ENVIRONMENTAL ASSESSMENT REPORT

Cascade Brewery Wastewater Treatment Plant

Cascade Rd South Hobart
Carlton & United Breweries Limited

The Board of the Environment Protection Authority
12 August 2013
## Environmental Assessment Report

<table>
<thead>
<tr>
<th>Proponent</th>
<th>Carlton &amp; United Breweries Limited</th>
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<tbody>
<tr>
<td>Proposal</td>
<td>Cascade Brewery wastewater treatment plant</td>
</tr>
<tr>
<td>Location</td>
<td>127-127A &amp; 131 Cascade Road, South Hobart</td>
</tr>
<tr>
<td>NELMS no.</td>
<td>PCE 8819</td>
</tr>
<tr>
<td>DA number</td>
<td>PLN-12-01234-01</td>
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<td>File</td>
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<td>Document</td>
<td>H165799</td>
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<td>Class of Assessment</td>
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## Assessment process milestones

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
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<tbody>
<tr>
<td>09/01/2013</td>
<td>Notice of Intent submitted</td>
</tr>
<tr>
<td>15/11/2012</td>
<td>DPEMP Guidelines issued</td>
</tr>
<tr>
<td>23/11/2012</td>
<td>Permit application submitted to Council</td>
</tr>
<tr>
<td>21/05/2013</td>
<td>Application received by Board</td>
</tr>
<tr>
<td>19/06/2013</td>
<td>Start of public consultation period</td>
</tr>
<tr>
<td>NA</td>
<td>End of public consultation period</td>
</tr>
<tr>
<td>NA</td>
<td>Supplementary information received</td>
</tr>
<tr>
<td>Acronyms</td>
<td>Full Form</td>
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<td>-----------</td>
<td>---------------------------------------------------------------------------</td>
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<tr>
<td>Board</td>
<td>Board of the Environment Protection Authority</td>
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<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>EPN</td>
<td>Environment Protection Notice</td>
</tr>
<tr>
<td>GLC</td>
<td>Ground level concentration</td>
</tr>
<tr>
<td>LUPA Act</td>
<td><em>Land Use Planning and Approvals Act 1993</em></td>
</tr>
<tr>
<td>OU</td>
<td>Odour Unit</td>
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<tr>
<td>OER</td>
<td>Odour Emission Rate</td>
</tr>
<tr>
<td>SD</td>
<td>Sustainable development</td>
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<tr>
<td>TWA</td>
<td>Trade Waste Agreement</td>
</tr>
<tr>
<td>UASB</td>
<td>Underflow Anaerobic Sludge Blanket</td>
</tr>
<tr>
<td>WWTP</td>
<td>Wastewater treatment plan</td>
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Report summary

This report provides an environmental assessment of Carlton & United Breweries Limited’s anaerobic wastewater treatment plant (WWTP) intended for its Cascade brewery, Cascade Rd, South Hobart.

Carlton & United Breweries Limited intends to install a high rate anaerobic reactor system to process wastewater from its Cascade brewery at South Hobart prior to discharge to sewer. The new WWTP is necessary in order for brewery wastewater to comply with new trade waste quality requirements issued by Southern Water.

This report has been prepared based on information provided by the proponent in the Development Proposal and Environmental Management Plan (DPEMP). The advice of relevant Government Agencies and the public has also been sought and considered as part of this assessment.

Background to the proposal and details of the assessment process are presented in Section 1 of this report. Section 2 describes the context of this assessment. Details of the proposal are contained in Section 3. Section 4 reviews the need for the proposal and considers the project, 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 contained in Section 6. Section 7 identifies other environmental issues and the report conclusions are contained in Section 8.

Appendix 1 contains a tabular evaluation of other environmental issues referred to in Section 7. Appendix 2 contains environmental permit conditions for the proposal. Attachment 2 of the permit conditions contains the table of commitments from the DPEMP.
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1 Approvals process

An application for a permit under the *Land Use Planning and Approvals Act 1993* (LUPA Act) in relation to the proposal was received by Hobart City Council on 15 November 2012.

The proposal is defined as a ‘level 2 activity’ under Schedule 2 Subsection 3(a) of the *Environmental Management and Pollution Control Act 1994* (EMPC Act), being the conduct of a wastewater treatment works that involves the discharge of treated or untreated sewage, septic tank effluent or industrial or commercial wastewater to land or water, being works with a design capacity to treat an average dry-weather flow of 100 kilolitres or more per day of sewage or wastewater. Section 25(1) of the EMPC Act required Council to refer the application to the Board of the Environment Protection Authority (the Board) for assessment under the Act. The application was received by the Board on 23 November 2012.

The assessment has been undertaken by the Director, Environment Protection Authority under delegation from the Board.

The Board required that additional information to support the proposal be provided in the form of a Development Proposal and Environmental Management Plan (DPEMP) prepared in accordance with guidelines jointly issued by the Board and Hobart City Council on 9 January 2013.

Several drafts of the DPEMP were submitted to the EPA for comment prior to its formal submission. The DPEMP was released for public inspection for a 28-day period commencing on 21 May 2013. Advertisements were placed in the Saturday Mercury and on the EPA web site. The DPEMP was also referred at this time to relevant government agencies for comment. One public submission was received.¹

¹ After the close of the statutory advertising period.
2 SD objectives and EIA principles

The proposal must be considered by the Director in the context of the sustainable development 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) established by 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 protect the environment of Tasmania, and to further the RMPS and EMPCS objectives.

The Director 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 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 key proposal characteristics**

<table>
<thead>
<tr>
<th>Activity</th>
<th>Anaerobic treatment of average daily flow of 700kL brewery wastewater.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Location and planning context</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Location</strong></td>
<td>127-127A &amp; 131 Cascade Rd, South Hobart, as shown in Figure 1.</td>
</tr>
<tr>
<td><strong>Land zoning</strong></td>
<td>Special Use Zone 5 (the Cascade precinct)</td>
</tr>
<tr>
<td><strong>Land tenure</strong></td>
<td>252507/1</td>
</tr>
<tr>
<td><strong>Existing site</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Land Use</strong></td>
<td>Brewery</td>
</tr>
<tr>
<td><strong>Topography</strong></td>
<td>Generally hilly, timbered in places though largely cleared land or residential development around brewery. Brewery occupies several hectares of gently sloping land near confluence of Hobart &amp; Guy Fawkes Rivulets. Intended WWTP site is situated in a valley running north/south, ~15m from Guy Fawkes Rivulet. Topography immediately north of intended WWTP site &amp; Cascade Rivulet is very steep &amp; densely vegetated. The intended WWTP site has three different bench heights of which 75% is within brewery’s existing fenceline. [DPEMP, Section 3.2.1, p25].</td>
</tr>
<tr>
<td><strong>Geology &amp; soils</strong></td>
<td>Map sheet of Hobart [5225, scale 1:25,000 produced by Mineral Resources Tasmania] indicates intended WWTP site is located on Triassic, freshwater predominantly cross-bedded quartzose to feldspathic sandstone – Knocklofty formation. There are five different geological units within close proximity to intended WWTP site, including dolerite talus &amp; quaternary alluvium; a large scale fault which divides major lithologies is near to the site. [DPEMP, Section 3.2.4, p29].</td>
</tr>
<tr>
<td><strong>Hydrology</strong></td>
<td>Principal drainage features in area are Guy Fawkes &amp; Hobart Rivulets (which join near brewery). Original brewery built on eastern side of Hobart Rivulet, but expansion since 1920s has continued west over this watercourse, which is now culverted beneath bottling plant. Guy Fawkes Rivulet forms northern boundary to brewery operations &amp; its southern bank is fully retained with a concrete wall several metres high. WWTP will be located on a hardstand area adjacent to Guy Fawkes Rivulet.</td>
</tr>
<tr>
<td><strong>Fauna</strong></td>
<td>Flora and fauna assessment conducted August 2012 (DPEMP, Appendix B). Comprised desktop review of study area &amp; field survey. Assessment found that intended WWTP site provides limited terrestrial native fauna habitat since dominated by exotic paddock &amp; weed infestations. Paddock areas do provide some potential foraging habitat for native fauna that may inhabit surrounding bushland. Evidence of marsupial browsing was identified on site. According to Natural Values Atlas (NVA) Report, three threatened fauna species have previously been recorded within 500m of nominated WWTP area, namely:</td>
</tr>
<tr>
<td></td>
<td>- <em>Accipiter novaehollandiae</em> (Grey goshawk)</td>
</tr>
<tr>
<td></td>
<td>- <em>Lathamus discolor</em> (Swift Parrot)</td>
</tr>
<tr>
<td></td>
<td>- <em>Tyto novaehollandiae</em> (Masked Owl)</td>
</tr>
<tr>
<td></td>
<td>Flora and fauna assessment concluded that site’s primarily agricultural features means it’s unlikely to constitute core habitat for threatened fauna species identified above. NVA Report also notes no record of wedge tailed eagle nests within a 1km radius of the site. [DPEMP, Section 3.2.8, pp31-32].</td>
</tr>
</tbody>
</table>
### Flora

NVA Report did not identify any threatened native vegetation communities within the study area. Site mapped as exotic communities: Agricultural Land (FAG) and Urban Areas (FUR). This classification was consistent with field survey results. Majority of flora species identified across study area (heavily grazed paddock) were exotic grass species.

NVA Report identified six threatened plant species previously observed within 500m of site, including:

- *Austrostipa nodosa* (knotty speargrass)
- *Carex longebrachiata* (drooping sedge)
- *Austrodanthonia induta* (tall wallabygrass)
- *Corunastylis nuda* (tiny midge-orchid)
- *Corunastylis nudiscapa* (bare midge-orchid)
- *Deyeuxia densa* (heath bentgrass)

None of these species were recorded by NVA Report as occurring within study area itself. None of these species [or other threatened flora] was detected during field survey.

Flora and fauna assessment concluded that while field survey conducted late winter, [usually considered suboptimal time of year to survey for herbaceous annuals & grasses], considering degraded nature of study area [which is dominated by introduced grass species, plus substantial history of weed spraying] on-site presence of threatened flora identified by desktop research very unlikely. [DPEMP, Section 3.2.8, p31].

### Local region

#### Climate

Average annual rainfall ~616 mm. Monthly mean temperatures range 4.6°C (winter mornings) to 21.6°C (summer afternoons). Wind speeds are on average higher in afternoon, averaging 16 km/h at 3pm compared to 13 km/h at 9am.

#### Surrounding land and uses

Adjacent land to west, north & north east zoned Rural B. Land to east & south east is zoned Residential (Precinct 26C). Land to west & south west zoned Residential 2 (Precinct 34A).

- Land north & south of site & brewery is forested, climbs steeply (>50m in both directions) to ridges that run either side of valley. North of ridge lies McRobies Gully that contains a waste disposal facility, ~ 750m northwest of site.
- Southwest are residences in Strickland & Smithurst Avenues. Nearest of these to site ~200m.
- East of site [beyond brewery] is Cascade Visitor Centre. Beyond this is Cascade Gardens which extend eastwards from brewery between Cascade Road & Hobart Rivulet. Farther east lie residential areas along Cascade & Hillborough Roads & Cascade Female factory historic site.
- West of site, Old Farm Road traces valley lower upwards towards forested slopes of Wellington Mountain Park. [DPEMP, Section 3.1.3, p24].

#### Species of conservation significance

None.

### Proposed infrastructure

#### Major equipment

Underflow anaerobic sludge blanket reactor. Includes:

- Fine screen
- Tanks (equilisation, UASB, sludge storage, re-aeration)
- Lamella settler
- Pumps
- Package plant (polymer preparation)
- Heat exchangers
- Biogas flare
- Chemical dosing system

#### Other infrastructure

- Natural gas boiler (approx. 1 Megawatt)
- Lab
- Motor control room (switchboard)

### Inputs

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>Average daily wastewater flow to UASB ~700kL.</td>
</tr>
<tr>
<td>Energy</td>
<td>Electricity demand can be accommodated by brewery’s present supply. Reticulated natural gas (existing line will be extended to WWTP).</td>
</tr>
</tbody>
</table>
| Other raw materials | * Ferric chloride (FeCl₃)  
* Sodium hydroxide (NaOH)  
* Polymer (settling agent) |

### Wastes and emissions

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liquid</td>
<td>Stormwater runoff from WWTP hardstand areas. Treated wastewater from UASB (via re-aeration tank) to sewer.</td>
</tr>
</tbody>
</table>
| Atmospheric| Construction: Dust  
Operating: Odour (principal component of interest H₂S) |
| Solid      | Construction: excavated materials, construction & packaging materials. Will store at designated laydown area(s), removal by licensed contractors as necessary.  
Operation: Sludges (from lamella settler & UASB). |
| Noise      | WWTP sources include pumps, mixers, low pressure fan, jet aerator, boiler house, gas flare stack, compressor.  
Other sources include chemical delivery trucks, sludge tanker(s), screenings waste skip removal.  
Construction activities. |
| Greenhouse gases | Key greenhouse gas, methane (CH₄), will primarily be combusted in brewery’s natural gas boiler(s) & flared when boiler not operating. Cascade brewery's annual GHG emissions are incorporated in CUB’s annual return for National Greenhouse & Energy Reporting scheme. |

### Commissioning and operations

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
</tr>
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</table>
| Operating hours     | Construction: 0700 to 1800 hours, Monday to Friday and 0800 to 1800 Saturday.  
Operating: 24hrs, 7days |
| Project timetable   | Construction July 2013 – July 2014                                           |
Figure 1: Present brewery operations with intended WWTP site (Figure 1 of DPEMP)

Environmental Assessment Report – Cascade Brewery Wastewater Treatment Plant
Figure 2: Site plan (Figure 2 of DPEMP)
Figure 3: Process overview (Figure 6 of DPEMP)
4 Need for proposal and alternatives

Southern Water regulates [by way of a Trade Waste Agreement (TWA)] and treats wastewater arising from Cascade Brewery operations. At present, brewery wastewater discharges untreated direct to the municipal sewerage system and flows to Macquarie Point Sewage Treatment Plant for treatment. Wastewater arising from brewery operations generally meets quality limits specified in Cascade Brewery’s TWA but additional costs are incurred for instances of non-compliance.

Southern Water has recently established a set of more stringent wastewater requirements that will form part of a new TWA for the brewery. In order that brewery wastewater can comply with new, stricter requirements, Cascade will need to provide and implement initial wastewater treatment prior to sewer discharge. Cascade has selected an underflow anaerobic sludge blanket (UASB) reactor to achieve the desired trade waste limits.

Other alternative treatment processes were considered. Alternatives included replacing the UASB reactor with an Internal Circulation reactor, a similar anaerobic process. Additional aerobic treatment processes (following primary anaerobic treatment) to further reduce Chemical Oxygen Demand prior to sewer discharge were also considered. Cascade discounted these approaches since it considered UASB would deliver the desired level of treatment performance for least cost, space (ie WWTP footprint) and electrical and chemical consumption. Secondary aerobic treatment would also produce sludge, requiring additional treatment and disposal, a situation that Cascade considered a disbenefit.

As the intended WWTP site is located within Special Use Zone 5 (the Cascade Precinct) and is immediately adjacent to the brewery complex, Cascade considered it to be the only viable site to locate the WWTP. As such, the company did not consider other sites for siting of the intended WWTP.
5 Public and agency consultation

No representations were received.
The DPEMP was referred to and received a response from Southern Water.
The following Divisions/Areas of the Department of Primary Industries, Parks, Water and Environment also provided feedback about the DPEMP:

- Policy & Conservation Assessment Branch (Resource Management & Conservation)
- Aboriginal Heritage Tasmania
- Heritage Tasmania
- Senior Scientific Officer (Noise) EPA Division
- Scientific Officer (Water) EPA Division
- Regulatory Officer (Food & Textiles Unit) EPA Division
- Scientific Officer (Air) EPA Division

No new issues were raised by these Divisions/Areas of DPIPWE and the results and conclusions presented in the DPEMP were accepted. Consequently it was not considered necessary to request additional information from Carlton and United Breweries Limited (CUB) in the form of a Supplement to the DPEMP.
6 Evaluation of key issues

The key environmental issues relevant to the proposal that were identified for detailed evaluation in this report were:

1. Air emissions (includes gas flare impacts)
2. Noise (includes gas flare impacts)

These key issues are discussed individually in the following Sections. The table of commitments from the DPEMP is included in Appendix 2 of this report.

6.1 Air emissions

Description

By and large, brewery odours are presently associated with the following processes and/or sources:

- Malting, brewing and fruit processing operations which can, on occasion, give rise to odours that may be detected in the immediate locality of the brewery. These odours are generally confined to the brewery complex, transient in nature and typically do not cause nuisance in the community.

- Refrigeration units that may, on occasion, release ammonia gas. Cascade conducts preventative maintenance of its refrigeration units to minimise instances of ammonia release. Monitors, alarms and emergency control and corrective procedures (for refrigeration units) are also in place to limit opportunities for escape of ammonia.

At present, condition A7 of Environment Protection Notice (EPN) 591/2 specifies that the company must implement odour management measures to prevent odour nuisance beyond the property boundary. There are no other conditions concerning odour mitigation.

Complaint history

The brewery’s complaints register records three air quality complaints since 1994, namely:

- An odour complaint in 2006 which when investigated was found not to originate from the brewery.
- Two smoke related incidents (2000 and 2004), one related to emission of steam from a boiler, the other related to a brief emission of dark smoke during boiler start up.

Cascade has developed and implements a complaint handling procedure to manage (odour) complaints from employees and the public.

Intended WWTP and odour impacts

Installation and operation of a new anaerobic WWTP on brewery land has potential to cause environmental nuisance in the local community, largely due to generation and dispersal of odourous gases—particularly hydrogen sulphide (H₂S). Odourous gases, such as H₂S, are a fundamental product of anaerobic wastewater treatment systems. Humans perceive H₂S at very low levels and the gas is considered highly toxic.

The anaerobic treatment process will also produce sludge, from which odour may be evident at close range.
Other air emissions

Aside from the aforementioned sources of odour, the brewery’s main point sources of atmospheric emissions are its boilers. In September 2010, the brewery’s coal and oil fired boilers were replaced with two 6MW and one 5MW gas fired boilers for raising steam. Stack emissions testing is regularly conducted as per Environment Protection Notice (EPN) 591/2. Oxides of nitrogen emissions from the gas fired boilers are typically well below limit of 350mg/m³ specified in the EPN.

There is no routine ambient air quality monitoring at Cascade Brewery.

Cascade considers that the brewery’s present odours are transitory, by and large unobjectionable, and generally confined to the brewery site. The company expects that emissions from the intended WWTP will be more consistent, of greater volume and more obvious than any odours presently arising on site.

Management measures

Particular design features of the WWTP are intended to limit the opportunity for odour generation and transmission. Such features include:

- Enclosed or covered vessels and screens
- Extraction fan to draw and direct foul air to re-aeration tank (where odourous gases are ‘scrubbed’ out)
- Directing biogas (methane) to boilers to combust or to flare when biogas production exceeds boiler demand (eg. during weekend shutdowns)
- Ensuring redundancy is built into the system to account for upset conditions such as electrical or dosing pump failures

Other measures to limit and contain odourous gases include:

- Implementing a preventative maintenance program
- Ensuring key operating parameters such as pH, temperature, flow and chemical oxygen demand (COD) are monitored and maintained within optimal ranges
- Dosing with ferric chloride at the UASB reactor and lamella settler (to help settle primary sludge and react with sulphides to reduce odour potential)
- No stockpiling of screenings or other solids near uncovered/unsealed vessels
- Closed system transfer of solids from sludge tanks to vacuum trucks for offsite disposal

Cascade also intends to develop and implement:

- A pollution incident control plan [Commitment 1]
- Spill management procedures to ensure immediate clean-up of any spills from vehicles associated with WWTP deliveries or dispatches (eg. sludge transport)

Public and agency comment

The EPA Division’s Senior Scientific Officer (Air Modelling) concluded that Cascade’s odour dispersion modelling report was very thorough and of a high standard. It was agreed that of the three modelling scenarios presented, scenario two most likely reflected day-to-day WWTP operating conditions (with 2% of fugitive emissions). This scenario predicts a maximum odour concentration beyond the property boundary of 2.3 OU and at the nearest receptor 1.2 OU.
The very conservative nature of modelling was noted, where emission factors of greater magnitude than those expected in reality were used. Modelling also assumes that fugitive emissions (using these factors) occur continuously when in fact they do not. It was concluded therefore that the extent and magnitude of any (odour) exceedence is likely to be smaller than that presented in the DPEMP.

It was also remarked that the report contained little evidence the WWTP would cause environmental harm (including nuisance). The conclusion presented in the odour impact assessment report—that the potential for adverse odour beyond Cascade’s boundary would be minimal, assuming ‘normal’ WWTP operation and application of good management practices—was supported.

One public representation concerning the odour dispersion model was received after the statutory advertising period and has been considered in this report. The representor queried whether the air dispersion model had suitably accounted for temperature inversion conditions that often occur during winter in the valley where the brewery is situated.

**Evaluation**

Note that the following evaluation of potential odour impacts presumes that Cascade will adopt all its stated design features (eg. enclosed vessels, combusting methane in boiler or flare, directing off-gases to re-aeration tank for ‘scrubbing out’) to minimise the conditions for odour generation and dispersion. Instigating these design features is considered critical to limiting odour nuisance from WWTP operation and must be implemented. The following analysis will instead focus on Cascade’s intended operating practices and procedures to limit the prospect of odour nuisance to nearby neighbours.

In accordance with Cascade’s WWTP Project Specific Guidelines, the company modelled how odour might be dispersed from the WWTP under a number of operating conditions. Modelling methodology was developed with reference to the Project Specific Guidelines and a number of draft odour assessment reports were reviewed and amended by the EPA Division’s Air Unit prior to advertising of the development application. The odour dispersion assessment report is included in the DPEMP as Appendix C.

Briefly, three odour emission scenarios were modelled based on whether or not fugitive emissions from sealed tanks would occur. Scenario one (‘ideal case’) presumed no escape of odour from any covered vessels, scenario two assumed 2% fugitive emissions from all covered vessels including the screenings skip and scenario three (‘worst case’) assumed 10% fugitive emissions from all covered vessels including the screenings skip. In each case, maximum odour ground level concentrations (expressed as odour units) were predicted and plotted to produce an odour contour map. Predicted ground level concentrations (GLCs) were assessed against the criterion that odour concentrations at or beyond the property boundary of the (brewery) facility should be no greater than two odour units (OU) as a 1 hour average and 99.5th percentile.²

In summary, modelled scenarios one and two forecast the maximum odour GLC beyond the property boundary as 1.6OU and 2.3OU respectively, to the north of the brewery complex. At the nearest sensitive receptor (8 Strickland Ave in both cases), scenario one yielded an odour GLC of 0.8OU while scenario two estimated 1.2OU, slightly above the odour level that may be detected by the general population. For scenario three, the 2OU contour extended beyond the property boundary north and south of the brewery, with the maximum expected GLC of 4.5OU occurring to the north. Four sensitive receptors (all in company ownership) southeast of the brewery, including the reception centre Woodstock, were intersected by contours greater than 2OU but less than 3OU.

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As indicated at **Public and agency comment** above, Cascade’s modelling approach and results were reviewed on several occasions. Cascade adjusted aspects of the methodology and provided additional explanation about its modelling approach in response to the review process. Overall, the modelling approach can be considered robust, conservative and credible. With respect to the representation querying whether the odour dispersion model had adequately considered temperature inversion events; on request Cascade provided (8 July 2013) extra detail to explain how temperature inversion conditions were incorporated and treated in the model. This information was reviewed by the EPA Division’s Senior Scientific Officer (Air Modelling) who concluded that the model as presented in the final (advertised) DPEMP had satisfactorily accounted for temperature inversion situations and that the results of the model remained unaffected.

Of the three odour modelling scenarios, scenario two (2% fugitive emissions from all covered vessels) is considered to best approximate the most realistic or typical operating situation since:

- It compares favourably with design parameters and operating results (i.e. actual odour measurements) conducted at a similar CUB brewery in NSW.
- ‘Ideal’ scenario one (no odour leakage) is unlikely to be reproduced in practice. Some escape of odour is to be expected regardless of system design, operating performance and preventative maintenance measures.
- Scenario three (10% odour leakage) represents the ‘worse case’ situation, where housekeeping is poor and vessels are poorly covered or maintained. With astute management practices such as preventative maintenance, equipment renewal and good housekeeping, scenario three conditions are not considered likely or realistic.

As indicated, the maximum odour GLCs estimated for scenario two were less than 2OU and occur in land zoned as Rural B north of the brewery. Given the relative absence of sensitive receptors north of the brewery and predicted odour strength less than 2OU, odour nuisance caused by operation of the intended WWTP is considered unlikely under scenario two conditions (i.e. conditions that could be categorised as typical). Concerning the predicted GLC of 1.2OU at the nearest sensitive receptor; this odour strength is at the limit of detection by the general population. Provided that Cascade is disciplined about its monitoring and preventative maintenance program (refer **Management Measures**), WWTP odour is unlikely to routinely be detected at this or other sensitive receptors under typical operating conditions.

With reference to scenario three (10% fugitive emissions from all covered vessels), results suggest that WWTP odour may be detected beyond the brewery property at four sensitive receptors to the southeast. Again, provided that Cascade acts to ensure that key operating parameters are maintained within optimal ranges, is proactive about its intended preventative maintenance program and employs good housekeeping practices, then the opportunity for ‘worse case’ conditions to manifest is considered remote. Furthermore, it is noted and accepted that for all three scenarios the assumed odour emission rate (OER) is very conservative and in reality likely to be at least a factor of ten lower than modelled. A lower OER would be expected to lead to generally lower odour GLCs.

**Flaring**

Flaring of biogas was not identified as a source or activity that may cause adverse odour. Instances of incomplete combustion of biogas are anticipated to be rare. Given this and the expectation that the flare will usually only operate during weekend shutdowns, the likelihood of odour nuisance from biogas flaring is considered negligible.

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3 Based on test work conducted at a similar brewery in NSW [DPEMP, Section 5.5.3, p45].
**WWTP upsets**

In accordance with the Project Specific Guidelines, Cascade examined how the WWTP’s odour profile might be affected under a variety of abnormal or undesirable operating conditions. Five of the most likely disruptive operating events, including ‘souring’ of the UASB and malfunction of FeCl₃, were considered in terms of potential to occur (likenhood), duration of impact and potential change to odour strength (consequence) [DPEMP Appendix C, Table 6, pp 50-52]. The analysis shows that periods where odour may diverge from the norm (eg. scenario two) are expected, can therefore be planned for and in most instances readily controlled. Aside from souring of the UASB—considered the worst WWTP upset and requiring up to two weeks to address—other upsets were forecast to moderately elevate OER for periods between two hours and three days. It should also be noted that a number of situations which may disrupt typical WWTP function will be by design, such as scheduled maintenance activities.

Cascade’s analysis of how adverse WWTP conditions might affect odour behaviour is considered satisfactory. It is acknowledged that the WWTP will not always operate as desired and that periods where odour strength is elevated—and perhaps detectable—are possible. However, most of the identified WWTP upsets can be effectively avoided or mitigated by maintaining operating parameters within optimal bounds (via the company’s own monitoring regime), careful scheduling and timely implementation of preventative maintenance and rapid, robust investigation and response to any public odour complaints—all of which Cascade has committed to do. Cascade’s additional mitigation measures outlined in Section 5.6.1 of Appendix C are also supported. Provided that Cascade implements the aforementioned measures to a high standard, then instances that may disrupt ‘normal’ WWTP function are likely to be rare, which in turn should limit the opportunity for episodes of adverse odour.

**Conclusions**

As outlined above, typical WWTP function is expected to best approximate modelling scenario two. Under this scenario, odour from ‘normal’ WWTP function is unlikely to be detected in the local community, particularly at the sensitive receptors identified in the DPEMP.

While circumstances that upset ‘normal’ WWTP function are anticipated on occasion, Cascade can limit these instances (which may cause adverse odour) by implementing its stated mitigation measures that include precise load management, using uninterruptible power supply, maintaining optimal operating conditions and high standard of preventative maintenance.

In order to confirm the expected (and typical) odour performance of the WWTP, Cascade should be required to conduct an odour assessment within a specified period post commissioning of the plant. This requirement is specified in Condition A1.

In addition, Cascade should be required to comply with standard conditions for odour management A2 (dust) and A3 (odour).

Finally, Cascade should be required to comply with its stated design and management commitments for odour, as outlined in DPEMP Section 2 (design measures) and Section 4.1.4 (management measures).

Provided that Cascade implements all its stated commitments and complies with the nominated conditions for odour, then operation of the WWTP should accord with the emission criteria outlined in Schedule 3 of the Environment Protection Policy (Air Quality) 2004.
6.2 Noise

Description

Briefly, the processes and/or sources of brewery noise relevant to possible noise from the WWTP (construction and operation) include:

- Traffic on Cascade Road, Strickland Avenue and from a small number of vehicles using Old Farm Road.
- Council rubbish trucks during early morning periods (based on Cascade’s noise complaint records).
- Keg line, including compression room and forklift movements.
- Brew house and associated ammonia plant, ammonia leakage alarm, and hot liqueur process.
- Gas plant.
- Boiler house and stacks.

Cascade’s EPN 591/2 contains several noise conditions that:

- Set agreed noise limits (N1).
- Specify under what circumstances a noise survey must be conducted (N2).
- Specify the noise survey methodology (N3).

Results from Cascade’s most recent noise survey (2011/2012) indicated that for the most part the brewery complied with its specified noise limits.

The 2011/2012 survey also found brewery noise was reduced by effective acoustic shielding from the building envelopes. In instances where noise has been identified as a problem (eg. noise from cooling towers), Cascade has implemented measures to eliminate or reduce these.

Complaint history

Cascade’s complaints register contains details about 22 noise complaints attributed to brewery operations since 1994 (DPEMP Table 9, p53). Complaints have been caused by, among other things, alarms, bearings, vehicle movement and fans.

During the past five years, the register records three noise complaints, two of which were shown not to relate to brewery operations.

Intended WWTP and noise impacts – Construction and operation

In the absence of appropriate controls, construction activities such as earthworks (for site preparation) and equipment fabrication may lead to nuisance noise beyond Cascade’s property boundary. Cascade’s intended WWTP construction activities are detailed in its construction program [DPEMP Appendix D (Noise Assessment), Section 6.1, p36].

Installed and operating, components and/or processes at the WWTP most likely to contribute to brewery noise include:

- 0.5 mm parabolic fines screen.
- Vehicle movements (eg. screenings waste skip removal and truck noise, chemical deliveries).
- Pumps (eg. at equalisation tank, lamella tank, UASB reactor).
- Dosing pumps (to add caustic, ferric chloride).
- Static mixers.
- Low pressure fan to extract and deliver off-gases to aerator tank.
- Gas flare stack and 5 kW gas compressor.

The full list of primary WWTP noise sources and processes appears in the DPEMP Appendix D (Noise Assessment), Section 3.3, pp22-23.

Again, in the absence of appropriate design features or mitigation measures that serve to limit noise, the aforementioned equipment and/or processes may exacerbate the brewery’s present noise profile and lead to environmental nuisance beyond the property boundary.

**Management measures**

**Construction**

Cascade intends to limit the potential for environmental nuisance arising from construction activities by:

- Conducting construction activities between 07:00-18:00hrs Monday-Friday and 08:00-13:00hrs Saturday. No construction work is proposed on public holidays or Sundays.\(^4\)
- Preparing and implementing a construction noise management plan.\(^5\)
- Conducting education programs for employees and contractors regarding quiet work practices.
- Working to ensure that all construction equipment and associated construction activities comply with the maximum noise levels specified in Australian Standard AS2436-2010 *Guide to noise and vibration control on construction, demolition and maintenance and sites*.
- Limiting the acoustic range of reversing alarms on heavy equipment such as trucks involved in deliveries and collection of skips.
- Siting noisy equipment behind structures that act as barriers.
- Orienting equipment to direct noise away from near neighbours, particularly those identified as key sensitive receptors.
- Enclosing noisy equipment and keeping all mechanical plant well maintained.
- Providing noise attenuation screens, where appropriate.
- Where possible, limiting periods in which a vehicle associated with construction is left idling in road(s) adjacent to residents.

**WWTP design and operation**

Cascade intends to limit the potential for environmental nuisance arising from operating the WWTP by:

- Incorporating design features into the WWTP that specifically aim to:
  - Minimise generation of sound energy;
  - Minimise objectionable characteristics of the sound;
  - Reduce sound energy using attenuation measures such as sound absorption; and
  - Deflect sound energy away from sensitive receptors.
- Instituting a preventative maintenance program.

\(^4\) Hours are as recommended in NSW Department of Environment & Climate Change – Interim Construction Noise Guideline (2009). No comparable Tasmanian guideline.

\(^5\) This plan will be a component of the Construction Environmental Management Plan [Commitment 18].
• Siting noisy equipment below ground level or behind structures that act as barriers.
• Enclosing noisy equipment and keeping all mechanical plant well maintained.
• Restricting deliveries and collections to reasonable (eg. standard daylight) hours.
• Considering whether to use lights or sirens to indicate emergencies based on WWTP’s proximity to residents. Lights would be preferable to a siren if the WWTP is close to residents since a siren could cause an environmental nuisance.

Public and agency comment

With respect to noise, the EPA Division’s Senior Scientific Officer (Noise) reviewed Cascade’s Noise Assessment report and made the following observations:

“The indication is that noise is very unlikely to cause complaints during both construction and operation of the WWTP. The subject of noise has been addressed in detail and the conclusions are well supported. It would be appropriate to request a follow-up noise survey about six months after the completion of commissioning.”

No other submissions with respect to noise were received.

Evaluation

In accordance with Cascade’s WWTP Project Specific Guidelines, the company modelled how noise from constructing and operating the WWTP might affect (ie exacerbate or not) the brewery’s present acoustic profile and in turn the acoustic environment beyond the property boundary. Modelling methodology was developed with reference to the Project Specific Guidelines and a number of draft noise assessment reports were reviewed and amended by the EPA Division’s Senior Scientific Officer (Noise) prior to advertising of the development application. The Noise Assessment report is included in the DPEMP as Appendix D.

Construction

With reference to construction noise, Cascade modelled sound pressure levels for a variety of construction plant and equipment over a range of distances from source [DPEMP Appendix D (Noise Assessment), Section 6.3, Table 9, p39]. This enabled the company to identify which plant and equipment, if any, might cause noise disruption off-site and estimate the extent of this impact.

The nearest residential sensitive receptor occurs about 267m from the WWTP's southern boundary at 8 Strickland Avenue. With reference to Table 9 of Cascade’s Noise Assessment report, aside from pile driving (which is not likely to be required) the highest noise levels are expected from jackhammer use. At a distance of 267m, an outdoor sound pressure level of about 64 dB(A) is anticipated from jackhammer use, 6 dB(A) above daytime local rating background level.7 It should be noted, however, that this level represents worse case and is likely to be transient in nature. Furthermore, the estimate does not take into account shielding from existing brewery buildings or terrain which could reasonably be expected to substantially reduce jackhammer noise.

The preceding discussion considers possible noise impacts from a single operating source. Cascade also considered the situation where more than one piece of plant or equipment operates simultaneously. A scenario involving dozer, dump truck and excavator was used to demonstrate the cumulative noise impact at a distance of about 200m from this machinery. A sound pressure level of about 64 dB(A) at 200m was calculated for these machines operating together. Again, shielding and terrain effects were not considered nor the potential of Hobart Rivulet and traffic noise to mask this result.

6 B Wilson, 7 June 2013.
From the above discussion it is apparent that the brewery’s nearest residents, notably those in Strickland Avenue, may at some point during the WWTP’s construction phase detect one or more pieces of plant or equipment. It is reasonable to surmise, however, that any disturbance will be short lived or insignificant because of attenuation provided by brewery buildings, other structures and favourable terrain. In addition, the prospect of adverse noise impacts beyond the property boundary can be minimised by Cascade implementing its stated mitigation measures to control construction noise (refer Management measures). All of the measures to keep construction noise to reasonable and acceptable levels are supported.

With respect to construction hours, Cascade initially stated in its DPEMP that Saturday hours would be 08:00-13:00hrs. This requirement was included in the initial draft PCE8819 that was provided to Cascade on 12 July 2013. The company subsequently requested that Saturday construction be extended to 18:00hrs, essentially to allow it to complete the construction phase in as short a period as reasonably possible and therefore limit neighbours’ exposure to construction activities.

Legislative support for allowing an extension to Saturday construction hours may be found in Schedule 7 of the Environmental Management and Pollution Control (Miscellaneous Noise) Regulations 2004. Schedule 7 outlines Permissible Hours of Use of Specified Things, where ‘Things’ mean portable apparatus such as power tools, pumps, air compressors and cement mixers. It could reasonably be expected that such apparatus might operate on a construction site. The nominated hours of use for such apparatus on a Saturday are 09:00-18:00hrs. This, plus the observation that the WWTP construction site is relatively well removed and shielded (by brewery structures) from Cascade’s near neighbours in most directions suggest that an extension beyond 13:00hrs on a Saturday is a fair request. A finish of 17:00hrs on a Saturday is considered reasonable.

Again, provided that Cascade complies with its stated mitigation measures for construction noise and adheres to any protocols for noise control outlined in its Construction Environmental Management Plan (Commitment 18), then a 17:00hrs finish for construction activities on a Saturday is unlikely to compromise local acoustic amenity. Construction hours have been specified as Condition CN2.

Cascade’s Commitment 18 to produce and implement a Construction Environmental Management Plan (CEMP; which will contain a Noise Management Plan) is supported. Condition CN1 requires that Cascade construct and operate the WWTP in accordance with the final design report produced and accepted for the facility. Among other measures/ procedures, the CEMP will also outline how the company intends to receive and respond to noise complaints. Together with the company’s stated mitigation measures for construction noise, following the instructions/ procedures for noise control in the CEMP should limit the opportunity for environmental nuisance due to construction activities.

Operation

With reference to operating noise two scenarios were modelled, namely anticipated noise from standalone WWTP operation and the WWTP operation plus existing brewery operations (‘combined’ scenario). The latter scenario was informed by sound pressure levels measured during Cascade’s most recent noise survey of 2011/2012. As previously indicated, Cascade’s Noise Assessment report was reviewed on a number of occasions and ultimately considered satisfactory.

Briefly, noise from standalone WWTP operation (including gas flare noise) was predicted to be well below the strictest noise level limit in EPN 591/2 condition N1, being the night time limit of 45 dB(A) (L_Aeq (10 min)), with values ranging from 16 to 29 dB(A). Predicted noise levels were well below existing background levels measured in 2012, which respectively ranged from 39 to 46 dB(A) (L_A90) east and 48 to 53 dB(A) (L_A90) southwest of the brewery. This outcome accords with expectations for WWTP noise, given the facility’s relatively isolated and well shielded location and the generally low noise disturbance nature of WWTP equipment (in the main pumps, stirrers, mixers). The 16
dB(A) difference between the standalone scenario’s predicted maximum of 29 dB(A) and the present night time noise limit of 45 dB(A) is substantial enough to conclude that under typical operating conditions, noise from the WWTP is unlikely to be readily distinguished from existing brewery operations.

The scenario that modelled noise from combined operations of WWTP and existing brewery processes clearly showed that existing processes dominate the brewery’s noise profile. The ‘combined’ scenario indicated that the WWTP’s contribution to brewery noise was minor and very unlikely to exacerbate the present operating circumstances. Again, this is the outcome one might expect based on the relatively remote and well shielded location of the WWTP and equipment not typically associated with adverse noise. It is perhaps worth noting that the combined scenario predicted a noise level slightly higher than the present specified night time limit at receptor sites R9 (14 Strickland Ave) and R10 (25 Strickland Ave). Cascade attributes this marginally higher noise level to existing silo and cooling tower noise [Appendix D (Noise Assessment), Table 15, p48] and intends to actively address this matter through its maintenance program.

While it is accepted that noise from the WWTP is not likely of itself, or in combination with existing brewery operations, to adversely affect the amenity of near neighbours, Cascade must remain vigilant and proactive about controlling noise ‘hot spots’ such as cooling towers and grain silos. To a large extent the company already appreciates this, maintaining an active noise mitigation program. Furthermore, the significance of community noise impacts from a large business located in close proximity to residential areas is already acknowledged in EPN 591/2 (circumstances requiring a noise survey) and N3 (how to conduct noise survey). Installation of a new WWTP is considered sufficient change to brewery operations to warrant a follow up noise survey, so a condition requiring this (Condition N2) has been set, plus a condition specifying survey methodology (Condition N3).

Conclusions

As discussed above, construction noise is not expected to adversely affect Cascade’s near neighbours provided that the company implements its stated mitigation measures, which includes following any instructions or procedures for noise control outlined in its CEMP [Commitment 18]. Condition CN2 will specify construction hours and Condition CN1 the construction and operating criteria (ie the final, accepted design report). It is recognised that the company already maintains a complaint register and handling procedure.

Consistent with EPN 591/2 conditions N1-N3 and the need to validate results and conclusions from Cascade’s noise assessment:

- **Condition N1** for PCE 8819 will specify that noise emissions from the WWTP align with (ie not compromise) the brewery’s present restrictions on noise stipulated in EPN 591/2 condition N1.9
- **Condition N2** and **N3** will specify that Cascade must conduct a noise survey within six months of commissioning of the WWTP (N2) using methodology specified in **Condition N3**.

Furthermore, Cascade has indicated that it will to the greatest extent possible incorporate all practicable design features that will limit adverse noise from the WWTP and instigate its stated management measures for control of operational noise, especially a preventative maintenance program and responsive complaint handling protocol.

Provided that Cascade complies with these stated conditions and institutes its nominated mitigation measures for noise control, the proposed WWTP is not likely to be a source of environmental nuisance.

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8 Table 15 includes likely WWTP noise sources plus brewery’s existing noise sources.
9 It should be noted that the noise limits stipulated in EPN 591/2 condition N1 remain contemporary and valid.
7 Other environmental issues

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

- Liquid waste
- Groundwater
- Solid and controlled waste
- Dangerous goods
- Biodiversity and natural values
- Greenhouse gases and ozone depleting substances
- Heritage
- Visual effects
- Socio-economic
- Health and safety
- Hazard analysis and risk assessment
- Fire risk
- Traffic
- Monitoring and review
- Decommissioning and rehabilitation
8 Report Conclusion

This assessment has been based upon the information provided by the proponent in the permit application and DPEMP.

This assessment has incorporated specialist advice provided by Divisions of DPIPWE in relation to a number of key issues.

This assessment has taken into account one matter raised in one public submission.\(^{10}\)

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. 8819 appended to this report are imposed and duly complied with, including commitments made by the proponent in the DPEMP.

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Report Approval

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

[Signature]

Alex Schaap
Director, Environment Protection Authority
Under delegation from the Board of the Environment Protection Authority
Date: 12 August 2013

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\(^{10}\) Lodged after close of stipulated advertising period.
9 References

GHD 8 May 2013, Carlton and United Breweries-Cascade Brewery WWTP DPEMP
## 10 Summary of appendices

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## Appendix 1  
**Assessment of other environmental issues**

### Issue 1

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<td>The primary objective of installing a new WWTP is to treat brewery wastewater to comply with new trade waste quality requirements issued by former water authority Southern Water (now TasWater). As indicated, wastewater discharge will be governed by a trade waste agreement between the brewery and TasWater. Discharges from site amenities (ie black water and grey water) will continue to report to sewer under terms of the trade waste agreement. Discharges to the environment (eg. Hobart Rivulet) will be limited to uncontaminated stormwater runoff and potentially contaminated stormwater runoff. Uncontrolled discharges of stormwater to local waterways may cause adverse impacts to stream ecology and health. On occasion, flooding (from nearby rivulets) may also pose a risk to site infrastructure and processes.</td>
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### Management measures proposed in DPEMP

CUB proposes to engage in further discussion with Hobart City Council, TasWater and EPA to come to an agreement on workable solutions regarding the potential diversion of stormwater to stormwater system in order to keep unnecessary volumes of clean stormwater out of the anaerobic treatment circuit.

### Public and agency comment

TasWater (formerly Southern Water) indicated that the forecast quality of wastewater discharged from the proposed WWTP was acceptable to it. TasWater also indicated a condition of permit be that Cascade install a system to capture and treat any contaminated stormwater in the WWTP bund and then release uncontaminated stormwater to the stormwater system.

### Evaluation

As indicated, wastewater treated by the proposed WWTP will discharge to sewer under the terms of a new trade waste agreement between Cascade brewery and TasWater. TasWater will administer/service this agreement as the regulating authority. No further action is required by the EPA Division.

With respect to stormwater that collects within the WWTP footprint; it is agreed that only potentially contaminated stormwater (eg. so called ‘first flush’ volume) should be captured and treated and that all other stormwater confirmed as ‘clean’ (uncontaminated) should be released to existing stormwater system in line with TasWater’s comment above. Cascade’s commitment to work with Council, EPA and TasWater to develop and implement in essence a ‘first flush’ diversion system is supported. It is recommended that this system be devised and implemented within three months of WWTP commissioning (should Council grant a permit).

Cascade’s Flood Assessment Study [DPEMP, Appendix K] concluded that the WWTP is unlikely to be affected in the event of a 1 in 100 year ARI flood event, as the WWTP site would sit above flood level. It also showed that there is no increased risk of flooding as a result of the development.

### Conclusion

As indicated, the purpose of brewery’s new WWTP is to produce a higher quality effluent that will place less treatment demand on TasWater operated WWTP. Discharge terms and conditions will be specified in a new trade waste agreement, which TasWater will enforce. Discharge conditions over and above those contained in new trade waste agreement are not deemed necessary.

It is acknowledged and accepted that floods should pose little risk to the WWTP.

With respect to stormwater flows, Cascade should be required to develop and implement a system that allows capture and treatment of potentially contaminated stormwater while diverting flows confirmed as ‘clean’ to existing stormwater system. Cascade should complete this action within three months of WWTP commissioning (should Council grant a permit). This requirement is specified in non-standard **Condition OP1**.
### Appendix 1

#### Issue 2

**Groundwater**

**Description of potential impacts**

Cascade's desktop analysis revealed no groundwater users near the brewery. Closest bore located ~300m south of the proposed WWTP. Groundwater monitoring bores also lie ~300m north at McRobies Gully Waste Management Centre.

Cascade expects groundwater under natural conditions to flow towards Guy Fawkes Rivulet and Hobart Rivulet from or beneath WWTP area. The Hobart Rivulet has been identified as a ‘groundwater dependent ecosystem’. Groundwater quality in immediate area is not known.

The scale and shallow nature of anticipated excavations and site levelling are considered minor. No pile driving is forecast. The opportunity to intercept or disturb groundwater is small.

Extensive and / or poorly planned and executed site preparation and excavation works may disturb groundwater system(s) and introduce contamination. There is also a possibility of groundwater contamination during WWTP operation from poorly isolated/ contained leaks/ spills.

**Management measures proposed in DPEMP**

Prior to excavation, Cascade commits to identifying whether (or not) any fill materials have the potential to contaminate groundwater. In the event that Cascade locates materials with potential to contaminate groundwater it will implement appropriate measures for removal, treatment (where required) and disposal. This intent is expressed in Commitment 3 [DPEMP Part 4.3.3 p47].

No other management commitments for groundwater have been proposed.

**Public and agency comment**

None.

**Evaluation**

The forecast shallow nature of site preparatory works and unlikely need for pile driving suggest a low likelihood that groundwater will be encountered and disturbed. Cascade’s Commitment 3—to test and ascertain whether (or not) any fill materials present a contamination risk to groundwater and (where necessary) employ appropriate measures to treat and dispose of any contaminated fill material—is supported.

It is noted that WWTP components will be located on and contained within an impermeable concrete base or bunds. As such the opportunity to contain and appropriately deal with any spills or leaks from WWTP equipment is anticipated to be high and potential to contaminate groundwater systems low. Any substances (eg. wastewater, reagents) spilled/ leaked will be contained within bunded area sumps and returned to wastewater treatment process.11

Cascade’s preventative maintenance regime—which will include routine inspection of tanks, pipes and pumps—is supported. It is also recognised that tank design/ placement will include features to limit leaks and spills.

**Conclusion**

As discussed above, the WWTP is unlikely to pose a tangible risk to groundwater systems provided that no pile driving occurs, site excavations remain shallow and Commitment 3 is executed.

To account for a situation where pile driving or deeper than anticipated site excavations are necessary, Cascade will be required to discuss this and nominate suitable controls to limit impact on groundwater in its Construction Environmental Management Plan [Commitment 18]. Cascade will need to construct and operate the WWTP in accordance with its final, accepted design report prepared for the facility (Condition CN1).

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11 Unless trapped, contained and treated more immediately at source.
## Issue 3

### Solid and controlled waste

### Description of potential impacts

During site preparatory and construction works it is anticipated that solid wastes will primarily comprise excavated materials, construction materials and packaging.

During WWTP operation, the primary solid waste stream will be sludge (from lamella settler and UASB).

In the absence of suitable controls, solids such as excavated (soil and rock) materials, construction materials and packaging may spread to and degrade local waterways/ groundwater (especially if fill materials are contaminated) and land.

### Management measures proposed in DPEMP

With respect to construction, Cascade intends to implement procedures specified for solid waste management in the CEMP [Commitment 18]. This plan will identify opportunities for waste reduction and recycling. Any construction materials, packaging waste or waste generated by contractors will be stored in designated laydown areas or sealed bins. These materials will then be regularly removed as per existing arrangements with waste/ recycling contractors.

With respect to sludge, Cascade intends to routinely/ regularly ‘harvest’ this material by transfer to vacuum tanker and disposal at an approved waste disposal facility. Minor quantities of sludge are likely to be stored in covered bin(s)/ skip(s) prior to collection by vacuum tanker.

Specific undertakings for solid waste (including controlled waste) management are as follows:

- **Commitment 6** - Controlled wastes will continue to be removed from the WWTP site by an approved controlled waste transporter and will be disposed of at an approved disposal facility.
- **Commitment 7** – Sludge will be managed appropriately and regularly removed by sealed tanker to an approved waste disposal facility.

### Public and agency comment

None.

### Evaluation

Cascade’s intended management measures and specific commitments (refer above) for solid wastes are considered fit for purpose and are supported. Provided that Cascade implements procedures and heeds standards for management of solid wastes specified in its CEMP then the opportunity for environmental harm from solid wastes arising from construction activities is anticipated to be remote. Similarly, provided that Cascade removes quantities of sludge regularly by vacuum tanker and limits quantities of stored sludge (in air-tight containers) then risk to waterways and land is considered remote.

### Conclusion

Cascade should be required to comply with its stated management undertakings for solid wastes, namely **Commitments 6 and 7**. In addition, Cascade should be required to comply with its stated management undertakings for solid wastes as per its intended CEMP.
### Issue 4

#### Hazardous substances

**Description of potential impacts**

Small quantities of fuel, lubricants and other chemicals may be stored on-site during the construction phase of WWTP.

During WWTP operation the primary hazardous substances are ferric chloride and sodium hydroxide.

Potential for loss or spills of hazardous substances exists. Uncontrolled loss of hazardous substances such as hydrocarbons can infiltrate, contaminate and damage surface and ground water and soil ecosystems. Uncontrolled release of hazardous substances such as ferric chloride and sodium hydroxide may also adversely affect human health.

**Management measures proposed in DPEMP**

The transport and storage of nominated hazardous goods will be in accordance with the relevant standards and legislative requirements. Each chemical will have storage and handling facilities and procedures appropriate to the material and will be managed in accordance with requirements of relevant standards, codes and guidelines for the use of these chemicals.

Cascade will continue to maintain an inventory of all hazardous materials stored on WWTP site. This will identify the location of storage facilities, maximum quantities of each hazardous material likely to be kept in storage and accompanying material safety data sheets (MSDS). Relevant staff will be trained in the use of specific hazardous materials prior to operation and on an as-needs basis thereafter. Spill kits will be kept on site in suitable locations and staff trained in their use.

Cascade’s CEMP [Commitment 18] will include details about hazardous goods to be transported, stored and used during construction and appropriate storage and handling procedures. The CEMP will also specify procedures to follow in the event of a leak or spill at WWTP to limit impacts to environment and human health.

Specific undertakings for hazardous substance management are as follows:

- **Commitment 8** – Hazardous goods stored on site will be in suitably bunded containers and stored in accordance with the Dangerous Goods Act 2005 and associated regulations.
- **Commitment 9** – The CEMP will outline the management of fuels and lubricants required for equipment during construction, operational and maintenance activities.

**Public and agency comment**

None.

**Evaluation**

Cascade’s intended management measures and specific commitments (refer above) for hazardous substances are considered fit for purpose and are supported. As previously outlined at Issue 3 (solid and controlled wastes), presence of impermeable concrete barrier under and around WWTP components will also limit prospect of spread and adverse impact of hazardous substances. Provided that Cascade implements intent/ actions outlined in Commitments 8 and 9 and adheres to procedures for management of hazardous substances nominated in its CEMP then the opportunity for environmental harm from hazardous substances is anticipated to be low.

**Conclusion**

Cascade should be required to comply with standard conditions for management of hazardous substances H1 (storage and handling) and H2 (provision of spill kits). Cascade should also act to comply with its management commitments 8 and 9.
Issue 5

Biodiversity and natural values

Description of potential impacts

Results of Cascade’s desktop flora and fauna assessment and field survey have been previously detailed at Table 1, pp6-7. In brief, the WWTP site is a highly modified environment with little potential habitat for threatened flora and fauna species. No threatened flora communities or species were identified by survey. Similarly, the field survey did not detect any threatened fauna species. The field survey did, however, identify a number of declared environmental weeds.

Poorly managed site preparatory and construction works may adversely impact biodiversity and natural values of local waterways (including groundwater) and land. Construction works may potentially distribute weeds to other parts of the WWTP site and beyond via vehicles, soil and machinery traffic.

Management measures proposed in DPEMP

With respect to construction phase, measures to limit degrading natural values of Guy Fawkes Rivulet are primarily concerned with isolating sediments (silt fences, impoundments) and oils. The CEMP will outline how biodiversity and natural values of local waterways (including groundwater) and land will be protected.

Declared weeds observed during the field survey will require control under the Tasmanian Weed Management Act 1999.

To limit the potential to introduce, transfer and/or spread weeds during site preparatory and construction works, Cascade will establish and document suitable control measures in the CEMP, including:

- Vehicle and machinery washdown in accordance with the Washdown Guidelines for Weed and Disease Control Edition 1.
- Pre-construction weed control for any declared weeds in the immediate vicinity of works.
- Post construction visual inspection of weed occurrence and follow up control if required.
- If required, only bring clean fill onto WWTP site.

Specific undertakings to help limit impacts to local biodiversity and natural values are as follows:

- **Commitment 10** - Sediment control measures will be outlined in the CEMP to ensure that construction works do not impact on Guy Fawkes Rivulet and remediation works along the rivulet banks will take place post construction.
- **Commitment 11** - Weed control measures, including wash down and pre-construction weed control, will be outlined in the CEMP.

Public and agency comment

Resource Management and Conservation (Policy and Conservation Assessment Branch) commented that the intended installation and operation of WWTP should have no measureable impacts on natural values in the immediate area provided all management commitments were adhered to.

Evaluation

It is clear from the desktop flora and fauna assessment and field survey that the WWTP ‘footprint’ is a highly modified area with limited existing terrestrial biodiversity and natural values. It is agreed that the focus should be to conserve biodiversity and natural values of local waterways (including groundwater) and limit the transfer and spread of weeds to areas beyond the WWTP ‘footprint’. Cascade’s intended management measures and specific undertakings [Commitments 10 and 11] to achieve these outcomes are supported and considered appropriate.

Conclusion

Cascade should be required to adhere to protocols/procedures for biodiversity and natural values protection (includes control of weeds) as outlined in its proposed CEMP. Provided the company implements its intended mitigation and management measures to conserve local biodiversity and natural values then adverse impacts are not anticipated.

No specific biodiversity and natural values conditions are deemed necessary.
## Appendix 1

### Issue 6

**Greenhouse gases and ozone depleting substances**

<table>
<thead>
<tr>
<th>Description of potential impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Greenhouse gas (GHG) emissions during construction phase derive primarily from use of machinery (eg. excavators, trucks) and light vehicles.</td>
</tr>
<tr>
<td>GHG emissions during WWTP operation will arise primarily from electricity use and combustion of natural gas in natural gas boiler. Emissions of biogas (methane) from anaerobic wastewater treatment will be consumed in existing gas fired boilers and/or flared as previously outlined (Table 1, p8).</td>
</tr>
<tr>
<td>Installation and operation of WWTP does not involve generation or use of ozone depleting substances.</td>
</tr>
</tbody>
</table>

Uncontrolled GHG emissions may contribute to and exacerbate the effects of global climate change.

### Management measures proposed in DPEMP

With respect to construction phase, Cascade intends to ensure that all machinery and vehicles are well maintained and operated efficiently to optimise fuel use and limit GHG emissions.

CUB is presently obliged to report annually against the National Greenhouse and Energy Reporting scheme. CUB will continue to do so in order to compare/contrast at least the first year GHG emissions (brewery plus WWTP operation) with historical (brewery).

Cascade nominates one specific undertaking to help track GHG emissions and energy consumption as follows:

- **Commitment 12** - CUB will continue to report on all potential greenhouse gas emissions and energy use at the Cascade Brewery under the National Greenhouse and Energy Reporting scheme.

### Public and agency comment

None.

### Evaluation

Cascade anticipates installing and operating the WWTP will not significantly alter the brewery’s annual GHG emission volume. While a detailed estimate is not presented, it is acknowledged that the bulk of the brewery’s GHG emissions will continue to stem from existing processes and activities. Cascade’s ongoing participation in the National Greenhouse and Energy Reporting scheme is noted and supported (Commitment 12) and provides a means for the company to judge the WWTP’s contribution to overall brewery GHG emissions. Cascade may—depending on magnitude of the contribution—also use this comparison as one means of assessing whether the WWTP needs targeting to reduce GHG emissions.

Cascade’s intent to ensure that all machinery enlisted for construction activities is tuned and operated efficiently to optimise fuel use and limit GHG emissions is supported and deemed appropriate.

### Conclusion

Cascade should be required to implement the management measure proposed to limit GHG emissions during construction phase and measure reflected in **Commitment 12**. No specific conditions relating to GHG emissions and ozone depleting substances are considered necessary.
## Issue 7

### Heritage

#### Description of potential impacts

**European heritage**

Part 3.2.10 (pp 33-34) of DPEMP describes the built heritage values of brewery and its immediate surrounds. Briefly, brewery site is included on Appendix 1 of Schedule F of City of Hobart Planning Scheme 1982, is registered on the Tasmanian Heritage Register and included in Register of the National Estate. The World Heritage listed Female Factory is located ~1km from proposed WWTP site.

**Aboriginal heritage**

Advice from AHT confirmed the absence of known Aboriginal heritage sites within the intended WWTP footprint. Consequently no impacts to Aboriginal cultural heritage are anticipated.

Installation and operation (especially site preparatory works and construction activities) of the WWTP has the potential to damage or degrade items of heritage value if poorly planned and executed.

#### Management measures proposed in DPEMP

Cascade submitted a Works Application to Council as part of documentation to support this development. This Application was approved subject to condition, parts of which are encapsulated as Commitment 13 below. With reference to this commitment, Cascade will also provide a report about archaeological monitoring to Heritage Tasmania within three months of completing works.

**Commitment 13** - Ground disturbance will be monitored in accordance with the Tasmanian Heritage Council Practice Note 2 and if archaeological remains are discovered, works will cease while the remains are being managed.

**Commitment 14** - If any Aboriginal features are identified during the construction phase, works shall cease and advice will be sought from Aboriginal Heritage Tasmania prior to recommencement of works.

Furthermore, Cascade indicates that it consulted Council’s heritage officer about WWTP’s possible visual effects on the heritage significance of the Brewery. Consequently WWTP design and location have been chosen to avoid impacts on heritage fabric or setting of the brewery or any items that contribute to its significance.

#### Public and agency comment

Heritage Tasmania commented that Cascade’s DPEMP adequately deals with issues related to the European historic heritage values of the site.

#### Evaluation

Cascade’s engagement with Council concerning heritage matters as alluded to above – culminating in the Tasmanian Heritage Council approving a works application—are noted and supported. Approval demonstrates that the development is consistent with heritage provisions of the City of Hobart Planning Scheme 1982.

Cascade’s intent to clad tanks in neutral recessive colours to ensure that new infrastructure is well integrated with the existing setting and to ensure that the WWTP is sympathetic to the site context is considered appropriate. Cascade’s obligation to monitor ground disturbance during site preparatory and construction works and cease work immediately if archaeological remains are located [Commitment 13] is supported, as is Cascade’s intent to suspend construction activities if Aboriginal heritage is discovered [Commitment 14].

It should be noted that monitoring of ground disturbance will be a component of Cascade’s CEMP [Commitment 18].

Provided that Cascade:

1. Complies with all conditions of Notice of Heritage Decision issued by the Tasmanian Heritage Council 12 November 2012 [DPEMP Appendix F]-the bulk of which is encapsulated in Commitment 13-and the intent expressed in Commitment 14
2. Builds the WWTP in the nominated location and adopts neutral recessive colours for coating tanks then heritage values are not likely to be materially affected by this development.
## Conclusion

The Tasmanian Heritage Council previously concluded that the WWTP development was not likely to cause measurable impacts to the heritage values of the brewery and requires Cascade to monitor and report concerning ground disturbance during construction. As previously indicated, Cascade should develop the WWTP consistent with **Commitments 13 and 14**. No specific conditions concerning heritage (either European or Aboriginal) are deemed necessary.
### Issue 8

**Visual effects**

**Description of potential impacts**

**Construction phase**
Cascade anticipates only minor visual impacts from construction equipment, clearing, excavation and landfill works as well as construction signage (largely due to screening by grain silos and main brewery building).

**Operational phase**
Cascade indicates that WWTP will not be visible from Cascade Rd to the south and east, as its highest point (biogas flare stack) at 3-4m above ground level is well below either grain silos or main brewery building (>20m high). Topography is expected to prevent or severely limit views of WWTP site from most other directions.

WWTP is likely to be visible from Old Farm Road and possibly from points further up the mountain to the east, but this will be against backdrop of an existing industrial complex; so visual impact anticipated to be negligible.

**Flaring**
Gas flares can cause visual disturbance, particularly at night. Cascade indicates that its flare will only be used where biogas production exceeds boiler demand, typically during weekend shutdowns.

WWTP components such as tanks and biogas flare have potential to degrade visual amenity in the absence of suitable management controls.

**Management measures proposed in DPEMP**
Cascade has identified two specific commitments concerning visual aspects of the development, namely:

- **Commitment 15** - Management of visual impacts during construction (including dust mitigation) will be addressed in the CEMP.
- **Commitment 16** - WWTP tankage will be painted neutral colours to minimise visual obtrusiveness.

Cascade also states that biogas flare will be an ‘invisible flame’ type with complete incineration, which it will shroud to prevent detection of visible naked flames from areas adjacent to the WWTP, particularly at night.

**Public and agency comment**
None.

**Evaluation**
Given that flaring events are expected to be occasional, that flare design is for a ‘naked’ flame and that the flare will be fitted with a shroud, the prospect that visual amenity will be negatively affected by flaring is very low.

**Conclusion**
Provided that Cascade shields the gas flare in the intended manner, then the likelihood that WWTP installation and operation will adversely diminish local visual amenity is considered remote. No specific conditions are recommended.
# Issue 9

## Socio-economic

### Description of potential impacts

The following is included for noting only.

Cascade indicates that the development will create employment in the construction sector for about eight months. Cascade estimates a total capital investment of about $4.2M.

Operating the WWTP will be incorporated into the brewery’s present management regime. Cascade anticipates <1FTE will be needed to operate the WWTP in a part time role shared with other maintenance roles within the brewery.

Cascade does not anticipate that WWTP construction and operation will materially affect any other upstream/downstream industries (locally and across Tasmania) since brewery wastewater will discharge to sewer rather than into the adjacent rivulet. Cascade states that new WWTP will improve sewage treatment capacity and thereby allow TasWater to more readily comply with its own treatment and discharge requirements.

Cascade does not anticipate any material impacts on local land values, largely due to the expected adequate containment/ restriction of WWTP impacts (eg. odour, noise) within the brewery property.

New or intensifying industrial developments have the potential to adversely affect local and regional socio-economic conditions if proponents fail to properly consider, evaluate and practically mitigate potential socio-economic impacts.

### Management measures proposed in DPEMP

No specific management measures have been proposed.

### Public and agency comment

None.
### Issue 10

**Health and safety**

**Description of potential impacts**

The following is included for noting only.

Cascade will require construction contractors to provide documentation that outlines their systems to manage health and safety during construction. Cascade will require contractors to undertake all works in accordance with its Occupational Health and Safety Policy [DPEMP, Appendix M].

As far as WWTP operation is concerned, Cascade intends to revise and update its Environmental Management Plan to account for and address potential health and safety matters. Cascade also intends to develop an Emergency Response Plan (see below).

If appropriate health and safety protocols and controls are not adhered to then the health and wellbeing of brewery employees, local community and environment may be adversely affected.

**Management measures proposed in DPEMP**

**Commitment 17** - CUB will update the Cascade Brewery Environmental Management Plan and Emergency Response Plan to encompass the WWTP operations.

**Public and agency comment**

None.

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### Issue 11

**Hazard analysis and risk assessment**

**Description of potential impacts**

Cascade conducted a preliminary hazard analysis and risk assessment which identified key risks as noise and odour during construction and odour during operation.

Cascade proposes to conduct a comprehensive risk assessment following appointment of the supply contractor. This will be provided to the EPA Division at the earliest opportunity post completion.

Analysis of hazards is central to effective management of health, safety and environmental risks associated with the WWTP.

**Management measures proposed in DPEMP**

No specific management measures have been nominated, though Cascade has indicated it will provide the EPA Division with a copy of its comprehensive risk assessment once completed.\(^\text{12}\)

**Public and agency comment**

None.

**Evaluation**

As previously discussed in this report, provided that Cascade adheres to specified conditions for key risks odour and noise, then residual risks posed by these WWTP emissions are expected to be acceptable and meet community expectations.

**Conclusion**

No specific conditions concerning hazard analysis and risk assessment are deemed necessary.

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\(^{12}\) This is expected prior to substantial commencement of WWTP construction.
### Issue 12

**Fire risk**

<table>
<thead>
<tr>
<th><strong>Description of potential impacts</strong></th>
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<tbody>
<tr>
<td>Ignition sources associated with construction phase are limited to use of machinery, vehicles and fuels. There is potential for fire to encroach on the WWTP site from neighbouring bushland. Potential fire sources include lightning strikes as well as spot fires from fires further afield. Cascade considers that ‘external’ fire poses a very low risk to WWTP operation as all structures will be of concrete construction and tanks contain liquid materials. In the absence of suitable controls, fire may cause environmental harm.</td>
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<table>
<thead>
<tr>
<th><strong>Management measures proposed in DPEMP</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Cascade intends to maintain all vehicles and machinery in good working order to minimise the potential for fires on site. Any fuels required during the construction phase will be limited in quantity and stored in suitably bunded facilities. Cascade intends to retain (and operate if necessary) suitable fire fighting equipment on site during the construction phase and ensure that key staff are trained in emergency procedures and use of fire fighting equipment. Cascade will enclose the biogas flare with a shroud to obviate fire risk. Cascade has prepared a fire prevention and control plan for its existing operations, in consultation with the appropriate authorities. This plan relies on support from local fire authorities and State Emergency Services and is regularly reviewed and updated. Cascade's CEMP will outline the full detail for fire management during the construction phase. A performance standard of 100 % compliance to fire management procedures will be set.</td>
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<thead>
<tr>
<th><strong>Public and agency comment</strong></th>
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<tbody>
<tr>
<td>None.</td>
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<table>
<thead>
<tr>
<th><strong>Evaluation</strong></th>
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<tbody>
<tr>
<td>Cascade’s intended approach to limit fire risk associated with this development (as outlined above) is supported, especially all appropriate protocols for fire management that the company specifies in its CEMP. Cascade’s performance standard of 100 % compliance to fire management procedures (construction phase) is supported. Cascade should update its fire prevention and control plan to reflect addition of WWTP to site infrastructure.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Conclusion</strong></th>
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</thead>
<tbody>
<tr>
<td>Provided that Cascade implements its intended management regime with respect to fire, then the residual fire risk related to this activity is considered acceptable. No specific conditions concerning fire management are recommended.</td>
</tr>
</tbody>
</table>
### Issue 13

**Traffic**

**Description of potential impacts**

The following is included for noting only.

Cascade forecasts a possible minor increase to road traffic along the access route (Cascade Rd) and other regional roads during construction. However given the relatively limited nature of works and short construction duration (8 months), Cascade does not expect any measureable or enduring impacts to local road users.

Once construction is complete, Cascade expects operational traffic to be of similar profile to present site operations. Occasional deliveries of WWTP chemicals and removal of sludge by vacuum tanker are not forecast to materially affect traffic flow or conditions.

Council did not require a traffic impact assessment for this proposal.

**Management measures proposed in DPEMP**

The CEMP will specify appropriate procedures/ measures for traffic control during construction phase [Commitment 18].

**Public and agency comment**

None.
## Issue 14

### Monitoring and review

#### Description of potential impacts

As previously indicated, the Tasmanian Heritage Council requires the company to monitor ground vibration during the construction phase in accordance with its Practice Note 2.

WWTP operation will be controlled by a number of automated environmental and process monitoring systems. These are discussed in Section 4.18 of the DPEMP.

In addition, Cascade recognises that it will most likely need to validate the results of its modelling exercises conducted for odour dispersion and noise emissions following commissioning of the WWTP.

Implementation of appropriate monitoring and review protocols should allow Cascade to operate the WWTP within ranges stipulated for key criteria and allow Cascade to measure and adjust operating performance (to optimise treatment capability and limit environmental impacts).

#### Management measures proposed in DPEMP

In the event that either an odour or noise complaint is made, Cascade intends to manage this in accordance with the procedure outlined in its Environmental Management Plan.

Cascade intends to report any accidents or incidents that may cause or have the potential to cause environmental harm to the appropriate authorities as soon as practicable.

#### Public and agency comment

None.

#### Evaluation

Cascade appreciates that it is likely to need to validate the results modelled for odour ground level concentrations and sound pressure levels arising from construction and operation of the WWTP. Validation of odour and acoustic models using field measurements is considered a vital and necessary part of evaluating the robustness of model assumptions and therefore output data. As previously highlighted at 6.1 (Odour) and 6.2 (Noise), Cascade should be required to conduct:

- An odour assessment within a specified period post commissioning of the plant to validate the odour dispersion model. This requirement is specified in Condition A1.
- An acoustic assessment within a specified period post commissioning of the plant to validate the acoustic model. This requirement is specified in conditions N2 (requirement for survey) and N3 (survey methodology and reporting).

It is noted and supported that optimal (or acceptable) operating performance of the WWTP will be governed by automated environmental and process monitoring systems. As previously indicated, measuring operating parameters affords Cascade the ability to maintain desired treatment performance and in doing so acceptable levels of emissions such as odour and noise.

Cascade’s intended approach to manage complaints—as specified in its Environmental Management Plan—is supported.

#### Conclusion

Cascade should be required to comply with non-standard monitoring condition M1 (sampling and handling).
### Issue 15

**Decommissioning and rehabilitation**

**Description of potential impacts**

Cascade has no medium or long term intent or plan to decommission any parts of its present brewing facility. Consequently it anticipates that a detailed decommissioning and rehabilitation plan will not be required as part of this development.

Unchecked or abandoned brewing facilities have potential to impart legacy issues for immediate and surrounding environment, including risks to public health and safety and potential contamination of surface and ground waters.

**Management measures proposed in DPEMP**

In the event that any part of Cascade’s present facility becomes redundant, it intends to prepare and provide to the Director, Environment Protection Authority a decommissioning and rehabilitation plan at least three months prior to decommissioning.

**Public and agency comment**

None.

**Evaluation**

There is no immediate or firm evidence to suggest that Cascade intends to retire or decommission any parts of its brewery in the foreseeable future. In the event that closure or decommissioning of plant and/or equipment is planned, Cascade’s approach to develop and submit to the Director EPA a suitable decommissioning and rehabilitation plan at last three months prior to decommissioning is accepted. This approach is reflected in **Condition DC2**.

**Conclusion**

As indicated, the medium and longer term prospect of brewery closure appears remote. As such the requirement for a decommissioning and rehabilitation plan at least three months prior to closure/decommissioning is considered appropriate and is encapsulated in **Condition DC2**.

In addition, the company will be required to comply with standard decommissioning and rehabilitation conditions **DC1** (notification of cessation), **DC3** (rehabilitation following cessation) and **DC4** (temporary suspension of activity).
PERMIT PART B
PERMIT CONDITIONS - ENVIRONMENTAL No. 8819

Issued under the Environmental Management and Pollution Control Act 1994

Applicant: CASCADE BREWERY COMPANY PTY LTD
          ACN 058 152 195
          CASCADE RD
          SOUTH HOBART TAS 7004

Activity: The operation of a wastewater treatment plant (ACTIVITY TYPE:
          Wastewater Treatment Works)
          CASCADE BREWERY & BEVERAGES, CASCADE RD
          SOUTH HOBART TAS 7000

The above activity has been assessed as a level 2 activity under the Environmental Management
and Pollution Control Act 1994 under delegation from the Board of the Environment Protection
Authority.

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: HOBART
Permit Application Reference: PLN-12-01234-01
EPA file reference: 225788

Date conditions approved: 12 AUG 2013

Signed: DIRECTOR, 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.
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Attachments

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Schedule 1: Definitions

In this Permit Part B:-

Aboriginal Relic has the meaning described in section 2(3) of the Aboriginal Relics Act 1975.

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.

Air Dispersion Model means the model developed to produce odour dispersion modelling results contained in the report titled Cascade DPEMP Air Quality Assessment, prepared for Carlton and United Breweries Limited by GHD Pty Ltd and dated May 2013.

Commissioning means the testing of major items of equipment or processes and is taken to be completed when the item(s) or processes are being used or operated in the course of normal commercial operations.

Construction means activities associated with the construction phase of the activity, including but not limited to, activities associated with the clearance of vegetation, site works to create a level site, rock breaking, installation of fences and other infrastructure whether on land or in water.

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.

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.

First Flush Stormwater System Or Device is a method to reduce or limit the first flush of potential contaminants within the physical footprint of the wastewater treatment plant from entering the municipal stormwater system.

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.


The Land means the land on which the activity to which this document relates may be carried out, and includes: buildings and other structures permanently fixed to the land, any part of the land covered with water, and any water covering the land. The Land falls within the area defined by:

1 Certificate of title 252507/1; and
as further delineated at Attachment 1.

**Wastewater Treatment Plant** means the high rate anaerobic reactor system described in Section 2 of the Development Proposal and Environmental Management Plan titled *Cascade Brewery WWTP*, prepared for Carlton and United Breweries Limited by GHD Pty Ltd and dated 8 May 2013.
Schedule 2: Conditions

Maximum Quantities

Q1 Regulatory limits
   1 The activity must not exceed the following limits (annual fees are derived from these figures):
      1.1 1,000 kilolitres per day of design capacity to treat sewage or wastewater (average dry weather flow).

General

G1 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 on The Land, including contractors and sub-contractors, are familiar with these conditions to the extent relevant to their work.

G2 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.

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 Change of ownership
   If the person responsible for the activity is not the owner of The Land upon which the activity is carried out and the owner of The Land changes or is to change, then, as soon as reasonably practicable but no later than 30 days after becoming aware of the change, the person responsible must notify the Director in writing of the change of ownership.

G5 Change of responsibility
   If the person who is or was responsible for the activity ceases to be responsible for the activity, they must notify the Director in accordance with Section 45 of the EMPCA.

G6 Notification prior to commissioning
   At least 14 days prior to the commencement of commissioning of the wastewater treatment plant, the person responsible for the activity must notify the Director of the date on which commissioning is expected to commence.

DIRECTOR, ENVIRONMENT PROTECTION AUTHORITY

12 AUG 2013
G7 Commitments
The activity must be carried out in accordance with the commitments contained in Attachment 2 unless otherwise specified in these conditions or unless otherwise approved in writing by the Director.

Atmospheric

A1 Odour assessment
1. Unless otherwise approved in writing by the Director, within 14 days of completion of commissioning of the wastewater treatment plant the person responsible for the activity must notify the Director in writing that commissioning has been completed.

2. Within three months of completion of commissioning of the wastewater treatment plant, or by a date otherwise specified in writing by the Director, the person responsible for the activity must conduct an odour survey of all odour sources on The Land in accordance with odour survey methodology approved by the Director.

3. The odour survey must be conducted in accordance with any reasonable guidelines provided by the Director.

4. Prior to undertaking the odour survey as required by these conditions, a proposed odour survey methodology must be submitted to the Director for approval.

5. Without limitation, the survey methodology must specify how Odour Emission Rates (OERs) will be measured to allow, where necessary, revision and recalculation of Air Dispersion Model results.

6. An odour survey report must be submitted to the Director within 30 days from the date on which the odour survey is completed.

7. The odour survey report must include the following:
   7.1 a statement justifying the need, or lack of need, to re-model odour emissions;
   7.2 comment on, and interpretation of results;
   7.3 appendices providing the full area source sampling report(s); odour concentration determination report(s); and
   7.4 where any measured OERs exceed those used in the Air Dispersion Model by more than 10% and the Model is revised and results recalculated:
      7.4.1 a revised odour modelling report.

A2 Control of dust emissions during construction
1. Construction activities must be managed using such measures as are necessary to prevent dust emissions causing environmental nuisance. Such measures may include but are not limited to:
   1.1 using a dust suppression method such as watering dust generating surfaces; and
   1.2 ceasing construction activities in windy weather when dust may be blown in the direction of residences.

A3 Odorous gases
The person responsible must institute such odour management measures as are necessary to prevent odorous gases causing environmental nuisance beyond the boundary of The Land.

DIRECTOR, ENVIRONMENT PROTECTION AUTHORITY

12 AUG 2013
Construction

CN1 Construction and operation of wastewater treatment plant
Unless otherwise specified in writing by the Director, the wastewater treatment plant must be constructed and operated in accordance with the design specified in the document titled 'Carlton & United Breweries-Cascade Brewery Co. Pty. Ltd Study for waste water treatment works' dated 7 December 2012 as prepared by Waterleau Group N.V.

CN2 Construction operating hours
1 Unless otherwise approved in writing by the Director, activities associated with construction must not be undertaken outside the hours of 0700 hours to 1800 hours Monday to Friday and 0800 hours to 1700 hours on Saturdays.
2 Notwithstanding the above paragraph, activities associated with construction must not be carried out on public holidays that are observed Statewide (Easter Tuesday excepted) without prior approval of the Director.

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 draft Decommissioning and Rehabilitation Plan (DRP) for the activity must be submitted for approval to the Director within 90 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, The Land 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 on-going 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.

DC4 Temporary suspension of activity
1 Within 30 days of becoming aware of any event or decision which is likely to give rise to the temporary suspension 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 suspend or has suspended.
2 During temporary suspension of the activity:
   2.1 The Land must be managed and monitored by the person responsible for the activity to ensure that emissions from The Land do not cause serious environmental harm, material environmental harm or environmental nuisance; and
2.2 If required by the Director, the person responsible must prepare and implement a Care and Maintenance Plan to the satisfaction of the Director.

3 Unless otherwise approved in writing by the Director, if the activity on The Land has substantially ceased for 2 years or more, rehabilitation of The Land must be carried out in accordance with the requirements of these conditions as if the activity has permanently ceased.

**Hazardous Substances**

**H1 Storage and handling of hazardous materials**
Unless otherwise approved in writing by the Director, environmentally hazardous material held on The Land, including chemicals, fuels and oils, must be located within impervious bunded 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 on The Land must be kept in appropriate locations to assist with the containment of spilt environmentally hazardous materials.

**Monitoring**

**M1 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 or other standard(s) approved in writing by the Director;
   1.2 measurement equipment must be maintained and operated in accordance with the manufacturer's 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;
   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; and
   1.5 noise measurements must be undertaken in accordance with the Tasmanian Noise Measurement Procedures Manual.

**Noise Control**

**N1 Noise emission limits**
1 Noise emissions from the activity, including construction, when measured at any noise sensitive premises in other ownership and expressed as the equivalent continuous A-weighted sound pressure level must not exceed:
   1.1 53 dB(A) between 0700 hours and 1800 hours (Day); and
   1.2 47 dB(A) between 1800 hours and 2200 hours (Evening); and
   1.3 47 dB(A) between the hours of 0600 hours and 0700 hours (Early morning); and
   1.4 45 dB(A) between 2200 hours and 0600 hours (Night).
2 Where the combined level of noise from the activity and the normal ambient noise exceeds the noise levels stated above, this condition will not be considered to be breached unless the noise emissions from the activity are audible and exceed the ambient noise levels by at least 5 dB(A).

3 The time interval over which noise levels are averaged must be 10 minutes or an alternative time interval specified in writing by the Director.

4 Measured noise levels must be adjusted for tonality, impulsiveness, modulation and low frequency in accordance with the Tasmanian Noise Measurement Procedures Manual.

5 All methods of measurement must be in accordance with the Tasmanian Noise Measurement Procedures Manual.

N2 Noise survey requirements
Within six months of completion of commissioning of the wastewater treatment plant or by a date otherwise specified in writing by the Director, the person responsible for the activity must conduct a noise survey in accordance with noise survey methodology approved by the Director.

N3 Noise survey method and reporting requirements
1 Prior to undertaking a noise survey as required by these conditions, a proposed noise survey method must be submitted to the Director for approval.

2 Without limitation, the survey method must address the following:
   2.1 measurements must be carried out at day, evening and night times (where applicable) at each location; and
   2.2 measurement locations, and the number thereof, must be specified, with one location established as a control location (noise).

3 Measurements and data recorded during the survey must include:
   3.1 Operational status of noise producing equipment and throughput of the activity;
   3.2 subjective descriptions of the sound at each location;
   3.3 details of meteorological conditions relevant to the propagation of noise;
   3.4 the equivalent continuous ($L_{eq}$) and $L_{10}$, $L_{10}$, $L_{50}$, $L_{50}$ and $L_{90}$ A-weighted sound pressure levels measured over a period of 10 minutes or an alternative time interval specified by the Director;
   3.5 one-third octave spectra over suitably representative periods of not less than 1 minute; and
   3.6 narrow-band spectra over suitably representative periods of not less than 1 minute.

4 A noise survey report must be forwarded to the Director within 30 days from the date on which the noise survey is completed.

5 The noise survey report must include the following:
   5.1 the results and interpretation of the measurements required by these conditions;
   5.2 a map of the area surrounding the activity with the boundary of The Land, measurement locations, and noise sensitive premises clearly marked on the map;
   5.3 any other information that will assist with interpreting the results and whether the activity is in compliance with these conditions and EMPCA; and
   5.4 recommendations of appropriate mitigation measures to manage any noise problems identified by the noise survey.

DIRECTOR, ENVIRONMENT PROTECTION AUTHORITY
12 AUG 2013
Operations

OP1 Stormwater system

1 Within three months of completion of commissioning of the wastewater treatment plant or by a date otherwise specified in writing by the Director, the person responsible for the activity must:

1.1 install and operate a first flush stormwater system or device to service the wastewater treatment plant; and

1.2 conduct monitoring to demonstrate to the Director the effectiveness of the first flush stormwater system or device such that only uncontaminated water is directed to the Hobart City Council stormwater system.
Schedule 3: Information

Legal Obligations

LO1 Notification of incidents under section 32 of EMPCA

1 A person responsible for an activity that is not a level 2 activity or a level 3 activity must notify the relevant Council, as soon as reasonably practicable but not later than 24 hours, after becoming aware of the release of a pollutant occurring as the result of any incident in relation to that activity, including an emergency, accident or malfunction, if this release causes or may cause an environmental nuisance.

2 A person responsible for an activity that is a level 2 activity or a level 3 activity must notify the Director, as soon as reasonably practicable but not later than 24 hours, after becoming aware of the release of a pollutant occurring as a result of any incident in relation to that activity, including an emergency, accident or malfunction, if this release causes or may cause an environmental nuisance.

3 A person responsible for an environmentally relevant activity must notify the Director, as soon as reasonably practicable but not later than 24 hours, after becoming aware of the release of a pollutant occurring as a result of any incident in relation to that activity, including an emergency, accident or malfunction, if this release causes or may cause serious or material environmental harm.

4 The Director can be notified by telephoning 1800 005 171 (a 24-hour emergency telephone number).

5 Follow up reports can be emailed.

6 Any notification given by a person in compliance with this section is not admissible in evidence against the person in proceedings for an offence or for the imposition of a penalty (other than proceedings in respect of the making of a false or misleading statement).

7 A person is required to notify the relevant Council or the Director of an incident despite the fact that to do so might incriminate the person or make the person liable to a penalty.

8 Any notification referred to in subsection (1), (2) or (3) must include details of the incident, its nature, the circumstances in which it occurred and any action that has been taken to deal with it.

9 For the purposes of subsections (1), (2) and (3):

9.1 a person is not required to notify the relevant Council of an incident if the person has reasonable grounds for believing that the incident has already come to the notice of the Council

9.2 a person is not required to notify the Director of an incident if the person has reasonable grounds for believing that the incident has already come to the notice of the Director;

LO2 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.

[Signature]

12 Aug 2013

DIRECTOR, ENVIRONMENT PROTECTION AUTHORITY
LO3 Aboriginal relics requirements

1 The Aboriginal Relics Act 1975, provides legislative protection to Aboriginal heritage sites in Tasmania regardless of site type, condition, size or land tenure. Section 14(1) of the Act states that; Except as otherwise provided in this Act, no person shall, otherwise than in accordance with the terms of a permit granted by the Minister on the recommendation of the Director of National Parks and Wildlife:
   1.1 destroy, damage, deface, conceal or otherwise interfere with a relic;
   1.2 make a copy or replica of a carving or engraving that is a relic by rubbing, tracing, casting or other means that involve direct contact with the carving or engraving;
   1.3 remove a relic from the place where it is found or abandoned;
   1.4 sell or offer or expose for sale, exchange, or otherwise dispose of a relic or any other object that so nearly resembles a relic as to be likely to deceive or be capable of being mistaken for a relic;
   1.5 take a relic, or permit a relic to be taken, out of this State; or
   1.6 cause an excavation to be made or any other work to be carried out on Crown land for the purpose of searching for a relic.

2 If a relic is suspected and/or identified during works then works must cease immediately and the Tasmanian Aboriginal Land and Sea Council and the Aboriginal Heritage Tasmania be contacted for advice before work can continue. In the event that damage to an Aboriginal heritage site is unavoidable a permit under section 14 of the Aboriginal Relics Act 1975 must be applied for. The Minister may refuse an application for a permit, where the characteristics of the relics are considered to warrant their preservation.

3 Anyone finding an Aboriginal relic is required under section 10 of the Act to report that finding as soon as practicable to the Director of National Parks and Wildlife or an authorized officer under the Aboriginal Relics Act 1975. It is sufficient to report the finding of a relic to Aboriginal Heritage Tasmania to fulfill the requirements of section 10 of the Act.
Attachment 1: The Land
### TABLE OF COMMITMENTS – CASCADE BREWERY COMPANY PTY LTD WASTEWATER TREATMENT PLANT

<table>
<thead>
<tr>
<th>Commitment type &amp; no.</th>
<th>Detail</th>
<th>When</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction</td>
<td>A detailed construction program will be confirmed and provided to the Environment Protection Authority upon engagement of the successful contractor.</td>
<td>Prior to construction</td>
</tr>
<tr>
<td>2</td>
<td>Chemical testing of the fill material in the made ground will be undertaken prior to excavation and, should any material with potential to contaminate groundwater be discovered, it will be extracted appropriately and removed from site for disposal.</td>
<td>Prior to construction</td>
</tr>
<tr>
<td>3</td>
<td>Construction will be scheduled to minimise potential disturbance to neighbours, as specified in the CEMP.</td>
<td>During construction</td>
</tr>
<tr>
<td>4</td>
<td>Ground disturbance will be monitored in accordance with the Tasmanian Heritage Council’s Practice Note 2, and if archaeological remains are discovered, works will cease while the remains are managed.</td>
<td>During construction</td>
</tr>
<tr>
<td>13</td>
<td>If any Aboriginal features are identified during the construction phase, works shall cease and advice will be sought from Aboriginal Heritage Tasmania prior to the recommencement of works.</td>
<td>During construction</td>
</tr>
<tr>
<td>14</td>
<td>Management of visual impacts during construction (including dust mitigation) will be addressed in the CEMP.</td>
<td>During construction</td>
</tr>
<tr>
<td>15</td>
<td>WWTP tankage will be painted neutral colours to minimise visual obtrusiveness.</td>
<td>During construction</td>
</tr>
<tr>
<td>Management plans</td>
<td>A Pollution Incident Control Plan will be prepared to cover unintended emissions to the environment.</td>
<td>Prior to construction</td>
</tr>
<tr>
<td>1</td>
<td>Cascade Brewery Company Pty Ltd will update the Cascade Brewery Environmental Management Plan and Emergency Response Plan to encompass the WWTP operations.</td>
<td>At all times</td>
</tr>
<tr>
<td>17</td>
<td>A Construction Environmental Management Plan (CEMP) will be prepared prior to construction to include management of dust, water, waste, noise, hazardous substances, weeds, ecological values, heritage and fire.</td>
<td>Prior to construction</td>
</tr>
<tr>
<td>18</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 2 AUG 2013
<table>
<thead>
<tr>
<th>Commitment type &amp; no.</th>
<th>Detail</th>
<th>When</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Sediment control measures will be outlined in the CEMP to ensure that construction works do not impact on Guy Fawkes Rivulet and remediation works along the rivulet banks will take place post construction.</td>
<td>Prior to and post construction</td>
</tr>
<tr>
<td>Solid wastes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Sludge will be managed appropriately and regularly removed by sealed tanker to an approved waste disposal facility.</td>
<td>At all times</td>
</tr>
<tr>
<td>Noise</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Cascade Brewery Company Pty Ltd will implement the operational efficiencies for minimising noise from WWTPs outlined in Tasmania’s Sewage Pumping Station Environmental Guidelines (December 1999).</td>
<td>At all times</td>
</tr>
<tr>
<td>Weed management</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Weed control measures, including wash down and pre-construction weed control, will be outlined in the CEMP.</td>
<td>At all times</td>
</tr>
<tr>
<td>Greenhouse gases</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Cascade Brewery Company Pty Ltd will continue to report on all greenhouse gas emissions and energy use at the brewery under the National Greenhouse and Energy Reporting scheme.</td>
<td>At all times</td>
</tr>
<tr>
<td>Controlled wastes</td>
<td></td>
<td></td>
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<tr>
<td>6</td>
<td>Controlled wastes will continue to be removed from the WWTP site by an approved controlled waste transporter and will be disposed of at an approved disposal facility.</td>
<td>At all times</td>
</tr>
<tr>
<td>Hazardous substances</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>All hazardous substances will be stored and handled in accordance with safe working practices and legislative requirements.</td>
<td>At all times</td>
</tr>
<tr>
<td>9</td>
<td>The CEMP will outline the management of fuels and lubricants required for equipment during construction, operational and maintenance activities.</td>
<td>Prior to construction</td>
</tr>
</tbody>
</table>