



Tram Utility Diversions

08 March 2017

27 October 2004



Introduction

Susan Clark
Tram Delivery Director

08 March 2017

27 October 2004



Introduction

- Presentation team
- Susan Clark, Delivery Director (**tie**)
- Alasdair Slessor, MUDFA Project Manager (**tie**)
- Andrew Malkin, MUDFA Project Director (AMIS)
- Suzanne Waugh, Communications (**tie**)

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Agenda

- Overview
- Monitoring & Managing
- Programme
- Health, Safety, Quality and Environment
- Stakeholder and Communications Management
- Questions

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Jargon explained!

- MUDFA
- Infraco
- SU
- Tramco
- SDS
- AMIS
- DKE
- SGN

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MULTI-UTILITY DIVERSION FRAMEWORK AGREEMENT

INFRASTRUCTURE COMPANY

STATUTORY UNDERTAKER

TRAM COMPANY

SYSTEM DESIGN SERVICES

ALFRED MCALPINE INFRASTRUCTURE SERVICES

DEVELOPED KINEMATIC ENVELOPE

SCOTLAND GAS NETWORKS (took over from Transco in Scotland)



Overview

Utility Diversions - Why?

- Utility free construction zone
- Future access for SUs
- Operational risk reduction

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UTILITY FREE CONSTRUCTION ZONE

ie; the space to be excavated to allow the track slab to be constructed must be cleared of utilities.

FUTURE ACCESS FOR SUs

So that the utilities can access their apparatus for operational or maintenance reasons in safety. Apparatus to be installed at/moved to an agreed lateral or vertical separation from the train (distance depends on circumstances but typically 2.0m laterally or 300mm below excavation).

OPERATIONAL RISK REDUCTION

- to minimise the risk of utility work or incidents affecting the operation of the tram.

- eg; providing duplicate or redundant crossings so that in the event of failure of e.g. gas or water mains the service can be brought into commission without the need to excavate below the tram and consequently stop its operation. Residual risk is that both crossings might fail – however this is unlikely.




Overview Why MUDFA?

- Uniform approach to design
- Optimise diversion
- Avoid multiple disruption
- Improve programming and co-ordination
- Retain control of programme

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Overview MUDFA

- MUDFA concept agreed with:
 - Scotland Gas Networks
 - Scottish Water
 - Scottish Power
 - BT Openreach
 - NTL Telewest
 - Cable & Wireless
 - Thus
 - Easynet
 - BAA
 - Forth Ports

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These agreements set out the terms under which tie and its contractor may work on each SU's apparatus.




Overview Non MUDFA Works

- SUs: Verizon; Scottish & Southern; E S Pipelines; Independent Pipelines Ltd; Geo Networks
- Major works excluded: High pressure gas mains & Power distribution cables if required
- Telecoms SUs carrying out cabling works
- Co-ordinated with MUDFA programme

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- Verizon and Geo Networks are telecommunications companies.
- ES Pipelines and Independent Pipelines are gas pipeline operators.
- Scottish and Southern are installing electricity cables.
- The HP Gas main is at Gogar; this requires specialist procedures which SGN wishes to retain control of.
- Similarly the Scottish Power distribution cables require specialist procedures and planning; these cables cross the tramway at Leith Walk in the road and under the span of a number of bridges at Craighleith Drive, Roseburn Street and Cultins Road. The intention is that those cables will not be moved due to the cost and timescales; work is underway to ensure that suitable provision for this is made in the Infracore design.
- MUDFA will be responsible for installing the ducts and other civil engineering works for the telecoms companies; the telecoms companies will then draw their own cables through the ducts and make the connections.



Overview Design

- Utilities design by SDS consulting with SUs
- Design hierarchy:
 1. Leave utility in place / abandon
 2. Protection
 3. Slew and lower
 4. Provision of reserve capacity duct
 5. Internal reinforcement
 6. Divert services outwith DKE and working area

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There has been, and is ongoing, a series of meetings between SDS and the SUs, tie and the SUs, and all three parties to ensure that the design meets the SUs requirements.



Alasdair Slessor
MUDFA Project Manager
tie's Representative

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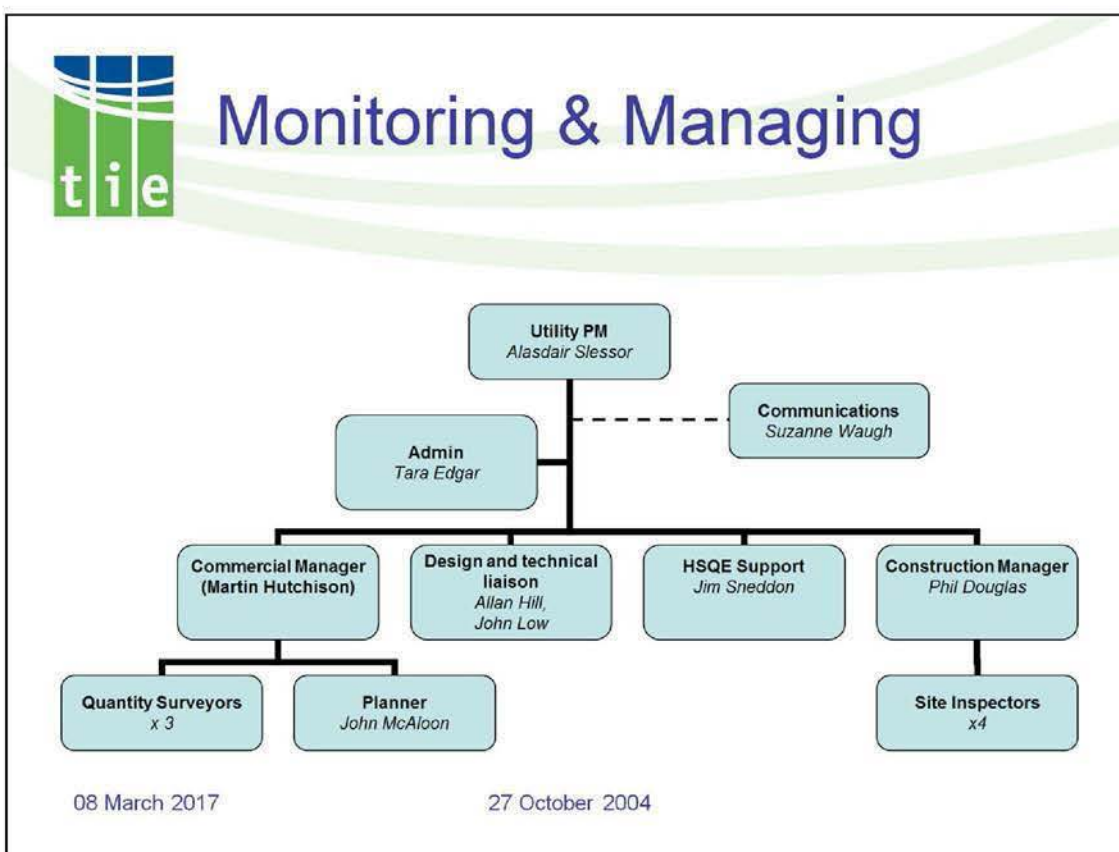
Monitoring & Managing

- **tie** team to manage, co-ordinate, monitor and audit construction performance
- Integral part of tram project delivery team reporting to the Delivery Director
- Strong integration with Infraco contract management

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Remeasurable based on schedule of rates agreed with MUDFA contractor.



Roles filled ...

Roles being recruited ...



Monitoring & Managing

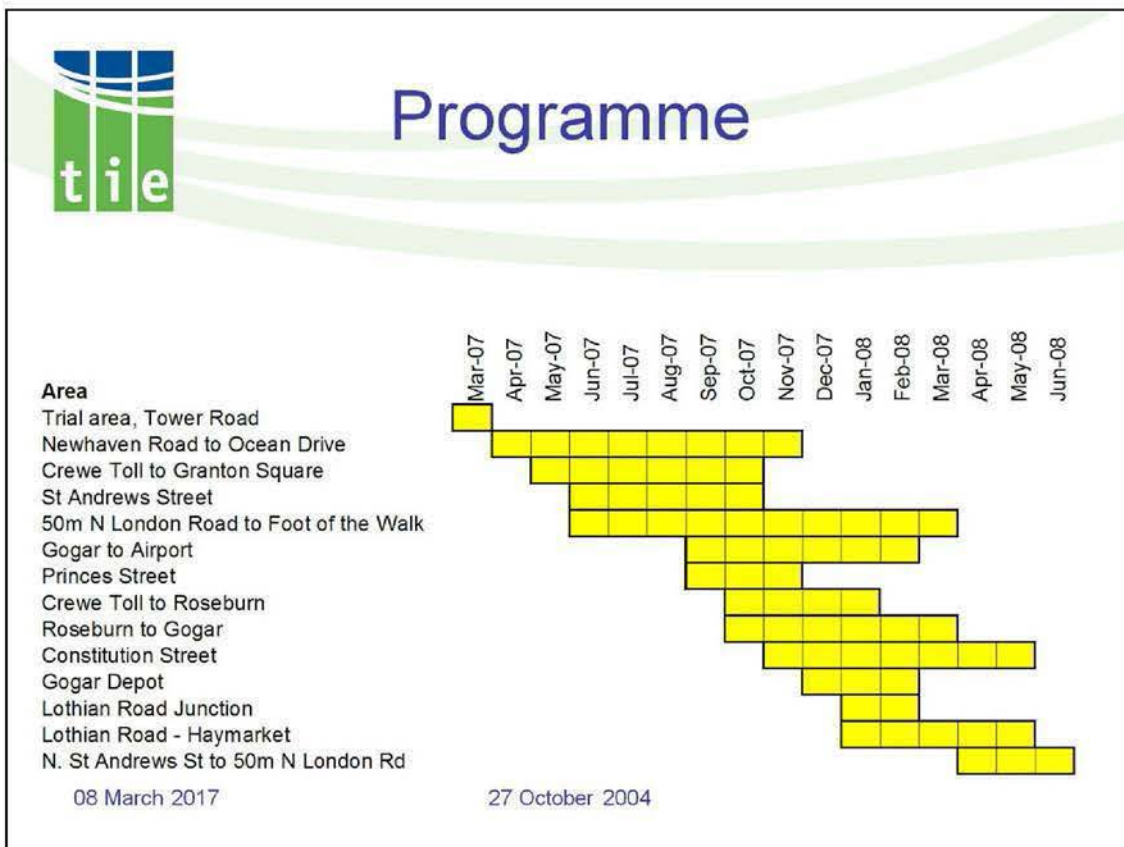
Managing, monitoring, co-ordinating and auditing

- **Site Inspectors:**
 - HSQE monitoring
 - Construction & reinstatement monitoring
 - Traffic management auditing
 - Measurement
 - Change management on site
- **Quantity Surveyors**
 - Commercial
 - Payment
 - Change management – commercial aspects

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Key on site roles



Trial section chosen to be sufficiently large amount of work to trial processes and procedures, but not so large or busy as to create extensive disruption.

Note overlap between Infraco and MUDFA in the Roseburn-Gogar section. The utilities work in this area is small enough that it will be possible to programme the section such that the two contracts will stay separate.



Andrew Malkin
Project Director
Alfred McAlpine Infrastructure Services

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Our Company

- Part of Alfred McAlpine plc - £ 1bn
- Infrastructure £ 300 M t/o
- Employs 9,000 people
- 30 years experience in Edinburgh
- Multi-Utility programme experience
- Our Clients

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Infrastructure Clients

Alfred McAlpine is fully experienced in delivering projects of comparable size and complexity



£100m over 4 years Detailed design
Budget forecasting
Urban environment
Tight cost control
Outer Isles to Gretna

£60m over 5 years Reactive 24/7
Emergency response



£100m over 4 years Project Management
Sub Station switching
PTW system
Customer liaison

£130m over 5 years City centre traffic management
Self administered PTW
Complex operational processes
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Health, Safety, Environmental & Quality Management

- GIRS, ISO 9001, 14001 & OHSAS 18001
- Integrated Business Management System
- MUDFA Discipline Specific Procedures
- **tie** / AMIS Co-ordination Plans

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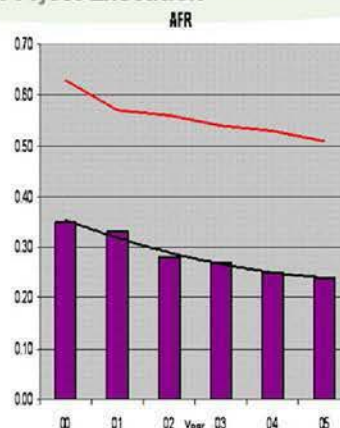
AMIS to insert bullets and discussion notes.



Safety Performance

EDINBURGH TRAM NETWORK MUDFA
Programme and Project Execution

- Industry Average AFR 0.51
- Alfred McAlpine AFR 0.24
- Scottish Power Contract AFR 0.19
- Scotia Gas Networks Contract AFR 0.18
- Scottish Water Solutions Contract AFR 0.28
- Our target is to reduce our AFR to 0.1 or lower by 2010 .

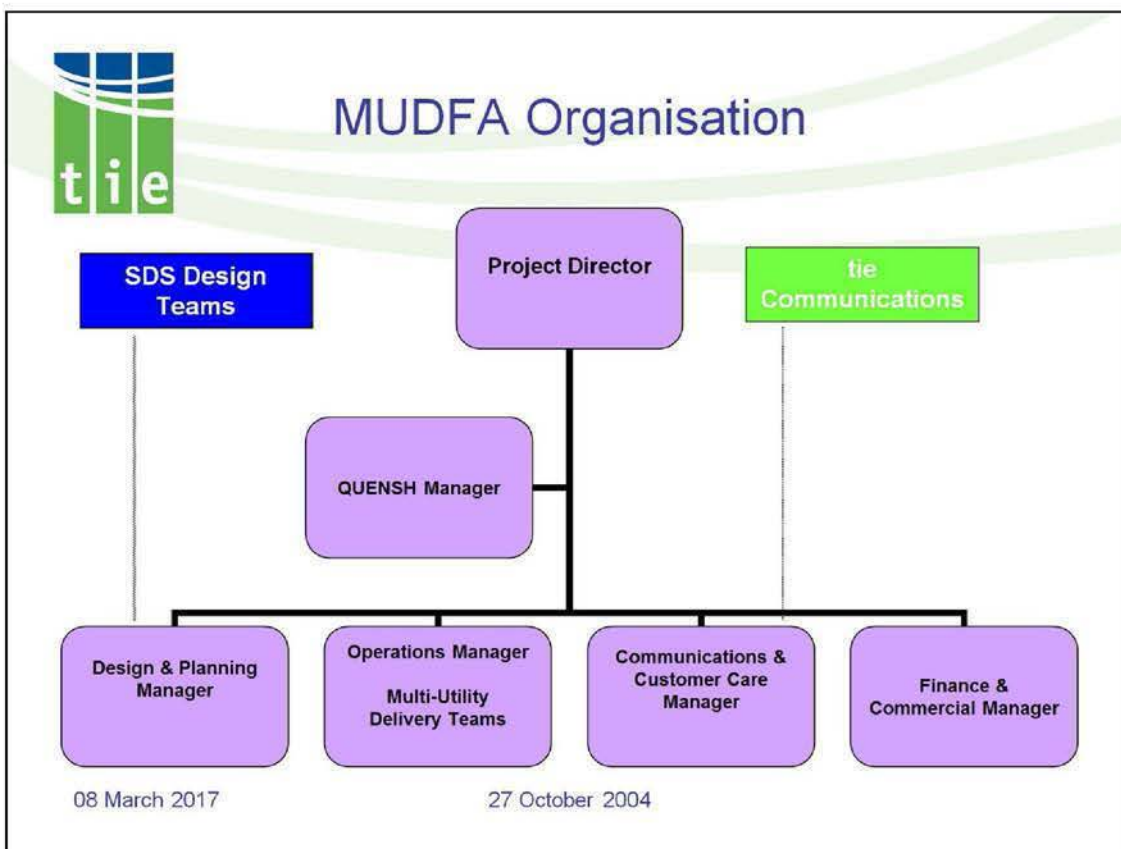


Promises Delivered

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MUDFA Current Status

- Contract awarded in October 06 to Alfred McAlpine Infrastructure Services Ltd (AMIS)
- Pre-Construction Services (PCS) currently underway
- Construction Commences March 07

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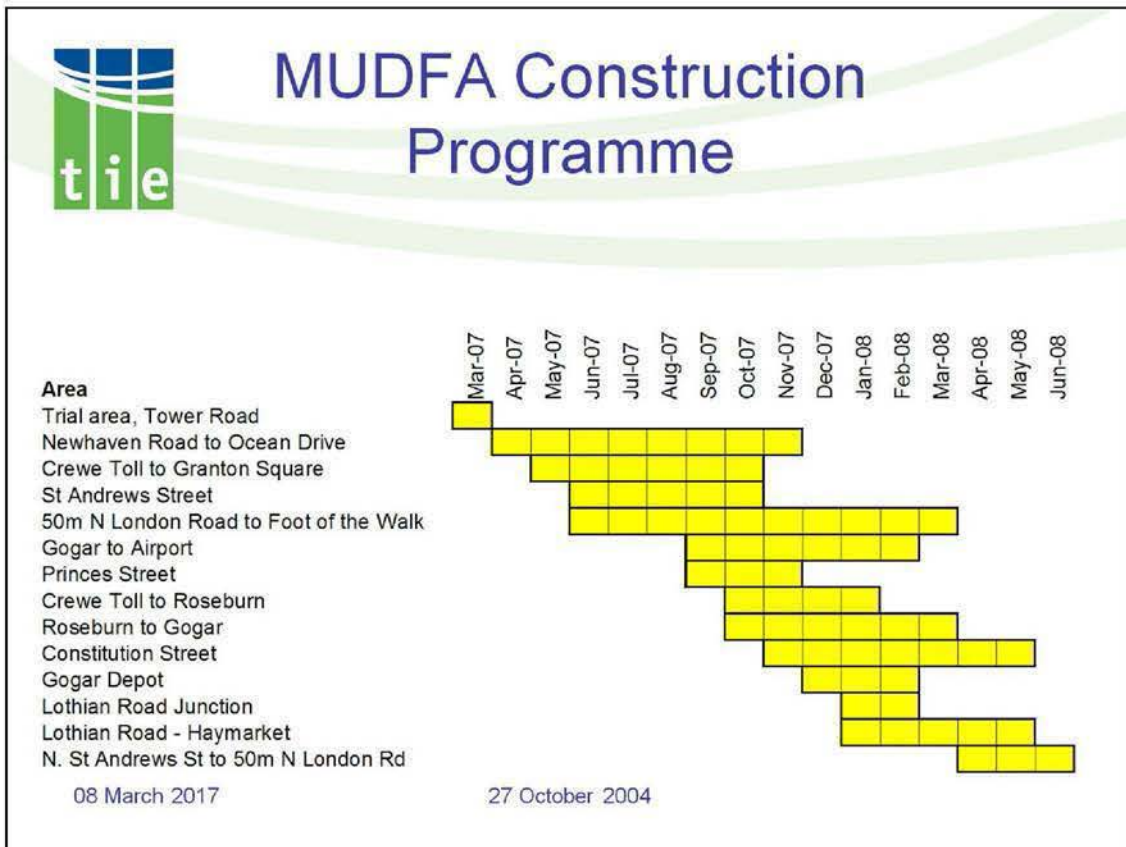
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PRE-CONSTRUCTION

Activities, current and expected.

CONSTRUCTION

Trial area at Newhaven in March 2007



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Note overlap between Infraco and MUDFA in the Roseburn-Gogar section. The utilities work in this area is small enough that it will be possible to programme the section such that the two contracts will stay separate.



Delivery & Service Considerations

- Effect on key areas:
 - Princes Street (Mound & Lothian Road Junction)
 - St Andrews Square (South-Central-North)
 - Leith Walk (Picardy Place, London Road & Progressive)
 - Haymarket Junction (Torphichen Street & Junction)
- Length of road closures : Ranges 20 to 200 mtrs
- Total No. of work sites = 133
- Work areas open at any one time = 7 Streams
- Traffic Management : Planning & Logistics
- Resource : Operatives at Peak Approx 85
- Tram Helpers, Information Packs & Newsletters

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INSERT/DESCRIBE/DISCUSS

Example of traffic management methods in an example area.

Comments on each of these, and any other important, key areas.

Traffic modelling – not yet carried out, we expect, from experience, that it will support our proposed methodologies.



Suzanne Waugh
Communications Manager
tie

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Stakeholder Management

- Dedicated phoneline
- Tram helpers
- Emergency response
- Advanced notification of utility customers

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Stakeholder management Incident Management

- Possibility of Utility Strikes
- Other incidents

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Procedures etc to avoid strikes

Work with SUs if it happens

What other incidents?



Questions?

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