



HUNUA 4 WATERMAIN

PRESENTATION OUTLINE

- Objectives
- Route overview
- Properties
- Construction
- Timeline
- Questions



OBJECTIVES

Project objective 1 :-

Meet the future demand for water supply:

In particular Manukau City and Airport Precinct (50 year horizon).

Achieved by connecting into the local network in key locations across Manukau City.

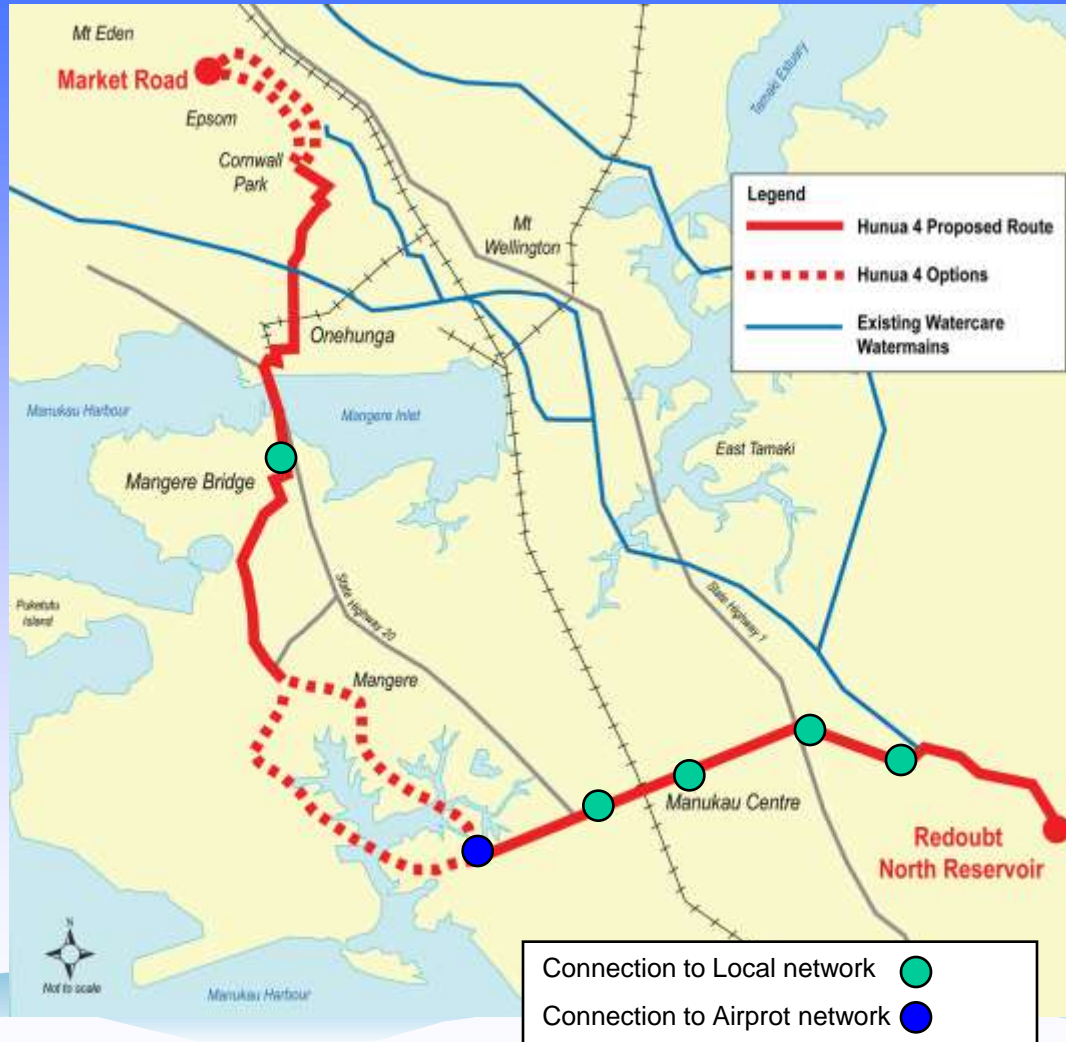
OBJECTIVES

Project objective 2 :-

Mitigate the security of supply risks that exist due to the degree of reliance on existing reticulation infrastructure – Hunua 1, 2 and 3.

Achieved by staged commissioning of the new H4 main - enabling Watercare to take other watermains out of service to carry out essential maintenance.

ROUTE OVERVIEW



PROPERTIES

- ~\$250M new infrastructure for the people of Auckland
- 100 year+ design life expectancy

PROPERTIES



*Cosseys Raw Watermain Project,
Pipeline Diameter 1600 mm*



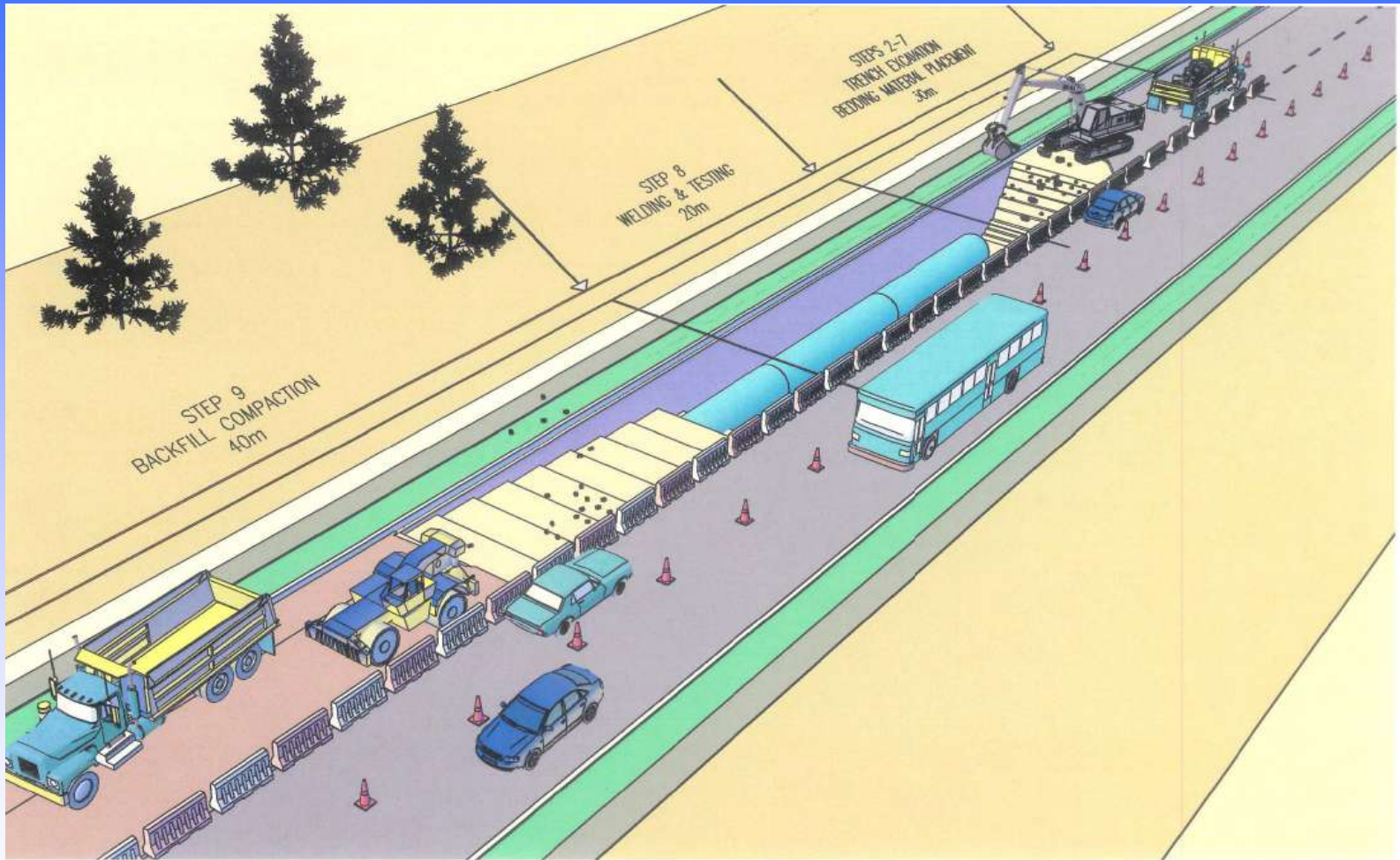
*Cosseys Raw Watermain Project,
Pipeline Diameter 1600 mm*

Hunua 4 varies in size - 1.9m, 1.6m and 1.3m diameter.
Cover 1.5 m

CONSTRUCTION

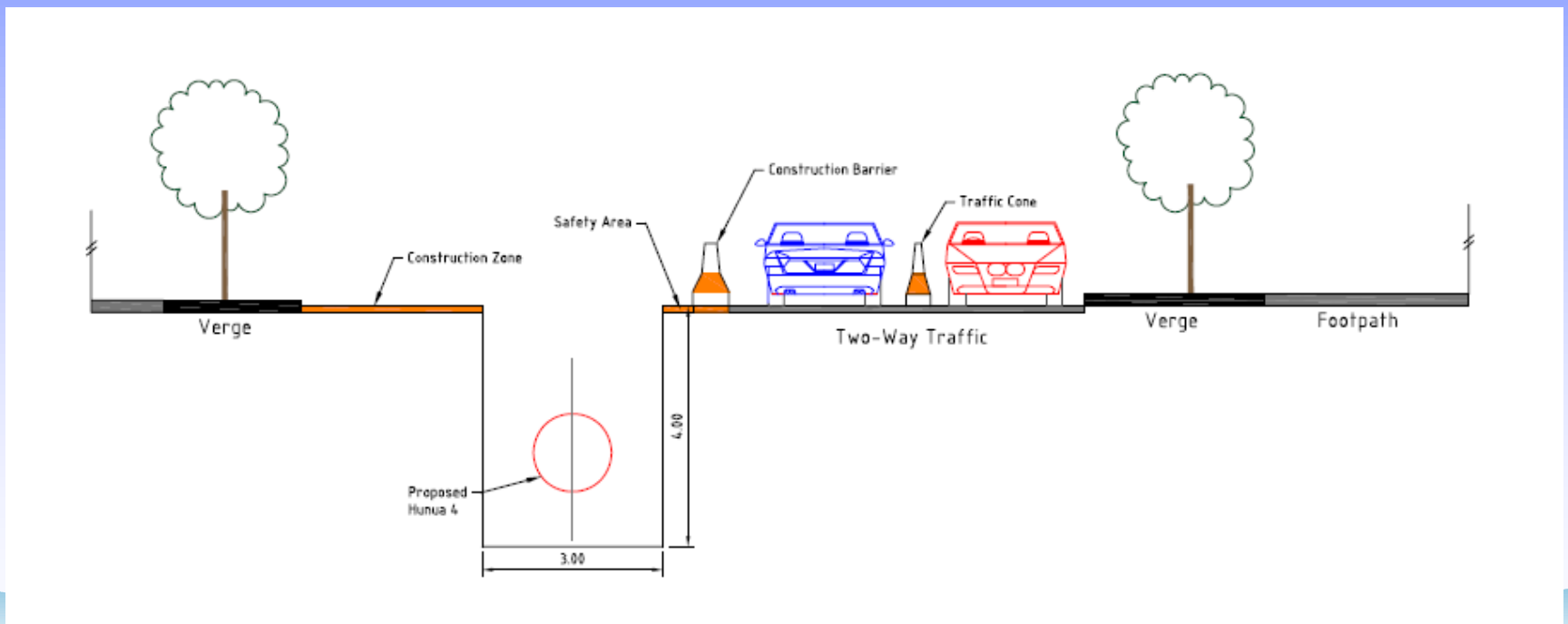
- Majority of Hunua 4 will be laid in the road reserve by open cut methods
- Trenchless methods will be used at key roading intersections, motorway / rail crossings and possibly in coastal areas
- Trench is on average 4m deep, 3m wide
- Generally 30 – 50 m of trench open at any one time, construction area expected to be in the order of 200 m in length
- Lay rate depends on geotechnical conditions and existing services, expecting average rates ~10 metres / day

CONSTRUCTION



CONSTRUCTION

- Whenever possible two way traffic will be maintained
- One way traffic and temporary road closures will apply on certain roads during construction



Typical Cross Section showing two way traffic

CONSTRUCTION



Albany Highway, Glenfield no 2 – 1000mm dia

CONSTRUCTION



Cosseys Raw Watermain Project, 1600mm dia

Hunua 4 - MHX



Hunua 4 - MHX



Suspended pipeline at the north end of Pier 5

Hunua 4 - MHX



Pipeline suspension from span 4

Hunua 4 - MHX



Suspended pipeline installation

Hunua 4 - MMG



Hunua 4 - Challenges

- Traffic Disruption
- Existing Services
- Stakeholder Liaison
- Operational Constraints @ commissioning

TIMELINE

Appointed engineering consultants (CH2M Beca / GHD)
end 2008

Commenced preliminary design May 2009

Lodged consents Feb 2010

Construction start 2012 (Note Advanced works at MHX, MMG, Thomas Rd, Kirkbride Rd)

Partial commissioning 2014

Full commissioning 2016

The Client Brief

A Watercare Perspective

- Professional Services
- Client Supplied Materials and Equipment
- Construction Contractors

Professional Services

- The Agreement – CCCS Conditions of Contract for Consultancy Services (incl IPENZ / ACENZ Short Form) + published guidelines
- Used exclusively by Watercare unless in case of special projects with high / abnormal risk profile
- Modified for IP, Confidentiality, Insurances
- Robust, proven vehicle for effective project delivery – maintain control over design

Materials Procurement

- Client Supplied Items
- Typically pipes, valves, pumps / motors / VSD's and key process equipment (can be up to 40% of project value)
- Use std Watercare purchase order, preferred supplier T&C or specialist supply contract (risk!)

Construction Contractors

Typically AS/NZS 3910 – modified for WSL:

- Client supplied insurances
- Performance Bonds ('on demand' not default)
- Const Cont Act, Subcont registration & payment
- Payment - retention model
- PC and SWC (completion certs)

Use bespoke contract forms on high risk or high value contracts

Other Options

- Modified FIDIC incl D&C
- Other bespoke forms of contract
- Specialist advisor input

- The Future? NEC 3 / Alliance models / ECI / incentivised performance
- Drivers for change: Value, relationships, risk sharing, ever increasing need for flexibility (operational constraints)

When Does it Go Wrong?

- Lessons Learned

- Poorly conceived / executed planning study
- Lack of definition in deliverables
- Unknown or misunderstood operational (shut down) constraints
- Uncontrolled scope change during design phase

- All have impact on outturn cost and programme
- All effect team morale and relationships

QUESTIONS