

# Appendix B

## Approval conditions, actions, outcomes, management

EPBC 2007/3385 approval conditions addressed by this module, actions taken by Gunns to prepare management measures, action outcomes and resultant environmental management measures

Condition	Issue	Approval requirement addressed by this module	Actions taken to prepare management measures	Findings	Management measures adopted to ensure approval condition is met
3	Trigger levels, maximum limits and response strategies	The EIMP must include trigger points and maximum limits in relation to effluent discharge from the operation of the pulp mill as well as specific remedial management responses to be undertaken by Gunns Limited if trigger points are exceeded or maximum limits are reached. It shall be an operational objective of the pulp mill, and reflected in the EIMP, that trigger points, and maximum limits, are not to be reached.	Trigger levels and maximum limits have been developed in accordance with approval conditions 32 and 33. These are described in section 4c of this module.	Trigger levels and maximum limits for effluent are described in Table 23 and Table 24.	Response strategies are described in Table 33 of this module. These will be implemented if trigger levels are reached.
4	Implementation of response strategies	If at any time during the taking of the action there are reasonable grounds for any of Gunns Limited, the Minister, the Department, the Independent Expert Group or the Independent Supervisor to believe that the maximum limits for effluent discharge in this approval, or in the EIMP, are likely to be exceeded, then that party (if it is not Gunns Limited) shall immediately inform Gunns Limited. Once Gunns Limited has either been so informed or itself believes maximum limits are likely to be exceeded, it must immediately implement the response strategies in the EIMP, in accordance with the stipulated timeframes. If within the stipulated timeframe Gunns Limited is unable to demonstrate to the satisfaction of the Minister that response strategies are achieving their objective as set out in the EIMP to reverse the undesirable impacts, the mill must cease to operate until such time as a tertiary treatment solution satisfactory to the Minister is installed.	Maximum limits have been developed in accordance with approval conditions 32 and 33. These are described in section 4c of this module.	Maximum limits for effluent are described in Table 23 and Table 24.	Response strategies are described in Table 33 of this module. These will be implemented if trigger levels are reached.
9	Commissioning and the EIMP	No commissioning activity is to commence until the final and complete EIMP has been approved by the Minister. Once approved, the EIMP must be implemented.	This module of the EIMP addresses those conditions of the approval that are relevant to precommissioning activities.	The approval defines " <i>commissioning</i> " to be "when construction activities of the pulp mill have been concluded and the pulp mill is commencing start-up" (the approval does not define the end of commissioning). "Start-up" is not defined in the approval but it is an accepted industry term marking the first input of chips to the pulp mill's digester. For this project, start-up will also include any trials of the pulp drier using purchased fibre, which could lead fibre to contamination of water that will be discharged from the ocean outfall.	Mill commissioning will not commence until the full EIMP has been approved by the Minister.
31	Effluent discharge volume limit	The volume of wastewater effluent discharged from the operation of the pulp mill to the marine environment must not be more than 64 megalitres per day on an average monthly basis.	This is a set limit (of not more than 64 megalitres per day on an average monthly basis). No action is required.	Effluent volume monitoring has been described in Module M.	The mill will be operated so that the average monthly discharge is less than or equal to 64 megalitres per day.

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32	Operational effluent trigger levels and maximum limits	<p>Gunns Limited must sample the effluent discharge from the operation of the pulp mill for the parameters in the tables below on at least a daily basis. The pulp mill must not operate if the monthly average effluent concentrations from the pulp mill exceed the maximum limits provided in the tables below. These limits may be revised in the final EIMP if agreed by the Independent Expert Group and approved by the Minister as a result of further studies. Maximum limits and trigger levels on additional effluent contaminants (for example, nitrate, resin acid and colour) will also be developed in the EIMP in accordance with Schedule 2.</p> <table border="1"> <thead> <tr> <th rowspan="2">Parameter</th> <th colspan="2">Monthly average effluent concentrations</th> </tr> <tr> <th>Trigger level</th> <th>Maximum limit</th> </tr> </thead> <tbody> <tr> <td>Dioxins &amp; furans</td> <td>2.0 pg TEQ/L</td> <td>3.4 pg TEQ/L</td> </tr> <tr> <td>Chlorate (CO3-)</td> <td>1.9 mg/L</td> <td>3.7 mg/L</td> </tr> <tr> <td>Total chloroacetic acids</td> <td>237 µg/L</td> <td>237 µg/L</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th rowspan="2">Parameter</th> <th>Monthly average concentration</th> <th>Maximum limit</th> </tr> </thead> <tbody> <tr> <td>Total nitrogen</td> <td>2.5 mg/L</td> <td></td> </tr> <tr> <td>Total phosphorus</td> <td>0.8 mg/L</td> <td></td> </tr> <tr> <td>Total suspended solids</td> <td>20 mg/L</td> <td></td> </tr> <tr> <td>Biological oxygen demand</td> <td>11 mg/L</td> <td></td> </tr> </tbody> </table>	Parameter	Monthly average effluent concentrations		Trigger level	Maximum limit	Dioxins & furans	2.0 pg TEQ/L	3.4 pg TEQ/L	Chlorate (CO3-)	1.9 mg/L	3.7 mg/L	Total chloroacetic acids	237 µg/L	237 µg/L	Parameter	Monthly average concentration	Maximum limit	Total nitrogen	2.5 mg/L		Total phosphorus	0.8 mg/L		Total suspended solids	20 mg/L		Biological oxygen demand	11 mg/L		Further studies have been undertaken and are reported in Appendix E of this module.	The studies have led to trigger levels and maximum limits being proposed for the normal operations of the mill. These are described in Table 23 of this module.	<p>During normal operations, the mill will be operated so that the maximum limits described in Table 23 are not exceeded. If the trigger levels described in that table are exceeded during normal operations, the response measures identified in that table and described in Table 33 will be implemented.</p> <p>This Module L also describes additional studies and investigations that will be undertaken to address residual risks and uncertainties identified by the Chief Scientist.</p> <p>These studies and investigations are intended to further inform understanding of effluent characteristics and the design of the monitoring program. Gunns may also use the results of some of these studies and investigations to contribute to a request to the Minister to revise the trigger levels and maximum limits as provided for under condition 32.</p> <p>The findings of the completed studies will need to be approved by the Department prior to commissioning commencing.</p> <p>The results of the approved studies will need to be incorporated into the monitoring program (known as the Commonwealth Baseline and Operational Monitoring Plan, C-BOMP), or other documents as required, to the satisfaction of the Department prior to commissioning commencing. The results of baseline surveys being undertaken to inform the monitoring program will also be incorporated into the monitoring program.</p> <p>Outputs from the programs will include reports to the Department and at various stages Departmental approval will be required.</p>
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33	Effluent trigger levels and maximum limits for all phases	Prior to commissioning, trigger levels for effluent discharge for all phases of development must be included in the EIMP together with agreed response strategies and timeframes if trigger levels are exceeded or maximum limits reached.	Further studies have been undertaken and are reported in Appendix E of this module.	The studies have led to trigger levels and maximum limits being proposed for the commissioning and ramp-up phases of the mill. These are described in Table 24 of this module.	During the commissioning and ramp-up phase of the mill development, the mill will be operated so that the maximum limits described in Table 24 are not exceeded. If the trigger levels described in that table are exceeded during these phases, the response measures identified in that table and described in Table 33 will be implemented.																													
34	Effluent toxicity testing	In accordance with the EIMP, Gunns Limited must obtain (from overseas pulp mills already using technologies similar to that proposed) effluent samples, and conduct chemical analyses and whole effluent toxicity testing to identify the key contaminants and their concentrations and the effluent dilutions needed in the mixing zone for the proposed mill. Gunns Limited must report on the temporal variability in both the contaminant concentrations and toxicity in the effluents from	A toxicity testing sample and analysis plan has been prepared and is described in section 4a of this module.	The findings of the toxicity testing will be provided to DEWHA when they are available.	Once approved through the approval of this module, the toxicity testing will be commissioned. The results of this testing will be reported to DEWHA and response strategies will be modified if and as necessary and submitted to DEWHA for approval prior to mill commissioning.																													

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		these mills.			
35	Properties of fine particulate organic matter	In accordance with the EIMP, to determine the properties affecting the fate of fine particulate organic matter in effluent, Gunns Limited must undertake laboratory studies, agreed to by the Department, to assess the likely settling and flocculation properties of fine particulate organic materials in equivalent effluent.	A laboratory study methodology for determining the settling and flocculation properties of fine particulates has been prepared and is described in section 4b of this module.	The findings of the laboratory studies will be provided to DEWHA when they are available.	Once approved through the approval of this module, the laboratory studies will be commissioned. The results of the studies will be reported to DEWHA for approval prior to mills commissioning.
37	Reassessment of risk quotients for hydrophobic substances	Gunns Limited must determine, in accordance with the EIMP, effluent monitoring requirements prior to the commencement of pulp mill commissioning. This must include but not be limited to: a) the parameters described in Condition 32; b) a re-assessment of the Risk Quotients (RQs) for hydrophobic substances, in all media, being taken into account; and c) sampling and analysis protocols and accreditation.	The risk assessment undertaken for the Preliminary Documentation examined hydrophilic substances. Condition 37 requires a reassessment for hydrophobic substances.	Gunns will:  1. Select potentially hydrophobic chemicals from the list of 130 chemicals potentially in the effluent  2. Determine the physicochemical properties of these hydrophobic chemicals,  3. Determine their partitioning coefficients, half-lives etc. (based on the physico-chemical properties)  4. Determine their sediment concentrations (following the corrected procedure to estimate dioxin/furan concentrations in sediments)  5. Determine guideline or end-point values for each of the chemicals that partition to the sediment phase  6. Calculate their RQ values, and  7. Any chemicals with $RQ \geq 1$ will be added to the monitoring list if they are not already on the list.	The testing will be undertaken in accordance with the program described in this module.

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38	Additional hydrodynamic modelling	<p>Additional modelling must be carried out in relation to the fate of effluent, as part of the EIMP, prior to the commencement of commissioning of the mill. The details of the modelling to be commissioned and the organisation responsible for performing the modelling must be approved by the Department. The modelling to be commissioned must include, but not be limited to:</p> <p>a) The inclusion of a sediment transport component.</p> <p>b) The use of three-dimensional models for all levels of spatial resolution.</p> <p>c) Increased vertical resolution for the high resolution model used in the water quality analysis.</p> <p>d) Forcing from all mechanisms that may potentially influence residual or diurnal dynamics, including background sea level gradients, low frequency sea level oscillations, surface heat flux, sea level, temperature and salinity open boundary and initial conditions which capture mesoscale variability and wave enhanced bottom friction.</p> <p>e) The execution of long term simulations that capture seasonal variability, and evidence of the model achieving pseudo-steady state in the regional (Bass Strait) field.</p> <p>f) The calibration of model tracers (e.g. temperature or salinity) and velocity to data derived from moored instruments (for temporal comparisons) and measured profiles (for spatial comparisons) over the period the model is simulated. This will involve a supplementary field program designed specifically for model calibration (i.e. implemented over an annual cycle). Detailed evidence of satisfactory calibration must be supplied, including correlation between phase and amplitude of calibration variables.</p> <p>g) Sensitivity analysis for key model parameters, particularly horizontal diffusion.</p> <p>h) The use of appropriate simulation lengths for generating plume statistics.</p> <p>i) The use of data (modelled or measured) that captures the three-dimensional nature of the water column and seasonal variability for use in the near-field model.</p>	<p>The additional hydrodynamic modelling (condition 36(c)) to be undertaken is described in section 4f.3 and Appendix D of this module. The modelling has been broken up into the following five major components:</p> <ul style="list-style-type: none"> <li>o Far-field hydrodynamic modelling</li> <li>o Near-field modelling</li> <li>o Sediment transport modelling</li> <li>o Wave modelling</li> <li>o Field measurement program.</li> </ul> <p>The laboratory studies for determining the properties of fine organic particulates are described in section 4b.2 of this module.</p>	<p>Following the approval of this module, the additional hydrodynamic modelling and the laboratory studies will be commissioned in accordance with the program described in this module.</p>	<p>Subject to the findings of the additional hydrodynamic modelling and laboratory studies of fine organic particulates, the C-BOMP will be modified as necessary, and then submitted to DEWHA for approval.</p>

Condition	Issue	Approval requirement addressed by this module	Actions taken to prepare management measures	Findings	Management measures adopted to ensure approval condition is met
39	Deposition and trigger levels	In accordance with the EIMP, if the results of the modelling resulting from condition 38 indicate that effluent hydrodynamics and deposition will result in chemicals reaching trigger levels, Gunns Limited must implement approved response strategies, including, if necessary, changing the design and operation of the effluent pipeline and diffuser.	<p>The additional hydrodynamic modelling (condition 36(c)) to be undertaken is described in section 4f.3 and Appendix D of this module. The modelling has been broken up into the following five major components:</p> <ul style="list-style-type: none"> <li>○ Far-field hydrodynamic modelling</li> <li>○ Near-field modelling</li> <li>○ Sediment transport modelling</li> <li>○ Wave modelling</li> <li>○ Field measurement program.</li> </ul>	Following the approval of this module, the additional hydrodynamic modelling will be commissioned in accordance with the program described in this module.	Subject to the finding of the additional hydrodynamic modelling, any necessary additional response measures will be developed and submitted to DEWHA for approval.
41	Early warning of reaching trigger levels	<p>In accordance with the EIMP, Gunns Limited must prepare and have approved by the Minister, prior to commencement of mill commissioning, strategies for monitoring the impacts of the mill effluent on the marine environment. These strategies must include but not necessarily be limited to:</p> <p>(a) Appropriate early warning of reaching trigger levels in Commonwealth waters. ... g) Effluent monitoring must be undertaken on weekly composites of the daily samples</p>	A Commonwealth Baseline and Operating Monitoring Plan (C-BOMP) has been prepared.	The C-BOMP is provided with Module M. Trigger levels are provided in Table 26, Table 27 and Table 28. Effluent sampling will use 7-day composites of daily samples.	The approved C-BOMP will be implemented and any proposed revisions will be submitted to DEWHA for approval.
41	Ecotoxicological testing	<p>In accordance with the EIMP, Gunns Limited must prepare and have approved by the Minister, prior to commencement of mill commissioning, strategies for monitoring the impacts of the mill effluent on the marine environment. These strategies must include but not necessarily be limited to:</p> <p>... c) Chemical and ecotoxicological assessments including assessments of endocrine disrupting ability, and ecological assessments. ... i) Whole-effluent toxicity testing using species relevant to Commonwealth waters in Bass Strait. ...</p>	<p>The proposed whole effluent toxicity (WET) testing will comprise:</p> <ul style="list-style-type: none"> <li>• Microtox assay using the marine bacterium <i>Vibrio fischeri</i></li> <li>• 72-h micro-algal growth inhibition test using <i>Nitzschia closterium</i></li> <li>• 72-h macro-algal germination assay using <i>Hormosira banksii</i></li> <li>• Sea urchin fertilisation success using <i>Heliocidaris tuberculata</i></li> <li>• 72-h larval development using the sea urchin <i>Heliocidaris tuberculata</i></li> <li>• 48-h larval development using the doughboy scallop <i>Mimachlamys asperrima</i></li> <li>• 96-h survival of the juvenile amphipod <i>Allorchestes compressa</i></li> <li>• 96-h larval fish imbalance test using the striped trumpeter <i>Latris lineata</i>.</li> </ul> <p>The strategy for monitoring endocrine disruptive ability of the effluent of the Bell Bay Pulp Mill Project will continue to include the focussed surveillance strategies developed for the Canadian Pulp &amp; Paper Environmental Effects Monitoring (EEM).</p>	<p>WET testing will be undertaken prior to mill commissioning, using overseas mill effluent.</p> <p>The endocrine disruptive ability investigation strategy however, will be reviewed again after construction of the mill has commenced and before commissioning commences. The intent of the review will examine if any other assay(s) potentially with greater ecological relevance than the presently known in vitro assays, such as ER_CALUX have developed from the Canadian project or any other robust source. If there are any such assays, they will be considered for inclusion in later versions of the C-BOMP, with the final strategy subject to approval by DEWHA.</p>	The testing will be undertaken in accordance with the program described in this module.

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42	Maximum limits of dioxins and furans in sediments	The maximum limit of concentration of dioxins and furans in the benthic sediments in any location within Commonwealth marine waters is 850pg TEQ/kg. To ensure that concentrations do not reach this level, trends in concentrations of samples collected in State and Commonwealth waters, in accordance with the EIMP, must be analysed and independently reviewed on a six-monthly basis.	A Commonwealth Baseline and Operational Monitoring Plan (C-BOMP) has been prepared and submitted for approval with Module M.	The C-BOMP includes monitoring of sediments for dioxins and furans. Trends in concentrations of samples collected in State and Commonwealth waters will be analysed, and independently reviewed, on a six-monthly basis. As described in Module M, following mill commissioning sediment surveys will be taken quarterly in the first year of operations. Thereafter they will be taken twice annually (spring and autumn) for 3 years unless the findings indicate that quarterly sampling should be continued. The sampling need and sampling frequency will be reviewed after 3 years.	Once approved, the C-BOMP will be implemented.