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Attention: Mr John Studdert

Ethanol Tank Bund No 2 & Road Tanker Loading Bay AS 1940 Compliance

Approval of Mod 19 will allow a major upgrade of the ethanol distillation and storage facilities at this site. This brief report provides information on the proposed upgrade of ethanol storage tanks in Ethanol Tank Bund 2, and on the proposed second road tanker loading bay, located adjacent to Ethanol Tank Bund 2.

1. Layout plan, Drawing No MN6963-007 Rev P09, provides dimensional information on the Tank Bund 2, and the second tanker loading bay.
2. The table and notes attached summarise details of the tanks, tank fittings, bund and road tanker loading area.
3. These 15 m high tanks are approximately 4 m from the bund wall. Tanks on the edge of the bund will be provided with an external screen to address crest locus issues.
4. Depot 51 is an IBC/drum storage area for flammable denaturants, Class 3 PGII. Maximum capacity of this depot is 20,000 litres. This depot is located six metres from tanks in Tank Bund 2. Table 5.3 of AS 1940 requires a separation distance of 6m from tanks to package stores. However, Clause 4.3.1 and Table 4.1 require a greater separation distance, as below.

Capacity of Package Depot	7,000 L	10,000 L	14,000 L	20,000 L
Separation Distance to Storage tank	6 m	7m	8 m	9 m

The capacity of this depot must be reduced to comply with AS 1940.

5. Spillage control for the road tanker loading bay shall be provided as required by Clause 8.2.6 of AS 1940. The pavement of the loading bay shall be graded so that spillage will drain away to a dedicated tank or compound. The capacity of the containment tank shall be at least 9,000 litres.

The provisions incorporated into the design will ensure that Tank Bund 2 and the proposed second road tanker loading area achieve the level of safety required by Australian Standard AS 1940-2017.

Hand Sanitiser Plant:

The old Defat building is separated from tanks in Bund 2 by approximately 5 m. This building is now used for the manufacture of hand sanitiser. A detailed description of the hand sanitiser process is included in the PHA for Mod 18, dated 6 July 2020.

Manufacture of hand sanitiser is a simple mixing process. Glycerine, water and hydrogen peroxide are first premixed in Tank 101 (capacity 6 cu. m.). They are then transferred to Blend Tank 201 (3.5 cu.m.) and ethanol is added to achieve 70% concentration. When adequately mixed the final product is transferred to Tank 301 (3 cu.m.). The final product is then filled into IBCs. Note that Tanks 201 and 301 are blanketed with nitrogen.

Hand sanitiser is manufactured irregularly. The workforce is small, and personnel in this area are trained and familiar with the site.

Table 5.3 of AS 1940 specifies a separation distance of 15 m between storage tanks and office buildings, warehouses, manufacturing and process areas, workshops or amenities blocks on the same premises. This requirement is much greater than the 5 metres provided.

The PHA has assessed the risks associated with both the hand sanitiser manufacture and the ethanol tank storage and has determined that the off-site risk complies with Department of Planning requirements.

There is no reason to believe that an increased separation distance between Tank Bund 2 and the hand sanitiser manufacturing area would decrease the on-site risk. Risk assessment justifies the reduced separation distance between Tank Bund 2 and the hand sanitiser manufacturing area.

C. E Flannery
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Ethanol Tank Bund 2

Tank No.	Tank Working Capacity litres	Tank Diameter m	Max Fill Level m	Tank Height (approx.) m	Distance to Adjacent Tanks m. (approx.)	PV Vent Size/Set Pressure	Emergency Vent Size/Set Pressure	Nitrogen Blanket/ Foam Injection
10	236,000	4.5	15	16	>1.5	150 NB Vac -.22kPa Press 0.75kPa	450 mm weighted	Nitrogen Blanket
11	236,000	4.5	15	16	>1.5	As above	450mm Set Press 2 kPa	As above
12	236,000	4.5	15	16	>1.5	As above	As above	As above
13	236,000	4.5	15	16	>1.5	As above	As above	As above
14	236,000	4.5	15	16	>1.5	As above	As above	As above
15	236,000	4.5	15	16	>1.5	As above	As above	As above
16	236,000	4.5	15	16	>1.5	As above	As above	As above
17	236,000	4.5	15	16	>1.5	As above	As above	As above
18	236,000	4.5	15	16	>1.5	As above	As above	As above

- Notes:**
1. Bund Capacity in accordance with Clause 5.8.2 of AS 1940-2017.
110% of largest tank or 25% of total capacity of all tanks in bund, whichever is greater.
= 531,000 litres. (Bund wall to be raised approx. 400mm, to 1.9m. - Access stairways will be required into the bund.)
 2. Distance between tanks = 1.5 m minimum. Distance from tanks to bund wall approx. 4.5m.
 3. All tanks on edge of bund will be provided with external screen to address crest locus issue.
 4. All tanks are provided with high integrity overfill protection, to control risk of overfilling.
 5. All tanks are provided with nitrogen blanketing, to control the risk of internal tank explosion and tank failure.
 6. Distance from tank shell to road tanker loading connection point is approx. 9 metres.
 7. Road tanker loading bay to be provided with foam deluge system to NFPA requirements.
 8. All tanks are provided with roof sprinkler systems.
 9. Fire water monitors are sited to provide cooling water to tank shells.
 10. Fire monitors have foam capability, and can reach the top of tanks.