qB136697
10/02563
Department Generated Correspondence (Y)

DEPARTMENT OF PLANNING
Development Assessment

ASSESSMENT REPORT

Section 75W Modification
Tooheys Brewery, Lidcombe - Cogeneration Facility
(06_0303 Mod1)

---

1. PROJECT BACKGROUND

The Tooheys brewery at Lidcombe has been operating since the 1960s and was initially used as a packaging facility (see Figure 1). Brewing commenced at the site in 1978.

In July 2007, the then Minister for Planning approved a major upgrade to the brewery which included:

- a new Beer Processing Building and upgrade of the associated beer processing equipment;
- a new Bright Beer Tank (BBT) Cellar and BBTs;
- an increase in production capacity of up to 3.3 hectolitres of beer per annum; and
- upgrade of utility services including the heating, refrigeration and compressed air plant.

The brewery upgrade, which commenced in 2007, includes significant works to improve energy efficiency of the brewery. These works when complete are anticipated to reduce the electricity consumption of the brewery and natural gas consumption. Operation of the brewery upgrade is anticipated to commence in early 2010.

***Figure 1**: Regional Context*

Tooheys are striving to further reduce their electricity consumption and greenhouse gas emissions at the Lidcombe brewery through a number of mandatory and voluntary programmes including the Commonwealth Government's Greenhouse Challenge Programme and Energy Efficiency Opportunities Programme.

Having received support and grant funding from the Commonwealth Government under the NSW Green Business Programme, Tooheys now propose to install a 2MW Cogeneration Facility at the Lidcombe site in order to further reduce the brewery's consumption of grid electricity. The cogeneration plant would work in conjunction with the two highly efficient boilers approved as part of the 2007 upgrade.

2. PROPOSED MODIFICATION

Tooheys Pty Ltd (Tooheys) proposes to modify the existing approval (MP 06_0303) to install a 2MW Cogeneration Facility at the Lidcombe site. Cogeneration involves the combustion of natural gas to produce electrical and mechanical energy. The generation of electricity from cogeneration offsets electricity which would otherwise be sourced from the electrical grid. The cogeneration facility will reduce peak electricity demand on the site by over 2MW - reducing grid based electricity annual consumption by approximately 15,000 MWh and associated greenhouse gas emissions by 9,500 tonnes a year.

The major components of the project are summarised in Table 1. The cogeneration process is depicted in Figure 2 and the proposed site layout and plant elevation is illustrated in Figures 3 and 4. The project is described in full in Tooheys' Environmental Assessment (EA).

Table 1: *Major Components of the Project*

Aspect	Description
Project Summary	**Installation of a 2MW (TCG 2020V20 Deutz) generator set with associated mechanical and electrical systems.**
Capital investment value	▪ $4.5M. Tooheys has received $2M funding for this project from the DECCW as part of the NSW Green Business Programme.
Employment	▪ Construction – Estimate workforce of 6-10 for the construction phase (Nov-Jan) ▪ Operation – 0 full time (Plant unmanned)
Plant Components	
Acoustic Enclosure / Ventilation System	▪ The generating set, control panels and ancillary components will be located within an acoustic enclosure designed to reduce the generator noise to 75dB(A) at 7m. ▪ A separate gas detection system and a fire detection system will be installed within the generator enclosure. ▪ The enclosure will be ventilated by fans equipped with sound attenuators.
Cooling tower	▪ A cooling tower will be required for the absorption chiller system. The cooling tower is of a typical design, dimensions of approx. 4m by 4m, with vertical air discharge. ▪ The cooling tower will be located outside of the existing boiler house.
Waste heat boiler	▪ A waste heat boiler will be installed in the exhaust gas stream of the generator. The generating set will provide approximately 1013 kW of waste heat in the exhaust gas when cooled to 120^{o}C. Heat utilisation will be reduced to 730 kW.
High & low temperature cooling systems	▪ HT Water System - The engine jacket water heat will be utilised through the absorption chiller and converted into chilled water. ▪ LT Cooling System - The current design allows the off loading of intercooler energy via the cooling water heat exchanger.
Exhaust system / Silencer	▪ An exhaust silencer will be installed outside the building on the vertical stand.
Broad BDH 75 hot water absorption chiller	▪ A single stage hot water absorption chiller (Broad BDH 75) will be installed to convert heat energy from the engine (jacket water) cooling system into chilled water for use within the plant.
High Voltage RMU	▪ A separate HV cubicle containing the RMU will be installed in the existing HV room.
Master control panel	▪ The master control panel will provide supervision over the cogeneration operation.
HV electrical connection	▪ The generator HV circuit breaker will be housed in a separate mounted panel in the generator control room.

The cogeneration plant would include installation of a natural gas fired internal combustion engine capable of producing 2MW of electrical energy. Additional waste heat in the form of 1MW of steam and an additional 1MW of hot water would also be generated by the plant. The steam would be generated from the exhaust discharge via an exhaust gas heat exchanger and would supplement the existing plant steam system. The hot water would be generated from the engine cooling system and would be used by an absorption chiller to produce chilled water to be supplied to the existing cooling circuit within the brewery.

The proposed cogeneration process is illustrated below as Figure 2.

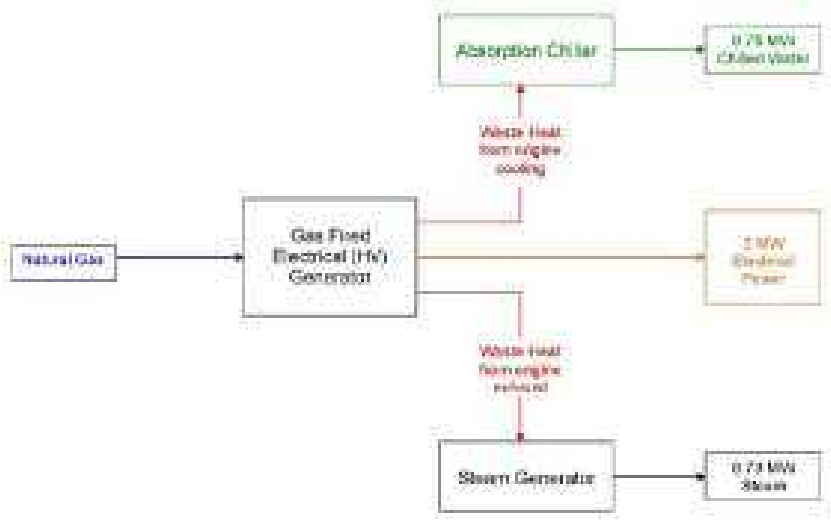

***Figure 2**: Proposed Cogeneration Process*

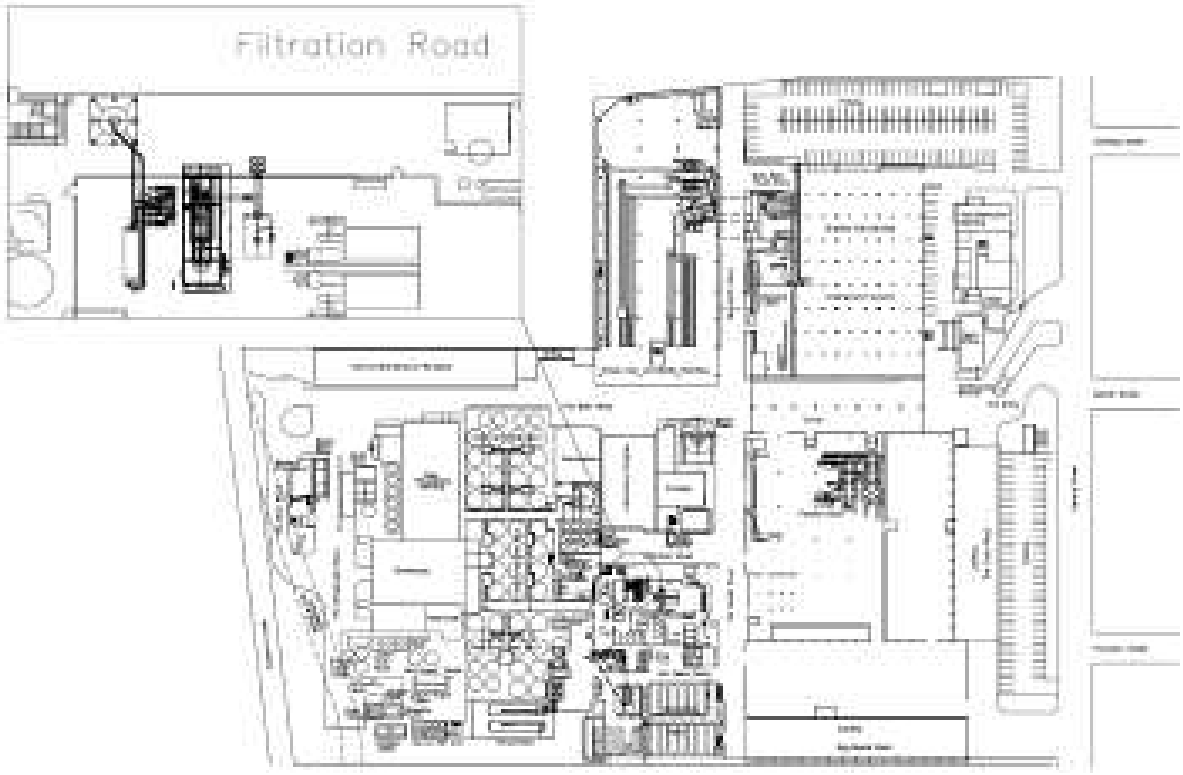

***Figure 3**: Proposed Site Layout*

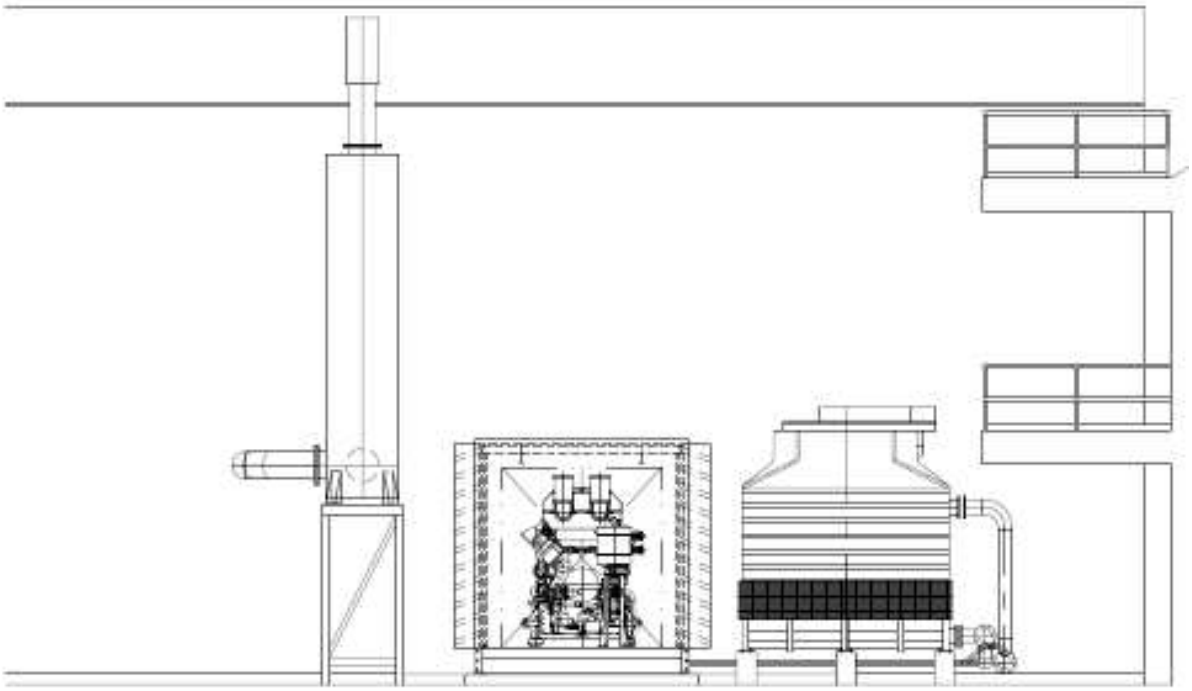

***Figure 4**: Proposed Elevation – 2.0MW Enclosed Generator (Externally Located)*

The proposed cogeneration facility will not increase the total capacity of the brewery or result in any changes to the working arrangements at the brewery.

The plant would consist of a 2MW (TCG 2020V20 Deutz) generator set with the associated mechanical and electrical systems detailed in Table 1. The new plant would be substantially installed inside the Engine Room as shown in Figure 3 - Site Layout. The equipment would be installed where two redundant steam boilers are currently located which are scheduled to be removed under the current approval for the site.

A cooling tower and an exhaust silencer would be installed outside of the existing building. Both would be below the current roofline of the surrounding buildings, as illustrated in Figure 4 - Proposed Elevation.

Tooheys brewery is currently approved to operate 24 hours per day, 7 days per week over the entire year. The generator would operate in conjunction with the operating hours of the brewery to supply thermal and electrical demands for continued operation of the brewery. It would consume approximately 126m^3 of natural gas per hour. All electricity and steam generated would be utilised in the brewery operation. Overall, the proposed cogeneration facility is expected to improve the site's energy efficiency by 34%.

3. STATUTORY CONTEXT

Approval Authority

The Minister was the approval authority for the original project application and is consequently the approval authority for this application. However, on 25 January 2010, the Minister delegated the powers and functions as an approval authority to modify certain project approvals under section 75W of the EP&A Act to the Executive Director. This modification application meets the terms of this delegation. Under these circumstances, the Executive Director may determine the application under delegated authority.

Exhibition and Notification

Under Section 75W of the EP&A Act, the Department is not required to notify or exhibit the application. Notwithstanding, the Department referred the application to Auburn City Council (Council) and the Department of Environment, Climate Change and Water (DECCW) for comment.

Neither Council nor the DECCW objected to the proposed modification however they raised some issues concerning noise, air emissions and amenity, and requested that a number of conditions be included in the modified approval.

The Department has considered issues raised in submissions and Tooheys' response to submissions in this assessment and revised the conditions of approval where appropriate.

4. ASSESSMENT

The Department has assessed the EA, submissions on the project, and Tooheys response to submissions and considers the key issues are:

- Noise;
- Air Quality; and
- Hazards.

These issues are considered in Table 2. All other issues are considered minor with negligible environmental impact.

***Table 2**: Summary of Issues*

Issue	*Assessment*	*Recommendation*
Noise	• The noise assessment indicated that the operation of the cogeneration plant would not increase the overall noise emissions from the Brewery and therefore would comply with the noise limits in the Project Approval and the Environment Protection Licence (EPL). • However, Council raised concerns about potential noise impacts, particularly on residential properties. • The DECCW was satisfied with the noise assessment and considered the existing noise limits in the EPL would manage any impacts. • The Department is satisfied that the cogeneration plant would comply with existing noise limits, and that the existing conditions and some additional provisions would ensure noise is managed.	Recommended conditions require Tooheys to: ▪ Undertake a noise audit following commencement of operations of the cogeneration plant to ensure that the facility complies with the noise limits.
Air Quality	<u>Local Air Quality</u> • The air quality assessment for the Brewery expansion showed that PM_{10} was the critical pollutant in terms of local air quality impacts from the site. • However, the proposed cogeneration facility would result in a net decrease in PM_{10} emissions from the site as a result of the cogeneration natural gas fired engines working in conjunction with the two highly efficient boilers approved as part of the 2007 upgrade. <u>Regional Air Quality</u> • NOx emissions are predicted to marginally increase compared to the approved project due to the increased consumption of natural gas. However, NOx emissions would still remain well below the relevant criteria. • DECCW indicated that their previous issues had been addressed and recommended a number of conditions for the approval which have been incorporated into the recommended instrument. • The Department is satisfied that the proposed cogeneration facility would not have a significant impact on air quality.	Recommended conditions require Tooheys to: ▪ operate the cogeneration facility in a manner which complies with the air emission limits specified in the EPL. ▪ ensure the design and construction of the cogeneration facility includes an air emission sampling position that complies with DECCW's requirements.
Green-house Gas	• While direct GHG emissions from the Brewery would increase due to the increase in natural gas consumption, overall GHG emissions would however reduce due to the cogeneration plant reducing the amount of electricity sourced from the grid.	No further conditions required.
Hazards	• The Preliminary Hazard Analysis (PHA) concluded that the proposed cogeneration facility meets HIPAP No. 4 Risk Criteria for Land Use Safety Planning and would not significantly increase the overall risk of the facility. Furthermore, the sites proposed operations have not been found to be an offensive or hazardous industry under SEPP 33.	Recommended conditions require Tooheys to: ▪ prior to construction of the Cogeneration Plant, prepare a revised; - Firs Safety Study

Issue	Assessment	Recommendation
	• The Department has reviewed the PHA and considers that the proposed cogeneration facility is a "low Hazard" in relation to the surrounding land uses and it would not significantly increase the overall risk from the facility. • Notwithstanding, the Department has recommended additional/revised conditions of approval to ensure there is no increased risk at the site.	- Hazards Analysis; and - Construction Safety Study. ▪ prior to commissioning of the Cogeneration Plant, prepare a revised: - Emergency Plan; and - Safety Management System. ▪ prior to operation submit - a Compliance Report to the Director-General
Visual	• The new plant is to be substantially installed inside the Engine Room as per the site layout (refer Figure 3). The equipment will be installed in an area where two redundant steam boilers are currently located. • A cooling tower (dimensions approx 4mx4m) and an exhaust silencer will be installed outside of the existing building, below the current roofline of surrounding buildings (refer Figure 4). • The Department considers that the project would not result in any significant visual impacts.	No further conditions required.

5. RECOMMENDED CONDITIONS OF APPROVAL

The Department has recommended changes to the existing project approval to include the modification application within the terms of the approval. Further, a number of conditions detailed in Schedule 2, 3 and 4 of the existing project approval have been amended requiring the Proponent to submit revised plans, strategies and studies incorporating the cogeneration facility.

6. CONCLUSION

The Department has assessed the merits of the project in accordance with the requirements in Clause 8B of the EP&A Regulation. This assessment has found that the proposed modification is unlikely to cause any significant impacts and potential impacts can be appropriately managed through the mitigation measures proposed by Tooheys and the modified conditions of approval.

Consequently, the Department considers the proposed modification should be approved subject to conditions.

7. RECOMMENDATION

It is RECOMMENDED that the Executive Director:

- approve of the proposed modification under Section 75W of the EP&A Act; and
- sign the attached instrument (tagged A).

C. Ritchie. 28/1/10.

Chris Ritchie
A/Director
Mining and Industry

28.1.10

Chris Wilson
Executive Director