

The effect on flooding as a result of subsidence from the mine has been identified as an important environmental issue to be assessed.

Existing Flood Regime

Two preliminary flood studies of major catchments within the subsidence area have been prepared for the Project.

The flood study of the Yarramalong and Dooralong Valleys focused on the 350 square kilometre catchment above the junction of the Wyong River and Jilliby Jilliby Creek.

The following conclusions about existing flood behaviour were drawn from the study:

- the rivers and creeks have little capacity and most of the flood flows break out of the main channel and inundate the floodplain;
- the 1% AEP flood is approximately 1.1 m higher than a 20% AEP flood and 0.5 m higher than a 5% AEP flood;
- flood widths range from 500 m in the upper valleys to in excess of one kilometre in the lower sections of the valley;
- average velocities are low due to the width of the floodplain;
- higher localised flow velocities occur near bridges in the upper reaches of the valleys;
- the local community has a good understanding of flood behaviour in the valleys due to the frequency and extent of flooding;
- this intuitive knowledge of flood behaviour is demonstrated by the fact that most residences are located either outside the floodplain or on the flood fringe;
- some bridges for private access roads are overtopped by floodwaters in small floods, and during major events they are overtopped early in the storm event; and
- bridges on public roads generally have greater capacity than those serving private properties, but several public bridges are also overtopped in frequent flood events.

The flood study of the Hue Hue Creek catchment focused on five kilometres of Hue Hue Creek, and extended from Porters Creek Swamp to just upstream of Cottesloe Road.

These baseline flood studies demonstrated that both the Yarramalong and Dooralong Valleys are significantly floodprone, before mining. The floodplain is subject to regular inundation to significant depths. Bridges and culverts are cut-off regularly and for long periods during relatively small floods. Large sections of the main roads into both valleys are flood affected and many of the access roads pass through the floodplain.

The Hue Hue Creek floodplain is different as flood depths are significantly less. The majority of flood prone land is located in rural or public open space areas of the catchment rather than in rural residential area.

The Next Phase of Study

The next phase of the study is to undertake an assessment of subsidence impacts on the flooding regime and flood liable structures. The key issues to be addressed in future investigations of the flood impact assessment in the EA report include:

- flood affected dwellings & structures;
- flood liability;
- flood hazard assessment;
- property access;
- time of ponding; and
- proposed flood mitigation measures.

Work has begun on assessing the existing dwellings which are flood affected. There are approximately 57 dwellings in the Yarramalong and Dooralong Valleys and 5 in the Hue Hue Creek floodplain, which are currently considered flood prone. Flood prone land is defined as land which experiences a one in a hundred year flood. The majority of flood prone houses are located outside the proposed mine plan.

