TRANSPACIFIC
INDUSTRIES GROUP LTD

Environmental Assessment for Replacement Stack at Transpacific Refineries Rutherford

November 2014

Ken Telfer | Environmental Specialist NSW/ACT | Industrials
Transpacific Industries Group Ltd | 390 Princes Highway, Bomaderry, NSW 2541
P: + 61 2 4422 8900 | **F:** + 61 2 4422 8901 | **M:** + 61 417 059 138
E: Ken.Telfer@transpac.com.au | www.transpacific.com.au

TRANSPACIFIC INDUSTRIES GROUP LTD

Contents

TRANSPACIFIC INDUSTRIES GROUP LTD

Pamela Morales
Planning Officer - Industry
Infrastructure Assessments
Department of Planning & Environment

Dear Pamela,

Re: Environmental Assessment for Replacement Stack at Transpacific Refineries Rutherford.

Transpacific Refineries would like to request approval to replace a stack at our Rutherford plant. The existing stack has reached end of life and will pose a safety risk if not remedied. The current height is in line with existing walkway access on the adjacent structures and poses potential Occupational Health and Safety issues to our employees. We propose the installation of a higher stack to avoid these risks and to increase dispersion of the emissions.

The existing stack was built under Project Approval 05_0037 (as modified) (Approval) and is a licenced emission point under Environmental Protection Licence (EPL) No. 12555.

Please have no hesitation in contacting myself or Ken Telfer on 0417 059 138, for any further information. Thank you for your consideration.

Regards,

Ray Carson | Refinery Manager | Hydrocarbons - Refineries
11 Kyle Street, Rutherford TPR NSW 2320 Australia | 246, Rutherford NSW 2320
P: +61 2 4939 1125 (Direct) | F: +61 2 4939 1113 | M: +61 438 946 411

TRANSPACIFIC INDUSTRIES GROUP LTD

Assessment

Description of the existing operations;

Transpacific Refiners (TPR) operates an oil refinery at 11 Kyle Street Rutherford, processing refined waste oil into base oil for use in lube oil blending and industrial processes. The refinery has been operating since May 2007. During this time TPR has been progressively improving its operation to ensure best practice and compliance with the principles of ecologically sustainable development. The operation of the Rutherford plant is subject to the conditions of the Project Approval 05_0037 (as modified) (Approval) and environmental protection licence no. 12555.

TPR requests that in accordance with section 75W of the Environmental Planning and Assessment Act 1979 (NSW), the Department of Planning (DoP) approve the replacement of the EPL Point 19 Fired Heater stack with a taller replacement. The foremost reason for a taller stack is to improve dispersion of emissions into air and to mitigate potential Occupational Health and Safety issues relating to access platforms on surrounding structures which are at the same height as the existing stack exhaust. With an increased stack height, the gas exit point will be above all work level areas on site.

Background

TPR operates an Oil Refinery in Rutherford, NSW. Although the Rutherford Refinery is the first plant of its kind in Australia for processing recycled lubricant base oils (RLBOs), the technology itself is well established within the petrochemical and food manufacturing industries. The RLBO feedstock for refining is sourced from recovered used oils that have undergone preliminary offsite treatment by oil recyclers to remove water and other impurities. The facility is designed to process RLBO at a typical rate of 3.8 tonnes per hour.

The refining process involves hydrogenation of the feedstock, which in essence is the addition of hydrogen to unsaturated hydrocarbon molecules. Hydrogenation is performed by contacting the RLBO feed with hydrogen at elevated temperature and pressure (350°C and 25bar) in the presence of a catalyst resulting in chemically stable saturated hydrocarbons.

The aim of the hydrogenation process is to produce refinery-grade lube base oil from the RLBO feedstock. By-products of the process include light end gases (recovered within the process and used as fuel), light end liquids (recovered for use as industrial solvents) and water (recovered for treatment). Approximately 95% of the feedstock oil is recovered for re-sale into the lube base oil market.

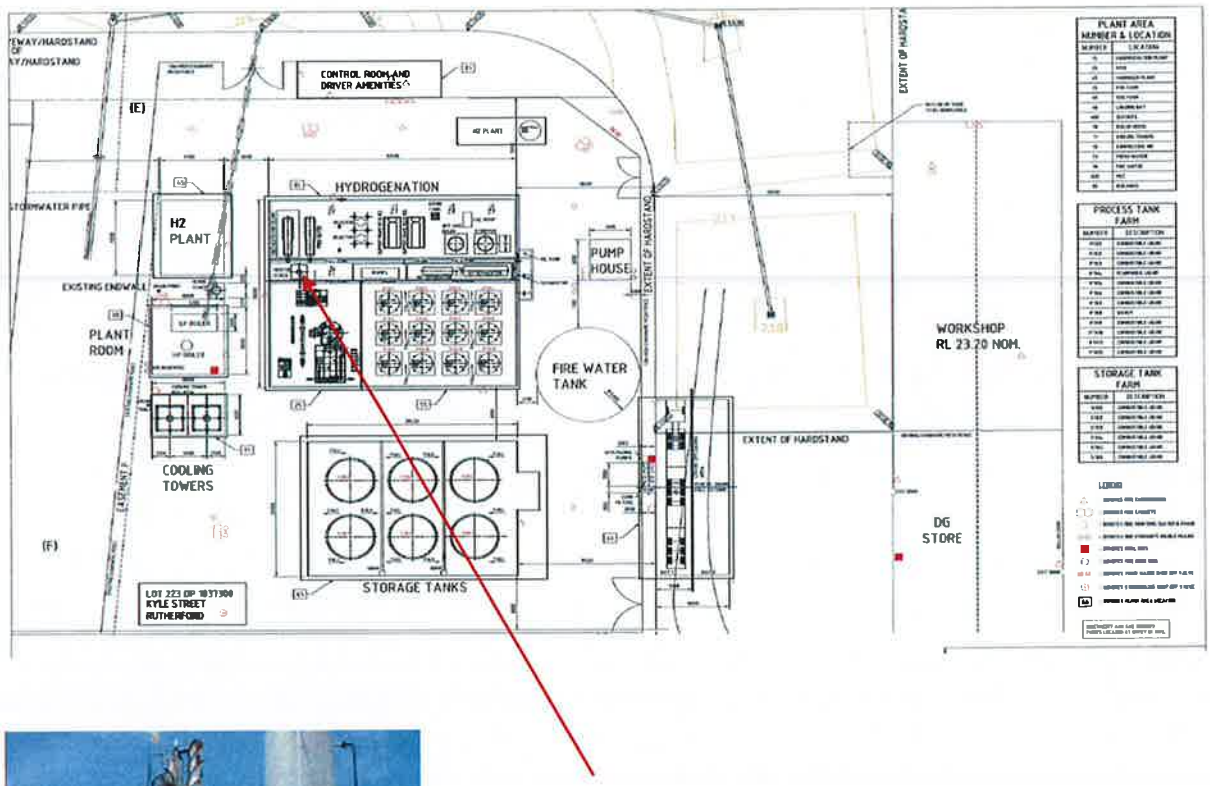
Stack function

The stack we request to be replaced is emission Point 19 of EPL 12555 (Appendix A) and collects the combined discharge from Point 1 and Point 18 (Thermal Oil Heater). Inlet gas to the SOx Scrubber upstream of Point 1 is rapidly cooled in a freshwater quench vessel prior to entering the scrubber. The scrubber is a packed tower containing polypropylene tellerettes. The gas stream passes through the packed bed where it is in contact with a dilute caustic (NaOH) solution to remove oxides of sulphur. Immediately above the packed bed is a full cone irrigation spray that ensures uniform caustic solution distribution and maximises scrubbing efficiency. The scrubbed gas stream then passes through a fabric demister, then a cyclone knock out pot, prior to discharge. Discharge from the SOx scrubber is combined with the exhaust gases from the natural gas fired Thermal Oil Heater (Point 18) and discharged to atmosphere via the stack (Point 19 – see Image 1a&b below).

Site plans

The new stack will be 25m tall, approximately 2m taller than the walkway on the existing Flash Point Correction column, and located within the boundaries of existing refinery (shown in Image 1a below). It will be in keeping with the visual aspect on the current facility infrastructure.

Image 1a & b: Diagram of existing stack location & photo of existing stack (Flash Point Correction Column shown in background)



Existing Stack, Point 19

The need for the modification application

While the new stack is essentially a replacement of existing infrastructure it will be taller. From recent correspondence with the New South Wales Department of Planning, Transpacific have been advised by Pamela Morales, Planning Officer, that the replacement stack will require a formal modification to the approval (05_0037) under section 75W of the EP&A Act to accommodate for the extra height.

Alternatives

Replacing the stack with another of the same existing and approved dimensions has been considered. However, the opportunity to raise the height to allow increased dispersion and a safer workplace is the preferred approach.

Environmental impact

The proposal will not have any adverse environmental effects, there are no additional pumps or fans required which could add noise.

The stack will have no impact on water use, waste water generation or quality. The refinery is fully bunded with a gate valve on the stormwater outlet. The increased height will improve dispersion of emissions which have been modelled by PAE Holmes (Appendix B), which shows some Ground Level Contractions to reduce by up to 45%. The new stack will not require any further amendments to current conditions of approval, the site currently undertakes emission testing on the stack under EPL NSW EPA Licence 12555, and this proposal will not alter or affect this requirement.

Consultation with key stakeholders

Rebecca Akhurst, of NSW EPA has advised that, "The EPA advised DoPI it didn't believe the stack replacement would require a variation to the existing Environment Protection Licence and therefore the EPA doesn't require anything further".

Key assessment issues

The new stack has been designed by accredited civil, structural and geotechnical engineers and fabricated to Australian Standards (Appendix C). While the concentration of emissions will not be affected, atmospheric modelling by PAE Homes Report 6963 (appendix B), shows that the increased height will improve dispersion of the emissions which are already within EPA requirements.

Operational installation

The stack has been fabricated off site and therefore has minimal impact on site activities or environmental impacts. The existing development has been completed and operational since 2007, the proposal does not alter the development or process and changes will therefore be inconsequential. The increased height will reduce interactions with the existing plant as it will be higher than work areas. Since there are no other proposed alterations there will be no further interactions in the vicinity of the site.

Civil Installation

- Time: 2 weeks
- Fill: ~3m3
- Concrete: 9m3 (4 off deliveries from batch facility located 500m away)
- People: 4 people for 10 days

Structural Installation:

The stack has been prefabricated off site, site erection requires one day which requires the use of one fixed crane and one mobile crane (Franna) on site. Site connection will require 3 further days with one mobile crane (Franna).

- Time: 4 days
- Plant: Crane and Franna for 2 days
- People: 4 people for 4 days

Redundant Stack removal:

The existing stack will be removed after the commissioning of the new stack.

- Time: 1 day

- Plant: Crane and Franna for 1 day
- People: 4 people for 1 day

Summary of Impacts

Social

The proposal delivers no social impacts as it is generally replacing new for old with the exception of height, the increased height will improve dispersion of emissions as shown by the modelling report. The height of the new stack will be equivalent to the highest structure on site.

Access & Traffic

Increased traffic consists of a structure deliveries, crane and support vehicles. Deliveries do not require special transport arrangement. This is negligible in relation to existing industrial estate traffic movements.

Air quality

Installation requires the plant to be shut down, preventing any impacts on air quality. As mentioned the new height will improve emission dispersion.

Noise

Current operations are not considered a noise source. The use of the machinery and crane for installation will have a negligible increase of noise above normal operations.

Water

The modification does not require any changes to water use.

Energy

The modification does not require any changes to energy use.

Waste

The original stack is made of carbon steel and will be sent for recycling.

Excavated material:

- Concrete: ~2m3

- Soil: ~10m3
- Disposal: 3 tipper trucks to nearby council tip (Kurri Kurri)

Staffing

Contractors on the project will be accommodated by existing amenities. There will be no increase in staffing required for this proposal.

Conclusion

The replacement is essentially new for old with the exception of height, which will improve dispersion of emissions and alleviate some of the risk for workers on site. Installation will have a minimal impact compared to existing operations and will require a minimal amount of resources and time.

There will be no further environmental, social or visual effects as a result of the installation and no requirement to alter the current conditions of approval or EPL.

Appendices

A. Environmental Protection License EPL12555

B. PAE Holmes, Stack Modelling for Transpacific Refiners Rutherford, Report 6963, 6 August 2012.

C. EMA Consulting Engineers, TPRR-15-Mech-GA-070 Rev1, Heater Waste Gas Stack General Arrangement, 2 June 2014