



CONSULTANTS ADVICE NOTICE

Project:	Warehouse 3B	Ref No.:	R200159
From:	Renton Parker	Date:	15 th of June 2016
		Issue:	0

RE: Preliminary Hazard Analysis Public Exhibit Concerns

This Consultant Advice has been prepared to address the concerns regarding the storage and handling of Dangerous Goods at the proposed Reckitt Benckiser located at Lot 3B, Oakdale Industrial Estate.

The concerns raised by the resident have been reviewed and distilled into what the consultant interprets as the main concerns which will be addressed in the following.

The main concerns are considered to be:

1. Impacts to society based on the classification of goods (i.e. Dangerous Goods)
2. Impacts on surrounding areas (initiated by accident, terrorism or other) from the facility
3. Facility design to mitigate 1 & 2.

Each concern is addressed in the following.

1. Impacts from the classification of goods (i.e. Dangerous Goods)

Dangerous Goods is a general term assigned to goods which may have properties which make them more dangerous than everyday chemicals or substances. The terminology and classification arose from the need to be able to identify chemicals during transport on road and rail, to ensure storage and handling of these chemicals occurs in a manner that minimises the risks to personnel transporting goods, users on the road, emergency responders in an incident and the environment. There are 9 Dangerous Goods Classes which may have several sub classes. The main classes are;

- Class 1 – Explosives (party poppers, mining explosives, C4, etc.)
- Class 2 – Gases (i.e. helium, oxygen, hydrogen, natural gas, etc.)
- Class 3 – Flammable Liquids (petrol, paints, alcohol, etc.)
- Class 4 – Flammable Solids (matches, calcium carbide, some waxes, etc.)
- Class 5 – Oxidising Agents (bleach which contains calcium hydroxide, ammonium nitrate, etc.)
- Class 6 – Toxic Substances (Nicotine, arsenic, etc.)
- Class 7 – Radioactive Substances (uranium-235 & 238, molybdenum 99, etc.)
- Class 8 – Corrosive Substances (hydrochloric acid, sodium hydroxide, etc.)
- Class 9 – Miscellaneous Dangerous Goods and Articles (molten metal, air bags, environmentally harmful chemicals)

The classification as a Dangerous Goods is governed by the Australian Dangerous Goods Code (ADG) which details the individual tests a chemical must undergo to determine the classification in addition to providing guidance on how chemicals are to be stored during transport. For example, to determine whether a liquid is classified as a flammable liquid it must be shown that at temperatures less than 60°C the liquid will generate flammable vapours.

The warehouse will be a distribution centre for products that will ultimately be sold in retail stores such as Coles, Woolworths, IGA, etc. The Dangerous Goods classes that will be stored in the warehouse are;

- Class 2 – Gases (aerosols such as mortein spray, deodorants, aerogard etc.)
- Class 3 – Flammable Liquids (Silvo silver polish, Brasso metal polish)
- Class 8 – Corrosive Substances (detol bathroom cleaner, easy off bam)
- Class 9 – Miscellaneous Dangerous Goods and Articles (mortein kill and protect, mortein ant sand)

Based on the products being stored, there are no toxic chemicals present within the warehouse. The Conditions of Consent will prevent the operator from storing any Dangerous Goods that have not been approved through the Development Application processes; hence, only those DG classes listed above will be stored. Furthermore, the quantities of goods stored will be limited by the Conditions of Consent.

2. Impacts on surrounding areas (initiated by accident, terrorism or other)

In NSW, development approval is governed by the Environmental Planning Act 1979 and associated Regulation 2000. These legal instruments dictate the approval processes developments must undergo prior to development. Where Dangerous Goods (as discussed above) are stored, these must be assessed against the State Environmental Planning Policy No. 33 (SEPP33). This document details thresholds to determine if a facility requires further assessment as part of the development application. If the quantities of Dangerous Goods are below the applicable thresholds, then no further assessment is required. As the quantities increase above the threshold additional assessment is required.

Additional assessment for facilities storing Dangerous Goods exceeding SEPP33 quantities is the preparation of a Preliminary Hazard Analysis. The guidelines for the preparation of this study can be found in the Hazardous Industry Planning Advisory Paper (HIPAP) No. 6 which is available on the NSW government website. This requires the risks of the facility to be reviewed to determine if they fall below the relevant criteria for adjacent land uses. The warehouse is located in an industrial area with the local residential area located approximately 500 m from the site.

The assessment identifies incidents which may impact off site (i.e. extending over the site boundary). Where incidents are identified to have potential offsite impact (i.e. radiant heat from a fire) they are assessed to estimate the levels of radiant heat observed at the site boundary. If the levels of radiant heat are excessive (i.e. roughly 2.5 times the radiant heat experienced from exposure to sunlight on a hot summer day), then the frequency of the incident (i.e. ignition of a fire) is determined to estimate the overall risk to an observer at the site boundary. The risks from all possible incidents with offsite impacts are added together and compared to the acceptable criteria applicable to the land use. The applicable criteria can be found in HIPAP No. 4 (available on NSW government site).

As the warehouse is not storing bulk quantities of goods (i.e. large tanks of chemicals) the only incident that could potentially impact off site is if the whole warehouse caught fire. It is noted, that

the modelling of these incidents is incredibly conservative; hence, the impact is likely to be overestimated. A full warehouse fire can only occur if several protection systems fail (for example, sprinkler system failure). Based on the frequency of these systems failing, and the potential impact, the acceptable criteria is not exceeded.

Essentially, the impact of this facility on the adjacent land use would be comparable to any general warehouse. The difference is, the chemicals stored within this warehouse may be more volatile which lend themselves to a higher probability that an incident will occur. However, because they are more dangerous, the warehouse is designed to accommodate these differences to minimise these inherent risks such that the impact of the facility on the surrounding land uses is acceptable.

Based on the quantities of Dangerous Goods stored, the Work Health and Safety Regulations 2011 classifies the facility as a Major Hazard Facility. Therefore, to operate the facility it must obtain a license to operate from WorkSafe. The license is granted based on approval of a Safety Case study which is multifaceted in that it assesses the design, operation, emergency response, security, etc. of the facility. One portion of the study is developed in conjunction with the NSW Police Force to ensure that the facility is secure. The license is ongoing and the operators must demonstrate that the facility is complying with the Safety Case to continue to operate. Based on this input, the security of the facility is increased compared to a normal distribution warehouse.

3. Facility design

As noted, the products being stored have increased risks associated with them which, in turn, drives additional design requirements of the facility. As the products are small retail packages, the risks associated are reduced compared to bulk storage as only a small release of material can occur from a failed product. To have a large release, numerous containment failures would be required to occur which is incredibly unlikely due to the quality assurance testing of containers prior to being filled with product, packaged and dispatched.

Due to the products, the warehouse has been designed with guidance from two Australian Standards;

- AS1940-2004 – Storage and Handling of Flammable and Combustible Liquids
- AS3833-2007 – Storage and Handling of Mixed Classes of Dangerous Goods

The main warehouse area (which will store Class 2, 8 and 9 Dangerous Goods) has been designed according to AS3833, while the Class 3 flammable liquids will be stored in a separate area designed according to AS1940. Several of the protection systems for each area are highlighted in the following.

Flammable liquids store

- The flammable liquid store is designed as a bunker which has concrete walls capable of withstanding 4 hours of exposure to fire (i.e. they will remain standing for 4 hours when exposed to fire and prevent heat transfer through the concrete for 4 hours).
- The bunker will have a continuous ventilation system which will disperse and remove any vapours which may occur within the bunker (i.e. from spilled or damaged packages). Removal of vapours significantly reduces the potential for ignition and subsequent fire.
- Electrical equipment within the bunker will be designed such that it will not result in ignition if flammable vapours accumulate (i.e. if the ventilation system fails). This further reduces the potential of ignition within the store.

- The bunker will be fitted with 2 sprinkler systems; ceiling mounted sprinklers and in-rack sprinklers. In the event of a fire, the in-rack sprinklers will activate controlling and potentially extinguishing a fire. If this system fails or is unable to prevent fire growth, the ceiling mounted sprinklers will activate.
- The bunker will be designed to contain approximately 25% of the volume of products stored in addition to 20 minutes of sprinkler output to prevent discharge to the environment. This containment overflows into a secondary containment which will contain 90 minutes of sprinkler and hydrant discharge.

General Warehouse

Due to the small risks associated with the Class 2, 8 and 9 products stored in the general warehouse these products will be stored according to AS3833, although, additional design requirements above those required by this standard have been incorporated into the design.

- The Class 2 DGs will be separated from the main warehouse by a 4 hour fire rated wall. Ensuring that any incident within the Class 2 area is contained and will be unlikely to spread to the general warehouse.
- Electrical equipment installed within the Class 2 DG area will be designed such that it does not result in ignition if flammable vapours accumulate (i.e. punctured aerosol can).
- The Class 2 DGs will be protected by in-rack and ceiling mounted sprinklers which will activate to control and suppress a fire.
- The Class 8 and 9 DGs will be stored in the main warehouse in designated areas to ensure products are separated as required by the standards.
- The general warehouse area is bunded to contain 90 minutes of sprinkler and hydrant discharge to prevent environmental contamination in the event of an incident.

It is hoped that the above addresses the concerns raised; however, if additional clarification is required please address these concerns through the appropriate channels.

For and on behalf of CORE Engineering



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