

# Simpson Street Stormwater Management System

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- **WHY IS MAINTENANCE IMPORTANT IN DESIGN?**
  - **PROJECT BACKGROUND**
  - **DESIGN CONSIDERATIONS**
  - **DEVELOPED CONDITIONS FLY OVER**
  - **SPECIAL DESIGN CONSIDERATIONS FOR MAINTENANCE**
  - **QUESTIONS?**
- 



- Different ways to design infrastructure
- Great engineering design & construction
- Failure in performance
- Maintenance



# • Maintenance in early stages

- Communication with asset owners and stakeholders
- Understanding of the limitations and capacities
- Understanding of the design preferences
- Preparation of the maintenance plan
- Simplifying the proposed infrastructure where possible

# Project Background

SLIDE 5

- Potential Failure of Simpson Street Tunnel
- Flood Protection
- Stormwater Harvesting and Supply to WRC
- Stages of Works





**Russel Creek**

**Tozer Road and Channel**

**Racecourse Internal Drainage**

**Simpson Street**

**Racecourse Outlet Joining the Creek**

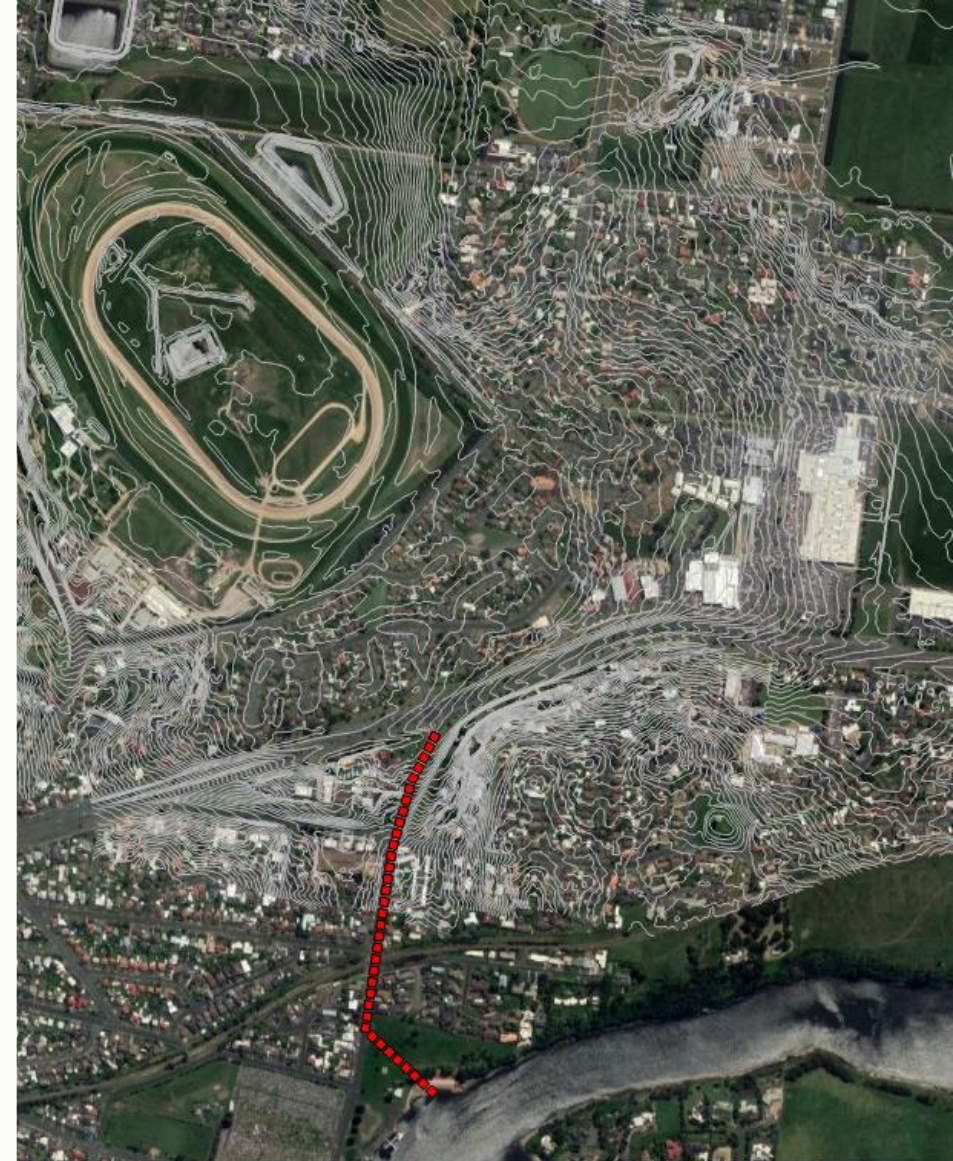
**Existing Racecourse Outlet**

**Park Street Drainage Outlet**

# • Design and Construction Stages

SLIDE 7

- Simpson Street Tunnel lining & protection
- Construction of box culvert under the race track
- Construction of retarding basin & associated infrastructure to cater for existing catchment plus 24ha diverted catchment
- Extension of retarding basin to cater for additional 61ha



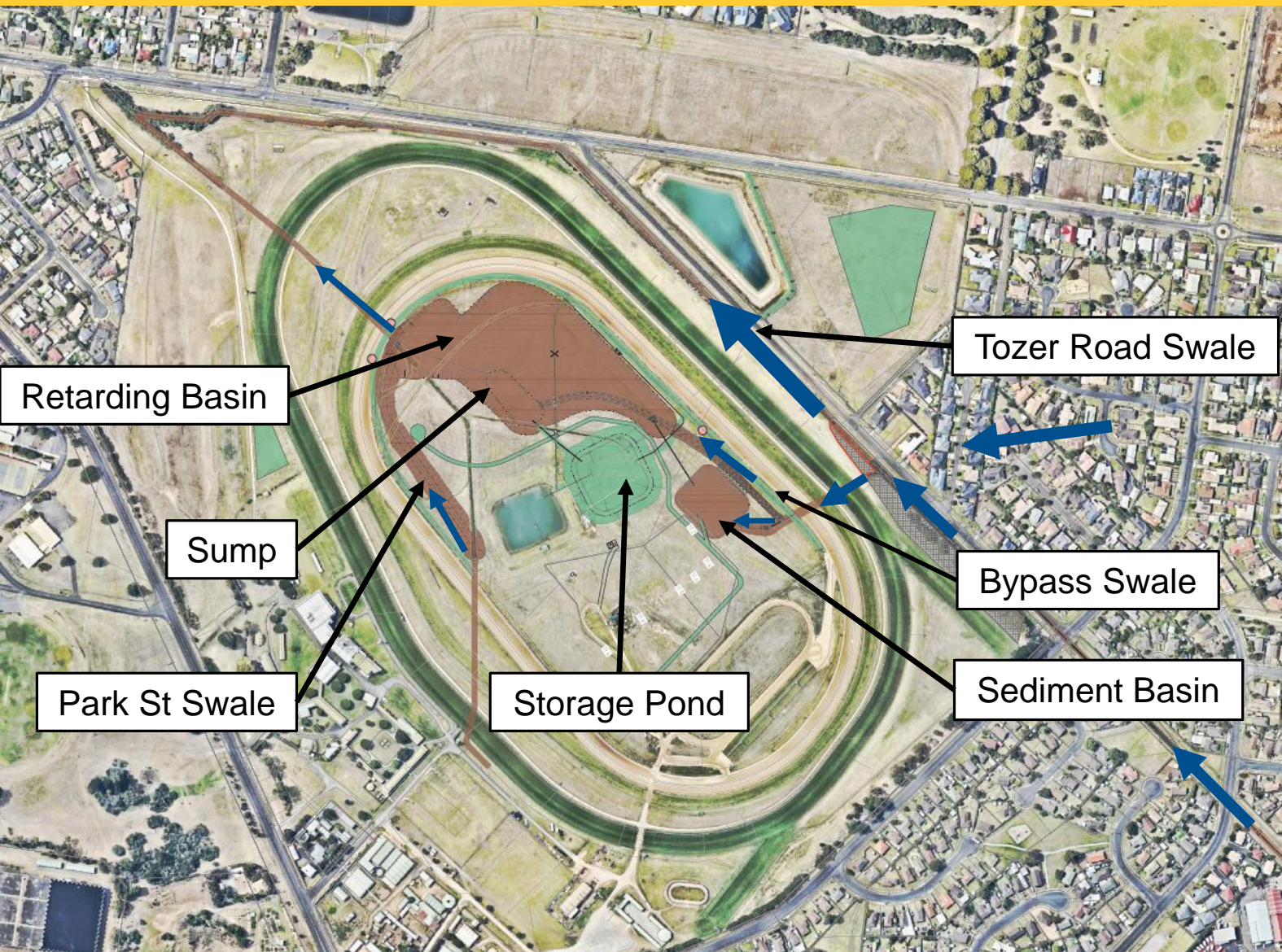


# Design Considerations

- Diversion of runoff towards the retarding basin via pit and pipe
- Diversion of low-flow towards the sediment basin
- Diversion of 10% AEP flow to the retarding basin
- Management of 1% AEP overland flow-path
- Consideration of an emergency backup to avoid overflow on the race track
- Maintenance of Park Street drainage



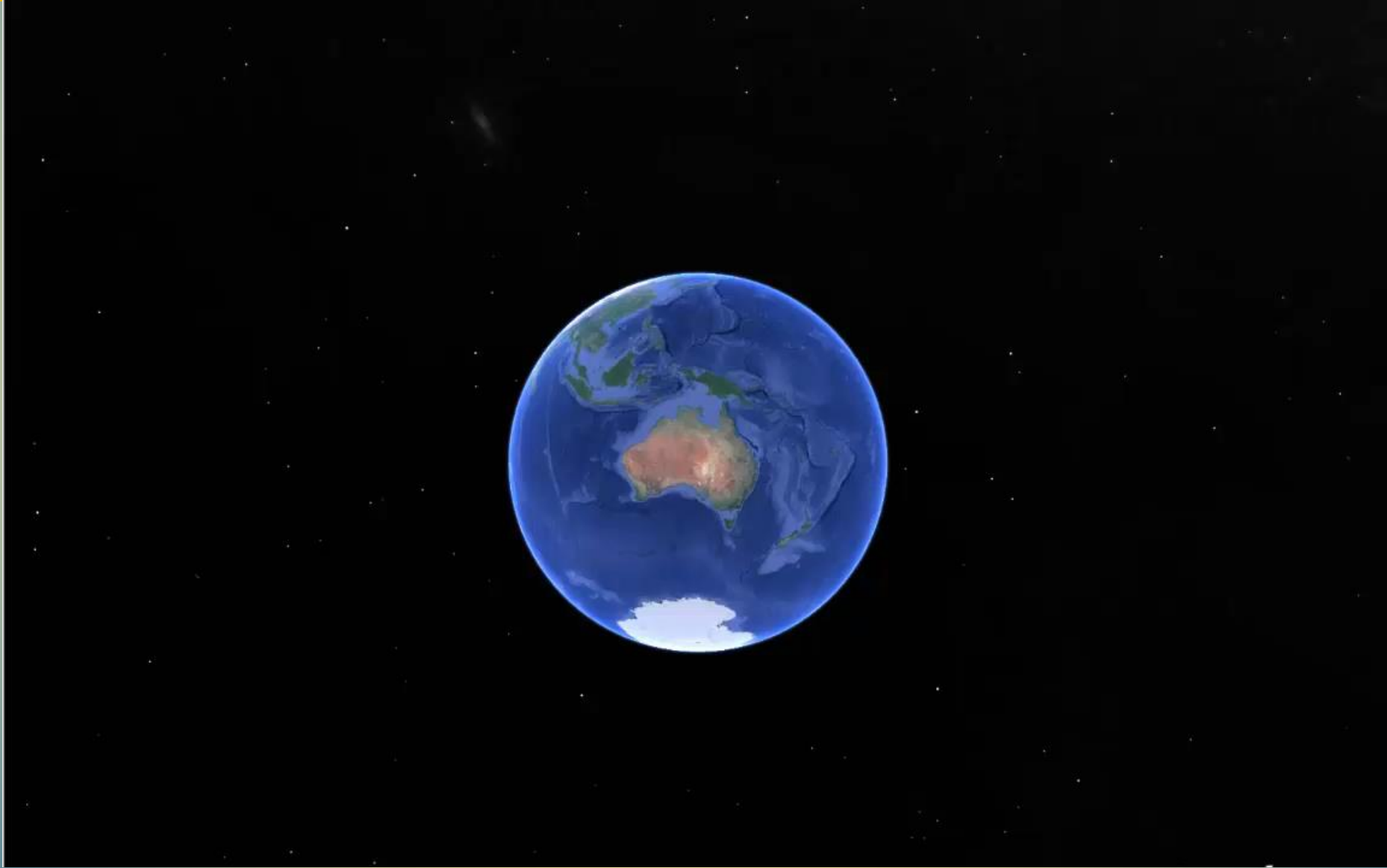
# Designed infrastructure



- pipes & pits system
- The flowrate up to 10%AEP will be diverted towards the retarding basin
- The flowrate higher than 10% AEP will be directed to the Tozer Road channel
- Sediment basin will cater for the flow up to 3mnts (95% AEP)
- Higher flow, up to 10% AEP will be directed to the Retarding Basin
- The existing outlet will cater for the flow discharging from Park Street drainage system and the Retarding Basin



# Developed Conditions Fly Over



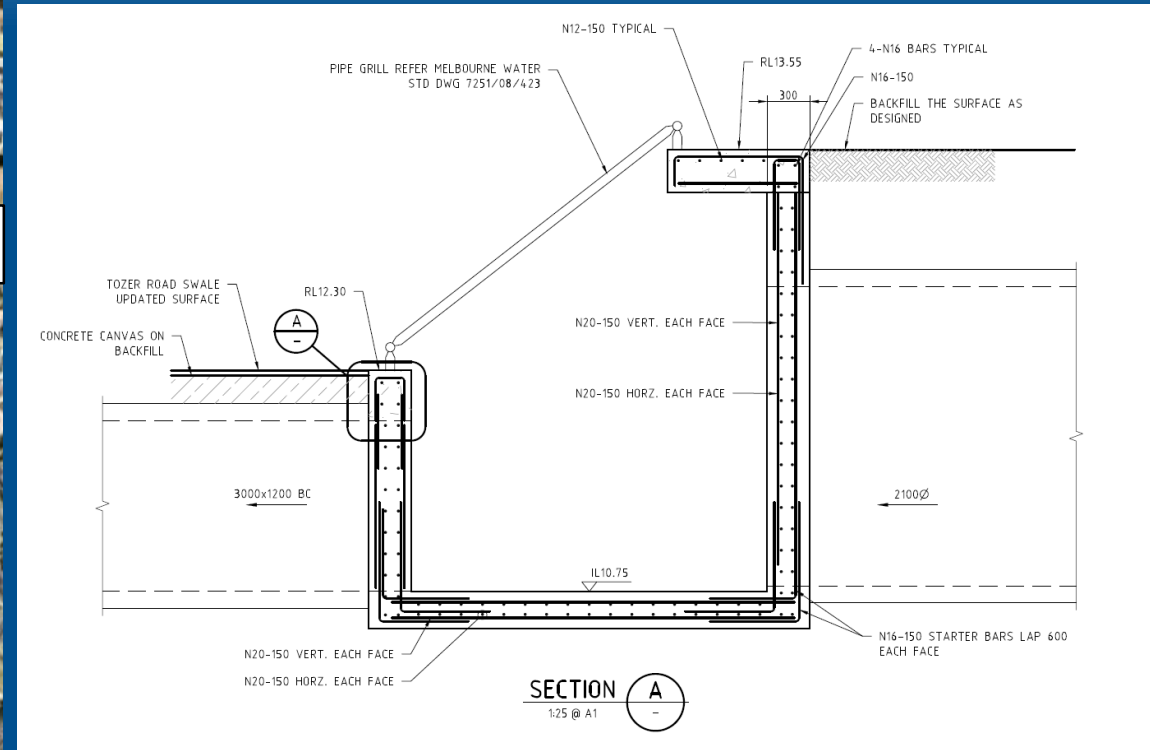
# Special Design Considerations for Maintenance

# • Maintenance considerations

- Automatic diversion with minimum manual involvement
- Self cleaning factors
- Simplicity
- Safety
- Cost effectiveness



# Key Elements & Proposed Layout Plan



# • Conclusion

- The goal of designing an infrastructure is to be able to use it when is required.
- Evolution of design vs construction/maintenance cost.
- Auto diversion of runoff reduces the risk of wash out during a major event.
- Communication with the relevant stakeholder and infrastructure owner.
- Considering the constructability & maintainability of the proposed infrastructure.
- Analysis of design safety.

Questions?

