Stephenson

Environmental Management Australia

SEPP 33 HAZARD ANALYSIS REPORT

INDEPENDENT PRINT MEDIA GROUP

WARWICK FARM, NSW

PROJECT NO.: 4157/08/A

DATE: OCTOBER 2008

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1 INTRODUCTION

1.1 OVERVIEW

Independent Print Media Group (IPMG) is seeking approval from the Director-General for the development of a printing facility and associated activities at Warwick Farm, New South Wales.

The proposed site is at 23 Scrivener St, Warwick Farm.

IPMG is a market leading print group in Australia with operations extending to pre-media and distribution. Its origins date back to 1887, however since then the company has grown into a multi-million dollar, integrated printing group with the capacity to handle the most demanding print products in Australia.

Stephenson Environmental Management Australia has been engaged by IPMG to conduct a Preliminary Hazard Analysis (PHA) as required by the Director-General's Requirements. Refer to Appendix A for a copy of the Director-General's Requirements.

This PHA is an integral part of the planning and approvals process for a potentially hazardous development in NSW under State Environmental Planning Policy No. 33-Hazardous and Offensive Development (SEPP 33) (1992). Section 1.2 has further details on PHA.

1.2 BACKGROUND TO PHA STUDY

Certain activities may involve handling, storing or processing a range of materials which, in the absence of location, technical or operational controls, may create an off-site risk or offence to people, property or the environment. Such activities would be defined by SEPP 33 as 'potentially hazardous industry' or 'potentially offensive industry'. SEPP 33 applies to any industrial development proposals which fall within these definitions.

SEPP 33 is an enabling instrument (that is, it allows for the development of industry), while ensuring that the merits of proposals are properly assessed in relation to off-site risk and offence before being determined by a consent authority. It overcomes the limitations of previous definitions of 'hazardous industry' or 'offensive industry', which were based on industry type.

The Application Guidelines assist councils and proponents to establish whether a development proposal would fit into such definitions and hence, come under the provisions of the policy.

For development proposals classified as 'potentially hazardous industry' the policy establishes a comprehensive test by way of a preliminary hazard analysis (PHA) to assess the risk to people, property and the environment in the presence of controls. Should such risk exceed nominated criteria of acceptability, the development is classified as 'hazardous industry' and may not be permissible within most industrial zonings in NSW.

1.3 THE SCOPE OF STUDY

The scope of this PHA study covers the:

- Movement, Storage and handling of Dangerous Goods (where relevant)
- Transport (Truck Movements) of the above mentioned Dangerous Goods
- Determination of Offensive Industry and Offensive Storage Establishment as defined by SEPP 33.

The format of this study and context is specifically defined by the SEPP 33 guidelines provided by the NSW Department of Planning.

Land use safety issues, primarily the emergency planning principles and safety management systems associated with the above mentioned Dangerous Goods have been dealt with in a separate report prepared by Sherpa Consulting.

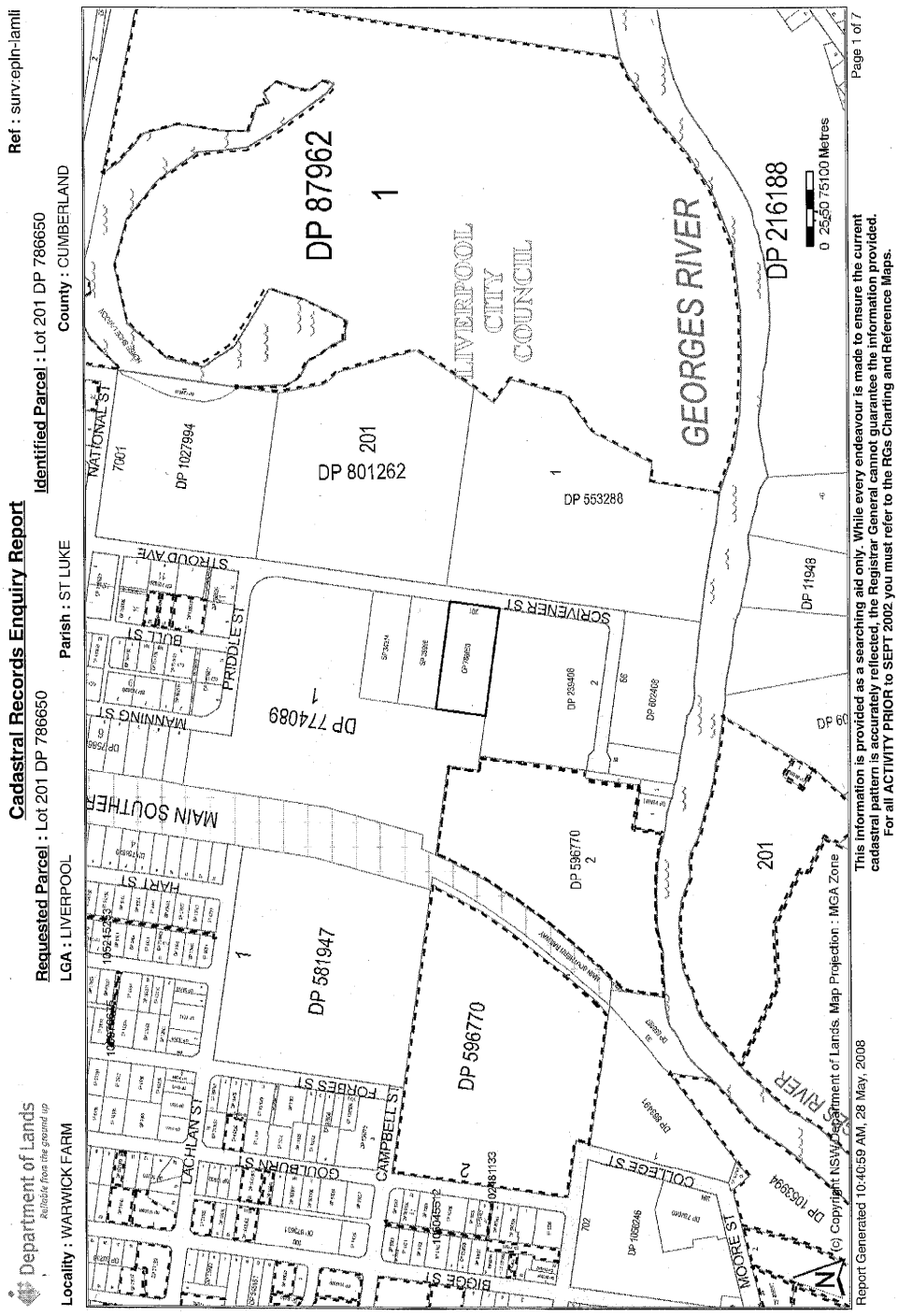
1.4 SITE

The site is located at 23 Scrivener Street Warwick Farm in NSW with the northern boundary adjacent to Priddle Street which intersects with Manning Street at the North West corner of the site. The site has previously been used for many years for production of printed paper products, in particular disposable nappies, by Kimberley Clark Australia

The real property description of the site is Lot 1 DP 774089.

Refer to Figure 1-1 for the location of the site.

FIGURE 1-1 SITE LOCATION



2 DESCRIPTION OF PROPOSED OPERATIONS

2.1 PROPOSED OPERATIONS

2.1.1 OVERVIEW OF MAIN AREAS OF OPERATION

IPMG is a major entity in the Australian print production of newspapers, magazines and catalogues for national distribution. The following groups of activities would occur at the facility:

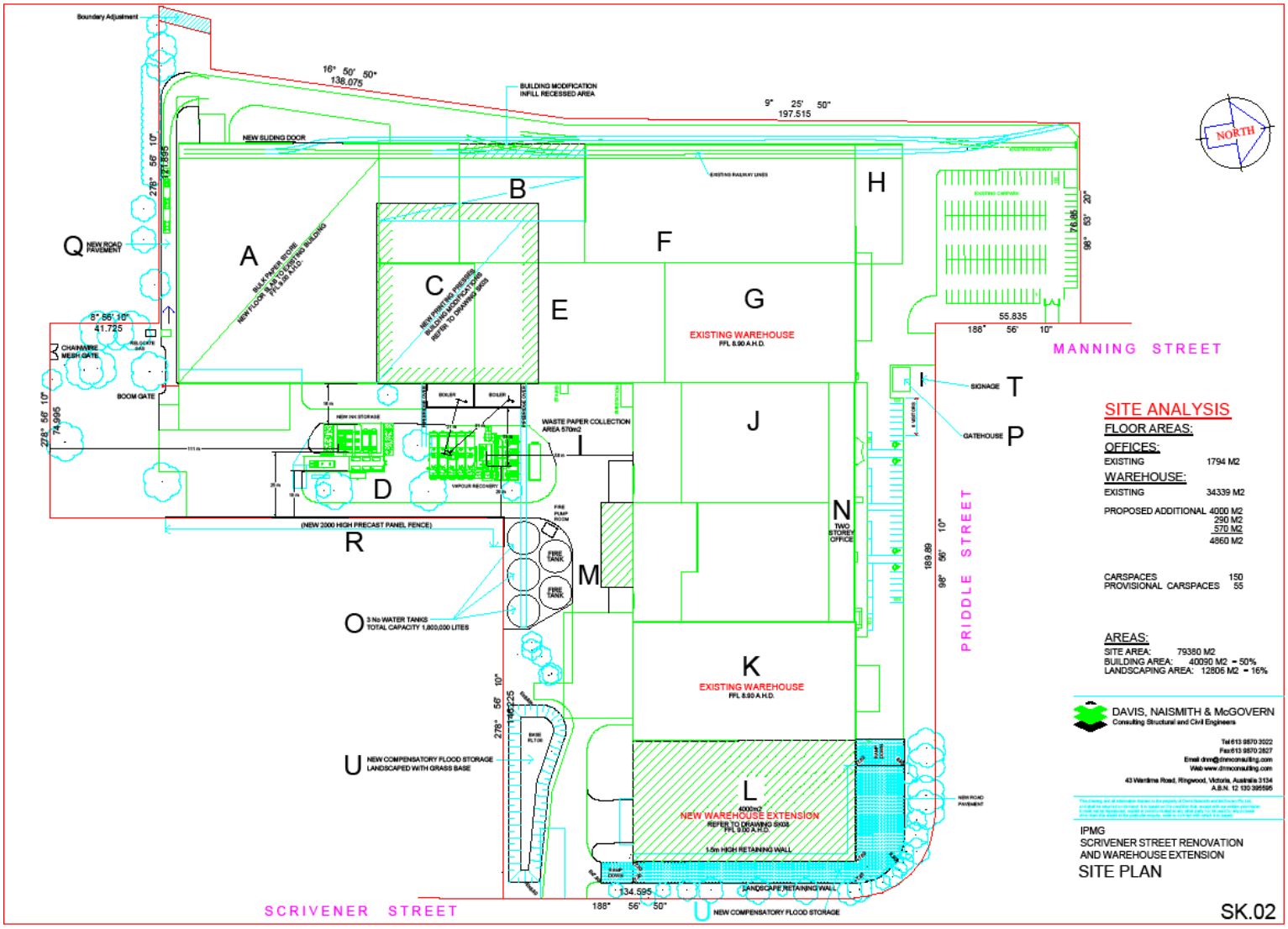
- Receiving
- Warehouse
- Print production
- Binding
- Despatch.

Refer to Figure 2-1. IPMG propose to expand/extend the existing facility by 4,000 m^2 to accommodate its entire operations.

2.2 HOURS OF OPERATION

IPMG is seeking to operate the facility 24 hours per day, seven days per week.

FIGURE 2-1 SITE PLAN



2.3 DESCRIPTION OF MAIN AREAS OF OPERATION THAT MAY GENERATE OR USE HAZARDOUS MATERIALS/DANGEROUS GOODS

2.3.1 INTRODUCTION

The following manufacturing areas will generate or use materials classed as Dangerous Goods:

- Cylinder Preparation and Mechanical Engraving- Corrosive Acids and metals
- Press Room and Vapour Recovery System- Volatile Organic Compounds (VOC's) as toluene solvent.
- Ink Storage – toluene solvent and ink solids consisting of calcium resinate containing non-reactive and/or dibasic hydrocarbon resin of greater than 18 carbon atoms. These resins are the same as those found in trees.
- Solvent Storage – toluene solvent

Sections 2.3.2 and 2.3.3 provide an overview of activities in each area and identify the hazardous materials that will be generated or used on-site.

2.3.2 USES OF HAZARDOUS MATERIALS/DANGEROUS GOODS: MANUFACTURING AREAS

PRE-PRESS AREA, CYLINDER PREPARATION AND MECHANICAL ENGRAVING

Printing cylinders are electroplated, digitally imaged, then re-plated, stored, ready for distribution to the press room.

The following steps make up the cylinder preparation and mechanical engraving process:

- Stripping Station
- Degreasing Station
- Copper Bath
- Polishing
- After copper polishing
- Engraving
- Degreasing station
- Chrome tank
- Chrome Polishing

Liquid Hazardous Materials/Dangerous Goods

- Sulphuric Acid
- Chromic Acid
- Waste – Thin sludge and spent Sulphuric Acid

Potentially hazardous waste effluent would be generated from this area. All plating would be conducted through a closed loop recovery system, with effluent from this process being treated onsite by the Vacuum Distillation System from which, 95% is recycled and the remaining 5% of concentrated chrome thin sludge will be disposed of by approved reprocessor or specialist recovery contractors.

PRESS ROOM

The press room will consist initially of 2 x 8 unit rotary presses, which are located side by side with provision for a third press.

The paper rolls are delivered automatically to the reel loaders at the rear of the press next to the paper store.

The paper is unwound from the roll and printed on 2 sides by printing units, each primary colour is applied separately to both sides of the paper in a continual process.

The solvent used to dilute the ink solids and make the ink flow is toluene. The toluene vapour emitted from the press during the printing process will be collected via sealed hoods and ducted back to the Vapour Recovery System (VRS) which is located external to the press room. The solvent (toluene) will be separated from the extraction air stream using activated carbon adsorption techniques and steam separation recovery processes. The recovered solvent will be reused in the ink dilution and printing process or sold back to the ink manufacturer.

The printed product is then cut, folded and delivered to the stacking and handling equipment which can trim bundle and palletise the printed material, this equipment is located next to the Work In Progress store.

Liquid Hazardous Materials/Dangerous Goods

The following liquid hazardous materials/Dangerous Goods will be used as raw material or generated in this Press Room process area:

- Ink carrier – toluene solvent
- Spillages of ink solids – solids constituted as outlined in Section 2.3.1

2.3.3 PAPER STORAGE AREAS AND ANCILLARY UTILITIES

No Dangerous Goods/chemicals defined in SEPP 33 will be used or generated in these areas. However, the stored paper may be classed as a hazardous material which will be dealt with in a separate multiple risk hazard analysis report.

2.3.4 INK RECEIVING AND STORAGE AND TOLUENE STORAGE TANKS

Ink would be received via rigid or articulated semi trailer trucks transporting specialised Stolt-style shipping containers containing semi liquid inks consisting of 50% solids and 50% toluene solvent at the bunded ink (receiving) dock. Containers will be 20 foot in length and would be unloaded while the truck waits.

All volatile toluene solvent vapours emitted during the transfer of ink from the tanker transport to the storage tank, where delivered ink displaces air in the headspace of the storage tank, will be returned to the tanker transport via a sealed pumping system. The air displaced from the tank will be the equivalent volume to the liquid delivered to the storage tank from the transport tanker. This returned vapour is then recovered by the manufacturer or transport company at their purpose designed terminal facility. Therefore this presents a closed loop with solvent emissions and odours being contained in the transport vessel and not emitted to atmosphere on-site.

Liquid Hazardous Materials/Dangerous Goods

The following liquid hazardous material /Dangerous Goods will be used in this area:

- Toluene

3 PRELIMINARY HAZARD ASSESSMENT

3.1 INTRODUCTION AND APPROACH

SEMA undertook an assessment to determine if the printing process and the chemicals used and stored on site would trigger any Screening Threshold requirements of the *State Environmental Planning Policy (SEPP) 33 – Preliminary Hazard Assessment (PHA).*

The approach taken in this report has been as per the flow diagram presented in Appendix B of this report titled Figure 4 Risk Screening Procedure as presented in SEPP 33.

3.2 NATURE AND QUANTITY OF HAZARDOUS MATERIALS/DANGEROUS GOODS:

3.2.1 STORAGE AND PROCESS VOLUMES

Paper rolls, ink, solvent, acid, plating materials and copper metal are proposed to be stored on site.

3.2.2 CHEMICALS AND MATERIALS

The following chemicals and materials will be used in the process:

- Toluene
- Inks (brought to site in concentrated semi solid form (50% by volume) which are then diluted with toluene)
- Sulphuric Acid (less than 1.84 gram per Litre (g/L) and 2% solution) – for cylinder preparation.
- Chromic Acid solution will be transported to site in 1,000 litre containers of a ready-to-use concentration of 0.5 kg/L.

3.2.3 DANGEROUS GOODS CLASSIFICATION OF ABOVE CHEMICAL MATERIALS

The following Packaging Codes (PG) have been drawn from the *Australian Dangerous Goods Code Volume 1 – Requirements and Recommendations and Volume 2 – Technical Appendices for the Chemicals and Materials* nominated for use in this rotogravure printing process on the proposed site at Warwick Farm:

- Toluene – 3PGII
- Inks and Varnish (containing 50% toluene) – 3PGII
- Sulphuric Acid (less than 1.84 kg/L) – 8 PGII
- Sulphuric Acid (2%) – 8 PGII
- Chromic Acid Solution – 8PGII or 8PGIII.

3.2.4 OFFENSIVE INDUSTRY AND OFFENSIVE STORAGE ESTABLISHMENT CLASSIFICATION

SEPP 33 defines:-

- Offensive Industry as a development for the purposes of an industry which, when all measures proposed to reduce or minimise its impact on the locality have been employed (including, for example, measures to isolate the development from existing or likely future development on other land in the locality), would emit a polluting discharge (including, for example, noise) in a manner which would have a significant adverse impact in the locality or on the existing or likely future development on other land in the locality.

- Offensive Storage Establishment as any establishment where goods, materials or products are stored which, when in operation and when all measures proposed to reduce or minimise its impact on the locality have been employed (including, for example, measures to isolate the establishment from existing or likely future development on other land in the locality), would emit a polluting discharge (including, for example noise) in a manner which would have a significant adverse impact in the locality or on the existing or likely future development on other land in the locality.

4 CONSEQUENCE ANALYSIS: HAZARDOUS MATERIALS STORAGE AND USE

4.1 STORAGE VOLUMES

The storage volumes for each of the chemicals identified in Section 3 and the associated SEPP 33 Screening Threshold Quantities are summarised in Table 4-1.

If any of the tests result in a screening threshold being exceeded the proposed development should be considered potentially hazardous and SEPP 33 will apply. In such cases, a preliminary hazard analysis (PHA) will be required to be submitted with the development application.

TABLE 4-1 STORAGE QUANTITY AND SEPP 33 SCREENING THRESHOLD QUANTITIES

Material and Dangerous Goods Classification	Proposed Storage Quantity per month	Actual Proposed Distances to Boundary (m)	SEPP 33 Screening Threshold Quantities(Refer Appendix B of this report and Table 1 of SEPP 33)
Toluene Solvent (3PGII) and Inks and Varnishes (50% toluene)	145 cubic metres	25	> 22 metres to boundary
Sulphuric Acid (<1.84 kg/L) (8PGII)	2 cubic metres	--	25 (Class 8 PGII) cubic metres
Sulphuric Acid (2%) (8PGII)	7.1 cubic metres	--	25 cubic metres
Chromic Acid(500 gram/Litre) (8PGII or 8PGIII)	2 cubic metres	--	25 tonne or 25 cubic metres (Class 8PGII) or 50 tonne or 50cubic metres (Class 8PGIII))

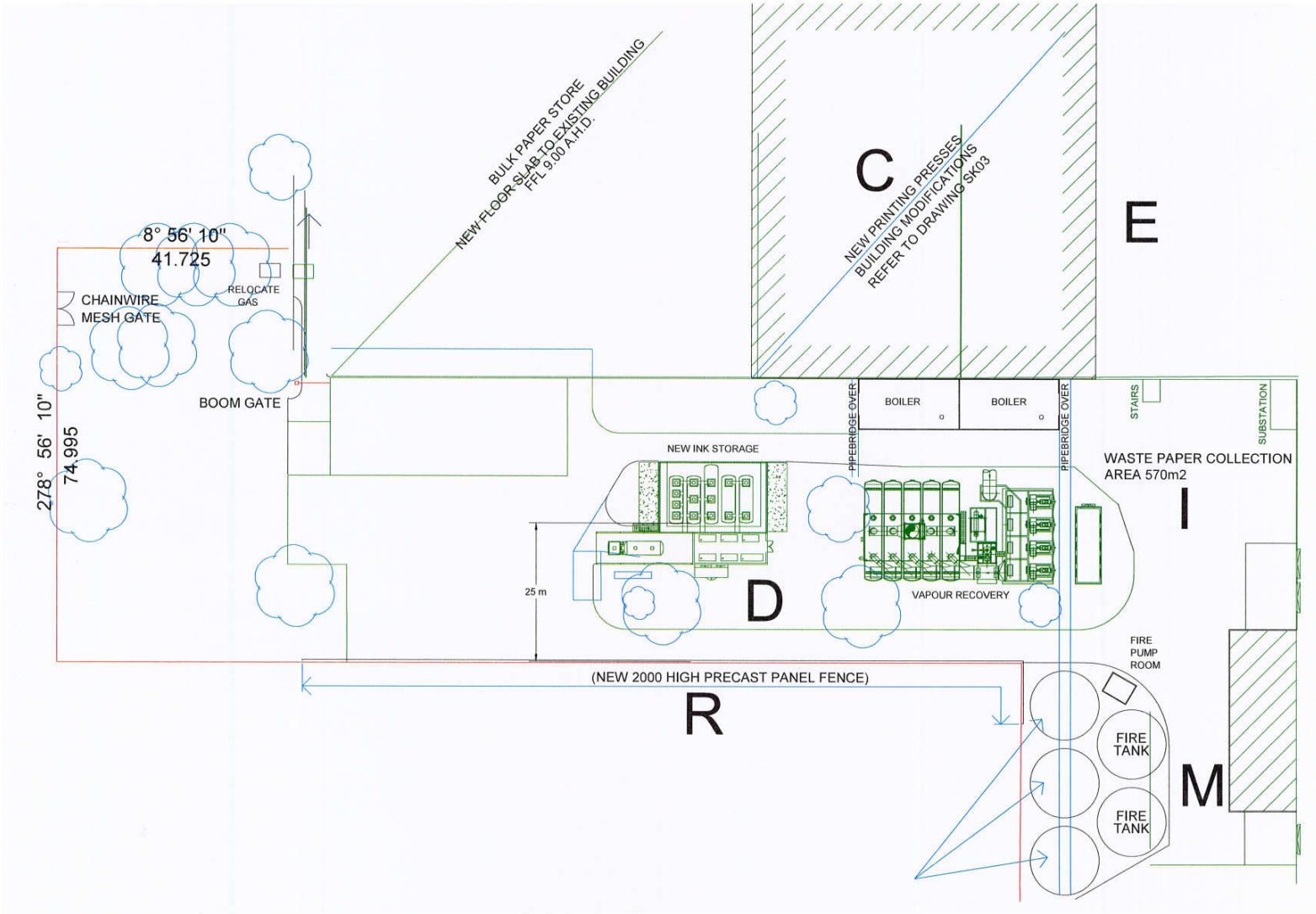
Refer to Figure 4-1 for site layout drawing showing location of the storage areas of the Dangerous Goods and the distances to the nearest boundary.

The following summarises the overall consequences of storage of the proposed materials presented in Table 4-1:

- All acid solutions do not trigger SEPP33 Screening Threshold Quantities
- Toluene and Bulk Ink storage of 145 cubic metres per month (cumulative total which is made up of 80 m^3 of recovered toluene and 40 m^3 of toluene solvent as ink carrier and 25 m^3 stored as varnish constituent) of *Dangerous Goods Code* Class 3PGII flammable liquid would require a minimum buffer distance to the nearest boundary of 22 metres.
- The current design has the toluene and ink storage tanks located at 25 metres from the nearest boundary and hence does not trigger SEPP 33 Screening Threshold for Class 3 PGII flammable liquids. Figure 4-1 presents the location of these storage tanks and the relevant distances to boundary.

- The ink solids consist of high melting point resinates are generally not volatile. However, in the unlikely case that this ink was ignited then it would burn with a low temperature flame releasing black smoke consisting of alkyds, aldehydes and phenolic compounds. These emissions would be not dissimilar to those emitted during the combustion of wood. There are no isocyanates in this ink and therefore no potential cyanide emissions in the combustion products of an ink fire.
- An ink fire would be addressed in the same manner as a petroleum fire and the engineered solution would be to have an automatic foam suppression fire fighting control system installed.

FIGURE 4-1 CHEMICAL STORAGE AREAS AND DISTANCES TO BOUNDARY



5 TRANSPORTATION OF DANGEROUS GOODS AND OTHER CHEMICALS

5.1 TRANSPORTATION DETAILS

The SEPP 33 Transportation Screening Thresholds relating to the number of vehicle movements and associated minimum quantity per trip are summarised in Table 5-1. Table 5-2 summarises the actual trips for each Dangerous Good.

SEPP 33 uses Transportation Screening Thresholds to determine whether a transport route study is required as part of the preliminary hazard analysis. Table 2 of *Applying SEPP 33* nominates these transportation screening thresholds for each Class of the Dangerous Goods Code.

When applying SEPP 33 the Department of Planning advise that:-

> "The proposed development may be potentially hazardous if the number of generated traffic movements (for significant quantities of hazardous materials entering or leaving the site) are above the annual or weekly cumulative vehicle movements shown in Table 2.
>
> If the proposal is found to be potentially hazardous with respect to transportation, a route evaluation study should be completed in accordance with the route selection guidelines prepared by the Department of Planning".

TABLE 5-1 TRANSPORTATION SCREENING THRESHOLDS (REF. TABLE 2; SEPP 33)

Chemical/Dangerous Goods Class	Vehicle Movements (Cumulative Annual)	Vehicle Movements (Peak Trips per Week to Site)	Minimum Quantity* Per Load (tonnes) Bulk	Minimum Quantity*Per Load (tonnes) Package
Toluene (3PGII)	> 750	> 45	3	10
Ink and Varnish (50% Toluene) (50% 3PGII)	> 750	> 45	3	10
Sulphuric Acid (<1.84 kg/L) (8 PGII)(Non-Fuming)	> 500	> 30	2	5
Spent Sulphuric Acid (2%) (8 PGII)	> 500	> 30	2	5
Chromic Acid (solution) (8 PGII or 8 PGIII)	> 500	> 30	2	5

Key:
> = greater than
% = percentage
kg/L = Kilograms per Litre
m^3 = cubic metres

Note:* **Minimum Quantity:** If quantities are below this level, the potential risk is unlikely to be significant unless there are a large number of traffic movements (Ref SEPP 33, Table 2)

TABLE 5-2 PROPOSED TRANSPORTATION OF DANGEROUS GOODS AS CLASSIFIED IN PREVIOUS TABLE 5-1

Chemical/Dangerous Goods Class	Trips per Week to Site	SEPP 33 Transportation Screening Threshold Quantities (Vehicle Movements Peak Trips per Week to Site)	Proposed Quantities Per Trip	Minimum Quantity per trip below which the potential risk is considered insignificant
Toluene (3PGII)	2	> 45	15 tonnes (17m^3) of recovered toluene solvent	10 tonnes
Ink (50% Solids) (50% 3PGII)	4	> 45	15 tonnes total	10 tonnes
Sulphuric Acid (<1.84 kg/L) (8 PGII)(Non-Fuming)	0.25	> 30	0.05 tonne (0.03 m^3) bulk	5tonnes
Spent Sulphuric Acid (2%) (8PGII)	0.25	> 30	0.065 tonne	5 tonnes
Chromic Acid (solution) (8 PGII or 8 PGIII)	0.5	> 30	0.090 tonne	5 tonnes

Key:
< = less than
% = percentage
kg/L = Kilograms per Litre
m^3 = cubic metres

From the data presented in Table 5-2 it can be concluded that the number of trips and quantity of Class 8 PGII Dangerous Goods carried during those trips does not trigger the SEPP 33 Transportation Screening Thresholds.

However, for Class 3 PGII, there will be approximately 6 deliveries per week (approximately 300 per year) of 15 tonnes. Deliveries of 10 tonnes or less are considered not significant in SEPP 33. Refer previous Table 5-1. Whilst the quantity per load (15 tonnes compared with 10 tonnes minimum) is enough to warrant consideration of the average weekly vehicle movements, six movements per week compared with the Transportation Screening Threshold of 45 peak vehicle movements per week, is probably not enough to trigger a transport study as part of a preliminary hazard analysis.

Appendix B presents SEPP 33 Screening Threshold Quantities and Figures and definitions.

5.2 SAFEGUARDS

5.2.1 PLANT

Safeguard measures have been incorporated into the design of the plant and will be in place to protect the plant. These safeguards, including fire and risk, have been dealt with in the multiple hazard analysis report prepared by Sherpa Consulting

However, one of the operational safeguards which has been designed into the process will enable all volatile toluene solvent vapours that would have been emitted during the transfer of ink from the tanker transport to the storage tank to be returned to the tanker. That is, the delivered ink will displace air in the headspace of the storage tank which will then be returned to the tanker transport via a sealed pumping system. The air displaced from the tank will be the equivalent volume to the liquid delivered to the storage tank from the transport tanker. This returned vapour is then recovered by the manufacturer or transport company at their purpose designed terminal facility. Therefore this presents a closed loop with toluene solvent emissions and odours being contained in the transport vessel and not emitted to atmosphere on-site.

5.2.2 TRANSPORT OPERATIONS

Transportation safeguards include:

- First aid fire fighting provisions near transfer points to BCA requirements can assist in extinguishment
- Heavy vehicle truck routes as required by RTA to be followed.
- All relevant bunding at bulk load transfer points on-site.

6 CONCLUSIONS: OVERALL CONSEQUENCES, RISK ASSESSMENT & LAND USE SAFETY IMPLICATIONS

The following conclusions are drawn from the data and assessment presented in this document:-

- **Overall Dangerous Goods Storage:** Total solvent, acids and metals stored on site will not exceed Screening Thresholds as defined by SEPP 33

- **Transport:** The number of vehicle movements to deliver these Dangerous Goods and the quantity of Class 8 PGII Dangerous Goods will not exceed SEPP 33 Transport Screening Thresholds.

- The quantity per load for Class 3PGII Dangerous Goods could be enough to warrant consideration of the average weekly vehicle movements. However, six movements per week compared with a peak weekly Transportation Screening Threshold of 45 per week is not enough to trigger a transport study as part of the preliminary hazard analysis for an on-site process which is not potentially hazardous.

- **Fire Fighting Engineered Solution:** The installation of an automatic foam suppression system is recommended to address the unlikely chance of an ink fire.

- **Offensive Industry and Offensive Storage Establishment:** These categories, as defined by SEPP 33, do not apply to this proposed development.

- **Conclusions:** The Screening Tests conducted on the site for the proposed development do not exceed any SEPP 33 Screening Threshold for both the storage and use of Dangerous Goods on-site. Therefore, this proposed development is **Not Potentially Hazardous** which means SEPP 33 does not apply.

- **Further Work:** Thus, any further Preliminary Hazard Analysis and the associated Route Evaluation/Transport Study is **not** required under SEPP 33.

APPENDIX A – DIRECTOR-GENERAL REQUIREMENTS

APPENDIX B – SEPP 33 INFORMATION

TABLE 3. SCREENING THRESHOLD QUANTITIES

Class	Screening Threshold	Description
1.2	5 tonnes	or are located within 100 m of a residential area
1.3	10 tonnes	or are located within 100 m of a residential area
2.1	(LPG only — not including automotive retail outlets)	
	16 m^3	if stored above ground
	64 m^3	if stored underground or mounded
2.3	5 tonnes	anhydrous ammonia, kept in the same manner as for liquefied flammable gases and not kept for sale
	1 tonne	chlorine and sulfur dioxide stored as liquefied gas in containers <100 kg
	2.5 tonnes	chlorine and sulphur dioxide stored as liquified gas in containers >100 kg
	100 kg	liquefied gas kept in or on premises
	10 m^3	other poisonous gases (measured at metric standard conditions of 101.3 kPa at 15° C)
4.1	5 tonnes	
4.2	1 tonne	
4.3	1 tonne	
5.1	25 tonnes	ammonium nitrate — high density fertiliser grade, kept on land zoned rural where rural industry is carried out, if the depot is at least 50 metres from the site boundary
	5 tonnes	ammonium nitrate — elsewhere
	2.5 tonnes	dry pool chlorine — if at a dedicated pool supply shop, in containers <30 kg
	1 tonne	dry pool chlorine — if at a dedicated pool supply shop, in containers >30 kg
	5 tonnes	any other class 5.1
5.2	10 tonnes/10 m^3	
6.1(a)	0.5 tonnes/0.5 m^3	
6.1(b)	2.5 tonnes/2.5 m^3	
6.2	0.5 tonnes/0.5 m^3	includes clinical waste
7	all	should demonstrate compliance with Australian codes
8	5 tonnes/5 m^3	packaging group I
	25 tonnes/25 m^3	packaging group II
	50 tonnes/50 m^3	packaging group III

Note: *The classes used are those referred to in the Dangerous Goods Code and are explained in appendix 6.*

FIGURE 5. CLASS 1.1 EXPLOSIVES

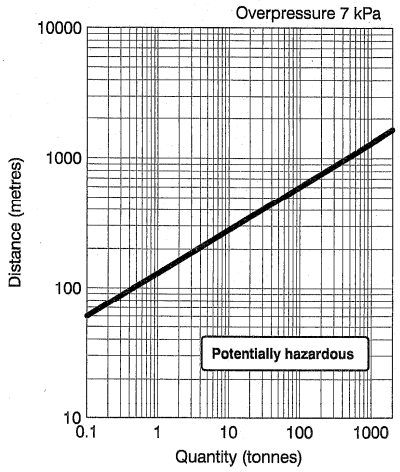


FIGURE 8. CLASS 3PGI FLAMMABLE LIQUIDS

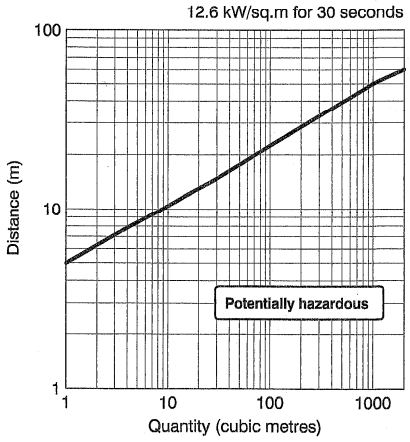


FIGURE 6. CLASS 2.1 FLAMMABLE GASES PRESSURISED (EXCLUDING LPG)

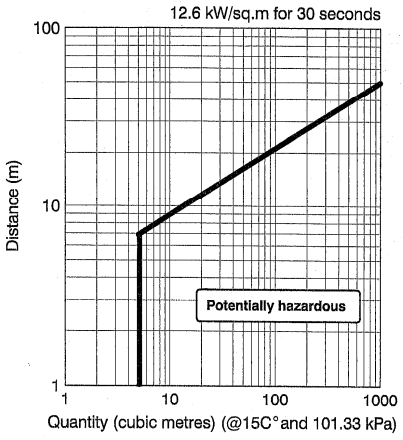


FIGURE 7. CLASS 2.1 FLAMMABLE GASES LIQUEFIED UNDER PRESSURE (EXCLUDING LPG)

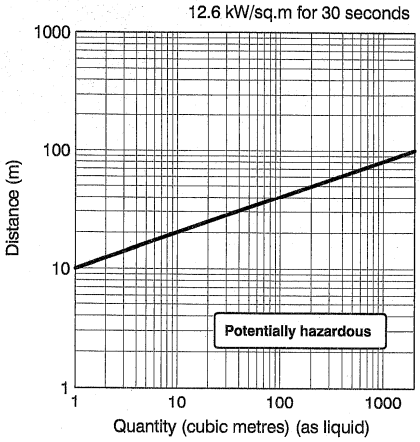


FIGURE 9. CLASS 3PGII AND PGIII FLAMMABLE LIQUIDS