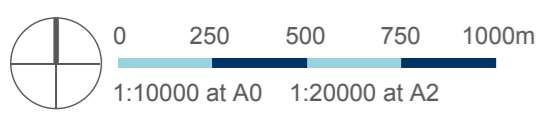


DRAWING KEY

- BOUNDARIES**
- Study Area Boundary
- STORMWATER & DRAINAGE**
- Potential Land Encumbered by Drainage
 - Potential Land Encumbered by Drainage - Further Investigation Required
 - Potential Indicative Drainage Infrastructure - Further Investigation Required
 - Potential Utilities - Trunk Drainage (Underground)
 - Further Drainage Investigation Required Prior to Resolution of Future Land Use
 - Potential Encumbered Land - Open Space / Constraints
 - Existing Ground Slope: 10% Gradient or Steeper
- NATURAL FEATURES**
- Major Watercourse
 - Minor Watercourse
- MOVEMENT NETWORK**
- Freeway / Highway
 - Major / Arterial Road
 - Local Road
 - Railway

**WORKING DRAFT
FOR CONSULTATION
SUBJECT TO CHANGE**



**NORTHERN GEELONG GROWTH AREA
POTENTIAL MAJOR DRAINAGE INFRASTRUCTURE**

27 October 2017
CITY OF GREATER
GEELONG

**NORTHERN
& WESTERN
GEELONG
GROWTH AREAS**

MAJOR DRAINAGE INFRASTRUCTURE

DRAINAGE

- Waterway corridors shown provide indicative areas for drainage infrastructure including open waterways, retarding and sediment basins and wetlands.
- Trunk drains (large underground pipes) are estimated but locations will be determined to correspond to the future road network.
- Drainage in the growth area will ultimately outlet to existing pipes, culverts or waterways and must be designed to avoid adverse downstream impacts.
- Stormwater drainage strategies will be designed in the context of a broader integrated water management (IWM) approach.
- IWM seeks to manage all aspects of the urban water cycle in a more holistic way and considers the interconnections between waterways, wetland and floodplains, major drainage, stormwater management, alternative water sources, drinking water, sewerage, land use and the open space network.
- IWM includes water sensitive urban design (WSUD) - an approach to planning and designing urban areas to make use of runoff and reduce the harm it can cause to waterways.
- Waterways indicated are preliminary only and subject to change as the draft framework plan is developed. Further development of the stormwater management strategy will occur as part of subsequent precinct structure planning processes to confirm locations and sizes of drainage assets and widths of waterway corridors.
- Plan shows the potential flow routes for stormwater drainage (rainwater runoff) in peak (large and rare) events at a time when the growth area has transitioned from mainly rural to urban development and does not consider impacts due to other assessment criteria such as flow volume and frequency of runoff.
- Next phase of the framework planning process includes a flood impact assessment that will model anticipated conditions based on the proposed future land uses to identify required infrastructure and methods to manage downstream impacts.
- Development in the growth area will increase impervious surfaces (such as pavement and dwellings) and reduce infiltration of rainfall into the ground causing runoff volumes, flow rates and speeds to increase. Stormwater runoff from developed areas needs to be controlled by appropriately designed drainage infrastructure.
- Development and land reshaping in the growth area will reduce the current 1% AEP flood extent in some areas (for example, constructed waterways or drains are installed to convey stormwater from the area), but this cannot be the case in all locations due to the shape of the land and waterway and other factors.
- The term 1% AEP (commonly referred to as '1 in 100 year flood') refers to a rare event: there is a predicted 1% chance of that event happening in any given year.
- Drainage infrastructure proposed throughout the growth area will be delivered as a part of the wider open space network and will be designed to collocate with areas of biodiversity, local parks, sports reserves and community facilities.
- The City is collaborating with key water stakeholders including Barwon Water, Corangamite Catchment Management Authority and Southern Rural Water to establish the future waterway network for the growth areas.
- Encumbered: Land that is required for potential drainage solutions to service future development would mean that development in waterway corridors would be constrained or 'encumbered'.