Perth

Site
- Sited on the Swan Coastal Plain
- Sited to the west of the Darling Plateau
- Sited 0-60m above sea level

Situation
- Situated 2716km from Adelaide
- Situated at 31°57’S, 115°52’E
- CBD 17km upstream from Fremantle Harbour

Characteristics of Functional Zones

CBD – Central Business District
- Transport Node
- Pedestrian Orientated Development
- Highest land values
- Aggregation of functions
- Varying population densities
- Dynamic (constantly changing)
- Historical Preservation

IMZ – Inner Mix Zone
- Greatest land use mix
- Invading functions (invasion & succession)
- Aggregation of functions
- Urban blight (dero buildings)
- Urban renewal and redevelopment
- Socio-economic Characteristics

RZ – Residential Zone
- Variations in residential densities
- Variations in residential age
- Suburban services eg. Shopping centres
- Changing characteristics eg. Renewal of large areas of land
- ERZ – Established Residential Zone – located near the CBD – older style homes
- NGZ – New Growth Zone – outer edge of ERZ – new housing estates, underground power, parklands, cheaper than ERZ, often lacking in public transport and schools
IZ – Industrial Zone

- Agglomeration
- Industrial Variation (light+heavy industry)
- Industrial estates (big estates, removed from RZ)
- Industrial Inertia – Industrial buildings refusing to move now surrounded by Residents
- Buffer zones

OBD – Outer Business District

- Vary in size and functional complexity
- Limited aggregation
- Horizontal zonation only
- Highly accessible

RUF – Rural Urban Fringe

- Mix of urban and rural functions (invasion and succession)
- Is a zone of transition – rural to urban
- Land use conflict
- Urban Shadow effect (blight)

Identify associations/ interactions between, or compare and contrast the functional zones

CBD & IMZ

Similarities
- **High accessibility** – CBD most accessible region of Perth – central node of all major transport routes – railways network – extends Joondalup, Midland, Armadale, Fremantle, Mandurra – Ferry routes – all major highways and freeways end in the CBD eg. Mitchell Freeway, Albany Highway – as a result IMZ is made highly accessible as all major transport routes pass through zone to reach CBD – IMZ also links residential zone to CBD

- **Aggregation of functions** (horizontal aggregation)– Similar functions are grouped in CBD to benefit customers eg. Row of outdoor adventure equipment along Hay Street. IMZ – eg. Northbridge has created an aggregation of entertainment venues and restaurants.

- **High Land value** – all functions want to locate in CBD and IMZ because it is so highly accessible. As there is limited room for expansion – highest economic rent of all zones

Differences
- **Vertical aggregation** – more high rise buildings in CBD – IMZ limited to horizontal zonation
• **Land use mix** – CBD small amount of residential functions, mainly commercial activity – utilised by accounting firms, banks and lawyers. IMZ great land use mix – has retail and commercial functions as well as residential functions, light industrial functions and even educational functions (eg central TAFE)

• **Invasion & succession/ Urban blight** – Highly evident in IMZ eg. West Perth which used to be a residential area and has now been invaded by commercial functions eg. Real estate, interior design. Urban blight also occurs where houses remain run down and dilapidated awaiting an increase in land value before they are sold. - Does not occur as evidently in the CBD as land is always in high demand

**NGZ & RUF**

*Similarities*
• Limited accessibility - limited public transport etc  
• Zone in transition/ dynamic  
• Centrifugal forces - people attracted to NGZ and RUF because of cheap land prices, little traffic congestion, noise and pollution, pleasant environment

*Differences*

<table>
<thead>
<tr>
<th>NGZ</th>
<th>RUF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban land use</td>
<td>Rural land uses</td>
</tr>
<tr>
<td>No blight - all new</td>
<td>Urban Shadow Effect</td>
</tr>
<tr>
<td></td>
<td>Invasion and succession</td>
</tr>
</tbody>
</table>

**RUF & IZ**

*Similarities*
• Invasion and succession of rural land  
• Land use conflict  
• Away from the CBD/ Centrifugal forces

*Differences*

<table>
<thead>
<tr>
<th>RUF</th>
<th>IZ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential building</td>
<td>Industrial building</td>
</tr>
<tr>
<td>Little noise and pollution</td>
<td>Generates much noise and pollution</td>
</tr>
<tr>
<td></td>
<td>Buffer zones</td>
</tr>
</tbody>
</table>

**ERZ & NGZ**

*Similarities*
• Residential areas  
• Suburban services and amenities
### Differences

<table>
<thead>
<tr>
<th>ERG</th>
<th>NGZ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban Renewal</td>
<td>New housing</td>
</tr>
<tr>
<td>High demographic of older residence</td>
<td>High demographic of young families</td>
</tr>
<tr>
<td>Established public transport, school, services</td>
<td>Limited public transport, schools, services</td>
</tr>
</tbody>
</table>

### Urban Land-use Models

**The Concentric Zone Model**
- No landforms in the way - uniform surface
- City grows outwards from original site
- Everyone has equal access to transport
- CBD in centre, everything around it IMZ, ERZ, NGZ etc
- Free competition for space

**The Sector Model**
- A city planned around landforms etc.
- May be planned around a river or a railway line
- Residential zone organised into sectors emanating from CBD outwards
- High grade residents in most desirable areas
- Lower grade housing in undesirable areas such as next to manufacturing districts and rail lines - noise, pollution etc

**The Multiple Nuclei/cellular Model**
- A CBD in the centre but then OBD’s surrounding it, RZ in between
- Built around both CBD and OBD
- OBDs in more accessible locations - along main roads or public transport routes
- Commuter suburbs
- Site factors - takes into consideration rivers and harbours that can influence the growth of the city

### Key Terms

**Megacity** - An urban agglomeration/ city with a population greater than 10 million people

**Metropolis** - A term used to refer to a capital city eg. Perth and Tokyo are both metropolis’

**Megalopolis** - Agglomeration of urban areas with less than 10 million people

**Urban Consolidation** - When existing urban areas are developed to contain higher density land use

**Density** - The quantity of people or things in any given area or space/ per square km
Key Words/ Urban Processes

- **Agglomeration** - When functions group together to benefit their business. Savings are made through lower transport costs and the sharing of the area’s infrastructure (power, transport, water).

- **Aggregation** – When functions group together to benefit customer (eg. Doctor, chemist and radiology clinic grouped together)

- **Accessibility** – Locations that can be easily reached. Good accessibility would include easy transport methods to get there ie. Trains near by and buses

- **Horizontal Zonation** – When like functions are grouped in a horizontal line

- **Vertical Zonation** – When like functions are grouped vertically – on floors of skyscrapers

- **Dynamic Character** – Constantly changing

- **Centrifugal Forces** – Pulling functions AWAY the city centre

- **Centripetal Forces** – Pushing functions TOWARDS from the city centre

- **Invasion** - When one land use invades upon another land use.

- **Succession** - When invasion occurs in such an amount that the invading land use becomes the more common land use.

- **Urban sprawl** - The resulting landscape from decades of housing developments. Features of urban sprawl include extensive road network, limited public transport, large homes and few people living in them.

- **Urban blight** - The deterioration of older properties because it no longer becomes viable to maintain them due to invasion of other functions.

- **Urban shadow effect** - Similar to urban blighting. Occurs on the rural–urban fringe.

- **Urban renewal** - Redevelopment of areas of urban blight

- **Gentrification** – Upgrading (renovating etc) a residential house to increase the socioeconomic status

- **Consolidation** - When older blighted homes are knocked down and replaced with higher density apartments or townhouses

- **Greenfields Development** – Developing land on previously vacant vegetation
Describe and account for Perth’s external morphology

- Stellate shape
- North corridor extends out to Ocean Reef, northeast corridor to Midland, southeast corridor to Armadale, south corridor to Rockingham
- Shape influenced by:
  - Underground water aquifers - 3 aquifers in Perth region has prohibited development, especially in Jandakot
  - Darling Scarp prohibits development to the east
  - Indian Ocean restricts development to west & accounts for the 100km extent of Perth along coast - desirable location
  - Development around rivers
  - 1975 Corridor Plan - Four corridors, greenbelts
  - Rail lines - eg, Midland
  - Main Road eg. Albany highway

Describing Spatial Pattern

- N,S,E,W
- Latitudes
- Place names

Eg. The Residential area of Greentown extends westwards from Yellow to Blue

**Formal region** - A cultural or physical feature that occurs over a region or area. The feature has a distinct boundary (can be seen on a map)

Planning Decisions that address Perth’s Urban Growth

**1970 Corridor Plan**

- 4 transport corridors
- Self sustaining corridor
- Each corridor dominated by a main road
- Greenbelts between each corridor
- **Aimed to relieve traffic congestion in the city** - most facilities and amenities in each corridor - didn’t need to leave

**1987 Metroplan**

- Encouraged Urban Consolidation
- Encouraged Urban Renewal and Redevelopment
- **Aimed to slow down urban sprawl**

**2004 Network city plan**

- Activity centers (OBDs)
- TODs
- Livable neighbourhoods
- Mandurah Railway line
- **Traffic congestion** - TODs, OBDs, railway line less far to travel
- **Water Conservation** - Gnangara groundwater protection, water sensitive urban design
- **Natural Hazard Management** - controlled burning etc.
Sustainable Management: The management of urban environments that meets the needs of the present without compromising the ability of future generations to meet their own needs. Planning and management needs to be complex (provides balance between PEES stakeholders), ongoing (our understanding of natural and cultural environments is constantly evolving) and dynamic (ongoing understanding of values and viewpoints).

Sustainable Management in Perth

Urban Sprawl

- First a location needs to be **liveable** – compacts, pedestrian orientated, mix land uses, nature reserves – attractive
- **Compact** – development in areas where services and infrastructure already exist
- **Mixed housing** – mix of housing types to attract range of demographics
- **Mixed Use Communities** – creating communities – compact, affordable and public transport
- **Establish protected land reserves** – protects from urban development
- **Restricting and rethinking road networks**
- **Redevelopment** – of older suburbs/ buildings – increase pop density

Water Shortage
- Sprinkler bans
- Water restrictions
- Water efficient household appliances
- Rebates for independent household water supplies
- Desalination plant
- Proposed Kimberly Pipeline
- Managed aquifer recharge (MAR)

Traffic congestion
- Increasing safe pedestrian and bicycle paths
- Reduced funding for construction of freeways
- Increase cost of parking in CBD
- Space on trains for bicycles
- More public transport
- Encourage construction of TODs
- Limit urban sprawl

Sustainable Management in Tokyo

Urban Sprawl
- Underground tunnels
- Tokyo bay - artificial island creation
- Radial road route
- Compact city development
**Water Shortage**
- Public Education campaigns - how to save water
- Television footage of low dams
- Tone canal project - development of canals to redirect water to where it is needed

**Traffic Congestion**
- New circular routes connecting radial roads
- Tokyo Wan Aqua Line - highway crossing Tokyo bay
- Underground road tunnels
- Improved road designs:
  - Upgrading railway crossings
  - More off road parking
- Bus lanes
- More park and ride areas

**Stakeholders**

**Tokyo**

**Traffic Congestion**
- Tokyo Metropolitan Government
- Plans to connect radial roads with ring roads - means traffic does not all have to run through city centre
- Considering society’s want for quicker and more convenient travel
- Not taking into consideration cost, disruptions to neighbourhoods, clashing with existing land uses
- Plans to sink expressways underground
- Would remove blighted roads and create new opportunities for redevelopment on prime land
- However, is extremely expensive & requires careful planning so it doesn’t clash with other services underground (eg. Water pipes)
- Safe Bicycle Riding Promotion Plan in January 2007. This plan includes four main measures as follows:
  - Reducing illegally-parked bicycles
  - Developing bicycle paths
  - Improving bicycle traffic manners
  - Improving bicycle mechanics
- Encouraging the use of public transport
- Tokyo Metropolitan Region, bicycle parking facilities have been developed around most of the heavy rail stations to encourage such trip patterns.
- The TMG values alternative transport, convenience and time factors of traveling

**Water Shortage**
- TMG
- Believe public awareness of the issue will be most beneficial in saving water
- Public education campaigns
- Television footage
- Systematic replacement of leaking pipes
Urban Sprawl

- TMG
- Believe alterations to city planning will help
- Underground tunnel
- Artificial island creation
- Radial road route
- Compact city development

Perth

Traffic Congestion

- Main Roads Traffic Operations Perth
- More people are moving away from the CBD but their jobs remain in the city so perth bound trains are just a full as the freeways
- We don’t need to encourage using public transport instead - the trains are already full
- There needs to be more employment in places like Joondalup and Midland and surrounding areas
- More focus needs to be put on OBDs for employment opportunities than the CBD

Water Shortage

- Water Corporation
- Working with the community to make perth more water wise
- Allocated watering days
- Extensive information on how to save water both inside the home and in the garden
- Television campaigns to make Australians more water aware
- School programs
- Water fun days
- Encouraging rainwater tanks - rebates of up to $1000
- Free shower head swap
- Campaigns - 4 min showers & save 60L a day - challenges!

Urban Sprawl

- Jago Dodson from Griffith University (University studies)
- Suburban lifestyle can also increase the incidence of obesity.
- Where there is little public transport, people are forced to drive everywhere, thereby reducing their physical exercise.
- A low aesthetic appeal of such communities is said to leave people without a ‘sense of place’ and lead to antisocial behaviour.
- Low- density sprawl can create barriers to social interactions, a risk factor for depression