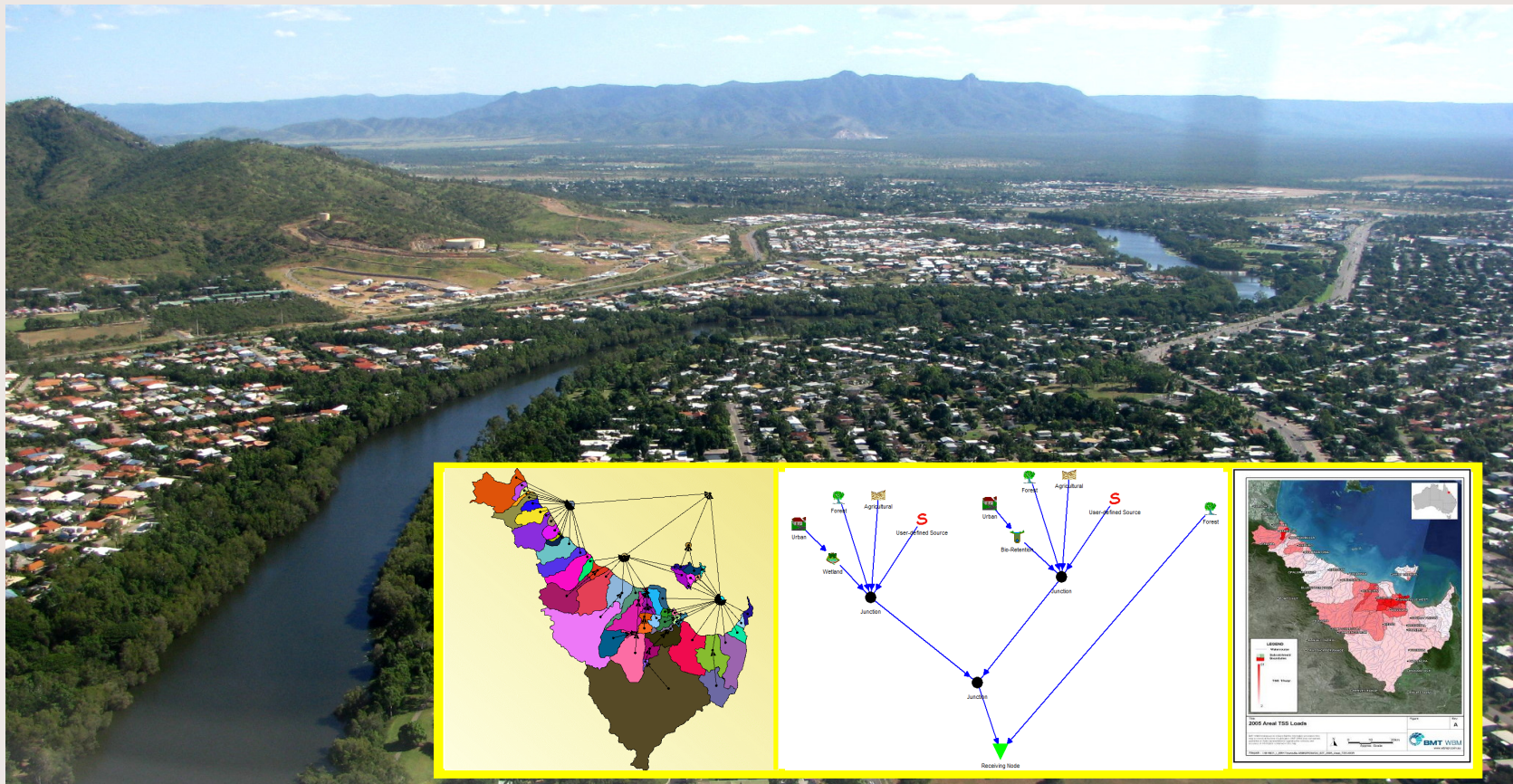


# Reef WQIP Water Quality Modelling



# Pollutant Export Modelling.

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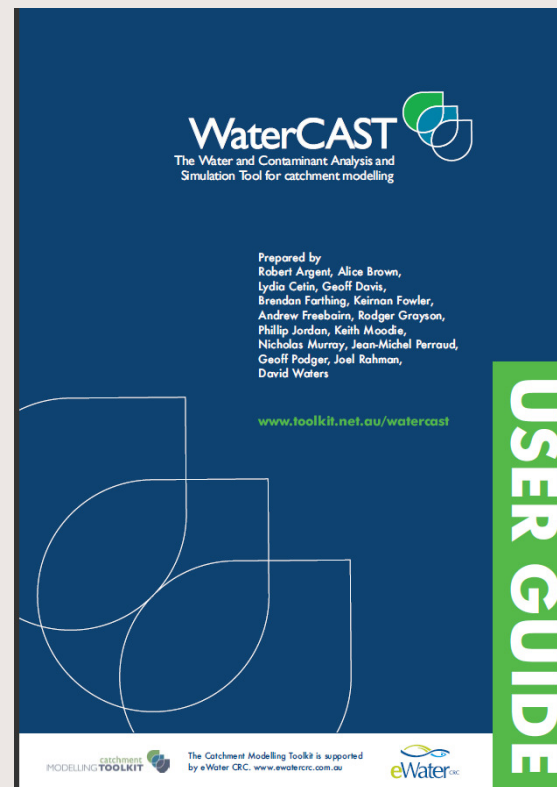
## » Catchment wide:

- Estimate pollutant loads generated by different land use types
- Identify high pollutant generating catchments and sub-basins
- Assess the effectiveness of management measures (ie WSUD, BMP)
- Set targets for future management

## » In a urban context:

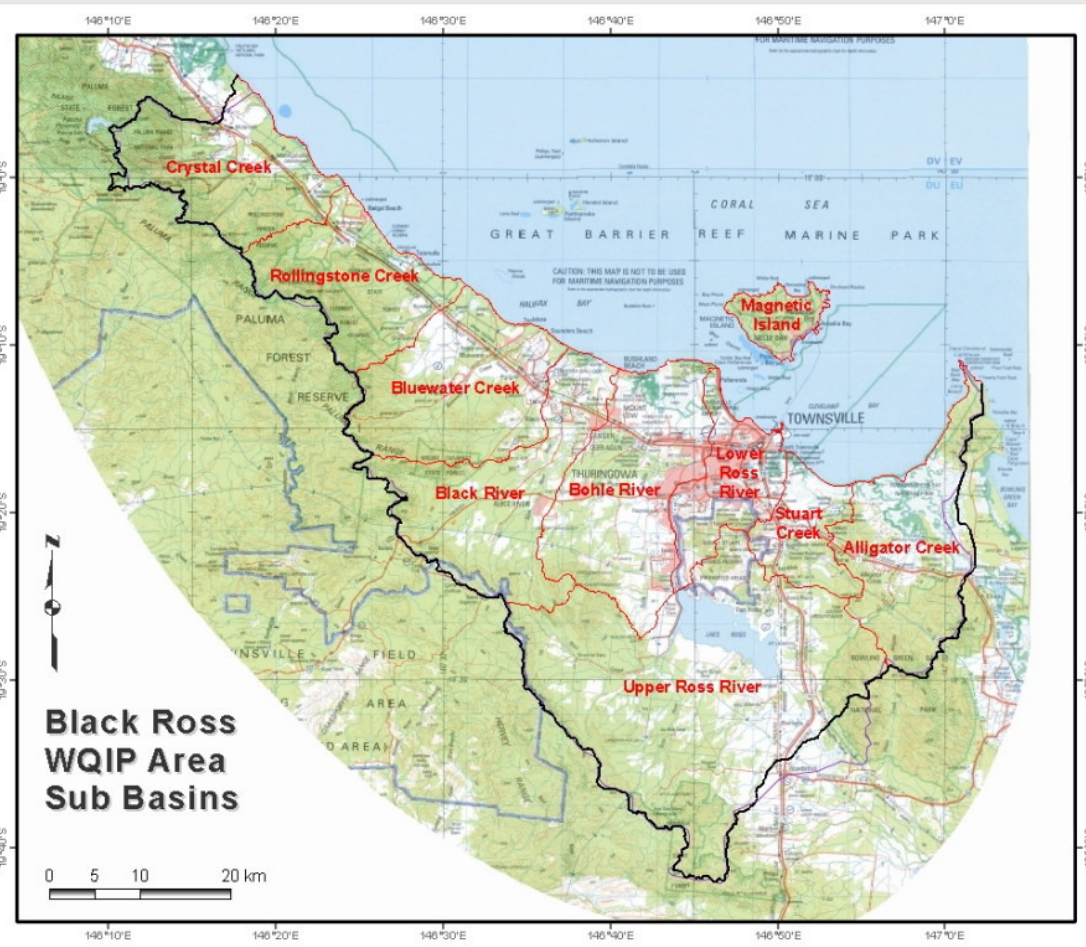
- Estimate pollutant loads generated from urban and peri-urban space
- Estimate future pollutant loads (2045) derived from urban areas that will occur inline with current growth patterns
- Assess the effectiveness of management measures, including WSUD
- Estimate pollutant loads generated from developing areas

# Pollutant export models used.

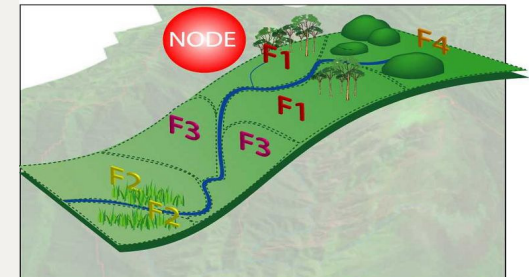


# Catchment & sub basins

Sub-Basin
Crystal Creek
Rollingstone Creek
Bluewater Creek
Black River
Bohle River
Ross River (lower)
Ross River (upper)
Stuart Creek
Alligator Creek
Magnetic Island



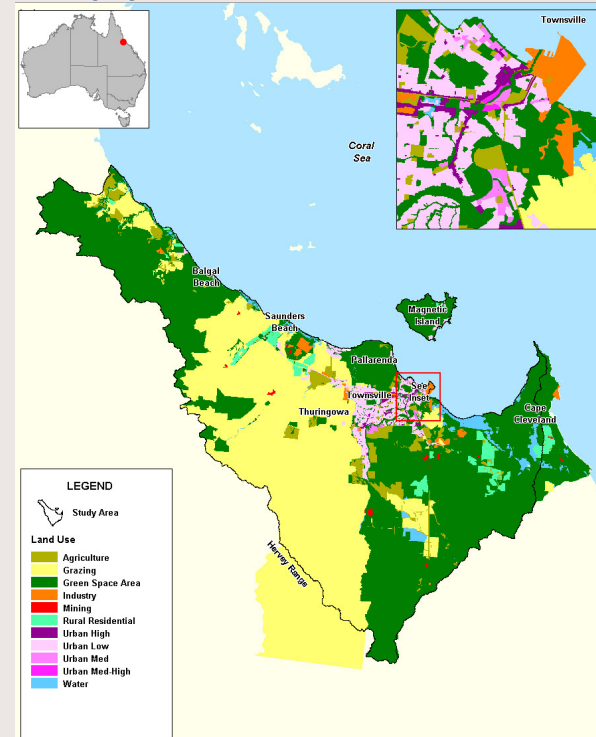
# Model development



>>

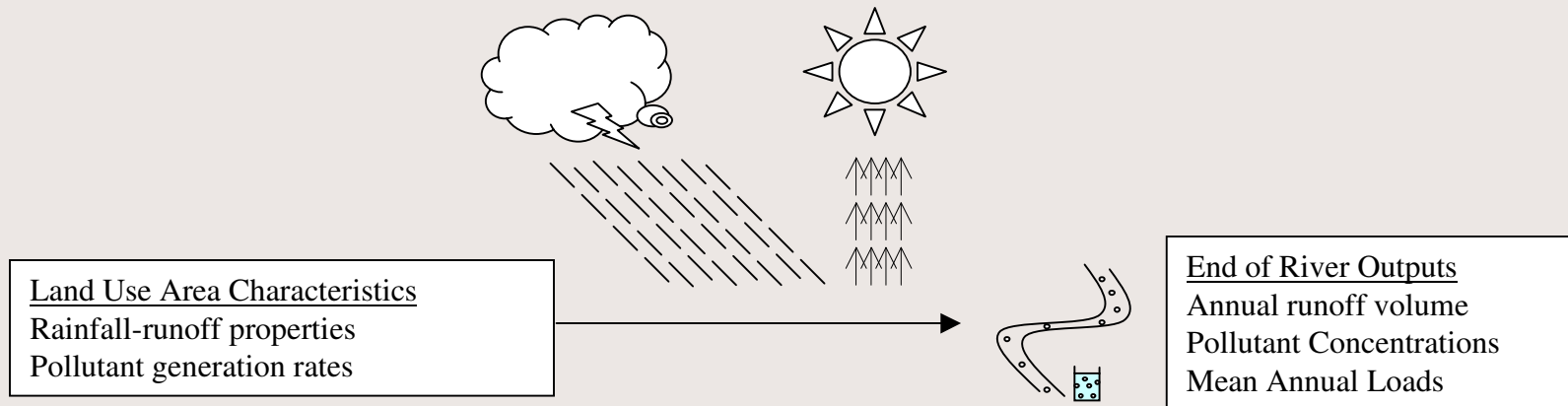
Step 3 – Functional Units are defined – usually just land use classes

- Agriculture
- Grazing
- Green Space
- Industrial
- Mining
- Rural Residential
- Urban (Low, Med, Med-High and High Density)
- Water



# Pollutant Export Modelling.

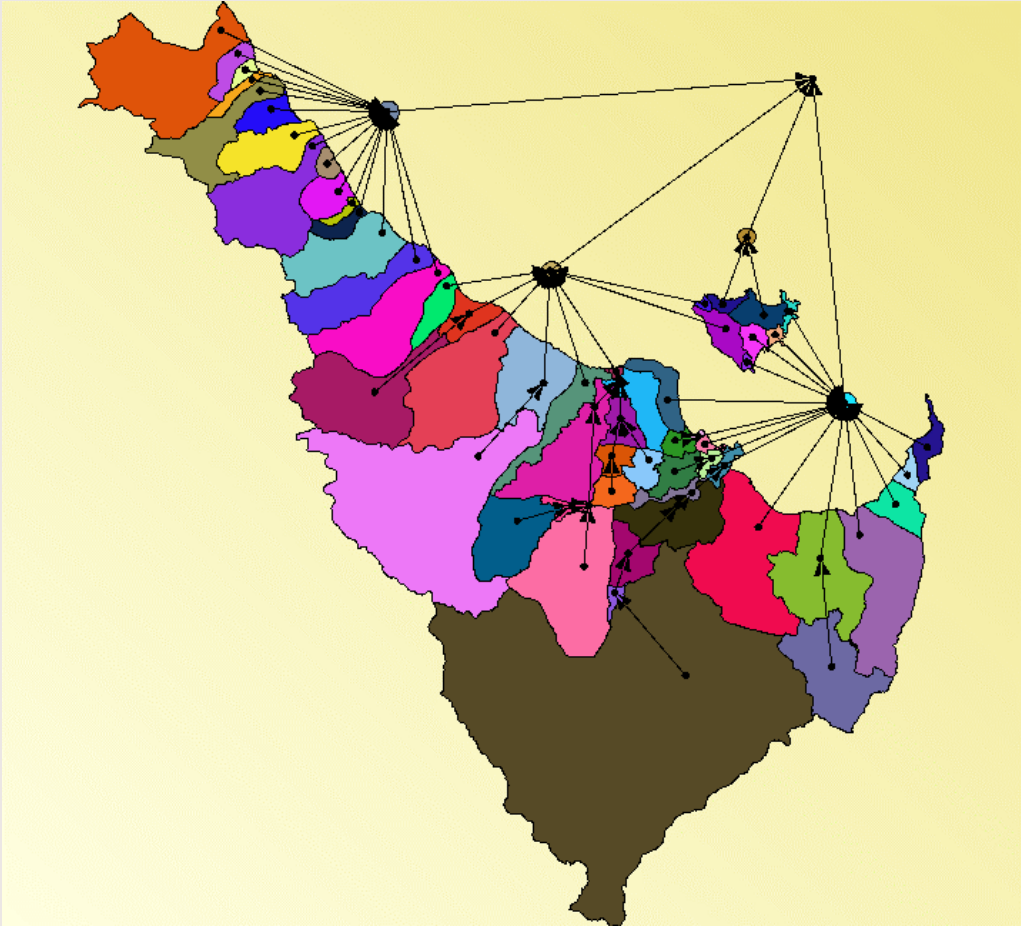
» How it works.



Mean Annual Pollutant Loads:

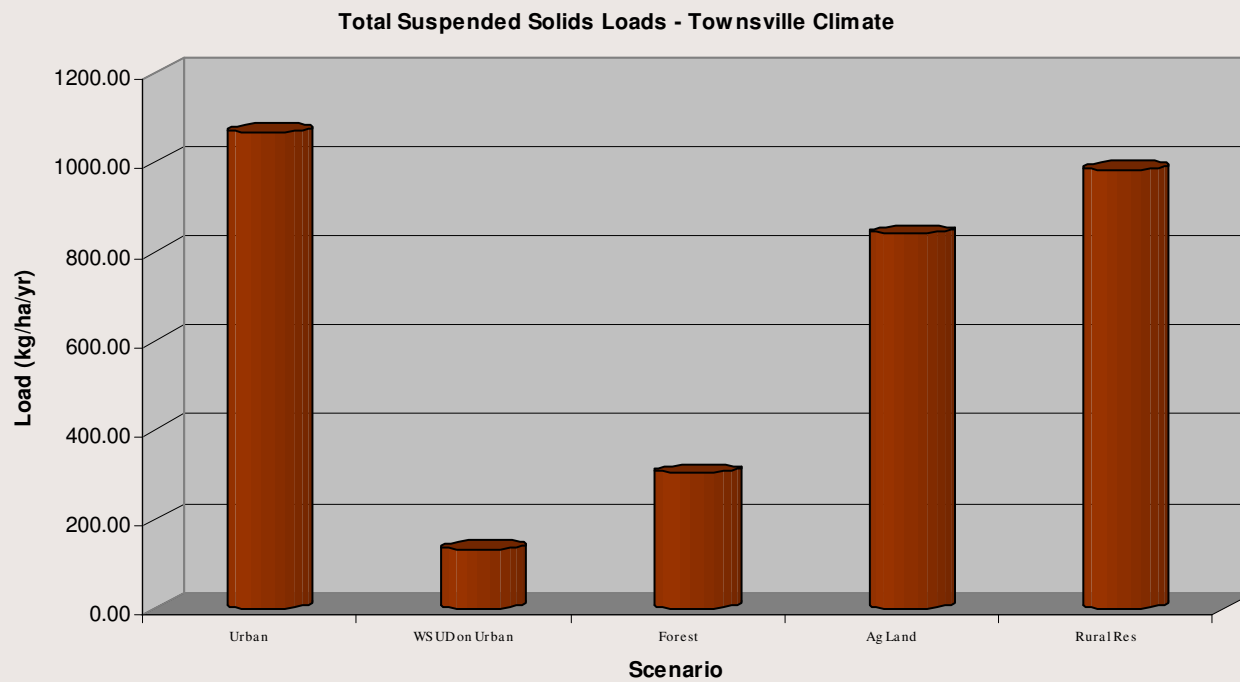
- Flow
- Total Suspended Sediments
- Total Phosphorus
- Total Nitrogen

# Model Development.



# Black Ross WQIP

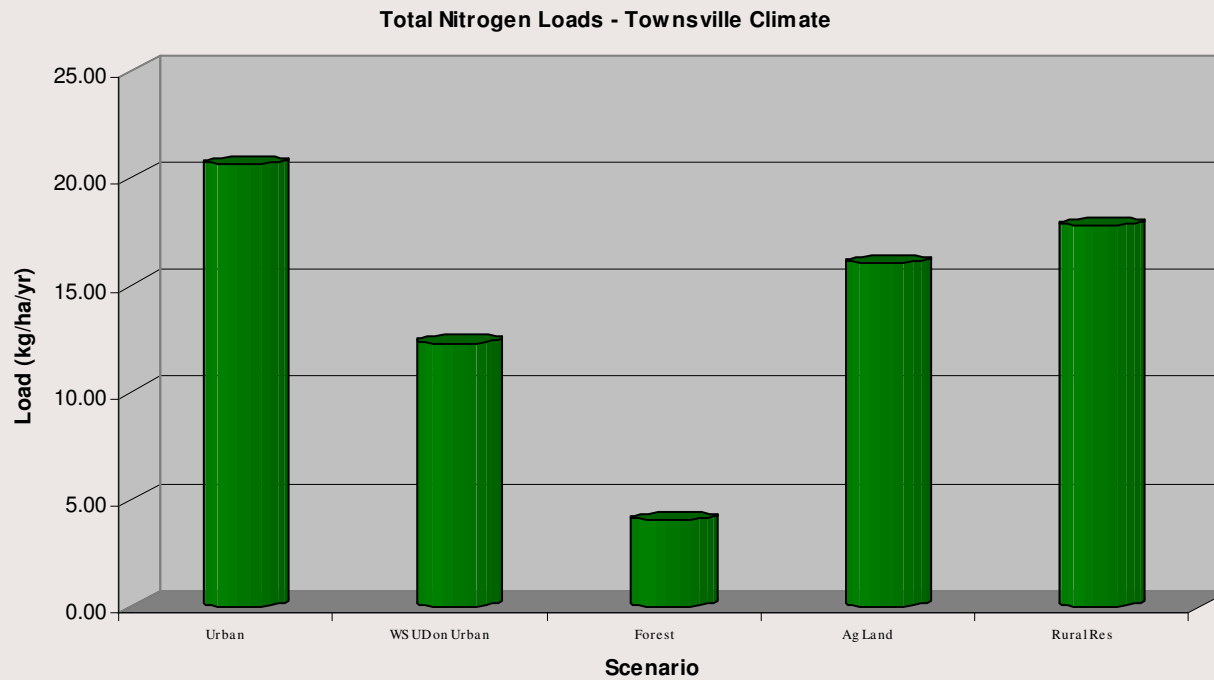
## Developed landuse comparisons





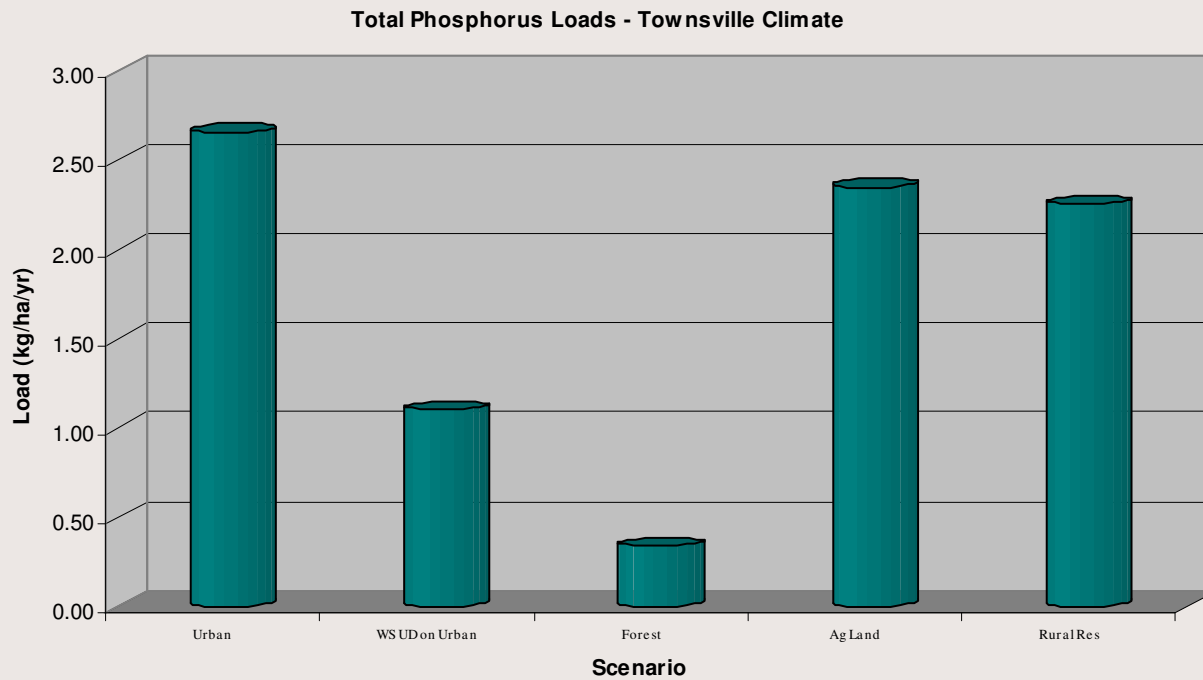
# Black Ross WQIP

## Developed landuse comparisons



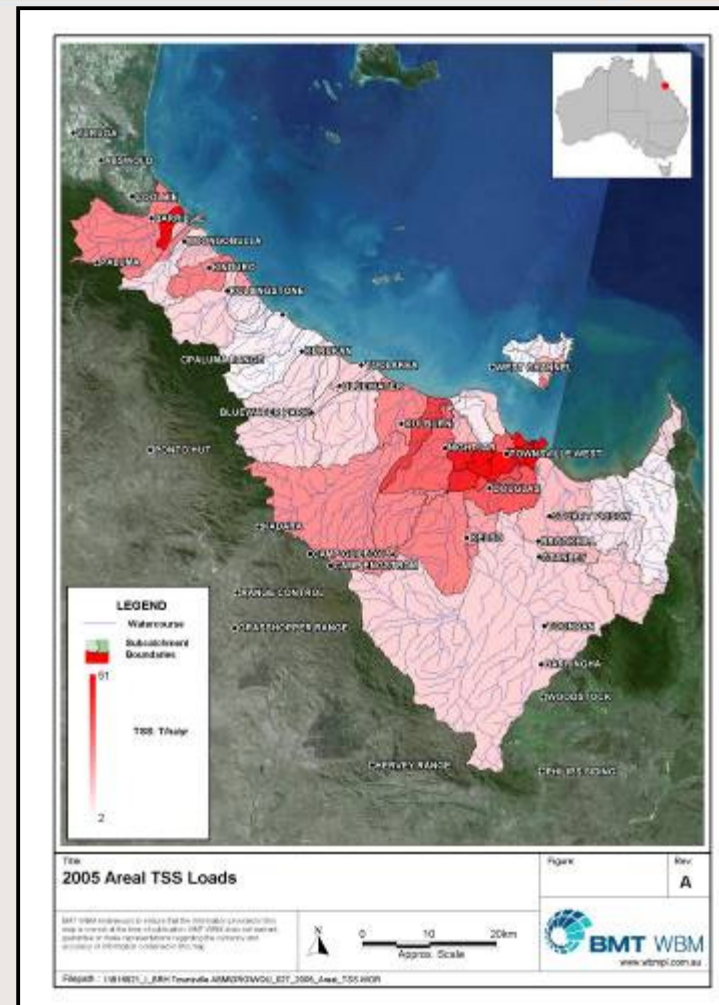
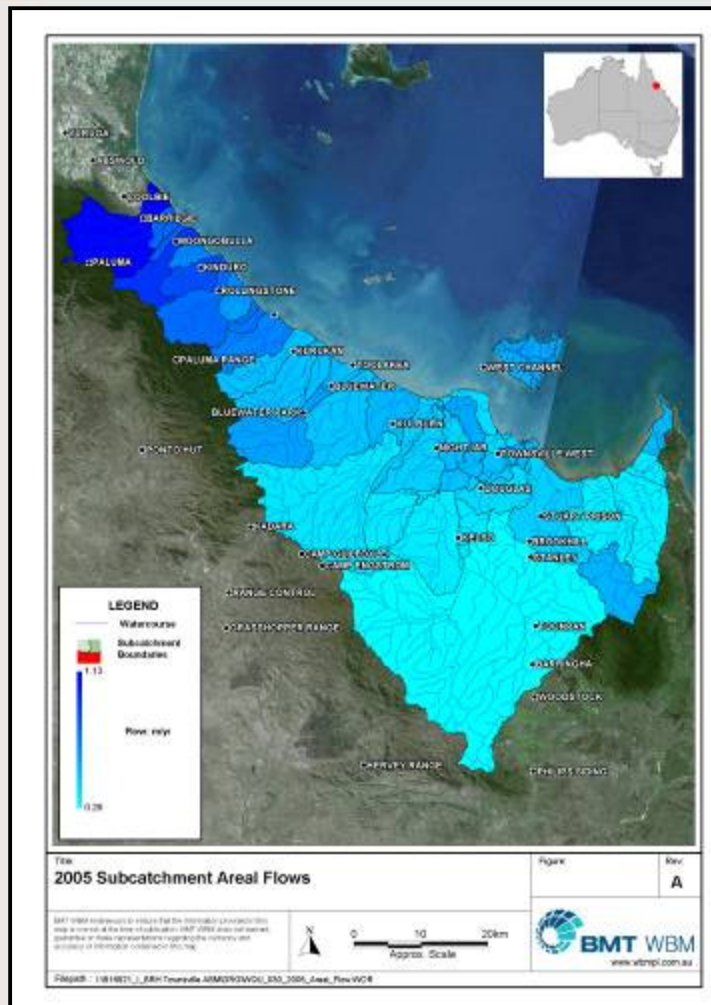
# Black Ross WQIP

## Developed landuse comparisons



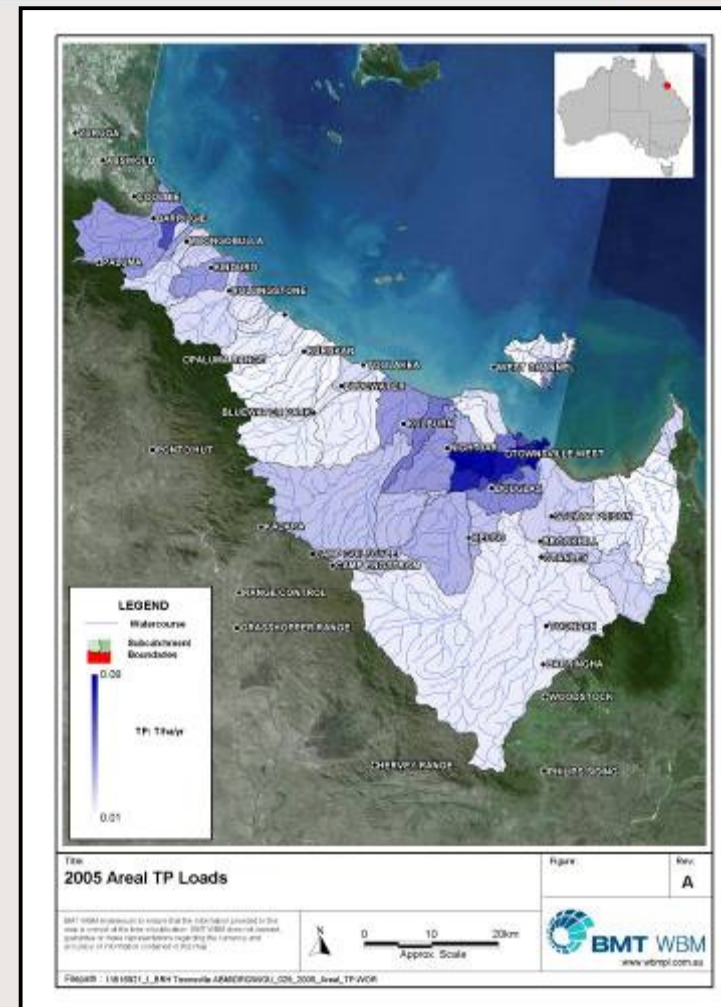
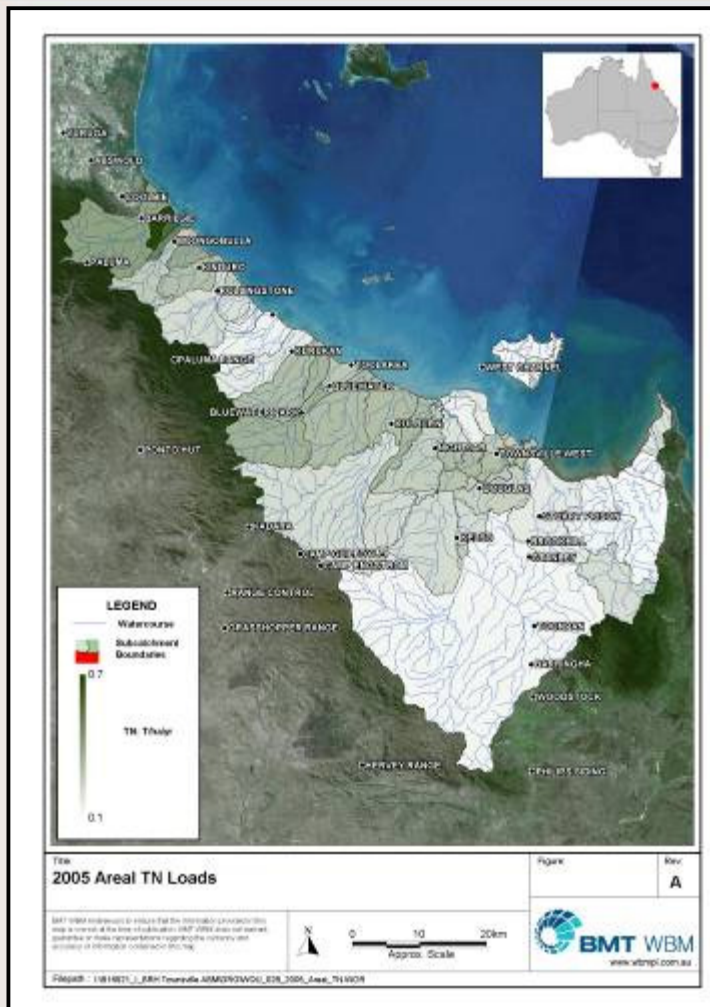
# Black Ross WQIP

## Priority areas (Diffuse flows & TSS)



# Black Ross WQIP

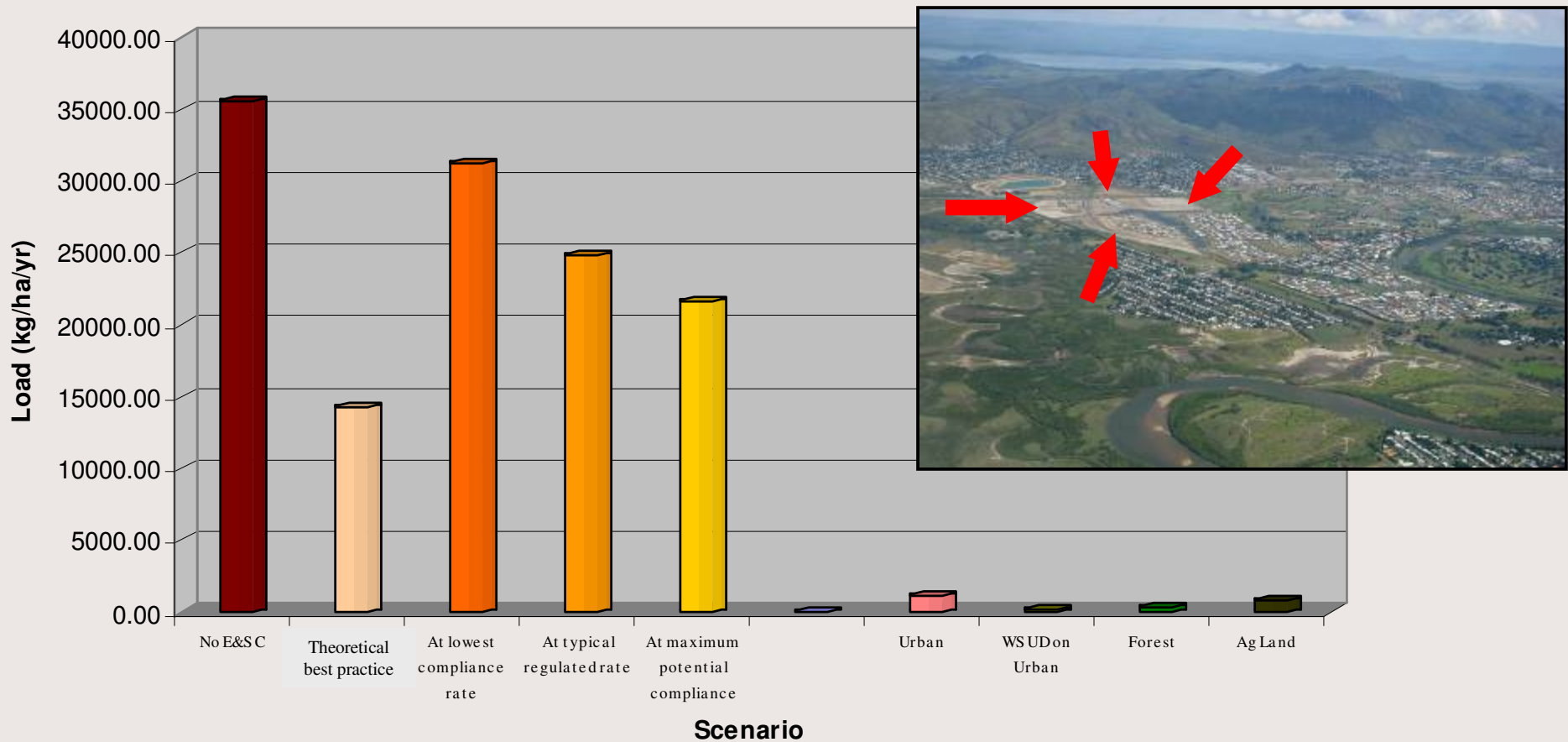
## Priority areas (Diffuse TN and TP)



# Black Ross WQIP

## Developing landuse comparison

Total Suspended Solids Loads - Townsville Climate



**35 times more sediment generated...**

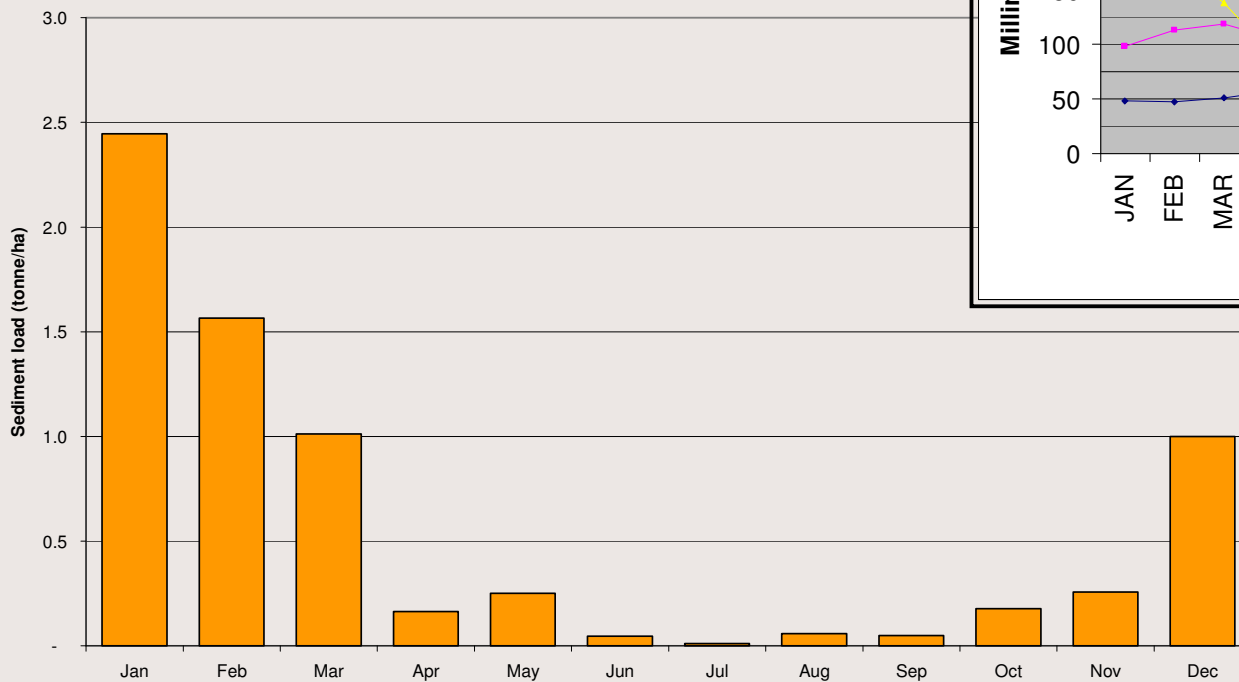
Source: Tony Weber (BMT WBM)

TOWNSVILLE CITY COUNCIL

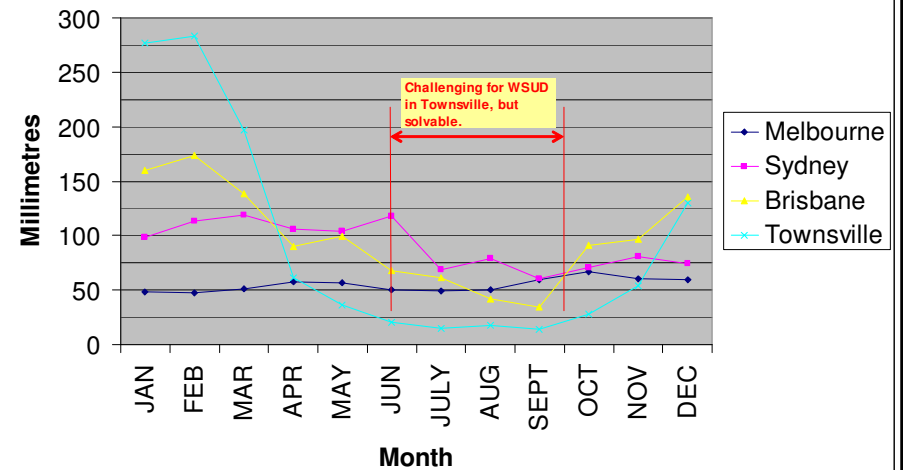
# Black Ross WQIP

## Developing areas – construction activity

Sediment load from unprotect soils during construction



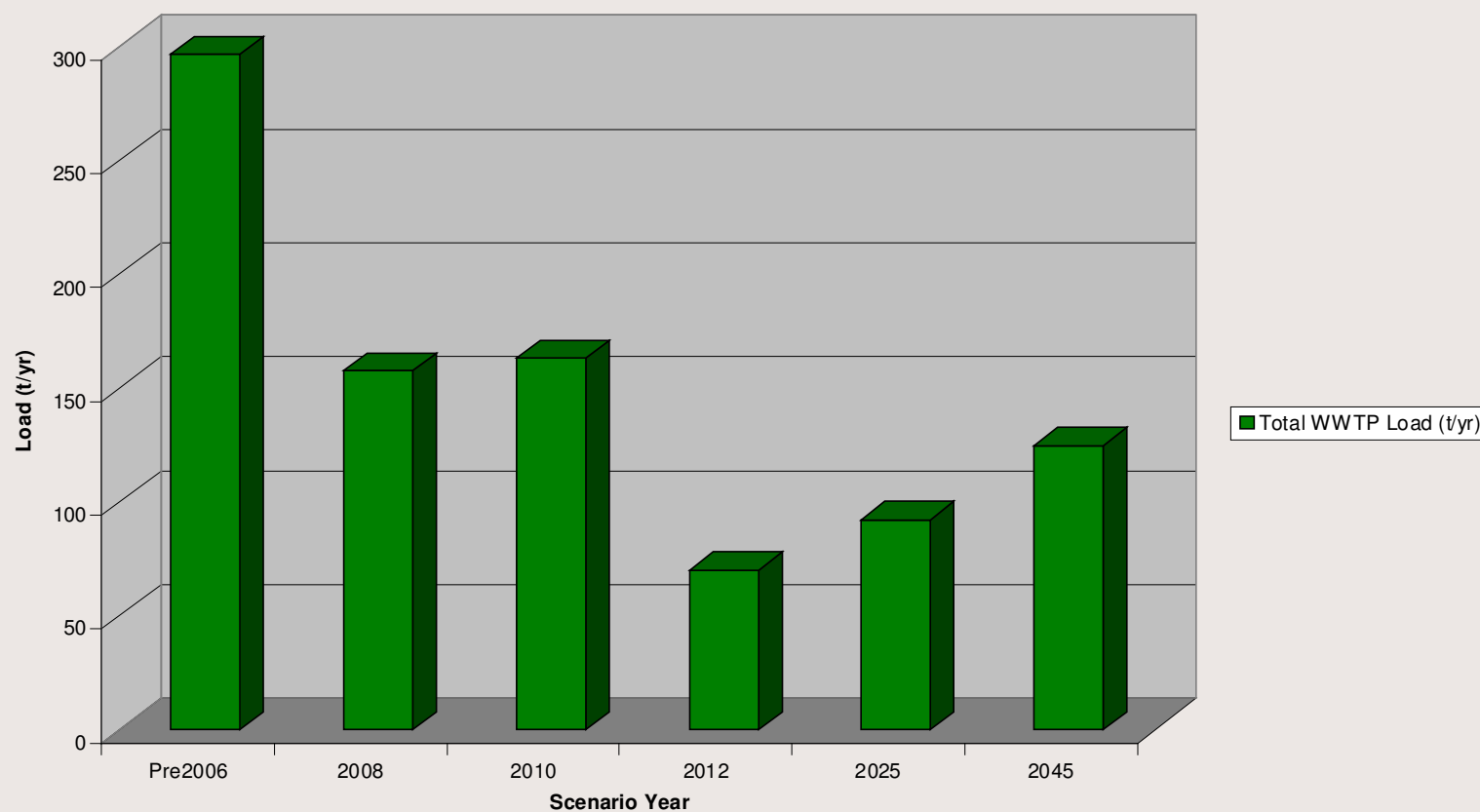
Melbourne-Sydney-Brisbane-Townsville Comparison



# Black Ross WQIP

## *Population increase effects – e.g. wastewater*

Total Nitrogen Point Source Load - Black Ross WQIP Area



# Black Ross WQIP

## *Population increase effects – e.g. wastewater*

Total Phosphorus Point Source Load - Black Ross WQIP Area

