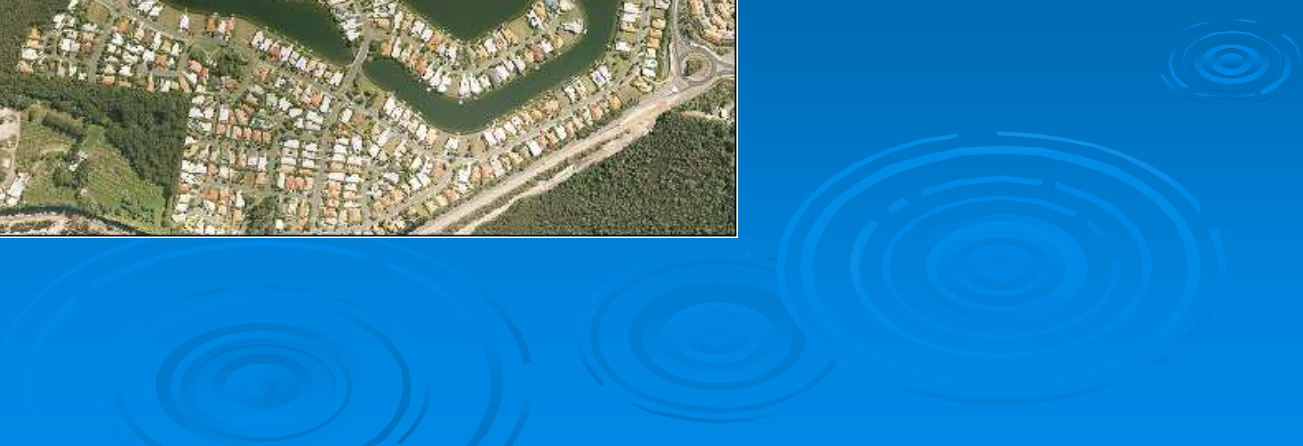


NOOSA WATERS FLOOD INFORMATION PRESENTATION



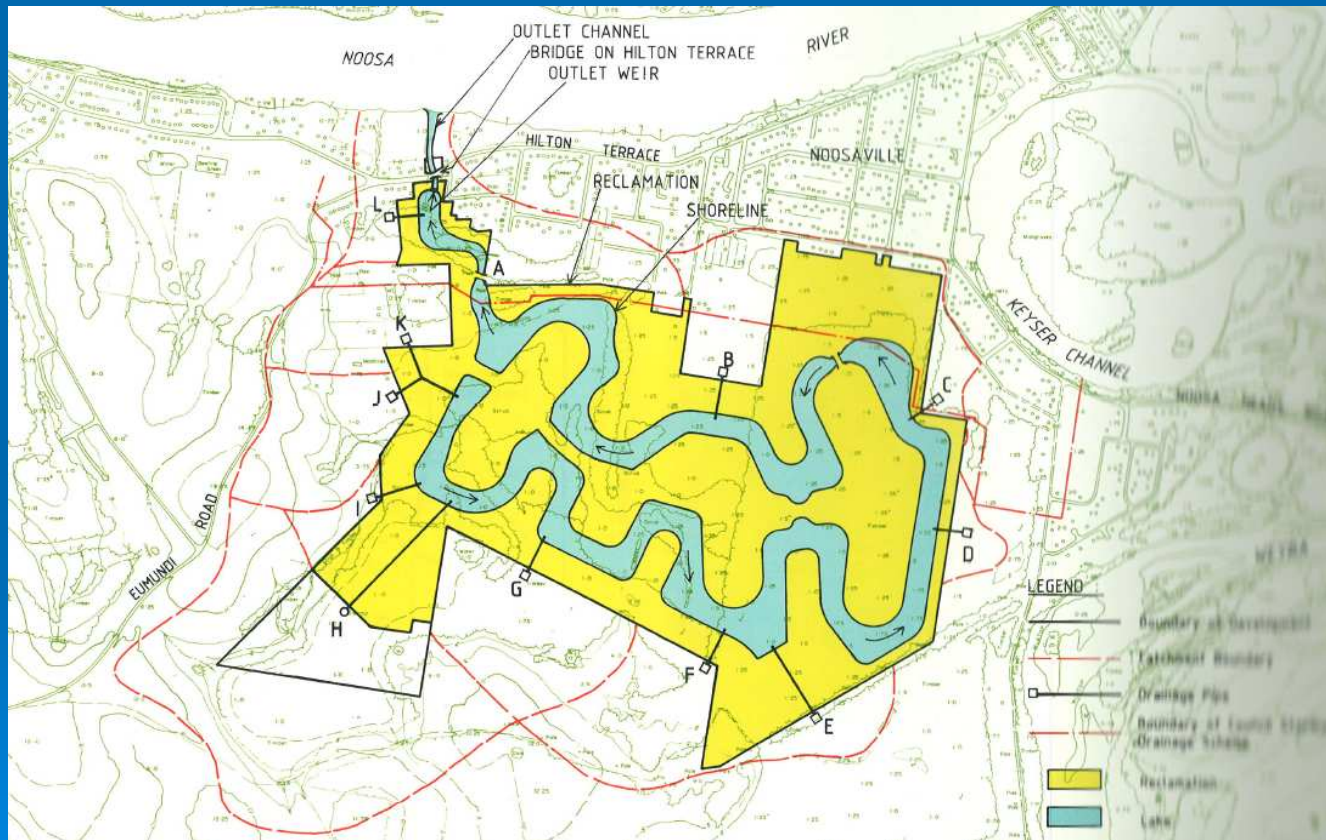
NOOSA WATERS FLOOD INFORMATION PRESENTATION



- The purpose of this presentation is to provide clarification on the impact of storm and flooding events within Noosa Waters Estate.
- The design philosophy that led to the layout of Noosa Waters was primarily to allow a development of low lying land into residential allotments whilst providing suitable flood immunity. This had to be achieved without adversely impacting existing development on the Noosa River and in the surrounding area.
- The easiest means of achieving this was to dig canals/lakes to maintain flood storage and to create spoil for the filling of the proposed parcels.

NOOSA WATERS FLOOD INFORMATION PRESENTATION

Catchment map

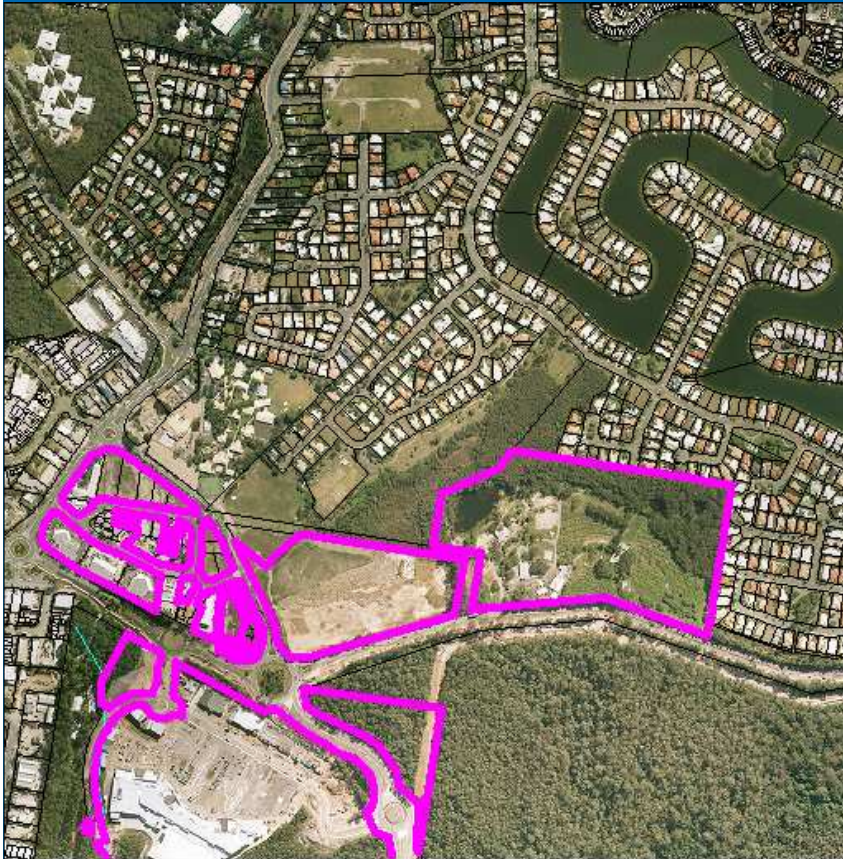


FLOOD TYPES TO BE DISCUSSED

- There are two different types of storms that will be discussed. The first is localised rainfall that is significant (call it a local event) and the regional flood event which is an impact of river flooding (call it a regional event).

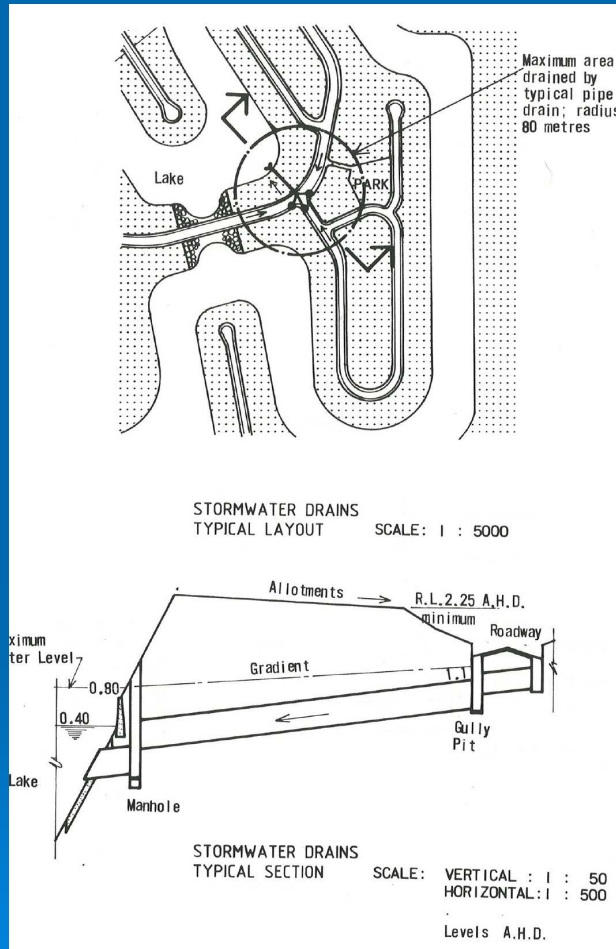


LOCAL EVENT



- In local events the rainfall runoff is coming from the upstream catchments (i.e. areas that drain towards Noosa Waters) and from the rain that falls on Noosa Waters itself.
- The rate of increase in the water level within the canals is dependant upon the rate the water is flowing into the stormwater drainage system (pipes) and from overland flows of stormwater within Noosa Waters and from upstream.
- The rate that water can leave the canals is controlled by the weir constructed as part of the development and the level in the river.
- New developments upstream have been conditioned to ensure that there are no adverse impacts on sites downstream. This is an added security as the design of Noosa Waters catered for the upstream catchments as could be seen on the catchment map in the earlier slide.

LOCAL EVENT (con't)



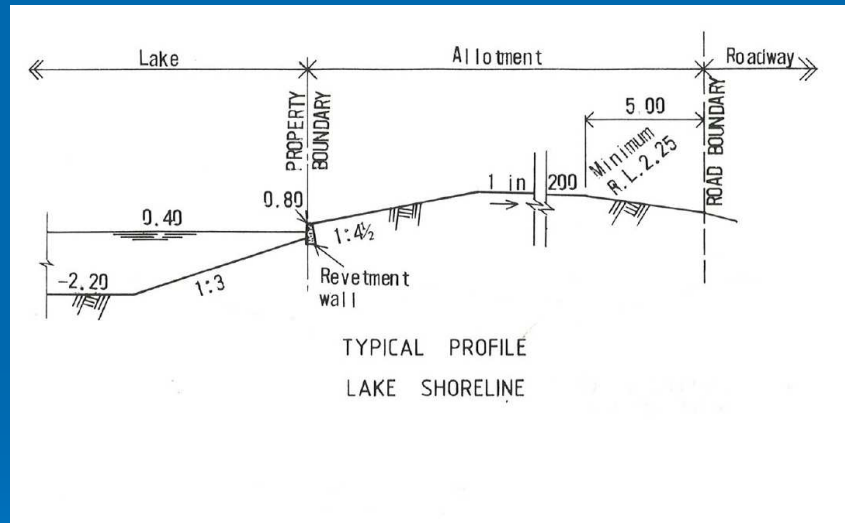
- It is important to note that the pipe system within the road network has only been designed to take a small event (Q5 - 20% probability event for local roads, Q10 - 10% probability event for collector roads), as per accepted engineering standards.
- When the pipes are full the road is designed to flood in order to provide an additional flow path to transport the rest of the rainfall to the outlet point. Roads were designed to have a trafficable depth at the crest for a 1% probability event (Q100).
- This was evident in the rainfall event in August 2007 where there was some flooding of Shorehaven Drive for a short period.
- The ability of the road to drain quickly can be reduced by high water levels in the canal because the pipe outlet may be below the canal water level.

LOCAL EVENT (con't)



- During local intense storms water levels in the canals can overtop the revetment walls.
- This is due to inflows into the canal exceeding the capacity of the weir in releasing waters from the canal. The level of overtopping is dependent upon river heights/tide levels and the amount of rainfall in the catchment.

REGIONAL EVENT



- The adopted Q100 regional flood can be expected to rise to near the top of the batter in Noosa Waters (i.e. this is well above the top of the revetment wall).
- The adopted Q100 regional flood affecting Noosaville is controlled by the level of the Noosa River and is the result of storm surge caused during a major event such as a cyclone. The storm surge in Laguna Bay is the result of short term sea level rise during the event and it sets the level in the Noosa River as it is more dominant than the inflows from upstream catchments and lakes in the adopted model.

REGIONAL FLOOD (con't)

- The level of the river for the Q100 event is well above the weir for the Noosa Waters canal and is estimated to be around the 2.0m AHD mark. This is consistent with the original modelling of the Noosa Waters Estate and is the reason the developer proposed to fill the house sites to a height of 2.25m. Council applies a freeboard to arrive at minimum floor levels for habitable rooms in houses in the area of 2.6m AHD to give a safety margin.
- It is important to realise that the height set by Council is for a particular event (the Q100), which is the event that most local governments use to determine flood levels for development. This does not mean that areas above this will not flood, but it has a relatively low probability of being exceeded in any given year. Council will likely be remodelling the floods of the Noosa River to cater for Climate Change which may give slightly different modelled flood heights, but the current model allowed for 300mm sea level rise and has a safety margin incorporated at present.

Canal Design & Setbacks

- The canal system has been designed to act as a drainage channel and to provide limited storage for stormwater & rises in river levels during heavy rainfall and flood events. This storage referred to is the volume available above the normal canal water level to the top of the batter, to store water/runoff in flood events.
- This storage area can be identified by observing the difference in level between the revetment wall & the top of the slope from the revetment (top of the batter).
- Council's Planning laws prohibit filling & construction works within 4.5m of the revetment wall (the batter area) which would reduce the storage capacity of the drainage channel/canals.
- Accordingly, water from the canal will over-top the revetment walls during river flooding or during heavy rainfall events. The estate has been designed for this to occur and that is the reason for the canal setback and for the difference in level between house sites and the canal revetment walls.