Goodman Property Services DG Review for Metcash Bungarribee

- NW00169 – DG Review- RPT DRAFT - Rev C
- 31st August, 2010

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Document history and status

Revision	Date Prepared	Prepared by	Reviewed by	Date reviewed	Comment
A	19th August, 2010	L Gawecki			Draft
B	23rd August, 2010	L Gawecki	D McKechnie	23rd August 2010	Draft
C	31st August, 2010	L Gawecki		31st August, 2010	Draft

Distribution of copies

Revision	Copy no	Quantity	Issued to
A	1	1	Metcash / Goodman Project Team
B	1	1	Metcash / Goodman Project Team
C	1	1	Metcash / Goodman Project Team

Printed:	
Last saved:	
File name:	NW00169 – DG Review
Author:	L Gawecki
Project manager:	L Gawecki
Name of organisation:	Goodman Property Services Pty Ltd
Name of project:	Metcash
Name of document:	DG Review
Document version:	DRAFT REV C
Project number:	NW00169

EXECUTIVE SUMMARY

Goodman Property Services (Aust) Pty Ltd are currently preparing a Part 3A Project Application for the Metcash Distribution Centre to be located at the Bungarribee Industrial Estate in Western Sydney. Goodman require a review of the requirements for storage of dangerous goods against the requirements of;

- State Environmental Planning Policy # 33 (SEPP33);
- Relevant Australian Standards, including AS 1940, AS 1596 and AS 2202 and
- Relevant WorkCover Regulations (Storage of Dangerous Goods) 2005.

Sinclair Knight Merz (SKM) were subsequently engaged by Goodman to undertake the dangerous goods review study.

This report, findings and recommendations provide Goodman with a checklist of remaining necessary actions to address the dangerous goods design layout for the racking and safety issues raised as a result of the dangerous goods risk review. In summary these issues include

1. DG licence required for site – An FDG01 form to be completed and submitted prior to occupation.
2. Manifest Qty exceeded for Class 2.1 – An Emergency plan is to be prepared for the site and submitted to NSW FB for comment. See Section 7 for details.
3. No PHA required to accompany Part 3A Project Application as the SEPP 33 Screening levels are not exceeded.
4. Bulk Storage quantities of LP Gas, Ammonia to be located in accordance with Australian Standards as provided in Section 6.
5. ICADS stores racking layout yet to be finalised – use Table 3 for guidance on layout and separation of dangerous goods by class.

All action items are intended to reduce the risks identified by the addition of appropriate controls as listed in the review report. All actions items are to be addressed by Goodman or occupier as part of the risk review and design process.

The operation of the proposal will include appropriate safety features, including all requirements of WorkCover and the relevant Australian Standard. These features should ensure minimum risk to adjacent landowners and the environment.

Contents

1. INTRODUCTION 5
2. Purpose 5
3. SCOPE and LIMITATIONS 5
   - 3.1. SCOPE 5
   - 3.2. LIMITATIONS 5
4. Statutory Framework 6
5. METHODOLOGY 7
   - 5.1. Process Adopted and Assessment Data 7
6. Australian Standard Requirements 8
   - 6.1. Dangerous Goods Storage 9
7. Dangerous Goods Regulation 2005 requirements 12
   - 7.1. Chapter 6A.3 – Obligations of Occupiers or employers 12
8. SEPP 33 Screening Analysis 19
9. WorkCover Requirements 20
   - 9.1. Dangerous Goods Proposed 20
   - 9.2. Alcohol Products 20
   - 9.3. Mixed dangerous Goods Storage Layout Options 20
10. CONCLUSION & Recommendations 23
11. Codes & References 24
12. APPENDIX A – Dangerous Goods Storage 25

1. Introduction

Goodman Property Services (Aust) Pty Ltd (hereafter known as Goodman) are currently preparing a Part 3A Project Application for the Metcash Distribution Centre to be located at our Bungarribee Industrial Estate in Western Sydney. In order to identify the Dangerous Goods requirements, Goodman require a review of the dangerous goods stored against the requirements of SEPP33, relevant Australian Standards and WorkCover legislation (OH&S Act 2000, and Dangerous Goods Regulations 2005).

This dangerous goods risk review was conducted at the request of Mr Richard Seddon, of Goodman, who has engaged the services of SKM to undertake the Dangerous Goods Risk Review.

2. Purpose

The purpose of this report is to assess the adequacy of dangerous goods storage systems against;

1. AS 1940 – 2004 " The Storage and Handling of Flammable and Combustible Liquids"
2. AS 1596 – 2004 " The Storage and Handling of LP Gas"
3. AS 2202 – 2004 " The Storage and Handling of Anhydrous Ammonia"
4. OH&S Act 2000, and Dangerous Goods Regulations 2005
5. NSW DoP , State Environmental Planning Policy # 33 (SEPP 33)

Under the new Dangerous Goods regulations, under NSW Workcover, employers and controllers of dangerous goods in the workplace have additional responsibilities. Key responsibilities, amongst others, are to apply hazard identification and risk assessment techniques to better control risks.

3. Scope and Limitations

3.1. Scope

The scope of this assessment is limited to the design documentation and technical documents referenced in this report.

The scope of this dangerous goods assessment is to provide a risk review of proposed dangerous goods storage systems and procedures against the relevant Australian Standards, and to outline the NSW Occupational Health & Safety (Dangerous Goods) Regulations 2005 requirements relevant to the proposal.

3.2. Limitations

The following limitations apply to the assessment:

- The Dangerous Goods review considers only the Dangerous Goods storages proposed at Metcash, Bungarribee Industrial Estate in Western Sydney. And no other site.

- The assessment does not consider the requirements of legislation other than the nominated sections of the OH&S (Dangerous Goods) Regulations 2005
- The assessment does not incorporate the detailed requirements of Australian Standards, other than those mentioned in this report;
- Generally the assessment does not incorporate the detailed requirements of the Building Code of Australia (these are assumed to be addressed at Construction Certificate (CC) stage);
- Certain action items listed in this report, for example, the production of Workplace Activity Statements, are outside the scope of this review. However, SKM can assist in the implementation of the action items on a fee-for-service- basis if required.
- The assessment does not cover the operational and organisational safety controls, such as staff safety training, emergency planning etc as these are to be covered by Metcash (building tenant) OH&S systems.

4. Statutory Framework

The new OH&S (Dangerous Goods) Regulations 2005 are called up by the Occupational Health & Safety Act 2000. Section 6A comprises the new operational and organisational safety requirements that will generally cover;

- Occupiers to obtain MSDS for all dangerous goods
- Occupiers to undertake risk assessments and record safe work procedures/practices
- Containing spills
- Training of personnel
- Planning for emergencies, etc

From 1st September, 2006 these requirements apply to all workplaces that use, handle or store dangerous goods. In this regard once the facility is commissioned SKM would be well placed to assist the Metcash in any review of operational and organisational OH&S systems.

5. Methodology

5.1. Process Adopted and Assessment Data

The following method of assessment has been used in the preparation of this report: -

(i) Discussions held with the Mr Richard Seddon, and Mr Brendon Quinn of Goodman.
(ii) Background notes & documents provided by Mr Brendon Quinn of Goodman.
(iii) Review of storage locations against the relevant Standards, including:
- AS 1940:2004 – The Storage and Handling of Flammable and Combustible Liquids.
- AS 1596 – 2004 " The Storage and Handling of LP Gas"
- AS 2202 – 2004 " The Storage and Handling of Anhydrous Ammonia"

(iv) The OH&S Act 2000, and Dangerous Goods Regulations 2005.
(v) NSW DoP , State Environmental Planning Policy # 33 (SEPP 33)

6. Australian Standard Requirements

The following section of the report (Section 6.1) presents a summary of the Dangerous Goods safety separation distances obligations for Goodmans Metcash Facility, as proposed at Bungaribee Estate, generally based on the relevant Australian standards for dangerous goods storages.

However, the attached table is not exhaustive and reference should also be made to the NSW WorkCovers' Code of Practice for the storage and handling of Dangerous Goods 2005 for completeness (See Reference 3).

6.1. Dangerous Goods Storage

The Design requirements and safeguards required are covered in AS 1940-2004, Chapters 2, 3, 4 and 11 as follows;

Issue / Clause #	Description	AS 1940-2008 Requirement	Comment / Minimum requirements
Clause 2.2 Minor Storage	Provides storage limits for minor storage. Above which a hardened DG store is required.	For Warehouses (in this case the proposed Metcash storage facility). For Class 3 PG I or II liquids, up to 1 litre / 2 m^2 of floor area with no more than 250 litres in any 500 m^2 area. For Class 3 PG III liquids, up to 1 litre / 1m^2 of floor area with no more than 500 litres in any 500 m^2 area.	For manufactured products an additional limit of 10,000 litre or kgs (of which no more than 2000 litres or kgs of Class 3 PG II) fo flammable products can be stored in the warehouse.
Emergency Response Plan (ERP)	Elements to be considered in any ERP	Covered in Section 10. Emergency Management.	Not in Goodman scope.

Issue / Clause #	Description	AS 1596 - 2008 Requirement	Comment / Minimum requirements / Compliance
Clause 6.2 Tank Spacing and Separation	Provides separation distance for aboveground LPG tanks	For aboveground LPG tanks of 8 m^3 or 8000 litres, the std requires a separation distance of 6m from a public place, and 10 m to a protected place (ignition source or other dangerous goods store). Figure 2 - Site layout shows 7m to the boundary. Hence separation distance requirements under AS 1596 are complied with.	Complies.

Issue / Clause #	Description	AS 2202-2003 Storage of Anhydrous Ammonia Requirement	Comment / Minimum requirements
Clause 3.10.2 Tank Spacing and Separation	Provides separation distance for aboveground Ammonia tanks for refrigerated systems.	For aboveground Ammonia tanks of less than 7 m3 or 7000 litres, the std requires a separation distance of ; ■ 15m to a highway or railway ■ 60 m from a public place of public assembly, residential bld and factories (this can be reduced by a factor of 4 (15m) for those facilities with a fenced site, and continuous security) , and ■ 90 m to a institution, hospital or sensitive land use	Complies, Site is; ■ 50 m to Great Western Hwy ■ 15 m from adjacent factory, 600m from nearest church (Arndell park) and 400m to nearest residential bld on Pikes Lane. Note : The Metcash facility will be a fenced site, with continuous or 24 hr security. ■ Over 2 km to Blacktown Hospital. Refer The layout Figure (2) - shows 10m to the boundary, but more than 15 m to adjacent warehouses or neighbours. And Figure 1 – Site Location shows distance to other locations of concern.

7. Dangerous Goods Regulation 2005 Requirements

The following section of the report presents a summary of the Dangerous Goods obligations for the Occupier under the new OH&S (Dangerous Goods) Regulations 2005, specifically section 6A.3. However, the attached table is not exhaustive and reference should also be made to the NSW WorkCovers' Code of Practice for the storage and handling of Dangerous Goods 2005 for completeness (See Reference 3).

7.1. Chapter 6A.3 – Obligations of Occupiers or employers

Clause	Description	Summary Comments / Requirements	Action
174W	Preventing contamination of food and personal products	An Occupier must ensure that dangerous goods cannot contaminate food, food packaging or personal use products, i.e., are segregated.	To be included in risk assessment procedures review.
174ZC	Planning for emergencies	The requirements for an emergency plan to deal with accidental releases of dangerous goods is covered in Ch 14 of the DG code of practice, and the respective standards, for e.g., in the case of flammable liquids storage the additional requirements in Appendix N of AS 1940 – Flammable Liquids Code.	**Site Emergency Plan** - OH&S committee or representative to review current site emergency plan to ensure emergency procedures cover accidental releases of dangerous goods. As the quantity of Aerosols (Class 2.1 stored) exceeds notification quantities (5000 kg), Goodman or Occupier must provide a draft of the revised plan to the NSW Fire Brigade.

Clause	Description	Summary Comments / Requirements	Action
174ZI	Outer warning placards	As Metcash Class 2.1 Storage exceeds notification & placard quantities a HAZCHEM placard is required at the loading dock entrance.	Occupier to provide.
174ZM	Manifests to be maintained	Occupier to provide a Manifest of Dangerous Goods, and consult with the NSW Fire Brigades to confirm location of manifest.	Occupier to provide.
174ZR	Notification to Work Cover – where DG quantities exceed Manifest quantities the employer must notify Workcover.	As the quantity of Class 2.1 Storage exceeds 5000 kg (Manifest Quantity) Occupier must notify WorkCover, and complete a DG licence application.	Occupier required to complete a Form FDG01 and refer to WorkCover prior to occupation.

Figure 1 – Metcash Site Location

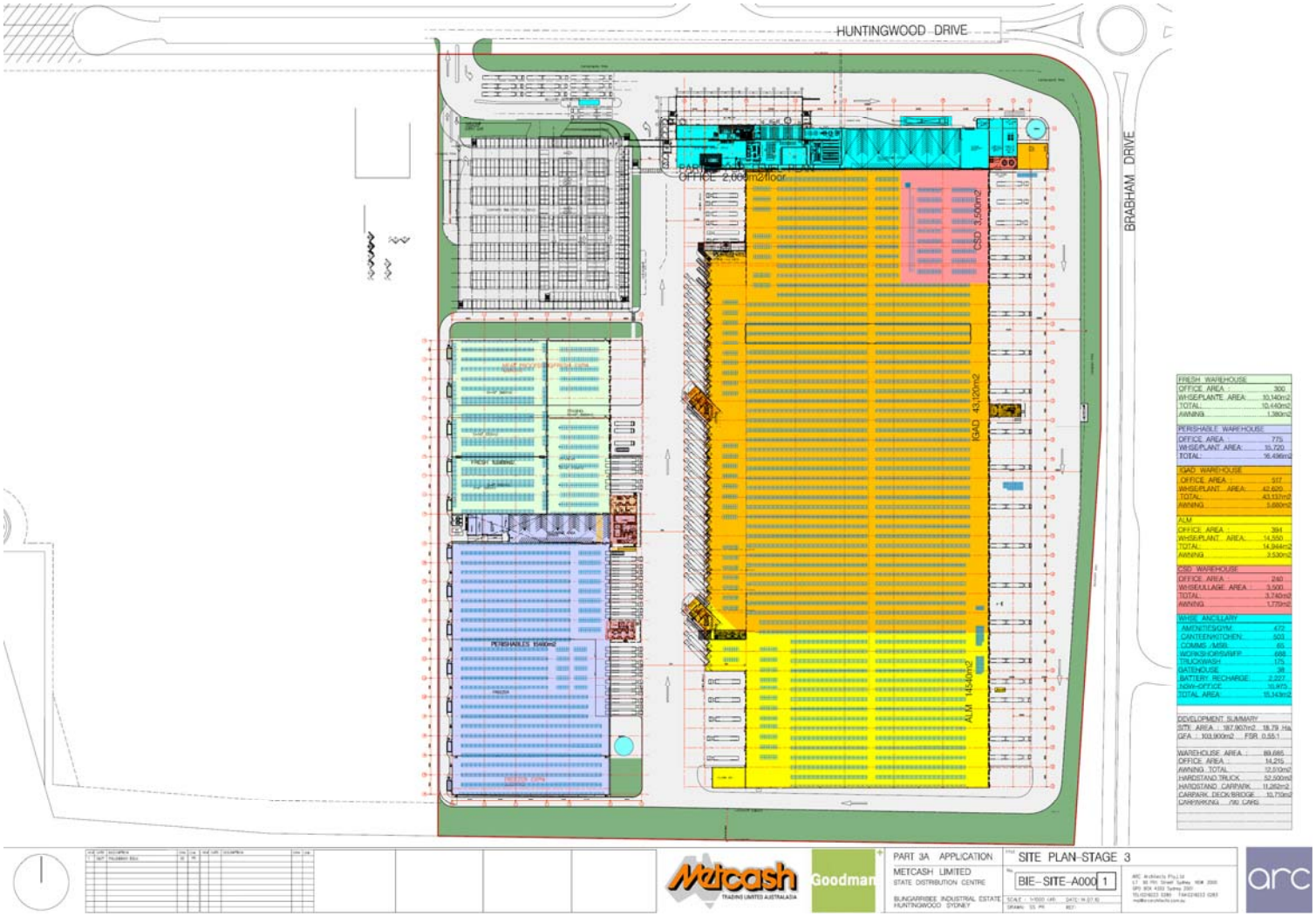

Figure 2 – Metcash - Site Layout Plan

Table 1 – Dangerous Goods Storage in Metcash Warehouse

DG Name/ Description	UN No.	Material Stored	DG Class/ (DG sub-class)	Inventory proposed typical / max	Aust Std Storage Limit	NSW WORK COVER Placard Qty	NSW WORK COVER Manifest Qty	Conclusion / Determination
Class 2.1 flammable gases such as hydrocarbon propellant in aerosol cans.	1001	Butane	2.1	14900 kg		500 kg	5000 kg	Notification and licensing required. Must also comply with Section 6A.3 Obligations of Occupier / or Employer.
Class 3 Flammable Liquids Note: All goods are manufactured goods, stored in containers of 1 litre or less, and are for retail sale.	various	Ethanol, alcohol and spirits	3 PG I,II, and III.	4265 kg	10,000 kg (with 2000 kg of Class 3 PG II)	1000 kg	10000 kg	Notification required. Must also comply with Section 6A.3 Obligations

Class 4 - Flammable Solids , such as matches , shoe polish, etc	various	Phosphorous/ naphthalene	Class 4.2, PG II	240 kg		250 kg	2500 kg	Notification and licensing required. Must also comply with Section 6A.3 Obligations of Occupier / or Employer.
Class 8 – Corrosives	various	Bleach,	Class 8 PG II	2200 kg		250 kg	2500 kg	Notification not required. Must also comply with Section 6A.3 Obligations of Occupier / or Employer.
Class 9 – Miscellaneous	various		Class 9 PG II	132 kg		1000 kg	10000 kg	Notification not required. Must also comply with Section 6A.3 Obligations of Occupier / or Employer.
		Grand Total	21,737 kg or litres					

Table 2 – Hazardous Nature of Materials and Safeguards required

MATERIAL/ QUANTITY	HEALTH HAZARD AND PHYSICAL PROPERTIES	SAFEGUARDS / General Segregation and Layout restrictions
LP Gas / 8000 litres	Class 2.1 Liquefied petroleum gas (LPG). Flammable limits in air 2.5 – 15.0%.	AS per AS 1596.
Anhydrous Ammonia / 4000 litres or 2680 kg.	Class 2.3 Toxic and flammable gas. Liquid Density 670 kg /m^3	AS per AS 2202.
Alcohol / spirits in packages, / 4,300 kgs	Class 3 Flammable Liquids PG II & III mainly	Segregation by 5m to other DG stores. Limits also apply to PG II & PG III as follows; 250 litres / 500 m^2 for PG II and 500 litres / 500 m^2 for PG III
Aerosols /	Class 2.1 Compressed Gases.	If more than 1,000 kg of aerosols or disposables of Class 2.1 (flammable) or 2.3 (toxic) are kept within an imaginary sphere of 5 m diameter, the following conditions should be observed: • adequate ventilation to allow the safe dispersal of gas or vapours that might escape from leaking containers • in an enclosure preventing the projection of containers if involved in a fire • at least 5 m from any other Class of dangerous goods (other than aerosols) or any combustible material • at least 3 m from any fixed ignition source (other than electric ceiling lighting).

8. SEPP 33 Screening Analysis

The following bulk dangerous goods are proposed for Metcash's Bungaribee distribution centre -

- Class 2.1 LP Gas - 1 x 8000 litre LPG storage tank – eastern boundary - up to 16m3 can be stored on-site - separation distances as per AS 1596, 6m from a public place and 10 m to protected works
- 1x 75kg LPG bottle – under awning in dock behind canteen - separation distances as per AS 1596 – minor storage only.
- Class 2.3 Anhydrous Ammonia - 1x 4000 litre ammonia vessel — up to 5 tonnes (7000 litres) can be stored on-site - separation distances as per AS 2022. See table Section 6.

When compared against the SEPP 33 Screening Guidelines (Table 3);

Table 3: General Screening Threshold Quantities

Class	Screening Threshold	Description
1.2	5 tonne	or are located within 100 m of a residential area
1.3	10 tonne	or are located within 100 m of a residential area
2.1	(LPG only — not including automotive retail outlets[1])	
	10 tonne or16 m^3	if stored above ground
	40 tonne or 64 m^3	if stored underground or mounded
2.3	5 tonne	anhydrous ammonia, kept in the same manner as for liquefied flammable gases and not kept for sale

The SEPP 33 storage thresholds are not exceeded – a Preliminary Hazard Analysis is not required to accompany the Part 3A Project Application for the proposal. It is anticipated that the transport of bulk dangerous goods, will be infrequent and lower then the transport risk frequencies indicated in the SEPP 33 Guidelines.

9. WorkCover Requirements

9.1. Dangerous Goods Proposed

The initial data provided by Goodman yielded the list of dangerous goods, their type and quantity stored is summarised in Table 1 – Dangerous Goods Storage summarises the Dangerous Goods type, package size, location, class and maximum inventory required, and whether Notification or licensing is required under current NSW Workcover requirements. Full details of all packaged goods are provided in Appendix A .

Metcash propose to store the dangerous goods in mixed classes, allowing separation distances as required by the code for class separation (usually 3 – 6 m) within the ICADS warehouse store. (Note: Only this store will house DG's of classes 2.1, 3, 4, 8, and 9 – all of which are stored in minor quantities, in manufactured packaging).

Note: No materials are manufactured or decanted on –site.

9.2. Alcohol Products

Dangerous Goods classification for Ethanol solutions including potable liquids such as beverages, flavours and fragrances; is based on alcohol percentage and flash point.

- Solutions below 24 per cent by volume are not classified as dangerous goods. In this case most beverages, spirits, wine etc stored would be either non-dangerous goods or Class 3 PG III by definition.
- Solutions above 24 per cent and up to 70 per cent are assigned to Packing Group III even if their flashpoints are below 23oC.
- Solutions above 70 per cent are in PG II. And are limited to no more than 2000 kg or litres on-site.

Racking could be colour coded to ensure storage of like dangerous goods (e.g., spirits and alcohols of Class 3 PG II or PG III are located in 500 kg batches in an area of no more than 500 m^2. These areas are to be separated from other dangerous goods by at least 6 m.

Based on the proposed list of material stored, a summary table of material properties, potential environmental hazards and suggested safeguards employed are given in Table 2 – Hazards of materials.

Whilst a hardened Dangerous goods store is not required, the site will require a DG license for the DG's stored, and the storages are to be stored and handled in accordance with the NSW Dangerous Goods Regulations 2005 (Reference 2).

9.3. Mixed Dangerous Goods Storage Layout Options

One relatively straight forward storage option is to colour code the racking layout to assist easy identification and retrieval of various goods. Table 3 – Dangerous Goods Storage in Metcash Warehouse, provides a colour code and separation distance between different

DG storages. In general, each dangerous goods area is to be separated from adjacent storages by at least 5m.

Note also that dangerous goods of different classes cannot be stacked above each other, even if separated by a 5m buffer. Also, dangerous goods are best stored on the lowest rack to avoid spillage onto goods below.

Description	Material Stored	DG Class/ (DG sub-class)	Inventory proposed typical / max	Minor Quantity or limits	Separation Distance (m) to other Dg storages	Rack Colour Code
Class 2.1 flammable gases such as hydrocarbon propellant in aerosol cans.	Butane	2.1	14900 kg	1000 kg	6 m	Red
Class 3 Flammable Liquids Note: All goods are manufactured goods, stored in containers of 1 litre or less, and are for retail sale.	Ethanol, alcohol and spirits	3 PG I,II, and III.	4265 kg	10,000 L (with on more than 2000 L PGII) 250 litres / 500 m2 for PG II 500 litres / 500 m2 for PG III	5 m	Orange / PG II Brown / PG III
Class 4 - Flammable Solids , such as matches , shoe polish, etc	Phosphorous, naphthalene	Class 4.2, PG II	240 kg	1000 kg	5 m	Yellow
Class 8 – Corrosives	Bleach,	Class 8 PG II	2200 kg	1200 kg	5 m	Green
Class 9 – Miscellaneous		Class 9 PG II	132 kg	4000 kg	5 m	Black
	Grand Total	21,737 kg or litres				

Table 3 – Dangerous Goods Storage Layout

These quantities and separation distances are only valid if the retail packages are packed in accordance with the ADG code and the maximum size of the packaged item does not exceed the quantities listed in As /NZS 3833: 2007 – The Storage and Handling of Mixed Classes of Dangerous Goods, shown in Table 4 – Max Retail Package Size for Dangerous Goods.

MAXIMUM SIZES OF RETAIL PACKAGES FOR DANGEROUS GOODS

Class or Division	Maximum package size	Examples and requirements
2.1	1 L	Butane lighters, cartouches of camping gas
2.2	120 mL	Soda bulbs, beverage gases
Aerosols (UN 1950) and other non-refillable pressure containers*	1 L	No Division 2.3 or 6.1 subsidiary risk
3	20 L	Acetone, mineral turpentine (turps), kerosene
3 Manufactured product	20 L	Oil-based paint, primers, sealants and adhesives
Combustible liquids C1 and C2	20 L	Cooking oils, motor oils
4.1	500 g 3 kg**	**Only if firelighters
4.3	500 g or mL 1 kg**	**Only in solid form Zinc dust for two-pack metal primers
5.1	20 kg or 20 L 10 kg**	**Only if pool chlorine in granulated or tablet form (NOT powdered form)
5.2 Not requiring temperature control	125 mL (liquid) 500 g**	**Only if in solid or paste form Automotive filling compounds, two-part epoxy or polyester resins and adhesives
6.1	20 kg or L	Some pesticides, paint stripper
8	PG II—5 kg or 5 L PG III—20 kg or 20 L	Liquid sodium hypochlorite (pool chlorine)
9	20 kg or 20 L	Lithium batteries

* This requirement does not apply to fire extinguishers (UN 1044).

Table 4 – Max Retail Package Size for Dangerous Goods.

10. Conclusion & RECOMMENDATIONS

Sinclair Knight Merz (SKM) undertook a dangerous goods review of dangerous goods storage arrangements proposed by Goodman Construction (Goodman) for the proposed Metcash warehouse and bulk goods facility at Bungaribee.

This report, findings and recommendations provide Goodman with a checklist of remaining necessary actions to address the dangerous goods design layout for the racking and safety issues raised as a result of the dangerous goods risk review. In summary these issues include

1. DG licence required for site – An FDG01 form to be completed and submitted prior to occupation.
2. Manifest Qty exceeded for Class 2.1 – An Emergency plan is to be prepared for the site and submitted to NSW FB for comment. See Section 7 for details.
3. No PHA required to accompany Part 3A Project Application as the SEPP 33 Screening levels are not exceeded
4. Bulk Storage quantities of LP Gas , Ammonia to be located in accordance with Australian Standards as provided in Section 6.
5. ICADS stores racking layout yet to be finalised – use Table 3 for guidance on layout and separation of dangerous goods by class.

All action items are intended to reduce the risks identified by the addition of appropriate controls as listed in the review report. All actions items are to be addressed by Goodman or occupier as part of the risk review and design process.

The operation of the proposal will include appropriate safety features, including all requirements of WorkCover and the relevant Australian Standard. These features should ensure minimum risk to adjacent landowners and the environment.

11. Codes & References

1. Australian Standard AS 4332 : 2004 " The Storage & Handling of Gases in Cylinders"
2. The OH&S Act 2000, and Regulations (Dangerous Goods) 2005
3. Storage and Handling of dangerous Goods – Code of Practice, WorkCover NSW 2005
4. AS 1940:2004 – The Storage and Handling of Flammable and Combustible Liquids.
5. AS 1596 – 2004 " The Storage and Handling of LP Gas"
6. AS 2202 – 2004 " The Storage and Handling of Anhydrous Ammonia"
7. NSW DoP State Environmental Planning Policy 33 (SEPP 33)

12. APPENDIX A – Dangerous Goods Storage

(Insert ICADS DG Storage calcs)