CLIENTS | PEOPLE | PERFORMANCE

Health Infrastructure

Waste Management Plan for Campbelltown Hospital Extension

Compliance with Director General's Requirements

January 2012

INFRASTRUCTURE | MINING & INDUSTRY | DEFENCE | PROPERTY & BUILDINGS | ENVIRONMENT

This Waste Capacity Estimation for New Loading Dock ("Report"):

1. *has been prepared by GHD Pty Ltd ("GHD") for Health Infrastructure;*
2. *may only be used and relied on by Health Infrastructure;*
3. *must not be copied to, used by, or relied on by any person other than [insert name of client] without the prior written consent of GHD;*
4. *may only be used for the purpose of estimating waste quantities and waste infrastructure space requirements at Campbelltown Hospital (and must not be used for any other purpose).*

GHD and its servants, employees and officers otherwise expressly disclaim responsibility to any person other than Health Infrastructure arising from or in connection with this Report.

To the maximum extent permitted by law, all implied warranties and conditions in relation to the services provided by GHD and the Report are excluded unless they are expressly stated to apply in this Report.

The services undertaken by GHD in connection with preparing this Report:

- *were limited to those specifically detailed in section 1.3 of this Report;*
- *did not include any other services.*

The opinions, conclusions and any recommendations in this Report are based on assumptions made by GHD when undertaking services and preparing the Report ("Assumptions"), including (but not limited to):

- *that the information provided by Campbelltown Hospital and BVN Architecture is accurate and correct*

GHD expressly disclaims responsibility for any error in, or omission from, this Report arising from or in connection with any of the Assumptions being incorrect.

Subject to the paragraphs in this section of the Report, the opinions, conclusions and any recommendations in this Report are based on conditions encountered and information reviewed at the time of preparation and may be relied on until [insert a "sunset" timeframe, eg 3 or 6 months], after which time, GHD expressly disclaims responsibility for any error in, or omission from, this Report arising from or in connection with those opinions, conclusions and any recommendations.

Contents

1. Introduction 1

1.1 Expansion of Campbelltown Hospital 1
1.2 Director General's Requirements 1
1.3 Purpose of This Report 1

2. Waste Generated During Operation 2

2.1 Waste Estimation Measures 2
2.2 Current General Waste Quantities 2
2.3 Cardboard Quantities 3
2.1 Clinical/Cytotoxic Waste Quantities 3
2.2 Projected Waste Quantities 4

3. Proposed Waste Handling Methods 5

3.1 Current Loading Docks 5
3.2 General Waste 7
3.3 Cardboard 9
3.4 Clinical Waste 9

4. Conclusion 10

Table Index

Table 1 GFA and Number of Beds in Proposed New Buildings 2
Table 2 Current General Quantities 2
Table 3 Current Cardboard Quantities 3
Table 4 Current Clinical/Cytotoxic Quantities 3
Table 5 Projected Waste Quantities 4

Figure Index

Figure 1- Main Dock 5
Figure 2 - Food Dock 6
Figure 3 - Proposed Main Dock Design 7
Figure 4 - Bin lifter 8

1. Introduction

1.1 Expansion of Campbelltown Hospital

Planning is advanced for Stage 1 of the expansion of Campbelltown Hospital. Stage 1 comprises a new acute clinical block.

The clinical block includes:

- Pathology;
- Ambulatory care;
- Outpatients;
- Allied health; and
- 90 bed (potentially 120 bed) inpatient accommodation.

The development will also result in internal refurbishment of parts of the existing hospital to provide:

- A new a birthing suite;
- A new cardiac catheterisation/angiography suite;
- Expanded emergency outpatient services; and
- Expanded paediatric outpatient services.

1.2 Director General's Requirements

Director General's Requirements (DGRs) have been issued for this development. In regard to waste management the DGRs say:

> ***'16. Waste***
>
> *Identify, quantify and classify the likely waste streams to be generated during construction and operation and describe the measures to be implemented to manage, reuse, recycle and safely dispose of this waste'*

1.3 Purpose of this Report

The purpose of this report is to address the DGRs and this is done in sections covering the two requirements as follows:

- Details of waste generated during ongoing operation; and
- A description of measures to be implemented to handle waste during ongoing use.

This report does not deal with waste generated during construction. Details of the amounts, handling methods and destinations of waste generated during construction is best provided by builders when appointed to the project.

2. Waste Generated During Operation

2.1 Waste Estimation Measures

Table 1 below shows the gross floor area and number of beds planned for the two new buildings that are part of the proposed development.

Table 1 GFA and Number of Beds in Proposed New Buildings

Building	GFA (m^2)	Beds
Stage 1 Acute Hospital	16,000	90

The activities to be undertaken in the new development are similar to those already undertaken at other parts of the hospital and, as a result, the types of waste are also expected to be similar.

The quantities of waste likely to be generated from the new development have been calculated based on quantities already generated from the existing hospital. These are shown in the following sections.

Waste quantities have calculated based on a 'per square metre' rate rather than a 'per bed' rate for two reasons. The first is that there are areas of the hospital that generate waste but have no beds or only a small number. The number of beds, therefore is not necessarily an accurate measure for waste management purposes. In addition, calculations show that the estimates by bed for waste generated in the future are lower than that estimated by square metre. To avoid underestimating the amount of waste that might be generated, the measure that gives the greater amount has been used.

2.2 Current General Waste Quantities

Table 2 below shows the approximate amounts of general waste currently generated at Campbelltown Hospital.

Table 2 Current General Quantities

Bins and Location	Number of Bins	Total Capacity (L)	Collection Frequency Per Week	Compaction Rate	Total Volume Per Week	
					Litres	Cubic metres
Main Dock - Compactor	1	20,000	1	3	60,000	60.0
Food Dock - Front-Lift Bins	2	2,000	3	1	12,000	12.0
Food Dock - Front-Lift Bins	1	3,000	3	1	9,000	9.0
Total					**81,000**	**81.0**

The table shows that 81 m^3 of general waste are generated each week at Campbelltown Hospital. Based on the existing GFA, the amount of general waste estimated to be generated curently is 1.85 litres per square metre per week.

2.3 Cardboard Quantities

Table 3 below shows the approximate amounts of cardboard currently generated at Campbelltown Hospital.

Table 3 Current Cardboard Quantities

Bins and Location	Number of Bins	Total Capacity (L)	Collection Frequency Per Week	Compaction Rate	Total Volume Per Week	
					Litres	Cubic metres
Main Dock - Front-Lift Bins	3	3,000	1	1	9,000	9.0
Main Dock - Front-Lift Bins	1	4,500	1	1	4,500	4.5
Main Dock - 240 L bins	42	240	1	1	10,080	10.1
Food Dock - Front-Lift Bins	2	3,000	3	1	18,000	18.0
Total					44,580	41.6

The table shows that 41.6 m^3 of cardboard are generated each week at Campbelltown Hospital. Based on the existing GFA, the amount of cardboard estimated to be generated currently is 0.95 litres per square metre per week.

2.1 Clinical/Cytotoxic Waste Quantities

Table 4 below shows the approximate amounts of clinical waste currently generated at Campbelltown Hospital.

Table 4 Current Clinical/Cytotoxic Quantities

Bins and Location	Number of Bins	Total Capacity (L)	Collection Frequency Per Week	Compaction Rate	Total Volume Per Week	
					Litres	Cubic metres
Main Dock – 240 L bins (clinical)	40	9,600	1	1	9,600	9.6
Main Dock – 120 L bins (cytotoxic)	10	1,200	1	1	1,200	1.2
Total					**10,800**	**10.8**

The table shows that 10.8 m^3 of clinical and cytotoxic waste are generated each week at Campbelltown Hospital. Based on the existing GFA, the amount of this waste estimated to be generated currently is 0.25 litres per square metre per week.

2.2 Projected Waste Quantities

Table 5 below shows the volumes of general waste, cardboard and clinical waste generated currently. The table also shows estimates of the additional amounts of each waste type expected to be generated from the new development, based on the GFA of the new development as shown in Table 1, and the total amount (current and future estimates added together) that may be generated.

Table 5 Projected Waste Quantities

Location and Material	Per Week (cubic metres)		
	Current Volume	Estimated Addition	Estimated Total
General Waste	81.0	29.6	110.6
Cardboard and Paper	41.6	15.2	56.8
Clinical/Cytotoxic	10.8	3.9	14.7

The table shows that, an additional 29.6 m^3 of general waste is estimated to be generated, an additional 15.2 m^3 of cardboard and an additional 3.9 m^3 of clinical and cytotoxic waste.

3. Proposed Waste Handling Methods

3.1 Current Loading Docks

There are currently two loading docks at Campbelltown Hospital. The Main Dock is of conventional design and features a raised platform onto which goods can be loaded and unloaded directly from heavy vehicles (Figure 1).

Figure 1- Main Dock

The second dock, or Food Dock, (Figure 2) is used only for the delivery and removal of food and waste from the kitchens which are immediately adjacent inside the building. This dock features a loading elevator which is set into the pavement.

Figure 2 - Food Dock

The main dock is subject to expansion and renovation as part of the early works for the new development. The proposed layout is shown in Figure 3 below with the waste-related areas shown as follows:

- Grey – general waste;
- Yellow – clinical waste;
- Purple – cytotoxic waste;
- Blue – recyclable paper and cardboard; and
- Green – bin storage and waste area.

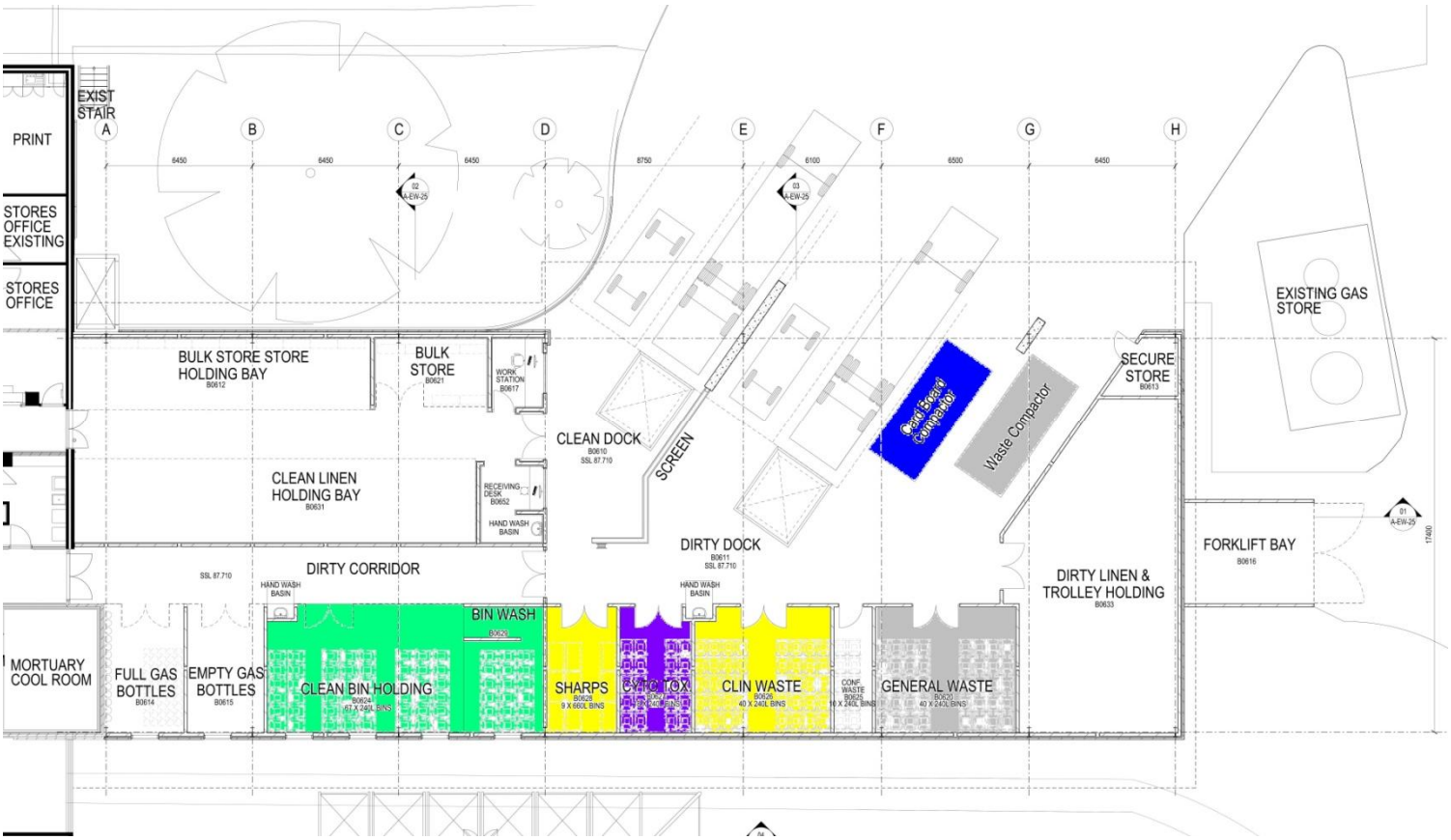


Figure 3 - Proposed Main Dock Design

Waste generated from the new development will be handled the same way as waste from other parts of the hospital and will be stored and collected from the two loading docks in the same way. This is described below.

A new contractor, Sita Environmental Services, began operations at the site in mid-2011.

3.2 General Waste

3.2.1 Main Dock

Cleaners working in shifts will bring all waste and recyclables to the Main Dock. General waste (garbage) will be collected by cleaners in clear plastic bags from bins in all parts of the site. As is the current practice these will be placed in a 2 m^3 trolley which, when full, will be wheeled to the garbage compactor (shown in grey in Figure 3) located in the Main Dock, into which they will be loaded. The compactor will be emptied as required under the agreement with Sita. Additional capacity, if required will be provided by increasing the frequency of collection.

3.2.2 Food Dock

There is a medium sized commercial kitchen on-site and a dedicated sandwich-making room. The kitchen is used for heating and plating of patient meals, which are prepared off-site, and for the preparation of hot meals for the staff cafeteria. Waste from the kitchen is taken directly to the bins outside the food dock. Waste generated as a result of additional meals prepared for staff and patients in the new development will be disposed of in the same way.

There is also a café on-site operated by commercial caterers. Waste from the café is disposed of through the Main Dock and this is not expected to change.

As is the current practice, waste from the kitchens and food preparation area will be placed in front-lift bins located near the Food Dock. These are currently emptied three times per week. Additional capacity will be provided by obtaining additional bins or bins of larger capacity or increasing the collection frequency, which is currently three times per week. A bin lifter (Figure 4) is provided in this area for staff to empty the contents of wheelie bins into the front-lift bins.

Figure 4 - Bin lifter

3.3 Cardboard

3.3.1 Main Dock

As is the current practice, cleaners will bring to the Main Dock, 240 litre bins of paper and cardboard. These are currently collected from many locations on-site and swapped for empty bins which are returned to locations on-site. This system will continue, however, instead of full being collected by a contractor, they will be emptied into a new cardboard compactor (shown in blue in Figure 3) which will be installed on-site and emptied for recycling as required. Empty bins will be stored in enclosures near the loading dock (shown in green in (Figure 3).

The collection process for secure paper bins will not change. Currently they are brought to the Main Dock and collected by contractors for recycling as required.

3.3.2 Food Dock

Any additional cardboard generated from food preparation areas will be disposed of according to the current practice, which is to place cardboard in one of two front-lift bins provided for cardboard recycling located outside the Food Dock.

If any additional capacity is required, the number or size of bins can be increased or a more frequent collection can be arranged.

3.4 Clinical Waste

The collection process for clinical and cytotoxic waste will be unchanged. Currently these bins are brought to the Main Dock and stored in designated enclosures (shown as yellow for clinical and purple for cytotoxic in Figure 3) from where they are collected by contractors for safe disposal. Additional capacity can be accommodated by providing more bins or increasing the frequency of collection.

4. Conclusion

Campbelltown Hospital is being expanded with the development of a new 90-bed acute clinical block.

Director General's requirements for the development specify that waste generated during construction and operation to be identified, quantified and classified and a description of the measures to be implemented to manage, reuse, recycle and safely dispose of this waste.

Calculations based on existing waste generation from the hospital show that an additional 29.6 m^3 of general waste, 15.2 m^3 of cardboard and paper and 3.9 m^3 of clinical and cytotoxic waste will be generated per week.

The existing loading dock is being refurbished and expanded to accommodate a new cardboard compactor and storage space for the general waste compactor and other bins for waste and recycling.

Waste from the new development will be mostly handled according to current systems already in place at the hospital. Additional capacity is available for all waste streams by increasing the number or capacity of bins or increasing collection frequency.

GHD

133 Castlereagh St Sydney NSW 2000

-

T: 2 9239 7100 F: 2 9239 7199 E: sydmail@ghd.com.au

Document Status

Rev No.	Author	Reviewer		Approved for Issue		
		Name	Signature	Name	Signature	Date
0	A. Quinn	D Gamble		DRAFT		22/12/11
1	A. Quinn	D Gamble		D Gamble		30/1/12

CLIENTS | PEOPLE | PERFORMANCE

27 February 2012

Health Infrastructure
C/- Scott Lawler
Capital Insight
Level 6, 2-4 Speed Street
Liverpool NSW 2170

Our ref: 21/20572/177625
Your ref:

Dear Scott

Campbelltown Hospital Redevelopment
Applicability of SEPP 33

1 Introduction

Capital Insight asked GHD to assess the applicability of SEPP 33 in regard to the expansion of Campbelltown Hospital. The assessment was undertaken by Senior Risk Consultant Rebecca Freeman. Rebecca has degrees in science and chemical engineering and experience in both quantitative and qualitative risk assessment methodologies across a number of industries in Australia and overseas including mining, minerals processing, petrochemicals, oil and gas, manufacturing, rail, water, food processing, defence and marine operations.

2 Expansion of Campbelltown Hospital

Planning is advanced for Stage 1 of the expansion of Campbelltown Hospital. Stage 1 comprises a new acute clinical block catering for;

- Pathology;
- Ambulatory care;
- Outpatients;
- Allied health; and
- 90 bed (potentially 120 bed) inpatient accommodation.

3 Campbelltown Hospital DGRs

The Director Generals Environmental Assessment Requirements (DGRs) for the Campbelltown Hospital Stage 1 redevelopment outlines the requirement to provide a ‘description of the proposed storage, use and management of any hazardous materials and measures to be implemented to manage hazards and risks associated with the storage’.

GHD Pty Ltd ABN 39 008 488 373
Level 15, 133 Castlereagh Street Sydney NSW 2000 Australia
T 61 2 9239 7100 **F** 61 2 9239 7199 **E** sydmail@ghd.com **W** www.ghd.com

This requirement applies to any materials that are to be introduced to the site as part of the redevelopment and does not include the existing materials on site. The exception to this applies when the additional materials are to be stored with existing materials.

4 SEPP 33

In NSW, the requirement to apply the State Environmental Planning Policy No. 33 Hazardous and Offensive Development (SEPP 33) and undertake a Preliminary Hazard Analysis (PHA) is often specified within the DGRs. In the case of Campbelltown Hospital redevelopment, this specific requirement was not included, however, the screening process outlined in SEPP 33 has been applied to review the necessity of applying SEPP 33.

When applying SEPP 33, the process involves a screening method, based on the quantities of dangerous goods on a site, to assist in determining if a development is likely to be a potentially hazardous industry. SEPP 33 will then apply if a proposal for an industrial development requires consent, and it is either potentially hazardous industry or potentially offensive industry (or both). The preliminary screening methodology concentrates on the transport and storage of specific dangerous goods classes that have the potential for significant off-site effects. Specifically the assessment involves the identification of classes and quantities of all dangerous goods to be transported, used, stored or produced on site with an indication of storage depot locations.

Depending on the inventories and storage locations, the screening process determines if the development is potentially hazardous or offensive. If the quantities are below the screening thresholds, it can be assumed there is unlikely to be a significant off site risk. If the screening thresholds are exceeded it may be potentially hazardous and therefore a PHA is required.

The thresholds outlined in SEPP 33 for all dangerous goods are provided in Table 1

Table 1 SEPP 33 screening thresholds

Class	Screening Threshold	Description
1.2	5 tonne	Or located within 100 m of residential area
1.3	10 tonne	Or located within 100 m of residential area
2.1	10 tonne	LPG only – If stored above ground
2.1	40 tonne	LPG only – 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
2.3	1 tonne	chlorine and sulphur dioxide stored as liquefied gas in containers <100 kg
2.3	2.5 tonne	chlorine and sulphur dioxide stored as liquefied gas in containers >100 kg

2.3	100 kg	liquefied gas kept in or on premises
2.3	100 kg	other poisonous gases
4.1	5 tonne	
4.2	1 tonne	
4.3	1 tonne	
5.1	25 tonne	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
5.1	5 tonne	ammonium nitrate — elsewhere
5.1	2.5 tonne	dry pool chlorine — if at a dedicated pool supply shop, in containers <30 kg
5.1	1 tonne	dry pool chlorine — if at a dedicated pool supply shop, in containers >30 kg
5.1	5 tonne	any other class 5.1
5.2	10 tonne	
6.1	0.5 tonne	packing group I
6.1	2.5 tonne	packing groups II and III
6.2	0.5 tonne	Includes clinical waste
7	All	should demonstrate compliance with Australian codes
8	5 tonne	packing group I
8	25 tonne	packing group II
8	50 tonne	packing group III

Materials greater than 100 kg and not specified in Table 1 (classes 1.1, 2.1 (other than LPG), 3PGI, 3PGII, 3PGIII) require assessment via graphs taking into account quantity and distance from the nearest boundary.

5 Dangerous Goods at Campbelltown Hospital

5.1 Dangerous Goods Manifests

In order to assess the applicability of SEPP 33, a review of the hospitals dangerous goods manifests was undertaken to ascertain the inventories of dangerous goods currently on site and the impact of adding further dangerous goods to these inventories.

The following manifests were reviewed:

- Allied health
- Birthing centre
- CSSD

- CCU & CDU
- Day surgery
- Environmental services
- Emergency department
- Food services
- Engineering
- Heart rock café
- Maternity
- Medical imaging
- Out patients
- PACS
- Pathology
- Pharmacy
- Security
- Surgery

5.2 Storage of Dangerous Goods

All dangerous goods on site are stored and used as per material safety data sheet (MSDS) provided with the substance. All containers are labelled appropriately and managed in accordance with relevant standards. As a result of the redevelopment, there will be no change in the type or quantities of dangerous goods on site, therefore all current practices for the management of dangerous goods will apply at the completion of the redevelopment.

From the dangerous goods manifest review, numerous substances were found to fall into dangerous goods classes 2.1, 2.2, 3, 5, 6, 8 and 9; however, in the majority of circumstances these substances were contained in small vessels, for example 1 - 5 litre containers, and are not near or do not exceed the above thresholds.

5.3 Diesel and Oxygen

The substances which had more significant inventories on site included diesel and oxygen. Diesel is defined as a C1 dangerous good (under workplace legislation) and oxygen is a class 2.1 dangerous good.

If combustible liquids of class C1 are present on site and are stored in a separate bund, or within a storage area where no flammable materials are stored, they are not considered to be potentially hazardous. If, however, they are stored with other flammable liquids, that is, class 3PGI, II or III, then they are to be treated as class 3PGIII, because under these circumstances they may contribute fuel to a fire. The inventory of diesel currently covers a range of quantities, with a maximum in any one area of approximately 12,000 L. The redevelopment will not increase the inventory of diesel and the diesel is stored separately, therefore it is not deemed potentially hazardous and therefore excluded from the assessment.

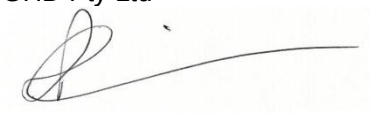
The oxygen on site is stored in either 170 L or 340 L bottles. Typically there are 4-6 bottles of each size in a particular department, therefore inventories of approximately 2000 L are at the hospital. As with the diesel, the inventory is not increasing with the redevelopment. As a result with the current inventories, no threshold is exceeded and this material is therefore excluded from the assessment.

6 Summary

On the basis that the only dangerous goods with any significant inventories on site are diesel and oxygen and neither of these are increasing in inventory due to the redevelopment, and they are stored separately, there is no requirement to progress through the SEPP 33 process to undertake a PHA.

In the case of Campbelltown Hospital therefore, the volumes of potentially hazardous materials (such as oxygen) expected to be use when the new building is complete are low and their management acceptable and similar to that already practices at the existing building. **As a result they do not trigger need for a SEPP 33 PHA assessment.**

Yours faithfully
GHD Pty Ltd



Andrew Quinn
Senior Environmental Consultant
02 9239 7180