

SafeWork NSW reviewed the EIS in general and the PHA in particular, and our comments are:

1. The requirements given by SafeWork for the SEARS are on Page 50 of the EIS. The first dot point stated that the EIS “should” include both on site and off site risks. However, item 1 in table 2.2 of the PHA states that *on site risk is not assessed in the PHA*. Clause 1.4 and item 6 in table 2.3 states that *SFARP demonstration was not addressed in the PHA*. Given that only off site risk is considered from a land use safety point of view, SafeWork has included in the suggested conditions below, that Vopak consult with SafeWork, prior to completion of detail design. Issues include, but are not limited to:
 - Including both on and off site risk in the PHA.
 - SFARP demonstration with regard to both on and off site risk.
 - Updating the Safety Case under the WHS Regulation.
 - Matters to be addressed in the HAZOP study
2. Clause 5.3.4 of the PHA states that *vapour cloud explosion was not modelled in this study*. An explanation is given that overpressures are within the flashfire (LEL) envelope. Clause 7.1 in the PHA states that the maximum extent of the worst case vapour cloud (flash fire and explosion) scenario from a gasoline tank overfill is approximately 620m. Section D6 discusses vapour cloud/flash fire scenarios for tank overfill. Table D7 shows flash fire consequence distances. Section D3 discusses other flash fires and states that modelling results are reported in terms of width and length to 50% LFL and 100% LFL. However, the consequence results in tables D3 and D4 appear to show only distances to LFL. Results for 50% LFL do not appear to be included. Vopak to clarify.
3. Clause 8.2, dot point 4 of the PHA refers to an assumption that a tank rim seal fire progresses to a full tank surface roof fire at a factor of 0.1, but states that it will be verified as part of the design phase. Vopak to provide this evaluation at design phase and revise the risk assessment if the 0.1 assumption cannot be substantiated by analysis and comparison with published data.
4. PHA Appendix A, items 14 & 16 indicate that this Buncefield recommendation will not be implemented. Although offsite risk criteria may be satisfied, Vopak will be required via the Safety Case update, to justify not implementing this measure, since risks need to be reduced to SFARP.
5. PHA Appendix A, item 14 is the (Buncefield) recommendation to reroute overflows. The Buncefield inflow rate was 890m³/hr at the time of the incident. The site B inflow rate at safety case preparation time was 820m³/hr. The B4 rate is stated as 3500m³/hr but unclear if this is tank fill rate. Anyhow, minimizing overflow quantity and hence the size of a potential vapour cloud is considered critical. Vopak to demonstrate that high reliability post overflow shutdown and control measures will be implemented. These need to be addressed in the HAZOP. The HAZOP must also verify if the ullage between overflow levels and High and High High levels are adequate in comparison with available response times. E.g. if the ESD valve closure time is 45 sec, is the ullage above HH alarm sufficient at the increased fill rate to prevent overflow? Vopak to clarify.
6. Table D7 shows 75W operation as 1750 m³/hr and B4 as 3500 m³/hr. It is unclear if this is ship to shore pumping rate over one pipeline or multiple pipelines. How are the velocity limits re static issues maintained. The previous draft surge study probably used the pre 75W flow rate of 820m³/hr. At least the following three scenarios need to be addressed in the

new surge study to be carried out under the current MHF licence conditions. (a) Emergency shutdown valves are presently set at 45 sec closing time. This will need to be reviewed in the surge study if flow rates are increased. (b) Surge conditions likely to be generated due to sudden failure of ship's pumps. (c) surge conditions likely to be generated if the dry break coupling on an MLA is activated during pumping.

Suggested conditions

1. Prior to finalising of detail design related to safety and risk control aspects of the B4 project, Vopak shall consult with SafeWork NSW with regard to matters to be addressed in updating the site B Safety Case, on site risk assessment, surge issues due to increase in pumping rates and SFARP demonstration in particular, and comply with the requirements of the Work Health and Safety Act and Regulation 2011. The updated Safety Case shall be submitted to SafeWork at least one month prior to commencement of commissioning of the B4 project.
2. The safety Management system to be prepared or updated for the whole of site B under consent condition No. XXXX shall comply with the requirements of the Work Health and Safety Regulation 2011. In particular, the requirements in clause 558, clause 568 and schedule 17.
3. A copy of the report of the Hazard Audit to be carried out under consent condition YYYYY shall be submitted to SafeWork together with a program to action the recommendations. The report and action plan must be submitted at the same time as the submission of the report to the Department of Planning and Infrastructure.
4. The FHA to be done under consent condition ZZZZ to include both on site and off site risks.
5. The HAZOP to be done under condition of consent WWWW. shall address the concerns raised under item 5 above.