

S1 KEY FINDINGS OF THE CONCEPT REPORT

TABLE S1  
BARADINE TOWN LEVEE CONCEPT DESIGN  
KEY FINDINGS OF CONCEPT REPORT

| Scheme | Elements of Scheme   | Features of Scheme  | Constraints and Conclusion  |
|--------|--|---|---|
| 1      | <p>Refer <b>Figure 4.1</b> and <b>Figure 4.3</b></p> <ul style="list-style-type: none"> <li>Levee on the eastern side of Teridgerie Creek, about 2.8 km long (provisionally extending from Worrigal Street to Wheat Silos 900 m south of Walker Street). Levee heights reach a maximum of 2.2 m in height.</li> <li>Extension of the levee south (upstream) of Wheat Silos to Ashby Road (about 400 m) depends on the results of further hydraulic analysis, supported by additional survey.</li> <li>Scheme includes removal of existing levees (ref. <b>Figure 2.3</b>). However, depending on the results of future geotechnical assessment, it may be possible to incorporate the existing <i>Levee 2</i> into the new raised levee.</li> <li>Scheme requires the upgrade Council's relief drain on eastern side of railway to cater for collection and disposal of town stormwater; and includes flap gates on existing 12 x 750 mm ARMCO culverts to prevent back flooding from Teridgerie Creek (ref. <b>Figure 4.5</b>).</li> <li>Scheme includes a channel on the landward side of levee plus flap-gated pipes to drain the protected area on the eastern floodplain between the railway and the levee.</li> <li>Scheme includes measures to mitigate effects of afflux caused by the levee in properties on western side of Teridgerie Creek (i.e. "third party" impacts), at intersection Namoi - Queen Street and at Worrigal Street (ref. <b>Figures 4.3, 4.4</b> and <b>Section 4.4.2</b>).</li> </ul>   | <ul style="list-style-type: none"> <li>Estimated Cost of <b>Scheme 1: \$5.423 Million</b> (including capital and annual maintenance costs). Indicative capital costs shown on <b>Tables A.1</b> and <b>A.2</b> of <b>Appendix A</b>.</li> <li>Levee footprint is mainly on public land but intrudes into 4 residential allotments.</li> <li><b>Scheme 1</b> and measures to mitigate "third party" impacts protect 66 residential properties and Baradine Hospital against 100 year ARI flooding.</li> <li><b>Scheme 1</b> does not alter the pattern of flows in Bugaldie Creek tributary.</li> <li>Indicative Benefit/Cost Ratio = 1.4 for 7 per cent discount rate (<b>Table 4.2</b>).</li> </ul>  | <ul style="list-style-type: none"> <li>The constriction of flow imposed by levee <b>Scheme 1</b> increases present day flood levels on Teridgerie Creek by up to 300 mm (ref. water surface profiles on <b>Figure 4.2</b>).</li> <li>Not presently possible to determine southern (upstream) extent of levee without additional survey and engineering analysis (ref. <b>Chapter 6</b> of report for recommended approach). The requirement for continuation of the levee south of the Wheat Silos depends on hydraulic analysis to determine the likelihood of overtopping the railway and the direction of any resulting overland flow (whether eastwards to the Namoi catchment or northwards towards Baradine).</li> <li>Estimates of cost are preliminary only and are subject to revision in the light of further data collection (survey and geotechnical assessment) and engineering analysis, but are sufficiently detailed for the purposes of comparison of <b>Scheme 1</b> with <b>Scheme 2</b>.</li> </ul> <p><b>CONCLUSION: SCHEME 1 IS ECONOMICALLY FEASIBLE AND ABOUT \$1.8 LESS EXPENSIVE THAN SCHEME 2. IT IS THE RECOMMENDED SCHEME.</b></p> |
| 2      | <p>Refer <b>Figure 5.1, Figure 5.2 (Sheets 1 and 2)</b> and <b>Figure 5.3</b>.</p> <ul style="list-style-type: none"> <li>Diversion bank across Teridgerie Creek at Ashby Road with a 5 m wide slot for conveyance of low flows downstream to Baradine. Bank diverts flood flows to Bugaldie Creek tributary in Namoi Valley catchment.</li> <li>Remove existing 6 x 1250 mm ARMCO culverts in railway embankment and replace with reinforced concrete structure which directs Bugaldie Creek tributary flows and diverted Teridgerie Creek flows across Coonabarabran Road.</li> <li>Levee on the eastern side of Teridgerie Creek 2.8 km long, from Worrigal Street to Wheat Silos 900 m south of Walker Street, as for <b>Scheme 1</b>. Maximum height of levee is 1.8 m.</li> <li>Extension of the levee south (upstream) of Wheat Silos to Ashby Road (about 400 m) depends on the results of further investigation, supported by additional survey.</li> <li>Scheme allows for replacement of <i>Levee 2</i> (ref. <b>Figure 2.3</b>). However, depending on the results of future geotechnical assessment, it may be possible to incorporate the existing levee into the new raised levee.</li> <li>Upgrade Council's relief drain on eastern side of Railway to cater for town stormwater; includes flap gates on existing 12 x 750 mm ARMCO culverts (ref. <b>Figure 4.5</b>).</li> <li>Provide channel on landward side of levee plus flap-gated pipes to drain protected area between the railway and the levee.</li> <li>Scheme includes measures to protect properties on western side of Teridgerie Creek, similar to <b>Scheme 1</b> (ref. <b>Figure 4.4, 5.3</b> and <b>Section 5.3.2</b>).</li> </ul> | <ul style="list-style-type: none"> <li>Estimated Cost of <b>Scheme 2: \$7.269 Million</b> (including capital and annual maintenance costs). Indicative capital costs shown on <b>Tables A.3</b> and <b>A.4</b> of <b>Appendix A</b>.</li> <li>Levee alignment is same as <b>Scheme 1</b>. Footprint is mainly on public land but intrudes into 4 residential allotments.</li> <li><b>Scheme 2</b> and measures to protect properties on western side of Teridgerie Creek protect 66 residential properties and Baradine Hospital against 100 year ARI flooding, as for <b>Scheme 1</b>.</li> <li>Earth banks (of lesser height and extent than for <b>Scheme 1</b>) are required to protect properties on western side of Teridgerie Creek and at Worrigal Street.</li> <li>Indicative Benefit/Cost Ratio = 1.0 for 7 per cent discount rate (<b>Table 5.2</b>).</li> </ul> | <ul style="list-style-type: none"> <li>The reduction in flows due to the upstream diversion offsets the constriction imposed by the levee. <b>Scheme 2</b> reduces flood levels on Teridgerie Creek in town by up to 260 mm compared with present day conditions (<b>Figure 4.2</b>).</li> <li>Diversion scheme raises flood levels over Coonabarabran Road and downstream levels and flood extents on Bugaldie Creek tributary (<b>Figures 5.3</b> and <b>5.4</b> and <b>Table 5.1</b>).</li> <li>Estimates of cost are preliminary only and are subject to revision in the light of further data collection (survey and geotechnical assessment) and engineering analysis and are only to be used for comparison purposes with <b>Scheme 1</b>.</li> </ul> <p><b>CONCLUSION: SCHEME 2 IS ECONOMICALLY FEASIBLE, BUT IS \$1.8 MILLION MORE EXPENSIVE THAN SCHEME 1. THE DIVERSION OF FLOW FROM TERIDGERIE CREEK INCREASES FLOOD LEVELS OVER COONABARABRAN ROAD, AS WELL AS THE EXTENT OF INUNDATION IN BUGALDIE CREEK TRIBUTARY. SCHEME 2 IS NOT RECOMMENDED.</b></p>  |