikely, and for consistency and avoidance of confusion Infraco should probably do all of this.		New road gullies would have to be installed at the same time as the road construction was carried out.
Telecoms	Protect	Where crossing or short longitudinal - part of the advance diversion scope of MUOFA.	Where long longitudinal: would be part of the advance diversion scope of MUOFA allowing Infraco a 'clear run'. However would necessitate double excavation of a long length of the tram foundation area.	Where long longitudinal: would be relatively easy to incorporate into Infraco - for a section, excavation would be deeper with (reg) concrete placed - this would avoid double excavation by MUOFA and Infraco.	
	Install/Lower	Part of the advance diversion scope of MUOFA.			
	Divert (inc manhole construction)	Part of the advance diversion scope of MUOFA.		If any apparatus is discovered by Infraco that was not identified at the time of the utility advance diversion works, the diversion would have to be carried out at the time of Infraco. Extensive site investigation has been / will be carried out to reduce this risk, but it cannot practically be eliminated.	
	Insurance Ducts	Part of the advance diversion scope of MUOFA.			
	Manhole access level change (eg raise height of access cover)				This could only be done at the same time as the road construction was carried out as the manhole lid would have to be flush with the road surface when the road is in use. Note that this will mean that new manholes installed by MUOFA may have to be modified by Infraco.
	Divert	Part of the advance diversion scope of MUOFA.			If any apparatus is discovered by Infraco that was not identified at the time of the utility advance diversion works, the diversion would have to be carried out at the time of Infraco. Extensive site investigation has been / will be carried out to reduce this risk, but it cannot practically be eliminated.
Protect	Part of the advance diversion scope of MUOFA.		(NB Long longitudinal protection would not be acceptable for gas mains)		

DOC.NO. COM-PROJECT CONTROLS-328	VERSION 2.0	STATUS: Under Review	DATE: 21/01/2008	PROJECT: Edinburgh Tram Project	SHEET 88 of 88
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