

Ixom P/L is seeking to modify the original development consent in D/A 35/98 that was granted to Orica in November 1998 to install a replacement chlorine plant and to construct and operate a new chlorine liquefaction and packaging to be integrated into the existing site operations with all chlorine material being sourced from the existing chlorine liquification plant process.

The original development consent, D/A 35/98 granted in November 1998 was unlawfully approved.

The original consent granted in November 1998 for the Orica replacement chlorine plant was unlawfully approved because the consent authority did not correctly apply SEPP 33 and HIPAP No 6 which contravened the then section 79C of the EP&A Act 1979 for matters of consideration listed under sub-sections (a), (b) and (e) of 79C of the EP&A Act.

The Environment Impact Statement is a document prepared by the applicant to support the development application which includes specific matters set by the Director General in the DGRs. The Orica determination purported to apply the Director Generals Requirements (DGR's) which did not appropriately address all issues that were required to inform the applicant for the preparation of an Environmental Impact Statement. Pursuant to Section 115C(2) of the applicable version of EP&A Act 1979 and Schedule 3 of the EP&A Regulation 1995, the Director General is to ensure that the applicant is aware of all key issues associated with the proposed development. The DGR's omitted reference to transport risks associated with the activities of transportation of chlorine to and from the plant which was a requirement of SEPP 33. Therefore, the DGR's did not require the applicant to appropriately apply tests set out in SEPP 33 nor HIPAP No 6. [See annex p 1-2.](#)

A Preliminary Hazard Analysis (PHA) was required to be submitted with the development application to be prepared in accordance with HIPAP No 6. Pursuant to HIPAP No 6, both cumulative impacts and associated operations including transportation of hazardous materials of which chlorine is included, **must** form part of the hazard analysis. Contrary to SEPP 33 and HIPAP No 6, transport risk was not quantified as part of the PHA for the Orica application and did not form a critical part in the decision on whether the development should be approved or not. Therefore, the original application for the Replacement chlorine plant was unlawfully approved.

On 6 November 1998 approval was granted by the then Minister for Planning. The approval imposed conditions made to ensure that potential hazards do not pose an unacceptable risk both on-site and off-site. [Annex 3](#). As the application did not consider transport risks associated with the activities of transportation of chlorine to and from the plant, an assessment of the potential off-site hazards could not have been appropriately made.

If the contribution to the cumulative hazard risks from the transportation of chlorine to and from the proposed Orica replacement plant was not an issue at the time the application was made, why did the consent authority and the applicant go to such extraordinary lengths to not report the contributions to risk as part of the PHA from the transportation of chlorine to and from the replacement chlorine plant?

The Ixom P/L application seeking to modify the original development consent in D/A 35/98 should be refused and the existing chlorine plant should be relocated away from the residential areas exposed to risk from the Dangerous Goods route running along Denison St, Wentworth Ave and Bunnerong Rd.

It is in the PUBLIC INTEREST that the chlorine plant should be relocated away from the residential areas to allow safe hazard free residential development.

The Issued Secretary's Environmental Assessment Requirements (SEARS), (formerly the DGR's) for the Ixom proposal are not consistent with SEPP 33 and HIPAP No 6 guidelines.

The Ixom P/L application to modify the original development consent in D/A 35/98 is a potentially hazard development and SEPP 33 applies. Applying SEPP 33; Common Queries: ***What are the implications of SEPP 33 for an existing development?*** notes; for a modification of the existing facility for a potentially development, hazards relating to external causes as well as those from the development itself **must** be addressed. Any preliminary hazard analysis would therefore need to consider hazards from the existing facility. Annex 4-5.

Secretary's Environmental Assessment Requirements (SEARS – formerly the DGRs) were issued in June 2024. Annex 6-7. Item 1: **Key Issues; Hazard and Risks**; required the environmental assessment to include a QRA in accordance with HIPAP No 6 demonstrating that the existing chloralkali plant (CAP) with the proposed chlorine liquefaction plant (CLP) complies with both the qualitative criteria, in particular the consideration of the site location and technology, and the quantitative criteria in HIPAP No 4.

- (a) Pursuant to HIPAP No 6, cumulative impacts and associated operations including transportation of hazardous materials of which chlorine is included, must form part of the Hazard Analysis. Annex 8,9, 10.
- (b) The Issued SEARS requirement is not consistent with SEPP 33 and HIPAP No 6 as it does not require the applicant to consider the potential impacts of DG transport to and from the existing chloralkali plant with the proposed chlorine liquefaction plant to demonstrate that the combined facility complies with both the qualitative criteria and the quantitative criteria in HIPAP No 4 as required by SEPP 33 and HIPAP No 6.

SEARS page 2, full dot 2; requires the environmental assessment to include a Transport Risk Assessment (TRA) to evaluate the potential impacts from DG transport to and from the modified facility.

- (a) For a modification to an existing hazardous development, hazards relating to external causes as well as those from the development itself **must** be addressed.
- (b) The Issued SEARS requirement is also not consistent with SEPP 33 and HIPAP No 6 as the TRA would also need to consider the potential impacts from DG transport hazards from the existing facility as well as those from the development itself.

The assessment requirements of the issued SEARS will not ensure that potential hazards will not pose an unacceptable risk both on-site and off-site as the applicant is not required to consider the potential impacts of DG transport from the existing chloralkali plant and the proposed chlorine liquefaction plant to demonstrate that the combined facility would comply with both the qualitative criteria and the quantitative criteria in HIPAP No 4 as required by SEPP 33 and HIPAP No 6.

If the contribution to the cumulative risks from the existing chloralkali plant, the proposed chlorine liquefaction plant and the transportation of chlorine to and from the combined facility was not an issue, why has the issued SEARS not required the applicant to address the potential impacts of DG transport from existing chloralkali plant as well as those from the proposed development itself to demonstrate that the proposal would comply with both the qualitative criteria and the quantitative criteria in HIPAP No 4?

In February 2019, Syscta Scott Lister finalised a Westfield Eastgardens QRA report to initiate the preparation of an amendment to the BBLEP 2013 for re-development to convert Level 2 of the existing parking area in Wentworth Ave into retail.

The 2019 QRA p 7, **Dangerous Goods Risks** notes; the Eastgardens site is exposed to risk from Dangerous Goods route running along Denison St, Wentworth Ave and Bunnerong Rd, annex 11, 12.

2019 QRA, p 28; Figure 10 provides Individual Risk Results for Dangerous Goods Transport showing various coloured fatality risk contours for Denison St and Wentworth Ave, [annex 13](#).

The 2019 QRA p 12, [annex 14, 15: Risk Assessment Framework](#) provides risk assessment criteria;

- (a) The green contour is the 1 in a million fatality per year (1×10^{-6} per year) risk contour which has been adopted as the limit for risk acceptability for residential area exposure.
- (b) The yellow line is the 5 in a million per year (5×10^{-6} per year). Commercial developments should not be exposed to individual fatality risk levels in excess of 5 in a million per year.
- (c) Figure 10 identified fatality risk contours in Denison St and along Wentworth Ave. Figure 10 did not provide fatality risk contours for the intersection of Wentworth Ave and Bunnerong Rd or along Bunnerong Rd.

The 2019 QRA at p 32, [annex 16: Conclusion](#) recommended a number of design engineering risk mitigation measures for the conversion of Level 2 of the existing parking area in Wentworth Ave into retail. These were;

- (a) To seal the level 2 conversion of the existing parking areas with solid walls to the south, and east and west corners with the internal area pressurised with roof mounted HVAC units, [annex 17 photo](#). Such arrangements are expected to protect occupants from the effects of toxic gases arising from accidents on Denison St and Wentworth Ave.
- (b) The retail area in Level 2 will be oriented that back-of-house and storage functions are towards the southern façade.
- (c) New retail areas will have solid steel reinforced concrete walls to the southern building façade with no ventilation ports and fire rate to withstand LPG fire radiation of 37kW/m² for 15 minutes.
- (d) The risk mitigation measures for the Level 2 conversion are to protect shoppers and staff from the effects of toxic gases releases and from the impacts of flash fires, jet fires and fireballs from accidents on Denison St or Wentworth Ave.

The 2019 QRA p 7 notes; Council engaged Arriscar P/L, Risk Engineers and Process Safety Services to perform a review of the QRA. The report is dated 2 July 2018. The report made a number of recommendations which are reproduced at p 7 & 8.

- (a) Item 7; there must be a public address system in the Eastgardens Complex to notify shoppers of actions to take in the event of a DG transport accident that may affect the car park on Wentworth Ave.
- (a) The QRA at p 30 advises; *It is noted that the previous version of this report suggested the ground level carpark could be walled-in to the south, east and west to prevent the accumulation of flammable gases in the area. Current modelling does not use the 3D explosion module in Safeti v8 and assumes strong explosions for all vapour cloud explosions.* The QRA concludes that such a mitigation should not be necessary.
- (b) The 2015 Scott Lister QRA at p 18 advises that flammable gases in the area are LPG and PGP Ethylene Oxide. However, a DG transport incident would also arise from an accident from the transport of toxic chlorine gases on Denison St and/or Wentworth Ave.
- (c) Therefore, there is no foundation for the QRA to conclude that the ground level carpark should not be walled-in in the event of a DG transport accident that may affect the car park on Wentworth Ave when no design engineering risk mitigation measures have been recommended.

The proposed risk mitigation measures for the conversion of Level 2 into retail and those that were proposed for Level 1 to be walled-in in the event of a DG transport accident expose that the risk from a transport incident from the transportation of flammable gases or from the effects of toxic gas release along the DG transport route are extreme. Further, sealing Level 2 and potentially Level 1 of the carpark with solid walls will impact the building wake effects along Wentworth Ave that in the event of a significant release of toxic gas would have a greater impact to residents from a dense gas release due to the density of

gas v air. No risk mitigation measures have been recommended for residents living adjacent to the complex in Wentworth Ave nor those living adjacent to the proposed high rise commercial developments along Bunnerong Rd. The same risk issues would also arise for the high rise residential units recently constructed to the north of the Eastgardens complex.

The 2019 QRA p 46, **annex 18**: Figure 6. Chlorine Tkr – Rupture – Toxic outdoor fatality envelope provides various coloured fatality risk contours for Individual Risk Results for the toxic outdoor fatality envelope at the intersection of Denison St and Wentworth Ave with the wind from the south. Curiously, Figure 1 at p 44, **annex 19** and Figure 3 at p 45, **annex 20** provide various coloured fatality risk contours for all wind directions but Figure 6 only assesses the fatality risk from wind from the south. Of note, the extent of the green contour and the yellow contour in Figure 6 running into the Eastgardens complex is significantly greater than the extent of these contours provided in Figure 10 at p 28.

- (a) Had Figure 6 presented fatality risk contours for all wind directions, the fatality risk contours, the green, yellow contours would have extended well into the Eastgardens complex, the residential areas around the intersection of Denison St and Wentworth Ave and into the Hensley Athletics Field which is home to the Randwick-Botany Little Athletics Club, the South Sydney Athletics Club and serves as a district park for the City of Bayside Council. Hensley Field has a capacity of approx 1000 people.

The Arriscar report, 2 July 2018, p 10 **annex 18A**: 3.3.1 **Individual Risk** notes; the risk to an individual along Denison St and Wentworth Ave is a result of a DG transport accident.

- (a) *The report assumes that the individual would be outdoors (most exposed individual).*
- (b) *The risk contour is shown in Figure 5.*
- (c) Figure 5 is a reproduction of Figure 10 in the 2019 QRA.

The Arriscar report, p 11 **annex 18B**; Figure 5 is a reproduction of the 2019 QRA Figure 10, p 28. The report notes; *It can be seen from Figure 5 that the 5 x 10.6 per year contour extends into the car park of the Eastgardens complex but does not affect the buildings. At this stage, the applicant has asked for an assessment of the BBLEP only and only a broad outline of the likely developments. It is not known if the development may involve changes to the car parking at the corner of Denison St and Wentworth Ave. If no changes are proposed within the 5 x 10.6 p.a. contour area, then the existing risk levels for the pre-existing development would not preclude additional developments to the buildings on the site.*

- (a) 2019 QRA p 46, **annex 18**: Figure 6; provides toxic outdoor fatality envelope at the intersection of Denison St and Wentworth Ave with the wind from the south.
- (b) Had the toxic outdoor fatality envelope been assessed for all wind directions, the significant risk contours, the green, yellow and red contours would have extended to the east and the west, well into the Eastgardens complex.
- (c) Further, in terms of the Arriscar report, this would now preclude additional developments to the buildings on the site.

The Arriscar report, Figure 5 and Figure 10 of the 2019 QRA only risk assess the intersection of Denison St and Wentworth Ave. The following intersections around the Eastgardens complex have not been risk assessed;

- (a) Intersection of Wentworth Ave and Bunnerong Rd.
- (b) Intersection of Bunnerong Rd and Westfield Drive – a major entrance and exit for the Eastgardens complex and entrance to the bus interchange.
- (c) Bus interchange exit into Wentworth Ave near Bunnerong Rd.
- (d) Intersection on Wentworth Ave and Banks Ave - a major entrance and exit for the Eastgardens complex.
- (e) Banks Ave - a major entrance and exit for the Eastgardens complex.

- (f) The 2019 QRA identifies that the Eastgardens site is exposed to risk from the DG route running along Denison St, Wentworth Ave and Bunnerong Rd.
- (g) In terms of the Arriscar report, a toxic outdoor fatality envelope assessed for all wind directions for all of the above intersections would preclude additional developments to the buildings on the site.
- (h) The original Denison St Systra Scott Lister report risk assessed the intersection of Denison St and Wentworth Ave, the transport exit point from the BIP in Denison St and the intersection Denison St and Beauchamp Rd from all wind directions, **annex 18C**.
- (i) There is no basis for the 2019 QRA not to risk assess all of the intersections around the Eastgardens complex as part of an environment assessment.

The 2019 QRA, p 7 notes; The Arriscar report Recommended at Item 2; The risk assessment must be updated to account for an increase in building height up to 70m, taking into account the building wake effects in the dispersion calculations. The increased building height are the proposed commercial buildings that front Bunnerong Rd. The QRA did not update the risk assessment but at p 43, **annex 21: Response** noted; It is our view that the hazards most likely to reach the proposed commercial buildings are dense gas releases which stay at lower levels due to the density of gas v air. Hence, the fact that the office buildings are generally raised above the retail podium (apart from the corner building) significantly reduces the potential impact for this commercial office worker population set.

- (a) Firstly, the QRA has identified that the lower levels are impacted by dense gas release which is from the effects of toxic gases arising from accidents on Denison St or Wentworth Ave.
- (b) Secondly, the updated risk assessment was required to take into account the building wake effects in the dispersion calculations for increases in building height up to 70 m. The building wake effects would impact the fatality risk assessment for the intersection of Wentworth Ave and Bunnerong Rd and along Bunnerong Rd and would not appear to have relevance to the commercial office worker population set above the retail podium when assessing the quantitative criteria.
- (c) P 40 of the QRA, **annex 22**, identifies that the additional new commercial areas commence at the corner of Wentworth Ave and run down Bunnerong Rd.
- (d) The 2019 QRA did not risk assessment the intersection of Wentworth Ave and Bunnerong Rd and along Bunnerong Rd. Arriscar review clearly requires the risk assessment to be updated to include the intersection of Wentworth Ave and Bunnerong Rd and along Bunnerong Rd which the QRA has not done.

The 2019 QRA addresses the extent of risk associated for a commercial re-development of the Eastgardens shopping complex. The 2019 QRA: Figure 6 has exposed the extent of the potential fatality risk from a toxic gas release from a transport incident at the intersection of Denison St and Wentworth Ave arising from the transportation of chlorine from the Orica replacement chlorine plant, which is extreme. This is evidenced by the significant fatality risk difference in the various fatality risk contours presented in 2019 QRA Figure 10 at the intersection of Denison St and Wentworth Ave and those presented in p 46, Figure 6, toxic outdoor fatality envelope. Had the Orica replacement chlorine plant application in 1998 complied with SEPP 33 and HIPAP No 6 as it should have and quantified transport risk as part of the PHA, development consent would need to have been refused on hazard grounds as the proposal would not have compiled with the qualitative criteria and the quantitative criteria in HIPAP No 4. (**Applying SEPP 33: Appendix 4, annex 23**). The same outcome must apply for the Ixom application which should also be refused on hazard grounds.