



# Principles of good transfer station design - practical applications

Andrew Quinn

Technical Director – Waste and Resources Management

global **environmental** and **advisory** solutions



# What's this all about?

- ➔ • Why listen to me?
- Who is SLR?
- What are transfer stations?
- What are the elements of good transfer station design?
- What are the practical applications?

# Why listen to me?



- 30 years in the waste management industry
- Many transfer station designs
- Judge 2015 and 2017 National Landfill and Transfer Stations Innovation and Excellence Awards
- Design and business case for TS, northern NSW
- Concept design for Wagait Beach TS, NT
- TS Feasibility Study and Master Plan, Lithgow, NSW
- SV TS Concept Design, Wollongong, NSW

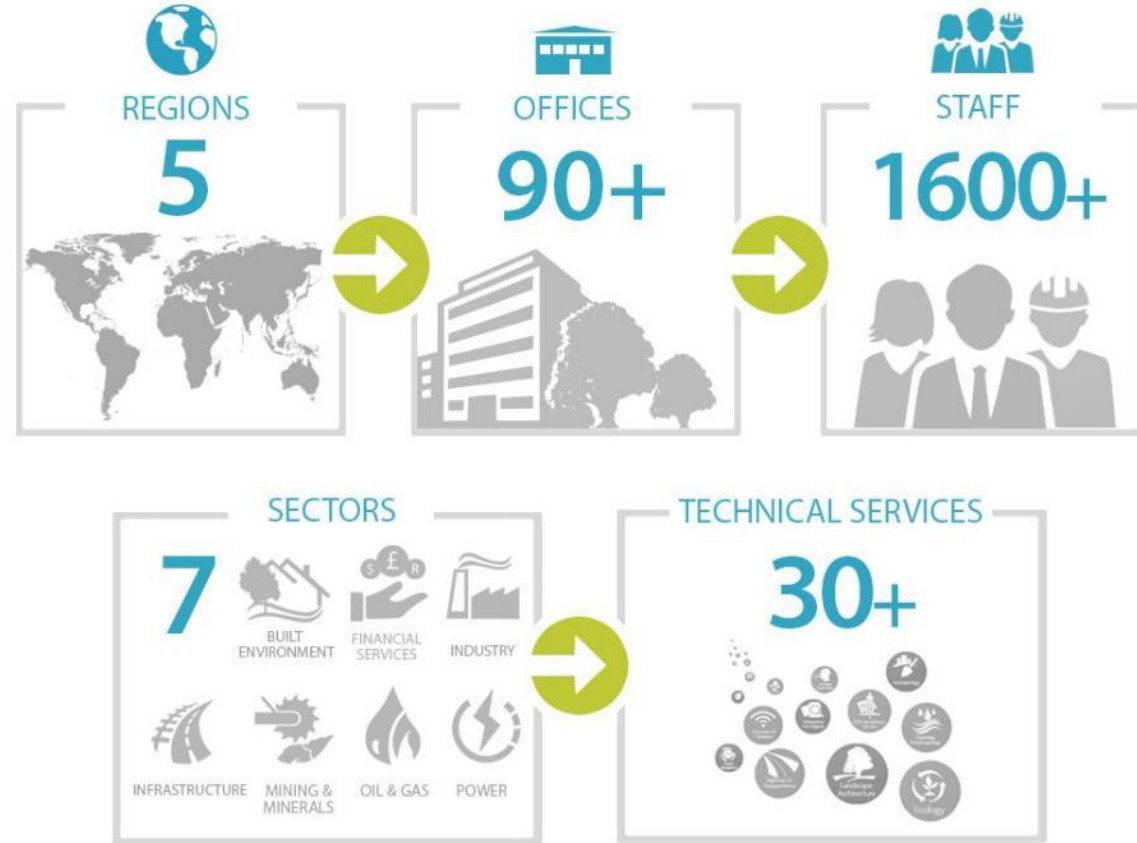


# SLR



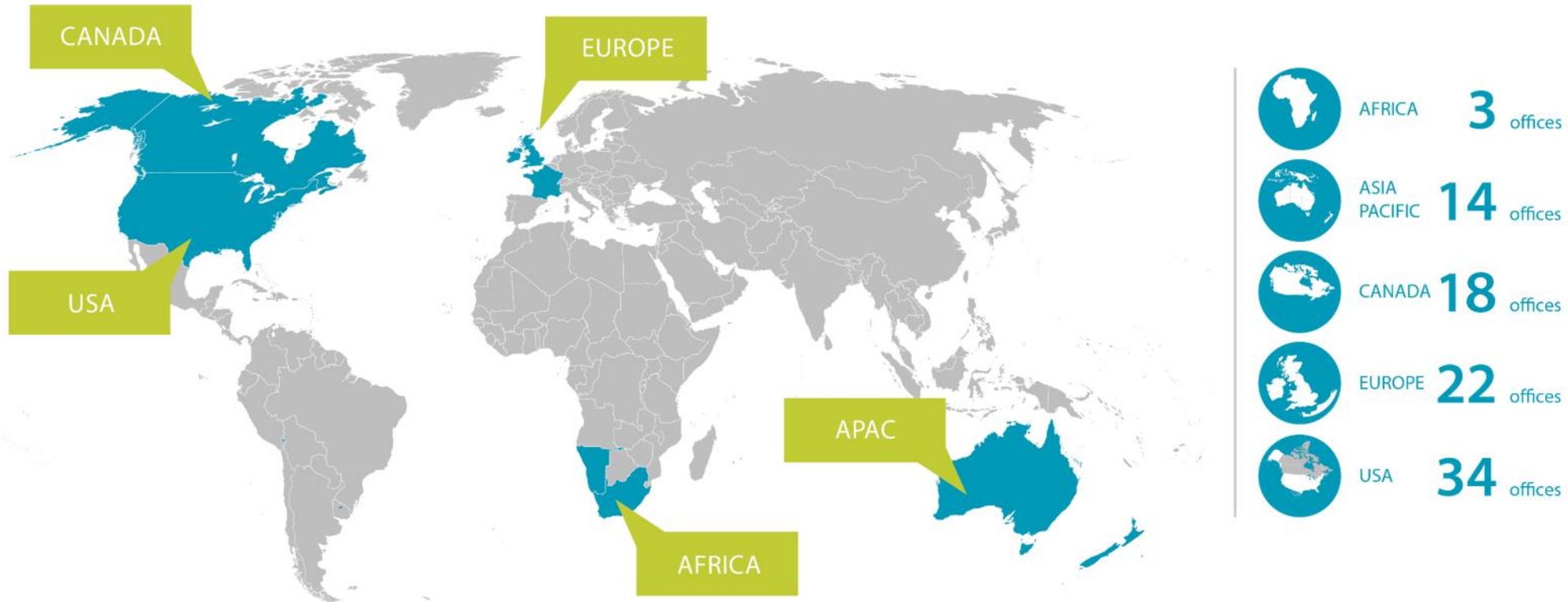
SLR delivers global **environmental** and **advisory** solutions

We provide advice and services to clients in the oil and gas, mining and minerals, infrastructure, built environment, industry, financial and power sectors.



# SLR GEOGRAPHY

We deliver global environmental and advisory solutions from a network of offices in five regions covering Europe, the US, Canada, Asia-Pacific and Africa.



global **environmental** and **advisory** solutions





# SLR ASIA-PACIFIC

We deliver global environmental and advisory solutions from a network of offices across Asia-Pacific.



# What are transfer stations?



- Consolidation point for small loads and quantities from many sources
- Larger loads and quantities for transfer to disposal or recovery
- A couple of bins up to very large facility
- Few hundred tonnes of waste up to hundreds of thousands plus wide range of materials and facilities
- No long-term storage



# Why are transfer stations important?

- ➔ • Enable screening of waste
- Improve recovery, reduce contamination
- Identify hazardous and dangerous materials
- Reduce transport costs
- Local community facility, more convenient
- Safer, more pleasant than landfills





# Standards and Guidelines



- No standards for design
- US EPA Guidelines
- Guidelines for remote and regional facilities in NSW
- SV Best practice for resource recovery centres – 2019
- WALGA – Reuse Shops



# Principles of Good Design



- One way traffic
- Recovery before disposal
- No crossing of traffic, no intersections
- Small vehicles and heavy vehicles separate
- Moving plant and customers separate
- No fall from heights
- Space for reversing



## FALLING FROM HEIGHTS AT WASTE MANAGEMENT FACILITIES

Safety Alert | 09/03/2015

This alert highlights the potential risks of falling from a height at a waste management facility such as a landfill, waste transfer station or resource recovery centre.

### BACKGROUND

In 2014 there were two incidents at waste management facilities where a member of the public received fatal injuries.

In one incident, a person fell from a transfer platform into a waste bin. To unload waste directly into the bin, the person backed their utility vehicle under the chain that ran along the edge of the platform. While trying to unravel the chain from the back of the vehicle, they fell into the bin.

In the other incident, a person fell from the back of their paneltech truck into a compactor (or push) pit. The person was at the commercial side of the pit at the time, which did not have edge protection as it was only intended for trucks that mechanically tip waste into the pit.

### ACTION REQUIRED

Business owners and workers of a waste management facility should review their site for potential risks of falling from heights. Where possible, eliminate risk of falls - eg by providing ground level disposal. If the risk can't be eliminated, risks should be minimised.

Control measures may include:

- In all areas:
  - use wheel stops and line markings to keep all vehicles a safe distance from edges
  - install safety signs at all disposal points – pictorial diagrams work best
  - provide supervision and instruction to everybody using the facility.
- In public areas, where waste is manually disposed:
  - design, install and maintain edge protection – eg a solid railing or wall – for all push pits and transfer platforms, or where there is the risk of a person falling
  - install a chute or something similar to allow waste disposal a safe distance from the edge
  - provide a drop off facility for waste that is too heavy or awkward to push through a chute or over a wall or railing
  - keep disposal areas clean and tidy.
- In commercial areas, where waste is mechanically disposed:

# Nice to Haves

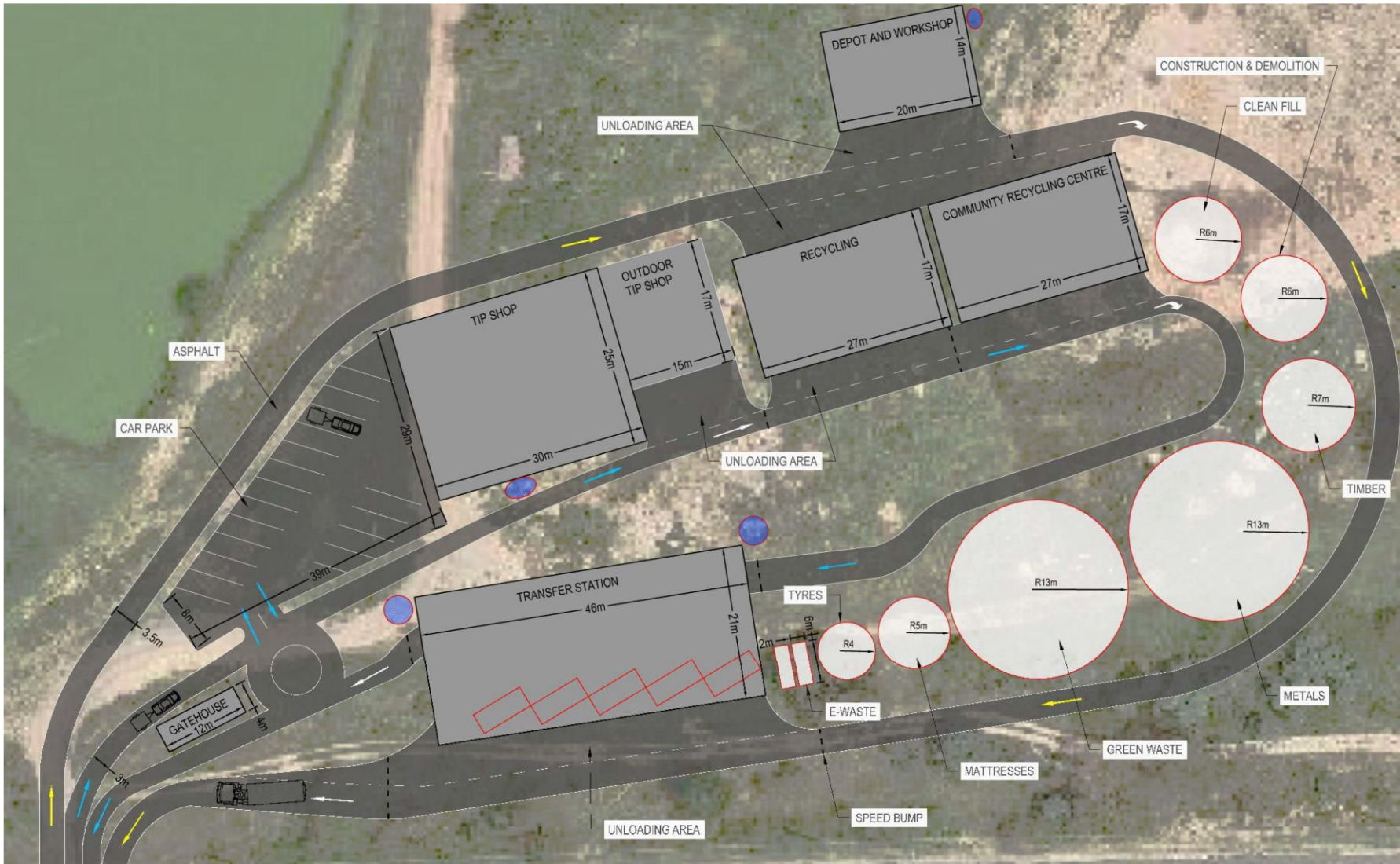


- Variable charging
- Weighbridge
- Under cover
- Security – gates, fences, lights, CCTV
- Gatehouse window
- Gatehouse traffic visibility
- Queueing space
- Bypass lane
- Bypass circulation
- Bin manoeuvring area





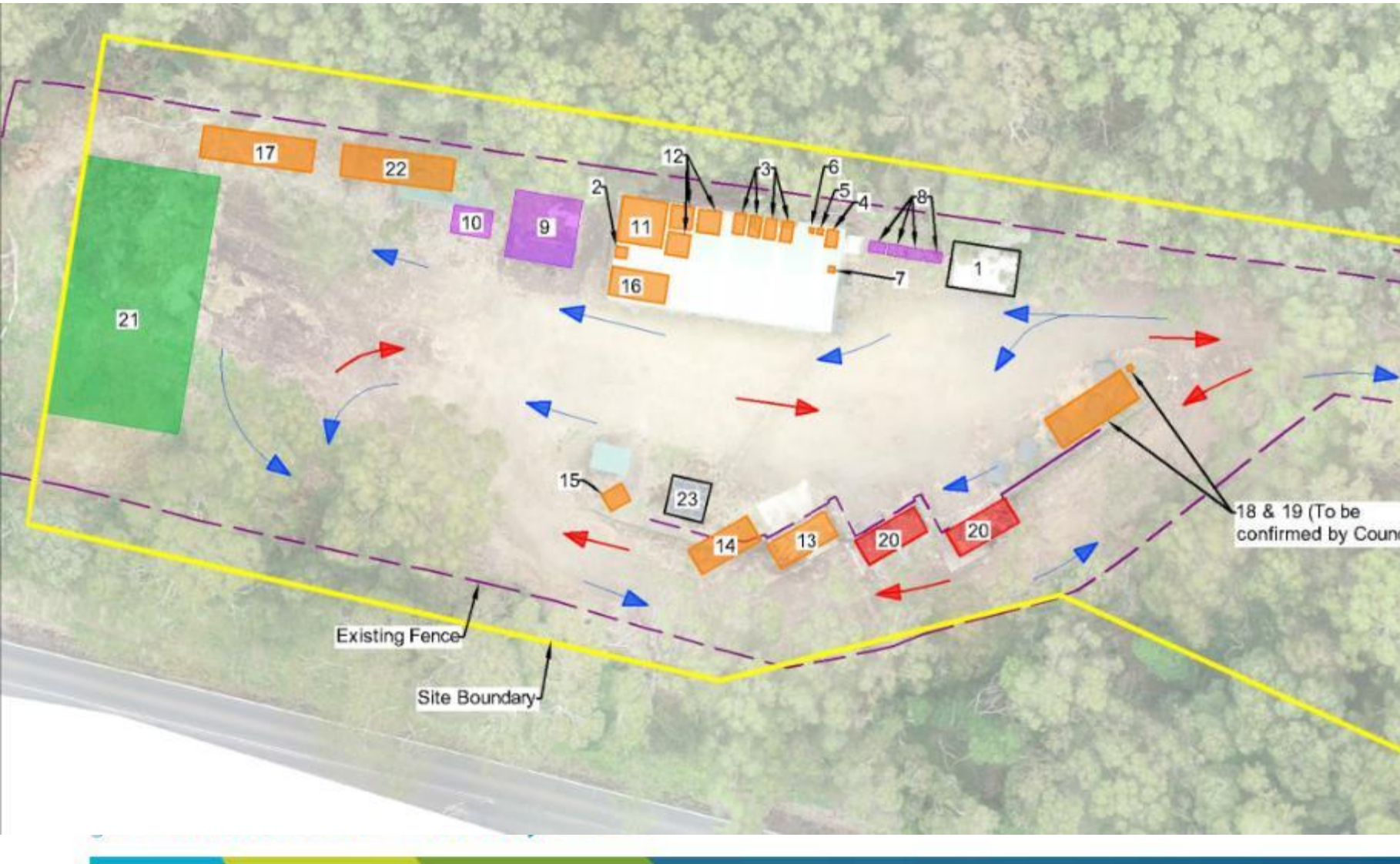
# Examples



- One way traffic ✓
- Recovery before disposal ✓
- No crossing of traffic ✓
- No intersections ✗
- Queueing space —
- Reversing space ✓
- Small vehicles and heavy vehicles separate ✓
- Moving plant and customers separate —
- No fall from heights ✗
- Variable charging ✗
- Weighbridge —
- Under cover ✓
- Security – gates, fences, lights, CCTV ✓
- Gatehouse window ✓
- Gatehouse visibility ✓
- Bypass lane ✗
- Bypass circulation ✓
- Bin manoeuvring area ✓



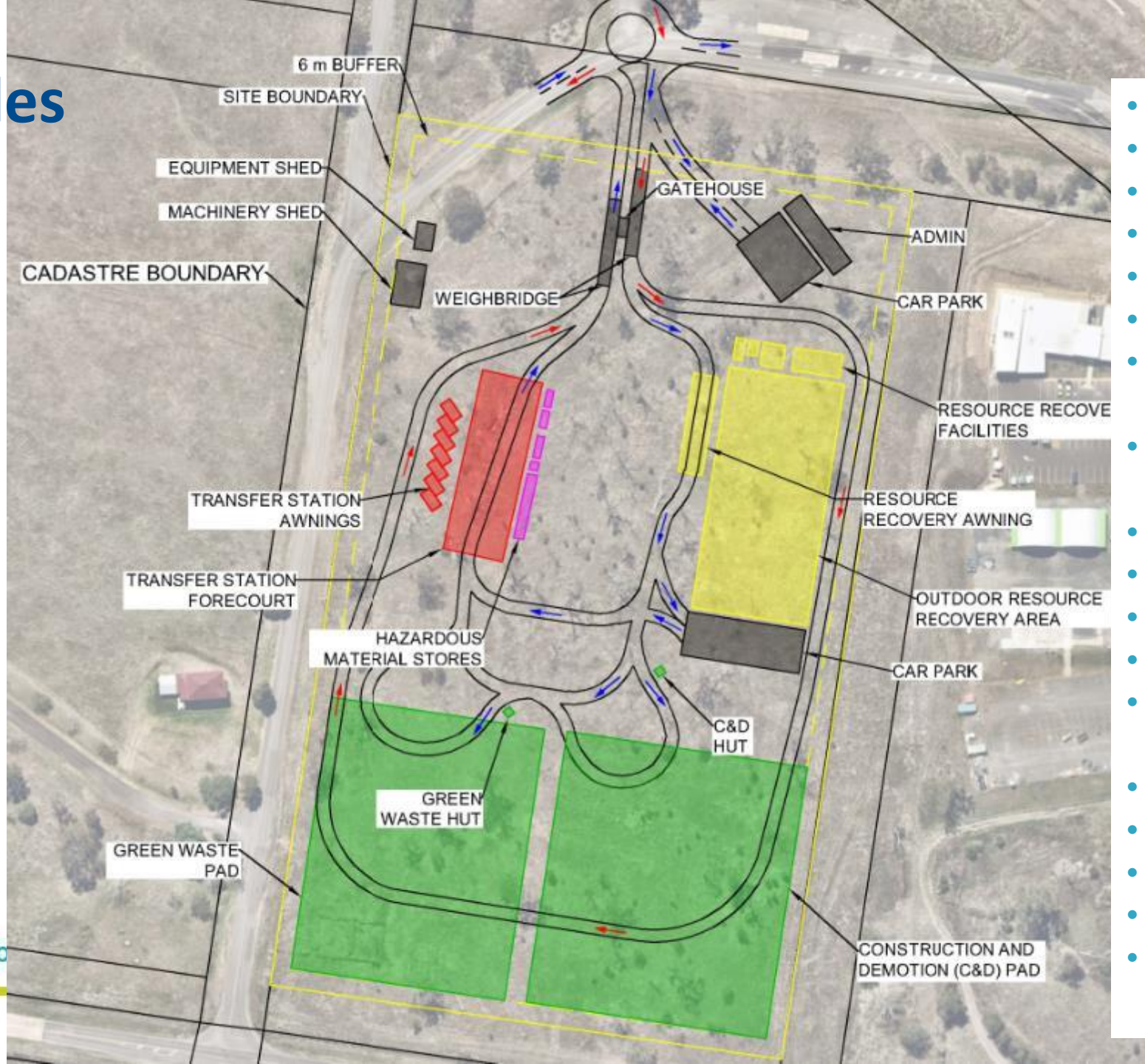
# Examples



- One way traffic ✓
- Recovery before disposal ✓
- No crossing of traffic ✓
- No intersections ✓
- Queueing space ✓
- Reversing space ✓
- Small vehicles and heavy vehicles separate —
- Moving plant and customers separate —
- No fall from heights ✗
- Variable charging ✗
- Weighbridge ✗
- Under cover —
- Security – gates, fences, lights, CCTV ✗
- Gatehouse window ✓
- Gatehouse visibility ✓
- Bypass lane ✗
- Bypass circulation ✓
- Bin manoeuvring area ✓



# Examples



- One way traffic ✓
- Recovery before disposal ✓
- No crossing of traffic ✓
- No intersections ✗
- Queueing space ✓
- Reversing space ✓
- Small vehicles and heavy vehicles separate —
- Moving plant and customers separate ✓
- No fall from heights ✗
- Variable charging ✗
- Weighbridge ✓
- Under cover —
- Security – gates, fences, lights, CCTV ✓
- Gatehouse window ✓
- Gatehouse visibility ✓
- Bypass lane —
- Bypass circulation ✓
- Bin manoeuvring area ✓

# Summary



- Very difficult to design the ideal transfer station
- Constraints and compromises
  - Site size
  - Site shape
  - Existing infrastructure
  - Location
  - Access points
  - Neighbours
  - Quantities
  - Types of materials
  - Client's wants
  - Cost
  - Topography



# THANK YOU QUESTIONS?



**Andrew Quinn**

**Technical Director, Waste and Resources Management – SLR Consulting**

- t** +61 (0) 477 013 217
- e** [aquinn@slrconsulting.com](mailto:aquinn@slrconsulting.com)
- w** [www.slrconsulting.com](http://www.slrconsulting.com)