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26 May 2025

NSW Department of Planning, Housing and Infrastructure  
Att: Nathan Robinson

Dear Nathan,

**RE: MOD8\_33kV High Voltage Electrical Infrastructure Upgrade Project (the Project)  
– Final Hazard Analysis Review**

A Preliminary Hazard Analysis (PHA) is required if development is potentially hazardous which is determined from the Hazardous and Offensive Development Application Guidelines applying SEPP 33:

1. Identify Hazardous Materials and the Type of Hazard
  - Hazardous materials are substances classified as dangerous goods by the Australia Code for Transportation of Dangerous Goods by Road and Rail.
  - Determine the quantities and classes of all hazardous materials in the development and adjacent inventory.
2. Group and total by class, activity, and location
3. Compare with screening threshold
  - Determine if the quantity of a particular hazard class is considered likely to be a significant off-site risk.
4. Determine whether SEPP 33 applies
  - If any of the included tests result in a screening threshold being exceeded, the proposed development should be considered potentially hazardous and therefore SEPP 33 applies.
  - If SEPP 33 applies, a PHA must be submitted.

A final hazard analysis (FHA) is an updated PHA which includes the final project design information.

In 2011 (MOD 1 PHA) an application to modify the 2009 approval was lodged by Orica following the completion of technology selection and feasibility study design work. The modification related to proposed changes to the post expansion Site layout and improvements to the ammonia handling systems.

In 2012, Orica sought approval to modify the project approval (MOD2) relating to the construction and operation of three ammonia flares and the change in location and increase in storage capacity

of a nitric acid tank detailed in the approval (08\_0129). The PHA was updated to reflect the change in location of the NA tank and three ammonia flares.

Assumptions underpinning the development of the Project PHA, and subsequent modifications to the site were based on a continual production throughout the year at a daily ammonia production rate of 1050t/day. Therefore, an annual ammonia production quantity of 385ktpa (the ammonia production rate proposed as part of the Project) has previously been modelled.

In 2015, a review of the model inputs identified that shipping and pipe utilisation inputs associated with ship loading infrastructure were based on a 360ktpa ammonia production scenario and focused on the change in risk profile associated with proposed modifications to shipping scenarios associated with the Project.

In 2015, to support Orica's modification application (MOD3), GHD assessed the impact on risk contours developed for the Project as a result of increasing the frequency in which ammonia is transported via ship from the Site. As part of the modification to shipping frequencies, the risk profile for the Site was updated to assess the change in risk. This involved undertaking a Site Quantitative Risk Assessment (QRA) which formed part of a Preliminary Hazard Analysis (PHA). The modelling work was completed using the existing QRA model developed for the Orica KI Update PHA MOD 2 for the AMI project. For consistency, the same model and software (DNV's Phast Risk version 6.7) were used for MOD3.

The assessment demonstrated that the proposed changes associated with shipping frequencies would result in a decrease in the risk profile for the shipping activities. Due to the low contribution of risk to the overall Site risk profile of the shipping scenarios, the Site IFR (individual fatality risk) contours, Site toxic injury and Site toxic irritation contours did not change from the previous MOD 2 case results. Hence, the risks associated with the Site continued to comply with HIPAP 4 risk criteria for the Project.

As such the FHA/PHA for the Project (up to MOD8) consists of the following documents previously submitted to DPHI:

- Original PHA included in the EA (Appendix H) for the Project (GHD - May 2009)
- PHA MOD1 related to the ammonia plant uprate (GHD, March 2012)
- MOD2 PHA update mainly related to updates to the ammonia transfer pipelines and storage (GHD, May 2014)
- MOD2 Phase 2 FHA review for the 3 ammonia flares as part of the Ammonia Management Improvement Project (Hatch, April 2015)
- MOD3 PHA update detailed in Section 6.3 of the MOD3 EA (AECOM, April 2015)

It should be noted that both the MOD2 Phase 2 FHA and MOD3 PHA concluded the base case results in the MOD2 PHA were not impacted by those modifications (i.e. the ammonia flares or change in shipping frequency). The MOD2 PHA therefore effectively represents the current FHA.

The following reviews have been undertaken for modifications associated with the consent since the above updates:

- MOD4 – Review letter prepared by Orica's Senior Specialist – SHES MHF dated July 2023 concluded there were no hazardous materials as defined under SEPP33 associated with the project and hence no requirement to prepare an overall FHA as a result of the MOD4 proposal.

- MOD5 – As for MOD4 but submitted in November 2023.
- MOD7 – “*Technical note – AN1 Intermediate Tank Installation Hazard Analysis*” (Sherpa Consulting – August 2023) was prepared and concluded there would be no effect on the offsite risk profile and hence no requirement to prepare an overall FHA as a result of the MOD7 proposal.

The only dangerous goods associated with the Project (MOD8) relate to the inert gas based fire suppression system that will be installed in the substation as a fire safety measure for inside the building in accordance with Australian Standards AS ISO 14520.1-2009 and AS ISO 14520.15-2009 for Gaseous fire extinguishing systems, and consists of a mixture of nitrogen, argon and carbon dioxide. The gas in the suppression system is designated dangerous goods because it is stored as a compressed gas, not due to the intrinsic nature of the material. These dangerous goods do not present an offsite risk and therefore are not hazardous materials under SEPP 33.

For this reason, the Project remains outside the scope of the original PHA as the project does not impact the quantities of in process or stored hazardous materials. As such the modification does not impact the original PHA and/or the subsequent FHA's.

If you require any additional information, please do not hesitate to contact me.

Yours sincerely,



Belinda Moss  
Senior Specialist – SHES, MHF