EastLink – Not just a Road

EastLink comprises approximately 39 kilometres of freeway standard road connecting the Eastern Freeway in Melbourne’s east to the Frankston Freeway in the south. EastLink also features many other traffic engineering components, including:

- direction signage based on results of a driver perception survey and computer simulation
- a new methodology to assess the safety performance at surrounding intersections.

EastLink delivered more than 35 kilometres of bicycle and walking paths for local residents. Landscape works included the construction of wetlands, installation of a shared use path and revegetation of open space areas and parkland.
EastLink – Not just a road

Ian Mullett
Road Operations and Asset Manager

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EastLink – Not just a road

- 88 bridges
- 17 interchanges
- 45 kilometres of road
- 2 x 1.6 km tunnels
- 13 tolling gantries and associated infrastructure
- A record spend of $2.5b on Australia's largest infrastructure project

The Wills Interchange - 9 bridges including 7 new structures
one bridge is 5 stories high

Claudia St and Joffre St Pedestrian overpasses looking north

Mullum Mullum Tunnel
EastLink – Not just a road

Oakwood Park Wetland

EastLink – Not just a road

35 kilometres of Shared Use Path

EastLink – Not just a road

Ellipsoidal Freeway Sculpture by James Angas

EastLink – Not just a road

- EastLink operational control and traffic management systems
  - operations management and control issues
  - traffic management issues
- EastLink operational issues since opening

EastLink – Not just a road

Operations Management & Control System (OMCS)
- Facilitate the effective management of incidents
- Monitor and control traffic systems and traffic movements
- Monitor and control freeway plant, equipment and communication systems
- Provide a high level of automation

EastLink – Not just a road

Operations Management and Control Systems (OMCS)
- Must include:
  - A Traffic Management and Control System
  - A Plant Management and Control System
  - A Communications System
EastLink – Not just a road

o Traffic Management and Control System
  - Tunnel Information signing System
    - Rotation of messages
  - Lane Use Signing System
    - No standard for sign sizes (in tunnels)
  - Variable Speed Signing System
    - Spacing in tunnels
  - Variable Message Signing System
    - No Victorian standard or Policy

EastLink – Not just a road

o Traffic Management and Control System
  - Traveller Information Signs
    - Use of abbreviations/Letter size
    - Backlighting of road name panels
  - Ramp Control Signs
    - Separate control of primary and secondary signs
  - Overheight Vehicle Warning System
    - Used to prevent overheight vehicles in tunnels

EastLink – Not just a road

o Traffic Management and Control System
  - Incident Detection System
    - Effect of direct sunlight
  - Tunnel Portal Barriers
    - Used to prevent traffic entering tunnels
    - Used to turn trucks around
    - Flashing lights versus traffic signals
  - Closed Circuit Television System
    - Time delay and ease of operation
  - Weigh-in-Motion System
    - Specialist equipment and software

EastLink – Not just a road

o Plant Management and Control System
  - Monitor and control mechanical and electrical plant
  - No single point of failure shall cause major performance
degradation or necessitate the closure of a freeway section
  - Capable of showing the status, alarms and faults of all plant and
  - Supported by secondary or manual systems

EastLink – Not just a road

o Communication System
  - Tunnel Radio Re-broadcast System
    - Different messages for different tunnels
  - Tunnel Public Address System
    - Volume at portals
  - Tunnel Mobile Telephone System
    - Multiple carriers and networks
  - Help Phone System
    - Effects of tunnel wall washing

EastLink – Not just a road

o Operational Issues Since Opening
  - Entry movements from Ringwood Bypass
  - Turning trucks (overheight and placarded loads) around
  - Excessive traffic signal cycle times at some interchanges
delays getting on and off
  - Ice on shared use path timber bridge decks
EastLink – Not just a road

Complaints about:
- Noise
- Windscreen damage
- Not enough signs
- Too many signs
- The wrong signs
- The lighting keeps me awake at night
- You didn’t tell me you’d started tolling

EastLink – Yes it is just a road!
VICROADS CONTRIBUTION TO THE EASTLINK PROJECT

Ravi Ravichandhira
Manager – Traffic Operations
Metro South East

VICROADS’ ROLE
- To work with SEITA closely, and to facilitate the delivery of EastLink
- To ensure that all of the ‘returned works’ are designed and constructed to VicRoads’ standards
- To safeguard the safety and mobility of the travelling public impacted by EastLink during construction
- To give consent for installation of permanent and temporary major traffic control items

OVERVIEW OF VICROADS’ INVOLVEMENT
- Reviewed 450 design packages for road infrastructure that has been handed back to VicRoads
- Signed off 8 design packages for signs & linemarking
- Reviewed a total of 1,300 MOCs & TMPs
- Completed infrastructure works to detour OD5 along Heatherton Road to link to the M1
- Project manage delivery of ‘link road’ that connects Heatherton Road (south) to PHE (west)

OVERVIEW OF VICROADS’ INVOLVEMENT – cont.
- Scoped additional works that were required around Heatherton Road and OD5
- Provided safety escorts for the delivery of 1,650 precast super beam & other concrete materials to the construction site from Morwell.
- Re-programmed signals to guarantee green phase for approaching OD vehicles

OVERVIEW OF VICROADS’ INVOLVEMENT – cont.
- Defining the operational/lease boundary
- Working closely with MCW regarding works between Jacksons Road and Heatherton Road
- Conducted Inspections prior to handover of facilities to VicRoads
  - 17 interchanges
  - 31 sites for signals
  - 3 pedestrian overpasses
  - 1 footbridge
  - 2 new & 4 widened bridges
  - landscaping

ROAD USER COMPREHENSION TESTING
- Purpose – To assess whether drivers can interpret new signing conventions developed for Eastlink
- 2 Stages –
  - Stage 1 - Sign Interpretation Test
  - Stage 2 - Driver Simulation Test
STAGE 1 METHOD
- 2 locations selected for investigation
  - Eastlink / Monash Freeway Interchange
  - Eastlink / Ringwood Interchange
- Total of 9 signs tested
- 2 day survey – R&L customers from VicRoads Burwood East Office

EASTLINK/MONASH FREEWAY I/C SIGNING CONCERNS
- Closely spaced exits (420m)
- Trap Lane
- Depart to Left, destination to Right (City)
- Lane Use Signage to Warragul and City

EXAMPLES OF SIGNS TESTED
- Diagrammatic sign
  - Eastlink – Monash Freeway I/C
  - Lane Discipline sign
- Ringwood Bypass
  - Lane Discipline sign

STAGE 2 – DRIVER SIMULATION TEST
- Incorporate signs and outcomes developed from Stage 1
- To test road users under Simulated driving conditions

STAGE 2 – PROCESS
- Urban Futures Consulting (UFC)
  - Developed Driver Simulation model
  - 3D design and terrain models provided by Thiess John Holland
  - Initial model development by VicRoads Design
- ARRB Consulting
  - Test, record and report on driver survey

UFC MODEL FEATURES
- High Definition LCD screen to display an image which represents what a motorist travelling along Eastlink would see through a car windscreen
- A steering wheel to manoeuvre the 'vehicle'
STAGE 2 – KEY FINDINGS

- Indications are that signage proposed will suit the vast majority of road users.
- ConnectEast is currently assessing feedback received from motorists.

APPLICATION OF GUIDANCE LINES

- From VCAT in DAIS vs Stonnington:
  - Act requires continuous accessible path, including a “Guidance Line”
  - Guidance Line is at the back of footpaths
  - Tactile indicators of little use to the elderly
  - Guidance Line used to locate & minimise tiles
  - Obstruction free space 1.5m wide at back of path
  - Vision Impaired require consistent width of: Crosswalk; Kerb ramp; & Cut-through

TYPICAL DDA CONFORMING LAYOUT

- Guidance lines in green along building line
- Directional tiles connect Guidance lines, reduced in number
- Hazard tiles half width at Guidance Line
- Crosswalk, Kerb ramp & Cut-through consistent width

CUT – THROUGH DESIGN

- Safety Performance was assessed for EastLink sites
- ARRB produced an Intersection Risk Assessment Tool
- The Tool uses risk assessment based on aggregation of risk x severity x exposure for relevant engineering factors
- Risk scores were compared for “before” and “after”
- Where safety deteriorated, remedial works were done
- Example: Traffic signals were installed at Cheltenham Rd/ Cambria Rd
INTERSECTION RISK ASSESSMENT TOOL

Intersection Type: Score
- 3 Leg Signalised: 7
- 3 Leg Unsignalised: 7.5
- 4 Leg Signalised: 8.5
- 4 Leg Unsignalised: 12
- 5 Leg Signalised: 16
- Roundabout: 8

Severity
- Greater than 80km/hour
- Less than 80km/hour

INTERSECTION RISK ASSESSMENT TOOL

Right Turn Protection: Score
- Dedicated RT Lane: 1
- Partial, implied RT Lane: 1.2
- No RT Lane: 1.43

Right Turn Control: Score
- Fully Controlled RT: 1
- Filter Across One Lane: 1.45
- Filter Across 2 Lanes: 1.72
- Filter Across 3 Lanes: 2.17
- Filter Across 4 Lanes: 2.88

INTERSECTION RISK ASSESSMENT TOOL

Intersection Risk Score = Sum of: Relative Risk x Severity x Affected Volume

For 20 Risk Factors

VICROADS FUTURE INVOLVEMENT

- “Before and After” traffic monitoring
- Defects liability period of 2 years after the closure of all defects identified by PECV, IR & VicRoads prior to the opening of EastLink (as part of Exhibit F)
- Unfinished landscaping works on the crossroads
- Management of on-going operational and commercial issues with ConnectEast
build it and they will come...
at grade cut through

Canterbury Rd

listen to that serenity...

we're not in Kansas anymore Toto

Burwood Hwy - bridge arriving soon
why do we ride?

What is the main reason you ride a bike?

- Fitness?
- Environment?
- Best way to start your day?
- Most convenient?
- Quicker to ride?
- Car parking and petrol too expensive?

Fitness: 7
Environment: 6
Best way to start your day: 7
Most convenient: 7
Quicker to ride: 7
Car parking and petrol too expensive: 7