ENVIRONMENTAL ASSESSMENT REPORT

Carrick Wastewater Treatment Plant – Discharge Outfall Relocation

Off Meander Valley Road, Carrick

TasWater

Board of the Environment Protection Authority
August 2015
Environmental Assessment Report

<table>
<thead>
<tr>
<th>Proponent</th>
<th>TasWater (Tasmanian Water &amp; Sewerage Corporation Pty Ltd)</th>
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</thead>
<tbody>
<tr>
<td>Proposal</td>
<td>Carrick Wastewater Treatment Plant – Discharge Outfall Relocation</td>
</tr>
<tr>
<td>Location</td>
<td>Off Meander Valley Road, east of Carrick</td>
</tr>
<tr>
<td>NELMS no.</td>
<td>9233</td>
</tr>
<tr>
<td>Permit application no.</td>
<td>PA/15/0110 (Meander Valley Council)</td>
</tr>
<tr>
<td>Doc1 folder</td>
<td>EN-EM-EV-DE-225780</td>
</tr>
<tr>
<td>Doc1 no.</td>
<td>H431625</td>
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<tr>
<td>Class of Assessment</td>
<td>2B</td>
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</tbody>
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Assessment process milestones

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>29 January 2015</td>
<td>Notice of Intent submitted¹</td>
</tr>
<tr>
<td>19 January 2015</td>
<td>DPEMP Guidelines issued²</td>
</tr>
<tr>
<td>20 January 2015</td>
<td>Valid permit application submitted to Council</td>
</tr>
<tr>
<td>7 February 2015</td>
<td>Application received by Board</td>
</tr>
<tr>
<td>11 March 2015</td>
<td>Start of public consultation period</td>
</tr>
<tr>
<td></td>
<td>End of public consultation period</td>
</tr>
</tbody>
</table>

¹ A Notice of Intent was submitted by Ben Lomond Water on 24 July 2012, but it effectively lapsed when TasWater was established on 1 July 2013.
² Guidelines were initially issued on 3 September 2012 but they effectively lapsed when TasWater was established on 1 July 2013. They were formally reissued on 29 January 2015 after the permit application was referred to the Board.
<table>
<thead>
<tr>
<th>Acronyms</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADWF</td>
<td>Average Dry Weather Flow</td>
</tr>
<tr>
<td>Board</td>
<td>Board of the Environment Protection Authority</td>
</tr>
<tr>
<td>DPEMP</td>
<td>Development Proposal and Environmental Management Plan</td>
</tr>
<tr>
<td>DPIPWE</td>
<td>Department of Primary Industries, Parks, Water and Environment</td>
</tr>
<tr>
<td>EIA</td>
<td>Environmental impact assessment</td>
</tr>
<tr>
<td>EMPC Act</td>
<td><em>Environmental Management and Pollution Control Act 1994</em></td>
</tr>
<tr>
<td>EMPCS</td>
<td>Environmental management and pollution control system</td>
</tr>
<tr>
<td>EPA</td>
<td>Environment Protection Authority</td>
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<tr>
<td>EPBC Act</td>
<td><em>Environment Protection and Biodiversity Conservation Act 1999 (Cth)</em></td>
</tr>
<tr>
<td>LUPA Act</td>
<td><em>Land Use Planning and Approvals Act 1993</em></td>
</tr>
<tr>
<td>RMPS</td>
<td>Resource management and planning system</td>
</tr>
<tr>
<td>SD</td>
<td>Sustainable development</td>
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</table>
Report summary

This report provides an environmental assessment of TasWater’s proposed discharge outfall relocation for the Carrick wastewater treatment plant (WWTP).

The proposal involves the relocation of the effluent discharge point from the Liffey River to the Meander River, with the construction of a new pipeline from the existing WWTP to the Meander. The relocation is expected to result in a significant improvement for receiving waters. The Meander River has higher flows (and therefore improved mixing potential) compared to the very low flows and poor mixing currently experienced in the Liffey River.

This report has been prepared based on information provided by the proponent in the Development Proposal and Environmental Management Plan (DPEMP). Relevant government agencies and the public have been consulted and their submissions and comments considered as part of this assessment.

Further details of the assessment process are presented in section 1 of this report. Section 2 describes the statutory objectives and principles underpinning the assessment. Details of the proposal are provided in section 3. Section 4 reviews the need for the proposal and considers the proposal, site and design alternatives. Section 5 summarises the public and agency consultation process and the key issues raised in that process. The detailed evaluation of key issues is in section 6, and other issues are evaluated in section 7 and Appendix 1. The report conclusions are contained in section 8.

Appendix 2 contains environmental permit conditions required by the EPA Board for the new outfall.
# Table of Contents

1 Approval process .................................................................................................................. 1  
2 SD objectives and EIA principles ....................................................................................... 3  
3 The proposal ......................................................................................................................... 4  
4 Need for proposal and alternatives .................................................................................... 9  
5 Public and agency consultation .......................................................................................... 11  
6 Evaluation of key issues ...................................................................................................... 12  
   6.1 Ambient water quality impact ......................................................................................... 12  
7 Other issues .......................................................................................................................... 22  
8 Report conclusions .............................................................................................................. 23  
9 References .......................................................................................................................... 24  
10 Appendices ......................................................................................................................... 25  
   Appendix 1 Assessment of other issues ............................................................................. 26  
   Appendix 2 Permit Conditions - Environmental ................................................................. 28
1 Approval process

The approval process for this proposal was somewhat irregular as TasWater (the Tasmanian Water & Sewerage Corporation Pty Ltd) was established after the process commenced. Difficulties were also experienced in determining the appropriate assessment mechanism under the EMPC Act.

A Notice of Intent in relation to the proposal was originally submitted by Ben Lomond Water (BLW), the regional water corporation that preceded TasWater and which had responsibility for the Carrick WWTP. The Notice was received by the Board of the Environment Protection Authority (the Board) on 24 July 2012.

The Board required that information to support the proposal be provided in the form of a Development Proposal and Environmental Management Plan (DPEMP) prepared in accordance with guidelines issued by the Board on 3 September 2012 to BLW. BLW then commenced preparation of the DPEMP.

On 1 July 2013 TasWater commenced trading in accordance with the Water and Sewerage Corporation Act 2012 and became responsible for the functions and assets of BLW. The EPA Division of the Department of Primary Industries, Parks, Water and Environment was of the view that the transitional provisions of the Water and Sewerage Corporation Act did not provide for continuation of current development assessment and approval processes. The Division came to an agreement with TasWater that current assessment processes for TasWater development proposals would continue on an informal basis until such time as a land use planning permit application was submitted to the relevant Council for each proposal. In the case of the Carrick WWTP proposal the preparation and review of the DPEMP was continued and an acceptable DPEMP was received on 5 December 2014. Several drafts of the DPEMP were submitted to the EPA Division for comment prior to its finalisation and acceptance.

An application for a permit (for the new discharge outfall) was submitted to Meander Valley Council on 16 December 2014, but the Council did not consider it valid as it was not accompanied by a necessary Crown Lands approval (the Meander River, into which the new outfall would discharge, is Crown land). The Crown Lands approval was obtained by the proponent and the Council accepted the permit application as valid on 19 January 2015. The final DPEMP was submitted with the permit application.

Both the EPA Division and Meander Valley Council were initially of the view that the proposed outfall was a ‘level 2 activity’ under clause 3(a), Schedule 2 of the EMPC Act, as it was considered that the outfall was a non-ancillary component of the existing Carrick WWTP. Council accordingly referred the permit application to the EPA Board under section 25(1) of the EMPC Act for assessment under the Act. The application was formally received on 20 January 2015. The Board’s delegate then re-determined the class of assessment and reissued the DPEMP Guidelines in accordance with the EMPC Act. The DPEMP was formally accepted at the same time.

The DPEMP was released for public inspection for a 28-day period commencing on 7 February 2015. Advertisements were placed in the Launceston Examiner and on the EPA website. The DPEMP was also referred at that time to relevant government agencies for comment. No public representations were received.
It subsequently came to the attention of the EPA Division that the proposed outfall would not be located on the same parcel of land as the WWTP, and thus Meander Valley Council could not validly refer the permit application to the Board under section 25(1) of the EMPC Act as a level 2 activity. Legal advice provided to the Division indicated that the assessment could nonetheless proceed as if the permit application were for a ‘level 1 activity’ and had been ‘called in’ by the Director, Environment Protection Authority under section 24(1) of the Act. Council agreed to proceed in this manner.

At its meeting of 7 July 2015, the Board of the EPA determined, under section 24(4) of the EMPC Act, that the proposed activity will not be treated as a level 1 activity for the purposes of the EMPC Act after the Board’s assessment is completed. This was necessary in order to ensure that the Board’s permit conditions issued under section 25 will have effect (in the event that Meander Valley Council grants a permit) and that the Director can effectively regulate the outfall (in both the construction and operational phases). The outfall is an integral part of the WWTP and it is necessary for the EPA to be able to regulate it along with the WWTP.

**Related matters**

The underground portion of the proposed new pipeline to carry effluent to the new discharge outfall location does not require a permit application to the Council, as it is exempt from the requirements of the *Land Use Planning and Approvals Act 1993* under regulation 11(d) of the *Water and Sewerage Industry (General) Regulations 2009*. The pipeline will therefore be assessed internally by the EPA Division and any conditions on its construction and operation will be imposed through the regulation of the existing WWTP.

A scheme to reuse a proportion of effluent from the Carrick WWTP, for irrigation on an adjacent farming property, was also proposed by TasWater and was recently approved by the Director, EPA. It is proposed that effluent for reuse be drawn from a take-off point on the new outfall pipeline. A reuse scheme is not a level 2 activity and such schemes are assessed internally by the EPA Division in conjunction with an advisory group, the Wastewater Reuse Coordinating Group (WWRCG).

Neither the reuse scheme nor the underground portion of the pipeline are assessed in this report.
2 SD objectives and EIA principles

The proposal must be considered by the Board in the context of the objectives of the Resource Management and Planning System of Tasmania (RMPS), and in the context of the objectives of the Environmental Management and Pollution Control System (EMPCS) (both sets of objectives are specified in Schedule 1 the EMPC Act). The functions of the Board are to administer and enforce the provisions of the Act, and in particular to use its best endeavours to further the RMPS and EMPCS objectives.

The Board must undertake the assessment of the proposal in accordance with the Environmental Impact Assessment Principles defined in Section 74 of the EMPC Act.
3 The proposal

The proposal involves the existing Carrick WWTP (which services both Carrick and Hadspen). The proposal is for the relocation of the effluent discharge outfall of the WWTP from the Liffey River to the Meander River, and provision of an associated pipeline. Effluent to be reused for irrigation on the adjacent farming property will be drawn from a take-off point on the new pipeline. Effluent not reused for irrigation will be discharged at the new outfall in the Meander.

The main characteristics of the proposal are summarised in Table 1. A detailed description of the proposal is provided in Section 2 of the DPEMP.

Table 1: Summary of the proposal's main characteristics

<table>
<thead>
<tr>
<th>Activity</th>
<th>Location and planning context</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location</td>
<td>Off the Meander Valley Road, east of Carrick (see Figure 1).</td>
</tr>
<tr>
<td>Land zoning</td>
<td>The WWTP is zoned Utility Services under the Meander Valley Interim Planning Scheme 2013. The surrounding farming property, which the pipeline will traverse, is zoned Rural Resource.</td>
</tr>
<tr>
<td>Land tenure</td>
<td>The WWTP is on two titles held by TasWater. The land surrounding the WWTP is “The Moat” farming property on a single title. The pipeline for the new discharge will traverse this property, and TasWater will acquire an easement for the pipeline route. The outfall is into the Meander River, which is Crown land and which lies between The Moat property and the farming property on the opposite side of the river.</td>
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<table>
<thead>
<tr>
<th>Existing site</th>
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<tbody>
<tr>
<td>Land Use</td>
</tr>
<tr>
<td>Topography</td>
</tr>
<tr>
<td>Geology</td>
</tr>
<tr>
<td>Soils</td>
</tr>
<tr>
<td>Hydrology</td>
</tr>
</tbody>
</table>
### Fauna
A site survey of the Meander River in the vicinity of the proposed new discharge point showed high levels of diversity of macroinvertebrate fauna, and overall diversity and abundance was consistent with water quality already impacted by habitat degradation, reduced riparian condition and hydraulic manipulation. No general information on terrestrial fauna is provided in the DPEMP.

### Flora
In general the riparian vegetation is reduced and dominated by exotic species (willows and blackberry). Many areas of the bank have been cleared for agricultural use. A small (<2 hectare) remnant of Tussock Grassland on the floodplain was identified in a 2001 survey outside but adjacent to the irrigation area.

### Local region

#### Climate
Mean annual rainfall (recorded at Carrick) is 925 mm. The 90th percentile wet year mean rainfall is 1151 mm. Rainfall is highest during the winter months, with January being the driest month.

Temperatures at Cressy (the nearest suitable observing station) are generally warm from November to March with mean maximum temperatures ranging from 18.9°C to 23.6°C. From April to October the mean maximum temperature ranges from 10.9°C to 17.5°C.

Year-round prevailing winds at Cressy are north-westerly at 9.00 am and at 3.00 pm. Wind data from Launceston was considered also. Both sets of available information suggest that prevailing winds are north-westerly at Carrick.

#### Surrounding land zoning, tenure and uses
Most of the land surrounding the WWTP and The Moat property is zoned Rural Resource and used for agricultural purposes. Carrick township lies to the south-east of the WWTP and is zoned Residential, Village and Recreation.

There are no conservation reserves in the vicinity of the proposal site. There is a Public Reserve located approximately 500 metres west of the site along the Liffey River, and a Conservation Covenant is located approximately one kilometre south-west of the site.

The nearest residence to the proposed new discharge outfall is approximately 340 metres distant to the north-east, on the opposite side of the Meander River. The nearest downstream water user is approximately 740 metres from the proposed outfall (see Figure 1).

#### Species of conservation significance
A desktop assessment found that although the EPBC Act protected matter search tool identified the site area as containing potential habitat for Australian Grayling, Swan galaxias and the Green and Gold Frog, there are no recorded observations of these aquatic fauna species within either a 500 metre or 5000 metre radius of the proposed new discharge point.

A desktop investigation revealed that a number of threatened terrestrial fauna have previously been recorded or predicted to occur within 500 metres and 5 km of the site. A field survey concluded, however, that the site was dominated by exotic vegetation with only small patches of relatively low quality remnant native habitat of limited value for threatened fauna species.

The Natural Values Atlas returned one record of Tasmanian Threatened Species Act (TSP Act) listed rare flora species Vallisneria australis (water ribbon) within a 500 metre radius of the proposed discharge point. This species has been recorded downstream at the Westbury Road Bridge.

No listed species were identified in the Meander River during the course of biological monitoring.
## Proposed infrastructure

### Major equipment
As part of the new discharge, a new outfall pipeline will be constructed to connect the existing storage dam with the existing irrigation infrastructure and the proposed Meander River outfall. The proposed outfall pipeline will include an offtake for the reuse scheme to the existing Moat property travelling irrigation infrastructure from an existing pump station. The discharge point in the Meander River will have an underwater four-port outlet. New instrumentation and telemetry will be provided to monitor and control flows to the discharge outfall and the reuse scheme.

### Other infrastructure
No significant changes to other infrastructure are proposed.

## Inputs

### Water
The existing WWTP treats up to 624 kL/day ADWF of sewage from the Carrick and Hadspen areas. No change to this limit is proposed under this proposal.

### Energy
No significant change in energy consumption is anticipated for the operational phase. There will be normal energy requirements for machinery and vehicles during the construction phase.

### Other raw materials
Materials will be required for construction of the pipeline and outfall. No significant change in raw material requirements is anticipated for the operational phase.

## Wastes and emissions

### Liquid
Possible impacts to surface waters during the pipeline construction phase include disturbance and increased turbidity in the river during the installation of the pipeline outfall. Pipeline earthworks will be shallow and impacts on groundwater are unlikely.

Discharges of WWTP effluent to the environment will be reduced because some effluent will in future be directed to the reuse scheme, but that is not directly relevant to this assessment of the new outfall.

### Atmospheric
There may be dust emissions from works during the construction phase, depending on weather conditions. There will be exhaust emissions from construction machinery and vehicles.

There will be no significant atmospheric emissions in the operational phase from the new discharge outfall. Potential for odour from the existing WWTP will probably be reduced as a result of redirecting effluent from the existing open drainage channel and outfall to the new pipeline and underwater discharge point. There have been no reported odour incidents in the last three years relating to the WWTP and there is no evidence of odour issues with the existing drainage discharge channel.

### Solid
Construction materials, packaging and general refuse will be generated during the construction phase. Small quantities of miscellaneous waste such as machinery parts are generated from WWTP maintenance, but no significant change is expected as a consequence of the current proposal.

### Controlled wastes
Sludge (biosolid waste) is periodically removed from the WWTP lagoons, but no significant change is expected as a consequence of the current proposal.

### Noise
Operational noise levels are not expected to change as a consequence of the current proposal. Current activities do not generate detectable noise at nearby residences.

There will be noise emissions from machinery and vehicles during the construction phase, during daylight hours only.

### Greenhouse gases
Operational greenhouse gas emissions are not expected to change significantly as a consequence of the current proposal. There will be emissions from construction machinery and vehicles during the construction phase.
### Construction, commissioning and operations

<table>
<thead>
<tr>
<th><strong>Proposal timetable</strong></th>
<th>No operational commencement date is proposed in the DPEMP. Detail design would commence immediately following approval of the proposal. The construction period would be of three months’ duration.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Operating hours (ongoing)</strong></td>
<td>Operation of the WWTP will be continuous as at present, although effluent discharge to the river will become less frequent because of the reuse scheme.</td>
</tr>
</tbody>
</table>

### Other key characteristics

<table>
<thead>
<tr>
<th><strong>Future developments</strong></th>
<th>This proposal is an interim solution to water quality issues associated with the Carrick WWTP. For the longer term, the proponent is investigating rationalisation of sewage treatment and reuse for Carrick, Hadspen and other nearby areas.</th>
</tr>
</thead>
</table>
Figure 1: Site plan (Figure 2 of the DPEMP)
4 Need for proposal and alternatives

Rationale

The new discharge pipeline and outfall will deliver an improvement to the quality of the existing receiving water by improving the mixing of effluent. The new pipeline location will also enable partial reuse of the effluent to occur by providing an offtake point for The Moat property irrigation. The availability of effluent for reuse is expected to reduce the overall volume of effluent discharged to water and reduced pollutant loads, whilst at the same time provide an agricultural benefit to The Moat property owner. The new pipeline and outfall development is considered a short-medium term improvement, whilst longer term solutions for Carrick involving a WWTP upgrade and potentially full reuse are considered.

The current Carrick WWTP discharge is via an open drainage channel to the Liffey River. The flow rates in the receiving waters of the Liffey River are often very low in dry months and consequently, mixing of effluent is less than optimal. The establishment of a new discharge location in the Meander River will provide a substantial improvement in effluent mixing as the flows in the Meander River are significantly greater than that in the Liffey River.

The proposed new pipeline provides the infrastructure for effluent to be partially reused (irrigated) during drier (low flow) conditions and discharge to the receiving water during wet conditions and generally preferred higher flow conditions. The access to irrigation infrastructure will also assist further in the management and control of blue green algae where effluent may be irrigated on new land areas during blue green algae outbreaks (DPEMP, section 2.1).

Site alternatives

The selection of the proposed outfall site and pipeline route was made on the basis of relocating the current discharge from the relatively low flow Liffey River to the higher flow Meander River where more efficient dilution can be achieved. The pipeline location also allows for an offtake to the existing Moat Property irrigation infrastructure so that treated effluent from the WWTP can be partially re-used. Only the subject site meets both these criteria and was selected on this basis. TasWater has undertaken successful discussions on the proposal with the owners of The Moat property (DPEMP, section 2.7.1).

Design alternatives

A single port discharge outlet on the edge of the river was considered as an alternative to the four-port outfall in the middle of the river. Mixing dilutions modelled during the mixing zone assessment suggested that the four-port discharge centrally positioned would provide the best mixing zone and was preferable over discharge from the river edge (DPEMP, section 2.7.2).

Management and operational alternatives

The alternative option to a new pipeline and outfall location is to implement a full reuse scheme. The required winter storage volumes to hold a one in ten wet year event for a future full reuse scheme for the existing combined Hadspen/Carrick effluent is 154 megalitres. Alternatively a full reuse for the projected 2040 Carrick only population would require a winter storage volume of 48 megalitres. Additional winter storage has not been pursued as part of this proposal as it is focussed on an initial short term solution. Additional storage capacity
and land for a full reuse scheme will continue to be investigated by TasWater as part of an appropriate Carrick-Hadspen longer term WWTP solution. Should a future full reuse scheme be established, it is anticipated that the proposed new outfall would be rarely required, however it would continue to provide an approved emergency discharge location.

Other options considered for the future of Carrick and Hadspen sewage treatment include directing Carrick-Hadspen wastewater to the Prospect WWTP (and upgrading), however this was dismissed following an options review on the basis of economics (DPEMP, section 2.7.3).
5 Public and agency consultation

No public representations were received.

The DPEMP was referred to a number of government agencies with a potential interest in the proposal, but no comments were received.

The following Divisions/areas of the Department of Primary Industries, Parks, Water and Environment provided comment on the DPEMP:

- Wastewater Section, EPA Division;
- Water Section, EPA Division;
- Air Section, EPA Division;
- Noise Section, EPA Division;
- Policy and Conservation Advice Branch, Natural and Cultural Heritage Division;
- Water Management Branch, Water & Marine Resources Division.

The Wastewater and Water Sections of the EPA Division endorsed the proponent’s approach and commitments, subject to appropriate ambient water quality monitoring and review following commencement of operations. The Division’s Air Section and Noise Specialist considered that air and noise impacts from the proposal would not be significant.

The Policy and Conservation Advice Branch recommended the development of a weed and hygiene management plan, but that was in the context of an early draft of the DPEMP which encompassed the proposed effluent reuse scheme and underground pipeline, which do not form part of this assessment and permit application (see section 1 of this report).

The Water Management Branch noted that dam works did not form part of the proposal and provided no further comment.
6 Evaluation of key issues

The only key environmental issue relevant to the proposal that was identified for detailed evaluation in this report is ambient water quality impact (from the new discharge outfall), discussed in the following subsection.

6.1 Ambient water quality impact

Description

Construction

Possible impacts to surface waters during the pipeline construction phase include erosion and runoff of sediment to the Meander River, and disturbance and increased turbidity in the river during the installation of the pipeline and outfall.

Discharge practice and ambient water quality

It is proposed to discharge effluent to the Meander River downstream of the confluence of the Liffey and Meander Rivers. Discharge to the Meander River is expected to be during higher flow months of May through to September (provided that the reuse scheme is implemented).

There is potential for scouring and erosion of the riverbed at the discharge outlet.

There is potential for the effluent to adversely impact on river water quality and biological health during times of discharge. As there are downstream properties that extract river water, there is also potential to have impact on the quality of water used for irrigation and stock watering. The Moat property also pumps water from the Meander River for gardening purposes, not far downstream from the proposed outfall location.

The State Policy on Water Quality Management 1997 (SPWQM) provides a framework for the development of ambient water quality objectives and the management and regulation of point and diffuse sources of emissions to inland surface waters and other waters. Under the SPWQM, protected environmental values (PEVs) – values or uses of the environment for which it has been determined that a given area of the environment should be protected – have been set for the Meander Valley catchment surface waters. For all surface waters within private land (including forest on private land), the PEVs report states that:

“…as a minimum, water quality management strategies should provide water of a physical and chemical nature to support a modified, but healthy aquatic ecosystem from which edible fish may be harvested; that is acceptable for irrigation and stock watering purposes; and which will allow people to safely engage in primary and secondary contact recreation activities such as swimming (Deloraine, Egmont and Bracknell), paddling or fishing in aesthetically pleasing waters; and is suitable for use by Pivot and (following impoundment) in the Trevallyn Power Scheme.”

3 Environmental Management Goals For Tasmanian Surface Waters: Meander River Catchment; Department of Primary Industries, Water and Environment (2004).
Private land is relevant to the current proposal as the Meander River passes mostly through private land for a considerable distance downstream of the proposed Carrick WWTP outfall. The PEVs nominated in accordance with clause 7 of the SPWQM are as follows.

A. Protection of Aquatic Ecosystems:
   (i) Protection of modified (not pristine) ecosystems from which edible fish are harvested.

B. Recreational Water Quality & Aesthetics:
   (i) Primary contact water quality (Deloraine, Egmont [Birralee Road] and Bracknell)
   (ii) Secondary contact water quality
   (iii) Aesthetic water quality

C. Drinking Water Quality

D. Agricultural Water Uses:
   (i) Irrigation
   (ii) Stock watering

E. Industrial Water Supply (hydro-electric power generation, Pivot)

The establishment of PEVs allows for a stringent set of water quality guidelines to be set for specific water bodies in the form of Water Quality Objectives (WQOs), in accordance with clause 11 of the SPWQM. At the present time WQOs have not been set for the Meander River, however draft WQOs had been developed by the EPA Division for the Meander River at Strathbridge, approximately 10 km upstream from the proposed outfall. This location is considered to be applicable to the proposed outfall location, and the draft WQOs were used by the proponent as a basis for investigation of likely impacts, effluent dilution and mixing zone assessment. The draft WQOs are shown in Table 11 of the DPEMP.

**Mixing zone assessment – toxicants**

A modelling assessment was undertaken by the proponent to determine the mixing zone required to meet the draft WQOs. A mixing zone may be designated in accordance with clause 20 of the SPWQM. The assessment included consideration of seasonal stream flow characteristics and dilution requirements under different flow conditions based on limited upstream ambient monitoring data. The dilution required to meet the draft WQOs was based upon the concentrations of toxicants (substances that may be toxic to aquatic ecosystems which are determined by reference to the relevant toxicant trigger values contained in the ANZECC guidelines), specifically ammonia, nitrate, and recorded metals species. These toxicants may have an adverse impact on aquatic life in the river.

Ideally the dilution requirement at the edge of a mixing zone, and hence the size of the mixing zone, is determined by the toxicant which requires the largest dilution. In the case of Carrick WWTP effluent this is likely to be one of the two key metals analysed, total copper or total zinc. The dilution requirements for these metals was calculated as 14 times and 16.5 times respectively, however these calculations were based on very small effluent datasets and coarse assumptions about the receiving water quality. Consequently, these estimates cannot be considered reliable and a conservative approach to defining the mixing zone was adopted by applying an 80 times dilution requirement to the edge of the mixing zone. Although arbitrary, this is in line with the minimum dilution considered acceptable in the
emission limit guidelines for sewage treatment plants that discharge into freshwater\(^4\), and is about five times the dilution requirement based on the (very limited) data currently available.

The mixing zone assessment considered two proposed effluent flow (discharge) rates – 5 litres per second and 10 litres per second (the latter will be the standard rate). It considered a range of river flow rates from 1 cubic metres per second (the lowest seven-day average flow that occurs once every 10 years, known as 7Q10) to 35 cubic metres per second. It also considered the alternative discharge arrangements of a single-port outlet and a four-port outlet (the latter would considerably improve initial dilution). The results of modelling for the various combinations of these factors are summarised in Table 15 and Table 16 of the DPEMP.

According to the modelling results, the length of the mixing zone to achieve 80 times dilution was less than one metre in most cases for a four-port outlet, although it ranged up to 190 metres for 7Q10 river flow conditions and the standard (10 litres per second) effluent discharge rate. For a single-port outlet the length of mixing zone ranged up to 1,400 metres. The width of mixing zone was less than one metre for all flow scenarios with a four-port outlet, but up to 9.5 metres for a single-port outlet.

More detailed information is provided in subsection 4.2.4 and Appendix J of the DPEMP.

**Dilution of non-toxicants**

Separate from any potential toxic impacts, discharges will also modify concentrations of nutrients downstream of the point of discharge, which may affect general water quality by eutrophication.

The impact of effluent discharges on general water quality can be divided into two zones: a heterogeneous zone immediately downstream of the outlet where plumes of effluent are present at higher than average concentration, and a homogenous zone downstream where effluent is evenly mixed across the river and the water quality is effectively even.

The physical location of the boundary between the heterogeneous zone and homogenous zone has practical application in the selection of monitoring locations and in the discussion of non-toxicant related water quality. In order for a monitoring location to be representative of the total flow, it should be located in the homogenous zone.

The potential for sustained changes in water quality in the Meander River between the point of discharge and the confluence with the South Esk River were investigated by the proponent by comparing the quality of the effluent discharged with the background river water quality. The effluent water quality assessed was the median effluent quality for the parameters of interest. The selection of the median quality in the analysis reflects the interest in the potential for prolonged changes in water quality. The parameters of interest included total ammonia, nitrogen, nitrate, nitrite, phosphorus, thermo-tolerant coliforms and enterococci. The parameter requiring the greatest dilution to achieve 80th percentile background concentrations was total phosphorus, where a dilution of 900 times was required to achieve background (Strathbridge) concentrations, followed by total ammonia (746 times).

The results of nutrient mixing modelling for the various discharge and river flow scenarios are summarised in Table 19 of the DPEMP. The modelling suggests that the heterogeneous zone for phosphorus may extend up to 770 metres downstream (under low flow conditions).

\(^4\) *Emission Limit Guidelines for Sewage Treatment Plants that Discharge Pollutants into Fresh and Marine Waters*; Department of Primary Industries, Water and Environment (2001).
This may result in slight changes to algal growth and biological indicators within this region. Given the closest downstream offtake for stock watering and irrigation is 740 metres from the proposed outfall, and that concentrations would be close to background levels, the impact on use of river water for stock watering and irrigation is likely to be low.

More detailed information is provided in subsection 4.2.4 and Appendix J of the DPEMP.

**Blue-green algae**

Effluent from the Carrick WWTP has on a number of occasions during spring and summer tested positive for blue-green algae (BGA), which has developed within the treatment and storage lagoons.

BGA, or cyanobacteria, are simple microscopic organisms that exist as unicellular, filamentous and colonial life forms which are capable of colonising a very wide range of aquatic habitats. Dense blooms within a water body may out-compete other species for light and darken the water body to a point where plants attached to the bottom may die out.

It is thus undesirable to discharge effluent that is contaminated with BGA, because of likely impact on rivers. In the case of past outbreaks of BGA at Carrick WWTP, discretionary approval has been granted by the EPA for emergency irrigation on The Moat property to avoid discharge to the Liffey River. For example between March 2012 and June 2012, 15.8 megalitres of effluent was irrigated on The Moat property under these emergency conditions. This equated to nine per cent of the total annual effluent discharge.

**Management measures**

**Construction**

Commitment 1 in the DPEMP (section 7) is relevant:

Develop a CEMP [Construction Environmental Management Plan] to address the potential impacts on surrounding waterways during the construction of the pipeline and outfall. All outfall construction works will be undertaken in accordance with the DPIWE Manual for Works in Waterways and Wetlands (2003).

**Operation – general**

The proposed relocation of the discharge point from the Liffey River to the Meander River (DPEMP, section 4.2.4 et al) is expected to result in a significant improvement for receiving waters. The Meander River has higher flows (and therefore improved mixing potential) compared to the very low flows and poor mixing currently experienced in the Liffey River.

**Outfall design**

The pipeline outfall will be anchored in the centre of the river one metre below the surface. A four port outlet will be used to maximise dispersion and mixing and minimise the size of the effluent mixing zone (DPEMP, section 4.2.4).

**Discharge practice**

Discharge is expected to occur regularly from May (autumn) through to September (spring).

The flow rate of 10 litres per second is sufficient to maintain some self-cleansing in the pipeline, therefore minimising the risk of sediment fallout and maintenance issues. The bed...
of the river in the outfall zone is of a rocky substrate and the proposed effluent flow rates are unlikely to result in scouring and erosion (DPEMP, section 4.2.4).

The WWTP incorporates an existing 25 megalitre effluent storage dam which can store 39 days' effluent. This should be more than sufficient to maintain buffer storage such that discharge to the Meander River will not be required during low flow summer and autumn months. Effluent discharge is not planned to occur in 7Q10 river flow conditions or low river flow periods (less than 2 cubic metres per second). If abnormal discharge is required during the irrigation season in the peak of summer, the outlet valve would be manually adjusted to slow the effluent discharge rate from 10 litres per second to 5 litres per second or as low as feasible whilst not allowing the effluent to overflow from the storage lagoon. The reduced effluent flow in lower river flow conditions would also minimise the area in which elevated nutrients would occur (DPEMP, section 4.2.4).

The proposed discharge controls and telemetry will permit discharge to the Meander River at 10 litres per second when the effluent storage dam is full. The pipeline, valves and telemetry will be routinely checked and preventatively maintained by TasWater to ensure it is operational at all times. Remote alarms will be in place to alert TasWater of any malfunctioning control valves (DPEMP, section 4.2.4).

The measures described above will be incorporated into the updated Carrick WWTP Operations Manual and the future Carrick Discharge Management Plan (a requirement of the existing environment protection notice (EPN) no. 8121/2 for the WWTP) (DPEMP, section 4.2.4).

**Ambient monitoring**

Monitoring will be undertaken to verify the mixing zone and the impacts on ambient water quality. The downstream monitoring site is proposed to be located at Westwood Road bridge approximately one kilometre downstream from the outfall. This monitoring point should be sufficiently far downstream to be outside the mixing zone and outside the heterogeneous non-toxicant zone and is therefore suitable to monitor any potential changes to receiving water quality. Biological monitoring will be undertaken in autumn and spring to assess the impact on aquatic ecology from the proposed new effluent outfall. The extent of the impact of the discharge will also be verified by undertaking plume dispersion monitoring (DPEMP, sections 4.2.4 & 5.2).

**Blue-green algae**

Effluent will continue to be routinely monitored for BGA on a monthly basis. The existing control measures to prevent the outbreak of BGA will be maintained. Ambient water will be monitored for an extended period from October through to April. During the months when BGA is most likely, there is no planned discharge to the Meander River. Nonetheless if BGA is detected in effluent, in accordance with TasWater’s Blue Green Algae Prevention Control and Management Plan there will be no discharge to receiving waters (DPEMP, section 4.2.4).

**Other measures**

The current Moat property garden pump will be relocated either upstream from the discharge or further downstream outside of the mixing zone and heterogeneous zones (DPEMP, sections 4.2.4).
It is proposed that “no swimming” signage be erected in the immediate vicinity of the effluent discharge, as a precaution (DPEMP, section 4.2.4).

Commitments

The following commitments by the proponent are relevant (DPEMP, section 7):

Commitment 2: Construct the effluent outfall pipeline to the middle of the Meander River using a four port outlet at a depth 1 metre below the surface to maximise mixing and dispersion and verify the mixing zone.

Commitment 3: Undertake routine effluent monitoring, ambient monitoring and a plume verification monitoring event in the Meander River in accordance with an EPA approved ambient monitoring plan.

Commitment 4: Maintain a system of operating controls to maximise discharge, while maintaining mixing zone, during high flow conditions, and avoiding discharge during flow conditions including the provision of remote alarms to detect control valve failures

Commitment 5: Maintain preventative pipeline and telemetry system maintenance via routine inspection.

Commitment 6: Management of effluent containing BGA in accordance with TasWater’s Blue Green Algae Prevention Control and Management Plan Dec 2011, including monitoring of BGA in accordance with Section 5.2 [of the DPEMP].

The DPEMP also contains a commitment to undertake improvements to the WWTP to ensure that effluent complies with the current emission limits in the EPN for the WWTP, but that is not relevant to the outfall relocation proposal or this assessment.

Public and agency comment and responses

No public representations were received. No relevant agency comments were received.

Evaluation

Construction

Some disturbance of the river bank and bed is unavoidable during construction, but steps should be taken to reduce it as far as practicable.

The proposal to prepare a CEMP (Commitment 1 in the DPEMP) is appropriate. As this is an important precautionary measure, permit condition CN1 will be imposed, to require the preparation and submission to the Director of a CEMP before construction commences. The permit condition will require that the CEMP specifies appropriate management measures and Preparation of the CEMP should help to ensure that pollution of the Meander River is minimised during construction, by prompting TasWater to consider all relevant environmental issues and make arrangements for the management of them.

In particular, the CEMP will be required to include:

- actions which reflect the relevant guidelines in the DPIWE Waterways and Wetlands Works Manual;
- monitoring of the impact on turbidity, pH and dissolved oxygen in the Meander River, and responses to excessive levels of those pollutants; and
- weed, pest and disease management (including prevention of the spread of Chytrid fungus onto the site).

In regard to the third point above, it is necessary to take action during construction works to prevent the spread of Chytrid fungus onto the site as there is potential habitat for the green and gold frog (*Litoria raniformis*) (DPEMP section 3.7.5).

Permit condition **CN2** will also be imposed, to require:

- notification of the Director at least one week prior to commencement of works for the new outfall (disturbance of the river may result in pollution and turbidity, for which the Director and EPA Division staff should be prepared);
- spoils from outfall construction to be properly stored (to prevent seepage or drainage of spoils and consequent pollution of the river); and
- stabilisation of the river bank following outfall construction (to prevent erosion and pollution of the river).

The second and third sub-conditions above deal with matters that are likely to be covered by the CEMP, but they are critical to protection of the river and thus warrant enforceable provisions in the permit (implementation of the CEMP by TasWater will not be enforceable).

**Outfall design**

The proposal for a submerged, four-port outlet located centrally in the river is appropriate and will maximise initial dilution of effluent. There is no superior alternative if effluent is to be discharged to the river. Permit condition **EF2** will be imposed, to require the DPEMP design to be implemented and a submerged, four-port outlet to be provided.

**Discharge practice and location**

The DPEMP’s discussion on patterns of effluent discharge relies heavily on the assumption that the proposed effluent reuse scheme (for irrigation on the adjacent Moat property) will be approved and implemented. The reuse scheme was recently approved by the Director. If the irrigation reuse scheme ceases at some future time, there will again be a requirement for summer/autumn discharge to the Meander River. This is not particularly significant, however, as the modelling of water quality impacts included worst-case summer/autumn (low river flow) discharge scenarios.

In any event the relocation of the discharge point from the Liffey River to the Meander River will have substantial environmental benefit due to the much higher flow rates of the Meander and more rapid dilution of effluent that will occur. The condition of the Liffey River in the vicinity of the existing discharge should improve markedly. This will be the case even if the reuse scheme ceases.

**Ambient water quality**

EPA Division water specialists have examined the toxicant mixing and non-toxicant dilution modelling report appended to the DPEMP and consider the modelling methodology, assumptions and results to be valid. Ambient water quality is very unlikely to be affected outside of the nutrient dilution heterogeneous zone, i.e. 770 metres downstream from the discharge outfall even under low river flow conditions, particularly in light of the fact that the discharge from the Carrick WWTP currently already impacts on the Meander River downstream of its confluence with the Liffey River.
The nearest downstream user of river water is 740 metres downstream of the proposed discharge location, but is so close to the termination of the non-toxicant heterogeneous zone that any nutrient impact is very unlikely. Toxicants would certainly not affect this user as the modelling predicts the mixing zone to extend to only 190 metres from the discharge point.

To ensure that existing downstream users of river water are protected, the Board will impose permit condition **EF1** specifying the grid location of the new outfall.

To ensure the predicted mixing and dilution outcomes are achieved, the Board will impose condition **EF3** which requires:

- a minimum ratio of one part effluent to two hundred parts Meander River flow when the flow rate of the Meander River at the effluent discharge location is 2 cubic metres per second or more, with the total volume of effluent discharged not to exceed 2,500 kilolitres per day; and
- a maximum rate of 5 litres per second under low flow conditions, as proposed in the DPEMP.

The first requirement above differs slightly from the proposal in the DPEMP of a maximum discharge rate of 10 litres per second during normal river flow conditions. When consulted on the draft permit conditions TasWater proposed that this be changed to a minimum dilution requirement. Divisional staff assessed the proposed change. It was noted that, in view of recent years' influent flow data for the Carrick WWTP, there may be occasions when a discharge rate of more than 10 litres per second will be necessary. It is necessary, however, to place a cap of 2,500 kilolitres on what may be discharged during any 24 hour period. This is to support the recommendation not to set a formal mixing zone for the time being.

Condition **EF3** will also require the Director to be notified whenever discharge to receiving waters occurs under low flow conditions (implementing the lower discharge rate requires manual intervention, with resulting potential for errors and higher risk of eutrophication). Condition **M5** will require the measurement or estimation of both effluent discharge and river flow rate to enable TasWater to comply with condition **EF3**.

Effluent discharge quality limits are authorised under the existing EPN 8121/2 for the WWTP and will remain unchanged; however the EPN will need to be varied by the Director to specify the grid location of the new outfall when Meander Valley Council issues a permit (in the event that it does so).

Based on advice from EPA Division water specialist staff, the Board will not formally designate a mixing zone (in accordance with clause 20 of the SPWQM) at this point of time. The matter will be reviewed when significant data from downstream ambient monitoring and plume verification becomes available (see below).

The ambient monitoring plan and plume verification study proposed by TasWater are appropriate and monitoring will be prescribed in permit conditions **M1, M2, M3 and M4**. Condition **M1** requires implementation of the ambient monitoring plan appended to the DPEMP. It additionally requires ambient monitoring at the outfall location, immediately following commencement of operations. This is a significant omission from the plan and it is critical to obtain data on water quality at the discharge location. Condition **M1** will also provide for amendment of the plan if appropriate following the completion of the plume verification study (further review of monitoring points is likely to be required).

The condition on the plume monitoring study will require the study to be carried out under low river flow conditions as soon as practicable after commissioning, and that the results be
reported within two months. Other ambient monitoring will be reported in the Annual Environmental Review that is already required as a condition of existing EPN no. 8121/2 for the WWTP.

**Blue-green algae**

BGA monitoring and control are currently regulated by the EPA as part of the operation of the existing WWTP, and TasWater’s existing arrangements are considered satisfactory. No permit conditions relating to BGA are required in relation to the discharge outfall relocation.

**Other issues**

Permit condition **OP1** will be imposed requiring that the Operational Procedures Manual for the WWTP, which is a requirement of existing EPN no. 8121/2, be suitably amended within six months to take account of the new discharge outfall and associated matters.

Permit condition **OP2** will be imposed requiring the erection by TasWater of warning signs in the vicinity of the discharge outfall location, to discourage aquatic recreational activities in the area.

Relocation of The Moat property garden pump is a necessary measure, but it is the responsibility of The Moat property owner.

Various conditions of a generic nature will be included in the permit to mirror and complement similar conditions in existing EPN no. 8121/2 for the WWTP. This will ensure that the outfall is encompassed within the administration and operation of the WWTP. For example condition **G1**, which is identical to condition G2 in EPN no. 8121/2, will ensure that a copy of the permit for the new outfall is readily available to responsible persons along with EPN no. 8121/2 and other documentation associated with the WWTP.

The standard permit condition **Q1** which normally specifies a regulatory limit states in this case that there is no limit. The activity is not a level 2 activity and the outfall has no capacity to treat wastewater, and a limit is therefore inapplicable. The quantity of effluent discharged from the outfall will be limited by the capacity and regulatory limit for the WWTP.

The commitments in the DPEMP will be included as an attachment to the permit conditions, with a reference to them in the information schedule of the conditions. This will draw the attention of both TasWater and regulatory staff to the main environmental management issues associated with the new outfall.

**Conclusions**

The proponent will be required to comply with the following conditions:

- **Q1** Effluent discharge limit for the new outfall (no limit applied)
- **G1** Incident response
- **G2** Access to and awareness of conditions and associated documents
- **G3** No changes without approval
- **G4** Complaints register
- **G5** Notification prior to commencement
- **CN1** Construction Environmental Management Plan
CN2 Outfall construction
DC1 Notification of cessation
DC2 DRP requirements
DC3 Rehabilitation following cessation
EF1 Effluent discharge location
EF2 Outfall design
EF3 Effluent discharge rate
H1 Storage and handling of hazardous materials
H2 Spill kits
M1 Ambient Monitoring Plan
M2 Dealing with samples obtained for monitoring
M3 Monitoring reporting and record keeping
M4 Effluent plume verification study
M5 Flow rate monitoring
OP1 Operational Procedures Manual
OP2 Signage at outfall
7 Other issues

In addition to the key issues, the following issues are considered relevant to the proposal and have been evaluated in Appendix 1.

1. Noise
2. Social and economic issues
8 Report conclusions

This assessment has been based upon the information provided by the proponent in the permit application and DPEMP and in correspondence and discussion between the EPA Division and the proponent and the proponent's representatives.

This assessment has incorporated specialist advice provided by EPA Division scientific specialists and regulatory staff and other Divisions of DPIPWE.

It is concluded that:

1. the RMPS and EMPCS objectives have been duly and properly pursued in the assessment of the proposal; and

2. the assessment of the proposal has been undertaken in accordance with the Environmental Impact Assessment Principles.

It is concluded that the proposal is capable of being managed in an environmentally acceptable manner such that it is unlikely that the RMPS and EMPCS objectives would be compromised, provided that the Permit Conditions - Environmental No. 9233 appended to this report are imposed and duly complied with.

At its meeting of 7 July 2015, the Board of the EPA determined, under section 24(4) of the EMPC Act, that the proposed activity will not be treated as a level 1 activity for the purposes of the EMPC Act after the Board's assessment is completed. This was necessary in order to ensure that the Board's permit conditions issued under section 25 will have effect (in the event that Meander Valley Council grants a permit) and that the Director can effectively regulate the outfall (in both the construction and operational phases). The outfall is an integral part of the WWTP and it is necessary for the EPA to be able to regulate it along with the WWTP.

Report approval

Environmental Assessment Report and conclusions, including permit conditions, adopted:

[Signature]

Warren Jones
CHAIRPERSON
BOARD OF THE ENVIRONMENT PROTECTION AUTHORITY

Date: 07 AUG 2015
GHD (2014); *TasWater Carrick STP New Discharge Pipeline and Outfall Development Proposal and Environmental Management Plan* (dated December 2014).
10 Appendices

Appendix 1  Assessment of other issues
Appendix 2  Permit conditions
Appendix 1  Assessment of other issues

### Issue 1: Noise

**Description of potential impacts**

Operational noise levels are not expected to change as a consequence of the outfall relocation. Current activities do not generate detectable noise at nearby residences.

There will be noise emissions from machinery and vehicles during the construction phase, during daylight hours only.

The nearest residences to the outfall are located approximately 340 metres to the northeast (across the Meander River) and approximately 450 metres to the southeast (The Moat property residence).

**Management measures proposed in DPEMP**

Construction activities will typically be undertaken five days per week between the hours of 7.00 am and 6.00 pm. Construction activities will not be undertaken on Sundays or public holidays or in such a manner as to disturb the property owner or neighbours. All vehicles and machinery will be maintained to minimise noise impacts on site workers.

During the operational phase, noise impacts will not be of concern as the effluent will be discharged by gravity. Accordingly the operational noise impacts associated with the new outfall are considered to be negligible (DPEMP section 4.4).

**Public and agency comment**

No public representations were received. No relevant agency comments were received.

**Evaluation**

Construction activity will be of an unexceptional nature, and given the distance from the outfall to the nearest neighbours noise nuisance is unlikely during daylight hours. Work outside of these hours may cause a nuisance due to lower background noise levels. Permit condition CN3 will therefore be imposed, limiting construction to the hours of 7.00 am and 6.00 pm Monday to Saturday (except with the Director’s approval).

Operational noise impacts associated with the new outfall are likely to be negligible, except where major maintenance is required, in which case regulatory action can be taken to mitigate any impacts.

**Conclusion**

The proponent will be required to comply with the following condition:

**CN3  Operating hours – construction**
## Issue 2: Social and economic issues

### Description of potential impacts

The DPEMP (section 4.12) states that the following social and economic impacts are expected from the discharge relocation proposal.

- It will contribute significantly to improving water quality in the Liffey and Meander Rivers by significantly reducing the total nitrogen and phosphorus loads discharged to the receiving environment. This may have an indirect positive impact on downstream properties accessing the water.
- There will be no impact on land values as there are no changes proposed to the existing WWTP, and existing buffer distances will be maintained.
- The construction of the new pipeline and discharge will provide increased employment potential during the construction period within Carrick and the municipality. The construction phase of the project will involve the engagement of a construction contractor, which is likely to be based in or around Carrick and would require in the order of 10 people for a construction period of approximately two months.
- Materials such as pipework and pumps will be sourced from off-site, however the suppliers are not yet known.
- The total capital funding allocated towards the proposal is $360,000.
- TasWater employs a small number of operational staff to undertake maintenance operations at the Carrick WWTP and other WWTPs. This employment will continue following the completion of the proposed works.
- The proposal will significantly benefit the community by providing the infrastructure necessary for the growth and expansion of the townships of Carrick and Hadspen and the local agricultural industry.

### Management measures proposed in DPEMP

No management measures are proposed in relation to social and economic impacts.

### Public and agency comment

No public representations were received. No relevant agency comments were received.

### Evaluation

The Board notes the likely social and economic benefits of the proposal.

### Conclusion

The Board is unable to impose valid permit conditions in relation to social or economic issues, and has no recommendations on these issues for other authorities.
Appendix 2 Permit Conditions - Environmental
PERMIT PART B
PERMIT CONDITIONS - ENVIRONMENTAL No. 9233

Issued under the Environmental Management and Pollution Control Act 1994

Applicant: TASMANIAN WATER & SEWERAGE CORPORATION PTY LTD
ACN 162 220 653
163 - 169 MAIN RD
MOONAH TAS 7009

Activity: The operation of an effluent discharge outfall for a wastewater treatment works (ACTIVITY TYPE: a referred level 1 activity)
CARRICK WASTEWATER TREATMENT PLANT, MEANDER VALLEY RD
CARRICK TAS 7303

The above activity has been assessed as a level 2 activity under the Environmental Management and Pollution Control Act 1994.

Acting under Section 25(5)(a)(i) of the EMPCA, the Board of the Environment Protection Authority has required that this Permit Part B be included in any Permit granted under the Land Use Planning and Approvals Act 1993 with respect to the above activity.

Municipality: MEANDER VALLEY
Permit Application Reference: PA/15/0110
EPA file reference: 024876

Date conditions approved: 07 AUG 2015

Signed: CHAIRPERSON, BOARD OF THE ENVIRONMENT PROTECTION AUTHORITY
DEFINITIONS

Unless the contrary appears, words and expressions used in this Permit Part B have the meaning given to them in Schedule 1 of this Permit and in the EMPCA. If there is any inconsistency between a definition in the EMPCA and a definition in this Permit Part B, the EMPCA prevails to the extent of the inconsistency.

ENVIRONMENTAL CONDITIONS

The person responsible for the activity must comply with the conditions contained in Schedule 2 of this Permit Part B.

INFORMATION

Attention is drawn to Schedule 3, which contains important additional information.
# Table Of Contents

Schedule 1: Definitions........................................................................................................... 4
Schedule 2: Conditions........................................................................................................... 5
  Maximum Quantities............................................................................................................. 5
    Q1 Regulatory limits ......................................................................................................... 5
  General................................................................................................................................ 5
    G1 Incident response ......................................................................................................... 5
    G2 Access to and awareness of conditions and associated documents ....................... 5
    G3 No changes without approval .................................................................................... 5
    G4 Complaints register ..................................................................................................... 5
    G5 Notification prior to commencement ......................................................................... 6
Construction.......................................................................................................................... 6
  CN1 Construction Environmental Management Plan ....................................................... 6
  CN2 Outfall construction .................................................................................................... 6
  CN3 Operating hours - Construction ................................................................................ 6
Decommissioning And Rehabilitation.................................................................................. 7
  DC1 Notification of cessation ............................................................................................. 7
  DC2 DRP requirements ........................................................................................................ 7
  DC3 Rehabilitation following cessation ............................................................................ 7
Effluent................................................................................................................................. 7
  EF1 Effluent discharge location ......................................................................................... 7
  EF2 Outfall design .............................................................................................................. 7
  EF3 Effluent discharge rate ................................................................................................. 7
Hazardous Substances......................................................................................................... 8
  H1 Storage and handling of hazardous materials ............................................................... 8
  H2 Spill kits ......................................................................................................................... 8
Monitoring............................................................................................................................ 8
  M1 Ambient Monitoring Plan ............................................................................................ 8
  M2 Dealing with samples obtained for monitoring ........................................................... 8
  M3 Monitoring reporting and record keeping ...................................................................... 9
  M4 Effluent plume verification study ................................................................................ 9
  M5 Flow rate monitoring .................................................................................................. 9
Operations............................................................................................................................ 10
  OP1 Operational Procedures Manual ................................................................................ 10
  OP2 Signage at outfall ........................................................................................................ 10
Schedule 3: Information....................................................................................................... 11
Legal Obligations.................................................................................................................. 11
  LO1 EMPCA....................................................................................................................... 11
  LO2 Storage and handling of Dangerous Goods, Explosives and dangerous substances ... 11
    LO3 Change of responsibility ......................................................................................... 11
Other Information................................................................................................................. 11
  OI1 Notification of incidents under section 32 of EMPCA ............................................. 11
  OI2 Waste management hierarchy .................................................................................... 11
  OI3 Commitments ............................................................................................................. 11
Policy Requirements............................................................................................................ 11
  PR1 Policy framework ....................................................................................................... 11

## Attachments

Attachment 1: PCE 9233 Attachment 1 (modified: 07/07/2015 15:52) .................................. 2 pages

CHAIRPERSON, BOARD OF THE ENVIRONMENT PROTECTION AUTHORITY

07 AUG 2015
Schedule 1: Definitions

In this Permit Part B:-

Activity means any environmentally relevant activity (as defined in Section 3 of EMPCA) to which this document relates, and includes more than one such activity.

Authorized Officer means an authorized officer under section 20 of EMPCA.

Director means the Director, Environment Protection Authority holding office under Section 18 of EMPCA and includes a person authorised in writing by the Director to exercise a power or function on the Director's behalf.

DPEMP means the document entitled TasWater Carrick STP New Discharge Pipeline and Outfall Development Proposal Environmental Management Plan (DPEMP) dated December 2014 (GHD report no. 32/17413).

DRP means Decommissioning and Rehabilitation Plan


Environmental Harm and Material Environmental Harm and Serious Environmental Harm each have the meanings ascribed to them in Section 5 of EMPCA.

Environmental Nuisance and Pollutant each have the meanings ascribed to them in Section 3 of EMPCA.

Environmentally Hazardous Material means any substance or mixture of substances of a nature or held in quantities which present a reasonably foreseeable risk of causing serious or material environmental harm if released to the environment and includes fuels, oils, waste and chemicals but excludes sewage.

Low Flow Conditions has the meaning ascribed to it in clause 20.3(f) of the SPWQM.

Operations means the discharge of effluent from the outfall.

Outfall means the pipeline and associated works for the discharge of effluent from the WWTP into the Meander River, excepting any portion of the pipeline which is buried.

Person Responsible is any person who is or was responsible for the environmentally relevant activity to which this document relates and includes the officers, employees, contractors, joint venture partners and agents of that person, and includes a body corporate.

SPWQM means the State Policy on Water Quality Management 1997, as amended from time to time.

WWTP means the wastewater treatment works located on the land defined by certificate of title reference 25757/1 and certificate of title reference 137714/1.
Schedule 2: Conditions

Maximum Quantities

Q1 Regulatory limits
   1 The activity must not exceed the following limits:
      1.1 No limit has been set for the purposes of the Environmental Management and Pollution Control (General Fees) Regulations 2010.

General

G1 Incident response
   If an incident causing or threatening environmental nuisance, serious environmental harm or material environmental harm from pollution occurs in the course of the activity, then the person responsible for the activity must immediately take all reasonable and practicable action to minimise any adverse environmental effects from the incident.

G2 Access to and awareness of conditions and associated documents
   A copy of these conditions and any associated documents referred to in these conditions must be held in a location that is known to and accessible to the person responsible for the activity. The person responsible for the activity must ensure that all persons who are responsible for undertaking work in connection with the outfall, including contractors and sub-contractors, are familiar with these conditions to the extent relevant to their work.

G3 No changes without approval
   1 The following changes, if they may cause or increase the emission of a pollutant which may cause material or serious environmental harm or environmental nuisance, must only take place in relation to the activity if such changes have been approved in writing by the EPA Board following its assessment of an application for a permit under the Land Use Planning and Approvals Act 1993, or approved in writing by the Director:
      1.1 a change to a process used in the course of carrying out the activity; or
      1.2 the construction, installation, alteration or removal of any structure or equipment used in the course of carrying out the activity; or
      1.3 a change in the quantity or characteristics of materials used in the course of carrying out the activity.

G4 Complaints register
   1 A public complaints register must be maintained and made available for inspection by an Authorized Officer upon request. The public complaints register must, as a minimum, record the following detail in relation to each complaint received in which it is alleged that environmental harm (including an environmental nuisance) has been caused by the activity:
      1.1 the time at which the complaint was received;
      1.2 contact details for the complainant (where provided);
      1.3 the subject-matter of the complaint;
      1.4 any investigations undertaken with regard to the complaint; and
      1.5 the manner in which the complaint was resolved, including any mitigation measures implemented.
   2 Complaint records must be maintained for a period of at least 3 years.

CHAIRPERSON, BOARD OF THE ENVIRONMENT PROTECTION AUTHORITY

07 AUG 2015
G5 Notification prior to commencement
The Director must be notified in writing of the commencement of operations at least 14 days before that occurs.

Construction

CN1 Construction Environmental Management Plan

1 At least 30 days prior to the commencement of construction activities, or by a date otherwise specified in writing by the Director, a Construction Environmental Management Plan (‘Construction EMP’) must be submitted to the Director.

2 The Construction EMP must contain a detailed description of the proposed timing and sequence of the major construction activities and of the proposed management measures to be implemented to avoid or minimise environmental impacts during the construction phase.

3 The Construction EMP must include, but not necessarily be limited to, management measures in relation to the following:

3.1 prevention of impacts upon surface water and waterways;
3.2 erosion and sediment control;
3.3 noise control;
3.4 dust control;
3.5 management of environmentally hazardous materials;
3.6 cultural (Aboriginal and non-aboriginal) heritage considerations;
3.7 flora and fauna management;
3.8 weed, pest and disease management (including prevention of the spread of Chytrid fungus onto the site);
3.9 quality control arrangements including supervision by appropriately qualified and experienced persons, detailed construction specifications for key items of environmental management infrastructure, documented site procedures, quality control testing and the keeping of appropriate records;
3.10 monitoring of the impact on turbidity, pH and dissolved oxygen in the Meander River, and responses to excessive levels of those pollutants; and
3.11 acid sulphate soil management (if identified in pre-construction testing).

4 The Construction EMP must be consistent with, and give effect to, relevant guidance in the Waterways and Wetlands Works Manual (published by the Department of Primary Industries, Water and Environment, Hobart, 2003).

CN2 Outfall construction

1 The person responsible must notify the Director at least one week prior to the commencement of works to construct the outfall of the expected date of commencement and duration of those works.

2 Spoils from operations carried out for the construction of the outfall must be stored in a manner that does not result in the release of solid matter to surface waters.

3 The bank of the Meander River must be stabilised following construction of the outfall to ensure the bank does not erode as a result of the outfall construction works or otherwise release solid matter to the Meander River.

CN3 Operating hours - Construction

1 Unless otherwise approved in writing by the Director:

Chairperson, Board of the Environment Protection Authority

07 Aug 2015
1.1 Construction activities must not be undertaken outside 0700 hours to 1800 hours Monday to Saturday.

1.2 Notwithstanding the above paragraph, the construction activities must not be carried out on Sundays or Public Holidays that are observed State-wide (Easter Tuesday excepted).

**Decommissioning And Rehabilitation**

**DC1 Notification of cessation**
Within 30 days of becoming aware of any event or decision which is likely to give rise to the permanent cessation of the activity, the person responsible for the activity must notify the Director in writing of that event or decision. The notice must specify the date upon which the activity is expected to cease or has ceased.

**DC2 DRP requirements**
Unless otherwise approved in writing by the Director, a Decommissioning and Rehabilitation Plan (DRP) for the activity must be submitted for approval to the Director within 30 days of the Director being notified of the planned cessation of the activity or by a date specified in writing by the Director. The DRP must be prepared in accordance with any guidelines provided by the Director.

**DC3 Rehabilitation following cessation**

1. Following permanent cessation of the activity, and unless otherwise approved in writing by the Director, land in the vicinity of the outfall must be rehabilitated including:
   1.1 stabilisation of any land surfaces that may be subject to erosion;
   1.2 removal or mitigation of all environmental hazards or land contamination, that might pose an ongoing risk of causing environmental harm; and
   1.3 decommissioning of any equipment that has not been removed.

2. Where a Decommissioning and Rehabilitation Plan (DRP) has been approved by the Director, decommissioning and rehabilitation must be carried out in accordance with that plan, as may be amended from time to time with written approval of the Director.

**Effluent**

**EF1 Effluent discharge location**
Effluent must be discharged from the outfall as close as practicable to grid reference GDA 1994 (MGA Zone 55) E501640 N5403634.

**EF2 Outfall design**

1. Unless otherwise approved in writing by the Director, and subject to paragraphs 2 and 3 of this condition, the outfall must be constructed in accordance with the design presented in Appendix B of the DPEMP.

2. The effluent pipeline must be fitted with a four-port diffuser outlet at the point of effluent discharge into the Meander River.

3. The diffuser outlet must be located such that it is below the surface of the river water under low flow conditions.

**EF3 Effluent discharge rate**

1. When the flow rate of the Meander River at the effluent discharge location is 2 cubic metres per second or more, the rate at which effluent is discharged must ensure a minimum ratio of two hundred parts Meander River flow to one part effluent and the total volume of effluent discharged must not exceed 2,500 kilolitres per day.
2 When the flow rate of the Meander River at the effluent discharge location is less than 2 cubic metres per second, the rate at which effluent is discharged must not exceed 5 litres per second.

3 The Director must be notified as soon as practicable, but no more than 24 hours, after the commencement of effluent discharge in accordance with paragraph 2 of this condition.

Hazardous Substances

H1 Storage and handling of hazardous materials
Unless otherwise approved in writing by the Director, environmentally hazardous material held on land in the vicinity of the outfall and in connection with the construction and operation of the outfall, including chemicals, fuels and oils, must be located within impervious banded areas or spill trays which are designed to contain at least 110% of the total volume of material.

H2 Spill kits
Spill kits appropriate for the types and volumes of materials handled in connection with the construction and operation of the outfall must be kept in appropriate locations to assist with the containment of spilt environmentally hazardous materials.

Monitoring

M1 Ambient Monitoring Plan
1 Subject to paragraphs 2 and 3 of this condition, monitoring of the Meander River waters must be carried out in accordance with the TasWater Carrick Sewage Treatment Plant Ambient Monitoring Plan dated October 2014 (GHD report number 32/16532) (the Ambient Monitoring Plan).

2 In addition to the requirements of the Ambient Monitoring Plan, ambient water quality must be monitored at the outfall effluent discharge location as defined in condition EF1 of this permit, in accordance with the following.

2.1 Sample parameters and frequency must be the same as that required for sampling sites P1, P3 and P4 listed in section 6.2.3 of the Ambient Monitoring Plan.

2.2 Monitoring at the additional sampling site must commence as soon as possible after commencement of operations.

3 Following the submission of the effluent plume verification study report required under condition M4, the Director may require the Ambient Monitoring Plan to be amended in a manner specified by the Director and resubmitted for the Director’s approval within a period specified by the Director.

M2 Dealing with samples obtained for monitoring
1 Any sample or measurement required to be obtained under these conditions must be taken and processed in accordance with the following:

1.1 Australian Standards, NATA approved methods, the American Public Health Association Standard Methods for the Analysis of Water and Waste Water or other standard(s) approved in writing by the Director;

1.2 measurement equipment must be maintained and operated in accordance with the manufacturers specifications;

1.3 samples must be tested in a laboratory accredited by the National Association of Testing Authorities (NATA), or a laboratory approved in writing by the Director, for the specified test; and
1.4 results of measurements and analysis of samples and details of methods employed in taking measurements and samples must be retained for at least three years after the date of collection.

M3 Monitoring reporting and record keeping

1. Unless otherwise specified by the Director, a monthly monitoring report, in an electronic format approved by the Director, must be submitted to the Director within 21 days of completion of laboratory analyses of samples collected for the previous monthly period. As a minimum, the Monthly Monitoring Report must include the following information:
   1.1 the laboratories at which sample analyses were carried out;
   1.2 contact details for a person responsible for managing monitoring programs;
   1.3 the estimated or measured average daily flow to the wastewater treatment plant for the previous monthly period; and
   1.4 for each sampling location or site test location:
      1.4.1 a location name which allows the location to be clearly identifiable;
      1.4.2 the date and time at which each sample was taken or site test conducted;
      1.4.3 the indicators for which analyses or tests were carried out and the units in which the results are reported; and
      1.4.4 the results for all sample analyses and site tests.

2 A record of all monitoring reports submitted to the Director must be maintained and copies of all laboratory analysis reports kept for a minimum period of three years and referenced to the relevant Monthly Monitoring Reports.

M4 Effluent plume verification study

1 Unless otherwise approved in writing by the Director, an effluent plume verification study must be conducted within 6 months of the commencement of operations.

2 Within 30 days of the commencement of operations, the proposed methodology and report format for the study must be submitted to the Director for approval.

3 The methodology must include:
   3.1 justification for the proposed methods to be applied for delineation of the effluent plume within the Meander River;
   3.2 recommendations for seasonal and operating conditions most suitable for undertaking the study; and
   3.3 a timetable for the completion of the study.

4 The study must be undertaken in accordance with the approved methodology.

5 An effluent plume verification study report, prepared in accordance with the approved report format, must be submitted to the Director within 45 days of the completion of the study.

M5 Flow rate monitoring

1 The flow rate of effluent discharged to the Meander River must be measured in a manner that enables the person responsible to comply with the requirements of condition EF3 of this permit.

2 The flow rate of the Meander River must be measured or estimated in a manner that enables the person responsible to comply with the requirements of condition EF3 of this permit.
The person responsible must maintain records of flow measurement or estimates obtained in accordance with paragraphs 1 and 2 of this condition and must keep such records for a minimum period of 3 years.

**Operations**

**OP1** Operational Procedures Manual

1. Unless otherwise approved in writing by the Director, within 6 months of the commencement of operations the Operational Procedures Manual for the WWTP must be suitably amended to take account of the new outfall and the requirements of these conditions.

2. The person responsible must take all reasonable and practicable measures to ensure that personnel, including contractors, carry out their duties in accordance with the amended Manual.

**OP2** Signage at outfall

Signage must be installed and maintained on land near to the outfall to discourage recreational activities within waters immediately around the outfall. Signage is to alert the public as to the proximity and nature of the discharge.

Chairperson, Board of the Environment Protection Authority

07 Aug 2015
Schedule 3: Information

Legal Obligations

LO1 EMPCA
The activity must be conducted in accordance with the requirements of the Environmental Management and Pollution Control Act 1994 and Regulations thereunder. The conditions of this document must not be construed as an exemption from any of those requirements.

LO2 Storage and handling of Dangerous Goods, Explosives and dangerous substances
1 The storage, handling and transport of dangerous goods, explosives and dangerous substances must comply with the requirements of relevant State Acts and any regulations thereunder, including:
   1.1 Work Health and Safety Act 2012 and subordinate regulations;
   1.2 Explosives Act 2012 and subordinate regulations; and
   1.3 Dangerous Goods (Road and Rail Transport) Act 2010 and subordinate regulations.

LO3 Change of responsibility
If the person responsible for the activity ceases to be responsible for the activity, they must notify the Director in accordance with Section 45 of the EMPCA.

Other Information

OI1 Notification of incidents under section 32 of EMPCA
Where a person is required by section 32 of EMPCA to notify the Director of the release of a pollutant, the Director can be notified by telephoning 1800 005 171 (a 24-hour emergency telephone number).

OI2 Waste management hierarchy
1 Wastes should be managed in accordance with the following hierarchy of waste management:
   1.1 waste should be minimised, that is, the generation of waste must be reduced to the maximum extent that is reasonable and practicable, having regard to best practice environmental management;
   1.2 waste should be re-used or recycled to the maximum extent that is practicable; and
   1.3 waste that cannot be re-used or recycled must be disposed of at a waste depot site or treatment facility that has been approved in writing by the relevant planning authority or the Director to receive such waste, or otherwise in a manner approved in writing by the Director.

OI3 Commitments
The person responsible for the activity has a general environmental duty to conduct the activity in accordance with the commitments contained in Attachment 1.

Policy Requirements

PR1 Policy framework
1 The policy framework and guidelines relevant to implementation of policy are as follows:

CHAIRPERSON, BOARD OF THE ENVIRONMENT PROTECTION AUTHORITY

07 AUG 2015
1.1 the SPWQM;
1.2 the Emission Limit Guidelines for Sewage Treatment Plants That Discharge Pollutants Into Fresh And Marine Waters, June 2001; and
1.3 the Environmental Guidelines for the Use of Recycled Water in Tasmania, December 2002.
### Commitments (from section 7 of the DPEMP<sup>1</sup>)

<table>
<thead>
<tr>
<th>No.</th>
<th>Commitment</th>
<th>Section Reference</th>
<th>Timeline</th>
<th>Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Develop a CEMP to address the potential impacts on surrounding waterways during the construction of the pipeline and outfall. All outfall construction works will be undertaken in accordance with the DPIWE Manual for Works in Waterways and Wetlands (2003).</td>
<td>4.2.3</td>
<td>Pre-construction</td>
<td>TasWater</td>
</tr>
<tr>
<td>2</td>
<td>Construct the effluent outfall pipeline to the middle of the Meander River using a four port outlet at a depth 1m below the surface to maximise mixing and dispersion and verify the mixing zone.</td>
<td>4.2.4</td>
<td>Pre-construction</td>
<td>TasWater</td>
</tr>
<tr>
<td>3</td>
<td>Undertake routine effluent monitoring, ambient monitoring and a plume verification monitoring event in the Meander River in accordance with an EPA approved ambient monitoring plan.</td>
<td>4.2.4</td>
<td>Operation</td>
<td>TasWater</td>
</tr>
<tr>
<td>4</td>
<td>Maintain a system of operating controls to maximise discharge, while maintaining mixing zone, during high flow conditions, and avoiding discharge during flow conditions including the provision of remote alarms to detect control valve failures</td>
<td>4.2.4</td>
<td>Operation</td>
<td>TasWater</td>
</tr>
<tr>
<td>5</td>
<td>Maintain preventative pipeline and telemetry system maintenance via routine inspection.</td>
<td>4.2.4</td>
<td>Operation</td>
<td>TasWater</td>
</tr>
<tr>
<td>6</td>
<td>Management of effluent containing BGA in accordance with TasWater’s Blue Green Algae Prevention Control and Management Plan Dec 2011, including monitoring of BGA in accordance with Section 5.2</td>
<td>4.2.4</td>
<td>Operation</td>
<td>TasWater</td>
</tr>
</tbody>
</table>

<sup>1</sup> DPEMP means the document TasWater Carrick STP New Discharge Pipeline and Outfall Development Proposal Environmental Management Plan (DPEMP) dated December 2014 (GHD report no. 32/17413)

07 Aug 2015
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<td>7</td>
<td>Undertake improvements to the Carrick STP to ensure that future effluent complies with EPN limits.</td>
<td>4.2.4</td>
<td>Operation</td>
<td>TasWater</td>
</tr>
<tr>
<td>8</td>
<td>A Contingency Management Plan for the Carrick New Pipeline and Outfall will be developed prior to the scheme commencing.</td>
<td>4.13.5</td>
<td>Operation</td>
<td>TasWater</td>
</tr>
<tr>
<td>9</td>
<td>The Carrick STP Operations Manual will be updated (where required) within 4-6 months following the commissioning period.</td>
<td>4.16.3</td>
<td>Operation</td>
<td>TasWater</td>
</tr>
<tr>
<td>10</td>
<td>Undertake effluent and ambient monitoring in accordance with Sections 5.2.1 to 5.2.5 if this DPEMP</td>
<td>5.2.5</td>
<td>Operation</td>
<td>TasWater</td>
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