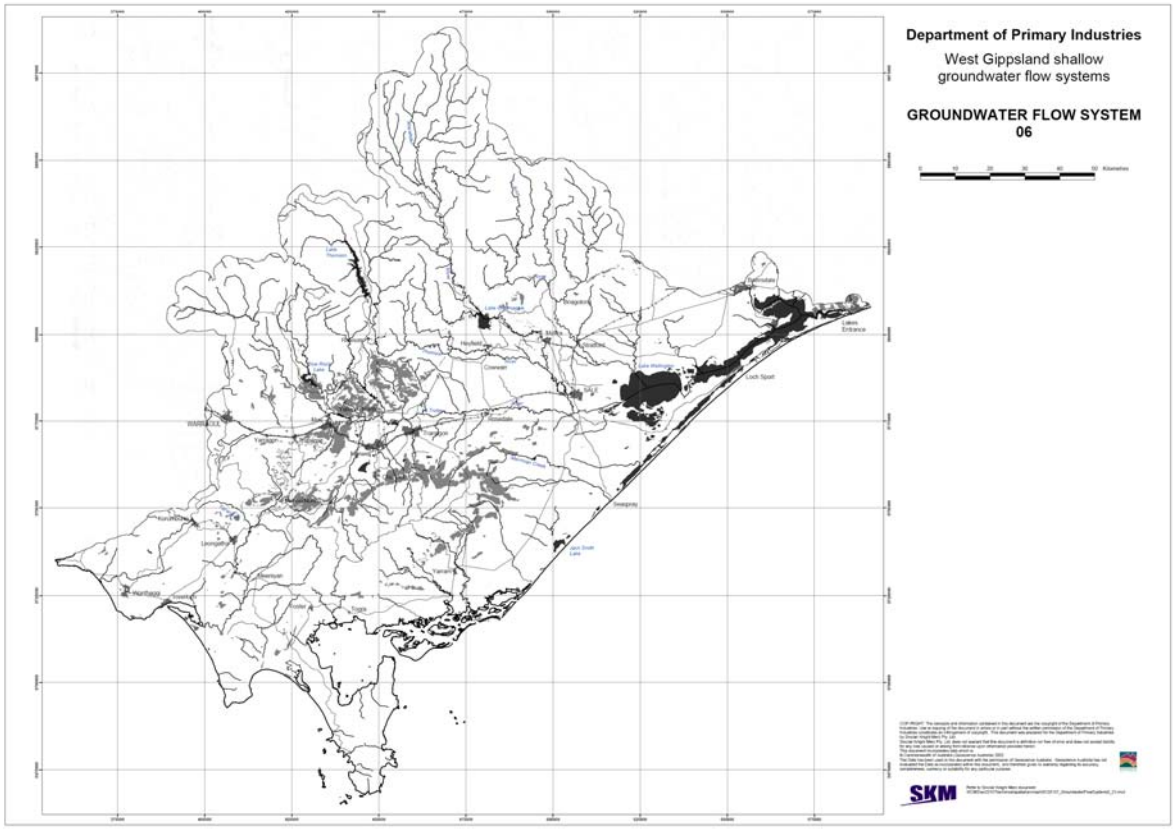
GFS 6: Tertiary sediments - high slope (Latrobe Gp recharge areas)

1. GFS definition



Geology constraint: All Tertiary sediments except Tvo and Tml

Slope Constraint: >5 degrees

Area constraint: None

Rationale for choice of GFS: GFS defines the recharge area for the deeper Latrobe Group Aquifer. Although the Latrobe Group Aquifer is not likely to be connected to the water table, there is a potential conflict between the management options for this area from a salinity perspective (ie reduce recharge) and a groundwater management perspective (ie maintain or increase recharge).

GFS priority: Low

2. The salinity problem

Salinity occurrence: None (Source: West Gippsland Land Salinity GIS layer)

Assets being affected: None (Rural Salinity: DNRE (2000) and WGCMA (2005) Urban salinity: SKM (2005 in prep))

Area of mapped land salinity: None (Source: West Gippsland Land Salinity GIS layer)

Area of primary and secondary land salinity: None (Source: West Gippsland Land Salinity GIS layer)

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Area of wetland salinity: No known areas of wetland salinity

Surface water salinity: Monitoring surface water courses generally meet SEPP limits for salinity

Salinity process: NA

Current area of less than 2m depth to water table: 12ha <2m (West Gippsland DTWT GIS layer)

Groundwater salinity: Unknown – potentially variable

Land salinity trend: NA

Groundwater level trend: No data – suspected to be the same as for Latrobe Aquifer (ie a decline of approximately one metre per year

3. Landscape attributes

Area: 69,600ha

Geology: All tertiary sediments (except Tvo and Tml)

Topography: >5° slope

Soil permeability: Predominantly moderate to high permeability with some areas of very very low and very low permeability. (Source: West Gippsland Soil Permeability GIS layer)

Annual Rainfall: 800-1000mm on average. (Source: West Gippsland Annual Rainfall GIS layer)

Annual Evaporation: 900-975mm on average. (Source: West Gippsland Annual Evaporation GIS layer)

Landuse: Predominantly farming and forestry. Small areas of native vegetation and mining. (Source: West Gippsland Landuse GIS layer)

4. Hydrogeology

Geology: Sands, gravels, clays

Aquifer type: Unconsolidated sediments

Hydraulic conductivity: Unknown

Aquifer transmissivity: Unknown

Aquifer storage coefficient: Unknown

Hydraulic gradient: Unknown

Yield: Unknown but expected to be low

Temporal recharge distribution: Likely to follow rainfall pattern (ie most recharge in winter and spring)

Spatial recharge distribution: Recharge likely to be greatest on sandier sections of the profile

Recharge estimate: Unknown but soils suggest a relatively high recharge

Aquifer uses: Irrigation, stock and domestic

Scale of groundwater flow path: Water table: Local (possibly with some intermediate influence)
Latrobe Aquifer: Regional

Responsiveness to land management: Reasonably responsive given the local nature of flow systems

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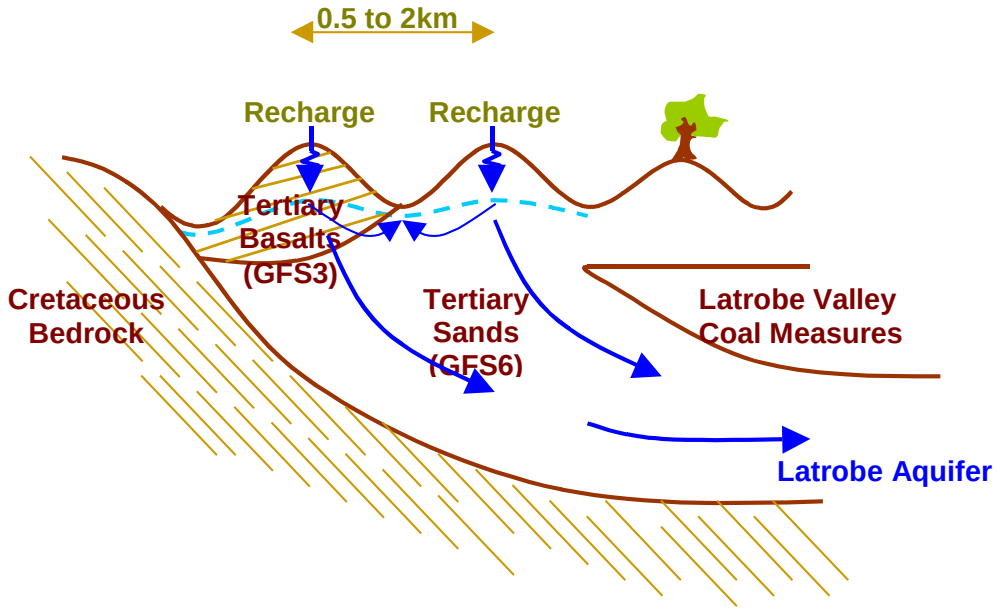
National GFS type most like (ref Coram et al., 1998): Local 8 – Discharge from low hydraulic conductivity aquifers

Groundwater flow between GFSs: Flow from GFS3 to GFS6 especially in the foothills areas of the Strzelecki Ranges

5. Conceptual model of recharge discharge relationship



6. Salinity Management Options

Current salinity management: NA

Recharge control options: Potential to revegetate cleared areas to reduce down-gradient salinity. Questionable effect given that most recharge is likely to be vertical to Latrobe Aquifer with little horizontal water table flow

Pasture or crop potential	*Trees for biodiversity potential*	*Trees for forestry potential*	*Surface drainage potential*	*Irrigation management potential*
Weak	Moderate	Moderate	Weak	Weak

Groundwater discharge enhancement options: None

Living with salt options: None

Conflicts with other NRM programs: If revegetation was an option for salinity control, there may be a conflict with sustainable management of the Latrobe Aquifer (Yarram WSPA) which is likely to discourage recharge reduction in this area. Also, there may be a further reduction to the baseflow of the Tarra River which has exhibited a decline over the last 20 years possibly due to the declining groundwater levels in the Latrobe Group Aquifer (SKM, 2005a)

Synergies with other NRM programs: Potential synergy with biodiversity and farm forestry program if tree planting is considered a viable option