The Total Water Cycle Management (TWCM) Plan detailed planning for the Moreton Bay Regional Council (MBRC) area. It has been developed in accordance with the TWCM Planning Guideline for South East Queensland (WBD, 2010a) in order to satisfy requirements of the Environmental Protection (Water) Policy (2009).

The document builds on the initial phase of the process which was the development of a TWCM Strategy, prepared in 2010 (BMT WBM, 2010). The TWCM Plan represents the second phase in a four phase process, which is:

**Phase 1: Preparation of a TWCM Strategy document.** This involved the identification of water cycle management drivers and issues in the MBRC region, development of solutions to address the identified issues, and preliminary assessment of these solutions resulting in a short list of solutions for further detailed analysis in Phase 2.

**Phase 2: Preparation of the final TWCM Plan.** This phase involves a detailed assessment of the costs and benefits of total water cycle management solutions developed in Phase 1. It identifies a preferred management scenario for each catchment to assist with council’s priority infrastructure planning.

**Phase 3: Preparation of an Implementation Plan.** This plan will identify the implementation pathways for the preferred management scenarios identified in phase 2, including costs and benefits.

**Phase 4: Preparation of a Monitoring and Review Plan.** This plan will include development of monitoring programs to measure the efficacy of the proposed management scenarios and inform the TWCM review process.

It is noted that the Mary River, Byron Creek and Neurum Creek catchments are not included in the detailed planning area, as no key water management issues were identified for these catchments during Phase 1.

### Region Facts
- **Area:** 202,543 ha
- **Current Population:** 374,900
- **Future Population:** 566,600*
- **Future Pop. Growth:** 51%*
- **Future Urban Land use:** 17%
- **Surface water storages include** North Pine Dam, Lake Kurwongbah, Woodford and Caboolture Weirs
- **Groundwater storages include** Bribie Island and Dayboro borefields
- **Wastewater treated at** 8 STPs
Key Issues for Total Water Cycle Management

Existing and future water cycle accounts and catchment constraints together with findings from a literature review were used to identify the key water cycle management issues within each catchment. A summary of the key water cycle management issues and the assessment criteria/ information used to identify whether the issue was flagged in each individual catchment is summarised below.

Water quality was identified as a key management issue requiring detailed planning in order to ensure sustainable development within MBRC.

<table>
<thead>
<tr>
<th>Water Cycle Management Issue</th>
<th>Assessment Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population Growth</td>
<td>Significant increase in urban population by 2031, defined as &gt;20,000 people or &gt; 100% (i.e. doubling of population).</td>
</tr>
<tr>
<td>Water Supply</td>
<td>Demand greater than known sustainable storage yields or nominal water treatment plant capacity. Level of Service objectives not met.</td>
</tr>
<tr>
<td>Sewage Treatment Plant (STP) Capacity</td>
<td>Population exceeds the design or the licence capacity (in EP) of STP, or predicted nutrient or discharge loads exceed licence conditions.</td>
</tr>
<tr>
<td>Water Quality</td>
<td>Waterway Report Card Results below &quot;C&quot;, predicted increase in pollutant loads/catchment loads exceed sustainable load targets, Council water quality monitoring results indicating water quality hotspots which do not meet WQOs, development pressures in drinking water catchments.</td>
</tr>
<tr>
<td>Flooding</td>
<td>Due to limited availability of information, this was flagged as an issue in catchments with large areas of urban development.</td>
</tr>
<tr>
<td>Environmentally Sensitive Areas</td>
<td>Presence of High Ecological Value receiving waters, potential for development to impact on other environmentally sensitive areas.</td>
</tr>
</tbody>
</table>

How did we do it?

Solution Feasibility

The TWCM Strategy developed in Phase 1 identified the top ranking solutions for each catchment to address key water cycle management issues identified in each catchment. These solutions were recommended for further investigation in the Total Water Cycle Management Plan.

Selecting Management Scenarios

Three management scenarios were developed for each catchment. These include:

1. **Low Intensity**: These management scenarios included solutions deemed to reflect “business as usual”, that is compliance with pollutant load reduction targets for new development under the State Planning Policy for Healthy Waters (SPP HW), and water saving targets required by the Queensland Development Code (QDC).

2. **Medium Intensity**: These management scenarios added solutions identified in each catchment as ‘easy to do’ and most preferred (considered most cost effective opportunities, low risks) as a result of stakeholder feasibility assessment workshops.

3. **High Intensity**: These management scenarios add solutions that may be considered to stretch the limits in terms of the expected costs and risks identified during the solution feasibility workshops.
A summary of the management scenarios developed for assessment in each catchment is detailed in the following table.

### Solutions and Management Scenarios

<table>
<thead>
<tr>
<th>Management Scenarios</th>
<th>Catchment</th>
<th>Stanley</th>
<th>Pumicestone</th>
<th>Bribie</th>
<th>Caboolture</th>
<th>CIGA</th>
<th>Burpengary</th>
<th>Upper Pine</th>
<th>Lower Pine</th>
<th>Silding</th>
<th>Hays</th>
<th>Redcliffe</th>
<th>Brisbane Coast</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Scenario 1: Low Intensity</strong></td>
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<tr>
<td>Future development meets 80/60/45% load reduction for TSS/TP/TN</td>
<td>✓</td>
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<tr>
<td>Future development meets QDC alternative water supply mandate</td>
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<td>✓</td>
<td>✓</td>
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<tr>
<td><strong>Scenario 2: Medium Intensity</strong></td>
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<tr>
<td>Increased implementation / enforcement of E&amp;SC management practices</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>Waterway riparian revegetation of 3rd &amp; 4th order streams</td>
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<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>Rural BMP for grazing land - revegetation of 1st &amp; 2nd order streams</td>
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<td>✓</td>
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<tr>
<td>Rural BMP for horticultural land - implementation of filter/buffer strips</td>
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<tr>
<td>Education &amp; /or capacity building and investment in incentive schemes</td>
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<td>✓</td>
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<tr>
<td>Prevention of illegal stormwater inflow connections to sewer</td>
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<tr>
<td>Recycled water supplied to land / agricultural users</td>
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<td>Recycled water supplied to urban users</td>
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<td><strong>Scenario 3: High Intensity</strong></td>
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<tr>
<td>WSUD retrofit to existing urban areas</td>
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<tr>
<td>Future greenfield development WSUD measures achieve 'no worsening'</td>
<td>✓</td>
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<tr>
<td>Recycled water supplied to urban users</td>
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<tr>
<td>Large-scale stormwater harvesting for non-potable use (greenfield sites)</td>
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<tr>
<td>Indirect potable reuse of Purified Recycled Water (PRW)</td>
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<tr>
<td>Rainwater tanks retrofitted to existing urban areas for non-potable use</td>
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</tbody>
</table>
Development of Modelling Framework
To quantify the performance of individual solutions, and management scenarios in later sections, the development of an integrated water cycle, catchment and receiving water quality modelling framework was necessary. This modelling framework consisted of a suite of models including catchment models, receiving water quality models and smaller scale urban water balance and urban water quality models.

Assessment of Individual Solution Performance
The costs and benefits of individual solutions proposed for each catchment were assessed by quantifying the net present value, potable water savings, and pollutant treatment performance of each solution over the project’s 20 year planning period (2011 to 2031).

Where to from Here?
On the 30 October 2012, Moreton Bay Regional Council endorsed the Total Water Cycle Management Plan and resolved to move forward with the preparation of Phase 3 of the process, Preparation of an Implementation Plan.

The Implementation Plan is intended to be completed by March, 2013 for council’s endorsement and progression to Phase 4 in the 2013/14 financial year.
The key issues influencing water cycle management* in the Stanley River Catchment are:
- Water Quality;
- Population Growth;
- Water Supply;
- Sewerage Treatment Plant capacity; and
- Environmental Flows

Three management scenarios* were modeled for the Stanley River catchment. The recommended option is management scenario 2. Scenario two will achieve a neutral impact on the waterway system, ‘no worsening from existing conditions’.

Scenario 2 involves the following suite of actions:
- Future Development meets SPP Healthy Waters 80/60/45% load reduction for TSS/TP/TN;
- Future development meets QDC alternative water supply target;
- Rural BMP for Grazing (Revegetation 1st & 2nd order streams);
- Rural BMP for Horticulture - Filter strips;
- Waterway riparian revegetation on 3rd and 4th order streams;
- Increased Implementation/Enforcement of E&SC;
- Land disposal of STP effluent (Woodford);
- Prevention of illegal stormwater inflow connections to sewer;
- Upgrade Woodford STP Capacity; and
- Education and capacity building to support implementation of solutions.

Implementing the preferred management scenario in this catchment over the planning period is predicted to improve waterway health in the Stanley River from an EHMP grade of B- to B.

The total estimated cost of implementing the actions contained within scenario 2 over 20 years is $55 million, which is distributed amongst Council, Unitywater and developers. The major contributing capital expenditure is revegetation of riparian corridors at an estimated value of $43.5 million.

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**Catchment Facts**

- Area: 31,830 ha
- Current Population: 4,100
- Future Population 2031: 8,600
- Future Population Growth: 110%
- Future Urban Land Use: 3%
- Potable Water sourced from Woodford Weir;
- Stormwater runoff drained via Stanley River to Somerset Dam;
- Wastewater treated at Woodford STP;
- EHMP Score (2010): B –
The key issues influencing water cycle management* in the Pumicestone Passage Catchment are:
• Water Quality;
• Environmentally Sensitive Areas; and
• Population Growth.

Three management scenarios* were modelled for the Pumicestone Passage catchment. The recommended option is implementation of management scenario 2. The summary indicates that a no worsening from existing conditions is achieved.

Scenario 2 involves the following suite of actions:
• Future development meets SPP Healthy Waters 80/60/45% load reduction for TSS/TP/TN;
• Future development meets QDC alternative water supply target;
• Rural BMP for Grazing (Revegetation 1st and 2nd order streams);
• Rural BMP for Horticulture - Filter strips;
• Waterway riparian revegetation on 3rd and 4th order streams;
• Increased Implementation/Enforcement of E&SC;
• Education and capacity building to support implementation of solutions.

Implementing the preferred management scenario in this catchment over the planning period is predicted to improve waterway health in the Pumicestone Passage Catchment from an EHMP grade of C-- to C.

The total estimated cost of implementing the actions contained within scenario 2 over 20 years is $54.5 million, which is distributed amongst council and developers. The major contributing capital expenditure is revegetation of riparian corridors at an estimated value of $20 million and developer installed water sensitive urban design.

**It should be noted that the results of the 2010 report card (C-) are based on a much larger (external) catchment that was not the focus of this study.**
Upper Pine River Catchment

The key issues influencing water cycle management* in the Upper Pine River Catchment are:
- Water Quality;
- Water Supply; and
- Sewerage Treatment Plant capacity.

The importance of implementing management measures in this catchment is to protect the drinking water quality of North Pine Dam, a significant regional water storage.

Three management scenarios* were modelled for the Upper Pine River catchment. The recommended option is implementation of management scenario 3. The summary indicates that a no worsening from existing conditions is achieved.

Scenario 3 involves the following suite of actions:
- Future Development meets SPP Healthy Waters 80/60/45% load reduction for TSS/TP/TN;
- Future development meets QDC alternative water supply target;
- Rural BMP for Grazing (Revegetation 1st & 2nd order streams);
- Rural BMP for Horticulture - Filter strips;
- Waterway riparian revegetation on 3rd & 4th order streams;
- Increased Implementation/Enforcement of E&SC;
- Prevention of illegal stormwater inflow connections to sewer;
- Upgrade Water Treatment Plant capacity – Dayboro borefield capacity to be reviewed;
- Upgrade Dayboro STP capacity; and
- Education and capacity building to support implementation of solutions.

Implementing the preferred management scenario in this catchment over the planning period is predicted to improve waterway health in the Upper Pine River from an EHMP grade of C- to C+. It will also assist improving waterway health in the receiving Pine River estuary.

The total estimated cost of implementing the actions contained within scenario 3 over 20 years is $32.5 million, which is distributed amongst council, and developers. The major contributing capital expenditure is revegetation of riparian corridors at an estimated value of $27.5 million.

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Catchment Facts

- Area: 34,890 ha
- Current Population: 2,000
- Future Population: 3,200
- Future Pop. Growth: 60%
- Future Urban Land Use: 2%
- Potable water from North Pine Dam exported to other catchments and Brisbane
- Wastewater treated at Dayboro STP
- Treated wastewater irrigated to land
- EHMP Score 2010: C-
The key issue influencing water cycle management in the Sideling Creek Catchment is:
• Water Quality.

As no future development will be occurring in this catchment, it is noted that the proposed management solutions were limited.

Three management scenarios were modelled for the Sideling Creek catchment.

The recommended option is management scenario 2. The summary indicates that a no worsening from existing conditions is achieved.

Scenario 2 involves the following suite of actions:
• Rural BMP for Grazing (Revegetation 1st & 2nd order streams);
• Rural BMP for Horticulture - Filter strips;
• Waterway riparian revegetation on 3rd & 4th order streams;
• Education and capacity building to support implementation of solutions

Implementing the preferred management scenario in this catchment over the planning period is predicted to improve waterway health in the Sideling Creek catchment from an EHMP grade of C-- to C. It will also assist in improving waterway health in the receiving Pine River estuary.

The total estimated cost of implementing the actions contained within scenario 2 over 20 years is $4 million, which is to be funded by council. The major contributing capital expenditure is revegetation of riparian corridors making up approximately 98% of the estimated expenditure.

Catchment Facts
- Area: 5,267 ha
- Current Population: 1,400
- Future Population: 2,600
- Future Pop. Growth: 87%
- Future Urban Land Use: 11%
- Potable water from Lake Kurwongbah is exported to adjacent catchments
- Wastewater treated at Burpengary East STP and discharges to Caboolture River
- EHMP Score 2010: C-
The key issues influencing water cycle management* in the Hays Inlet Catchment are:

- Water Quality;
- Environmentally Sensitive Areas; and
- Population Growth.
- Sewerage Treatment Plant capacity; and
- Flooding.

Three management scenarios* were modelled for the Hays Inlet catchment.

The recommended option is management scenario 3. The summary indicates that a ‘no worsening’ target from existing conditions is achieved for total suspended solids and total phosphorus. However, not total nitrogen. This is likely due to the increase in loads to Hays Inlet from the Redcliff STP**.

Scenario 3 involves the following suite of actions:

- Future Development meets SPP Healthy Waters 80/60/45% load reduction for TSS/TP/TN;
- Future development meets QDC alternative water supply target;
- Waterway riparian revegetation on 3rd & 4th order streams;
- Increased Implementation/Enforcement of E&SC;
- Prevention of illegal stormwater inflow connections to sewer;
- Stormwater harvesting for non-potable use;
- WSUD retrofit to existing urban areas;
- Upgrade Redcliffe STP design capacity
- Recycled water supplied to urban users (Redcliffe STP); and
- Education and capacity building to support implementation of solutions.

Implementing the preferred management scenario in this catchment over the planning period is predicted to improve waterway health in the Hays Inlet catchment (Bramble Bay) from an EHMP grade of D+ to C-.

The total estimated cost of implementing the actions contained within scenario 3 over 20 years is $173 million, which is distributed amongst council, Unitywater and developers. The major contributing capital expenditure is developer installed water sensitive urban design and water conservation measures and a recycled water supply to urban users.

**To meet the legislative intent of the EPP Water (2009), at minimum a ‘no worsening’ in water quality is required. To achieve a ‘no worsening’ in water quality for total nitrogen, it is recommended that the following additional treatment measures be investigated:

- Upgrade of effluent nitrogen treatment process at Redcliffe STP;
- Increased implementation of WSUD retrofit at a streetscape scale; and
- Potential cap on population growth.
The key issues influencing water cycle management in the Bribie Island catchment are:

- Water Quality; and
- Environmentally Sensitive Areas.

Three management scenarios were modeled for the Bribie Island catchment.

The recommended option is implementation of Scenario 2. Although there was not much difference in the score between Scenario 1 and Scenario 2, the small additional costs for Scenario 2 associated with increased enforcement of erosion and sediment control were considered worthwhile for the adoption of this scenario.

Scenario 2 involves the following suite of actions:

- Future Development meets SPP Healthy Waters 80/60/45% load reduction for TSS/TP/TN;
- Future development meets QDC alternative water supply target;
- Increased implementation/enforcement of E&SC on development sites; and
- Education and capacity building to support implementation of solutions.

Implementing the preferred management scenario in this catchment over the planning period is predicted to maintain the current waterway report card ranking of D+. It is noted that the Bribie Island catchment only has a small contribution towards the overall EHMP score for Pumicestone Passage.

The total estimated cost of implementing the actions contained within Scenario 2 over 20 years is $9 million, which is distributed amongst council and developers. The major contributing capital expenditure is developer costs in implementing WSUD in future developments at an estimated cost of $8.5 million.

Catchment Facts

- Area: 10,710 ha
- Current Population: 17,100
- Future Population: 21,800
- Future Pop. Growth: 27%
- Future Urban Land Use: 11%
- Water Supply Catchment: Potable water sourced from groundwater aquifer and supplemented by reticulated water network
- Bribie Island STP discharges to groundwaters.
- EHMP Score 2010: D+ (Pumicestone Passage)
The key issues influencing water cycle management* in the Redcliffe catchment are:
• Water Quality;
• Environmentally Sensitive Areas;
• Population Growth;
• Sewerage Treatment Plant capacity; and
• Flooding.

It is noted that part of the Redcliffe peninsula is located within Hays catchment. Therefore more complex TWCM solutions are examined within the Hays catchment.

Three management scenarios* were modeled for the Redcliffe catchment. The recommended option is Scenario 1. Due to the high additional costs for Scenario 2 and negligible difference in score, Scenario 1 was adopted as the preferred scenario.

The summary indicates that no worsening targets are met for Total Suspended Solids, Nitrogen and Phosphorus.

Scenario 1 involves the following suite of actions:
• Future Development meets SPP Healthy Waters 80/60/45% load reduction for TSS/TP/TN; and
• Future development meets QDC alternative water supply target.

Implementing the preferred management scenario in this catchment over the planning period is predicted to maintain the existing water quality with an EHMP grade of D+. Other external catchments influence this grade.

The total estimated cost of implementing the actions contained within Scenario 1 over 20 years is $34 million, which is distributed amongst council and developers. The major contributing capital expenditure is developer costs in implementing WSUD for future developments at an estimated cost of $31 million.

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**Catchment Facts**

- **Area:** 2,662 ha
- **Current Population:** 49,600
- **Future Population:** 72,900
- **Future Pop. Growth:** 47%
- **Future Urban Land Use:** 73%
- **Potable water sourced from North Pine Dam and Lake Kurwongbah**
- **Wastewater treated at Redcliffe STP in Hays Inlet catchment**
- **EHMP Score 2010:** D+ (Bramble & Deception Bays)

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**Legend**

- Water treatment plant
- Sewage treatment plant
- Waterways
- Urban footprint
- Conservation area
- High ecological value area
- Water storage

---

**Burpengary Creek Catchment**

**Deception Bay**

**Hays Inlet Catchment**

**Bramble Bay**
Brisbane Coastal Catchment

The key issue influencing water cycle management in the Brisbane Coastal catchment is Water Quality.

Three management scenarios were modeled for the Brisbane Coastal catchment.

The recommended option is implementation of Scenario 2. Although Scenario 3 scored marginally better than Scenario 2, the additional costs associated with Scenario 3 were not considered worthwhile for the adoption of this scenario.

The summary indicates that no worsening targets are met for Total Suspended Solids, Nitrogen and Phosphorus.

Scenario 2 involves the following suite of actions—
- Future Development meets SPP Healthy Waters 80/60/45% load reduction for TSS/TP/TN;
- Future development meets QDC alternative water supply target;
- Increased implementation/enforcement of E&SC on development sites; and
- Education and capacity building to support implementation of solutions.

Implementing the preferred management scenario in this catchment over the planning period is predicted to maintain the existing water quality despite future development with an EHMP grade of D+. However, significant external catchment impacts upon this score.

The total estimated cost of implementing the actions contained within Scenario 2 over 20 years is $2.5 million, which is distributed amongst Council and developers. The major contributing capital expenditure is developer costs in implementing WSUD for future developments at an estimated cost of $2.3 million.

Catchment Facts

- Area: 1,530 ha
- Current Population: 22,600
- Future Population: 24,100
- Future Pop. Growth: 6%
- Future Urban Land Use: 39%
- Potable water sourced from North Pine Dam
- Wastewater treated at Brendale STP in adjacent Lower Pine River catchment
- EHMP Score 2010: D+ (Bramble Bay)
The key issues influencing water cycle management in the Burpengary Creek Catchment are:

- Population Growth;
- Sewerage Treatment Plant capacity;
- Water Quality;
- Water Quantity (flooding); and
- Environmentally Sensitive Areas.

Three management scenarios were modeled for the Burpengary Creek catchment. The recommended option is the implementation of scenario 3. The summary indicates that ‘no worsening’ targets are achieved for Total Suspended Solids, Nitrogen and Phosphorus.

Scenario 3 involves the following suite of actions:

- Future development meets QDC alternative water supply target
- Waterway riparian vegetation of 3rd and 4th order streams;
- Rural BMP for Grazing (revegetation of 1st and 2nd order streams)
- Increased Implementation/Enforcement of ES&C
- Greenfield WSUD achieves ‘no worsening’
- Stormwater harvesting for non-potable use
- WSUD retrofit to existing urban areas
- Education and capacity building to support implementation of solutions.

Implementing the preferred management scenario in this catchment over the planning period is predicted to improve waterway health in Deception Bay (the receiving waters) from a D+ to a C+.

The total estimated cost of implementing the actions contained within scenario 3 over 20 years is $84 million, which is distributed amongst council, Unitywater and developers. The major contributing capital expenditure is WSUD retrofit to existing urban areas at an estimated value of $22 million.
The key issues influencing water cycle management in the Caboolture River Catchment are:
- Population Growth;
- Sewerage Treatment Plant capacity;
- Water Quality;
- Water Quantity (flooding); and
- Environmentally Sensitive Areas.

Three management scenarios were modelled for the Caboolture River Catchment. The recommended option is the implementation of scenario 2. The summary indicates that ‘no worsening’ targets are achieved for Total Suspended Solids and Total Phosphorus, but not for Total Nitrogen.

Scenario 2 involves the following suite of actions:
- Future development meets QDC alternative water supply target
- Greenfield WSUD meetings SPP Healthy Waters target
- Waterway riparian revegetation (3rd & 4th order streams)
- Rural BMP for grazing – fencing and revegetation for 1st & 2nd order streams
- Rural BMP for horticulture – filter strips
- Increased implementation/enforcement of ES&C on development sites
- Recycled water supplied to agricultural users
- Prevention of illegal stormwater inflow connections to sewer
- Education and capacity building to support implementation of solutions
- Upgrade STP capacity.

In addition to these actions, additional treatment measures will need to be investigated to work towards meeting the ‘no worsening’ target for Total Nitrogen. These include:
- WSUD retrofit at a streetscape scale, particularly through urban renewal and road upgrade projects
- Stormwater harvesting in greenfield developments
- Upgrade of effluent nitrogen treatment process at Burpengary and Caboolture South STPs
- Potential population cap.

Implementing the preferred management scenario in this catchment over the planning period is predicted to improve waterway health in the Caboolture River from an EHMP grade of D to D+.

The total estimated cost of implementing the actions contained in scenario 2 over 20 years is $234 million, which is distributed amongst council, Unitywater and developers. The major contributing capital expenditure is revegetation of riparian corridors at an estimated $61.2 million.
The key issues influencing water cycle management in the Lower Pine River Catchment are:
• Population Growth;
• Sewerage Treatment Plant capacity;
• Water Quality;
• Water Quantity (flooding); and
• Environmentally sensitive areas.

Thee management scenarios were modeled for the Lower Pine Rivers catchment. The recommended option is the implementation of scenario 2. Scenario 2 does not meet the targets for Total Nitrogen (TN) and Total Phosphorus (TP), predominately as a result of the two Sewerage Treatment Plants located within this catchment.

In order to achieve ‘no worsening’ targets for TN and TP, purified recycled water would need to be redirected to a potable water supply. Under current State government policy this action is not possible until dam capacity drops to 40%.

Scenario 2 involves the following actions:
• Future development meets SPP Healthy Waters target
• Future development meets QDC alternative water supply target
• Waterway riparian revegetation (3rd and 4th order streams)
• Increased Implementation/Enforcement of E&SC
• Rural BMP for grazing (revegetation 1st and 2nd order streams)
• Recycled water to urban users.

Implementing the recommended option in this catchment over the planning period is predicted to decrease waterway health in the Pine River estuary from an EHMP grade C- to D+.

The total estimated cost of implementing the actions contained within scenario 2 over 20 years is $134.6 million, which is distributed amongst Council, Unitywater and developers. The major contributing capital expenditure is recycled water to urban uses at an estimated value of $29.3 million.
The key issues influencing water cycle management in the Caboolture West master plan area are:
• Water Supply
• Water Quality
• Sewerage Treatment Plan capacity

Three management scenarios were modeled for the Caboolture West master plan area.

The performance of both Scenario 1 and Scenario 2 were modeled. Neither Scenario 1 or 2 meet the ‘no worsening’ targets for Total Nitrogen and Total Phosphorus. The recommended option is scenario 1.

Scenario 1 involves the following suite of actions –
• Future development meets SPP Healthy Waters target
• Future development meets QDC alternative water supply target
• Recycled water for public open space irrigation with the remainder discharged to land.

Implementing the recommended option within this master plan area over the planning period is estimated to result in the EHMP grade for the Caboolture River (freshwater) to lower slightly from a C+ to a C. Further detailed catchment planning is required to identify sustainable solutions for this catchment.

The total estimated cost of implementing the actions contained within scenario 1 (with the exception of the new STP) over 20 years is $210.7 million, which is distributed between Unitywater and developers. The major contributing capital expenditure is recycled water irrigation of public open space at an estimated value of $74.6 million.