



DOC18/402415-04

Ms Deana Burn
Planner
Department of Planning and Environment
GPO Box 39
SYDNEY NSW 2001

Dear Ms Burn

RE: Modification 16 – MP 06_0228 – Shoalhaven Starches Ethanol Expansion Project

I refer to your letter of 19 September 2018 advising that the Department of Planning and Environment (DPE) has received a modification application from Shoalhaven Starches Pty Ltd (Shoalhaven Starches) to Major Project Approval 06_0228 (Ethanol Expansion Project Approval), and inviting the Environment Protection Authority (EPA) to comment. I also refer to the emails dated 25 September 2018 and 12 October 2018 from Mr Stephen Richardson of Cowman Stoddard (Shoalhaven Starches planning consultant) providing additional information regarding this matter to both the EPA and DPE.

The EPA understands that the current modification application (MOD16) proposes a number of major changes at the Shoalhaven Starches premises including amongst other things a new boiler (no. 8) and co-generation plant, new flour mill C, new industrial building to house a new gluten dryer and speciality products processing and conversion of two existing gluten dryers (1 and 2) to starch dryers.

The EPA via DPE's website has accessed and reviewed the Environmental Assessment prepared for MOD 16 by Cowman Stoddard Pty Ltd and dated June 2018, including a number of the specialist reports. The EPA has also reviewed the additional information provided by Mr Richardson via email on 25 September 2018 and 12 October 2018 which was not available at the time that MOD 16 was lodged by Shoalhaven Starches with DPE.

To assist DPE with its consideration of MOD 16, the EPA advises it has identified a number of issues within the provided air quality impact assessment reports that require further information and/or clarification. These issues are detailed in **Attachment 1** to this letter. It is recommended that DPE seek additional information from Shoalhaven Starches that addresses the issues identified by the EPA. It is important to note, this information is required before the EPA can provide a thorough assessment of the likely air quality impacts of the proposal. In this regard the EPA would be happy to meet with both DPE, Shoalhaven Starches and its specialist consultant to discuss the issues that have been identified and the further information that has been sought.

To further assist DPE in its consideration of MOD 16, the EPA has also provided comments regarding noise management and irrigation management. These comments are included in Attachment 1.

The EPA is happy to further review any additional information that is submitted by Shoalhaven Starches regarding MOD16. Should you wish to discuss this matter further or arrange a meeting to discuss the issues associated with the air quality impact assessment please contact me on 6229 7002.

Yours sincerely

 26/10/18

STEFAN PRESS
Unit Head – South East Region
Environment Protection Authority

Attachment A: EPA Review of MOD 16 – Shoalhaven Starches

Air Quality Impact Assessment

The EPA has reviewed the following air quality impact assessment reports provided by the proponent for MOD 16:

- *MOD2018 Air Quality Assessment New boiler summary of best practice*, letter dated 21 September 2018, prepared by GHD (GHD 2018a)
- *Air Quality Impact Assessment*, dated May 2018, prepared by GHD (GHD 2018b).

Review of GHD 2018a – New boiler summary of best practice

The EPA provides the following comments and advice on GHD 2018a prepared for the purposes of addressing comments provided by the EPA to the proponent during initial consultation phase of MOD 16. The EPA provided the following comments during this initial consultation process:

- Provide manufactures' design specifications or performance guarantees for new discharge points, specifically the coal fired boiler;
- Demonstrate the discharge points (specifically the coal fired boiler) will comply with emission discharge concentrations contained in the *Protection of the Environment Operations (Clean Air) Regulation 2010*;
- Benchmark the proposed new discharge points (specifically the coal fired boiler), against Best Management Practice to demonstrate all reasonable and feasible emission controls are proposed. The Benchmarking should consider, but not be limited to:
 - Proposed combustion equipment;
 - Proposed fuel quality; and
 - Proposed pollution control equipment.

Issue 1 – Additional information does not adequately describe the discharge concentrations the proposed boiler will achieve and how discharge concentrations are consistent with the application of all reasonable and feasible mitigation measures

GHD 2018a lacks detail on what is being proposed and what emission performance will be achieved by the new proposed discharge points such as the Coal Fired Boiler.

The additional information references literature such as *Best Available Techniques (BAT) Reference Document for Large Combustion Plants Industrial Emissions Directive 2010/75/EU* published by the European Union and includes statements that Shoalhaven Starches will include several techniques such as duct sorbet injection, bag filter and flue gas recirculation. However, the additional information does not describe what discharge concentrations the proposed boiler will achieve with these technologies implemented. For example, GHD 2018a advises:

- “*Shoalhaven starches will employ the technique of Direct Sorbent Injection (DSI), where hydrated lime is injected into flue gas stream prior to baghouse...DSI is highly reliable and will have an SO₂ reduction rate of up to 80%*”. No justification for the 80% is included and no discharge concentration for SO₂ that the new boiler will achieve is provided;
- “*Shoalhaven Starches will employ Flue gas recirculation (FGR) in their boiler. This leads to a reduction in NO_x emissions...*”. No discharge concentration with such techniques implemented is provided
- “*Shoalhaven Starches will have flue-gas recirculation as well as combined techniques for NO_x and SO_x reduction*”. It is not clear if this includes the implementation of low NO_x burners and what discharge concentration will be achieved with the implementation of low NO_x burners.

GHD, 2018a advises that the proponent has engaged the services of Boiler and Power Plant Services Pty Ltd (B&PPS) to provide consultant advice on the selection of the coal fired boiler. B&PPS has

provided information as Attachment A to GHD, 2018a. The EPA notes the following from Attachment A of GHD, 2018a:

- Attachment A advises *"the contract specification for the boiler will contain performance guarantees on the emission discharge concentrations. These will comply with the EPA licence limits"*. The EPA advises that no licence limits have been set for the proposed boiler;
- With reference to existing licenced discharge points Attachment A of GHD, 2018a advises *"It is noted that the EPA licence limits for some of the emissions are lower than those specified in the Regulation. For clarity, the licence limits are given below and we have assumed these will apply to MOD 16"*

The EPA advises that the emission standards contained in the *Protection of the Environment Operations (Clean Air) Regulation 2010* (the Clean Air Regulation) are the maximum emissions permissible for an industrial source in NSW. The EPA advise that newly proposed coal fired boilers should be able to achieve discharge emissions lower than that prescribed in the Clean Air Regulation. Existing discharge limits for existing sources are not appropriate for demonstrating that newly constructed sources have all reasonable and feasible emission controls implemented.

Additionally, GHD (2018a) advises that:

- The proposed coal quality will be similar to the existing coal use apart from sulfur;
- Coal sulfur used at Shoalhaven Starches between May 2016 and April 2017 ranged from about 0.31 to 0.37%; and
- Other source of coal Shoalhaven may use (or a mix) range up to a sulfur content of 0.68%

Environment Protection Licence No. 883 (EPL) for the site includes a condition for a maximum coal sulfur content limit of 0.4%. There is no demonstration that the new boiler emissions performance has considered the change in coal quality and the proposed Direct Sorbent Injection.

As such a firmer commitment to what is being proposed and what emission concentrations will be achieved by new discharge points needs to be provided. Further it must be demonstrated how these discharge concentrations are consistent with the application of all reasonable and feasible emission controls.

Recommendation: Shoalhaven should provide firmer information on:

- What is being proposed and what emission concentrations the proposal will achieve**
- Demonstrate how the discharge concentrations are consistent with the application of all reasonable and feasible emission controls.**

Review of GHD 2018b – Air Quality Impact Assessment

The EPA provides the following comments on GHD (2018b) (the assessment).

Issue 2 – The identification and assessment of all emission sources lacks clarity

- Boiler 7 emissions have not been included in the Emissions Inventory*

The EPA understands the proposed modification includes the relocation of Boiler 7. The emissions inventory as per Table 8-1 and Table 8-2 does not tabulate emissions from Boiler 7. On this basis it is unclear if Boiler 7 has been included within the impact assessment.

- Emissions for Turbine No. 1 & 2 lack clarity*

Table 8-2 of the assessment presents the emission inventory for products of combustion. Included within the emissions inventory are emissions from Turbine No. 1 & 2, which are articulated as utilising natural gas. It is not clear what these emission sources are or if any gas turbines are proposed.

c) *Gluten and starch dryers*

The EPA understands the proposal includes the conversion of Gluten dryers 1 and 2 to Starch dryers. However, the emissions inventory for combustion pollutants (Table 8-2) only includes emissions from GD6, GD7 and SD5. Presumably these refer to Gluten dryer 6, Gluten dryers 7 and Starch dryer 5. The inventory does not include emission from dryer 1 and 2 which are understood to be converted from Gluten dryers to starch dryers.

Additionally, the emission inventory for particles (Table 8-1) includes emissions from:

- Gluten dryer 1,2,3,4, 6 and a new gluten dryer; and
- Starch dryer 1,3,4,5

However, these sources are not included in the inventory for other combustion pollutants. Presumably these sources also include other combustion emissions.

Recommendation: Revise the Air Quality Impact Assessment to:

- ***Include assessment of emissions of relocating boiler 7;***
- ***Provide further clarity on the turbines listed within the emissions inventory;***
- ***Include all existing and proposed Gluten and Starch dryers in the particulate and other combustion products emission inventory.***

Issue 3 – Emission rates for existing sources not justified

a) *Boilers 2, 3, and 5/6*

The air quality impact assessment (AQIA) advises that emissions from Boilers 2, 3, 5 and 6 (existing sources) have been based on monitoring undertaken for boiler 5/6. It is not clear how the data for boiler 5/6 has been utilised. No justification for the use of data for boiler 5/6 has been included with consideration to available monitoring data for these existing sources.

The EPA advises that as per the *Approved Methods for Modelling and Assessment of Air Pollutants in NSW* the EPA's preferred method for emission estimation for existing sources is direct measurement.

Additionally, estimated discharge concentrations for some pollutants (i.e. NO_x) based on discharge parameters and emission rates presented in Table 8-2 of the AQIA are elevated, with some concentrations above prescribed concentrations contained in the *Protection of the Environment Operations (Clean Air) Regulation* and above existing EPL discharge concentrations for these sources. For example, Table 8-2 of the AQIA tabulates a flowrate of 27.9 Nm³/s and a NO_x emission rate of 15.1 g/s for boiler 5/6. Utilising this data, a NO_x discharge concentration of ~ 541 mg/Nm³ is estimated. The EPL limit for this discharge point is 500 mg/Nm³.

b) *Boiler 7*

The EPA understands the proposed modification includes the relocation of boiler 7. The assessment advises that:

- 236,520 MJ of biogas would be combusted in Boiler 7. It is unclear if this is a change in operation of boiler 7;
- Emission factors have been adopted from NPI emission estimation technique manual for combustion in boilers.

The EPA advises that it is unclear if the proposed combustion of biogas represents a change in fuel for this source. Additionally, as boiler 7 is an existing source that is proposed to be relocated, then monitoring data should be available. Source specific monitoring data is more appropriate than emission factors for existing sources.

c) *Gluten and Starch Dryers*

The assessment advises that:

- 500,000 MJ of natural gas would be directed to gluten dryers 6 and 7 and starch dryer 5.
- Emission estimates for the sources are based on US EPA AP-42 emission factors for residential furnaces.

The assessment does not justify the use of emission factors for residential furnaces for these sources. Assessment of emissions for existing sources should be based on existing monitoring data. Alternatively, if the sources are proposed to be modified then the assessment should be based on proposed emission performance not emission factors for unrelated source types.

Recommendation: Revise the assessment to:

- **Base existing emission rates for existing sources on available monitoring data**
- **Where monitoring data is not available, justification for the emission estimation for existing sources be provided**

Issue 4 – Emission rates for proposed sources not appropriate or justified

a) *New Boiler (Boiler 8)*

The EPA advises that emissions from the new proposed boiler (Boiler 8) have been based on:

- monitoring undertaken for boiler 5/6;
- scaling to proposed future coal consumption rates.

The assessment does not provide the proposed future coal consumption rates or justify the adopted approach. The EPA advises that as per the *Approved Methods for Modelling and Assessment of Air Pollutants in NSW* the EPA's preferred method for emission estimation for proposed sources is manufacturers specifications or emission guarantees.

Based on the information presented in the combustion products emissions inventory (Table 8-2) emissions for some pollutants (i.e. NO_x and SO₂) are elevated. For example, Table 8-2 tabulates, an exhaust temperature of 150 deg. C, a discharge velocity of 16.8 m/s and a stack diameter of 0.65 m. Based on this information and the tabulated emission rates a stack concentration of 3,836 mg/Nm³ is estimated for SO₂ and a stack concentration of 2,863 mg/Nm³ is estimated for NO_x. This does not account for moisture content as it has not been tabulated within the emissions inventory for Boiler no 8. These concentrations are not representative of what a new proposed boiler should achieve and substantially exceed the Clean Air Regulation limits for NO_x.

Additionally, there is a lack of clarity regarding the basis for the discharge parameters adopted for the new Boiler. Assessment for new discharge points should be based on as designed/proposed manufacturers specifications. The emissions inventory (Table 8-2) does not include data or information for all discharge parameters including supporting information (i.e. manufactures specifications). For example, the inventory does not tabulate the flowrate proposed for the new boiler.

Recommendation: *The assessment be revised to assess the proposed new boiler based on:*

- *Actual design/proposed discharge parameters, with provision of supporting manufacturers specifications;*
- *Emission performances that have been benchmarked against best practice and reflect the implementation of all reasonable and feasible emission controls.*

Issue 5 – Demonstrate compliance with the prescribed concentrations contained in the Protection of the Environment Operations (Clean Air) Regulation 2010

As per Section 3.4 and 3.5 of the *Approved Methods for Modelling and Assessment of Air Pollutants in NSW*, the emission inventory must be used to demonstrate compliance with the prescribed concentrations contained in the *Protection of the Environment Operations (Clean Air) Regulation 2010* (the Clean Air Regulation). The assessment must demonstrate compliance with the prescribed concentrations contained in the Clean Air Regulation for any new or modified emission sources. The assessment does assess compliance with the Clean Air Regulation.

Recommendation: *The assessment be revised to demonstrate compliance with the Clean Air Regulation.*

Issue 6 – Assessment does not present predicted impacts at nearest sensitive receptors

The assessment identifies four residential receptors (R1, R2, R3 and R4) and advises that these receptors were selected to be consistent with previous odour assessments of the plant. The EPA are concerned there are other sensitive receptors closer to the plant, including the neighbouring industrial/commercial receptors.

Recommendation: *Revise the AQIA to*

- *Undertake a review of sensitive receptors surrounding the plant*
- *Revise the AQIA to include predicted ground level concentrations at the identified receptors.*

Issue 7 – Assessment does not assess all identified type 1 and type 2 substances

The assessment presents ground level concentrations for some Type 1 and 2 substances (cadmium and beryllium). However, the assessment does not tabulate predicted ground level concentrations for other Type 1 and 2 substances. For transparency purposes all identified Type 1 and Type 2 substances should be assessed individually.

Recommendation: *The AQIA be revised to assess all identified Type 1 and Type 2 substances*

Issue 8 – Assessment does not assess against impact assessment criteria for all averaging periods in the Approved Methods

The assessment does not predict ground level concentrations for each relevant averaging period for comparison against impact assessment criteria. For example (but not limited to), the assessment assesses against 1-hour average impact assessment criteria for sulfur dioxide and nitrogen dioxide,

however the *Approved Methods for Modelling and Assessment of Air Pollutants in NSW* includes assessment criteria for these compounds over other averaging periods.

Recommendation: The AQIA be revised to assesses against all relevant impact assessment criteria contained in the Approved Methods.

Noise Impact Assessment

The EPA has reviewed the report titled “Environmental Noise Impact Assessment Shoalhaven Starches – Proposed Modification Application to MP06-0228, Shoalhaven Starches Ethanol Expansion Project, Proposed New Specialty Processing Facility, New Gluten Dryer and other associated works” dated 31 May 2018 and prepared by Harwood Acoustics (noise impact assessment report)

Operational Noise

The information contained in the noise impact assessment report predicts that operational noise (post construction) of the plant and equipment proposed under MOD 16 will not result in cumulative noise levels from the Shoalhaven Starches premises that exceed the current noise limits contained in Environment Protection Licence No. 883 (EPL). It is noted that this is based on implementing the recommended noise controls as detailed in section 6 of the noise impact assessment report.

As such, it is recommended that any approval of MOD 16 contain appropriate conditions which requires:

- Implementation of the recommended noise controls as detailed in section 6 of the noise impact assessment report and;
- a noise validation be undertaken within the first 12 months of operation of all plant and equipment associated with MOD 16 to confirm that noise emissions comply with the predictions in the noise impact assessment and if not, all reasonable and feasible noise mitigation measures are implemented to achieve compliance.

Construction Noise

The information contained in the noise impact assessment reports predicts that construction noise will comply with the noise management levels (as per table 6 of the noise impact assessment report) except for the specific activity of impact piling at two of the four sensitive receiver locations. The noise impact assessment report predicts that impact piling activities will exceed the noise management level by 4 decibels (dB) at receiver location 3 and by 2 dB at receiver location 4.

It is noted that the noise impact assessment report provides at section 6.6 proposed mitigation actions in response to this issue and that the identified potential construction noise exceedance from impact piling is “not considered a significant exceedance during day time hours for short and sporadic duration.”

To provide that any construction noise impacts from the proposal are able to be appropriately managed and provide minimal impact upon the community, it is recommended that any approval of MOD 16 contain appropriate conditions which:

- requires implementation of the mitigation actions identified in section 6.6 of the noise impact assessment report, including the need for appropriate periods of respite for residents at locations 3 and 4 during any impact piling activities.
- restricts all impact piling activities to between 9:00am to 5:00pm Monday to Friday.
- restricts all other construction activities to standard construction hours (7:00am to 6:00pm Monday to Friday, 8:00am to 1:00pm Saturday and no work Sundays or public holidays).

Irrigation management

The EPA has reviewed the report titled “Irrigation Management of Treated Water; MOD 16” dated 12 October 2018 and prepared by Ms Glenys Luggg, Environmental Scientist – Manildra Group (the irrigation management report). The EPA understand this report was provided following comments it provided to the proponent in the initial consultation period for MOD 16.

The EPA notes that while the irrigation management report does not provide detailed hydraulic, nutrient and salt balances that accord with the *Environmental Guidelines Use of Effluent By Irrigation* (DEC 2003), the report states that the increased irrigation volumes as a result of MOD 16 will still be less than the overall volumes of waste water irrigated prior to the implementation of the waste water treatment plant. The EPA understands from the report that this is a result of the waste water treatment plant facilitating the reuse of up to 75% of waste water produced at Shoalhaven Starches premises for use back in factory processes. The report further states that the implementation of the waste water treatment plant has resulted in improvements to the condition of the Environment Farm (waste water irrigation area) and permitted cropping activities to occur which has assisted in the removal of nutrients that have been applied as a result of past waste water irrigation activities.

As such, the EPA is satisfied that the monitoring and reporting conditions in Environment Protection Licence No. 883 remain sufficient to regulate any environmental impacts associated with the irrigation of waste water at the Shoalhaven Starches premises.