Melbourne's Grade Separation Programme- Minimising Operational Disruption

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MELBOURNE'S CHALLENGE

- 50 level crossings
- Assume 2 weeks rail closure per level crossing
- 16 months rail closure + much greater disruption

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GRADE SEPARATIONS – MINIMISING DISRUPTION

Three steps:-

1) **Sticking plaster approach - package grade separations on a line**
2) **Aim for a minimum disruption option**
3) **Minimise construction impacts**

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STEP 1 - GRADE SEPARATION PACKAGING

- **Traditionally grade separations delivered singly**
- **Several weeks rail closure disruption**
- **Typically $100-150m**
- **Unsustainable delivery**
- **Level Crossing Removal Authority created**
- **Crossings packaged by line/area**

LEVEL CROSSING REMOVAL AUTHORITY

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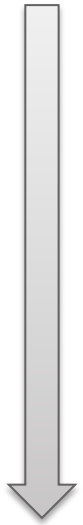
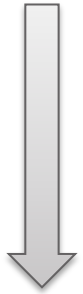
STEP 2 - MINIMAL DISRUPTION REMOVAL OPTION

Description	Melbourne Examples
Road closure	New Street, Brighton
Road Over	Warragul Road, Oakleigh North Road, Huntingdale
Road Under	Anderson Road North, Sunshine
Rail Over	Glenferrie Road, Hawthorn
Rail Under	Springvale Road, Springvale Centre Road, Bentleigh

Description	Melbourne Examples
Offline	Springvale Road, Springvale
Temporary Slew	Anderson Road South, Sunshine
Online	Centre Road, Bentleigh



Increased rail disruption



Increased rail disruption

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ROAD OVER

North Road,
Huntingdale

Warragul Road,
Oakleigh

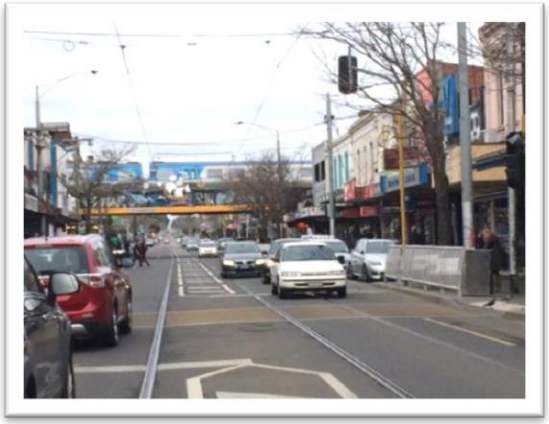
ROAD UNDER

Anderson Road North, Sunshine

Victoria Street, Middle Footscray

RAIL OVER

Glenferrie Road, Hawthorn



Carlisle Street, Balaclava

Nepean H'wy, Elsternwick

Flinders Street Viaduct

North Road, Brighton

Nightingale St, St Kilda East

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RAIL UNDER

Rooks Road,
Mitcham

Centre Road,
Bentleigh

Springvale Road,
Springvale

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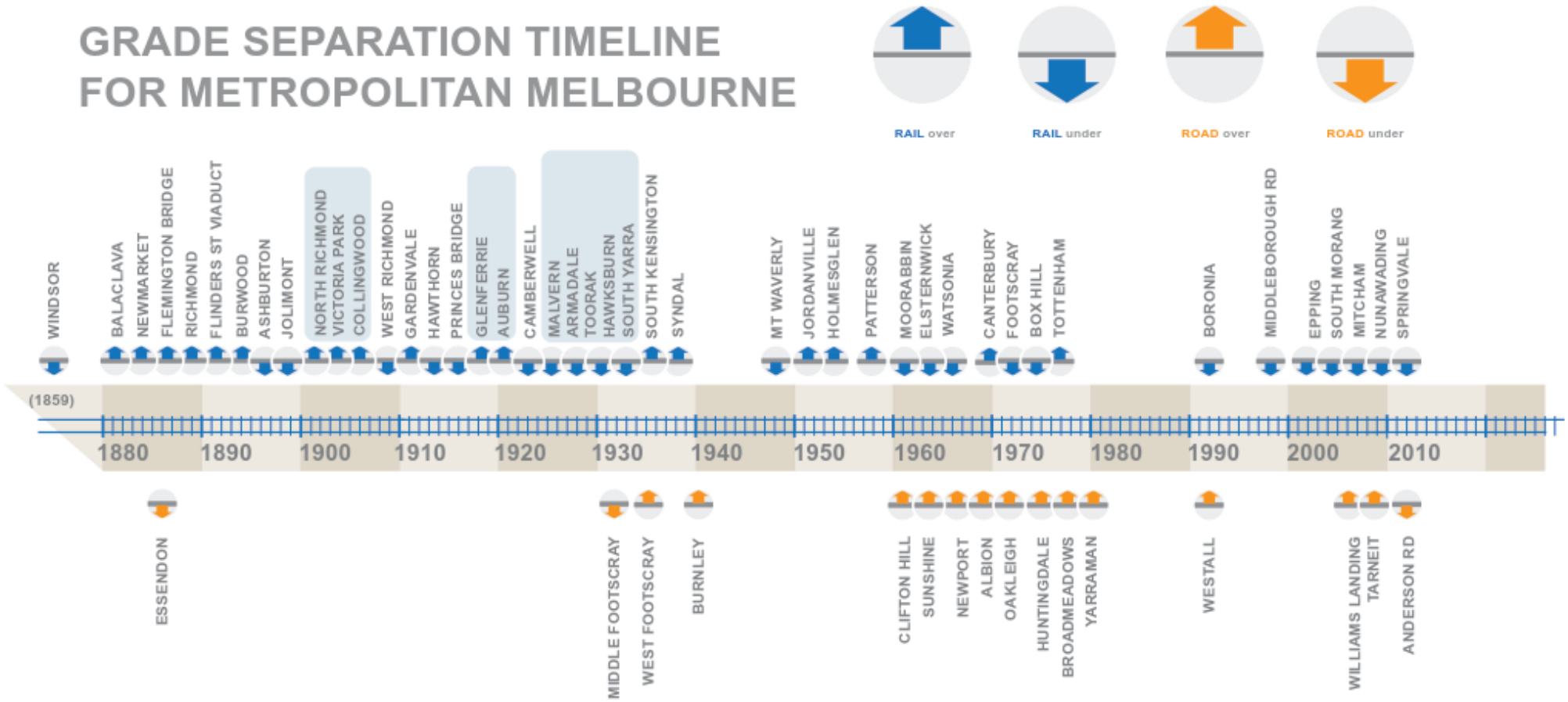

Taken from *"The Benefits of Level Crossing Removals - Lessons from Melbourne's historical experience"* by RMIT.

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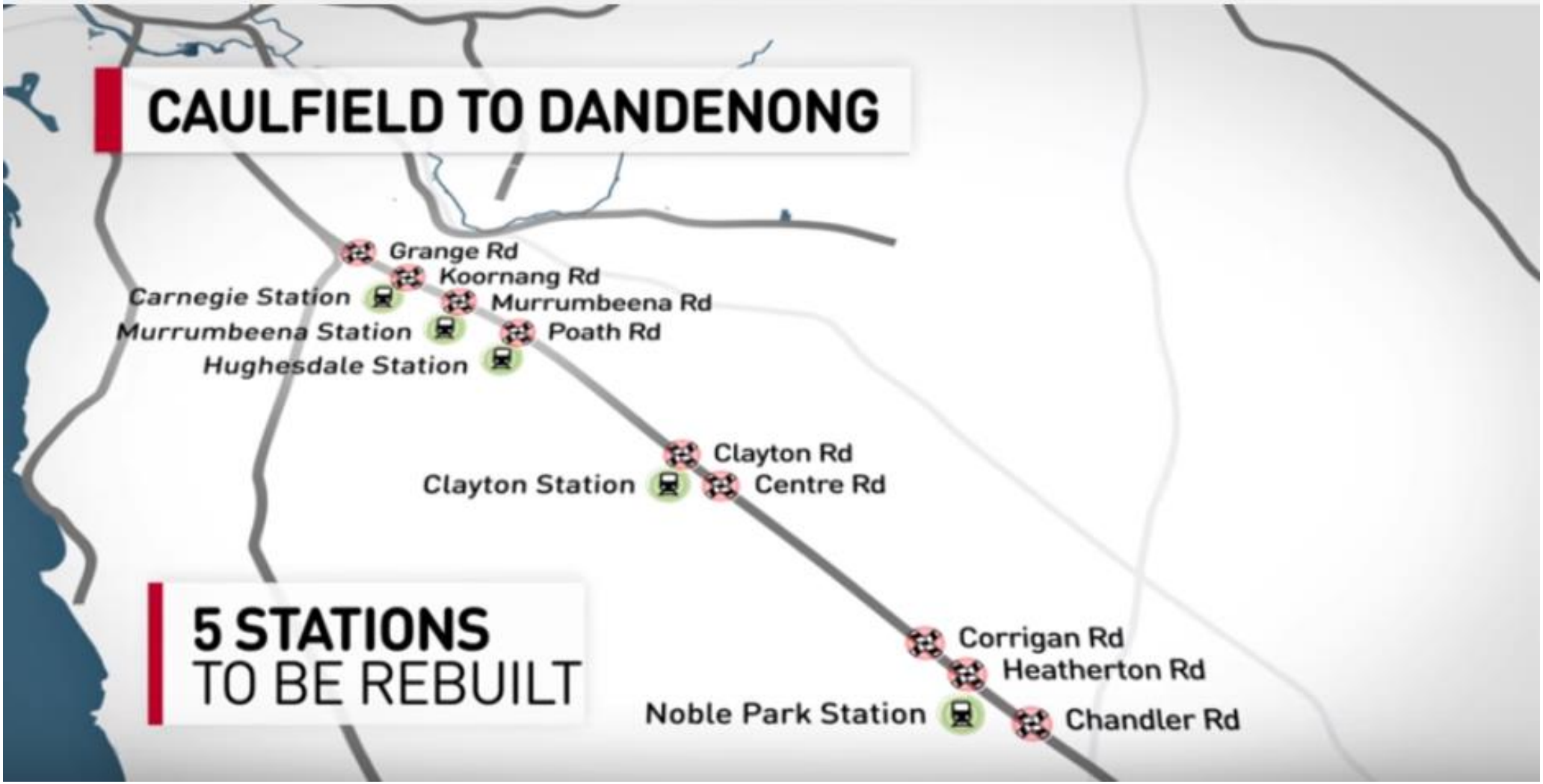
STEP 3 – CONSTRUCTION METHODS
CAULFIELD TO DANDENONG (CTD) OVERVIEW



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CTD HORIZONTAL AND VERTICAL ALIGNMENT SOLUTION

Area	Level Crossing	Crossing Type	Construction Type
1	Grange Road	Elevated rail over	Offline to south
	Koornang Road	Elevated rail over	Offline to north and south
	Murrumbeena Road	Elevated rail over	Offline to north and south
	Poath Road	Elevated rail over	Offline to north and south
2	Clayton Road	Elevated rail over	Offline to the north
	Centre Road	Elevated rail over	Offline to the north
3	Corrigan Road	Elevated rail over	Offline to the north
	Heatherton Road	Elevated rail over	Offline to the north
	Chandler Road	Elevated rail over	Offline to the south

9 Over

9 Offline

4 Viaduct structures

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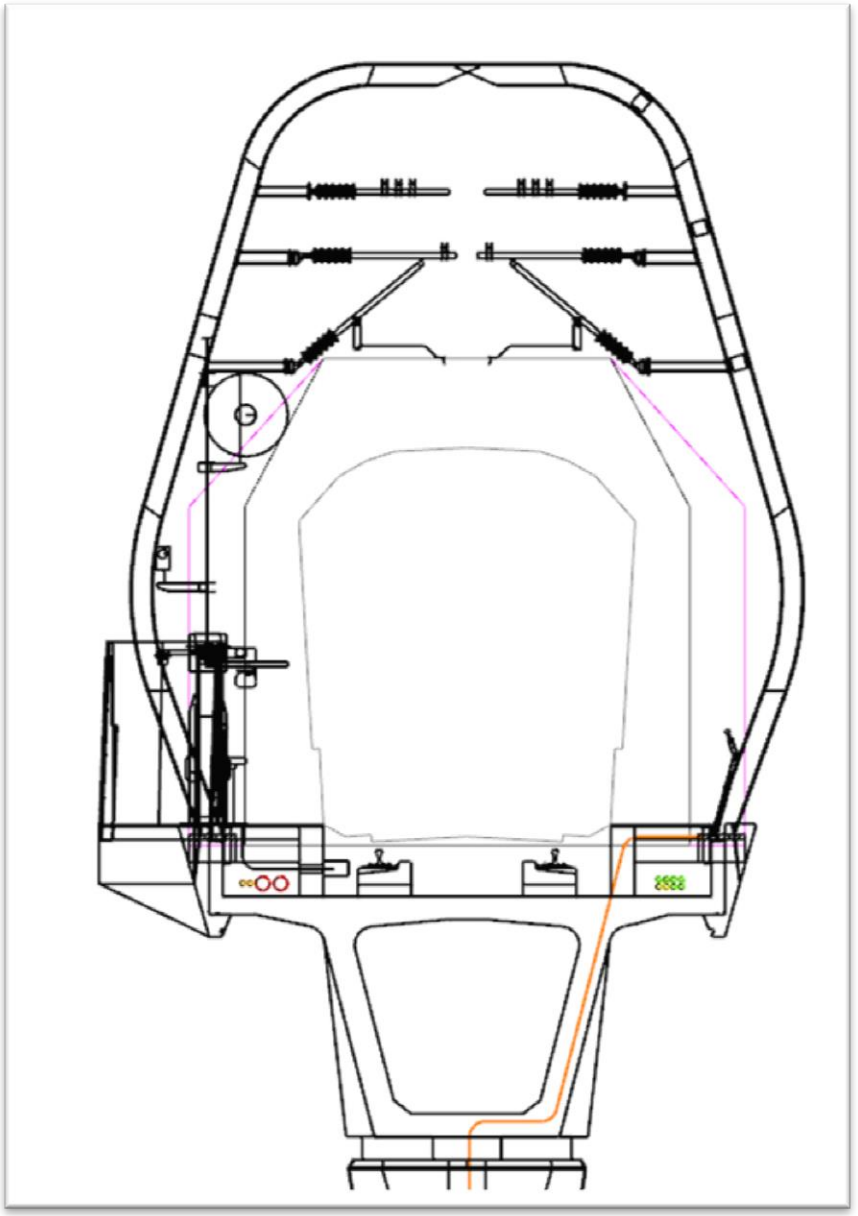
RAIL SYSTEMS ON VIADUCT

- Integrated rail solution
- Vosloh integrated fixed track system
- LED tilt mast signals
- No location cases on viaduct, SERs are on stations, REBs/loc's on ground under the viaduct
- Architecturally designed OHW masts
- Integrated CSR



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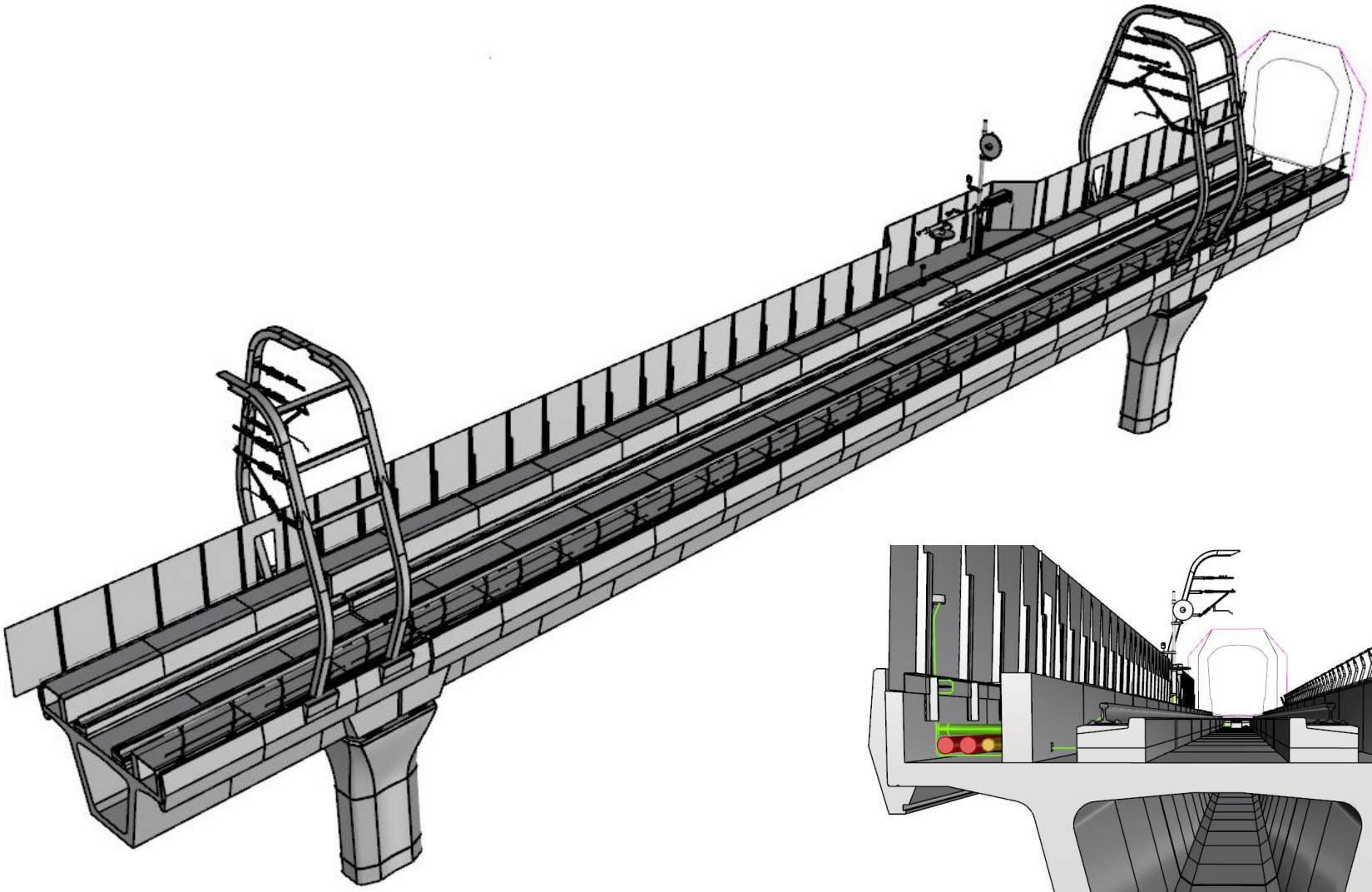
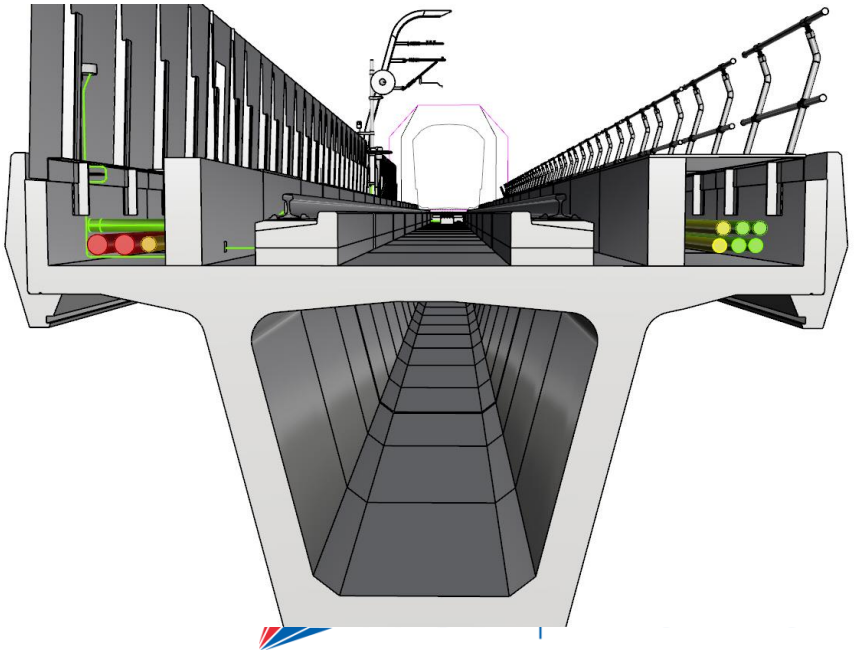
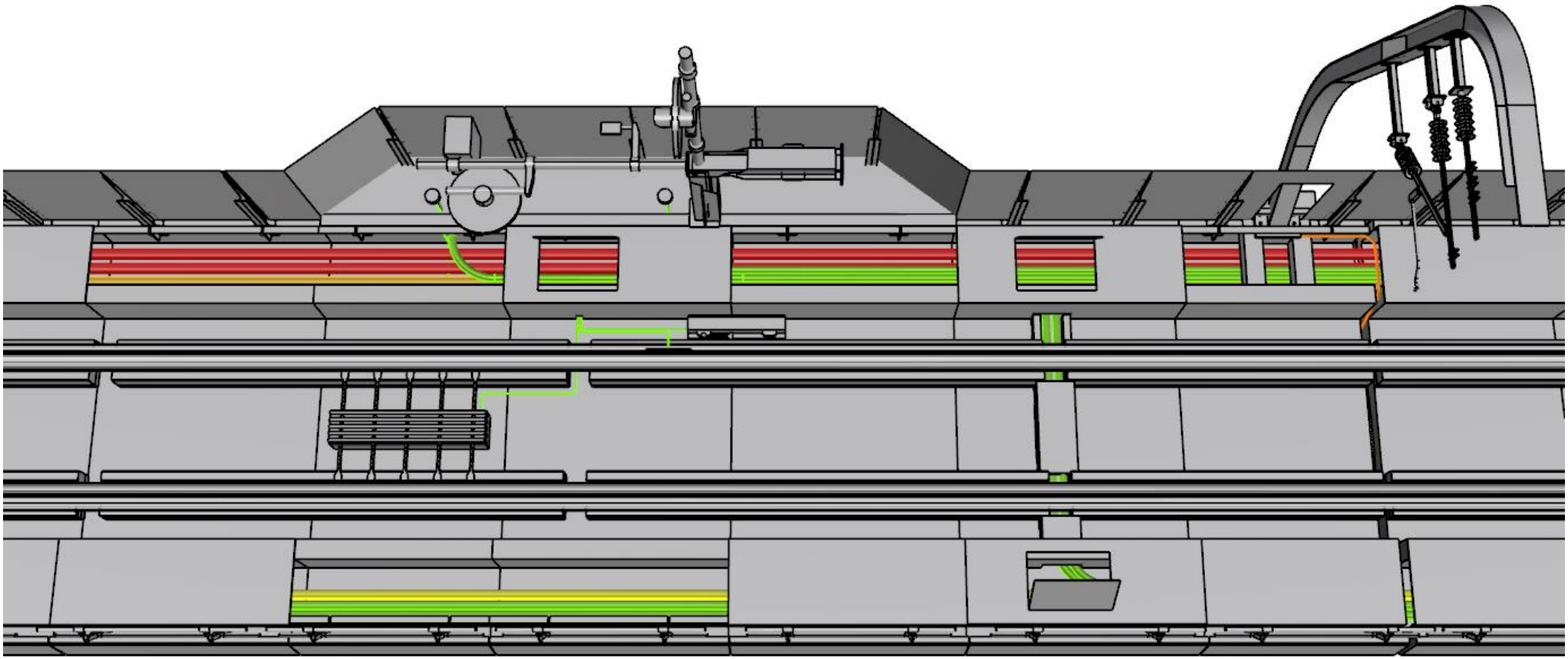
3D MODEL USED FOR SIGNAL SIGHTING

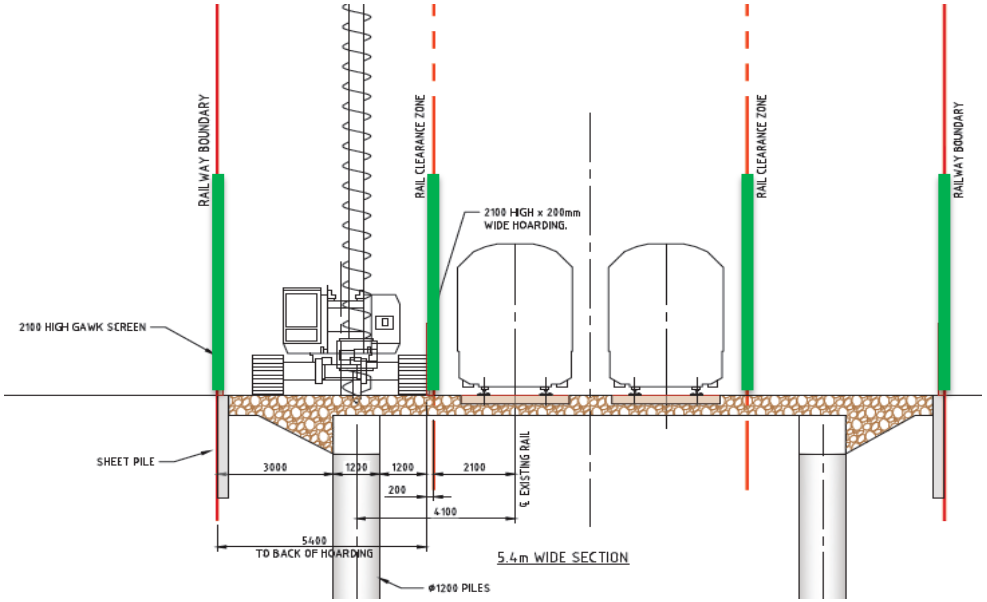




TILT SIGNALS



AREA 1 - CREATING A SAFE / OFFLINE CONSTRUCTION ZONE



- Very narrow 20m rail corridor
- Install barriers – create safe zone
- Work in area between barriers and rail boundary – 5 to 6m working room

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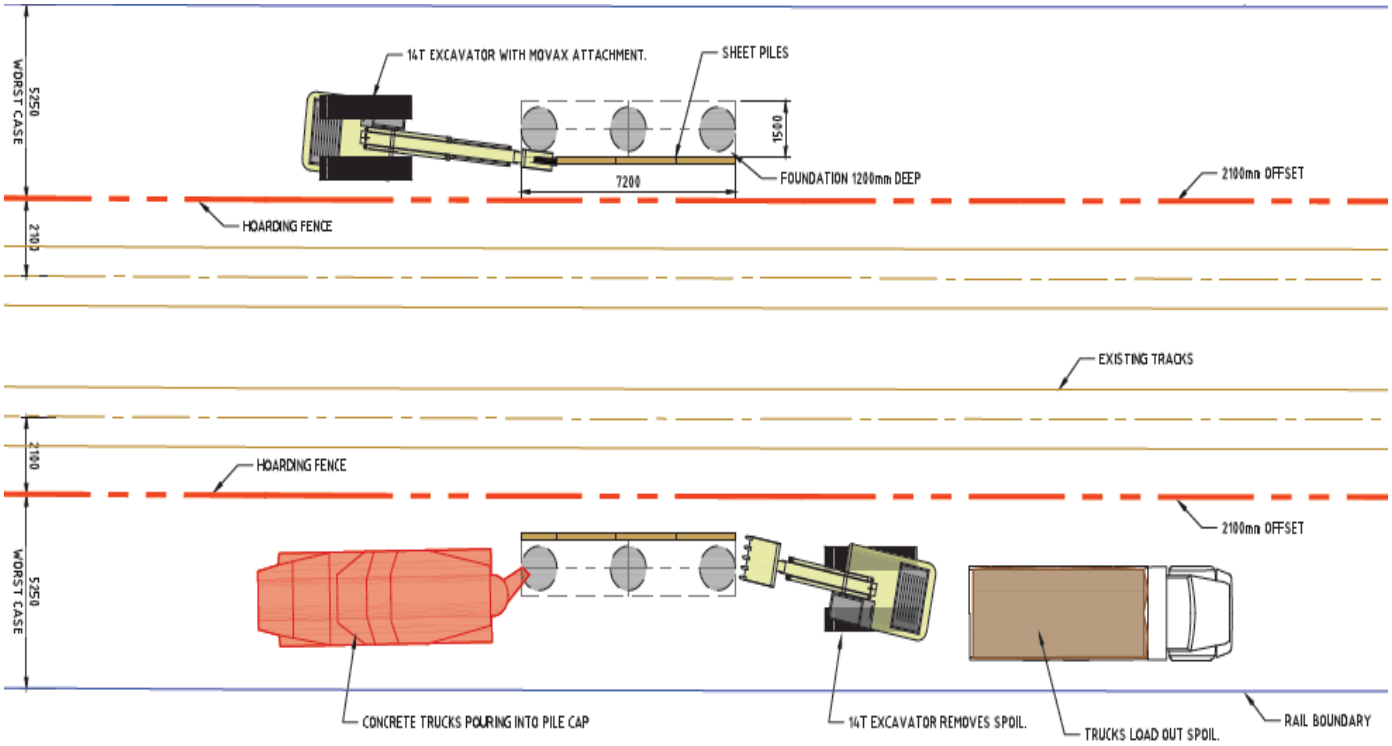
AREA 1 – MINIMIZING DISRUPTION



- Piles and pile caps cast in situ behind hoarding
- Bridge piers and deck are precast
- 90% of viaduct construction completed offline with no impact to train services

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AREA 1 – CARRIER CONSTRUCTION METHOD

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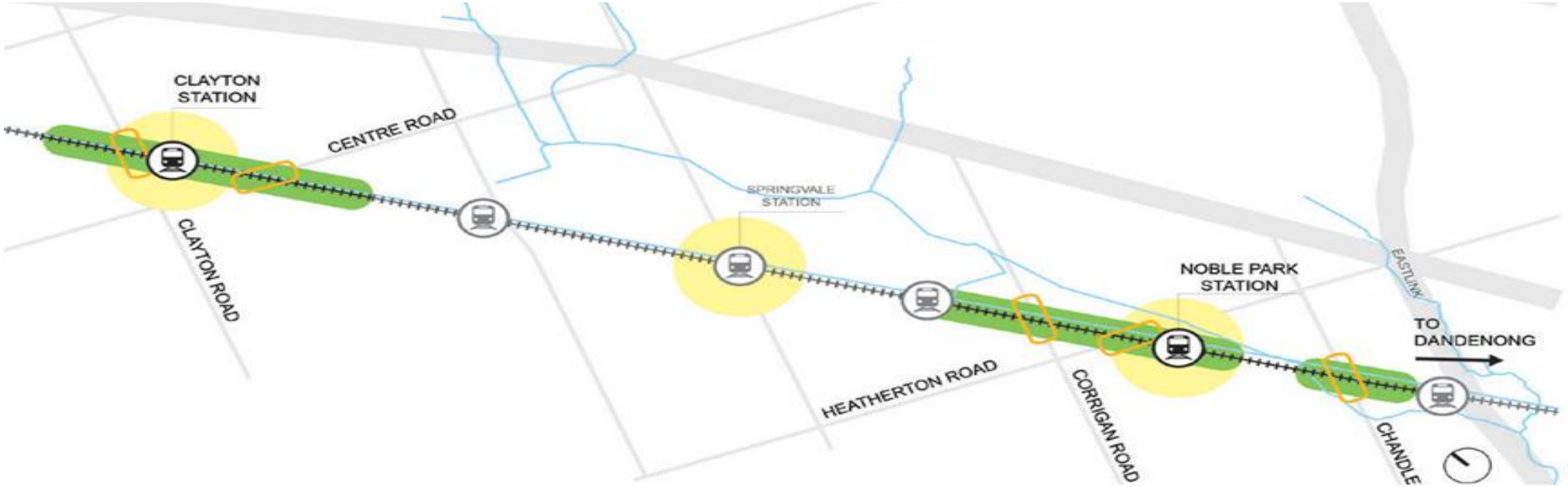
CTD CONSTRUCTION – AREA'S 2 AND 3



- Similar to Area 1 – rail safety, offline construction, precast
- Access easier from adjacent local roads
- Access allows Super-T construction – highly efficient

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CTD CONSTRUCTION IMPACT

9 level crossings removed using:-

- 24 Weekend occos
- 1 x 8 day occo
- 2 x 16 day occos

90% of all construction offline.

Note: Occupations for level crossing removals only. Additional occos required for wider CPLU works.

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KEY MESSAGES

Step 1 - Work packaging

No ‘one size fits all’ solution

Step 2 - Aim for minimal railway intervention solution

Step 3 - Innovative construction

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Questions?