New Lynn Rail Trench
Transformation through collaboration
IPENZ Transportation Group Conference
Auckland 2011
Darren Cash  Resolve Group
Malcolm MacDonald  Fletcher Construction Company

Acknowledgements
Peter King
Malcolm MacDonald  Paper Co - Author
Resolve Group Team

New Lynn Rail Trench – key points
Transformation
Collaboration
Construction

Project outline – New Lynn Rail Trench (Dart 6)
Project Outline

Construction period
- Enabling works
  December 2007,
- Main construction
  August 2008 - September 2010

Trench structure
- approx 900m length
- maximum retained height 8m

Where is New Lynn?

New Lynn - divided

Previously - rail through roundabout

LynnMall Shopping Centre
Industrial Area
Clark Street
Rail through roundabout

Safety problems

Transformation

Transformation – Improved Connectivity

Rail through roundabout replaced by signals
Transformation - Improved Connectivity

Two Additional New Crossings + Enhanced Station

Transformation - Integrated Hub

Transformation – how it used to be

Transformation – Wrap around Bus station
Transformation – shelter

Transformation – cycle storage

Transformation – more rail frequency

Collaboration
Collaboration – Contract Jargon Buster!

ECI = Early Contractor Involvement procurement model
TOC = Target Out turn Cost = sum of Target Cost and Margin
PRs = Principals Requirements = the project specification
VE = Value Engineering

Collaboration – ECI Contract

Early Contractor Involvement (ECI) contract

Collaboration – the ECI Process

Three stage approach:
- Stage One - Proposal
- Stage Two - Concept Design
  Preliminary Design
  Target Out turn Cost (TOC)
- Stage Three - Detailed design and construction.

Collaboration - common goals

- strong collaborative “best for project” behaviours
  - open-book policy
  - focused on common goals
  - enhanced the collaboration
Collaboration - payment mechanism

Collaboration - behaviours

Key areas of success
- Productivity gains
- Tension piling
- Diaphragm wall work
- Base slab construction
- Joint mitigation of project risks
- Early completion primary civil trench.
- Substantially under budget
ECI Process “wins” - example

Value Engineering

- Stage 2
- Preliminary design initial PRs March 2008
- Significant Value Engineering
- Joint, focused approach
- Entire concept for the project was thoroughly challenged

Key outcomes from VE:

- Removal of “future proofing for trench over-build”
- Relaxation of rail alignment
- Detailed design advanced 50% to 90%
- Reduction of $25 million (on approx $150M)

ECI wins – No Enhanced Station?

- Construction started before station was confirmed
- Design challenged to keep ahead
- Architecture by separate consultant, separate client
- “Best for project” team behaviour allowed the package inclusion

Construction
Typical Cross section

Diaphragm Wall Excavation

Diaphragm Wall Construction

Stage One – South slew
Stage 2 – North capping beam

Stage One move to Stage Two

Stage 3 – Dig out

Stage 3 – Prop and dig
Stage 3 – Prop and dig

Stage 3 – in trench view

Close proximity!

Prop removal
Excavation complete

Time lapse

Completion
Conclusion - Transformation

Successfully improved:
- rail efficiency and timetabling
- reduced traffic delays
- pedestrian and road user connectivity
- integration of travel modes
- urban regeneration

Conclusion - Collaboration

The collaborative team effort facilitated:
- inclusion of significant additional scope
- an optimised and constructible design
- a successful project under budget, ahead of time.

New Lynn Rail Trench
Transformation through collaboration

- legacy of transformational transport infrastructure
- blue print for future collaborative project delivery.

Questions

Working together moving towards prosperity