

# **The Challenge of delivering the 'D' in Transit Oriented Development: Examining the Town Planning contribution**

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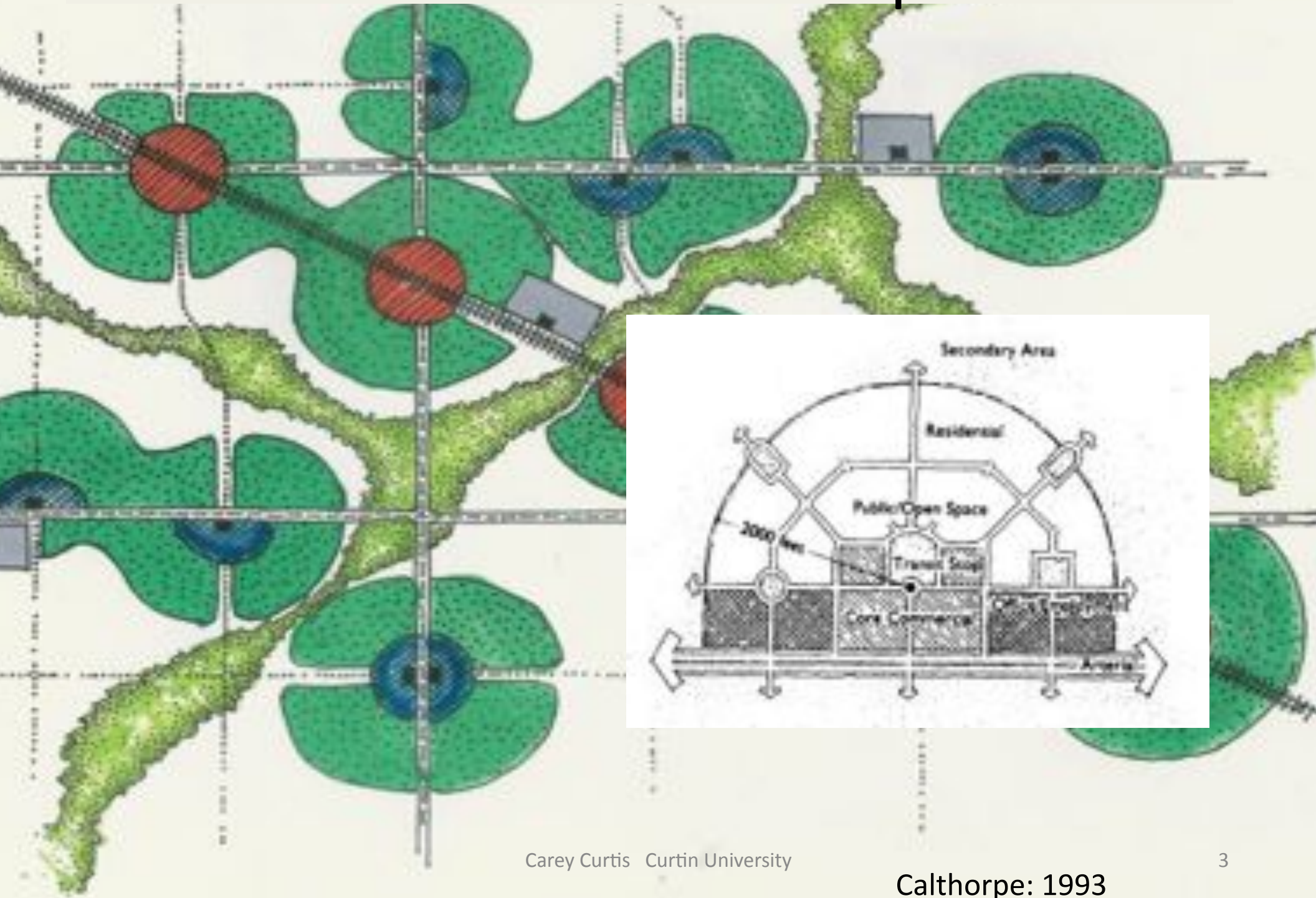
Curtin University

Australia

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# Context

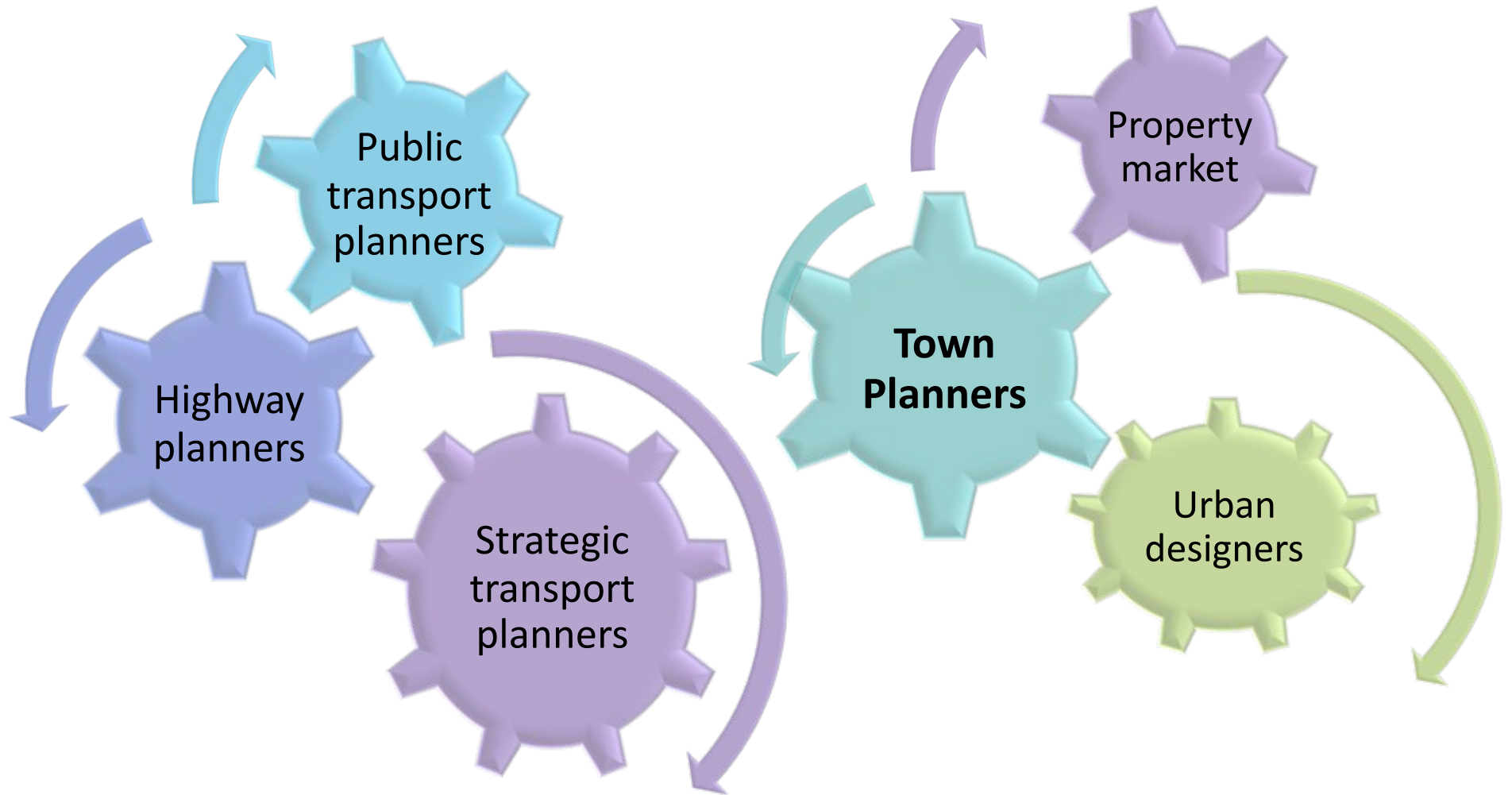
# Transit oriented development



# TOD – implementation difficulties

- Town planning:
  - Need good land use plans to provide certainty for developers
  - Bad land use plans/ inflexible planning standards are counterproductive
  - Existing land use patterns make TOD difficult
    - Fragmented ownership
- Institutional environment:
  - Fragmentation across agencies compounds implementation challenge
- Spatial outcomes:
  - US – implementation is patchy

# Integration and coordination



# Research approach

# Case Study: Perth

- one of the most deliberate attempts worldwide to move from car dependent development patterns to transit oriented development
- long standing TOD policy, first introduced in 1988
- three different town planning approaches to implement TOD:
  - 1) conventional town planning process whereby State policy is translated to local policy and implementation depends upon private sector developer action;
  - 2) Redevelopment Authorities where conventional town planning process is suspended; and
  - 3) State as developer operating a quasi RDA model.

# Research investigations...

- 1) A policy content analysis examines the articulation of state planning policies for TOD to the local government level.
- 2) A mapping analysis is made of land use in 2007 in Perth's 68 station precincts.
- 3) An assessment is made of which town planning approaches are most effective in implementing TOD
- 4) The relationship between town planning action and transport infrastructure implementation is considered.



# Planning policy for TOD

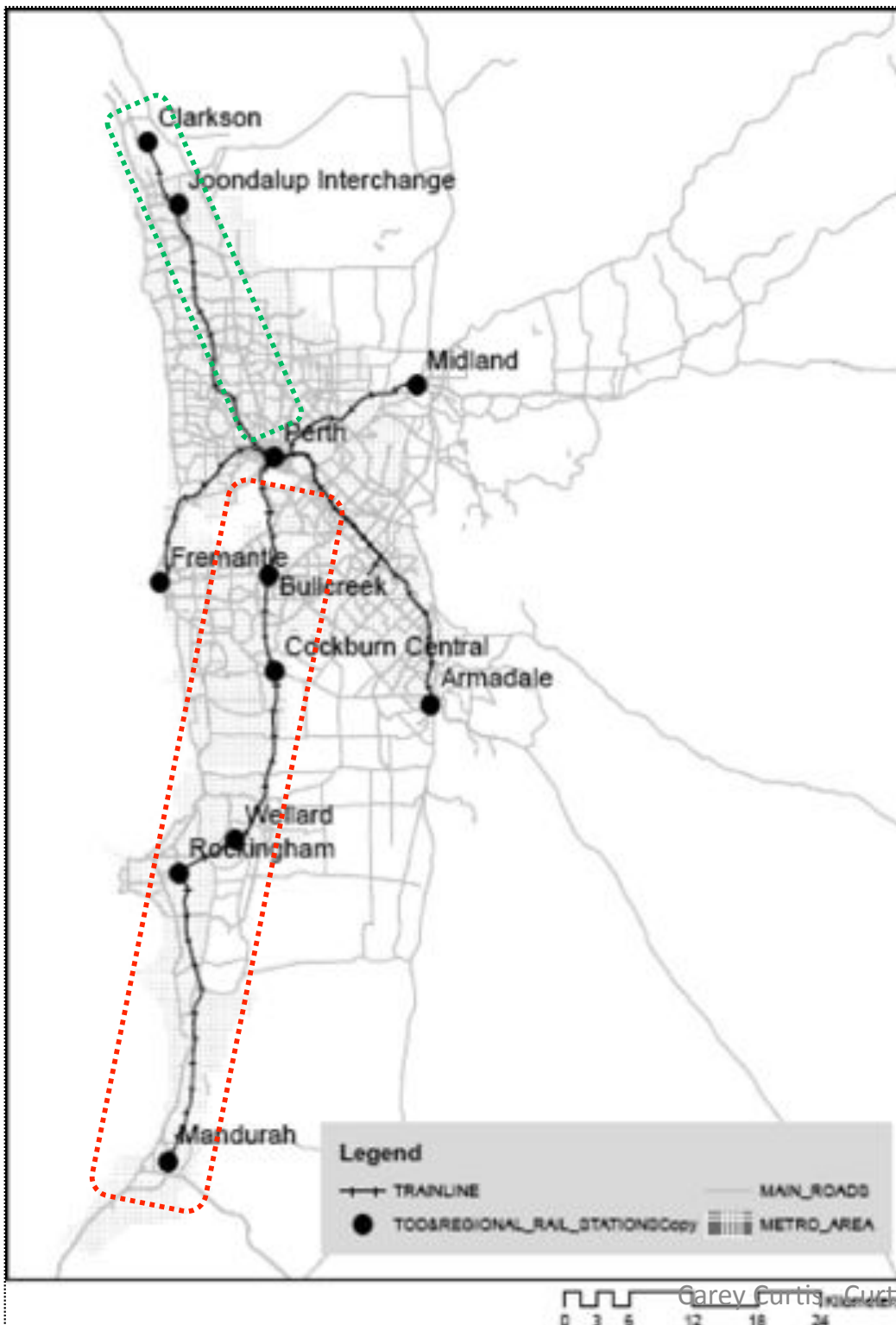
# History of Railway Developments

- Perth has seen strong investment in public transport infrastructure compared to past approach of a city designed for mobility by car:

- Early railway lines:
  - Fremantle (1881); Midland (1881); Armadale (1889);
- New lines:
  - Northern suburbs (1992)
  - Southern suburbs (2008)

- But...designing a transport system to compete with the car in a low density dispersed city raises significant challenges:

- Station spacing versus speed;
- Integration of stations within existing centres;
- Transport reserve – pragmatic solutions



Implications for built form

## Australian City to Suburban Railways: Average Journey time

City	Rail line (Station-Station)	Distance (Centre to Terminus)	Peak hour travel time (hours:mi ns) (fastest service)	Average Speed
Perth	1) – Mandurah	72 km	0:47	92 kph
	2) – Clarkson	32 km	0:33	60 kph
	3) – Fremantle	18.7 km	0:24	47 kph
Brisbane	Central – Robina	85 km	1:15	68 kph
Sydney	Central – Macarthur	62 km	1:02	60 kph
Adelaide	Flinders – Craigieburn	27 km	0:35	46 kph

In Perth the key objective was the ability to compete with the car for the journey to work :

- first 33kms of railway sits in freeway median
- Regional centres at Mandurah and Rockingham are by-passed (public transport transfers)

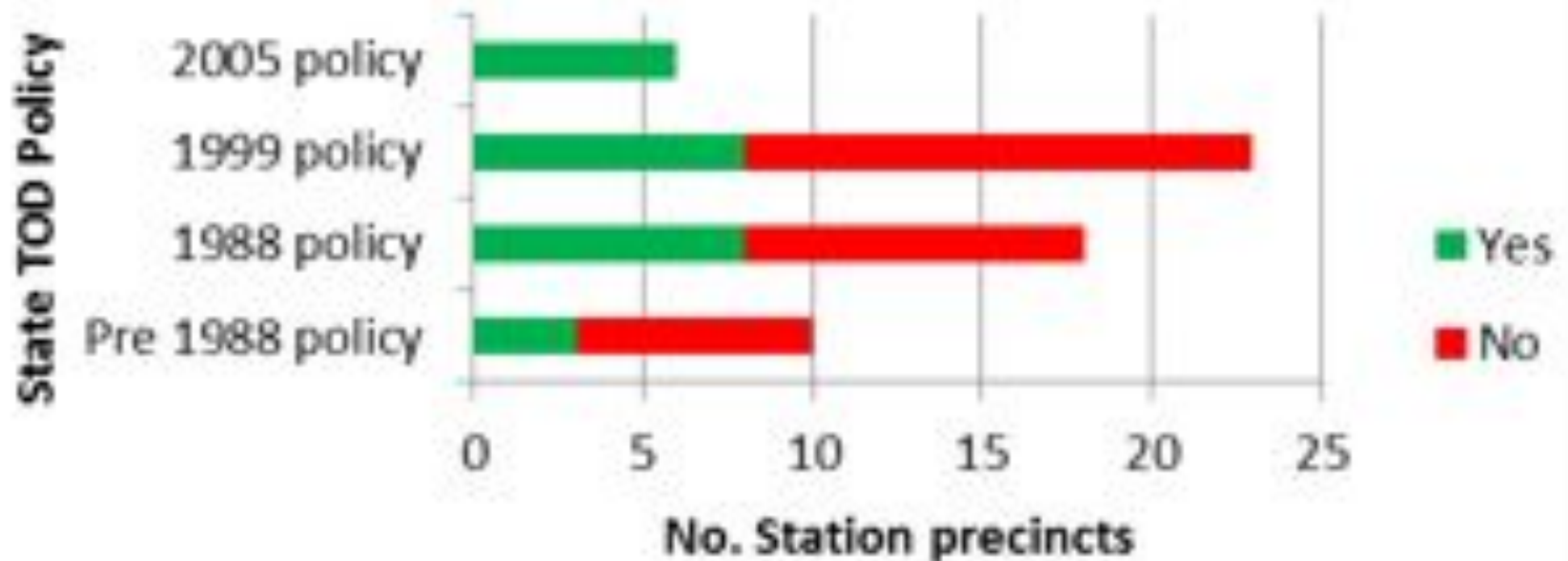
## State Development Control Policy for Transit oriented development

Policy	Summary of Approach	Date
DC1.6 Residential Development near Metropolitan Railway Stations	- minimum densities of 'R40' (translates to a density of about 35 dwellings gross per hectare)	1988
DC 1.6 Planning to Enhance Public Transport Use	- 'medium to high density' (actual density not stipulated), - added bus routes within residential sub-divisions and need to optimise land use around high frequency bus routes	1999
DC 1.6 Planning to Support Transit Use and Transit Oriented Development	- "transit oriented precincts" defined - 800 m distance, - minimum density of 25 dwellings per hectare (substantially higher in close proximity to a rail station... major bus interchange..) - significant generators of transit trips should be located close to transit facilities	2005

FINDINGS

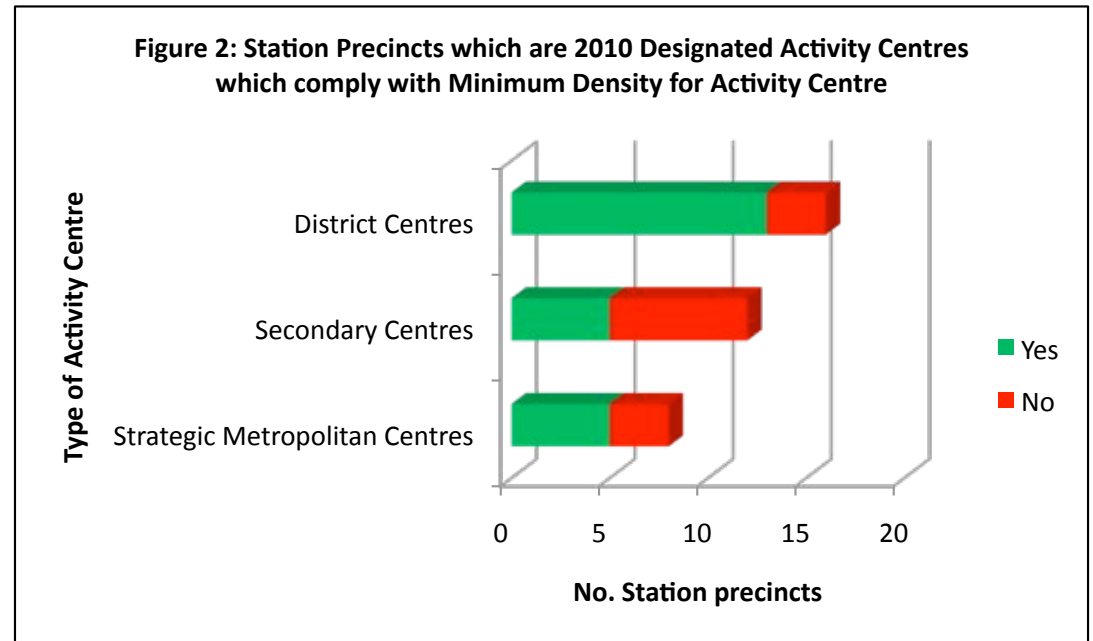
# **Implementation: Local planning policy intent**

**Figure 1: Station Precincts which complied with State TOD Density policy applicable at time of gazettal of Planning Scheme**



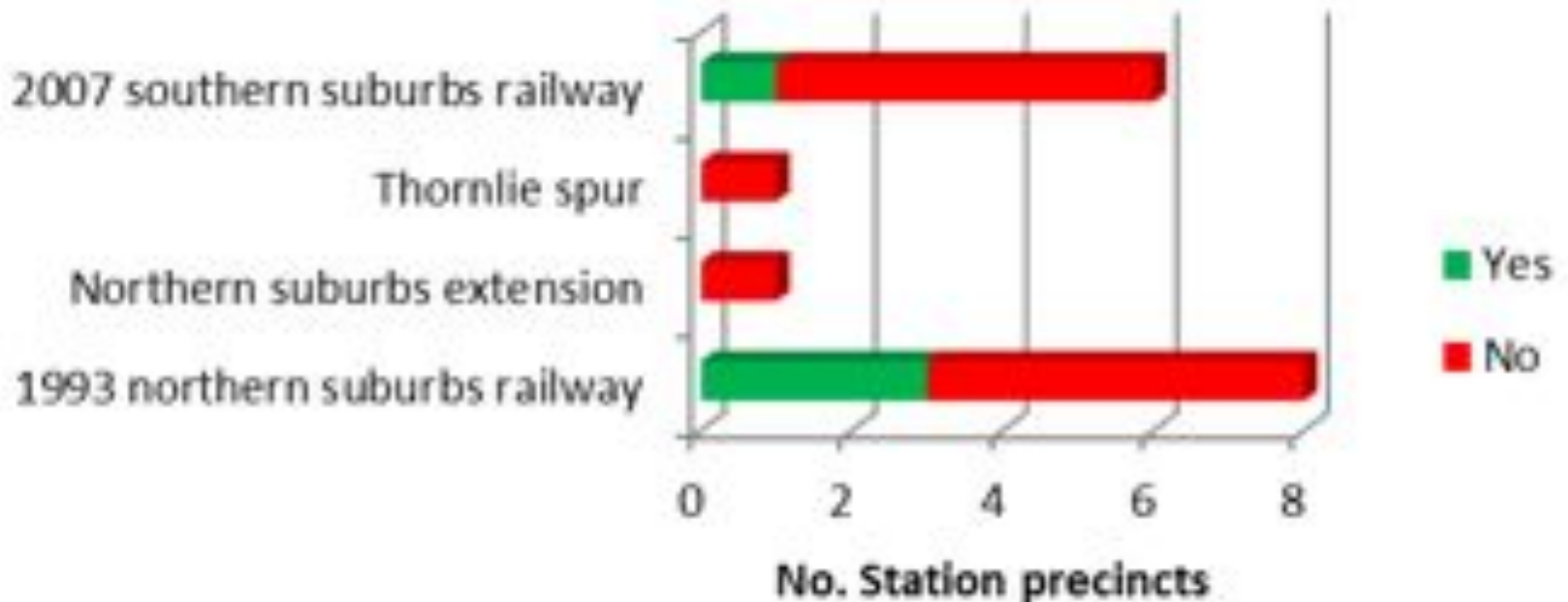
# Which station precincts should be TODS?

- State TOD policy does not distinguish between station precincts.
- Other state policies:
  - Metropolitan Centres 1991
    - 5 Strategic Regional Centres
    - retail floorspace caps, silent on other uses



– Activity Centres 2010

**Figure 3: Station Precincts on new railway lines which comply with State TOD policy for residential density**





# Assessing intensity of non-residential use

- No density equivalent for land zoned for employment use
- In depth study of three station precincts found:
  - Uses incompatible with TOD
  - Uses with 5 or fewer employees
  - Development assessment failed to implement TPS



City of Cockburn draft TPS (2002) showing approx. 1km area from station centroid.

-  Business zone
-  Regional centre zone
-  Region reserve – restricted public access

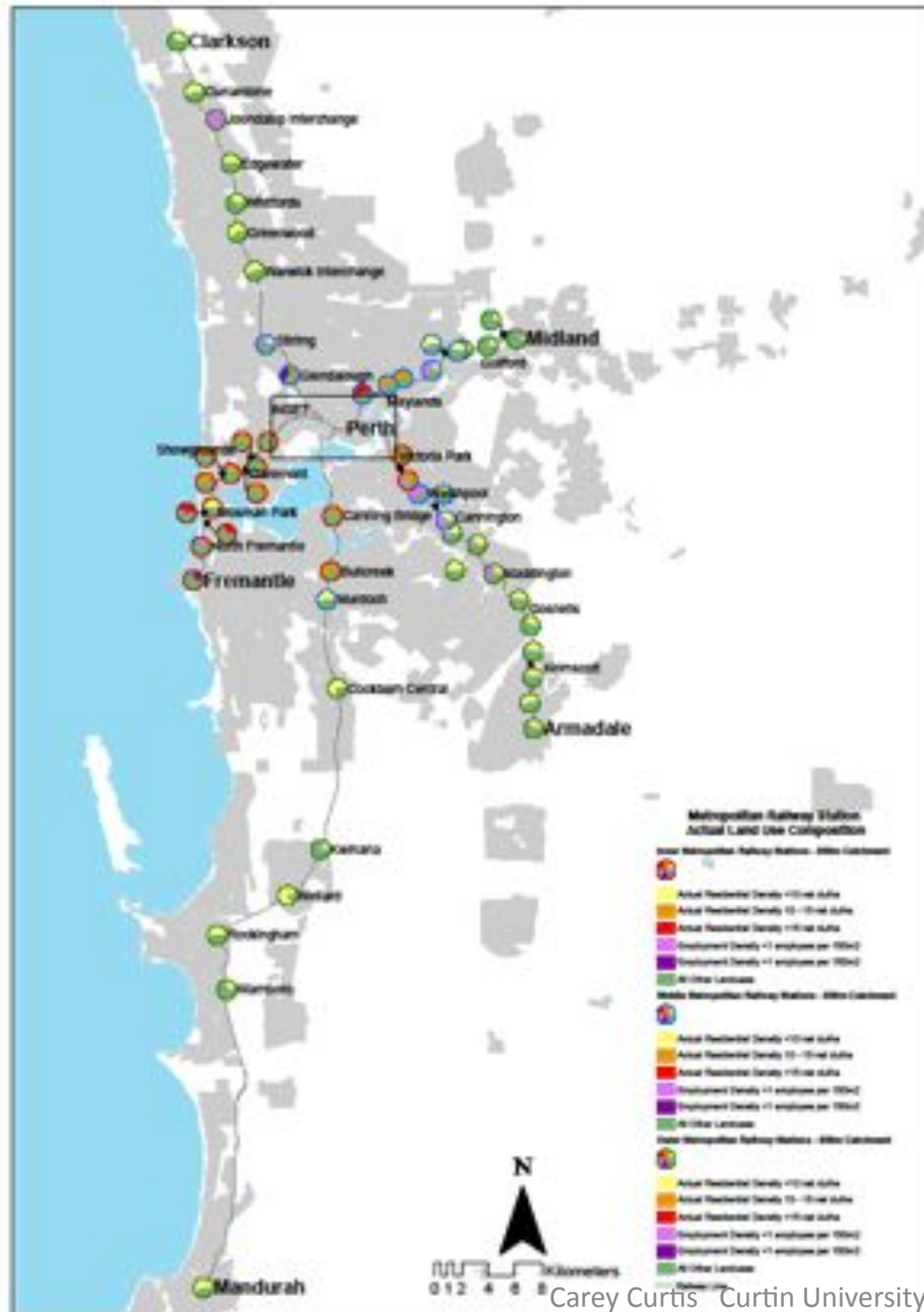
# Most progress in implementation has been via public intervention...

- **Subiaco** – Redevelopment Authority
- **Cockburn Central** – Landcorp
- **Leighton** (North Fremantle) Landcorp
- **Midland** Railway yards (Redevelopment authority)
- **Armadale** – Redevelopment Authority



FINDINGS

# **Implementation: On ground development change**

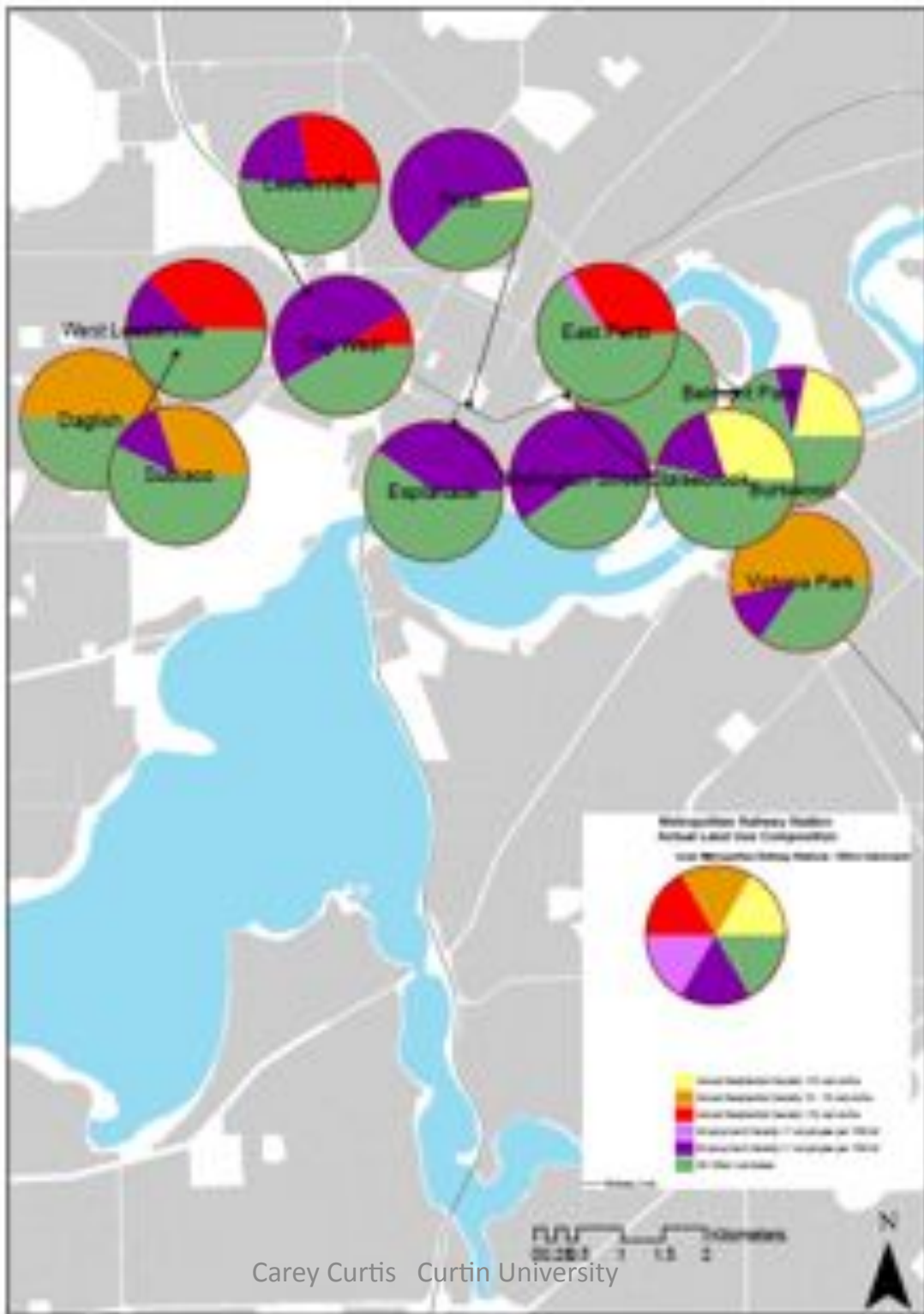


## Actual Land Use (2007)

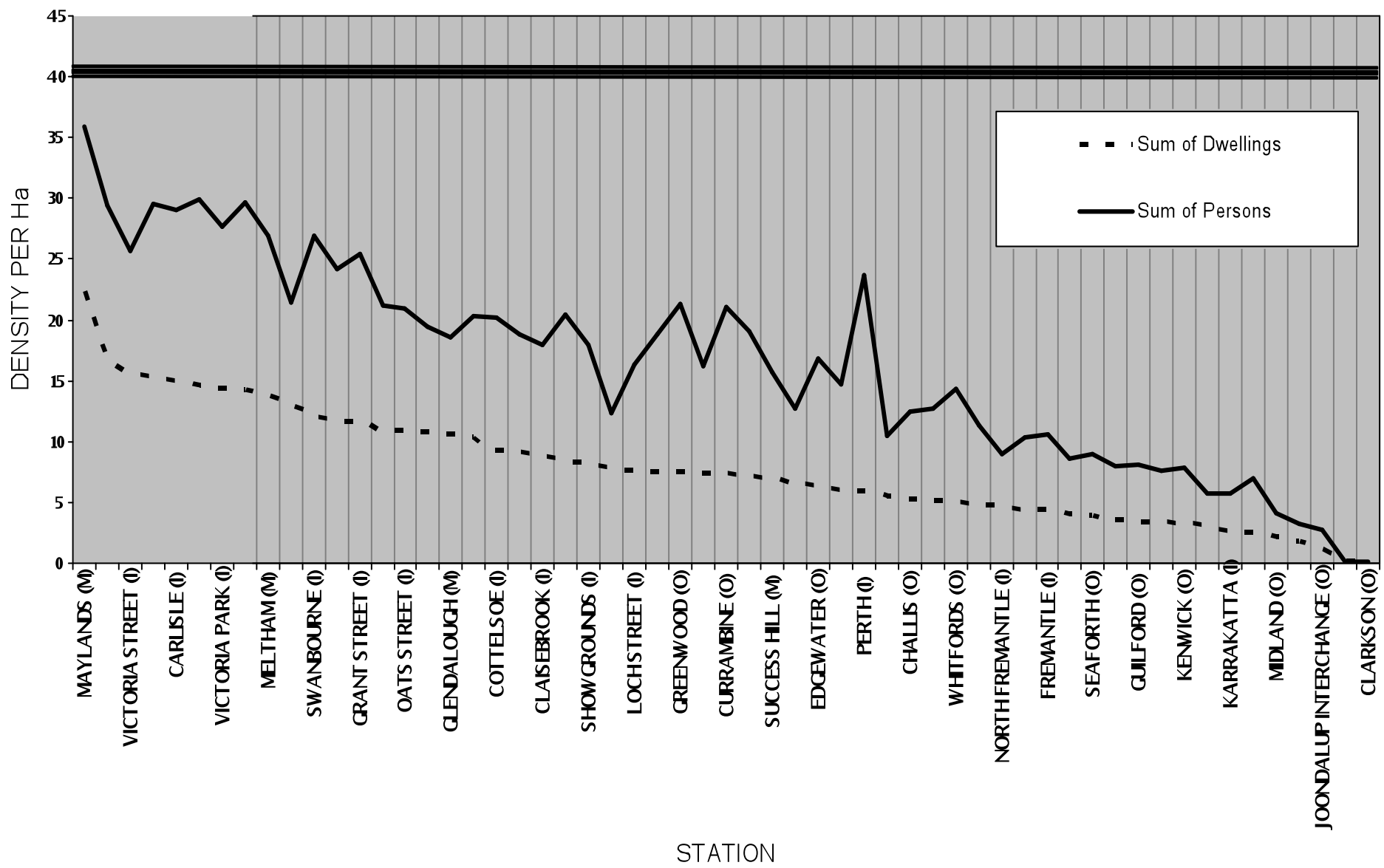
Net residential density /  
footprint and worker  
floorspace density/  
footprint

Net densities :ranged 0 - 21  
dwellings per hectare, but  
 $\frac{3}{4}$  of all precincts had a net  
density of 12 du/ha or less

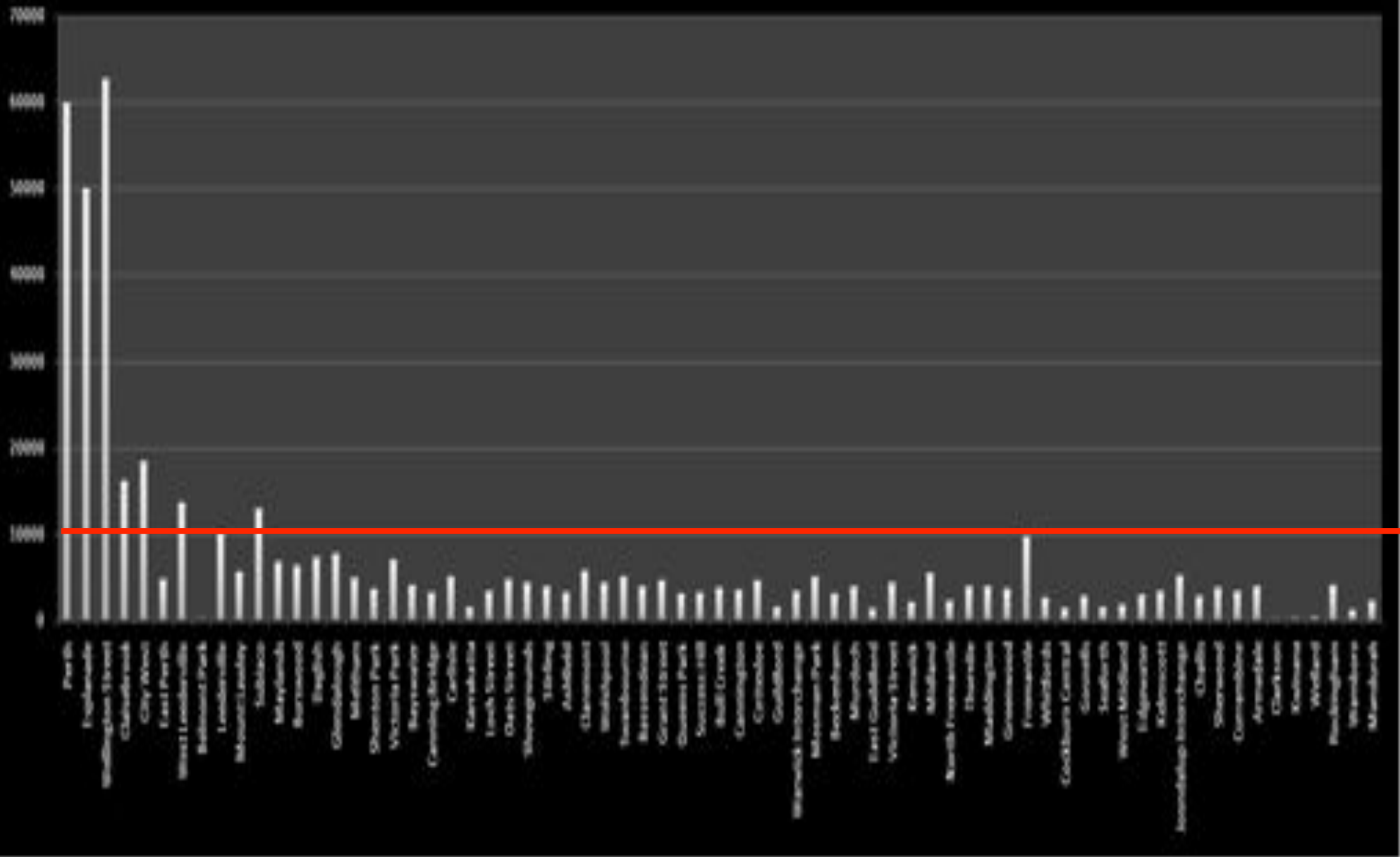
Almost half of all station  
precincts (31 out of 68) had  
some land used for  
employment purposes, in one  
third of these precincts the  
worker floorspace density was  
greater than 1 employee per  
150 sq. meters



# GROSS RESIDENTIAL DENSITIES - PERTH METROPOLITAN AREA



No. residents and employees in each station precinct



# Can the planning system implement the 'D' in TOD?

- Perth case – significant challenge where its development roots were planned around car-based mobility;
- Ambitious railway development program since 1980s
- Clear National and State policy support for TOD – and strong state planning powers
- Confusion in State policy - defining net/gross density... prescriptive or not
- Despite 20 year policy lead time only 1/3<sup>rd</sup> station precincts are governed by planning schemes that conform to State policy
- Local Planning Schemes can deliver TOD policy – but not all do;
- Despite long policy lead times little on-ground development to show;
- Residential densities are low... Employment intensity low and at few key strategic centres;
- State policy while good appears applicable for all stations regardless of function or place in a centres hierarchy;



# Transitioning to TOD:

- Despite a strongly integrated state land, planning and transport agencies, where railway infrastructure is improved, timely delivery of TOD is lacking
- Greater transition to TOD has been achieved through public sector led planning and development:
  - But is this model replicable in conventional planning processes?
  - What incentives can be offered?
  - What constraints would be effective?

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