Design of the Peninsula Link Freeway Project

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Associate, SKM

Alex Gilbert
Technical Director, Aurecon
Agenda

1. Introductions
2. Project Overview
3. Design Management Challenges
4. Technical Challenges
5. Questions
Peninsula Link
Strategic Context

East Link

Peninsula Link
Project Benefits

- Up to 40 minutes travel time savings in peak periods.
- Ease congestion on existing roads
- Bypass eight sets of traffic lights, six major roundabouts and a rail crossing.
- Completion of missing link
- Road safety
- New Shared Use Path
Project Description

- 27 kilometres of freeway standard road
- Two traffic lanes in each direction
- On and off ramps to 11 roads including three freeway to freeway connections
- 28 bridges (45 separate structures)
- Three million cubic metres of earthworks
- Around 1.5 million trees and plants requiring 80,000 cubic metres of mulch
- 25 kilometre shared walking and cycling path
- High standard urban design, environmental management and community information
What is an Availability PPP?

1st of its kind in Australia

Toll free – payment based on lane availability and a series of KPI’s

$759 million fully underwritten (debt and equity)

Concession period – Delivery (D&C) + 25 years
Contractual Framework

- **Independent Reviewer (AECOM, Balfe)**
- **Proof Engineer (SMEC)**
- **ABI GROUP**
  - D&C, 3 years
- **SKM/Aurecon Design JV**
- **Other Consultants**

**Linking Melbourne Authority (State)**

**Southern Way (Project Company)**
- Finance, D&C, O&M, hand back 28 years

**Bilfinger Berger Project Investments (Project Co Manager)**

**Lend Lease Infrastructure Services**
- O&M, 25 years

**Payment Certifier (Davis Langdon)**

**Facility Agent (ANZ)**
- Debt - $770M
- Equity - $124M

**DCOM**
- Interface Agreement

**Finance**
<table>
<thead>
<tr>
<th>Event</th>
<th>Date</th>
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</thead>
<tbody>
<tr>
<td>EOI Released</td>
<td>31 March 2009</td>
</tr>
<tr>
<td>EOI Submitted</td>
<td>5 May 2009</td>
</tr>
<tr>
<td>RFP Released</td>
<td>24 June 2009</td>
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<td>RFP Submitted</td>
<td>20 October 2009</td>
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<td>Preferred Bidder</td>
<td>15 January 2010</td>
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<tr>
<td>Financial Close</td>
<td>8 February 2010</td>
</tr>
<tr>
<td>First Sod Turn</td>
<td>17 February 2010</td>
</tr>
<tr>
<td>Date of Completion</td>
<td>18 January 2013</td>
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<td>Hand back to State</td>
<td>18 January 2038</td>
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Design Management Challenges

- 110 Design packages
- 6 Stages of review
- 600+ Design Deliverables in 14 months
- Over 5,000 construction drawings
- 14 Consultants
- Multiple stakeholders
Design Team Structure

Design Manager

Discipline Leader Structures
- Conventional bridges and arches
- Integral and other bridges
- Misc structures

Discipline Leader Civil
- Drainage waterway crossings
- Drainage road drainage
- Roads North
- Roads Central
- Roads South
Resourcing

200 designers (75 FTE at peak)
Review Process
## Programme

<table>
<thead>
<tr>
<th>Roads</th>
<th>Forecast Date</th>
<th>Forecast Date</th>
<th>Forecast Date</th>
<th>Forecast Date</th>
<th>Baseline Date</th>
<th>Forecast Date</th>
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<tr>
<td>PLA-C</td>
<td>0001 Main Carriage Way - Eastlink to Latham's Road</td>
<td>07-Apr-10</td>
<td>25-May-10</td>
<td>20-Jun-10</td>
<td>17-Sep-10</td>
<td>25-Oct-10</td>
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<td>09-Aug-10</td>
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<td>10-Dec-10</td>
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<td>07-Jul-10</td>
<td>28-Aug-10</td>
<td>09-Oct-10</td>
<td>17-Nov-10</td>
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<td>PLA-C</td>
<td>0004 Main Carriage Way - Blue Road to Robinsons Road</td>
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<td>28-Aug-10</td>
<td>09-Oct-10</td>
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13 Total items in table.
## Interface Management

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<tr>
<th>DRAINAGE</th>
<th>DRAFT PRELIM DESIGN</th>
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<tbody>
<tr>
<td>PLA-DP- D-1021 Waterway Crossings - Boggy Creek</td>
<td>25% 17-Jun-10 17-Jun-10 0</td>
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<tr>
<td>PLD-DP- D-1027 Waterway Crossings - Watson Creek/Balcombe Creek</td>
<td>10% 24-Jun-10 24-Jun-10 0</td>
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<td>PLE-DP- D-1028 Waterway Crossings - Balcombe Creek</td>
<td>10% 08-Jul-10 08-Jul-10 0</td>
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<td>PLA-DP- D-1052 Main Carriageway Drainage - Lathams Road to Ballarto Road</td>
<td>70% 02-Jun-10 16-Jun-10 -14</td>
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<td>PLB-DP- D-1053 Main Carriageway Drainage - Ballarto Road to Skye Road</td>
<td>20% 21-Jun-10 22-Jun-10 -1</td>
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<td>PLD-DP- D-1055 Main Carriageway Drainage - Frankston Stony Point Rail to Baxter</td>
<td>50% 07-Jun-10 15-Jun-10 -8</td>
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<td>PLE-DP- D-1056 Main Carriageway Drainage - Baxter to Mornington Tyabb</td>
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<td>PLF-DP- D-1057 Main Carriageway Drainage - Mornington Tyabb Road to Mt Martha</td>
<td>20% 17-Jun-10 05-Jul-10 -18</td>
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<td>PLA-DP- D-1051 Main Carriageway Drainage - Eastlink to Lathams Road</td>
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<th>DETAILED DESIGN</th>
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<tr>
<td>PLD-DP- D-1026 Waterway Crossings - Watson Creek</td>
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Technical Challenges
DESIGN CRITERIA
• Impact on Plains Grassy Wetlands
• Geotechnical
• Major flood catchment

The Challenge
The Solution

- Retaining walls
- Major art piece
- Straighten alignment
- Relocate watercourse
How it should look
How it looked during construction
Stony Point Rail Bridge