New Botany Paper Mill
Project B9

ENVIRONMENTAL ASSESSMENT REPORT

- Final
- December 2006

New Botany Paper Mill
Project B9

ENVIRONMENTAL ASSESSMENT REPORT

- Final
- December 2006

Sinclair Knight Merz
ABN 37 001 024 095
100 Christie Street
PO Box 164
St Leonards NSW
Australia 1590
Tel: +61 2 9928 2100
Fax: +61 2 9928 2500
Web: www.skmconsulting.com

Contents

List of Figures

List of Tables

Glossary

AADT	Annual Average Daily Traffic
Applicant	The person or a body proposing to carry out a development or activity.
Aquifer	An underground water-bearing porous medium such as a sand or gravel layer which is capable of supplying useable quantities of groundwater to a bore or spring.
ANZECC	Australian and New Zealand Environment and Conservation Council
BEREPA	Botany and Eastern Region Environment Protection Agency
Biocide	Chemicals used to control biological organisms in wastewater.
Biosolids	The cellulose fines and inorganic fillers from the process wastewater stream containing the bulk of the solid particles.
BIZWATCH	Port Botany Industrial Users Group
Catchment	The geographic region within which water drains into a particular river, stream or body of water. A catchment includes hills, lowlands, and the body of water into which the land drains. Catchment boundaries are defined by the ridges separating the watersheds.
Commissioning Period	The period where testing of the individual components of the New Paper Mill is undertaken.
Construction Environmental Management Plan (CEMP)	A plan containing procedures, mitigation measures and monitoring to be undertaken during construction to minimise impacts.
CLG	Community Liaison Group
Dissolved Air Flotation (DAF)	A type of wastewater treatment process that uses air bubbled or injected in wastewater to remove pollutants.
DNR	Department of Natural Resources

DoP	Department of Planning
Environmental Assessment (EA)	A formal description of a project and an assessment of its likely impact on the physical, social and economic environment under Part 3A of the EP&A Act.
ESD	Ecologically Sustainable Development
Effluent	The liquid discharge after wastewater treatment.
ENCM	Environmental Noise Control Manual
DEC	Department of Environment and Conservation
EP&A Act	Environmental Planning and Assessment Act, 1979
Hydrapulper	Cylindrical tank, containing a large metal rotor in its base, which is used to slush water and wastepaper around, separating the wastepaper into individual fibres for use in the paper machine.
Infiltration	The movement of water into the soil through the surface
INP	NSW DEC's Industrial Noise Policy
LACL	Local Aboriginal Land Council
LEP	Local Environmental Plan
LGA	Local Government Area
NEPC	National Environment Protection Council
NHMRC	National Health and Medical Research Council
NPI	National Pollutant Inventory
OEMP	A plan containing procedures, mitigation measures and monitoring to be undertaken during operation to minimise impacts.
Operation Phase	When the New Paper Mill is fully operational with No. 7 and No. 8 machines decommissioned
POEO Act	Protection of the Environment Operations Act, 1997

Preliminary Hazard Analysis (PHA)	An assessment undertaken under State Environmental Planning Policy No. 33 to determine the risks associated with dangerous goods are acceptable based on surrounding land use.
Planning Focus Meeting (PFM)	A meeting held at early stages of a development to allow Government Authorities and others to advise the applicant on issues they require to be addressed in an EA.
RBL	Rating Background Noise Level
Reel Store	Storage area for the reels of finished paper product
Reuse	The processing of wastewater by treatment methods to make it reusable for beneficial use such as industrial cooling or dual water supply.
RTA	Roads and Traffic Authority
SEPP	State Environmental Planning Policy
Sewage	The wastewater from homes, offices, shops and factories. Most sewage comes from domestic sources (for example from washing clothes, dishes and using the toilet and shower). Small amounts of trade wastes may also be present.
STP	Sewage Treatment Plant
Starch	Chemical added to the paper making process to improve the properties of board produced
Stormwater	Runoff water, which does not penetrate the surface layer, produced after rain.
Suspended solids (SS)	Particulate matter suspended but not dissolved in a liquid medium.
SWC	Sydney Water Corporation
SWSOOS	Southern and Western Suburbs Ocean Outfall Sewer
Telemetered	An automatic warning alarm system associated with flow level within the SWSOOS.

Topography	The shape of the ground surface as depicted by the presence of hills, mountains and plains.
Transition Phase	Production from No. 8 machine decreases as production from the New Mill increases. No. 7 machine is decommissioned.
Turbidity	This refers to the clarity of water and is caused by suspended matter, organic compounds and micro-organisms.
Water table	Upper surface of groundwater (i.e. it is at atmospheric pressure) below which the layers of rock, sand, gravel and soil are saturated with water.
Waste paper	Typically old cardboard boxes, newsprint, magazines, white papers, cartonboards and paper bags, which are used in the production of paper and board for corrugated boxes at the Botany Mill site.

1. Introduction

1.1 Background

AMCOR Packaging proposes to construct and operate a new paper making facility (referred to as the New Paper Mill), which uses 100% recycled waste paper, at their Botany site in Sydney, NSW. The New Paper Mill would replace the two existing papermaking machines (No. 7 and No. 8) at the site, increasing paper making capacity from the current 250,000 tonnes per year to around 345,000 tonnes per year. Replacement of the two 1960s vintage paper machines with a single machine, incorporating modern technology, would result in significant increases in the efficiency of the paper making process. The New Paper Mill would produce savings in energy and water use per unit of paper production and would improve the environmental performance of the facility.

The New Paper Mill would be designed specifically to minimise environmental impacts such as noise, odour and water discharges. By starting with a "clean slate" many of the mitigation measures can be built directly into the New Paper Mill and associated infrastructure. The environmental impact of the current operations, although acceptable, are not best practice because much of the infrastructure is old and was designed and built when environmental standards were lower.

This Environmental Assessment (EA) presents a detailed description of the existing operations and the proposed New Paper Mill. It also assesses the environmental impact of the operations and the proposed mitigation measures to minimise the impact of the proposed New Paper Mill.

All attempts have been made to minimise jargon within the document. To assist understanding, however, a glossary of terms is provided on pages X to XIII of this document.

1.2 Objectives of the Proposal

The objectives of the proposed development are to:

- Increase the quantity of wastepaper able to be processed into packaging paper products;
- Improve the quality and uses of the final paper product;
- Improve the efficiency of the paper making process in terms of energy, water and raw material usage;
- Reduce the environmental impacts of operations on the surrounding land uses, namely reducing noise and odour impacts;
- Reduce the environmental impact of wastewater and stormwater discharges on Botany Bay;

- Reduce the quantity of waste paper and solid waste sent to landfill; and
- Reduce the quantities and hazards of chemical storage on site.

A similar upgrade to the Botany Mill was proposed in 2000 (Project 100), however this did not proceed. This proposal differs from Project 100 in that the new building housing the new paper machine would be located in the south western corner of the site and would be further away from residents;

AMCOR Packaging is now seeking to gain approval for a New Paper Mill at the Botany Site (see **Figure 5-2**).

1.3 This Document

This Environmental Assessment (EA) is divided into the following sections:

1) **Introduction** – introduces the document and project – and details consultation activities undertaken during its preparation;
2) **Statutory Planning** – provides information on the statutory, legislative and policy requirements for the project;
3) **Need for the Project** – justifies the need for the project and assesses the implications of the project not proceeding;
4) **Option Evaluation** – describes the studies and alternatives considered in developing the preferred option for the New Paper Mill;
5) **Description of the New Paper Mill** – provides a detailed description of construction and ongoing operation of the New Paper Mill;
6) **Environmental Assessment** – contains detailed environmental impact assessment on all aspects of the construction and operation of the New Paper Mill. Mitigation measures to minimise the impact of the scheme are also presented;
7) **Environmental Management** – outlines the environmental management requirements for the construction and operation of the scheme;
8) **Conclusion** – summarises the overall impact of the New Paper Mill;
9) **References** – contains a list of referenced documents used in the preparation of the EA;
10) **Appendices** – contains detailed technical reports used in the environmental impact assessment.

1.4 Community and Authority Consultation

Consultation has been undertaken with both Government and Community stakeholders during the preparation of the EA. Details of this consultation are provided below.

1.4.1 Government Authority & Stakeholders

1.4.1.1 Planning Focus Meeting

A Planning Focus Meeting (PFM) was held on 20 April 2005. The purpose of the meeting was to provide information on the main aspects of the proposal to representatives of government departments and other organisations and to enable each organisation to raise issues that should be considered when preparing the environmental assessment of the proposal.

Representatives of the following organisations attended the Planning Focus Meeting:

- Department of Environment and Conservation (DEC);
- Department of Planning (DoP);
- Department of State & Regional Development;
- Randwick City Council; and
- Sydney Water Corporation.

After the PFM, the Director-General requirements detailing matters that need to be addressed in the EA, were obtained from DoP. During preparation of the EA, the *EP&A Act* was amended, altering the planning and assessment framework for the project. This is discussed in greater detail in **Section 2**. As a result new requirements for this EA were issued in October 2005. The EA requirements and details on where they are addressed in the EA are contained in **Appendix A**.

Relevant government agencies that did not attend the PFM were contacted separately by letter and asked to identify any issues that need to be addressed in the EA. All relevant correspondence with agencies and information on where the issues which have been raised are addressed in the EA is presented in **Appendix A**.

An initial version of the EA was submitted to DoP in November 2005 for Adequacy Assessment. Comments received from relevant government stakeholders have been included in this version of the EA.

1.4.2 Community Consultation

The Community Consultation Program sought to ensure that the local community, businesses, property owners and other stakeholders:

- had opportunities to understand the proposed development and to make comments about it while the EA was being prepared;
- were aware that additional opportunity existed again at exhibition to make a submission to DoP regarding the proposed development. This section describes the consultation activities that were undertaken and describes the way in which community issues and suggestions were considered; and
- Inputs were integrated into project planning so that appropriate measures to mitigate community concerns could be developed.

1.4.2.1 Target audiences

The Community Consultation Program focussed on providing information to meet the needs of the target audiences, namely;

- Randwick City Council - officers and elected representatives;
- Residents and local businesses in the project area;
- Local community, interest and environmental groups;
- Property owners;
- Aboriginal groups;
- Federal and State elected representatives; and
- The media.

1.4.2.2 Communication activities during the preparation of the EA

Communication activities during the preparation of the Environmental Assessment Report focussed on:

- Building upon AMCOR's existing consultation activities undertaken as part of their existing operations. AMCOR has an established Community Liaison Group (CLG) consisting of representatives of local residents, businesses and Government. The CLG has been meeting every 3 months since 1996, and has provided an important forum for the community to express its views on AMCOR's operations and for AMCOR to keep the community informed of matters which may affect them.
- Providing information to the target audiences about the proposal and the environmental assessment process. These activities included:

- Preparation of a newsletter providing information on the project, assessment and approval process and timing, and including a reply-paid tear-off feedback form inviting comment;
- Distribution of approximately 3800 copies of the newsletter to residents and businesses in the vicinity of the Mill;
- Distribution of newsletters with cover letters to interested stakeholders, including Randwick Councillors and representatives of surrounding businesses;
- Provision of a project specific webpage providing similar information to that included in the newsletter, and including an online comment form facility;
- Targeted meetings and briefings with interested community members and stakeholders;
- Staffing of a freecall information line and a project specific email address;
- Presentation to BEREPA (Botany and Eastern Region Environment Protection Agency) (8th June 2005);
- Presentation to the Botany Mill Community Liaison Group (1st June 2005); and
- Placement of two advertisements (14 June and 12 July 2005) in the *Southern Courier.*

- Recording all comments made about the proposal and all responses made using a project specific database. The database allows tracking and reporting of issues.

In response to the consultation program, a total of 53 responses were received. The key issues (not in priority order) raised from the consultation program are presented in **Table 1-1** below. *(Note - some respondents raised multiple issues, therefore the number of issues does not tally with the number of respondents listed above).*

Table 1-1 Issues Raised by Community During Consultation Process

Comment or Concern	Number of Responses	Where addressed in this document
Odour levels and mitigation	21	Section 6.11
Future use of surplus Land	20	Section 6.2
Noise impacts from the operation of the New Paper Mill	13	Section 6.10
Visual impact and landscaping	12	Section 6.15
Project employment opportunities	7	Section 9.1.2
Consultation Process	6	Section 1.4.2
Design of New Paper Mill (i.e. changes to stack height and elimination of steam)	5	Section 1 and 6.11
Program for construction and demolition works of New Paper Mill	5	Section 1
Improvements in efficiency	4	Section 6.17

Comment or Concern	Number of Responses	Where addressed in this document
Support for the New Paper Mill	3	N/A
Differences between this project and P100 in 2000	3	Section 1.2
Traffic changes	3	Section 6.9
Waste storage and management (incl. Pest Control)	3	Section 6.8 and 6.18
Heritage listings	2	Section 6.13
Operational differences between existing Paper Mill and New Paper Mill	2	Section 1
Consideration of alternative site locations	2	Section 1
TOTAL ISSUES RAISED	**111**	**-**

1.5 Planning Process

Once this EA has been lodged with and accepted by DoP, the EA will be displayed for a minimum period of 30 days. The timing and location of the display will be advertised in the media and on DoP's web site. Hard copies of the EA will be available for purchase and an electronic summary of the EA will be available on the DoP website.

In the display period, the public, Government Authorities and other interested parties will have the opportunity to put forward submissions to the Director-General of Planning for consideration. Ultimately, the Minister will determine the application for approval and can approve the project with such modifications or conditions as the Minister may determine.

2. Statutory Requirements

This chapter describes the statutory and planning framework in which the New Paper Mill is being assessed. Relevant local, State and Commonwealth planning and environmental legislation and policy are summarised and its implication for the project discussed. This chapter should be read in conjunction with **Section 6.2 - Land Use**.

2.1 Environmental Planning and Assessment Act, 1979

The site is subject to the provisions of the *Randwick Local Environmental Plan 1998* (Randwick LEP), which establishes the planning and zoning regime for the LGA (refer to **Section 2.2.1**).

The environmental impact assessment of this proposal commenced in early 2005 and was initially prepared under the requirements of Part 4 of the *EP&A Act*. The proposed development was designated under Schedule 3 of the *EP&A Regulation* and an EIS was required to be prepared to accompany the Development Application. Under *State Environmental Planning Policy 34 – State Significant Development (SEPP 34)*, the project was identified as of State significance, and the (then) Minister for Infrastructure and Planning was the consent authority.

A Planning Focus Meeting (PFM) was held at the Botany Paper Mill site on 20 April 2005, and was attended by relevant State government authorities and Councils (refer to **Appendix A**). The PFM provided a forum for discussion and consideration of issues to be included in the Director–General's requirements setting out the form and content of the EIS. The Director-General's requirements were issued on 24 May 2005.

During preparation of the EIS, the *EP&A Act* was amended, altering the planning and assessment framework for the project. As a result new requirements for this EA were issued in October 2005.

New Approvals Process

The *EP&A Act* was amended by the *Environmental Planning and Assessment Amendment (Infrastructure and Other Planning Reform) Act, 2005* (EP&A Amendment Act) which was gazetted on 1 August 2005. The *EP&A Amendment Act* proposed a new Part 3A of the *EP&A Act* which deals with major infrastructure and other projects ('Part 3A Project'). Major Projects under *SEPP Major Projects* would be development to which the new Part 3A of the *EP&A Act* applies.

Part 3A of the *EP&A Act* provides an assessment and approvals regime specifically tailored for major infrastructure where the Minister for Planning is the approval authority. It provides for a project assessment and approval. Under Part 3A the general process is as follows:

- Project application and environmental assessment, where the proponent submits a project application with an outline of the proposal, a preliminary assessment and outline of any consultation with Councils and the community. A Planning Focus Meeting is sometimes held and Authorities or Agencies and Councils provide recommended assessment requirements for the project. The integrated requirements for an Environmental Assessment (EA) are provided to the proponent by the Department of Planning (DoP);
- The proponent prepares and presents an EA, along with a draft Statement of Commitments. The EA is evaluated and, if adequate, is exhibited for public comment. The proponent considers submissions and may modify the proposal to minimise impacts; and
- The proposal is assessed by DoP and a draft Director-General's Report is prepared with recommended approval conditions. Authorities and Councils submit recommendations on the draft Director-General's Report which is then finalised with recommendations and submitted to the Minister for Planning for his decision.

Pursuant to clause 8J(1) of the Regulation, the Director-General has adopted as environmental assessment requirements for the project, those environmental assessment requirements issued by the Director-General under Part 4 on 24 May 2005. The outcomes of the PFM and the extent to which they are addressed in the EA are summarised in **Appendix A**.

The EA requirements are provided in **Appendix A** along with a description of where the issues raised in the requirements are addressed.

2.1.1 Consent Authority and Proponent

The approval of the Minister for Planning would be required for the project, as the development would be a "Major Project" under a new *State Environmental Planning Policy (SEPP) – (Major Projects) 2005.* Under this SEPP development for the purposes of "paper recycling" which employs more than 100 people or has a capital investment value of more than $30 million is considered a "Major Project". The new Part 3A requirements of the amended Environmental Planning and Assessment Act would apply to the proposal.

The requirements for the form and content of the EA, together with requirements for public exhibition, were provided in October 2005. The Director General's requirements are attached in **Appendix A**.

This EA has been prepared to accompany the Application for approval of the New Paper Mill by AMCOR Packaging (Australia) - the applicant.

The proposed development would require approval under other legislation (See **Table 2-2**).

2.2 Provisions of any Environmental Planning Instruments

The following statutory instruments are of particular relevance to the proposed development:

- Randwick Local Environmental Plan 1991 (Randwick LEP);
- State Environmental Planning Policy (SEPP) – (Major Projects) 2005;
- State Environmental Planning Policy No. 11 (SEPP 11) – Traffic Generating Developments;
- State Environmental Planning Policy No. 33 (SEPP 33) – Hazardous and Offensive Development;
- State Environmental Planning Policy No. 55 (SEPP 55) – Remediation of Land;
- State Environmental Planning Policy No. 71 (SEPP 71) – Coastal Protection; and
- State Environmental Planning Policy No 64 (SEPP 64) – Advertising and Signage.

No Regional Environmental Plans (REPs) apply to this proposal.

2.2.1 Randwick Local Environmental Plan 1998 (LEP)

The proposed development would be within the Randwick local government area (LGA). The principal planning instrument in this LGA is the Randwick LEP 1998. The Randwick LEP specifies the existing zones within the LGA down to the high water mark at the ocean.

The Botany Mill site is located within an Industrial Zone (zone 4A) and under the provisions of Randwick LEP the proposed development is permissible with consent in this zone.

The objectives of the 4A zoning relevant to the New Paper Mill include:

- accommodating traditional and modern forms of industrial developments and encouraging economic and employment growth;
- encouraging development of and accommodating innovation in types of industrial development; and
- enhance and improve the physical environment by minimising disturbances caused by air, water, noise and other pollutants.

The New Paper Mill is consistent with the above objectives in that:

- the New Paper Mill development involves erecting and operating a modern paper making machine on an established industrial site;
- the New Paper Mill will encourage economic growth by improving efficiency of the current process; and
- the New Paper Mill will result in an improvement in water management, an improvement in air emissions, and a decrease in noise impacts on surrounding residences.

Other relevant clauses of the LEP have been assessed against the proposed New Paper Mill, these are discussed below.

Clause 32 (4) Floor Space Ratio (FSR). The LEP specifies the maximum floor space ratio of 1:1 for the zoning. The current total floor space of buildings on the AMCOR site is 67,795m^2 (Julie Bindon and Associates, 1997), representing a ratio of about 0.5:1. The proposed New Paper Mill development involves demolition of the old mill buildings and associated infrastructure, with an approximate floor space of 15 000 m^2, and construction of the New Paper Mill having a total floor space of approximately 15,000 m^2. The new floor space ratio for the site will therefore not change. This floor space ratio complies with the provisions of the LEP.

Clause 36 (4) Additional Development in Industrial Zones. The Port Botany Landuse Safety Study (1996) was considered in the assessment of the project. This Study examines competing land uses in the area, including activities involving hazardous material, other industrial and commercial uses, Sydney Kingsford Smith Airport and residential areas. It provides a strategic framework to assist decision makers to integrate development opportunities and safe land use. The key recommendations of the study, although focussed on port activities, are addressed in **Table 2-1** below, along with how those recommendations were considered in this EA.

Clause 40A Master Plans. The LEP normally requires a Master Plan for development applications of more than 4,000m^2. However, this requirement is usually targeted at residential development or commercial development with multiple users. As the proposed development would continue an existing use for a single user it is not appropriate to prepare a Master Plan for the development.

- **Table 2-1: Recommendations from Port Botany Land Use Safety Study**

Developments in the Port area should undergo early risk assessment and comprehensive environmental impact processes to demonstrate conclusively that they will not contribute to any increase in cumulative risks, nor will there be any propagation of risks to neighbouring facilities	This EA demonstrates there will not be any increase in cumulative risk.
Development controls should be put in place to ensure there is no significant increase in the number of people exposed to risk outside the residential risk corridor.	AMCOR has no influence in changes in adjoining land uses (i.e. increase residential density). Nevertheless, there will be no change in risks to the existing residential areas associated with the proposed works.
Risk reduction and safety management measures should be implemented	Safety and environmental management measures will be implemented as part of the project. Also, the volumes of dangerous goods stored onsite would decrease and would be located further away from residential zones.
Emergency plans and procedures and fire prevention and protection systems should be kept up to date.	AMCOR will continue to maintain its existing fire prevention and protection systems.
Port users should adopt community right-to-know principles to ensure the community is adequately informed.	AMCOR has an established process of community consultation and this has been utilised to inform the public about the project.

Clause 42B Contaminated Land. Surface lands may be disturbed in the construction works and a preliminary assessment of the levels of soil contamination has been made. This is described in **Section 6.3**. More detailed sampling would be undertaken pre construction.

Schedule 3 (Heritage Items) of the LEP lists the APM Building at 1891 Botany Road as a heritage item (No. 111). This building would be demolished for the New Paper Mill. Clause 43(2) states that the Consent Authority must consider the extent to which the proposed New Paper Mill would affect the heritage significance of the item. Under Clause 43(3) consent to a DA may only be granted following consideration of a report which assesses the impact of the proposed New Paper Mill on the heritage significance of the item in its setting. The results of the heritage assessment are presented in **Section 6.13**.

2.2.2 State Environmental Planning Policy (SEPP) – (Major Projects) 2005

This SEPP was formerly known as *SEPP State Significant Development 2005*. The SEPP defines development which is considered to be a major project under Part 3A of the *Environmental Planning and Assessment Act 1979*. The SEPP repeals SEPP 34 Major Employment Generating Industrial Development and SEPP 38 Olympic Games and Related Development Proposals, as well as provisions in numerous other planning instruments, declarations and directions.

Under this SEPP, development for the purposes of "paper recycling" which employs more that 100 people or has a capital investment value of more than $30 million is considered to be

a Major Project. The New Paper Mill will involve a capital investment of over $30 million and therefore would be a Major Project under the SEPP, and would require the approval of the Minister for Planning.

2.2.3 SEPP 11 – Traffic Generating Developments

The primary objective of this policy is to ensure that the Roads and Traffic Authority (RTA) is made aware of, and given the opportunity to make representations in respect of developments referred to in Schedules 1 or 2. Schedules 1 and 2 of SEPP 11 have clauses that relate to the erection of a building for the purposes of industry. The proposed development falls within the requirements of SEPP 11, and would be referred to the RTA for its consideration. However, it should be noted that overall vehicle numbers would not change significantly with the operations of the New Paper Mill.

2.2.4 SEPP 33 – Hazardous and Offensive Development

SEPP 33 provides definitions for "hazardous industry", "hazardous storage establishment", "offensive industry" and "offensive storage establishment". Any application to carry out a potentially hazardous or potentially offensive development must be advertised for public comment, and applications to carry out potentially hazardous development must be supported by a screening level hazard analysis.

The proposed development could potentially be considered a hazardous development under SEPP 33 due to the storage and use of chemicals in the paper making processing. A screening level assessment of the volumes of chemicals (including Class 5.1, 6.1 and 8) to be used and stored on site and the location of the nearest receptors was undertaken as part of this EA (refer to **Section 6.16**). This assessment found that the volumes of some chemicals would exceed screening level threshold criteria and therefore, a Preliminary Hazard Assessment has been undertaken and is contained in **Appendix F.**

It should be noted that chlorine is no longer used in the paper making process and all existing stores have been removed from site.

2.2.5 SEPP 55 – Remediation of Land

SEPP 55 aims to promote the remediation of contaminated land for the purpose of reducing the risk of harm to human health or any other aspect of the environment. SEPP 55 relates to the *Contaminated Land Management Act, 1997* (*CLM Act*) which is administered by the NSW DEC. Responsibility for remediation and for reporting of contamination to the DEC rests with the owner of the land or with the person or organisation that caused the contamination.

Clause 7 of SEPP 55 states that a consent authority must not grant consent to any development on contaminated land unless it is satisfied that the land is suitable in its contaminated state (or will be suitable, after remediation) for the purpose for which the development is proposed to be carried out. Contamination investigation studies undertaken in the western section of the Botany Paper Mill concluded there appeared to be no evidence of significant contamination that would constrain the proposal from proceeding or trigger the requirements of the SEPP (refer to **Section 6.3.1**). However, additional soil and groundwater analysis would be undertaken to clearly identify any contamination and, if required, appropriate Remediation Action Plans would be prepared.

2.2.6 SEPP 64 – Advertising and Signage

SEPP 64 aims to improve the amenity of urban and natural settings by ensuring signage, including advertising, is compatible with the visual character of an area, provides effective communication in suitable locations and is of high quality design and finish. Under this SEPP the consent authority for any proposed signage would be DoP.

It is proposed that new signage would be installed on the sides of the New Paper Mill building, primarily consisting of AMCOR's name and logo. Details of the signage are presented in **Section 6.15** and the signage is assessed against the requirements of SEPP 64 in **Appendix A**.

2.3 Other State Legislative Requirements and Compliance

2.3.1 Protection of the Environment Operations Act, 1997

The *Protection of the Environment Operations Act (POEO Act) 1997* is the primary piece of legislation regulating pollution control and waste disposal in NSW and is administered by the Department of Environment and Conservation (DEC - formerly EPA). Under Section 48 of the *POEO Act*, scheduled activities (as defined in Schedule 1 of the Act) require an Environment Protection Licence (EPL).

Paper, pulp or pulp product industries fall within the definition of a scheduled activity under the *POEO Act* and AMCOR already hold an EPL for their current operations. As a result AMCOR would request that their existing EPL be modified to incorporate the construction and operation of the New Paper Mill.

2.3.2 The Water Act, 1912

The *Water Act* is also administered by DNR. Under this Act, licences would be required if sub-surface water was to be extracted. AMCOR currently holds a licence for its current operations to extract groundwater from the Botany Sands Aquifer via Snape Park borefield. AMCOR would not require an increase in the quantity of groundwater it is currently

permitted to extract from the Botany Sands Aquifer via Snape Park borefield and would not, therefore, require changes to AMCOR's existing licences. It should be noted that the volume of groundwater extracted from the Snape Park borefield would decrease due to improved control of the groundwater extraction system.

2.3.3 Occupational Health and Safety Act 2000 and Regulation

The statutory requirements for the management and licensing of dangerous goods has been incorporated in the *Occupational Health and Safety Act* and *Regulation*, and is administered by NSW WorkCover. A licence from NSW WorkCover would be required if the quantities of dangerous goods to be handled or stored on site exceed the quantities specified in the *Regulation*. AMCOR currently holds Dangerous Good licences for its current operations. Based on the quantities of dangerous goods detailed in **Section 6.16** and **Appendix F**, the New Paper Mill would require a continuation and modification of its license under this Act.

2.4 Other Relevant Strategies, Policies and Guidelines

2.4.1 NSW State Groundwater Policy Framework, 1997

The purpose of this Groundwater Framework Policy document is to provide a clear NSW Government policy direction on the ecologically sustainable management of the State's groundwater resources for the people of NSW. The State Groundwater Policy is a framework policy designed to establish:

- Objectives and principles for groundwater management;
- A coordinated program for policy development, reporting and review;
- Tools for policy implementation; and
- Opportunities for information sharing.

The purpose of the Policy is to guide the decision-making of State and local government, as well as landholders in their management and use of groundwater. AMCOR's current practice of groundwater extraction from Snape Park and the existing and proposed use of groundwater extraction with the New Paper Mill are compatible with this Policy.

2.4.2 Statement of Intent – Georges River Botany Bay System

Objectives and recommendations from the Healthy Rivers Commission for Georges River-Botany Bay have been further developed by the NSW State Government for inclusion in an overall Statement of Intent to improve water and ecological quality of the coastal river system.

Although the Statement of Intent primarily details actions and responsibilities of State and local government agencies, the implementation of some actions may affect AMCOR, namely:

- *Demand Management Programs (Item 1.1)* – The New Paper Mill would use approximately 60% less town water compared to the Existing Paper Mill;
- *Assessment of impact from new developments (Item 3.5)* – Comprehensive impact assessments of new developments on Botany Bay are required. This EA meets this requirement;

2.4.3 Industrial Noise Policy (EPA)

In January 2000, the EPA released the Industrial Noise Policy (INP), which provides a framework for deriving project specific operational noise limits for consents and licences for particular projects.

The operational noise assessment was undertaken in accordance with the guidelines of the INP (refer to **Section 6.10.4** and **Appendix C**) and the New Paper Mill would meet the project-specific noise guidelines derived using the INP.

2.4.4 Sydney Water - Trade Waste Policy

This Policy outlines principle strategies used by Sydney Water to control non-domestic sources of wastewater. The Policy also establishes the conditions under which Sydney Water will agree to accept trade wastewater discharges. AMCOR has an existing Trade Wastewater Agreement, however under the proposal a new Agreement or a modification to the existing Agreement would be required.

2.5 Permits and Licenses

A summary of licence/permit requirements for construction and operation of the New Paper Mill are provided in **Table 2-2**.

- **Table 2-2: Summary of Known Statutory Requirements**

Legislation	Description
Protection of the Environment Operations Act, 1997	AMCOR holds an Environment Protection Licence (EPL) (No. 1594) for its existing operations. A new licence or a modification to the existing licence would be required for construction and operation of the New Paper Mill.
Sydney Water Trade Waste Policy	The existing Trade Waste Agreement would be re-negotiated.
Occupational Health and Safety Act 2000	Modification to existing Dangerous Goods Permit would be required

2.6 Other Approvals

Approval would be sought from Sydney Ports Corporation to continue the discharge treated waste water into Bunnerong Canal.

3. Need for the Project

This chapter provides justification and explains the "need" for the New Paper Mill. Specifically, this chapter describes:

- Economic and environmental benefits;
- Limitations of the existing paper-making facility; and
- Consequences of not proceeding.

3.1 Economic and Environmental Benefits

Wastepaper recycling has a number of important economic and environmental benefits to NSW including:

- Transforming wastepaper into a resource with a positive financial value, rather than a waste product that requires disposal and has a negative financial value;
- Decreasing the volume of recyclable paper material sent to landfill. The NSW Government has committed to a substantial reduction in the volume of waste sent to landfill from Sydney;
- Reduced packaging costs in NSW (i.e. packing paper would not have to be imported to NSW);
- Recycling of resources (i.e. the paper is derived from cellulose in trees);
- Decreasing the amount of hazardous chemicals used in papermaking. As the wastepaper has already been processed, the quantity and type of hazardous chemicals used to reprocess the wastepaper is considerably reduced compared to virgin pulp; and
- Generating employment opportunities both direct and indirect.

Market predictions indicate that the volume of wastepaper collected in NSW will increase in the near future with new centralised wastepaper collection facilities in Sydney and regional NSW coming online. Currently AMCOR collects and processes approximately 50% of wastepaper collected in NSW at its Existing Paper Mill. It should be noted, should this proposal not proceed and the Paper Mill closes down, there will be a direct decrease in the wastepaper processing capacity of NSW leading to an increase in the amount of wastepaper being sent to landfill or being exported for processing in other states or countries.

The Existing Paper Mill is based on 1960's technology, which limits the quality of the finished product and the efficiency of the paper making process. The current environmental performance of the Existing Paper Mill is acceptable, although not best practice with any

improvements limited by the old technology on site and the somewhat ad-hoc nature of previous development on site. This includes the following aspects:

- The location and design of buildings and the layout of the plant are not optimal for reducing impacts such as noise and odour or increasing the efficiency of the plant operations; and
- The efficiency of the Existing Paper Mill is relatively low in comparison to modern plants (i.e. use of electricity, natural gas, water and the generation of waste products per unit of paper produced).

Therefore, there is a need to improve the capacity and efficiency of the paper making process, the quality of the finished product and the environmental performance of the Botany site to meet future requirements.

An aerial photograph of the existing site, showing the Botany Paper Mill within its local context, is included as **Figure 3-1**. The layout of the Botany Mill, showing the existing plant, is included as **Figure 3-2.**

3.2 Limitations of the Existing Paper Mill

3.2.1 Capacity

The Existing Paper Mill can process approximately 271,000 tonnes of wastepaper to produce 250,000 tonnes of finished paper products annually. Market research undertaken by AMCOR indicates increasing demand for low weight packaging including recycled corrugated box materials. In order to meet this growth, the production of paperboard from wastepaper will need to increase. Research indicates that this additional wastepaper is likely to come from the following sources within the Sydney metropolitan region and regional NSW:

- Reduction in export of wastepaper;
- Increase in collection of wastepaper within rural areas (which presently go to landfill); and
- Increase in metropolitan solid waste recycling (some Council collections, which presently go to landfill).

To meet this increase in demand and to ensure the competitiveness of paper production in NSW, the capacity of the wastepaper processing industry in NSW must be increased.

Figure 3-1
BOTANY MILL AND SURROUNDS

3.2.2 Technology & Type of Paper Products

Since the 1960s packaging technology has advanced significantly and as a result the quality and type of paper products used for new packaging has changed. As noted in the introduction, the Existing Paper Mill machines are based on old technology and therefore have the following disadvantages:

- In comparison to modern machines productivity is low. (They produce paper at less than half the speed of new machines);
- The finished product is too heavy for an increasing range of lightweight applications;
- The quality of the finished product is more variable than desirable for the optimum operation of high speed corrugators;
- Maintenance cost and energy usage for the existing paper machines is high in comparison to modern machines; and
- The width of No. 8 machine also inhibits its efficiency in supplying 2.8 metre wide reels as required for modern corrugating machines.

If the proposal to construct a New Paper Mill at the Botany site were not to proceed, AMCOR's operations would not be competitive, and the Botany Mill would be forced to close down within a relatively short time frame. The consequences of not proceeding are outlined in **Section 3.3**.

Incorporating the latest paper making technology allows the production of strong light weight packaging papers whilst, at the same time, achieving world class performance benchmarks in terms of minimum water usage, minimum effluent discharge, minimum energy consumption and reduced waste volumes sent to landfill. The light weight packaging product produced by the New Paper Mill would allow for a significant reduction in unit packaging weight, without loss of box performance.

Consequently to meet AMCOR's business objectives and the customer's requirements for modern high quality paper products, the current paper making machinery at the Botany site requires replacement.

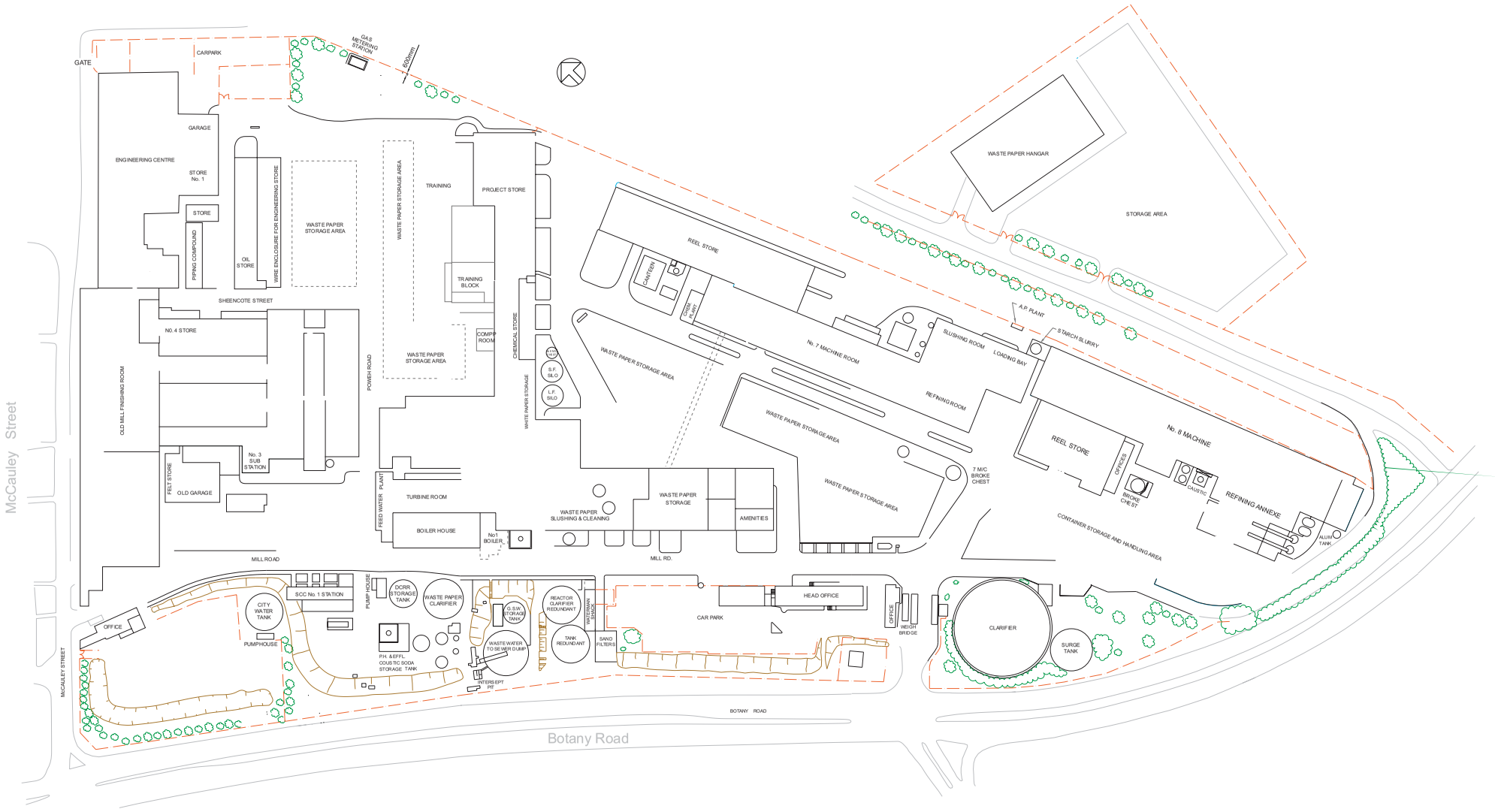


Figure 3-2
EXISTING PLANT LAYOUT

3.3 Consequences of Not Proceeding

The consequences of not proceeding with the New Paper Mill in terms of wastepaper disposal and processing in NSW is discussed in detail in **Section 4.1**. Other short-term consequences include:

- Closure of the Botany mill in the next 5-10 years as wastepaper processing at the site becomes uneconomic;
- The loss of 140 direct jobs at the Botany Mill;
- A decrease in waste paper processing capacity in NSW; and
- The likely loss of industry interstate.

The consequences of the continued operation of the Existing Paper Mill include:

- Continuing restrictions in the type and quality of the finished product;
- Only minor improvements in the environmental performance and efficiency of the Botany operations;
- An increase in the quantity of wastepaper going to landfill (i.e. metropolitan and rural solid waste recycling will continue to go to landfill); and
- Paper for AMCOR's corrugated box plants will need to be imported from overseas and/or sourced from interstate to satisfy AMCOR customer demand in NSW.

4. Options Evaluation

As the New Paper Mill project would involve a significant investment by AMCOR, alternatives in the location, design, technology and operational characteristics of the New Paper Mill were investigated fully to ensure that the most advantageous economic and environmental alternatives were selected as the preferred option.

The alternatives considered as well as an assessment of the "no development" option are presented in the following sections.

4.1 The "No Development" Option

The "no development" option, that is maintaining the Existing Paper Mill, is feasible in the short-term. However, as the demand for corrugating board outstrips supply and the demand for lightweight papers increases, paper would have to be imported if the proposal did not proceed. During the next 5-10 years, AMCOR would be forced to close the Botany operations as the Existing Paper Mill would become uneconomic to run due to the age, inefficiency and limitations of its technology. In addition, No. 8 machine is the incorrect width for the corrugator market.

If there was no New Paper Mill to replace the processing capacity of the Existing Paper Mill, approximately 40% of the wastepaper collected in NSW would have to be disposed of by alternative means – either disposal to landfill, or transported to another State or country for processing. Both these alternatives have considerable economic and environmental costs to NSW. Also as wastepaper is now considered to be a resource (rather than rubbish), the economic benefits of utilising this resource would be lost to NSW with the "no development" option.

The construction of a New Paper Machine incorporating modern technology would yield a significant improvement in environmental performance. The "no development" option has very limited opportunity for further environmental improvement.

4.2 Alternatives

4.2.1 Alternative Locations

AMCOR has undertaken several studies to investigate suitable locations for the New Paper Mill. The studies assessed a total of eight sites in NSW (including the current Botany site) using criteria such as:

- Project permissibility;
- Land use context;

- Future planning;
- Environmentally sensitive features or issues;
- Transport and access; and
- Access to utility services – i.e. electricity, gas, water, waste disposal (liquid and solid).

Results from the initial studies in 2000 are summarised in **Table 4-1**. In addition to the NSW sites, AMCOR has also considered possible interstate locations.

Additionally, the economics of developing and servicing each location, supplying raw materials and the proximity to finished product markets were assessed. The three potential sites outside the Sydney metropolitan area all ranked poorly in the economic assessment because they were distant from the major raw material source (wastepaper - which is sourced primarily from the Sydney metropolitan area) and were also distant from the major destinations of the finished product. The extra costs associated with transporting the wastepaper mostly from Sydney and the finished product to its end destination discounted further consideration of sites outside Sydney.

Of the two potential sites in Sydney, the Liverpool site has many environmental constraints and likely amenity and heavy vehicle access problems. Economically this site rated highly due to its close proximity to consumers of the finished products. The Penrith site has been sold for potential subdivision and is no longer a viable option.

A supplementary study was conducted in 2004 to assess an additional two sites in Sydney at St Marys. Both sites had potential land use constraints as were adjacent to new housing developments. Economically the sites rated highly due to their proximity to a recycled water treatment plant that could provide water for the paper making process.

Eight sites have been assessed in total, overall the existing site at Botany had many advantages over the others including:

- manageable environmental constraints;
- good existing access to raw materials, finished products markets and utilities;
- permissible zoning;
- good heavy vehicle access; and
- minimal social impact.

Consequently the existing Botany site was selected as the preferred location for the proposed New Paper Mill. Elevation diagrams for the New Paper Mill are presented in **Table 4-1** and

Figure 5-2 shows the proposed layout of the New Paper Mill within the context of the existing Botany site.

4.2.2 Alternative Processes/Technology

During the planning for the New Paper Mill, alternative technologies and configurations were considered. These alternatives primarily consisted of paper machines from different manufacturers and ranged from using multiple low-technology machines to a single fully computerised high technology machine.

The low-technology alternatives were discounted as there were concerns about the quality and cost of their final product, the control over the paper making process and their environmental impacts. Technological advantages associated with the proposed new paper making process and plant equipment used are outlined in **Sections 3.2.2**.

4.2.3 Alternative Plant Layouts on the Botany Site

A number of alternative plant layouts at the Botany site were assessed during the planning for the proposed New Paper Mill. The constraints on plant layout included:

- The requirement that the two existing paper machines and the Waste Paper Plant remained operational during the Construction phase;
- The requirement that one existing paper machine and the Waste Paper Plant remained operational during the Transition phase;
- Other auxiliary facilities such as the wastewater treatment plant and the power house remained operational during Transition; and
- The proximity of residences to north of the site.

A comparable upgrade (Project 100) proposed in 2000 that did not proceed was reviewed during the planning phase of this proposal. Project 100 involved the construction of a New Paper Mill on the western portion of the site and the construction of a new paper machine, waste paper plant, chemical storage area, engineering store, finished product store, water treatment system, package boiler systems, waste paper storage yard and an internal road system.

All these factors were considered in the final design resulting in the preferred plant layout.

Table 4-1: Constraints for Alternative Sites for New Paper Mill

Site	Zoning in relation to Project B9	Current & Future Surrounding Development	Environmental Constraints	Traffic & Access	Site Services
Kurri Kurri	Currently not permissible but change planned	Nearest non-industrial development > 1km Additional industrial development on site planned	▪ Topography – would require some earthworks ▪ Flora & Fauna – Threatened species on site and some important habitat areas ▪ Indigenous Issues- Archaeological sites present in adjacent areas and may be a possible constraint ▪ Hazards – bushfires & mine subsidence minor constraints	▪ Road access outside the site would have to be upgraded ▪ Considerable on site construction of road and rail infrastructure would be required	▪ No services currently on site, however, most are available in close proximity ▪ Solid waste disposal potential constraint
Liddell Power Station	Currently not permissible but possible to change	Only power station currently. No other development planned	▪ Flora & Fauna – Unknown but likely to be important habitat areas on site	Current access via Liddell Power Station suitable	Access to all services including steam and solid waste disposal via Liddell Power Plant
Newcastle – Steel River Project	Permissible	Borders residential and industrial land. No changes in surrounding land use proposed	▪ Noise – noise mitigation will be required due to nearby residences	Existing road access to site suitable	All services apart from steam readily accessible
Liverpool Showground	Currently not permissible	Borders residential, recreational and industrial land No changes in surrounding land use proposed	▪ Flora & Fauna –important habitat areas on site but can be avoided (minor constraint) ▪ Noise – noise mitigation will be required due to nearby residences ▪ Air quality – additional treatment of air emissions may be required ▪ Visual – due to adjacent residences and change in land use	Road access to site requires the purchase of additional land which may be difficult	All services apart from steam readily accessible
Existing Botany site	Permissible	Borders residential and industrial land. No changes in surrounding land use proposed	▪ Heritage – Old mill façade is listed in Randwick Council Heritage Plan ▪ Noise & Odour – noise and odour mitigation will be required due to nearby residences	Existing road access to site suitable	All services readily available
Penrith	Permissible	Borders residential and industrial land. Increase in residential land use possible	▪ Flooding – minor constraint due to proximity of Nepean River ▪ Flora & Fauna – Adjacent wetland will require protection ▪ Noise – noise mitigation will be required due to nearby residences ▪ Air quality – additional treatment of air emissions may be required	Modifications to external roads would be required	All services apart from steam readily accessible

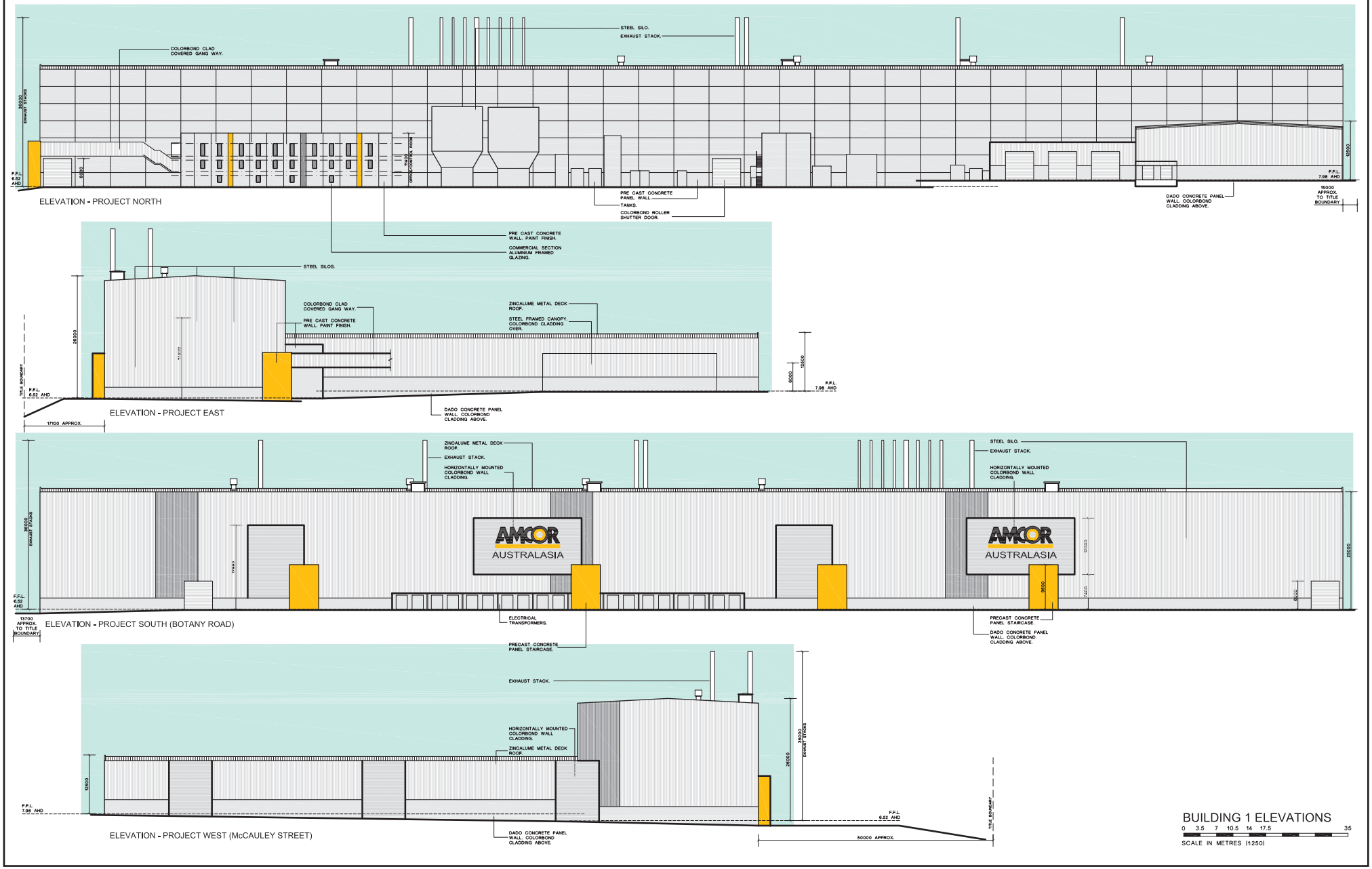


Figure 4-1
NEW PAPER MILL ELEVATION DIAGRAMS

4.2.4 Alternative Sources of Energy and Water

There are few alternatives for the sourcing of energy and water for the proposed New Paper Mill. It must be noted that the overall energy efficiency of the plant per unit of paper produced would increase with the New Paper Mill.

Town water is used for critical processes which require high quality water with a low level of contaminants. Groundwater is used for less critical processes where high quality water is not required. Currently the use of town water is minimised, with approximately 75% of water sourced from groundwater.

For the New Paper Mill, water extracted from Long Dam would be used as a substitute for town water for many processes that currently use town water. Approximately 60% less town water would be required for the New Paper Mill.

Alternative sources of water include treated effluent from Sydney Water and water from the Orica Groundwater Reverse Osmosis (RO) Treatment Plant. Sydney Water proposed to construct an effluent main from the Liverpool/Glenfield Sewage Treatment Plants in 2004, roughly following the SWSOOS sewer, which passes the Botany site. This effluent main would contain tertiary treated effluent and would be available for industrial applications. However, this development has not proceeded and it is unlikely that the treated effluent would be a suitable substitute for town water.

If available, water from the Orica Groundwater RO Treatment Plant may be a suitable substitute for town water however it would need to meet the following requirements

1) Does not cost any more than the current water supply;
2) Is uncontaminated as the paper produced at the Botany site is used for food packaging;
3) Does not have a high total dissolved solids (TDS) content; and
4) Provide a dependable supply of water into the future.

During the design phase the use of water from Orica's Groundwater RO Treatment Plant would be investigated as a substitute for town water.

Alternative sources of gas and electricity are not available.

4.2.5 Alternative Transitional Arrangements

The New Paper Mill at Botany would require commissioning before full production can commence and the existing paper making machines decommissioned. During this phase the quality and quantity of finished product from the New Paper Machine can not be guaranteed.

As it is imperative that AMCOR ensures supply to its finished product customers, a number of alternative strategies were considered for the Transition phase. These included:

1) Reducing or increasing the length of the estimated commissioning for the New Paper Mill;
2) Stockpiling finished product over the next three years and operating neither of the existing paper machines during the Transition;
3) Operating both of the existing paper making machines (No. 7 & No. 8) during the Transition; and
4) Operating one of the existing paper making machines (No. 7 or No. 8) during the Transition.

The Transition phase, including commissioning of the New Paper Machine, is expected to be around 6-9 months. The risks in reducing the Transition phase were considered too great, especially considering that the proposed New Paper Mill will be relying on a single paper making machine, rather than two machines as is the existing situation. Increasing the Transition phase, while ensuring the smooth transition to the new production facilities, would result in additional costs to AMCOR due to the continuing operation of the existing inefficient plant and would result in additional environmental impacts.

Stockpiling was not considered viable because if there were problems during the Transition phase and the New Paper Mill was not able to commence full production within the original time estimate, the stockpile could be rapidly depleted and AMCOR would be unable to service its finished product customers. The commercial risks to AMCOR from this option were assessed as too high. Also there were some concerns about the existing operations being able to produce sufficient finished product to stockpile and the ability to respond to changes in finished product markets.

Operating both of the existing paper making machines and the New Paper Mill during the Transition was not considered a viable option as it would require major installation of additional utilities to support three machines and would likely result in an unacceptable environmental impact.

Therefore the preferred alternative is to operate only one of the existing paper making machines during the 6-9 month Transition phase for the New Paper Mill and retain the other as a standby machine. The standby machine would only be run should the new machine be off line for an extended period. During this Transition phase, when the new Paper Machine and one of the existing machines is operating, there would potentially be a temporary increase in the environmental impact of the Botany Mill. This would decrease once the New Paper

Machine has been fully commissioned and the remaining existing machines are able to be taken off-line and decommissioned. In recognition of potential additional impact during the Transition, the EA will assess the impact of three phases of development in the proposed New Paper Mill namely – Construction, Transition and Operation.

4.3 The Preferred Scheme

The preferred scheme for the proposed New Paper Mill is to construct a single new high technology paper machine on the existing site at Botany.

This would be located on the southern boundary of the site to maximise the distance between the New Paper Machine and surrounding residences.

During the Transition phase of the New Paper Mill, one of the existing paper machines would continue operating to provide security of supply to AMCOR's finished product customers. Both existing paper machines may be operated during times when the new machine is off line in the first 1-3 months of the Transition phase. For the remainder of the Transition both machines would only operate if the new machine was unavailable for an extended period. It must be noted that at no time would all three paper machines be operational.

A detailed description of the preferred scheme is presented in the following chapter

5. The Proposed New Paper Mill

5.1 Introduction and History of Paper Making at Botany Mill

Paper making operations on AMCOR's Botany site commenced in 1901 with Federal Paper Mills' construction of No. 1 machine. A further 7 paper making machines were added progressively during the next 70 years, accompanied by various building expansion works and decommissioning of older machines. AMCOR Packaging now operates the paper making facility at Botany, where the majority of paper making activities occur towards the eastern end of the site at the No. 7 and No. 8 paper making machines.

5.2 Proposed Paper Making Mill

The New Paper Mill would be located within the existing AMCOR site, along the southern boundary, in the western corner (See **Figure 5-2**). There are only a small number of vendors who have the technological capability of supplying a machine suitable for this project. Depending on the selection of the preferred vendor, the location of some of the ancillary areas to the paper manufacturing area may move (eg. the silos at the southern end of the site may move up to 50m).

The overall paper making process at the New Paper Mill would be similar to the existing process used at the Botany site. However there are additional sub processes and significant technological improvements throughout the New Paper Mill which would deliver increased capacity and improved utilisation of resources.

5.2.1 Description of Paper Making Process

The stages involved in the paper making process are presented in a process flow diagram (refer **Figure 5-1**). The paper making process involves waste paper, typically old cardboard boxes, newsprint, magazines, white papers, cartonboards and paper bags, being trucked to the mill for use in the production of paper and board for corrugated boxes. The wastepaper is stored temporarily within the waste paper storage area and transferred onto conveyors, via a front end loader, to the hydrapulpers for pulping.

A large metal rotor in the base of the pulpers slushes the water and wastepaper around, separating the wastepaper into individual fibres. Contaminants, such as plastics, rubber, metal, timber and glass, are removed at the pulpers. The slurry fibre mix then undergoes a series of screenings to remove other contaminants and segregate the fibres according to their size and is then stored in two separate silos according to the length of the fibres.

From the storage silos the cleaned fibres are pumped to the paper machine where they are uniformly spread over an endless moving plastic mesh. Excess water is drained through the

plastic mesh leaving a formed paper web. The paper web is then passed through a series of roll presses to squeeze out water, and then wound through polished steam heated cast iron cylinders where the majority of remaining water evaporates.

Starch is then added to improve the paper properties of the board. Further water removal occurs, using steam heated drying cylinders, and then the paper is wound onto a spindle to form a jumbo roll. The finished reel is then cut to customer order sizes and conveyed to the dispatch area where a roll grab truck stacks or loads the reel for shipping to the customer.

5.2.2 Location

As outlined in **Section 4.3**, the New Paper Mill would be located along the southern boundary of the site, in the western corner. This area comprises a number of redundant buildings and both redundant and currently operational service's infrastructure. A plan showing the layout of the proposed New Paper Mill building and ancillary areas is included as **Figure 5-2**. It must be noted that some of the ancillary areas to the paper manufacturing areas may change during the detailed design phase.

The new machine and ancillary structures would be located wholly within AMCOR's site boundary, adjacent to the Botany Road and McCauley Street frontages. The layout has been designed to maximise the distance between the New Paper Mill and residences.

5.2.3 New Paper Mill

The New Paper Mill would produce a 5.66 m wide paper sheet at an average output of 945 tonnes per day. This average output is greater than the current combined capacity of the No. 7 and No. 8 Machines, which is 705 tonnes per day. The New Paper Machine would be located within a largely enclosed building having a footprint approximately 275 m long by 40 m wide. The heights of the new buildings are presented in **Table 5-1** and building elevation diagrams are presented in **Figure 4-1**. The New Paper Machine would be located on two floors of the new building.

- **Table 5-1: Building Heights**

Area	Building Height
Finished Product Storage	12.5 m
Paper Machine Building	25 m
Engineering Store	12.5 m

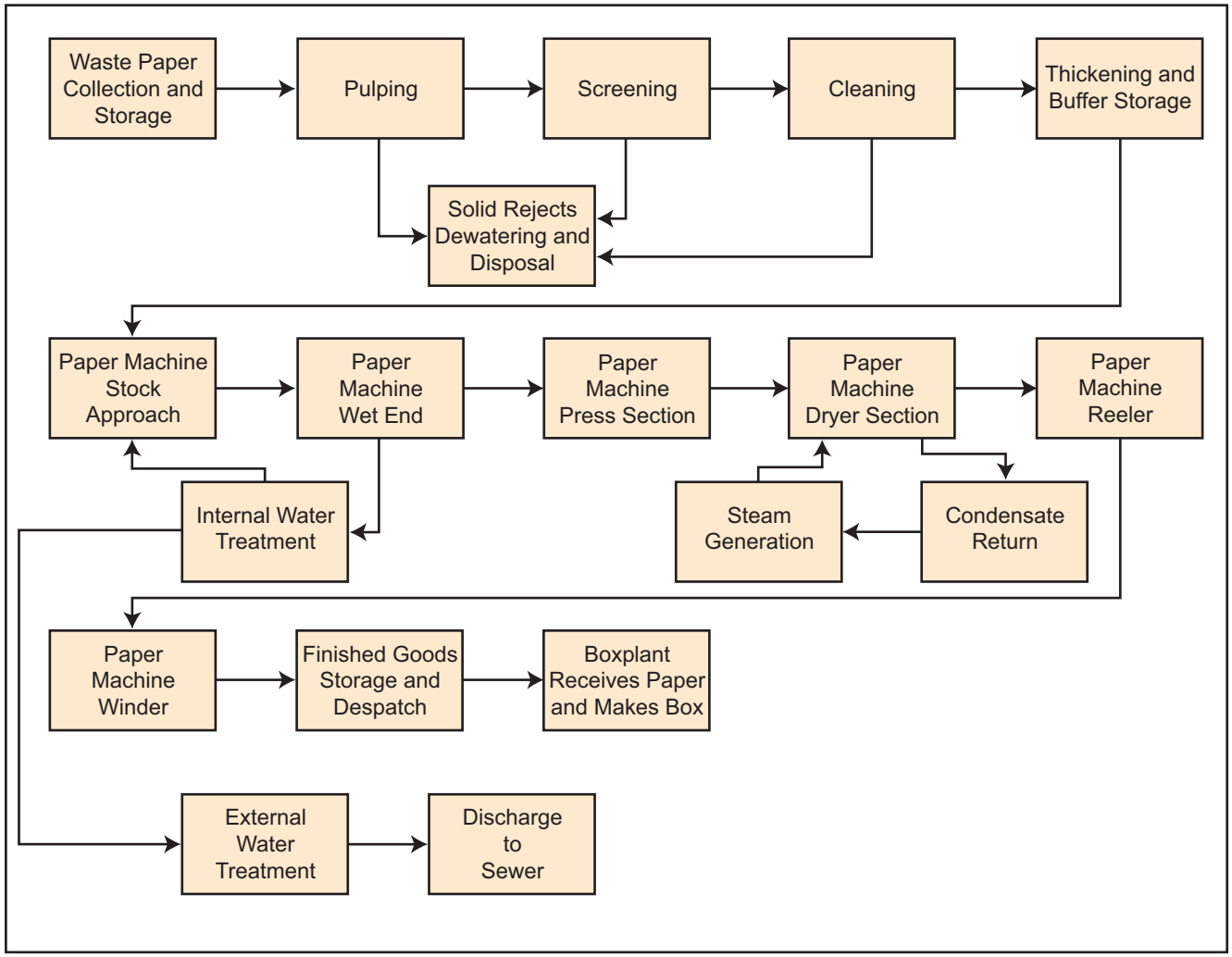


Figure 5-1
PAPER MAKING PROCESS FLOW DIAGRAM

The composition of the building is yet to be determined. However it is likely that the building would be metal (steel) clad or pre cast concrete and would be acoustically designed to attenuate noise emissions to an acceptable level. A number of fibre and water storage silos (nominally 3) would be located on the eastern border of the New Paper Mill building. These silos would be up 2-3 storeys high, and would be stainless steel.

The visual aspects of the new building including landscaping and architect's impression is discussed and assessed in **Section 6.15**.

5.2.4 Auxiliary Buildings & Infrastructure

Additionally the following infrastructure would be constructed:

- Finished Product Store and Despatch Area;
- Underground Services Infrastructure including water pipes, gas mains, electricity conduits, sewers and stormwater systems;
- Electricity Sub-Station;
- Internal Access Roads;
- Modifications to the Waste Paper Mill;
- Engineering Store and Workshop; and
- Chemical Storage Area.

The Electricity Sub-Station would be moved approximately 120m north east of its current location. The sub-station would be moved prior to the construction of the New Paper Mill.

The internal access roads would be re-configured to allow a more free flowing system. All traffic would enter the site through the existing entrance on Botany Road. New driver operated weighbridges for incoming traffic would be installed some distance from the entrance to virtually eliminate the need for queuing on Botany Road.

The Engineering Store would be used to store machine spare parts and consumables. The engineering store would be located to the north-east of the new Paper Machine building.

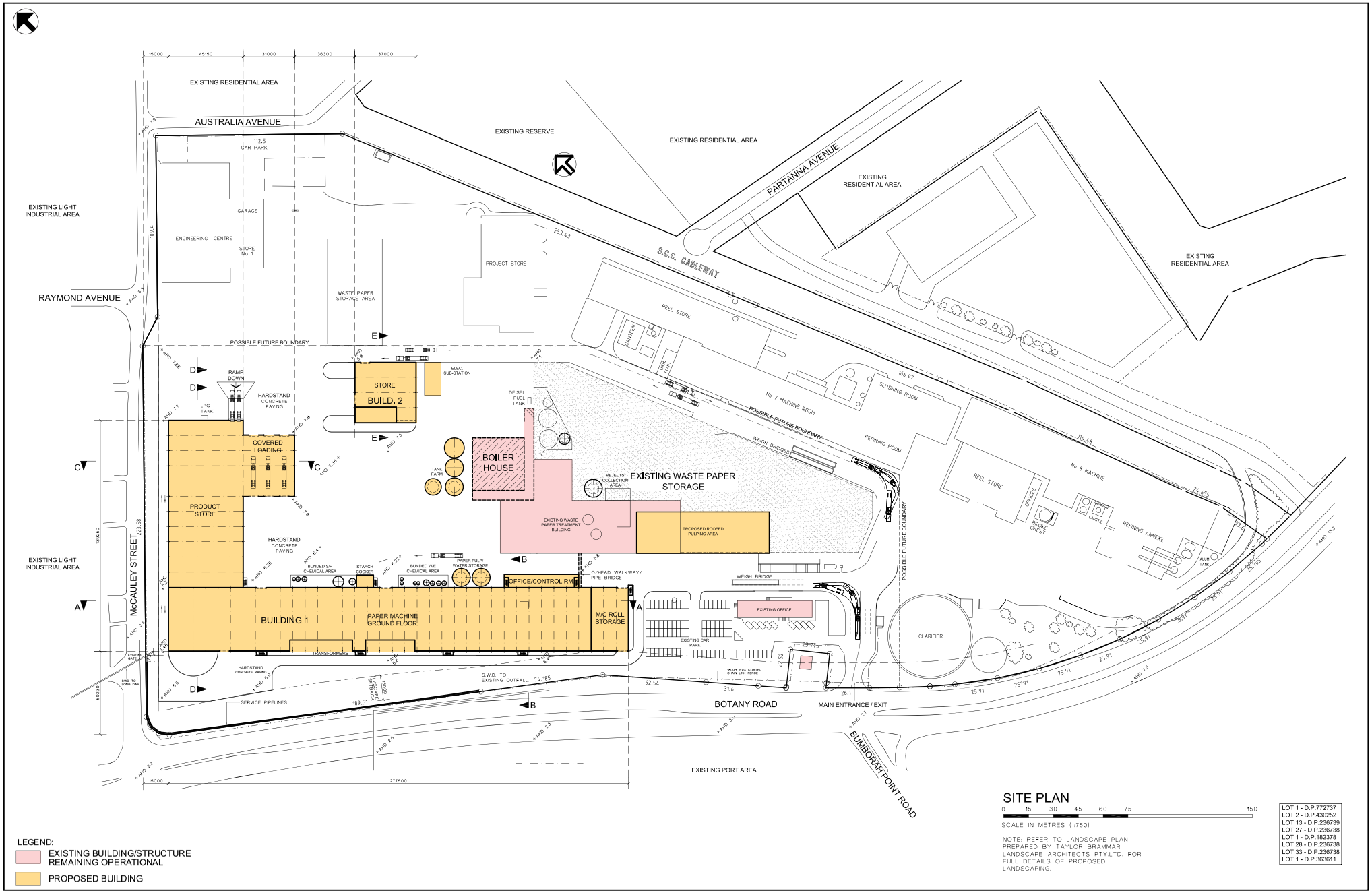


Figure 5-2
NEW PAPER MILL - CONCEPT DESIGN

5.3 Waste Paper Storage Area

The increase in production capacity of the New Paper Mill would require an increased quantity of waste paper and potentially a small increase in storage area. As outlined in **Section 3.2.1**, waste paper use would increase from approximately 271,000 tonnes/year (currently) to approximately 370,000 tonnes/year.

There would be no significant change to the current location of waste paper stored on site as a result of this proposal.

5.4 Chemical Bunded Storage Areas

Purpose designed and built Chemical Storage Areas would be constructed with the New Paper Mill. These new Chemical Storage Areas would have appropriate safety measures as per the requirements of the dangerous goods storage standards and codes. Any spills or leakages in the bunded areas would be reincorporated into the process water system. The main new Chemical Storage Area would be constructed adjacent to the New Paper Mill building (See **Figure 5-2**) and would store all bulk chemicals. A separate access and bunded delivery area for bulk chemicals would also be installed to ensure that chemical operations and deliveries are separated from other activities.

The type and quantities of chemicals used in the New Paper Mill would change from the existing conditions. There would be an increase in the quantities of Class 8 (Corrosive) and Class 5.1(Oxidising Agents and Organic Pesticides) substances stored on site. However, the quantities of most other dangerous goods stored on site would stay the same or decrease. The existing underground diesel storage would be replaced with an above ground storage and the underground storage tank (UST) tank removed. It should be noted chlorine gas is no longer used on site.

During the Transition phase there would be a greater volume and type of chemicals stored on site compared with the existing arrangements. The existing chemical storage locations would be closed progressively as Machines No. 7 and No. 8 are decommissioned.

The potential impacts of chemical storage on site are assessed in **Section 0**.

5.5 Finished Product Storage and Dispatch Area

The finished product (reel) store would be located at the north-west end of the new machine building (See **Figure 5-2**).

The new product dispatch area would be located adjacent to the south eastern side of the reel store (See **Figure 5-2**). This would consist of a paved enclosed area for loading semi-trailers, and B-doubles, with reels of finished product. Up to 3 semi-trailers would be able to be

loaded at once via specially designed Roll Grab Trucks. There would be two submerged docks on the north eastern side of the Product Store for container loading.

5.6 Wastewater Treatment System

A new Wastewater Treatment System, using Dissolved Air Flotation (DAF) has recently been installed and is currently in use. The DAF system would continue to treat internal process water and process water before discharge to the sewer.

5.7 Operational Characteristics

As is the current practice, the New Paper Mill would operate 24 hours per day, seven days per week and 52 weeks per year. A down time of 5 days per year would be necessary for regulatory inspections and major general maintenance to essential services .

Finished product would be loaded onto trucks and transported from the site 24 hours/day, 7 days/week. The majority of wastepaper would be transported to the site between 6 am and 8pm, 7 days per week. The existing Environment Protection Licence conditions specify that noise from the operation of the facility, including loading and unloading of material on the premises, shall not exceed an L_{A90} of 50 dB(A) between the hours of 9 pm to 7 am when measured or computed at any point within one meter of any residential boundary or any other noise sensitive premises. The project specific noise level, determined in accordance with the DEC's Industrial Noise Policy (INP) would be $L_{Aeq\ 15min}$ of 50, 49 and 47dB(A) for day evening and night respectively. The project specific noise level determined in accordance with the INP is likely to apply to the new operation.

5.8 Raw Materials Use

The range of raw materials used within the New Paper Mill will not differ from the existing. The primary input materials include:

- waste paper;
- starch;
- electricity;
- natural gas; and
- water.

The estimated waste paper and starch consumption during operation of the existing and New Paper Mill is summarised in **Table 5-2**. The estimated current and proposed consumption of water, electricity and natural gas during operation of the New Paper Mill is discussed in **Sections 6.17**.

- **Table 5-2: Raw Materials Consumption**

Heading	Unit	Existing Operation[1]	Transition Phase	New Paper Mill
Waste Paper	(tonnes/year)	271,000	305,000	370,000
Starch	(tonnes/year)	11,700	10,800	11,870

[1] based on 2003/2004 actual performance

Production capacity of the New Paper Mill is expected to increase from the current 250,000 tonnes/year of finished product, to approximately 345,000 tonnes/year. The consumption of waste paper input to the process would necessarily increase from approximately 271,000 tonnes/year (currently) to approximately 370,000 tonnes/year.

Despite the increase in production with the New Paper Mill, starch consumed within the process is expected to only slightly increase from the present 11,700 tonnes/year to around 11,900 tonnes/year, but will depend upon the Paper Machine configuration chosen and the product grade mix. The increase in efficiency per unit of paper produced is a combined result of the improved paper making technology incorporated into the new machine and the lighter weight of the paper sheet that will be produced. During the Transition, the rate of starch consumption would decrease to around 10,800 tonnes/year in line with the aforementioned technology improvements.

However, it must be noted that although the consumption of some raw materials is estimated to increase, the efficiency of the new process will be greater, resulting in a decrease in the amount of raw materials required per unit of paper.

5.9 Project Costs & Timing

It is estimated that the total cost of the Botany site redevelopment including the works specified within the EA, pre-site works involving upgrading of all auxiliary systems, indirect expenses, start-up costs, costs of finance, working capital and restructuring costs would be approximately $350 million

Presented in **Table 5-3** is a summary of the approximate timing and length of the proposed New Paper Mill construction and commissioning operations. This includes details on the length of each phase, on phases occurring in parallel and on paper machines that will be operational in each phase. The start date of the project has yet to be decided as it is dependent on approval from the AMCOR Board. The earliest date the project could commence is May 2007.

- **Table 5-3: Project Staging**

Phase	Period	Machine No. 7	Machine No. 8	New Paper Mill
Current	NA	Running	Running	NA
Demolition Stage 1	Months 0-6	Running	Running	NA
Service Relocation	Months 2-9	Running	Running	NA
Demolition Stage 2	Months 9 -11	Running	Running	NA
Site Preparation	Month 10-12	Running	Running	NA
Building Construction	Months 12-18	Running	Running	Being built
Machine Construction	Month 16-24	Running	Running	Being built
Commissioning/ Transition Phase###	Months 22-24	Intermittent ##	Intermittent#	Partially operational
Operation	>Month 24	Closed	Closed	Running at Full Scale
Final Demolition#### / Minor Construction	Month 24 -30	Closed	Closed	Running at Full Scale

Only one of the existing machines (i.e.B7 or B8) will operate together with the new Machine. Production decreases as New Paper Mill's production increases.

Only one of the existing machines (i.e.B7 or B8) will operate together with the new machine. Production decreases as New Mill's production increases.

Commissioning/ Transition Phase could extend for up to 9 months

Demolition Stage 3

NA – Not applicable

5.10 Construction Works and Staging

Due to the requirements to maintain the operation of the existing facility during the construction of the New Paper Mill and during the Transition phase, demolition of the existing facilities and construction of the New Paper Mill would be staged.

Certain existing auxiliary services such as the power house and storage tanks would not be demolished initially as they are required for continuing operations within the existing mill. These would continue to be maintained throughout the demolition stage and until the end of the Transition phase.

Demolition Stage 1 would involve the removal of derelict buildings and infrastructure adjacent to McCauley Street. Demolition works would be staged and if possible selected buildings would be retained and used as a noise buffer to nearby businesses and residences during the Construction phase of the project. Demolition would involve removal of concrete slabs, and relocation of underground drains, water and sewer lines. Service relocation works along Botany Road would run in parallel with demolition and would involve modifications to electricity, water and sewer services. Once service relocation and Demolition Stage 1 are complete Stage 2 demolition works would remove remaining infrastructure along Botany Road.

Figure 5-3 shows the existing buildings and areas that would undergo demolition before construction of the new facility commences. The demolition works would be undertaken during daylight hours. Procedures for the demolition of the old mill buildings would be developed by the Contractor, once appointed.

Following Demolition Stage 1 and 2 and service relocation works, earthworks associated with preparation of the footings and concrete slabs for the New Paper Mill building would commence. These works would be carried out during daylight hours, as would piling works required for the New Paper Mill building. The site layout of the New Paper Mill at the end of construction is shown in **Figure 5-2**.

Considering the economically feasible options currently available for the construction works **Table 5-4** provides an outline of the construction plant and equipment likely to be utilised during each of the major work stages.

- **Table 5-4: Construction Plant/Equipment**

Activities	Typical Equipment
Demolition Works	Excavators with rock breaking attachments Jackhammers Water tankers Trucks Truck cranes and 50 tonne cranes
Earthworks	Excavators Trucks Water tankers Dozers Graders Rollers
Construction Works(Machine building and Paper Machine installation)	Piling rig (probably bored piles) Cranes Mounted drilling rig Scissor Lifts Welding equipment Concrete trucks and pumps Semi trailers delivering machine parts and equipment for installation.

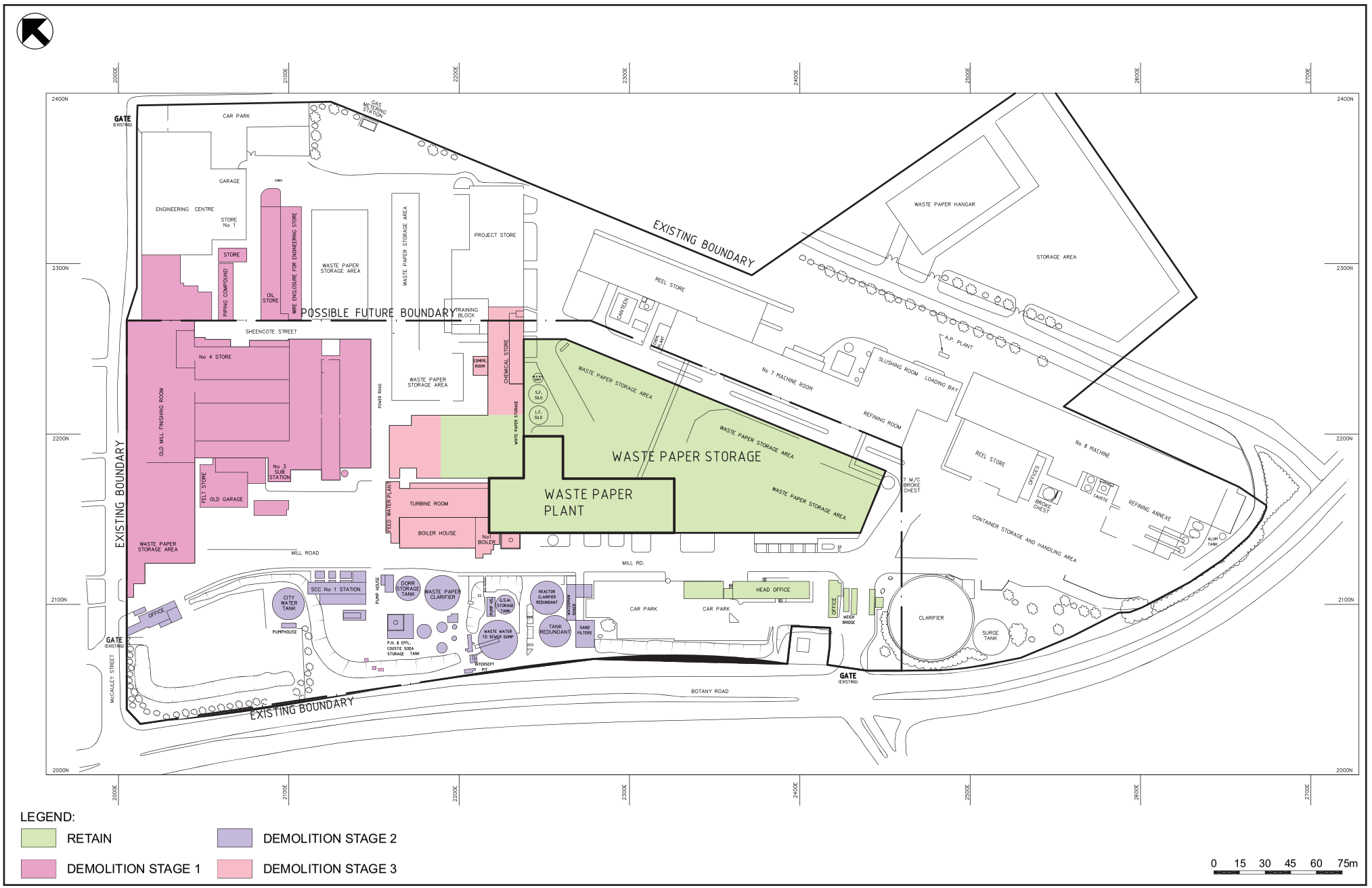


Figure 5-3
DEMOLITION STAGE 1 TO STAGE 3

Materials would be transported to the site by truck and offloaded using cranes. Support girders would be first erected, followed by the steel clad or pre-cast concrete walls and roofing. The new building components would be assembled off site and transported to the site in pieces for on-site erection and assembly. Following completion of the building structure, installation and commissioning of the New Paper Machine would occur.

There is a potential for some overlap between the erection of papermaking equipment and the building exterior being completed. However the majority of machine installation would be undertaken following completion of the building structure.

The paper making machinery would be assembled into manageable sections off site and transported to site for on-site erection. Cranes would be used to lift machinery from trucks and place them within the building. Hatchway access to the basement floor of the building would be provided to enable machinery to be lifted to the first floor of the building. Internal "non-noisy" installation activities such as electrical, plumbing and mechanical installation, would be undertaken 24 hours a day during some periods. These activities would meet noise objectives specified by the DEC and care would be taken to ensure that these activities do not give rise to complaints from surrounding residents.

Following assembly and installation of the New Paper Machine a series of 'dry' pre-commissioning tests would be undertaken to test the mechanical, electrical and safety systems of the plant. Water may be run through the machines during these 'dry' tests, without paper fibres present. Upon successful completion of the pre-commissioning tests, paper manufacture would commence at the New Paper Mill and the No. 7 and No. 8 machines would be progressively decommissioned.

Other new facilities that would be built initially include:

- Silos to store pulp;
- Stormwater drainage system;
- New electricity substation;
- Chemical Storage and delivery area;
- Some of the internal access roads for the New Paper Mill;
- New Engineering Store and Workshop; and
- New Finished Product Store and Dispatch Area.

The existing waste paper hanger and storage area located on the north-eastern side of the site maybe be used for temporary storage of construction equipment and supplies.

The Transition phase would last approximately 3 to 9 months. During this phase some minor construction activities may take place. However, they are not expected to have any significant impact.

Once both Machine No. 7 and No. 8 are decommissioned, demolition of the remaining out-dated infrastructure will be undertaken (Demolition Stage 3), as outlined in **Figure 5-3**. No. 7 and No. 8 machine buildings will be retained in a decommissioned state, as will the existing clarifier. Additional construction works, such as the realignment of internal roads and paving will be undertaken during the final construction stage.

Access for construction vehicles and cranes would primarily be from the existing gate on Botany Road. The existing southern entrance off McCauley Street may be used in the initial stages of the project. Parking for construction personnel's vehicles would be accessed via the gate at the northern end of McCauley Street or alternatively parking would be provided within the wastepaper hanger and storage area accessed via the Botany Road entrance.

This page is intentionally blank

6. Environmental Assessment

6.1 Approach to the Assessment

Ecologically Sustainable Development (ESD) is a major principle now used in guiding environmental impact assessment. While there is no universally accepted definition of ESD, the NSW Government in its 1997 State of the Environment Report has suggested the following definition of ESD:

"Using, conserving and enhancing the community's resources so that ecological processes, on which life depends, are maintained, and the total quality of life, now and in the future, can be increased"

Put more simply, ESD is development that aims to meet the needs of Australians today, while conserving ecosystems for the benefit of future generations. There are two main features that distinguish the ecologically sustainable approach to development:

- consideration of the wider economic, social and environmental implications of decisions and proposals; and
- taking more of a long term rather than short-term view when making decisions.

By following an ecologically sustainable path of development, the likelihood of serious environmental impacts arising from economic activity and development should be reduced.

The principles of ESD, as defined in Clause 6 of Schedule 2 of the *EP&A Regulation*, are as follows:

- The precautionary principle - namely, that if there are threats of serious environmental damage, lack of scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation;
- Intergenerational equity - namely, that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations;
- Conservation of biological diversity (biodiversity) and ecological integrity; and
- Improved valuation and pricing of environmental resources.

In the context of the proposal, the core principles of ESD necessitate the preferred option to:

- avoid irreversible and detrimental damage to ecological resources;
- enhance the health and quality of the environment for the benefit of present and future generations;
- minimise any impact on rare and endangered species and ensure conservation of biological diversity;
- recognise, describe and assess the effects of construction and operation on environmental resources; and
- ensure that environmental costs are included, if possible, in the economic evaluation of the project.

This EA has assessed the impacts of the proposed New Paper Mill in accordance with the principles of Ecologically Sustainable Development.

6.2 Land Use

6.2.1 Existing Environment

Land use and development within the study are governed by the provisions of *Randwick Local Environmental Plan 1998*, its associated DCPs and other State planning legislation. These are discussed in greater detail in **Chapter 2.**

The proposed development is located on a 15.5 hectare site within the Matraville industrial area owned by AMCOR. The site is bounded to the south by Botany Road, to the north by Australia Avenue, to the west by McCauley Street, and extends east to the end of Partanna Avenue. Surrounding land uses include residential uses to the north and east, and commercial and industrial uses to the west and south.

The nearest residential dwellings to the existing Botany Mill site boundary are located to the north and east of the site off Australia Avenue, Partanna Avenue, Moorina Avenue, Murrabin Avenue and McCauley Street. As shown in **Figure 3-1**, the nearest residences, located off Partanna Avenue and Australia Avenue, are approximately 30-50 m from the mill boundary.

Commercial offices are located beyond the western boundary of the site, on the western side of McCauley Street, and immediately to the east. Industry associated with Port Botany, including the CTAL Container Terminal and Bulk Liquids Storage Area, the Patrick Container Terminal (Australian Stevedore), and the Caltex Oil Terminal are located to the south and south-east.

The proposed New Paper Mill would be located within the south-western area of the site, which is currently occupied by derelict buildings and derelict and active service infrastructure. This location would place the proposed New Paper Mill furthest away from residential development. The buildings would be set back 15m from the site boundary along McCauley Street and between 15m and 45m from site boundary along Botany Road.

AMCOR would consider future changes to the boundary of the AMCOR site (refer **Figure 5-2**). This would release land for industrial redevelopment in the future.

6.2.2 Construction

6.2.2.1 Impacts

The construction of the New Paper Mill would not result in any impacts on land use as all construction activities would be undertaken on AMCOR's existing site. Amenity impacts from construction on surrounding land uses (eg. Noise, dust) are assessed in the respective sections.

6.2.2.2 Mitigation Measures

No mitigation measures are required to minimise impacts of the construction of the New Paper Mill upon land use.

6.2.3 Transition

6.2.3.1 Impacts

During the Transition, the activities on site would not result in any impacts on land use as all activities would be undertaken on AMCOR's existing site. Amenity impacts from the transition on surrounding land uses (eg. Noise, odour) are assessed in the respective sections.

6.2.3.2 Mitigation Measures

No mitigation measures are required to minimise impacts of the Transition upon land use.

6.2.4 Operation

6.2.4.1 Impacts

During the operation of the New Paper Mill, the activities on site would not result in any impacts on land use as all activities would be undertaken on AMCOR's existing site. The noise and odour impacts from the New Paper Mill would be reduced in comparison to the Existing Paper Mill and would improve the amenity of the surrounding residential and commercial zones.

6.2.4.2 Mitigation Measures

No mitigation measures are required to minimise impacts of the operation of the New Paper Mill upon land use.

6.3 Geology and Soil

6.3.1 Existing Conditions

Geology

The Botany Paper Mill site is located approximately 10 km south of the Sydney CBD, within the Botany Basin. Within the basin, Triassic Hawkesbury Sandstone bedrock underlies quaternary Transgressive Dune Sand, which exist to a depth of approximately 80 m. The quaternary sediments consist predominantly of unconsolidated to semi-consolidated permeable Marine Sands. These are interspersed with lenses and layers of peat, peaty sands, silts and clay.

Acid Sulphate Soils

The *Acid Sulphate Soil Map, 1:25000 – Botany Bay* (DLWC), indicates two different risk classifications on the Botany site. The south-western part of the site is classified as disturbed terrain possibly including filled areas. Geotechnical investigations for this area have not revealed any soils that meet the profile of typical acid sulphate soils.

In the north-eastern part of the site, soil characteristics present a low potential for acid sulphate soils. If present, acid sulphate soils would occur as small deposits within the predominantly sandy soil profile. Acid sulphate soils in this area are more likely to occur at depths greater than 3m, however, soil deposition in this area has generally not been suitable for the formation of acid sulphate soils.

Contaminated Soils

The majority of the Botany Paper Mill site has been highly disturbed as a result of development over the past century. Typically sand-based fill of varying thickness underlays the large sealed concrete and asphalt surfaces and mill buildings. Geotechnical investigations have indicated that the site is predominantly underlain by medium (200- 600 µm) to coarse grained sand (600µm - 2.36mm). There is some evidence of other types of fill material present however, the amount is small and appears to be primarily limited to the south-western corner of the site.

A preliminary soil and groundwater investigation undertaken for the western section of the Botany Paper Mill site (Woodward Clyde, 1999) showed that the extent of soil contamination is not likely to present a significant risk of harm to human health or the environment. There is no evidence of significant broad scale contamination of soils within this area. However, it

appears that the previous industrial use at the AMCOR Paper Mill site has resulted in some areas of minor soil contamination, the main area being restricted to the south-western section of the site. The western area has the longest history of paper making operations. Historical aerial photographs show large ponds, used for the treatment or storage of liquid waste, were previously located on the south western section of the site adjacent to Botany Road. Woodward Clyde (June 1999) note that soil contamination within this area is likely to have resulted from (Note: listed in order of importance):

- various metals (including lead and copper) and polyaromatic hydrocarbons from the deposition of boiler ash as fill on the site, and from the use of metals across the site;
- asbestos from the use of asbestos in insulating materials and wall cladding;
- organic waste and nutrients from the operation of the waste ponds;
- petroleum hydrocarbons from the storage of fuels in underground tanks; and
- mercury from its use as a biocide in wastewater.

The pond area has since been filled to form the present land surface. Much of the former paper mills and equipment has been removed from this area and some of the buildings have been demolished.

The analytical testing results for metals, total petroleum hydrocarbons, semivolatile organic compounds and polycyclic aromatic hydrocarbons in the soils within the southern and western sections of the site were below screening level assessment guidelines (Woodward Clyde, June 1999). Concentrations of copper and lead, sampled adjacent to the Dorr tank and caustic soda storage tank, exceeded the screening level assessment guidelines, as did the lead concentrations in the southern car park (**Table 6-1**). Trace quantities of asbestos fibre were found in several boreholes scattered throughout the western end of the site.

- **Table 6-1: Boreholes where soil exceeded contamination guidelines (1999)**

Borehole No.	Depth (m)	Contaminant	NEHF-F Commercial/ Industrial HIL Guidelines	Result	Unit
BH13	2.0-3.0	Copper	5000	7380	mg/kg
BH13	2.0-3.0	Lead	1500	2710	mg/kg
BH14	1.5-2.0	Lead	1500	1660	mg/kg

Source: Woodward Clyde June 1999

Two more recent investigations of soil contamination within the New Paper Mill area were performed by Coffey Geosciences (June 2000) and Golder Associates (September 2006). The Coffey Geosciences report concluded with similar findings to the Woodward Clyde report.

Heavy metals were detected in all samples analysed, but the majority of samples were below the threshold concentrations for Industrial sites listed in the Guidelines for the NSW Site Auditor Scheme (NSW DEC 1998). Bore hole B9, which was located in fill material to the west of the Caustic Soda Storage Tank, recorded the following exceedances of the threshold concentrations:

- **Table 6-2: Boreholes where soil exceeded contamination guidelines (2000)**

Borehole No	Depth (m)	Contaminant	NSW DEC Guidelines	Result	Unit
BH9	4.0-4.6	Copper	5000#	6250	mg/kg
BH9	4.0-4.6	TPH	1000##	1457	mg/kg

Source: Coffey 2000
NSW DEC 1998
NSW DEC 1994

The Golder Associates investigation (September 2006) found a higher incidence of exceedances than the past two investigations, although they still considered that the soil and fill materials present on the site generally satisfied the adopted Site criteria for commercial and industrial land use. A limited number of samples had contaminant levels above the Site criteria and four samples contained contaminants exceeding 250% of the Site value. This included several localised areas across the western side of the site where petroleum hydrocarbons and monocyclic aromatic hydrocarbons (BTEX) exceeded the criteria and elevated concentrations of lead near the Caustic Storage tank. Trace quantities of asbestos fibres were also found in several boreholes in the southern and western areas of the site. Soil samples exceeding the criteria and their locations are summarised below.

Other areas which may be affected by contamination include soils adjacent to underground storage tanks. Although it should be noted that soil sampling has been undertaken adjacent to some underground storage tanks and there has been no evidence of contamination.

■ **Table 6-3 Boreholes where soil exceeded contamination guidelines (2006)**

Borehole No	Depth (m)	Location	Contaminant	Referenced Guidelines	Result	Unit
BH102	0.5-1.0	No. 4 store	TPH	1000#	4010	mg/kg
BH108	0.8-1.7	No. 4 store	TPH	1000#	4500	mg/kg
BH116	0.2-0.5	Old Mill Finishing Room	Benzene	1#	3.5	mg/kg
BH116	0.2-0.5		Toluene	1. 4#	4.7	mg/kg
BH116	0.2-0.5		Ethyl-benzene	3.1#	4.6	mg/kg
BH116	0.2-0.5		Xylenes	14#	14.4	mg/kg
BH123	1.0-1.3	West of City Water tank	TPH	1000#	1910	mg/kg
BH125	2	North of Caustic tank	TPH	1000#	1950	mg/kg
BH125	2.5		TPH	1000#	1250	mg/kg
BH125	2.5		Lead	1500##	4000	mg/kg
BH132	0.1-0.3	South of caustic tank	Lead	1500##	1600	mg/kg

Source: Golder 2006
NSW DEC 1998
NEPM Commercial/Industrial HIL

6.3.2 Construction

6.3.2.1 Impacts

Sedimentation and Erosion

There is potential risk to soils during the construction from the clearing of land associated with the new facilities. This includes the potential for increased erosion of soils from cleared or excavated areas via runoff after rainfall and through the action of the wind. This risk is considered minor as the area to be cleared and excavated would be staged and the soils are predominantly medium grained sands. Generally sands have a low erosion potential and are easily managed using standard erosion and sedimentation measures. A Soil and Water Management Plan (SWMP) conforming to guidelines in *Managing Urban Stormwater: Soils and Construction* (Landcom 2004) would be prepared to manage the impacts and quality of surface run off during construction.

Overall it is unlikely that acid sulphate soils would be encountered, however, excavations would be monitored during construction to ensure that any acid sulphate soils are identified and the appropriate mitigation measures can be implemented.

Subsidence & Stability

As noted above, the soils beneath the Botany Paper Mill are primarily sand of varying coarseness. No large excavations will be required for the construction of the New Paper Mill

and the New Paper Mill is located at least 15m distance from roads and 25m distant from the nearest buildings. Significant piling will be required for the foundations of the New Paper Mill as the paper making machinery is relatively heavy and has a low tolerance to movement (ie. requires a stable platform). Therefore the risk of subsidence impacts due to the construction of New Paper Mill is low.

Contaminated Soils

The management of excavated fill on-site would require additional sampling to assess soil contamination and appropriate management requirements. Characterisation of soil would be undertaken after demolition activities, prior to construction and would consider appropriate guidelines for reuse of excavated material on site and disposal of any excess fill that is unable to be reused. The characterisation and sampling of soil would comply with appropriate guidelines for density of sampling and pollutants analysed for. Appropriate management plans would be developed to manage all fill and excavated material (Remediation Action Plans).

It should be noted that preliminary cut and fill balances indicate that fill material will have to be imported to ensure that buildings are above a 1 in 100 year flood level. Therefore, the amount of fill removed from site would be minimised. Where possible all uncontaminated excavated soil would be reused as part of the construction works. All fill which cannot be reused, remediated or would be unsuitable for reuse would be classified in accordance with the DEC *Environmental Guidelines for the Assessment, Classification & Management of Liquid & Non-Liquid Waste* prior to off-site disposal and would be disposed of to an appropriately licensed facility.

The Golder Investigation (September 2006) identified a small area to the north of the site near the No.4 store (around BH102 and BH108) which requires remedial work prior to redevelopment of the Site. This area contains elevated concentrations of hydrocarbons, which would be excavated under supervision and remediated prior to re-use onsite. The Golder investigation identified that other localised areas of hydrocarbon contamination may also be present around the site (for example around BH116, BH125 and BH123), these will be managed and assessed during removal of slabs and remediated or removed as required.

The Woodward Clyde (June 1999) Coffey (June 2000) and Golder (September 2006) investigations showed minor heavy metal contamination in some areas of fill within the south-western area of the site, and a hotspot (>250% of Site criteria) of lead contamination around the Caustic storage tank. The Coffey report considered it likely that at least some of the fill material in this area may be unsuitable for site re-use. Additional sampling and analysis would be required during the development phase to confirm the suitability of fill

material from this area. Any fill material over 250% of the Site criteria would be removed or remediated.

Low concentrations of contaminants in the fill in the central section of the site were detected and it is likely that the majority of fill material in these areas would be suitable to be reused on site. Additional sampling and analysis during the development phase would, however, be required to confirm the suitability of any fill material proposed for re-use from within these areas.

Trace levels of asbestos fibres were detected in three samples collected across the site by Woodward Clyde and three samples collected by Golder Associates. Soils containing significant quantities of asbestos would be classified as "asbestos waste".

Small volumes of chemicals and other hazardous substances may be stored and used on site during the construction of the New Paper Mill. These would pose a risk of soil contamination if not correctly managed.

6.3.2.2 Mitigation Measures

The following mitigations measures would be implemented during the construction of the New Paper Mill to ensure that impacts on soils are minimised:

- A Soil and Water Management Plan conforming to *Managing Urban Stormwater: Soils and Construction* (Landcom 2004) would be prepared and implemented;
- Appropriate management plans would be developed for the management and remediation of excavated fill (Remediation Action management Plans). This will include sampling and characterisation of soils during redevelopment to determine appropriate soil classifications for the reuse and disposal of excavated fill; and
- All fuel and chemicals used during construction would be stored in a bunded area.

6.3.3 Transition

6.3.3.1 Impacts

The potential impacts on soils during Transition would be the same as during the operation of the New Paper Mill and are discussed in greater detail in the following section.

6.3.3.2 Mitigation Measures

The mitigation measures for soils during Transition would be the same as for the operation of the New Paper Mill and are discussed in greater detail in the following section.

6.3.4 Operation

6.3.4.1 Impacts

As the majority of land would be sealed with either buildings or concrete / asphalt surfaces or landscaped there is no risk of erosion of soils after rainfall and through the action of the wind.

There is a minor potential contamination risk to soils during the operation of the New Paper Mill from the storage and use of chemicals and fuels. It should be noted that all old underground storage tanks will have been decommissioned once the New Paper Mill is fully operational. The number of tanks required on-site for the New Paper Mill is substantially lower than the Old Paper Mill – and all these tanks would be located aboveground in new storage areas.

6.3.4.2 Mitigation Measures

Mitigation measures regarding the storage and handling of chemicals and fuels (which could impact on soils) are discussed in **Section 0**.

6.4 Groundwater Extraction

6.4.1 Existing Conditions

The Botany Paper Mill site is located above the Botany Sands Aquifer, which stretches from its major recharge zone at Centennial Park to the Botany Bay foreshore. The aquifer comprises of a large reservoir of groundwater stored in medium to high porosity sands. The majority of groundwater lies less than 9 metres below the surface, with depths ranging between 0-23 m (DLWC 2000). The regional groundwater flow for both the shallow and deep groundwater horizons is in a south to south-west direction, discharging into Botany Bay.

The aquifer has a relatively high hydraulic conductivity (20-30 m/day) and transmissivity, however, is not homogenous due to the presence of peat beds and clay lenses which generally result in an unconfined aquifer in the upper sediments and a semi confined aquifer in the deeper sediments.

The Botany Bay Sand Aquifer has an estimated groundwater storage volume exceeding 170,000 megalitres (ML). Present licensed use is approximately 3,900 ML per year and within the estimated sustainable yield of 22,515 ML per year. In 1999 there were 402 active licences extracting water from the Botany Sands Aquifer, with the majority of licenses for irrigation and domestic usage and approximately one third for industrial purposes. AMCOR hold a number of groundwater extraction licences, which have been granted in perpetuity. Historically the Botany Paper Mill site has been the largest user of groundwater in the Botany region. However, groundwater usage in the area has not been properly recorded since the 1980's. It should be noted that groundwater extraction and use has been banned in a large

area surrounding the Botany Orica Complex (Botany Groundwater Exclusion Zone) due to the contamination of the aquifer by chemical byproducts including Hexachlorobenzene (HCB). This is further discussed in **Section 6.5**.

Currently 7ML/day of groundwater is extracted from a large borefield in the vicinity of Snape Park (See **Figure 6-1**). The borefield is operated by AMCOR directly and is outside the groundwater exclusion zone. Currently there is no control system on the groundwater extraction system, so the extraction rate of 7 ML/day is not able to be varied. The 7 ML/day of groundwater from Snape Park is discharged into a stormwater canal, which flows southward until it reaches Long Dam. A separate pumping system pumps water from Long Dam to the Botany Mill site. Long Dam also collects stormwater from the surrounding area and from approximately 25% of the Botany Mill site. Therefore in dry weather, Long Dam contains mainly groundwater, whereas in wet weather a mixture of groundwater and stormwater collects in the dam.

Currently the Existing Paper Mill only uses on average approximately 3.7 ML/day of water from Long Dam, however, this may vary up to 7 ML/day depending on the Paper Mill requirements. It should be noted that over the past ten years there has been a considerable reduction in water usage at the Existing Paper Mill and historically water extraction from Long Dam would have been around 7 ML/day.

A study was commissioned in 1992 to assess the impact of groundwater extraction from the Snape Park and Solvay Interox borefields (Unisearch 1992). It assessed four different pumping scenarios, namely extracting 5, 10, 15 and 20 ML/day. The study concluded that the aquifer would be able to sustain pumping rates of up to 20 ML per day for 50 years (including drought periods) from the Snape Park and Solvay Interox borefields without major impacts on surrounding water levels and users. The current groundwater extraction of 7 ML/day is substantially below this level and therefore the current extraction rates are not considered to have a major impact on surrounding groundwater levels and users.

6.4.2 Construction

6.4.2.1 Impacts

Up to 0.5 ML/day of additional water may be sourced from Long Dam for general construction water (i.e. for dust mitigation).

6.4.2.2 Mitigation Measures

No mitigation measures would be required to minimise the impact of construction on groundwater extraction and levels.

Legend

● Bore

Figure 6-1
GROUNDWATER EXTRACTION

6.4.3 Transition

6.4.3.1 Impacts

During the Transition, the extraction of water from Long Dam would increase by approximately 30% to an average of 4.8 ML/day (See **Table 6-4**). The increase is due to having to operate one of the existing paper machines and the New Paper Mill concurrently. It should be noted that there would be a decrease in town water usage during the Transition compared to the Existing Paper Mill, as the New Paper Mill would substitute water from Long Dam for some processes that currently use town water (See **Section 6.17**).

As part of the works associated with the New Paper Mill, AMCOR would install a remote control system for its groundwater extraction system at Snape Park. This would allow the groundwater extraction rate to be varied to meet demand during transition and operation – and minimise any unnecessary extraction of groundwater. Therefore, even though water extraction from Long Dam would increase, groundwater extraction at Snape Park would decrease due to improved control.

As discussed in Section 6.4.1 Previous studies (Unisearch 1992) have shown that groundwater extraction of up to 20 ML/day from Snape Park is sustainable and would not result in any significant groundwater drawdown.

- **Table 6-4: Average Extraction of Water from Long Dam During Transition**

Existing Paper Mill	Transition	Percent Change
3.7 ML/day	4.8 ML/day	+30%

6.4.3.2 Mitigation Measures

The following mitigation measures would be implemented to minimise the impact of the transition phase on groundwater levels:

- A remote control system for AMCOR's groundwater extraction bores at Snape Park would be installed and operated to minimise groundwater extractions.

6.4.4 Operation

6.4.4.1 Impacts

During the operation of the New Paper Mill, the extraction of water from Long Dam would increase by approximately 38% to an average of 5.1 ML/day (See **Table 6-4**). The increase would be caused by substituting water from Long Dam in some processes that currently use town water. It is predicted that there would be a decrease of about 60% in the volume of town water used by the New Paper Mill in comparison to the Existing Paper Mill (See **Section 6.17**).

As part of the works associated with the New Paper Mill, AMCOR would install a remote control system for its groundwater extraction system at Snape Park. This would allow the groundwater extraction rate to be varied to meet demand during transition and operation – and minimise any unnecessary extraction of groundwater. Therefore, even though water extraction from Long Dam would increase, groundwater extraction at Snape Park would decrease due to improved control.

As discussed in Section 6.4.1, previous studies (Unisearch 1992) have shown that groundwater extraction of up to 20 ML/day from Snape Park is sustainable and would not result in any significant groundwater drawdown.

- **Table 6-5: Average Extraction of Water from Long Dam During Operation**

Existing Paper Mill	New Paper Mill	Percent Change
3.7 ML/day	5.1 ML/day	+38%

6.4.4.2 Mitigation Measures

The following mitigation measures would be implemented to minimise the impact of the operation of the New Paper Mill on groundwater levels:

- A remote control system for AMCOR's groundwater extraction bores at Snape Park would be installed and operated to minimise groundwater extractions.

6.5 Groundwater Quality

6.5.1 Existing Conditions

There has been a history of contamination of the Botany Sands Aquifer predominantly from past industrial activities. Leaks of chemical storages at the ORICA complex to the north of the Botany site into the Botany Sands Aquifer has resulted in hexachlorobenzene (HCB) contamination of groundwater. As a result of the HCB contamination, a Groundwater Extraction Exclusion Area has been established by DoP to protect human health. Orica has also established a groundwater interception and treatment system to capture and treat contaminated groundwater before it impacts upon Botany Bay.

The Botany Paper Mill site was originally outside the Groundwater Extraction Exclusion Area, however, the boundaries were revised by DoP in July 2005 and the site is now within the exclusion zone. No groundwater extraction occurs at the Botany Mill site. Sampling of groundwater beneath the Botany Mill site was undertaken in 2005 and no HCB's were detected.

Other non-industrial sources of contamination may include fertiliser application in parks and recreational areas, urban runoff and "natural" pollution from peat bogs and swamps.

A study of groundwater beneath the Botany Paper Mill site was undertaken by Woodward Clyde (June 1999) and Golder Associates (September 2006). Woodwards Clyde (1999) identified the groundwater table beneath the old mill area to be approximately 4.0 to 4.3 m AHD in the north section of the site to 1.6-2.1 m in the south. Golder Associates (2006) identified the groundwater table to be 2.4-2.7 m AHD in the central area of the mill area and 1.1 to 1.4 m AHD in the south. Woodward Clyde (June 1999) found that groundwater north of the Botany Paper Mill site (the up-gradient side of the site) contained elevated concentrations of lead, zinc, phosphorous, nitrates and total organic carbon. Towards the southern boundary of the Botany Paper Mill site, groundwater contains elevated phosphorus concentrations. Golder Associates (2006) identified slightly elevated concentrations of chromium and zinc in three wells and one well respectively. However, Golder concluded that these concentrations were likely the results of natural chemistry of the aquifer and did not indicate a point source on the site. **Figure 6-2** shows the boreholes locations recording slightly elevated concentrations of contaminants within the vicinity of the Botany Mill site. The study concluded that groundwater contamination detected at the Botany Paper Mill site originated off-site. Groundwater generally flows through a number of industrial sites within the Botany area in a south to south-west direction, through the Botany Paper Mill site to Botany Bay.

Groundwater quality at the Snape Park borefields (see **Figure 6-1**) is of high quality due to its close proximity to the aquifer recharge areas and the predominance of aeolian sand dunes in the area. The Snape Park borefields are outside the Groundwater Extraction Exclusion Zone.

6.5.2 Construction

6.5.2.1 Impacts

As the final designs have not yet been completed, the extent of excavation below the groundwater table is unknown. However as noted in **Section 6.3.2**, fill would be imported to the site to raise the floor level of the major buildings above the 1 in 100 year flood level, and therefore excavation below the groundwater table would be minimised. Some minor dewatering may be required and groundwater may collect in excavations. As the groundwater is likely to contain high concentrations of nitrogen and phosphorus and possibly HCB, the discharge of the collected groundwater into stormwater systems or Botany Bay would not be permitted. If groundwater from dewatering operations is found to be contaminated, an infiltration pond or direct injection system would be installed on the Botany Paper Mill site away from the construction activities. The design and operation of this system would be detailed within the Construction Environmental Management Plan (CEMP). Small volumes of chemicals and other hazardous substances may be stored and used on site during the construction of New Paper Mill. These would pose a risk of groundwater contamination if not correctly managed.

6.5.2.2 Mitigation Measures

The following mitigation measures would be implemented to minimise the impact of construction of the New Paper Mill on groundwater quality:

- In the unlikely event groundwater dewatering is required, a management plan would be prepared to minimise the impact of dewatering upon groundwater quality, groundwater levels and the surrounding environment; and
- Refer to **Section 6.16.2** for mitigation measures for the storage and use of fuels and chemicals.

6.5.3 Transition

6.5.3.1 Impacts

The potential impacts on groundwater quality during Transition would be the same as during the operation of the New Paper Mill and are discussed in greater detail in the following section.

6.5.3.2 Mitigation Measures

The mitigation measures for groundwater quality during Transition would be the same as for the operation of the New Paper Mill and are discussed in greater detail in the following section.

6.5.4 Operation

6.5.4.1 Impacts

The main risk to groundwater quality from the operation of the New Paper Mill would be due to inappropriate storage and handling of chemicals and fuels. This risk would be negligible provided appropriate mitigation measures are implemented.

Existing underground storage tanks would also be decommissioned and removed. Although there is no evidence of groundwater contamination from these facilities, some of the tanks are old and pose an additional risk because of their age.

Groundwater extraction at Snape Park has no impact on groundwater quality in the region (Unisearch 1992).

6.5.4.2 Mitigation Measures

The following mitigation measures are proposed to protect groundwater quality:

- Refer to **Section 6.16.4** on chemical hazards for mitigation measures; and
- All redundant chemical storage facilities and underground storage tanks would be decommissioned.

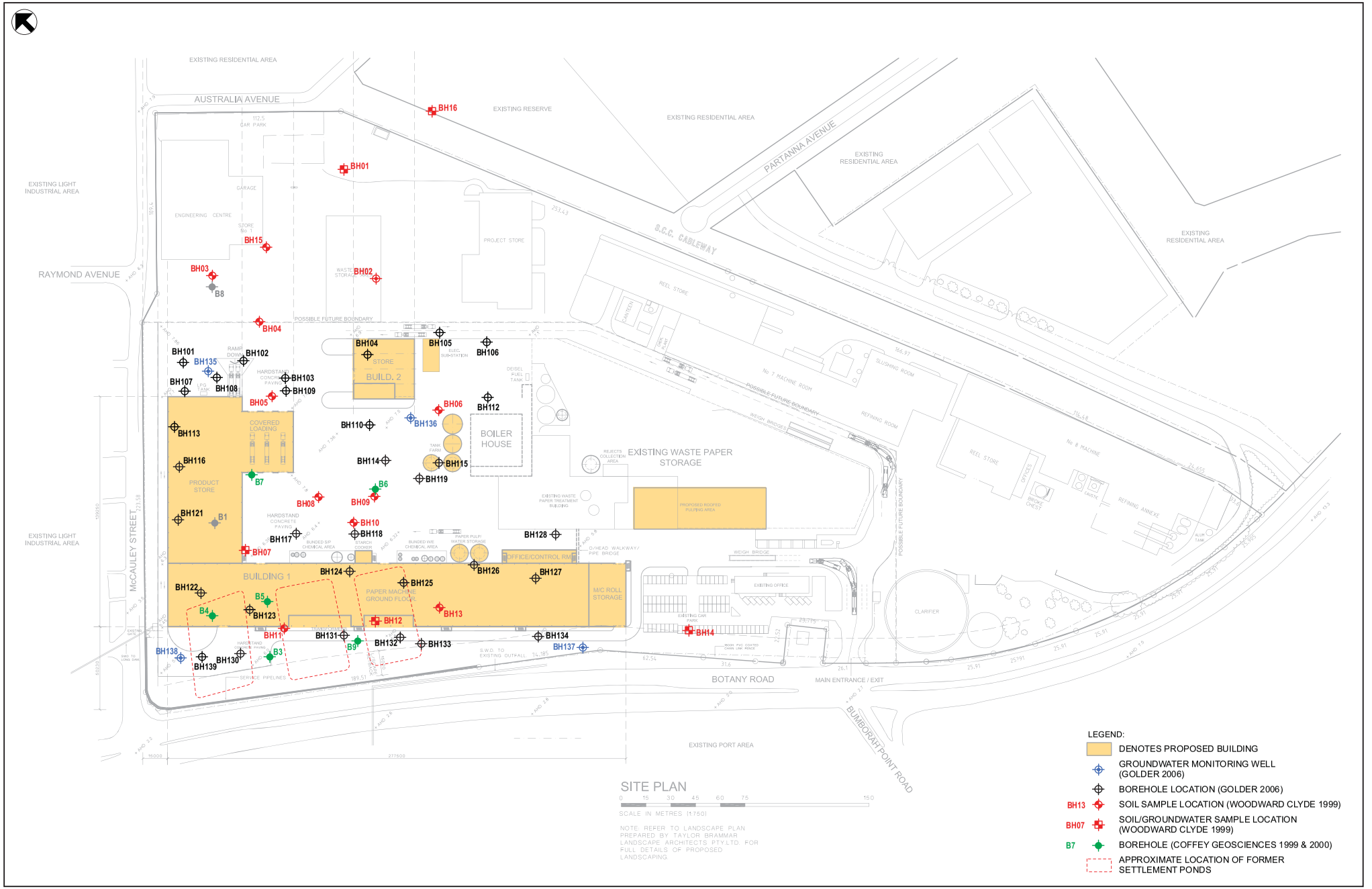


Figure 6-2
GROUNDWATER CONTAMINATION

6.6 Stormwater

6.6.1 Existing Conditions

There are a number of different stormwater catchments and receiving waters for the discharge of stormwater from the Existing Paper Mill. **Figure 6-3** shows the existing stormwater catchment areas, as described below.

The western side of the Botany Paper Mill site predominantly drains to Long Dam, with the south west corner draining to both Long Dam and Botany Bay. This area consists of disused buildings or buildings used for storage and maintenance. The stormwater in Long Dam is either reused in the paper making process or overflows the weir into Bunnerong Canal.

The central waste paper storage areas, the container packing and storage area and roads around the buildings housing Paper Machine No. 7 and No. 8 drain to the process water system – which in turn discharges to sewer. After significant rainfall, the stormwater inflow into the process water system results in larger volumes of water requiring discharge into the sewer.

The remainder of the site drains to Bunnerong Creek/Canal via a number of stormwater discharge points. Sydney Water owns this section of Bunnerong Canal.

Long Dam is a small weir that has been constructed across a concrete-lined stormwater channel approximately 150m north west of the intersection of Botany Road and McCauley Street. The stormwater system draining to Long Dam is owned by Sydney Water and extends 4 km north to Snape Park. The capacity of the dam is approximately 3 ML and the dam overflows into a continuation of the stormwater channel that eventually discharges into Bunnerong Canal. Long Dam is unlicensed and previous discussions with DNR have confirmed that it does not require a licence as:

- the dam is primarily used to store groundwater from Snape Park;
- the natural drainage lines have been replaced by a concrete-lined stormwater channel (which reduces the environmental sensitivity of the area); and
- the dam does not impact downstream or upstream users.

Currently there are no on-site stormwater detention facilities to mitigate peak stormwater flows from the Paper Mill site. The Botany Paper Mill site is at the downstream end of the larger stormwater catchment (ie. very close to Botany Bay), and therefore, on-site detention is not required as the peak flows occur early in the catchment stormwater hydrograph and do not exacerbate flooding. There have been no reports of localised flooding caused by stormwater runoff from the Botany Mill site.

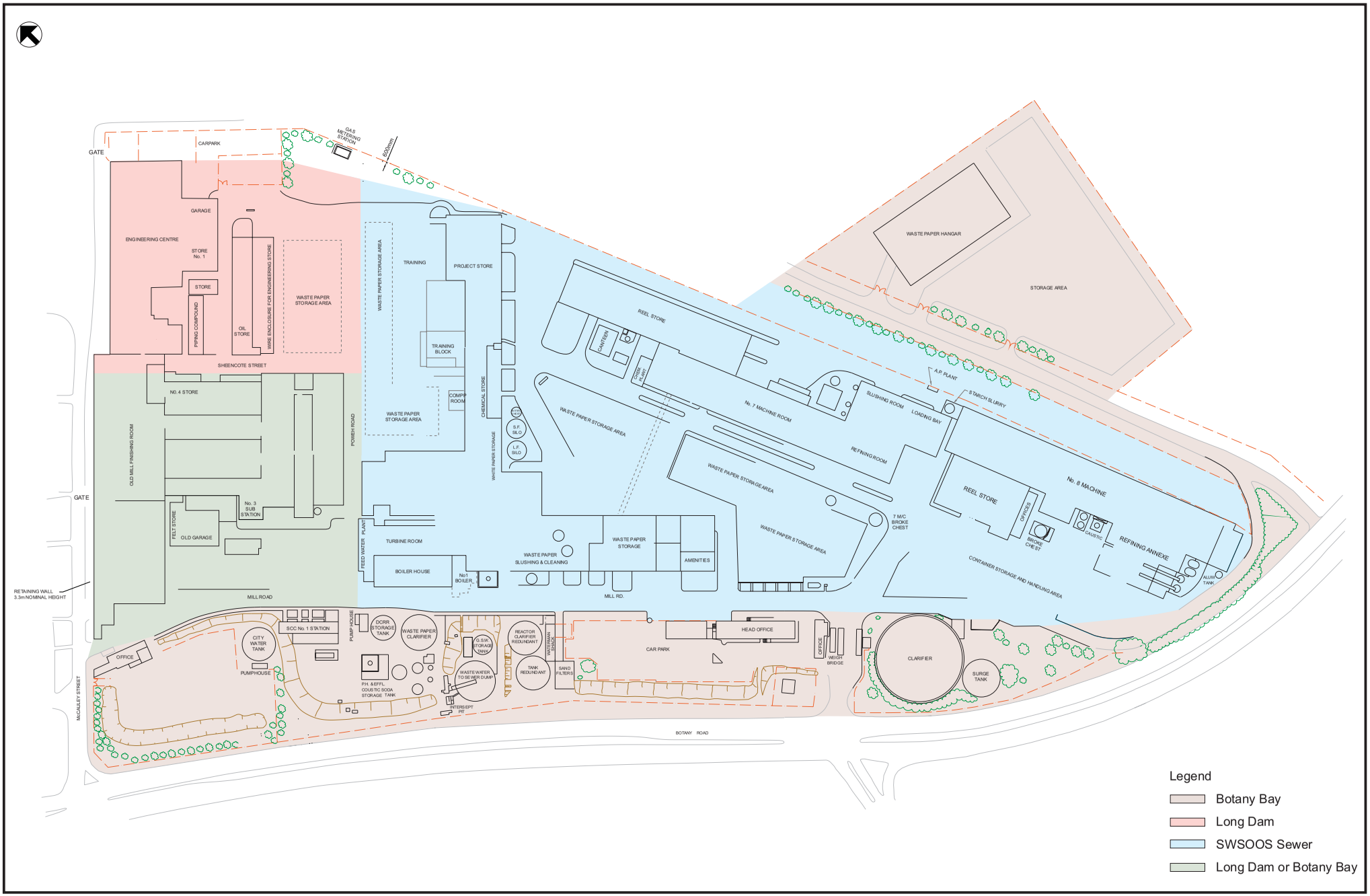


Figure 6-3
EXISTING STORMWATER CATCHMENTS

6.6.2 Construction

6.6.2.1 Impacts

Most of the existing stormwater system would be progressively decommissioned and rebuilt during the Construction phase. This would be undertaken in a phased approach as outlined in **Section 5.10**. During construction, stormwater from construction areas would be managed to ensure that it does not adversely impact the environment. This would include the preparation and implementation of a detailed Soil and Water Management Plan which is further discussed in **Section 6.3.**

6.6.2.2 Mitigation Measures

The following mitigation measures would be implemented during the construction of the New Paper Mill to ensure that impacts on stormwater are minimised:

- A Soil and Water Management Plan conforming to *Managing Urban Stormwater: Soils and Construction* (Landcom 2004) would be prepared and implemented.

6.6.3 Transition

6.6.3.1 Impacts

The potential impacts on stormwater during Transition would be the same as during the operation of New Paper Mill and are discussed in greater detail in the following section.

6.6.3.2 Mitigation Measures

The mitigation measures for stormwater during Transition would be the same as for the operation of New Paper Mill and are discussed in greater detail in the following section.

6.6.4 Operation

6.6.4.1 Impacts

The need for on-site stormwater detention was assessed for the New Paper Mill (**See Appendix H**). The assessment concluded that with no on-site detention, the New Paper Mill would not affect the capacity of Bunnerong Canal and Channel, and the stormwater runoff from the New Paper Mill would have no effect on flooding in the area. As the New Paper Mill is at the downstream end of the larger stormwater catchment and in close proximity to Botany Bay, the peak runoff generation from the site would occur early in the stormwater hydrograph for the catchment, and would not significantly add to the peak flow for stormwater catchment. Consequently no onsite stormwater detention would be required for the New Paper Mill.

On-site stormwater management would improve significantly with the New Paper Mill and would include the following features. Figure 6.4 shows the New Paper Mill stormwater catchment areas as described below.

- Zone 1 - The area draining to the process water system (and eventually the sewer) would be substantially reduced in size and only include the Waste Paper Storage Area and surrounding roads (decrease from 8.6 ha to less than 3 ha). The stormwater from these areas could be potentially contaminated with food and other substances which adhere to the wastepaper, and consequently would not be suitable for treatment and discharge to Botany Bay by typical means. The reduction in area draining to the process water system would result in a reduction in the volume and the peaks in flows of process water requiring discharge to sewer during wet weather. In an average rainfall year it is estimated that the process wastewater discharge to the sewer would decrease by an average of at least 41ML. AMCOR is also investigating diverting **all** stormwater from the process water system, treating it appropriately and then discharging it off-site;
- Zone 2 - Stormwater from these older and de-commissioned areas would be directed to Long Dam or Bunnerong Canal without any additional treatment. As these areas would not be trafficked, would not be used for other polluting activities and covered by concrete or buildings, it is not necessary to treat stormwater from them. Many of these areas already directly drain to Long Dam or Bunnerong Canal and there would be no change to the existing stormwater management. The major new additional areas that would drain to the Long Dam or Bunnerong Canal would be the roads around Paper Machines 7 and 8;
- Zone 3 - Stormwater from trafficked areas in the New Paper Mill would drain to a Gross Pollutant Trap (GPT) and Oil Separator to remove any suspended particles and oils before discharge into Long Dam or Bunnerong Canal; and
- Zone 4 - Stormwater collected from the New Paper Mill building roof would be discharged without treatment into Long Dam or Bunnerong Canal. Because the stormwater would be relatively clean as there are no major polluting activities affecting the roof environment, no treatment of stormwater would be required. A water cycle assessment was undertaken to determine the feasibility of using building roof stormwater to replace process water at the New Paper Mill. Fifty years of rainfall data was modelled to determine the optimum size of the stormwater storage (1 ML) and the average annual volume of water captured for reuse (19.8 ML). The average annual water demand of the New Paper Mill would be approximately 1,500 ML, so the stormwater would only replace 1.25% of the total New Paper Mill's water requirements. The stormwater would not be of sufficient quality to replace town water and therefore would only substitute for groundwater. The cost of reusing building roof stormwater for process water make-up is considered too high for a marginal environmental benefit. It should be noted that the

New Paper Mill would continue to indirectly use stormwater when it extracts process water from Long Dam after rainfall. Also a number of other water conservation measures would reduce town water consumption by more than 60% (See **Section 6.17**).

Any stormwater that collects in chemical unloading and storage areas would be directed to the internal process water system. Within the New Paper Mill, a floor drainage system would be installed, however, this would not be connected to the external stormwater system. All spills and leaks would be contained within the New Paper Mill building and directed to the process water system.

6.6.4.2 Mitigation Measures

The following mitigation measures would be implemented to manage stormwater:

- The area draining to the process water system and eventually to the sewer would be reduced in size and only include the "dirty" areas (Eg. Waste Paper Storage Area and surrounding roads). AMCOR is also investigating diverting **all** stormwater from the process water system, treating it appropriately and then discharging it off-site;
- Stormwater from trafficked areas would be passed through a GPT and Oil Separator before discharge into Botany Bay;
- Internal drainage systems in the New Paper Mill building and the chemical storage area would direct spills and leaks to the new process water system; and
- There would be bunds around the chemical and fuel storage areas.

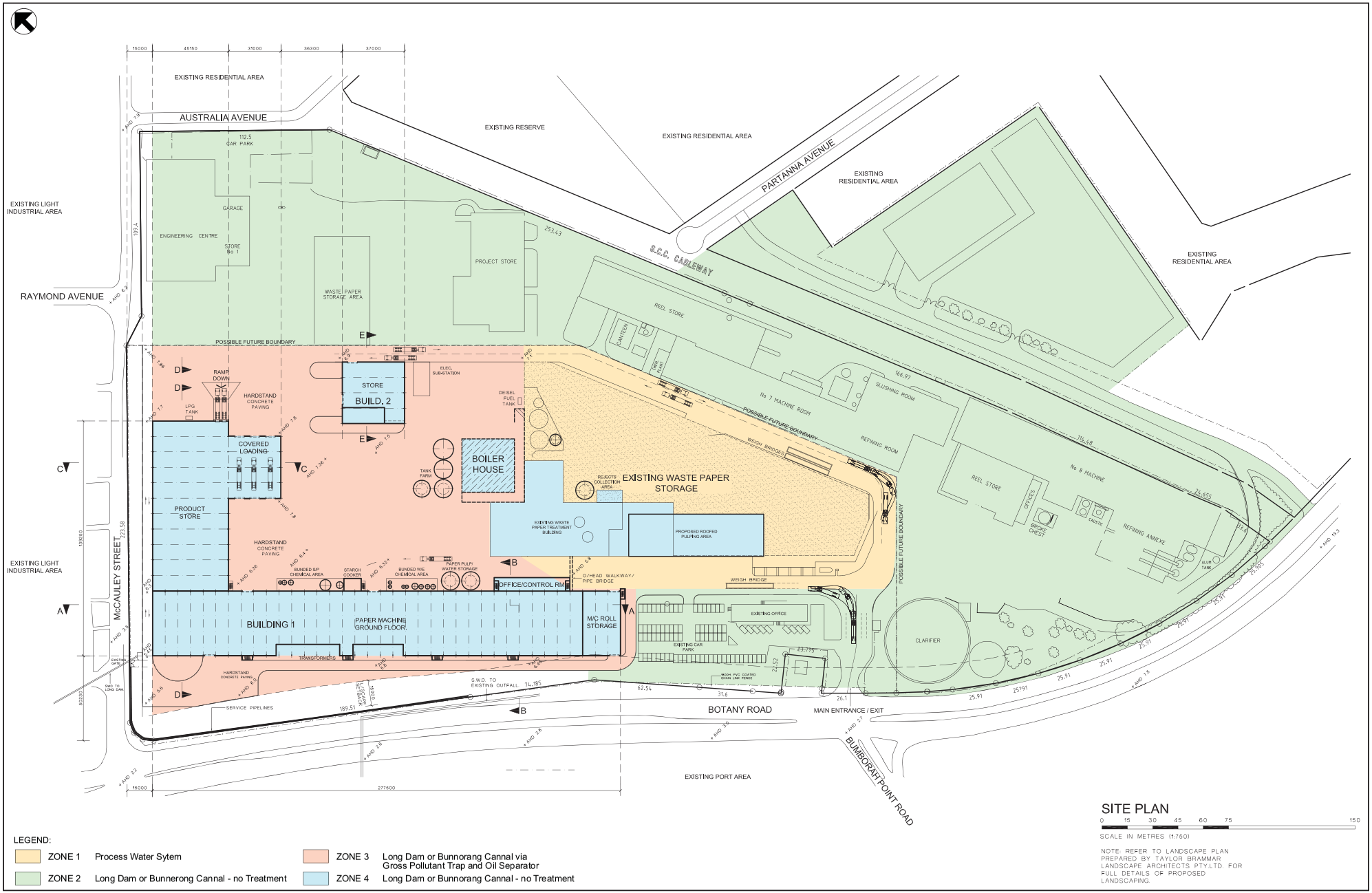


Figure 6-4
NEW PAPER MILL STORMWATER CATCHMENTS

6.7 Wastewater

6.7.1 Existing Conditions

Water is a key input into the paper making process and a paper mill has a substantial process water system to deliver, use and treat water and wastewater. The Existing Paper Mill uses groundwater, stormwater and town water in its processes, and has an on-site Dissolved Air Flotation (DAF) water treatment plant to treat wastewater for reuse in the paper making process. The extent to which water can be reused is determined by the composition and concentration of total dissolved solids, which builds up during recycling to a level that makes the water unsuitable for paper making and requires disposal. The Existing Paper Mill currently discharges the majority of its wastewater to the sewer (Southern & Western Suburbs Ocean Outfall Sewer – SWSOOS).

AMCOR has a Trade Waste Agreement with Sydney Water, which places limits on the discharge of wastewater to the sewer system. The Trade Waste Agreement limits the maximum instantaneous flow to 280 L/s and the maximum daily discharge to 6.75 ML/day . The average discharge to the sewer from the Existing Paper Mill is approximately 4.0 ML/day. However, there is considerable short term variation in the volumes of wastewater generated (which ranged between 0 and 6 Ml/day). Increased wastewater generation can be caused by process or maintenance related activities or issues, but the majority of increases correspond to days with high rainfall. This suggests that stormwater from the Existing Paper Mill is primarily responsible for increased wastewater generation.

The Trade Waste Agreement also specifies that wastewater discharge to the sewer system is to be controlled and / or disabled during times of high flow within the sewer (based upon Sydney Water's sewer gauging station at Hayden Place), and diverted to the Bunnerong Canal which eventually discharges into Botany Bay. Historically, depending on rainfall and other conditions, Sydney Water has accepted the discharge of all wastewater from the AMCOR site 97% of the time.

In addition to the discharge quantity limits, restrictions are placed on pollutant loadings, pollutant concentrations, temperature and pH of the wastewater discharge to sewer by the Trade Waste Agreement, as outlined in **Table 6-6.** AMCOR is required to report to Sydney Water regularly the loads and concentrations of BOD, suspended solids, grease and sulphates in the wastewater discharged. Overall there has been a high rate of compliance with these four discharge limits.

The wastewater discharged to the sewer must also comply with Trade Waste criteria for heavy metals. An analysis of heavy metals in the wastewater from the Botany Mill was undertaken and is presented along with the discharge limits for acceptance to the sewer in **Table 6-6**. The

concentrations of heavy metals contained within the Botany Mill wastewater sample were well below the discharge limits.

When the sewer is unavailable in wet weather, wastewater from the Botany site is discharged into Bunnerong Canal which flows into Botany Bay. On average this equates to discharges on 22 days per year with a total volume of 100 ML. Before discharge the wastewater is diluted with seawater which is extracted from Bunnerong Canal via old cooling water intakes.

Industrial discharges to Botany Bay, including the Existing Paper Mill's discharge, are regulated under a license issued by the NSW DEC under the *Protection of Environment Operations Act 1997*. The Existing Paper Mill's DEC licence allows treated process water to be discharged to the Bunnerong outfall canal when the SWSOOS sewer is unavailable. There are discharge limits in the DEC licence for wastewater discharged to Bunnerong Canal with the suspended solids content of this discharge water limited to 200 mg/L.

There is no detailed assessment of the impact of the current wastewater discharges on Bunnerong Canal or Botany Bay. However, as the majority of discharges occur during wet weather when the sewer is unavailable other pollutant sources such as sewer overflows and stormwater would be affecting the receiving waters at the same time. The impact of industrial discharges on Botany Bay (including the Existing Paper Mill) was assessed as being insignificant in comparison to stormwater and sewer overflows in the Sewerage Overflows EIS for the Georges River and Southern Beaches Geographic Area (Sydney Water 1998). It should be noted that the Bunnerong Canal discharges in between the main wharves at Port Botany. This location contains no sensitive marine vegetation and is dredged to maintain a 15m water depth for incoming shipping. In this highly modified environment any wastewater discharges would undergo further dilution before entering the bay and potentially impacting any sensitive ecosystem or use.

Following installation of the DAF treatment plant, levels of suspended solids in wastewater have reduced. This improvement in wastewater quality has been particularly beneficial when the SWSOOS is unavailable and the Existing Paper Mill is forced to discharge diluted treated wastewater into Botany Bay. The reduction in suspended solids concentration would reduce the impact on the aquatic environment. The potential water quality impacts of direct discharges of wastewater from the Botany site would be associated with the high level of oxygen depleting substances (BOD) and suspended solids, rather than any toxic effects from metals or other pollutants. Sewer overflows and stormwater would also have a similar impact

- **Table 6-6: Trade Wastewater Agreement - Discharge Quality**

Pollutant	Compliance (%) or Concentration in Effluent (mg/L)	Wastewater Discharge Limits (mg/L)
BOD5	100% compliance	3500
Suspended solids	> 99% compliance	600
Grease	100% compliance	45
Sulphates	100% compliance	300
Metals		
Aluminium	1.70	100
Arsenic	<0.05	1
Barium	0.20	2
Boron	1.60	100
Cadmium	<0.05	1
Cobalt	<0.05	5
Copper	<0.05	5
Iron	0.20	50
Lead	<0.05	2
Manganese	0.50	10
Mercury	0.001	0.03
Molybdenum	<0.05	200
Nickel	<0.05	3
Selenium	<0.05	5
Silver	<0.05	5
Tin	<0.05	10
Zinc	0.10	5

6.7.2 Construction

6.7.2.1 Impacts

The volume of wastewater discharged to the sewer and Bunnerong Canal would not change from existing conditions during construction as both Machine No. 7 and No. 8 would be operational.

6.7.2.2 Mitigation Measures

No additional mitigation measures would be required to minimise the impact of wastewater discharge during construction.

6.7.3 Transition

6.7.3.1 Impacts

Presented in **Table 6-7**, are the predicted wastewater discharge volumes during the Transition compared to the Existing Paper Mill. Average wastewater discharge would increase by 8% during the Transition (i.e. for up to 9 months).

- **Table 6-7: Average Discharge Volume of Wastewater During Transition**

Existing Paper Mill	New Paper Mill + Paper Machine 8	Percent Change
4.0 ML/day	4.3 ML/day	+7%

As for the Existing Paper Mill, Sydney Water may not be able to accept all of the wastewater in the Transition especially after rainfall. Therefore in the Transition phase, episodic discharges to Bunnerong Canal would continue, however, this would generally only occur after rainfall and would be similar in volumes to the existing situation. The majority of the additional wastewater would be produced during dry weather when the sewer would be available for the discharge of wastewater. The average daily discharge in the Transition would also be substantially below the maximum allowable daily discharge rate in the Trade Waste Agreement with Sydney Water.

6.7.3.2 Mitigation Measures

No additional mitigation measures would be required to minimise the impact of wastewater discharge during Transition.

6.7.4 Operation

6.7.4.1 Impacts

Presented in **Table 6-8**, are the predicted wastewater discharge volumes during the operation of the New Paper Mill compared to the Existing Paper Mill. Average wastewater discharge would increase by 7% permanently. Wastewater discharge per unit area of paper produced would reduce by approximately 21%. Unless there are abnormal circumstances such as production problems or maintenance, the average daily discharge rate of 4.3 ML/day would also exhibit reduced variation as:

- Areas where stormwater drains directly to the process water system and the sewer would be reduced;
- Flow balancing facilities (buffer tanks) would be installed as part of the New Paper Mill; and
- The new technology and process would enable smoother production and therefore less variation in the rates of wastewater generation.

Currently 8.6 ha of the Botany Paper Mill site drains to the process water system, which then discharges excess water to the SWSOOS after treatment. AMCOR recognises this is unsustainable and would modify the surface flow regime for the New Paper Mill to ensure the process water system would only accept stormwater from the wastepaper storage area and surrounds (less than 3 ha) at a maximum. This reduction in area draining to the process water system would result in a significant reduction in volume and peak flows of discharges to the SWSOOS. AMCOR is also investigating diverting **all** stormwater from the process water system, treating it appropriately and then discharging it off-site. This would further reduce the volume of wastewater requiring disposal.

- **Table 6-8: Average Discharge Volume of Wastewater During Operation**

Existing Paper Mill	New Paper Mill	Percent Change
4.0 ML/day	4.3 ML/day	+7%

A review of historical data from the Existing Paper Mill and preliminary modelling of the New Paper Mill has also been undertaken to assess the changes in wastewater discharges to Bunnerong Canal. The review indicates that the Paper Mill's ability to discharge to sewer is generally not related to wastewater generation, rather it is directly related to rainfall (and to the level of the SWSOOS). If the existing discharge limits specified in the current Trade Waste Agreement remain unchanged, modelling has indicated that the frequency and volume of discharges to Bunnerong Canal would decrease by up to 40% (average 12 days discharge a year and 56ML/year discharged) due to the reduced land area draining to the process water system.

In similar industrial/urban catchments in the Botany Bay catchment it has been estimated that approximately 33 kg per hectare per month of suspended solids are discharged via stormwater into the Cooks River and Botany Bay (Fergusson *et al* 1995). The suspended solids contribution from the New Paper Mill's wastewater discharge is about 1% of the stormwater load from land that directly drains to Botany Bay (not including the Cooks River or Georges River). Therefore the New Paper Mill's contribution to suspended solids and turbidity in Botany Bay is insignificant.

Despite the relatively low contribution to pollutant loads in Botany Bay, the New Paper Mill would meet the requirements of Section 120 of the Protection of the Environment Operations Act. This would result in the cessation of untreated process water discharges to Bunnerong Canal.

AMCOR is currently negotiating with Sydney Water to increase the availability of the SWSOOS to receive discharge from the New Paper Mill. Despite a decrease in the variability of the wastewater discharge from the New Paper Mill and an increase in the capacity in the

SWSOOS due to de-silting works, Sydney Water have indicated that restrictions on wastewater discharges to the SWSOOS would remain. However, these restrictions may be lessened, and combined with other proactive management measures, would further reduce the volume and frequency of excess wastewater which requires management when the SWSOOS is unavailable. The final solution for managing excess wastewater can only be determined in conjunction with the re-negotiation of the Trade Waste agreement with Sydney Water. The preferred solution is to develop a mutually agreeable discharge regime with Sydney Water that eliminates the need for any additional management measures, however, it this was not possible other options for managing process water when the SWSOOS is unavailable include:

- Removing all stormwater from the process water system;
- Modifying the process water system to include additional storage; and
- Closing down the mill or reducing its operations during extended wet weather periods.

Fire Water

Due to the large quantity of paper stored on site, fire is a potential risk on site. The areas where large quantities of paper are stored are the waste paper yard and the finished product storage. For paper fires, water would be used as the primary method of extinguishing any fires. Water used for fire fighting in the finished product storage would be retained within the storage building. Water used for fire fighting in the waste paper yard would be retained in the separate stormwater system for this area. This water would be retained until an appropriate method of treatment and disposal is determined.

6.7.4.2 Mitigation Measures

The following mitigation measures would be implemented to minimise the impact of wastewater generation and discharge during the operation of the New Paper Mill:

- The New Paper Mill would be designed and operated to meet the requirements of Section 120 of the Protection of the Environment Operations Act.
- AMCOR would enter into negotiations with Sydney Water to increase the availability of the SWSOOS to receive wastewater discharges in wet weather. This would include investigating other on-site management measures to eliminate untreated process water discharges to Botany Bay;
- The land area draining to the process water system would be reduced;
- Wastewater flows discharged to the sewer would be reduced in variation due to the improvement in the overall process, the installation of flow balancing facilities and the redirection of most stormwater away from the sewer.

6.8 Flora and Fauna

6.8.1 Existing Conditions

The Botany Paper Mill site has been largely cleared of vegetation to make way for the extensive industrial development of the site. However, there remains patches of introduced vegetation primarily planted to provide visual screening of the Existing Paper Mill. Some of this vegetation would be removed during the construction of the New Paper Mill.

A flora and fauna assessment of the proposed site for development was undertaken with the objectives to:

- Describe the biological environment of the study area in relation to terrestrial flora and fauna;
- Determine the known or likely presence of threatened species, communities and their habitats within the study area;
- Identify and describe the ecological constraints and opportunities;
- Assessment under the provisions of other relevant State and Commonwealth legislation, where necessary (including 8-part test of significance); and
- Devise and formulate strategies and mitigation measures that may be applied to mitigate potential adverse ecological impacts. This includes considerations pertaining to wildlife corridors and vegetation management.

Nine threatened or endangered terrestrial flora species and 43 fauna species have been recorded with 10 km of the Botany Paper Mill. A full list of these species is presented in **Appendix G**. An additional 39 threatened species of aquatic fauna have been identified in and around Botany Bay.

Flora

The vegetated areas of the site generally consist of mown grass and various planted trees and shrubs, comprising both native and introduced species. While the Botany Paper Mill site has been operational for over 100 years, a review of historical aerial photography of the site indicates that all existing vegetation within the development area was not present prior to 1969. This indicates that the vegetation was planted at some stage in the last 37 years (which would have most likely been for the purpose of aesthetics and screening). As such, it is of low importance to local biodiversity, however, a number of trees are well established.

A row of trees and shrubs comprising various species is present along the site boundary from the western part of McCauley Street and along Botany Road. (See **Figure 6-5**). These include Narrow-leaved Black Peppermint (*Eucalyptus nicholii*), Broad-leaved Paperbark (*Melaleuca*

quinquenervia), Brush Box (*Lophostemon confertus*), Magenta Lilly Pilly (*Syzigium paniculatum*) and Oleander (*Nerium oleander*).

There are two embankments in the western part of the study area (See **Figure 6-5**). Along the westernmost embankment there is dense vegetation to approximately 2m high comprising various shrubs including Sydney Golden Wattle (*Acacia longifolia*), Bottlebrush (*Callistemon* sp.), and several introduced species including Bitou Bush (*Chrysanthemoides monilifera* subsp. *rotunda*) and Pink Lantana (*Lantana camara*). Along the eastern embankment there are various planted trees and shrubs, including New Zealand Christmas Bush (*Metrosideros excelsa*) and Giant Honeymyrtle (*Melaleuca armillaris* subsp. *armillaris*).

There are various large mature trees within the study area, both along the boundary and amongst existing infrastructure, extending to the car park (See **Figure 6-5**). These include Broad-leaved Paperbark (*Melaleuca quinquenervia*), Swamp Oak (*Casuarina glauca*) and one Port Jackson Fig (*Ficus rubiginosa*).

A row of mature Canary Island Date Palms was planted along the western boundary of the AMCOR site, within the McCauley Street road reserve during 1930's. In recent years these trees have been infected by a fungal pathogen and all trees along AMCOR's site boundary have died.

Fauna

As the site has been used for industrial purposes for over 100 years and is surrounded by residential / commercial development and Port Botany it has limited habitat value. No significant habitat features are present within the study area and ecological resources are insufficient to sustain resident fauna populations other than common avian species and rodents. No nesting habitat (i.e. hollow trees) was observed, however, the vegetation present would provide potential foraging habitat. As such, it is expected that only transient species would use the existing vegetation. Species noted during the site assessment were the Noisy Miner (*Manorina melanocephala*) and the introduced Indian Myna (*Acridotheres tristis*). There is no suitable habitat for the Green and Golden Bell Frog on the Botany Paper Mill site – and there are no records of sightings of the threatened frog species with two kilometers of the site.

AMCOR has notably reduced the amount of waste paper stored on site and does not stockpile paper adjacent to the site boundary within the waste paper hanger and storage area. This has alleviated historical pest control problems (rodent and cockroach) on the site. As a contingency measure a controlled baiting program has been implemented.

EXISTING VEGETATION (STREETSCAPE)

Symbol	Description	Comment
1	*Araucaria heterophylla* (group of)	Significant visual features along Botany Road - local landmarks'
2	*Phoenix canariensis* (row of)	Intermittent row - provides visual identifier to McCauley Street
3	*Syzygium sp.*	Street trees along Botany Rd frontage generally low visual quality
4	*Agonis flexuosa* & *Syzygium sp.*	" " " due to topping under powerlines
5	*Banksia integrifolia*	" " "
6	*Casuarina glauca* (x 4)	" " "
7	*Melaleuca quinquinervia* (x 2)	" " "
8	*Eucalyptus botryoides* (x 2)	" " "
9	*Agonis flexuosa*	" " "
10	*Melaleuca quinquinervia* (x 2)	" " "
11	Native tree planting (various *Euc sp.* & *Casuarina glauca*)	Provides some screening to container terminal.

EXISTING VEGETATION (ONSITE)

Symbol	Description	Ht(m)	Canopy(m)	Comment
A	Mixed boundary hedge, including: *Syzygium leuhmanii, Photinia glabra, Callistemon sp.*	3-4m	2-3m	Provides low-level screening from Botany Road
B	Mixed boundary planting, including: *Eucalyptus nicholii, Lophostemon confertus, Nerium oleander*	6-7m	4-5m	Generally poor condition specimens, however provides screening from Botany Road.
C	Group of *Lophostemon confertus*	7m	5m	
D	*Ficus rubiginosa*	15m	15m	
E	*Ficus rubiginosa*	18m	20m	Good specimen - retain
F	*Melaleuca linariifolia* (various specimens)	6-9m	4-6m	
G	Group of *Lophostemon confertus*	6m	3m	
H	*Casuarina glauca*	12m	5m	
I	*Melaleuca quinquinervia* (various specimens)	6-12m	3-6m	Provides shade and screening in carpark area
J	*Syzygium paniculatum*	12m	5m	
K	Mixed hedge of *Agonis flexuosa* and *Metrosideros excelsa*	5m	3m	
L	*Eucalyptus botryoides*	25m	15m	Significant specimen at main entry point
M	*Ficus macrophylla*	20m	25m	Significant feature along Botany Road to be retained in any future development of site

Local Context

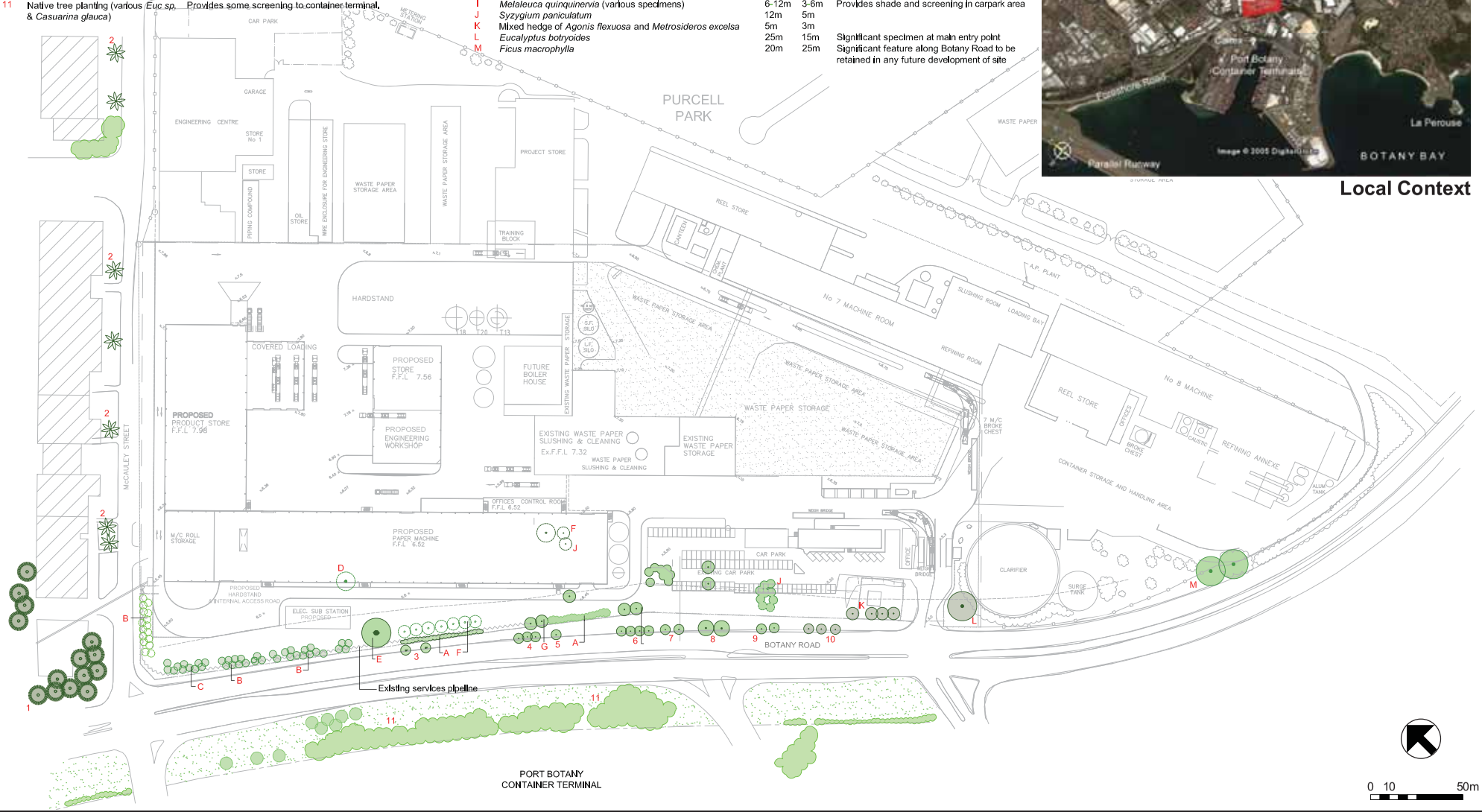


Figure 6-5
LOCATION OF FLORA ON DEVELOPMENT SITE

Aquatic Flora and Fauna

Human activities have modified the shoreline and catchment of Botany Bay. Activities including the creation and removal of habitat, water quality and sediment contamination from industrial activities, introduced species, fishing activities and shipping operations have had a significant effect on aquatic flora and fauna.

Botany Bay and the lower Georges River contain a diverse array of aquatic habitats. These habitats consist of saltmarshes and mangroves, algae, seagrasses, hard substrata, freshwater ecosystems, unvegetated soft sediments and the water column.

Saltmarshes and mangroves occur in several places in Botany Bay including Towra Point, Woolooware Bay and within the Cooks River and Penrhyn Estuary. Prior to construction of Sydney Airport's Runways saltmarshes and mangrove were also found at the entrance to Mill Stream. A variety of algae occur within the Bay including kelp, sargassum, smaller forms that attach to other algae or seagrasses and weakly attached or drifting forms

Development and reclamation especially along the northern shoreline of Botany Bay around Sydney Airport and the Port Botany development has lead to an extensive reduction in seagrass habitat and a significant increase in the amount of hard substrata. Seagrasses provide an important habitat for fish and a positive influence in bottom stability and nutrient recycling. Limited information is available on the ecology of hard-substrata communities within the Bay although evidence suggests communities on artificial surfaces are similar to those on natural rocky reefs.

Freshwater enters Botany Bay via the Georges River, Cooks River, Mill Stream and via two creeks (Floodvale Drain and Springvale Drain) that flow into Penryn Estuary. The main flow of freshwater is from the Georges River located in the south west of the Bay. The Mill Stream and Penryn Estuary are located on the northern shoreline of the Bay and are in the vicinity of the AMCOR site.

Mill Stream forms a series of interconnecting ponds extending northeast from Sydney Airport to Eastlakes, Pagewood and Daceyville. Mill Stream is listed as an endangered ecological community under the *Threatened Species Conservation Act (TSC Act), 1995*. Penryn Estuary is not a natural feature of the Bay and was formed during construction of Port Botany in the late 1970's. Its value as a freshwater habitat is limited as the area is highly disturbed by surrounding development and contaminant from industry.

Widespread aquatic habitats in Botany Bay include soft unvegetated sediments and the water column. Soft unvegetated sediments provide habitat for many species of invertebrate animals (i.e. molluscs) and for fish which in turn are a supply of prey for wading birds and food for

fish in deeper water. The water column provides habitat for a diverse assemblage of plants and animals including the seeds of seagrasses and mangroves and both permeant and transient animals which includes fish and prawn eggs and larvae. Its primary function is to support plants and animals, distribute food and oxygen and to transport wastes away from habitats.

Aquatic fauna within the Bay and surrounding tributaries consists of a variety of fish, migratory bird and macroinvertebrate communities. Thirty nine species of aquatic fauna listed under the *Fisheries Management (FM) Act, 1994*, *TSC Act, 1995* and/or Commonwealth *Environment Protection and Biodiversity Conservation (EPBC) Act 1999*, have been recorded in and around Botany Bay. This includes the Loggerhead Turtle (*Caretta Caretta*), Grey Nurse Shark (*Carcharias Fluiatalis*) and the Black Cod (*Epinephelus daemelii*).

In addition, a variety of marine mammals have been sighted in the area including the bottlenose dolphin, the southern right whale, humpback whale and sperm whale.

6.8.2 Construction

6.8.2.1 Impacts

No remnant native vegetation is present within the development area, as all existing vegetation has been planted and largely consists of non-indigenous species. As such, there are insufficient habitat resources to sustain any native fauna populations. One flora species, the Magenta Lilly Pilly (*Syzygium paniculatum*), listed as threatened under the *Threatened Species Conservation Act* is present on the site. The specimen of the species on site has been planted specifically and is not likely to have originated from local plant stock. As such, an assessment of this species in accordance with the provisions of the Act (ie an 8-part test) is not considered necessary. No other threatened or significant flora or fauna species, populations or communities listed in the *TSC Act* or *EPBC Act*, or habitat for such species, were identified at the site.

Although the proposed development would have a 15-45m set-back on Botany Road and a 15m set-back on McCauley Street from the site boundary and the majority of vegetation is not within the building footprint, it is possible that all vegetation along the southern boundary may need to be removed to provide access to the construction site. However, if possible substantial trees outside the building footprint would be retained. New trees and shrubs would be planted from the approved landscaping list from Randwick Council. The details of the landscaping are further discussed in **Section 6.15**. The impact on native fauna species which may use the existing vegetation would be minimal and temporary as the site does not currently provide any substantial habitat and the new landscaped habitat would soon provide a new potential habitat.

Potential construction impacts on aquatic flora and fauna may result from poor control of runoff during construction. **Section 6.3.2** identified the need for erosion and sedimentation control which would minimise any risk to aquatic flora and fauna.

6.8.2.2 Mitigation Measures

The following mitigation measures would be implemented to minimise the impact of the construction of the New paper Mill on flora and fauna:

- A Soil and Water Management Plan conforming to *Managing Urban Stormwater: Soils and Construction* (Landcom 2004) would be prepared and implemented;
- Introduced species, particularly noxious species and invasive species such as Golden Wreath Wattle (*Acacia saligna*), would be removed and controlled as necessary beyond the construction phase; and
- Native vegetation (comprising only locally indigenous species) would be used in landscaping treatments immediately on completion of the construction phase to compensate for removed vegetation and enhance the aesthetics and biodiversity potential of the site.

6.8.3 Transition

6.8.3.1 Impacts

There would be no impact on terrestrial flora and fauna during the Transition.

When the sewer is unavailable to receive wastewater during the Transition, wastewater would be discharged to Bunnerong Canal as per the Existing Paper Mill. Marginally higher volumes of wastewater may be discharged, however, this small increase in volume would not have any measurable impact on aquatic flora and fauna.

6.8.3.2 Mitigation Measures

No additional mitigation measures would be required to minimise the impact of Transition on flora and fauna.

6.8.4 Operation

6.8.4.1 Impacts

There would be no impact on terrestrial flora and fauna during the operation of the New Paper Mill.

The volume of wastewater discharged into Bunnerong Canal and eventually Botany Bay would be reduced once the New Paper Mill is operational. It should be noted that further

reductions in wastewater discharges may be achieved once negotiations with Sydney Water on a new Trade Waste licence have been completed. The reduction in discharge would result in improvement in water quality in Botany Bay and less stress and impacts on aquatic flora and fauna. Water quality impacts from wastewater discharge are discussed in **Section 6.7**.

Stormwater discharged from the site may also have an impact on aquatic flora and fauna. Measures to reduce stormwater impacts are detailed in **Section 6.6.4** and when implemented would minimise impacts on aquatic flora and fauna.

6.8.4.2 Mitigation Measures

The following mitigation measures would be implemented to minimise the impact of the operation of the New Paper Mill on aquatic flora and fauna:

- Improvements in stormwater management as detailed in **Section 6.6** would be implemented; and
- The volume and frequency of wastewater discharges to Bunnerong Canal would be reduced. Further negotiations with Sydney Water would be undertaken to further increase the availability of the SWSOOS and further reduce discharges to Botany Bay.

6.9 Traffic & Transport

6.9.1 Existing Conditions

The Botany Paper Mill site is conveniently located to main road, rail and port transportation networks. The site's main access on Botany Road provides direct access to the regional main road network. Existing traffic generation by the Botany Paper Mill includes the following elements:

- Receiving of waste paper (inbound);
- Delivery of final product (outbound);
- Chemical deliveries (inbound);
- Waste removal (outbound); and
- General traffic, including staff, visitors and maintenance.

Waste paper that is received at the Botany Paper Mill arrives either as loose paper in self-emptying trucks (2-20 tonne trucks) or as baled paper in semi trailer loads. Self-emptying trucks currently carry an average load of 3 tonnes.

The majority of final product is removed from the site in semi trailer loads of approximately 24 tonnes. An increasing number of B-double vehicles are also used to distribute finished product to interstate locations. As such they utilise the site's direct access to the regional road

network and national highways. Approved B-double routes include Botany Road, Foreshore Road and Bunnerong Road. Botany Road and Foreshore Road are currently the primary B-double routes used to access the site.

Semi trailers and other trucks are used for chemical deliveries to the plant (including starch and dyes) and solid waste removal.

General traffic includes cars, utilities and small rigid vehicles. General traffic is associated with the following on site activities:

- Staff ;
- Visitors;
- Engineering stores deliveries and dispatches;
- Other general deliveries and couriers;
- Technical component supplier representatives; and
- Maintenance suppliers.

The Existing Paper Mill site currently directly employees approximately 200 people.

A breakdown of the current average daily traffic generation is shown in **Table 6-9**.

- **Table 6-9: Existing Average Daily Traffic Generation**

Daily Movements	Weekday	Weekend
2-20 tonne Waste Paper Deliveries	107	17
Semi Trailer Waste Paper Deliveries	31	3
Starch / Chemical Deliveries	7	6
General Traffic	190	60
Final Product Deliveries	33	33
Solid Waste Removal	3	3
General Waste Removal	1	1
Total	**372**	**123**

Notes: Vehicle Generation represents a two way trip. (i.e. one inbound and one out bound movement)
Weekend generation is an average of Saturday and Sunday.

Traffic surveys at the site main entrance on Botany Road in July 2005 indicate that during the network peak periods, the site generates up to 96 vehicle movements per hour, with almost 50% of movements being heavy vehicles.

6.9.1.1 Transport Network Utilisation

Of the current 250,000 tonnes of final product, the following amounts are sent to the respective regions:

- 96,000 tonnes - NSW (mostly Liverpool area)
- 116,000 tonnes - Interstate
- 38,000 tonnes - International (New Zealand and Asia)

For the purpose of this assessment, it has been assumed that the 345,000 tonnes of product expected from the New Paper Mill would have similar distribution proportions.

Road transport is currently used for the delivery of final product to areas within NSW. This is not expected to change with the New Paper Mill. Some of the final product deliveries to interstate destinations are sent by rail, either from Cooks River, Port Botany or Chullora. There would also be some movement by ship. However, a road transport link is required between the Paper Mill and the rail or port terminal, and thus this assessment has conservatively assumed a 100% mode split to road. Increased use of rail and ships for the transportation of product would have benefits including reduced truck activity on the main road network, and the associated reduction in vehicle impacts.

6.9.1.2 Surrounding Road Network Conditions

All finished product would leave the site via heavy vehicle, either for the entire journey to the intended destination or the rail siding and ports for transfer to rail and ship.

The surrounding road network is characterised by a number of major heavy vehicle routes providing access from the regional road network to the industrial areas surrounding the site.

The main traffic access to the Botany Paper Mill site is via a signal controlled intersection on Botany Road at Bumborah Point Road. This provides the site with direct access to the regional road network.

Botany Road is a major arterial road serving the Port Botany area and industrial operations. It connects to Foreshore Road and thence to General Holmes Drive and Southern Cross Drive and the M5 Motorway.

Bunnerong Road provides main road access to the site from the eastern suburbs. Other key roads in the vicinity of the site include McCauley Street, Perry Street and Beauchamp Road.

McCauley Street adjoining the western boundary of the site provides access to both commercial and residential areas. Generally, McCauley Street carries a low amount of traffic, although a report by Masson and Wilson (1997) indicated that there was through traffic

movement from the north to the south with drivers wishing to access Botany Road. In addition, anecdotal evidence suggests traffic has increased over recent years due to development along McCauley Street. The intersection of McCauley Street and Botany Road is controlled by traffic signals.

Both Perry Street and Beauchamp Road are local collector roads and carry a significant proportion of heavy vehicle traffic. However, Randwick Council has indicated that they are attempting to discourage further heavy vehicle use of these streets.

A summary of traffic volumes along the surrounding road network is provided in **Table 6-10**.

- **Table 6-10: Existing Daily Traffic Volumes**

Road	Location	AADT	Source (Year)
Botany Road	West of Beauchamp Road	35,826	RTA (2002)
	East of Beauchamp Road	20,331	RTA (2002)
	South of Mill Pond Road	27,237	RTA (2002)
Bunnerong Road	North Beauchamp	19,582	RTA (2002)
Beauchamp Road	North of Botany Road	17,164	RTA (2002)
	West of Bunnerong Road	8,759	RTA (1999)
Foreshore Road	East of General Holmes Dr	29,851	RTA (2002)
Southern Cross Drive	West of Wentworth Ave	85,163	RTA (2002)
General Holmes Drive	At runway tunnel	133,393	RTA (2002)
Perry Street	West of Bunnerong Road	7,890	Randwick Council (1993)
McCauley Street		1,700	Randwick Council (1997)

6.9.1.3 Site Access

The main site access is located off Botany Road. The site access road forms one leg of a four way cross intersection at Botany Road and Bumborah Point Road. The intersection is controlled by traffic signals. No right turns from Botany Road are permitted into the site at this intersection. There is a currently little-used access gate in McCauley Street, just north of Botany Road, an access to the Engineering Workshop off McCauley Street near Australia Avenue and a gate located off Botany Road for access to the rear of No. 8 Paper Machine.

All waste paper deliveries to the site, final product distribution, chemical deliveries and solid waste removal are undertaken through the main site access at Botany Road. For the New Paper Mill this would continue to be the main site access.

The majority of general, staff and visitor traffic also currently use the main site access from Botany Road. This arrangement would remain for the New Paper Mill.

The entrance in McCauley Street near Botany Road would no longer be utilised. The entrance in McCauley Street near Australia Avenue would continue to be utilised for maintenance and delivery vehicle access. This would only be a minimal number of movements each day, as the main entrance would principally be used for these purposes.

6.9.2 Construction

6.9.2.1 Impacts

Construction of the New Paper Mill would be undertaken over a 24 month period. During the construction phase the Existing Paper Mill would continue to operate and produce approximately the existing quantities of final product. Therefore, for assessment purposes it has been assumed that all construction traffic would be in addition to the existing traffic levels generated by the site.

Based on the expected level of earth works and material delivery, the peak hourly construction traffic generation has been estimated for each stage of construction. These estimates vary depending upon the stage of construction. The estimated peak hourly movements are:

- Months 1-4 & 14 12 movements (6 in and 6 out)
- Months 5 & 8 28 movements
- Month 6 24 movements
- Month 7 20 movements
- Months 9-13 16 movements
- Months 15-21 8 movements
- Months 22-30 Machine Commissioning / Transition (< 5 movements)
- Months 30-33 10 movements

Peak construction traffic generation would be associated with the major concrete pours. Under the proposed construction timetable, during these periods up to 28 heavy vehicle movements (14 in / 14 out) per hour are expected to access the site. The duration of this peak traffic generation is expected to be 2 months out of a 24 month timetable. For the majority of the construction timetable the peak traffic generation is expected to be between 8 and 16 heavy vehicle movements per hour.

Expected construction traffic generation represents a significant increase in the number of heavy vehicles accessing the site during the peak periods. However, the intersection at the Botany Road main gate is operating with spare capacity, and the additional construction traffic would be adequately accommodated within the existing capacity of the intersection.

On-site parking would be provided for construction personnel either via McCauley Street gates (north) or the Machine No: 8 access from Botany Road.

6.9.2.2 Mitigation Measures

The following mitigation measures would be implemented to minimise the impact of the construction of the New Paper Mill on traffic:

- All major road users in the area (Eg. Sydney Ports) would be informed of construction timing and the potential for increased traffic movements; and
- A Construction Traffic Management Plan would be prepared in consultation with RTA and Council.

6.9.3 Transition

6.9.3.1 Impacts

The traffic impacts associated with the Transition would be similar to those for the operation of the New Paper Mill and are discussed in the following section.

6.9.3.2 Mitigation Measures

The mitigation measures to minimise traffic impacts associated with the Transition would be similar to those from the operation of the New Paper Mill and are discussed in the following section.

6.9.4 Operation

6.9.4.1 Impacts

Once the New Paper Machine is fully operational, the demand for wastepaper would increase from 271,000 tonnes per annum to approximately 370,000 tonnes per annum. The increase in demand would generate an increase in the number of vehicles delivering wastepaper to the Paper Mill.

The source of the additional waste paper is expected to primarily be from regional transfer stations or from wastepaper that is currently exported interstate or overseas. No substantial growth is predicted to originate from existing local sources. The net effect would be to increase the number of trucks delivering wastepaper. However, the average load size would increase so the increase in truck numbers would not be proportional to the increase in wastepaper demand.

The increase in final product from 250,000 tonnes to 345,000 tonnes per annum would also generate an increase in the number of vehicles moving final product from the site. The New Paper Mill would operate 24 hours a day, seven days a week as does the Existing Paper Mill,

however, most vehicles movements would occur during the day. The generation rate for the New Paper Mill assumes that the number of B-doubles used for the distribution of final product would not change and is therefore the estimated maximum level. The increased use of B-doubles would significantly reduce the number of vehicle trips generated during operation of the New Paper Mill.

The net change to daily traffic generation with the New Paper Mill is summarised in **Table 6-11** and **Table 6-12**.

- **Table 6-11: Changes to Heavy Vehicle Traffic Generation – Weekdays**

Weekday	Existing	Proposed	*Change*
2-20 tonne Waste Paper Deliveries	107	150	*+43*
Semi Trailer Waste Paper Deliveries	31	43	*+12*
Starch / Chemical Deliveries	7	5	*-2*
General Traffic	190	150	*-40*
Semi Trailer Final Product	33	50	*+17*
Solid Waste	3	4	*+1*
General Waste	1	1	*0*
Total	**372**	**403**	***+31***

Notes: Vehicle Generation represents a two way trip. (i.e. one inbound and one out bound movement)

- **Table 6-12: Changes to Heavy Vehicle Traffic Generation – Weekends**

Weekend	Existing	Proposed	*Change*
2-20 tonne Waste Paper Deliveries	17	24	*+7*
Semi Trailer Waste Paper Deliveries	3	5	*+2*
Starch / Chemical Deliveries	6	3	*-3*
General Traffic	60	40	*-20*
Semi Trailer Final Product	33	50	*+17*
Solid Waste	3	4	*+1*
General Waste	1	0	*-1*
Total	**123**	**126**	***+3***

Notes: Vehicle Generation represents a two way trip. (i.e. one inbound and one out bound movement)
Weekend day represents the average of Saturday and Sunday.

The traffic generation rates shown in **Table 6-11** and **Table 6-12** indicate that there would be a net increase in daily traffic flows once the New Paper Mill is operational.

There would be an increase in the volume of trucks delivering waste paper to the New Paper Mill, as well as an increase in heavy vehicle movements from the delivery of final product. This increase would be partly offset by a reduction in general traffic, particularly staff traffic.

The number of staff would be reduced from about 200 to 140. However, there would be an additional 31 vehicles per weekday and an additional 3 vehicles per day on weekends.

The traffic generation rates do not include the potential diversion of final product to rail. While all product would still need to leave the site by road, the use of rail would reduce AMCOR generated traffic on the regional road network.

Site Access

The main access to the site will continue to be via Botany Road. The Botany Road access will be used by all waste paper deliveries, final product transport and employee and most general traffic. The Botany Road access intersection generally operates well with no significant constraints to capacity. Based on survey results from July 2005, the intersection is operating at Level of Service B, which is indicative of low average delays to vehicles, and spare capacity. In 2016, using traffic volumes specified in the Port Botany Expansion Environmental Impact Statement (EIS), a Level of Service D could be expected due to increased traffic from Port Botany. An estimation of peak hour flows to and from the New Paper Mill suggests that intersection operation will not be adversely affected.

The existing access to the site from the northern end of McCauley Street near Australia Avenue would continue in use at its current low level. The southern access on McCauley Street would be closed.

Queuing on Botany Road

Although there has been a substantial reduction in the number and frequency of trucks queuing outside the Paper Mill site along Botany Road, further measures would be undertaken to eliminate any queuing outside the site. New automated weighbridges would be constructed and used for all incoming vehicles which require weighing and their location would allow traffic that does not require weighing to pass into the site without stopping at the weighbridge. The changes should virtually eliminate truck queuing on Botany Road.

Parking

The New Paper Mill would result in reduced staff. The site currently provides approximately 100 on site parking spaces for staff and visitors. Observations indicate that this parking adequately services the existing staff and visitor levels. The existing parking area would remain unchanged in the New Paper Mill. Therefore with the reduction in staff numbers, the proposed parking arrangements are considered adequate and would not generate adverse off-site impacts.

6.9.4.2 Mitigation Measures

The following mitigation measures would be implemented to minimise the impacts on traffic of the operation of the New Paper Mill:

- New incoming weighbridges would be constructed adjacent to the wastepaper storage area to virtually eliminate the occurrence of truck queuing on Botany Road; and
- The existing main access on Botany Road would be maintained as the primary access for all activities at the New Paper Mill.

6.10 Noise

This section provides an overview of the potential noise emissions, which may impact on the amenity of the surrounding area during both construction and operation of the New Paper Mill. The full noise impact assessment report is contained in Appendix C.

6.10.1 Existing Conditions

6.10.1.1 Noise Criteria

Construction

The Department of Environment and Conservation (DEC) shares responsibility for regulating construction noise in NSW. Noise level objectives outlined in *Chapter 171 Construction Site Noise* of the DEC's *Environmental Noise Control Manual 1994* (ENCM) are applicable for construction works at the nearest residential dwellings. The noise criteria are dependent on the existing background noise levels and the expected duration of the works. The noise goals for construction activity are expressed in terms of L_{A10} noise levels above the nominated background level and are detailed in **Table 6-13**. The New Paper Mill would be constructed and commissioned over 24 months with the major noisy works completed in the first 9 to 12 months.

- **Table 6-13: Construction noise objectives (EPA 1994)**

Construction phase	Noise objective
Construction period of 4 weeks and under	The L_{A10} level measured over a period of not less than 15 minutes when the construction site is in operation must not exceed the background level by more than 20 dB(A).
Construction period greater than 4 weeks and not exceeding 26 weeks	The L_{A10} level measured over a period of not less than 15 minutes when the construction site is in operation must not exceed the background level by more than 10 dB(A).
Construction period greater than 26 weeks	The EPA does not provide noise control guidelines for construction periods greater than 26 weeks duration, however, it is generally accepted that provided L_{A10} noise levels from the construction area do not exceed a level of 5 dB(A) above background, then adverse (intrusive) noise impacts are not likely to be experienced at nearest sensitive receptor locations.

Construction works would be restricted to the hours of:

- 7:00am to 6:00pm Monday to Friday;
- 8:00am to 1:00pm Saturday;
- no work would take place on Sundays, or public holidays; and
- If construction works are inaudible at the nearest residences, works maybe undertaken outside the above hours.

Operational noise

Industrial Noise Policy

The *Industrial Noise Policy* (INP) provides a framework for deriving project specific noise limits for consents and licences for particular projects. This enables the DEC to regulate premises that are scheduled under the *Protection of the Environment Operations Act, 1997*.

The INP sets two separate noise criteria to meet environmental noise objective: one accounting for intrusive noise and another to protect the amenity of particular land uses. The INP requires that if noise from the development under assessment complies with the lower of the amenity or intrusiveness criteria levels, then no acoustical impact would be expected. For a particular project, the more stringent of the intrusive or amenity criteria sets the project-specific noise levels.

Intrusive noise criteria

A noise source is considered to be non-intrusive if the $L_{Aeq,\ 15\ minute}$ level does not exceed the RBL by more than 5 dB(A) for each of the day, evening and night-time periods, and does not contain tonal, impulsive, or other modifying factors as detailed in Chapter 4 of the INP.

Measured survey data at 61 Australia Avenue determined the day evening and night time RBL levels to be 45, 44 and 42 dB(A) respectively. Levels were measured when the AMCOR site was operational however, trends in the reduction of noise levels from day to night would be used to determine the most stringent assessment criterion.

The average night time L_{A90} measured at 4 locations during the August 2004 shutdown was 42 dB(A). This has been used as the basis for the night time intrusive noise assessment and would be the most stringent noise criteria applied to the site. The day and evening results from the unattended monitoring have also been used as they are consistent with the night time result. The corresponding intrusive noise criteria for the day evening and night time periods are presented in **Table 6-14**.

- **Table 6-14: Derivation of Project Specific Noise Criterion**

	Day	Evening	Night-time
Intrusiveness Criteria			
Project Specific RBL levels	45 dB(A)	44 dB(A)	42 dB(A)
Project Intrusiveness Criteria	*50 dB(A)*	*49 dB(A)*	*47 dB(A)*
Amenity Criteria			
Acceptable Amenity Criteria	60 dB(A)	55 dB(A)	50 dB(A)
Adjustment to Amenity Criteria	-3 dB(A)	-3 dB(A)	-3 dB(A)
Project Amenity Criteria	*58 dB(A)*	*52 dB(A)*	*47 dB(A)*
Appropriate Criteria	**50 dB(A)**	**49 dB(A)**	**47 dB(A)**

Amenity noise criteria

The amenity criterion is based on the zoning and the landuse of the receiver location and the extent of the existing industrial noise in the area. The residential area surrounding the AMCOR site is classified as an urban/industrial interface based on the description for this type of location in the DEC's *Industrial Noise Policy*. A site inspection and detailed noise surveys indicates that the noise environment around the Paper Mill is controlled by industrial and traffic noise sources throughout the day. During the night time the ambient noise is estimated to be approximately L_{Aeq} 48 dB(A) and is contributed to by distant road traffic noise and industrial noise sources.

The DEC's *Industrial Noise Policy* recommends that for a residence located in an urban/industrial interface, an acceptable amenity criteria would be 60, 55 and 50 dB(A) L_{Aeq} period for day, evening and night, respectively. Modifying values for the amenity criteria are applied when there are existing industrial noise sources present. The amenity criteria are then decreased in accordance with Table 2.2 of the INP, which has a sliding scale depending on the contribution from industry. Existing L_{Aeq} noise levels for day evening and night are 56, 49 and 48 dB(A) respectively. A subjective assessment of L_{Aeq} at night indicates industrial noise has an estimated contribution of approximately L_{Aeq} 47 dB(A) with traffic noise accounting for the balance. From Table 2.2 of the INP a penalty of 3 dB(A) should be applied to the acceptable amenity criteria for the night time. Daytime and evening amenity criteria have the same adjustment applied. The modified amenity noise criteria for an urban/industrial interface residential receiver is presented in **Table 6-14**.

On the basis that the New Paper Mill would be operational 24 hours a day, seven days a week and in accordance with the above table, the limiting criteria for noise would be an $L_{Aeq, 15min}$ of 50, 49 and 47 dB(A) for day, evening and night respectively. It is expected that the night time operations would however be the limiting criterion for the project. These limits apply to noise generated by the New Paper Mill at any residential dwelling.

Sleep Disturbance Criteria

The DEC's Environmental Noise Control Manual (ENCM) provides guidance in assessing the likelihood of sleep arousal due to industrial noise impacts. The assessment of sleep disturbance varies between studies however it is commonly acknowledged that not all people are affected to the same degree or by the same noise exposure. Findings from studies of sleep disturbance measured by an awakening, change in sleep state or after-effects, reflect the considerable variation in people's response to noise. Suggested peak permitted noise levels vary from 45 to 68 dB(A), depending on ambient noise (Griefahn 1991), and disturbance is related to both the number and maximum level of noise events (Bullen *et al.* 1996). Appropriate internal design noise levels are detailed in the Australian Standard AS 2107-1987.

For assessment purposes, the ENCM uses the criteria based on L_{A1} noise level of the source being no more than 15 dB(A) above the L_{A90} (background) noise level, when measured outside a bedroom window.

Road Traffic Noise

The EPA's *Environmental Criteria for Road Traffic Noise* (ECRTN) (EPA 1999) establishes criteria that define acceptable traffic noise levels for different types of developments. The appropriate noise goals for the New Paper Mill are defined in Table 1 of the ECRTN and are summarised for this project in **Table 6-15**.

- **Table 6-15: Road Traffic External Noise Objectives**

Type of Development	Daytime Design Objectives	Night-time Design Objectives	Where the Criteria are already exceeded
Land use developments with potential to create additional traffic on existing freeways or arterials.	60 dB(A) $L_{Aeq(15hour)}$	55 dB(A) $L_{Aeq(9hour)}$	Where feasible and reasonable, existing noise levels should be mitigated to meet the noise criteria Examples of applicable strategies include appropriate location of private access roads; regulating times of use; using clustering; using quiet vehicles; and using barriers and acoustic treatments. In all cases, traffic arising from the development should not lead to an increase in existing noise levels of more than 2 dB(A).

For the purpose of road traffic noise assessment only, the Roads and Traffic Authority (RTA) and DEC define daytime as 7:00 am to 10:00 pm, whilst night-time is 10:00 pm to 7:00 am Monday to Sunday.

Summary of Project Noise Goals

Table 6-16 summarises the project specific noise goals for operational and construction noise impacts.

- **Table 6-16: Summary of Project Specific Noise Criteria**

Description	Day	Evening	Night
Operational Intrusiveness Criteria	L_{Aeq} 50 dB(A)	L_{Aeq} 49 dB(A)	L_{Aeq} 47 dB(A)
Traffic Noise Criteria	$L_{Aeq\ 15hr}$ 60 dB(A)	N/A	$L_{Aeq\ 9hr}$ 55 dB(A)
Construction Noise Criterion	L_{A10} 50 dB(A)	N/A	N/A

6.10.1.2 Existing Environment

Overview

When the Botany Paper Mill began operations in 1901, very few residential dwellings existed adjacent to the site. A gradual increase in residential and industrial development has produced the present day situation where residences occur adjacent to the north and eastern boundaries of the site, the closest of which is approximately 30 m away, and industrial facilities occur to the west and south. Due to the close proximity of these residences to industrial operations, on occasions, the occupants experience adverse noise impacts.

AMCOR address noise complaints from the local community and actively purses noise controls at the site. In the past AMCOR has adopted a number of noise controls in order to minimise adverse noise impacts of the existing operation within the local community. These include establishment of noise exclusion zones, modification to items of plant and equipment, and planned maintenance and upgrade programs. In addition, a Community Liaison Group has been established to discuss environmental aspects of operation, including noise aspects.

Background noise monitoring

Background noise levels are measurements taken where possible without influence of construction and/or industrial noise sources. Measurements denote typical day and night time variations in noise levels in the ambient noise environment to provide a basis for setting noise level goals.

Background noise levels in industrial areas are difficult to set due to the constant nature of noise emissions from various sources (e.g. Port Botany). AMCOR has undertaken a number of noise assessments dating back to 2000. Assessments both attended and unattended indicate little variation in the background noise environment over the last five years at the monitoring sites in Australia, Partanna, Murrabin and Moorina Avenues. This section describes background, noise monitoring conducted under the following scenarios:

- Unattended noise monitoring whilst plant operational (August 2000);

- Attended noise monitoring during plant shutdown (August 2004); and
- Attended noise monitoring whilst plant operational (March 2004 to May 2005).

Unattended noise monitoring was undertaken while the Paper Mill was operational in August 2000 in accordance with procedures set out in the INP (EPA 2000). Monitoring at Australia Avenue indicates L_{A90} noise levels in the vicinity of the Paper Mill remain at a reasonably constant level during the day, evening and night time periods. A summary of the measured noise data is presented in **Table 6-17**.

- **Table 6-17: Summary of Unattended Noise Survey**

Location	Rating Background Level (RBL)			L_{Aeq} over the assessment period		
	Day	Evening	Night	Day	Evening	Night
61 Australia Avenue	45 dB(A)	44 dB(A)	42 dB(A)	56 dB(A)	49 dB(A)	48 dB(A)

Attended noise monitoring in August 2004 during a routine plant maintenance shutdown indicates L_{A90} background noise levels at Australia and Moorina Avenues do not vary greatly from measured levels when the Paper mill is fully operational (results presented in **Table 6-18**). This is due to road traffic on Botany Road and noise from the container terminal at Port Botany. Results at Partanna Avenue were approximately 4 dB(A) lower than the other sites at Australia, Murrabin and Moorina Avenues because residences are shielded from other noise sources.

- **Table 6-18: Summary of Attended Noise Survey During Plant Shutdown**

Monitoring Dates	Location				Average During Survey L_{A90}
	Australia Avenue	Murrabin Avenue	Partanna Avenue	Moorina Avenue	
	L_{A90} Noise Levels				
26 Aug 04	43 dB(A)	43 dB(A)	39 dB(A)	40 dB(A)	42 dB(A)
28 Aug 04	45 dB(A)	45 dB(A)	41 dB(A)	43 dB(A)	44 dB(A)

Attended noise monitoring undertaken between March 2004 and May 2005 when the Paper Mill was fully operational suggests Murrabin Avenue and Partanna Avenue are directly affected by noise from the Paper Mill. Noise emissions at Australia Avenue during the night are influenced by activities at Port Botany and not the Paper Mill while Moorina Avenue shows the greatest variation in noise levels as a result of meteorological effects (Results are summarised in **Table 6-19**). This location would likely gain the greatest attenuation due to increased distance from the New Paper Mill as the result of the relocation of the plant.

- **Table 6-19: Summary of Attended Noise Survey During Plant Operation**

Monitoring Dates	Location			
	Australia Avenue	Murrabin Avenue	Partanna Avenue	Moorina Avenue
	L_{A90} Noise Levels dB(A)			
Mar 04 – May 05	39-45 dB(A)	44-48 dB(A)	53-55 dB(A)	36-45 dB(A)

Background noise levels during the Paper Mill shutdown have been used to set noise criteria according to the INP. The average result at the four residential locations taken during shutdown is estimated to be 42 dB(A). This level would be used to assess intrusive noise impacts at night.

6.10.2 Construction

6.10.2.1 Impacts

During the construction phase, noise would be generated during demolition, service relocation works, excavation and grading activities by machinery likely to include bulldozers, backhoes, rollers, scrapers, excavators, concrete trucks, mobile cranes, truck mounted boring rigs, jackhammers and haul trucks. While the details of the construction methodology have not been finalised, for the purposes of this assessment some assumptions have been made about the types of construction activities that would take place and the types of equipment that would be used. Typical construction equipment which may be involved in the construction and their noise emissions are contained in **Table 6-20**.

- **Table 6-20: Equipment Sound Power Level L_{A10} dB(A)**

Item #	Description	Sound Power Level L_{A10} dB(A)[A]	Approximate Sound Pressure Level @ 7m
1	Compressor	103	78
2	Bucket Excavator	108	83
3	Mobile Crane	108	83
4	Tip Truck	108	83
5	Front End Loader	112	87
6	Piling (Driven)	120	95

Construction activities would occur over 24 months, although most noisy activities are likely to be complete in 26 weeks. The appropriate construction noise level at Australia Avenue adopted for this project in accordance with the ENCM is taken to be an $L_{A10\ 15\ Min}$ of 50 dB(A) for standard construction hours, based on the daytime background noise level of 45 dB(A) plus an additional 5 dB(A).

Demolition and service works would be expected to take 5 months to complete, an additional 6 months would be required for construction of the building to house the new paper machine. Fit out of the building and construction of the paper machine would follow, taking a further 8 months. The highest noise levels would be experienced during demolition, service relocation and earthworks.

Demolition works would be planned to commence at buildings furthest away from the residences in Australia Avenue to ensure any available shielding from existing buildings is maintained for the greatest amount of time.

Noise levels would not fluctuate substantially during construction activities as the location of plant and equipment will remain relatively localised on the site. A sound plan noise model has been used to predict noise levels at the most affected residences in Australia Avenue resulting from various construction scenarios **Table 6-21** lists the predicted noise impacts for potentially noisy activities during the construction phase including the use of driven piles which is to be confirmed. The predictions indicate a level of approximately L_{A10} 53 dB(A) for typical construction activities and a L_{A10} 60 dB(A) for piling would be expected.

During typical earthworks noise levels are predicted to exceed project noise criteria by approximately 3 dB(A) at the most affected residences in Australia Avenue. In order to mitigate these exceedances **Section 6.10.2.2** presents noise mitigation measures.

Predicted noise levels at Partanna Avenue would be notably less due to shielding from the intervening building.

- **Table 6-21: Predicted Noise Scenarios - Australia Avenue**

Activity Description	Predicted Noise Levels L_{A10} dB(A)
Demolition	53
Civil Preparation (Piling)	60
Slab Pour	40-50
Building Construction	45-50
Machine Installation	45-50

To maintain existing production levels during construction of the New Paper Mill, both No. 7 and No. 8 machines will remain operational. At this time construction noise impacts would be the only additional source of noise during the daytime.

6.10.2.2 Mitigation Measures

To ensure the noise levels at the nearest receptors during construction do not exceed the relevant limits, the following measures would be implemented:

- A Construction Noise Management Plan would be prepared as part of the Construction EMP, which would specify the applicable noise limits, describe how these limits will be met, and how complaints will be recorded and handled;
- Construction would be restricted to the hours of:
  - 7:00am to 6:00pm Monday to Friday;
  - 8:00am to 1:00pm Saturday; and
  - no work would take place on Sundays, or public holidays.
  - If construction works are inaudible at the nearest residences, works maybe undertaken outside the above hours.
- Approval would be obtained from DEC for all noisy works outside approved hours;
- If noisy construction is to occur outside these hours, all nearby residents would be advised of the work to be done at least 24 hours before it commences;
- Monitoring of noise levels during construction would be regularly undertaken to ensure compliance with the set noise limits;
- All affected residents would be notified of construction works;
- All complaints about noise would be investigated and resolved; and
- Construction work would be carried out in accordance with *Australian Standard 2436–1981, Guide to Noise Control on Construction, Maintenance and Demolition Sites (SA 1981).*

6.10.3 Transition

6.10.3.1 Impacts

Noise impacts during Transition would be minor with the transfer of many operations away from nearest residences to the southern boundary of the site. Existing operations at Machine No. 7 and No. 8 would be progressively shutdown once commissioning of the New Paper Mill is complete. One of the existing paper machines would continue to operate until the New Paper Mill reaches full production. Once Machines No. 7 and No. 8 are taken offline noise impacts in Partanna, Murrabin and Australia Avenues would progressively reduce.

6.10.3.2 Mitigation

The mitigation measures to minimise noise impacts associated with Transition would include the operation of only two of the three paper machines simultaneously. At no times would all three machines operate concurrently. The partial operation of the New Paper Mill and the full

operation of one of the existing paper machines during the Transition period would generate similar noise emissions to the full operation of the New Paper Mill (which is discussed in the following section).

6.10.4 Operation

6.10.4.1 Impacts

During operation of the New Paper Mill the main sources of noise would include:

- Building facades;
- Vent stacks; and
- New and existing external plant and mobile plant.

External noise sources such as pumps, motors, vents and mobile plant would influence the noise levels. In addition the New Paper Mill would also be a significant contributor to overall site noise levels. Modelling of noise impacts at residential locations is based on noise emissions from all identified individual noise sources and assumes noise would be controlled by appropriate building design and attenuation measures. Any new equipment not included in the modelling would be reviewed and accommodated during the detailed design phase.

Predicted noise contours at the nearest residential receivers for the operations of the New Paper Mill are presented in **Figure 6-6** and **Figure 6-7** for the day and night time scenario respectively. Predictions indicate the New Paper Mill would meet project noise goals at most affected residences for both day time and night time operations. During adverse weather conditions levels may be exceeded by approximately 1 dB(A) at Australia Avenue. This minor exceedance may not be measurable given the existing environment and the variation in ambient noise levels.

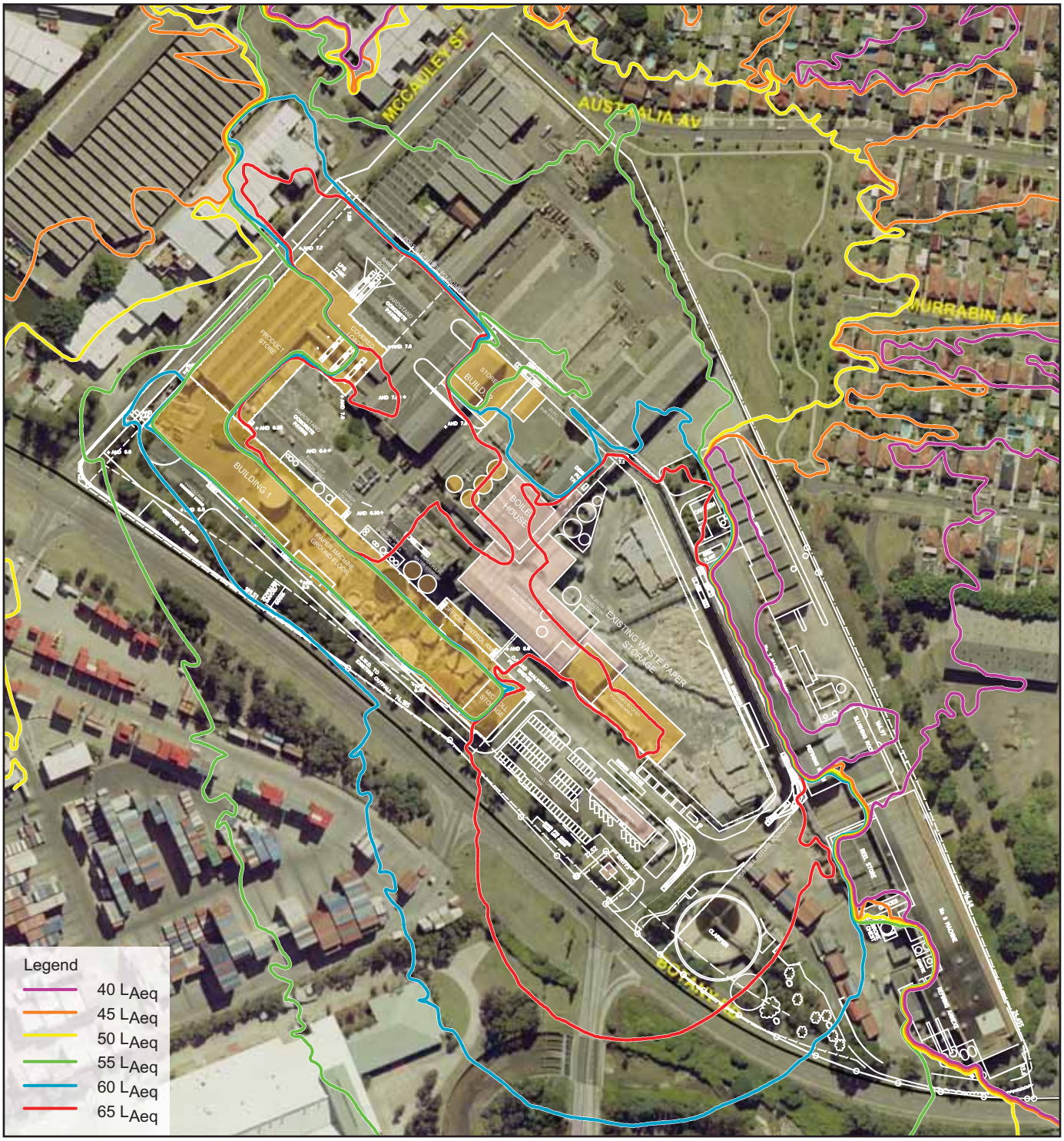


Figure 6-6
PREDICTED DAYTIME NOISE CONTOURS

- **Figure 6-7: Predicted Night-time Operational Noise Contours**

Noise impacts from traffic during the operation of the New Paper Mill would be negligible with site traffic remaining relatively unchanged. This reduction in traffic numbers would have no measurable effect on the noise currently generated by vehicles on Botany Road (Refer **Section 6.9.4.1** for a detailed discussion of traffic and transport impacts during operation of the New Paper Mill).

Overall there would a reduction in noise levels and impacts from the New Paper Mill when compared to the Existing Paper Mill.

6.10.4.2 Mitigation

Modelling of noise emissions from the operation of the New Paper Mill indicated noise criteria may be exceeded at Australia Avenue by 1dB(A). Methods that would be employed to mitigate noise levels where appropriate would include:

- The equipment used would be the quietest reasonably available;
- Noisy equipment would be sited behind structures, which act as barriers, or at a greater distance from noise-sensitive areas;
- Equipment would be regularly and effectively maintained;
- Where reversing alarms would be used, their acoustic range would be limited to the immediate danger area;
- Equipment with effective silencers or muffler design would be used; and
- Buildings would be designed to incorporate noise attenuation to meet the INP criteria.

6.11 Air Quality

The air quality impacts assessed in this section include odour and other particulates that may have a direct impact on human or environmental health.

A detailed air quality assessment has been prepared by SKM and is included in **Appendix D.** The results of the air quality assessment are summarised below.

6.11.1 Existing Conditions

Climate

The impact on air quality on the surrounding area from air emissions during construction and operation of the New Paper Mill is dependent on climate and dispersion meteorology. The climatology and dispersion meteorology of the area is strongly influenced by latitude, topography, elevation and proximity to the ocean.

The climatic environment at the Paper Mill has been described using historical meteorological data recorded by the Australian Bureau of Meteorology at Sydney (Kingsford-Smith) Airport which is approximately 5.5 km to the north west of the Paper Mill.

Temperature, Rainfall and Humidity

The Paper Mill site and surrounds experience a relatively mild climate, characterised by warm summers and cool winters. The warmest months of the year are January and February, which experience mean daily maximum temperatures of approximately 26°C and a mean daily minimum temperature of 18.6°C. July is the coolest month experiencing mean daily maximum and minimum temperatures of 16.9°C and 6.8°C respectively.

Late summer and autumn are usually the wettest time of the year, with March and June receiving the highest mean monthly rainfall of 126 mm. The driest month is September, which receives a mean monthly rainfall of approximately 62 mm. The mean annual rainfall is approximately 1,106 mm, which occurs over approximately 129 days.

Relative humidity peaks in January and February and declines towards the minimum in August and September. The annual range in 9am relative humidity is between 75% in June to 60% in October.

Wind speed and direction

Surface wind observations at 9.00 am between November and March illustrate a dominance of wind from the south (25% of the time). From April through to September, winds are generally from the west (28% of the time) and the north west (33% of the time). Typically, wind direction changes at 3.00 pm and is predominantly from the north east through to the south during September through to April, from the south during May and June and from the south and west during July and August.

Air Quality

Air quality within the area surrounding the Paper Mill site is influenced by both local and regional pollutant sources, including road traffic, domestic sources, aircraft and a variety of industrial emissions. The proximity to local pollutant sources and the influence of sea breezes play significant roles in the dispersal of pollutants at the Paper Mill site.

The closest sensitive receptors to the site are located on the north and eastern side of the Paper Mill with the nearest resident approximately 30m from the site boundary.

Dust Emissions

Localised airborne dust emissions (specifically fibrous paper and board dust) generally occur in the waste paper storage area during warm, dry, windy conditions. During humid or moist conditions following rain, dust generation is typically low. No community complaints relating to the transport of airborne waste paper dust from the Paper Mill site have been recorded.

Odour Emissions

Odour emission from the Paper Mill can occur as a result of the evaporation of process water in the paper drying process, from roof vents in the No. 7 and No. 8 machines and from the water treatment plant. Biological organisms within the process and wastewater stream liberate volatile fatty acids, which are odorous. Since 2001 AMCOR has implemented a number of odour reduction measures as part of its Pollution Reduction Program (PRP) for odour, these include:

- Decommissioning of an old clarifier;
- Construction and operation of a new Water Treatment Plant;
- Increase exhaust velocities at particular stacks; and
- Increasing the height of a low vacuum fan exhaust.

Recent odour studies in November 2004 and March 2005 indicated a reduction in odour concentration at the nearest residents. Community surveys and complaints records also demonstrate an acceptable level of odour impact within the local community.

The Southern and Western Suburbs Ocean Outfall Sewer (SWSOOS) adjacent to the Paper Mill is also known to have significant odour problems due to sewage becoming septic. Sydney Water has installed a dosing plant approximately 2 km upstream of the Paper Mill site and have recently cleaned the interior of the SWOOS to control the odour and concrete corrosion from the generation of H_2S. In addition, the Kelloggs Factory approximately 8.5 km north west of the Paper Mill has also been identified as an odour source.

Odour Criteria

The NSW DEC regulates air quality in NSW, with odour criteria objectives being set to minimise the adverse effects of the discharge of odorous emissions from odour-producing activities. The intensity of a particular odour is described in terms of odour units (OU) which relate to the number of times odorous air must be diluted with odour-free air in order for 50% of a selected panel of 'sniffers' to detect a smell.

The DEC's *Draft Policy: Assessment and Management of Odour from Stationary Sources in NSW* (NSW EPA, 2001) states that the level at which an odour is perceived to be of nuisance depends on the combination of odour quality; the sensitivity of the given population to odours, the background odour level, the tolerance of the community to odour, and the characteristic of the source. Consequently the odour performance criteria (shown in **Table 6-22**) are based on population density. These criteria state that no individual should be exposed to ambient odour levels greater than 7 OU and the level from which odours cause annoyance is 2 OU.

- **Table 6-22: Recommended Odour Performance Criteria**

Size of Affected Community	Odour Performance Criteria # (Odour Units/m^3)
Urban (Population ≥ ~ 2000)	2.0
Population ~ 500	3.0
Population ~ 125	4.0
Population ~ 30	5.0
Population ~ 10	6.0
Single Residence (≤ ~2)	7.0

nose-response time average, 99th percentile

Historically AMCOR has received a substantial number of complaints from the surrounding community regarding odour from the Paper Mill. In 1999, there was a significant increase in community concern about odour generation and as a result AMCOR commenced investigating odour reduction measures. In 2002, the Environment Protection Authority (EPA) now DEC formalised their requirements for odour reduction measures by requiring AMCOR to undertake a Pollution Reduction Program (PRP) for the Existing Paper Mill.

The PRP required AMCOR to undertake detailed odour assessments and commence a program of staged controls at the Paper Mill. Odour control works were complete in February 2005 and have greatly reduced community complaints regarding odour from the Existing Paper Mill. Odour reduction works included:

- Decommissioning of the clarifier;
- Construction of new DAF water treatment plant; and
- Increasing exhaust stack velocities on selected stacks.

In conjunction with the PRP, AMCOR has completed a detailed community odour survey to investigate community perceptions to changes in odour as a result of the odour reduction works. Surveys were sent out to 5500 households and businesses in the local area. The survey included a number of questions regarding the local environment and asked for volunteers to participate in a long-term Odour Diary Project. Volunteers were asked to record their odour

experiences at specific times corresponding to the completion of each stage in the odour reduction works. Diaries were checked to determine if residents perceived any improvements to their odour experiences as a result of the works. Diary responses have become more favourable, corresponding to a decrease in odour impacts.

Prior to odour mitigation works being implemented odour impacts were in the order of 25 OU/m^3 at the nearest residential receivers. Odour dispersion models estimated odour impacts would still be above the performance criteria of 2 OU/m^3 following completion of odour control works.

The DEC Policy recognises that in some cases it may be more appropriate to set industry specific odour criteria acknowledging that different industries emit different types of odour. As such while 2 OU/m^3 may be an appropriate target for some industry, for industries where odour is considered less offensive a higher (less stringent) target may be appropriate.

In view of this a community criterion was developed to provide a benchmark against which the impact of the proposed odour control could be measured. The methodology for developing the criteria used odour dispersion plots together with community complaint densities and location to determine an odour concentration that would generate zero complaints. A site specific odour criterion of 6 OU/m^3 was determined as the level of odour impact required to achieve a situation of community acceptance where no valid odour complaints would be received (ie. no offensive odour). **Section 6.11.4** assesses if this criteria should be applied to the assessment of odours associated with the New Paper Mill or if an alternate criteria should be applied.

6.11.2 Construction

6.11.2.1 Impacts

Particulate Matter

The main construction impacts on air quality are expected to arise from the generation of airborne dust. The DEC's concentration based air quality criteria for particulate matter in NSW is shown in **Table 6-23**.

- **Table 6-23: NSW DEC Criteria for Particulate Matter**

Pollutant	Averaging Period	Concentration (µg/m^3)
PM_{10}[1]	24-hour	50
	Annual	30
TSP[2]	Annual	90

[1] Particulate matter (diameter < 10µm)

[2] Total suspended particulates (diameter < 50µm)

Deposited dust can reduce the amenity of an area if present at sufficiently high levels and represents a health hazard. In NSW the DEC has set limits on acceptable dust deposition levels. The maximum acceptable increase in dust deposition compared to existing dust levels is shown in **Table 6-24**.

- **Table 6-24: NSW DEC Criteria for Dust Fallout**

Existing background dust fallout level (g/m^2/month)	Maximum acceptable increase over existing fallout levels (g/m^2/month)
2	2
3	1
4	0

During the construction phase particulate matter would be liberated during the following activities:

- demolition of existing buildings;
- excavation and levelling of the site by bulldozers, backhoes and excavators;
- Movement of soil/fill and demolition material by dump trucks and scrapers;
- Wind erosion from unsealed surfaces and stockpiles; and
- Wheel generated dust by construction vehicles travelling along unsealed roads/access tracks.

6.11.2.2 Mitigation Measures

Dust control techniques to ensure assessment criteria are met and air quality is protected during construction activities would be developed in detail in an Air Quality Management Plan that would be prepared as part of the Construction Environmental Management Plan for the project.

6.11.3 Transition

6.11.3.1 Impacts

The air quality impacts associated with the Transition would be similar to those from the operation of the New Paper Mill and are discussed in the following section.

6.11.3.2 Mitigation

The mitigation measure to minimise air quality impacts associated with the Transition would be similar to those from the operation of the New Paper Mill and are discussed in the following section.

6.11.4 Operation

6.11.4.1 Impacts

Odour Impacts and Management at Other Wastepaper Mills

A review of odour impacts and management at other similar wastepaper mills was undertaken. The only information on odour impacts able to be sourced was from Germany and a review on this information was commissioned as part of the Environmental Assessment (See **Appendix D**). This review:

- confirmed that some of the New Paper Mill estimates of odour generation rates for specific processes were appropriate and in the range recorded for German wastepaper mills ;
- concluded that odour criteria for German and Australia were too different to compare; and
- detailed measures to mitigate odours if unacceptable impacts were to occur.

A literature review was also commissioned by AMCOR into possible "end of the pipe" treatment options for wastepaper mills to further reduce odour emissions. This research undertaken by CSIRO is presented as an Appendix to the Air Quality Report in **Appendix D**. The literature and best practice review concluded that there are no proven, economically feasible technologies for "end of the pipe" odour control for paper mills using waste paper. This is primarily because of the large volumes of air and steam which would require treatment and the relatively low odour concentrations in the air and steam. Standard industry practice for the control of odour involves minimising the potential for the generation of odour producing substances by the effective design and management of the process and fibre water systems. As noted in other sections, a new process water system would be installed as part of the New Paper Mill.

Odour Dispersion Modelling

The odour assessment for the operational stage of the project was assessed using the dispersion model CALPUFF that simulates the effects of time and space varying meteorological conditions on pollutant transport, transformation and removal. As the existing upper meteorological air data from Sydney Airport was insufficient for the purposes of

dispersion modelling, the CSIRO air pollution model (TAPM) was used to generate additional meteorological data for the assessment.

Previous odour studies have used the AUSPLUME dispersion model to assess odour impacts from the Mill. In this instance CALPUFF was chosen as the preferred dispersion model because of its ability to model low wind speed and coastal meteorological conditions to a greater technical depth.

Existing odour impacts were modelled using odour emission data and exhaust stack parameters collected by Environ Odour in November 2004 after completion of the PRP odour mitigation works. The results shown in **Figure 6-8** show that the odour impact at the nearest resident is in the order of 6 OU/m^3. Also, based on the results of Community Odour Surveys and the reduction in complaints from the general community following completion of the PRP odour mitigation works, it is considered the performance of the Existing Paper Mill with respect to odour impacts is acceptable. On this basis the current level of odour impact i.e. 6 OU/m^3 at nearest residences to the site as predicted by CALPUFF is considered to represent a suitable odour criterion for the New Paper Mill – and would not cause an offensive odour to impact surrounding residences.

Once fully operational, it is predicted that the New Paper Mill would result in a decrease in total odour emission from the current emission rate of 198,560 OUm^3/s to 186,154 OUm^3/s.

Modelling of the odour impacts from the New Paper Mill are shown in **Figure 6-9**. Here it can be seen that impacts at the nearest residence is 5 OU/m^3. This decrease is most likely attributable to the location of the New Paper Mill adjacent to Botany Road (ie. further away from residences) as well as the decrease in total odour emissions and improvements in dispersion technology.

- **Figure 6-8: CALPUFF Modelled Existing Odour Impacts (2 OU/m^3– Yellow; 3 OU/m^3 – Blue; 5 OU/m^3 – Purple; 6 OU/m^3 – Pink)**

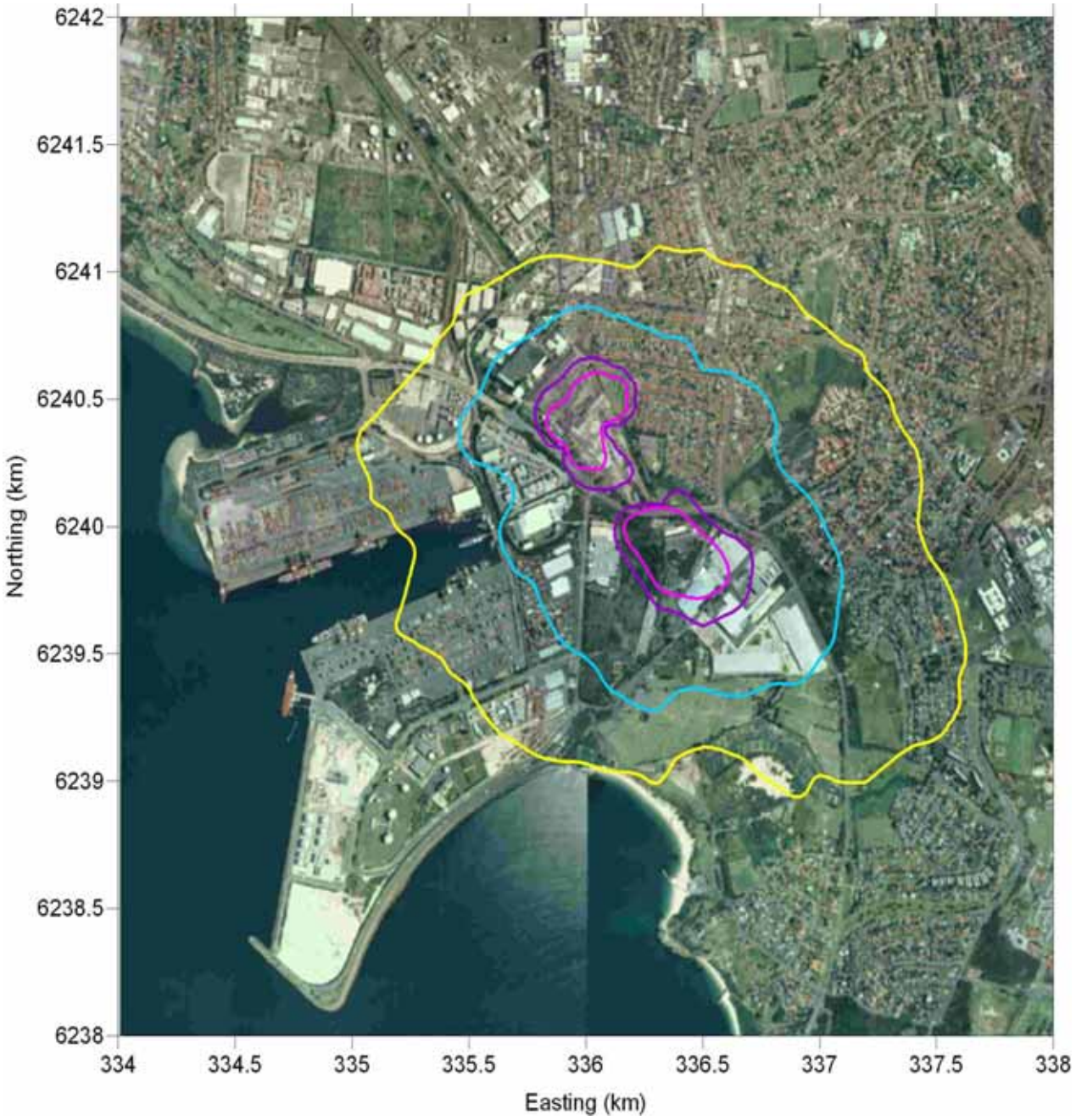
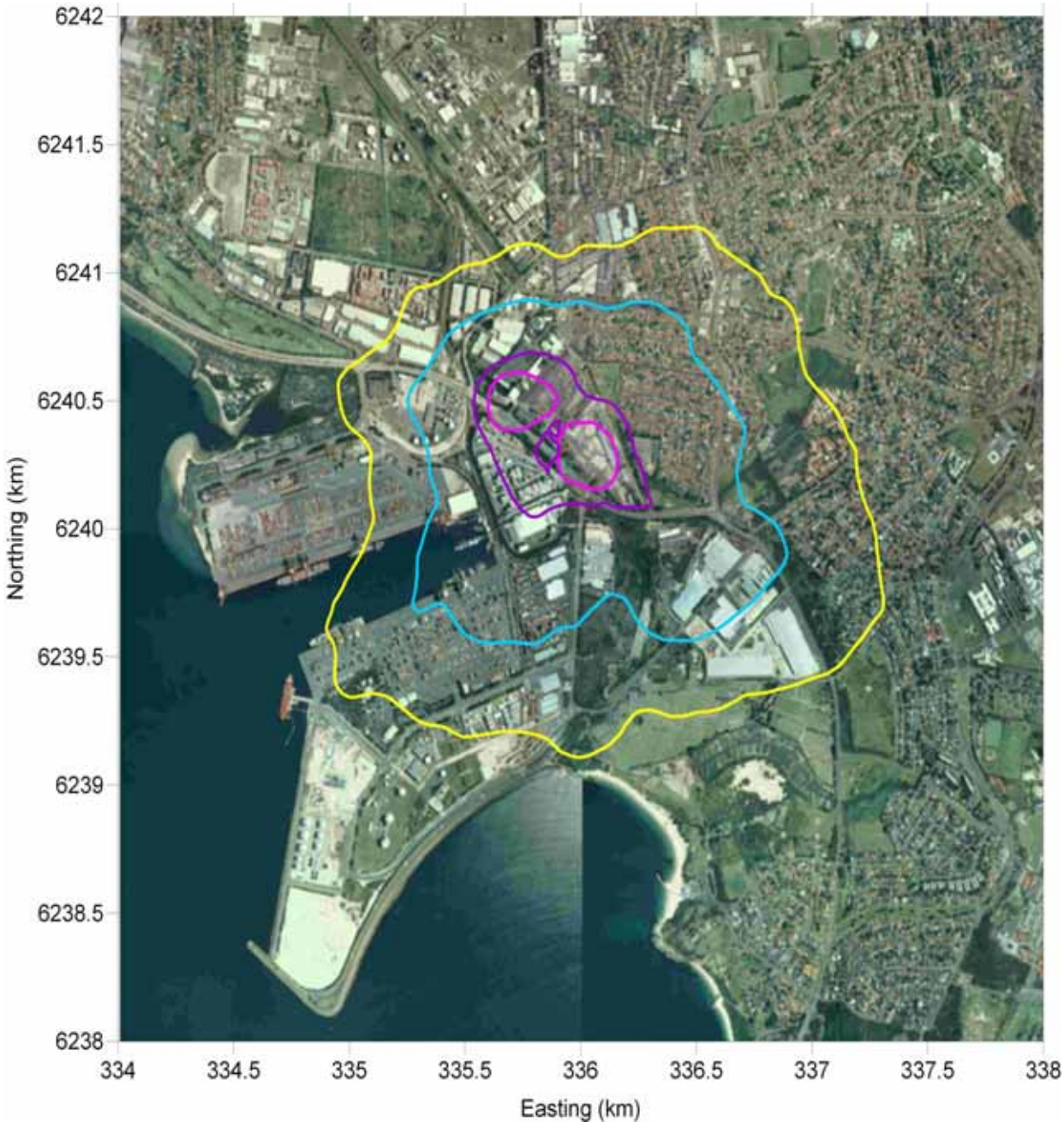


Figure 6-9: CALPUFF Proposed Odour Impacts (2 OU/m^3– Yellow; 3 OU/m^3 – Blue; 5 OU/m^3 – Purple; 6 OU/m^3 – Pink)



In terms of the extent of odour impact within adjacent residential areas the 2 OU/m^3 contour is smaller for New Paper Mill (refer to **Figure 6-9**) compared to the existing Paper Mills (refer to **Figure 6-8**). It is noted that low level odour impacts from New Paper Mill extend further westward over industrial areas of Port Botany than is the case from Existing Paper Mill. This is partly due to New Paper Mill being located to the western boundary of the site away from sensitive receivers. The marginally increased impact of low level odours over Port Botany would not result in increased odour annoyance to these industrial receivers.

It should be noted that the predicted odour emission rates are conservative and have been based upon the performance of the existing paper machines. It is likely that with the improved technology of the New Paper Mill, total odour emissions would be even lower. However, there is little or no comparable data available about the odour performance of new similar wastepaper mills to derive any meaningful odour emission rates for detailed modelling therefore, the conservative approach of adopting existing emission rates was undertaken.

In the unlikely event, that the odour emissions from the New Paper Mill are determined to be offensive (despite achieving the no greater than 5 OU/m^3 criterion at the nearest residence) AMCOR would undertake further additional mitigation measures.

It is generally accepted that the odour-causing compounds in the emissions to air from wastepaper mills are volatile fatty acids and/or reduced sulphur compounds generated by biological activity. As there are no proven technologies available for "end-of-pipe" control of odour emissions, further mitigation measures would be targeted at management or elimination of biological activity in the process.

The appropriate mitigation measures would depend on the source of the biological activity generating the odorous compounds. Hence, if necessary, AMCOR would implement an exhaustive survey of the New Paper Mill process systems to identify the sources, mechanisms and process factors that were responsible for the biological activity.

The range of potential mitigation measures available to address odour generating biological activity would include:

- Correction of any mechanical deficiencies resulting in stagnant pockets in the process circuits;
- Adjustment of the biological control program to specifically target identified problem areas;
- Optimisation of the paper machine wet end retention system to minimize total dissolved solids (TDS) and biological oxygen demand (BOD) levels in the Paper Machine water loop;

- Controlling and operating the process water loops at the lowest practical Total Dissolved Solids level to minimise the availability of food sources for microbiological organisms;
- Investigating reasonable and feasible upgrades of infrastructure on site to improve environmental performance.

After implementation of any further odour mitigation measures the survey (and modelling) would be repeated to verify the effectiveness of the odour reduction measures.

6.11.4.2 Mitigation

The following mitigation measures would be implemented to mitigate odour impacts from the operation of the New Paper Mill:

- A full odour assessment would be undertaken following commissioning of the New Paper Mill. This assessment would include odour concentration and intensity measurements, and odour dispersion modelling, to ensure odour impacts are acceptable at the nearest residence. Odour assessments would then be conducted on an annual basis or as agreed with DEC.
- The New Paper Mill would be designed and operated to ensure that odour impacts at the nearest residence are no greater than 6 OU/m^3
- If after the New Paper Mill was to become operational, offensive odours were found to be emitted, AMCOR would investigate the source and cause of the offensive odours and implement reasonable and feasible mitigation measures to reduce the impacts to acceptable levels.

6.12 Indigenous Heritage

6.12.1 Existing Conditions

A specialist study on indigenous heritage was undertaken by Robynne Mills Archaeological and Heritage Services (June 2000) as part of the initial environmental assessment for Project 100. A summary of the study is presented below. The full report is provided as **Appendix G**.

DEC Data Base

A search of the DEC Site Register identified three (3) Aboriginal sites to the south of the AMCOR site. These sites are summarised in **Table 6-25.**

- **Table 6-25: Indigenous Heritage Items in the Vicinity of the Botany Mill**

NPWS Site register no.	Item Description	Location
#45-6-0639	Rock engraving	On Bumborah Point, Yarra Bay approximately 1km south of development site
#45-6-1152	Midden	Located approximately 400m south of the development site in the Eastern Suburbs Crematorium, south of Botany Road.
#45-6-0976	Shelter with midden	Located approximately 300m south of the development site, south of Botany Road.

Australian Heritage Council

There are no indigenous sites listed on the Australian Heritage Commission's Register of the National Estate for the Randwick Local Government Area.

Native Title Tribunal

A search of the National Native Title Tribunal for registered native title applications identified 3 claims that have been registered in the Randwick LGA. These are Claims NC97/8, NC96/10 and NC97/16 and are located on Crown Land.

Claim NC97/16 is relevant to the development area, and is located immediately south of the proposed development area (see **Figure 6-10**). It was lodged by Greg Simms and Assan Timbery on behalf of the Dharawal People who have a continuing connection to Goorawahl (La Perouse). The claimed area consists of certain crown land, foreshores and waters in and around La Perouse and Botany Bay.

Aboriginal Consultation

As part of the consultation process for this Environmental Assessment, a letter was sent to the La Perouse LALC detailing likely impacts during construction and operation of the New Paper Mill. To date no comments have been received.

During the heritage investigation in 2000, consultation was undertaken with the La Perouse LALC Sites Officer, David Ingrey. Mr Ingrey agreed that as a result of the degree of surface disturbance, it was unlikely that surface sites would be present within the Paper Mill site. However Mr Ingrey expressed concern that there may be sub-surface cultural materials which could be impacted by any excavation at the site. His concerns were based on discoveries at the Prince of Wales Hospital, the fact that the AMCOR site is located within the dune area adjacent to Botany Bay, and that registered sites have previously been identified along this dune area wherever impacts to the dune have been minimal.

6.12.2 Construction

6.12.2.1 Impacts

The indigenous heritage assessment concluded that it is unlikely that archaeologically sensitive sites will be located within the proposed development area because of the high degree of disturbance that has occurred from previous papermaking activities at the site over the last 100 years. However, the presence of known sites within 500m of the development area indicates that the area may have been utilised by Aboriginal people in the past and therefore there is a possibility that cultural heritage material may be present in sub surface deposits. It was concluded that all areas where sub-surface disturbance is proposed have the potential to reveal archaeological deposits.

6.12.2.2 Mitigation Measures

The following mitigation measures would be implemented to minimise the potential impact to undiscovered indigenous heritage sites within the proposed development area:

- All bulk excavation at the development site will be monitored by a qualified archaeologist; and
- Should Aboriginal cultural heritage items be identified during bulk excavation, works would cease in the immediate area and DEC (National Parks and Wildlife Section) would be contacted immediately.

6.12.3 Transition

6.12.3.1 Impacts

During the Transition phase there would be no bulk excavation or disturbance of soil and therefore, there would be no potential impacts on indigenous heritage.

6.12.3.2 Mitigation Measures

No mitigation measures are required to protect indigenous heritage during the Transition phase.

6.12.4 Operation

6.12.4.1 Impacts

During the operation of the New Paper Mill there would be no bulk excavation or disturbance of soil and therefore, there would be no potential impacts on indigenous heritage.

6.12.4.2 Mitigation Measures

No mitigation measures are required to protect indigenous heritage during the operation of the New Paper Mill.

Legend

- Amcor mill
- NC97/16 Claim
- Site Register Number

Figure 6-10
LOCATION OF NATIVE TITLE CLAIM

6.13 Non-Indigenous Heritage

6.13.1 Existing Conditions

A preliminary assessment of the heritage significance of the old Paper Mill buildings contained at the Botany Mill site was undertaken by Graham Brooks and Associates Pty Ltd (1997) for the proposed Bulk Store Development Application. An additional specialist study investigating potential non-indigenous heritage impacts of the New Paper Mill was undertaken by Graham Brooks and Associates (June 2000) for P100. This has been updated by Graham Brooks and Associates Pty Ltd for the current proposed development. A full copy of this assessment is included as **Appendix E** and a summary of the findings is provided below.

The Old Finishing Mill building (APM Building c1902 at 19 McCauley St Matraville) is listed as a heritage item under the Randwick LEP. The face brick facades, stretching along the McCauley Street frontage, hold some aesthetic and social significance for their association with the evolutionary development of the mill site. The Old Finishing Mill building façade is generally characterised in the Federation Warehouse style. No other buildings or features of the site are listed on any local, State or National Heritage Register.

Photographs of the Old Finishing Mill Building along the McCauley Street frontage of the site are given in **Figure 6-11**. It should be noted that since this photograph was taken all Canary Island date palms shown have died due to fungal pathogens.

The assessment stated that the buildings, which can be identified as part of the earliest phase of the mill, retain some significance. The significance of these buildings has, however, been reduced by the removal of specialised papermaking equipment that was housed within the buildings and the extensive modifications made to the buildings over their life. Generally the buildings and facades are in poor condition, mainly resulting from neglect since the closure of this section of the mill. The significance of the Paper Mill Site is limited as a reminder of the role that the Botany Paper Mill played in the daily lives of the workers and their families who lived nearby.

The original water tower, and the face brick façade of the building to which it was joined, hold some historical and aesthetic significance. However, the building is currently in a degraded state with the layout having been extensively modified since operation. The building does not carry high heritage significance. The tank and water tower are considered to hold some scientific research potential, as an example of the contemporary mechanical engineering in the early 20th Century.

The site of former occupation of the Paper Mill site was determined to have some social significance for its association with members of the Royal Veteran's Corps, which were disbanded in 1823. No known relics of this activity are present today.

The Canary Island Date Palms, which were planted along the McCauley Street frontage during the early 1930's, were determined to create an avenue of some rarity in the area, in a style, which is linked to the period of the planting (John Graham and Associates, 1992). The condition of these palm trees has deteriorated and all trees along the AMCOR site boundary have died due to fungal pathogens.

The heritage study concluded that the heritage significance of the site is related more to the industrial activity of paper making than to the architectural qualities of the remaining Old Finishing Mill buildings. In particular, the Old Finishing Mill building frontage was determined to have limited townscape merit in its context and to have limited architectural merit. The 1997 assessment, which determined the McCauley Street façade to have high significance, was carried out in the context of the site no longer being used as a paper production facility. The continued production of paper on the site is, however, of greatest heritage significance, and greater than the retention of the nostalgic façade. The New Paper Mill proposal will continue to utilise the site for paper production.

6.13.2 Construction

Options for retaining the existing façade of the Old Finishing Mill have been investigated for the current proposal. Alternative location of the New Paper Machine on site, so as to retain part of the Old Mill building, would not be suitable in terms of satisfying safe access and noise reduction requirements. Retention of the façade along the boundary as a stand alone wall was also investigated as an option. However, the façade would not be attached to a building and would no longer relate to its use as a wall enclosing a building, nor relate to the new building, and would be vulnerable to continued degradation. The significance of the Old Mill Building façade with this option would therefore be greatly reduced.

The Graham Brooks and Associates (July 2000) report concluded that demolition of the Old Mill Building and façade, in the context of continuing the historical function of the site, is considered to have an acceptable impact on the heritage significance of the property. Demolition of the Old Mill building, to make way for the proposed New Paper Mill, would maintain the level of heritage significance at the Botany Mill site by continuing the historical associations of paper manufacturing. The recording of the history and the physical appearance of the buildings to be demolished would be undertaken to the appropriate archival standards.

Figure 6-11
PHOTOGRAPH OF McCAULEY STREET FRONTAGE

A recent addendum to the July 2000 report produced for the current proposal did not introduce any new recommendations and had no objections towards the proposed demolition works. Further recommendations were made to reduce the monolithic visual perception of the large-scale façade of the proposed New Paper Mill. The visual impacts of the New Paper Mill proposal are discussed in **Section 6.15**.

6.13.3 Transition

6.13.3.1 Impacts

There would be no impacts on non-indigenous heritage during the Transition.

6.13.3.2 Mitigation Measures

No mitigation measures are required during Transition to minimise the impact on non-indigenous heritage.

6.13.4 Operation

6.13.4.1 Impacts

There would be no impacts on non-indigenous heritage during the operation of the New Paper Mill.

6.13.4.2 Mitigation Measures

No mitigation measures are required during the operation of the New Paper Mill to minimise the impact on non-indigenous heritage.

6.14 Social Environment

6.14.1 Existing Conditions

As shown by the complaint register maintained by AMCOR, noise and odours generated by the Existing Paper Mill produce perhaps the most significant social impacts. However as noted in previous sections, odour generation from the Existing Paper Mill has decreased substantially over the past three years with the implementation of a Pollution Reduction Program aimed specifically at reducing odour impacts. This in turn has resulted in a major reduction in the number of odour complaints associated with Botany Paper Mill.

Also residents located near the Botany Paper Mill have, in the main, purchased their properties in the full knowledge that their neighbours are industrial premises. This has resulted in a general level of acceptance of industrial operations amongst the community.

AMCOR is pro-active in community involvement and operates an extensive community consultation program at the Botany site. A Community Liaison Group, which meets on a

regular basis to discuss environmental performance of the site and planned operational improvements, has been established. Community Newsletters, reporting on similar issues are also distributed on a regular basis.

6.14.2 Construction

6.14.2.1 Impacts

There would be increased noise, traffic and dust during the demolition of existing buildings and the construction of the New Paper Mill (See respective sections). This will have some impact on the surrounding residences. AMCOR would keep all residents informed of construction activities and especially those likely to have a substantial impact (such as concrete pours). These impacts have been assessed in other sections of the EA and are summarised in **Table 6-26**.

There would be a number of positive impacts, namely 400 additional construction jobs will be created during construction and up to 60% of the capital budget will be spent directly within the Australian economy.

- **Table 6-26: Amenity Impacts From Construction**

Aspect	Summary of Impacts
Air Quality	There would be an increase in dust deposition surrounding construction areas. However, provided dust mitigation measures are implemented this impact would be minor and temporary in nature.
Noise	Noise emissions from construction activities would impact nearby residences and/or businesses. However, provided noise measures are implemented this impact would be minor and temporary in nature. Audible construction activities would also be confined to nominated hours.
Traffic	Vehicles numbers associated with construction would be small and would not significantly increase traffic in the area. Temporary road/lane closures may be required during construction that may result in some traffic delays, however, delays would be temporary and will be managed via traffic management plans.
Visual	There will be moderate visual impacts from construction activities. These would be temporary and visual screening would be provided where appropriate to manage these impacts.

6.14.2.2 Mitigation Measures

The following mitigation measures would be implemented to minimise the impacts of construction on the social environment;

- The mitigation measures detailed in the noise, air quality, odour, visual amenity and heritage sections would be implemented to minimise the impact of construction on the surrounding land users; and
- Ongoing consultation with the community would be undertaken during construction.

6.14.3 Transition

6.14.3.1 Impacts

The noise and odour impacts during the Transition phase will be similar to existing conditions as discussed in the relevant sections of this document. There would be no other additional impacts on the social environment during Transition.

6.14.3.2 Mitigation Measures

The following mitigation measures would be implemented to minimise the impacts of Transition on the social environment;

- The mitigation measures detailed in the noise, air quality, odour, visual amenity and heritage sections would be implemented to minimise the impact of Transition on the surrounding land users; and
- Ongoing consultation with the community would be undertaken during Transition.

6.14.4 Operation

6.14.4.1 Impacts

There will be a reduction in traffic, odour and noise impacts once the New Paper Mill is fully operational and all existing paper machines are decommissioned. A larger quantity of wastepaper will be able to be recycled, utilising existing resources more efficiently. The removal of most of the derelict buildings on site and their replacement with a modern landscaped facility should improve the visual amenity of the site.

While the New Paper Mill will involve a reduction in direct employment from 200 down to 140 people, it is an improvement over the situation which would result if the New Paper Mill project were not to proceed, which would ultimately require the mill to be closed down.

6.14.4.2 Mitigation Measures

The following mitigation measures would be implemented to minimise the social impact of the project:

- The mitigation measures detailed in the noise, air quality, odour, visual amenity and heritage sections would be implemented to minimise impact of operation on the surrounding land users; and
- The CLG would be maintained as part of ongoing operation.

6.15 Visual and Landscaping

6.15.1 Existing Conditions

The proposed location of the New Paper Mill is within the existing AMCOR Botany site, adjacent to Botany Road, and distant from residences. Views from these residences consist of the intervening vegetation, other residential dwellings, industrial buildings and facilities associated with the Port of Botany. Views of Botany Bay, Kurnell Peninsula and the Tasman Sea can be seen in the distance.

The visual character of the site is largely industrial, comprising large brick, metal and fibro type factory buildings. The most prominent features of existing plant are the boiler house and three tall stacks within the centre of the site. The visual character is not inconsistent with the industrialised nature of the surrounding area.

Existing screening vegetation along Botany Road includes Norfolk Island Pines on the corner of Botany Road and a row of mixed trees along the southern boundary. These do not provide a consistent landscape character to the mill's road frontage. Feedback from surrounding residents indicates they consider the current visual amenity of the site to be poor, with the derelict buildings being an eyesore.

Landscaping works has converted an area between the site and nearest residences to open parkland. This has to some extent, ameliorated the visual impact of the existing industrial environment. This land is owned by AMCOR, who has previously made it available for long term lease to Council, without any obligation to do so.

6.15.2 Construction

6.15.2.1 Impacts

Visual impacts during the construction would result from modification to existing structures on site and would include:

- Construction and demolition equipment; and
- Construction work areas.

Visual impacts from construction would only be temporary, with demolition and construction works to be completed over a period of about 18 months.

6.15.3 Mitigation Measures

Visual screening of the construction area would be provided where appropriate. This would include plywood hoardings and/or chain wire fence around the perimeter of the worksite. The colour of the screening would be determined though consultation with relevant stakeholders.

6.15.4 Transition

6.15.4.1 Impacts

Visual impacts during Transition would be similar to those from the operation of the New Paper Mill and are discussed in the following sections.

6.15.4.2 Mitigation Measures

The mitigation measures to minimise visual impacts associated with Transition would be similar to those from the operation of the New Paper Mill and are discussed in the following sections.

6.15.5 Operation

6.15.5.1 Impacts

There will be an improvement in visual amenity and site layout with the New Paper Mill. **Figure 6-12** shows an artist impression of the new site layout, as viewed from Botany Road. It must be noted that the colour scheme and architectural features for the building exterior have not yet been finalised, and additional consultation with Randwick City Council and DoP will be undertaken in determining the appropriate visual finishes.

Existing derelict buildings and infrastructure would be removed from the south western corner of the site. The new facility would consolidate processing and storage areas, removing a number of existing storage areas from the visual catchment of the site. The New Paper Mill building has been designed to complement the existing visual environment and incorporate sympathetic finishes and architectural features. Landscaping around the perimeter of the site would be designed to reduce the visual impact of the new buildings.

An artist's impression of the McCauley Street frontage of the New Paper Mill site is shown in **Figure 6-13. Figure 6-14** and **Figure 6-15** present artist impressions from the closest residences at Australia Avenue and Partanna Avenue respectively.

Landscaping works will play an important role in the mitigation of the visual impacts of the proposal, and the integration of the development into the landscape. In accordance with Randwick Council's "Street Tree Master Plan" landscaping would be designed to provide a strong and distinctive element along Botany Road.

Figure 6-12
ARTIST IMPRESSION OF NEW PAPER MILL FROM BOTANY ROAD

Figure 6-13
ARTIST IMPRESSION OF NEW PAPER MILL FROM McCAULEY STREET

Figure 6-14
ARTIST IMPRESSION OF NEW PAPER MILL FROM CLOSEST RESIDENCE ON AUSTRALIA AVENUE

Figure 6-15
ARTIST IMPRESSION OF NEW PAPER MILL FROM CLOSEST RESIDENCE ON PARTANNA AVENUE

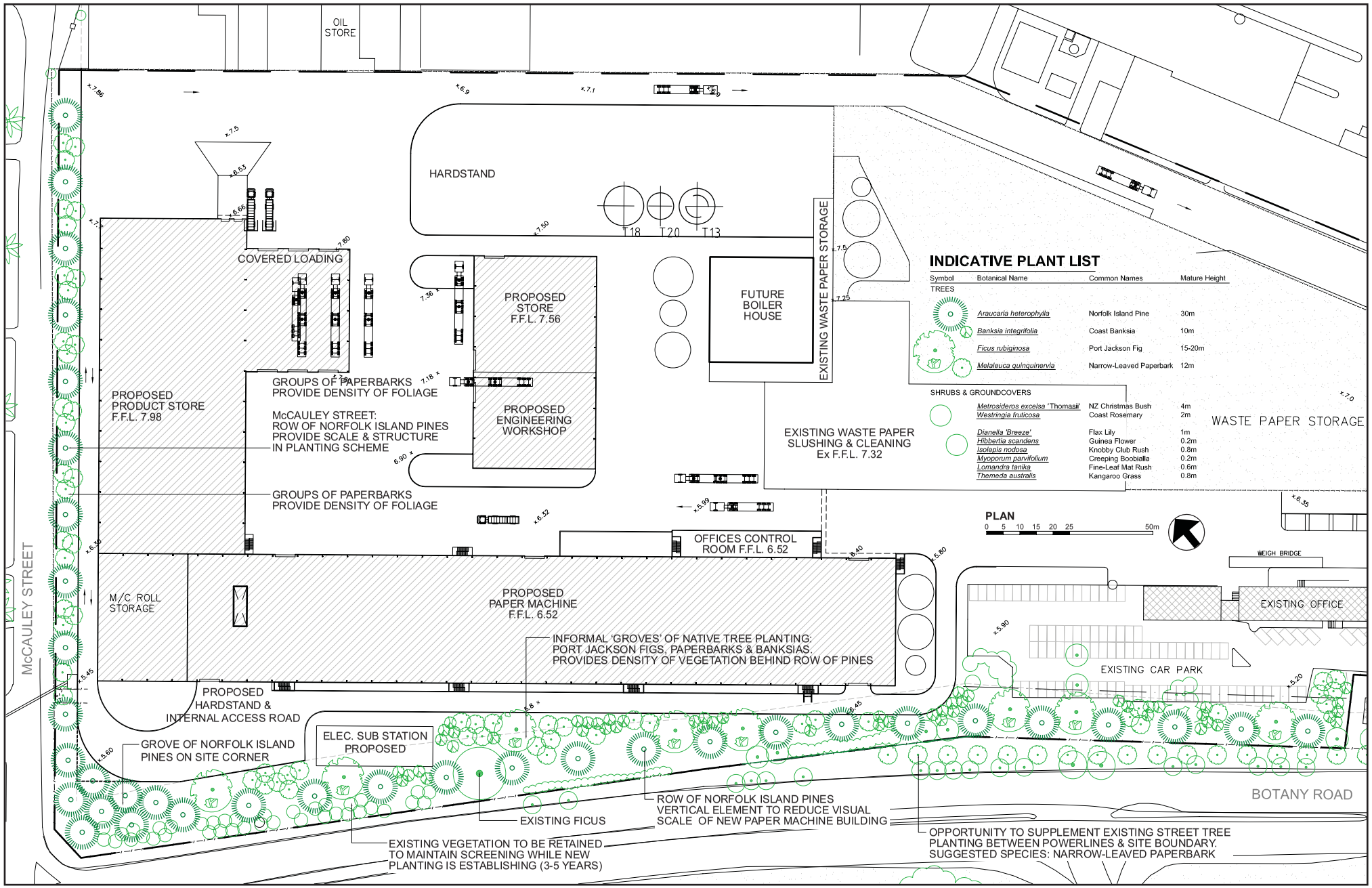


Figure 6-16
LANDSCAPE PLAN FOR THE NEW PAPER MILL

Figure 6-16 presents the landscape plan for the New Paper Mill. Norfolk Island Pines would be planted along Botany and McCauley Street frontages. These would compliment an existing row of Norfolk Island Pines on the corner of McCauley Street. The expected height of these trees would visually ameliorate the New Paper Mill. In between the row of Norfolk Island Pines, the density of the vegetation would be increased using other species that may include, Narrow Leaved Paperbark (*Melaleuca quinquenervia*), Port Jackson Fig (*Ficus rubiginosa*), Coastal Banksia (*Banksia integrifolia*) and Tuckeroo (*Cupaniopsis anarcardiodes*). The existing mature Port Jackson Fig and Narrow Leaved Paperbark on the Botany Road boundary would be retained, if possible.

Loading areas and access roads would be screened from adjoining streets using low to medium shrubs which may include Christmas Bush (*Metrosideros excelsa*) and Coastal Rosemary (*Westringia Fruiticosa*).

6.15.5.2 Mitigation Measures

The following mitigation measures are proposed to minimise the visual impact during operation of the New Paper Mill:

- Removal of derelict buildings from the site;
- Incorporation of sympathetic finishes and architectural features in the New Paper Mill building; and
- Increased landscaping with endemic native species around the perimeter of the site to increase screening and visual amenity.

6.16 Chemical Hazards

6.16.1 Existing Conditions

The most obvious hazard on site is a fire in either the Waste Paper Storage Area or Finished Product Storage. The existing facilities meet recognised fire standards and fire management procedures and training are part of the safety system. The new Finished Product Area would be designed to meet recognised fire protection standards and fire management procedures.

The recycling of wastepaper requires the use of relatively few chemicals, as most of the chemical processing has been undertaken in the processing of wood into virgin wood pulp and paper. However due to the large volume of wastepaper recycled, large quantities of some chemicals are required to be stored on site. In NSW, assessment of off-site risk posed by potentially hazardous or potentially offensive industries is undertaken with due consideration to *State Environmental Planning Policy (SEPP) No 33 - Hazardous and Offensive Development,* and associated guidelines issued by DoP (formally DUAP). SEPP 33 provides for merit based assessment ensuring that location and design considerations are an integral

part of the assessment process. The hazard assessment documentation provides several screening methods to assist in determining whether the proposed development is potentially hazardous.

This includes:

- a Screening Level Assessment to determine whether any of the types, quantities and locations of the dangerous goods stored on site potentially pose a risk to surrounding land uses. Based upon the Screening Level Assessment, the activity is either; not potentially hazardous and no further assessment is required: or potentially hazardous and an additional assessment is required; and
- If an activity is considered as potentially hazardous – the risks must be classified and prioritised and a further analysis of potential impact is required through a Preliminary Hazard Analysis (PHA).

The maximum amounts of dangerous goods (by class) stored on site are presented in **Table 6.26**. The proposed quantities for the Transition and Operation of the New Paper Mill are also presented in the same table. A Screening Level Assessment was undertaken on the proposed maximum quantities of dangerous goods that will be stored on site during the Transition and Operation of the New Paper Mill. In **Table 6-27**, the bolded cells indicate the classes of dangerous goods that exceed the screening level thresholds in SEPP 33. A further risk analysis through a Preliminary Hazard Analysis (PHA) for those dangerous goods that exceeded threshold levels is therefore required. The full PHA is contained in **Appendix F.** The following sections summarise the findings of the PHA.

The proposed development is classified as a potentially offensive industry under SEPP 33 as it will require licensing under the *Protection of the Environment Operation Act 1997* by the DEC. It must be noted that the current operations are licensed under the same Act.

Currently dangerous goods are stored in many locations throughout the site. A map showing dangerous goods storage locations along with maximum and typical quantities is presented in **Appendix F**.

Relatively large quantities of Class 5.1 and Class 8 substances are stored on site. The majority of the Class 8 substances are used as process chemicals. Fuels such as diesel and LPG are also stored on site for use by mill vehicles.

The storage of all dangerous goods on site complies with the relevant codes and standards. All Class 3, 5.1 and 8 substances are stored in bunded areas. No chlorine gas is currently stored or used on site nor would it be in the future.

- **Table 6-27: Maximum Quantities of Dangerous Goods Stored on Site**

Dangerous Good Class	Typical Materials	Existing Operation	Transition	Transition Total Quantities per Class	New Paper Mill Operation	Operation Total Quantities per Class
2.1	LPG (litres)	6,775	13,550	13,550	6,775	6,775
	Acetylene-dissolved (m^3)	1650	1650	1650	1650	1650
2.2	Compressed Gases (litres)	120	350	350	150	150
3	Boiler Treatment Chemical (litres)	4,800	4,800	4,800	4,800	4,800
5.1	Ammonium Persulfate (litres)	7,000	15,000	**15,000**	10,000	**10,000**
6.1 & 8	Toxic Liquid, Organic (litres)	30,000	30,000	**30,000**	15,000	**15,000**
8	Sodium Hydroxide (litres)	47,500	100,000	**174,600**	60,000	**119,600**
	Sulphuric Acid (litres)	4,600	4,600		4,600	
	Sodium Hypochlorite (litres)	15,000	30,000		15,000	
	Corrosive Liquids (litres)	38,000	40,000		40,000	
C1	Diesel (litres)	25,000	20,000	20,000	20,000	20,000
C2	Oil & Grease (litres)	73,500	173,500	73,500	100,000	100,000

Note: Bolded cell indicates exceedance of SEPP33 Screening Guideline Levels

6.16.2 Construction

6.16.2.1 Impacts

There may be a small increase in the quantity of dangerous goods stored on site during construction, however, the increase is not considered significant.

The potential impacts from chemical storage and usage during construction include:

- Spillage of fuels or chemicals during handling;
- Leakage of fuels or chemicals from storage areas; and
- Leakage of fuels or chemicals from vehicles.

6.16.2.2 Mitigation Measures

The following mitigation measures are proposed to minimise the potential impacts of chemicals and fuels during construction:

- Spill management procedures and fuel and chemical storage measures would be detailed in the CEMP;
- To minimise spillages or leakages, chemicals and fuels would be stored in appropriately bunded areas;
- Major plant and equipment would be re-fuelled either off site or by a mobile mini-fuel tanker with a spill procedure and spill kit; and
- A spill kit would be maintained on site during construction.

6.16.3 Transition

6.16.3.1 Impacts

New Chemical Storage Areas would be built as part of the New Paper Mill and would conform to all dangerous goods codes and storage requirements. Individual bunded areas would be constructed for each type of chemical. Any spillages or leakages would be contained within the bunded areas and returned to the process. A review of the detailed design of the New Chemical Storage Areas would be undertaken by a specialist to ensure that the design complies with standards and codes (primarily AS1940 and Dangerous Good storage codes). The main Chemical Storage Area would be located adjacent to the Paper Machine building and would store the majority of chemicals including all bulk chemicals.

A bunded Chemical Delivery Area would also be constructed adjacent to the main Chemical Storage Area to ensure that all spills or incidents during unloading are controlled. As outlined above, any spillages and leakages from this area would be contained and returned to the process.

During the Transition phase Machine No. 7 and associated chemical storages would be decommissioned.

As both the New Paper Mill and Machine No. 8 would be operational, the quantities of several Class 8 substances on site would increase during the Transition (See **Table 6-27**).

The quantities of Class 5.1, 6.1 and 8 substances would exceed SEPP 33 screening level guidelines and consequently a PHA for these substances was required. The PHA concluded that there was negligible off site risks relating to the storage and use of these substances on site as:

- Potential risks to surrounding receptors would only arise if there was direct contact with the substances, which is unlikely given they are not explosive or flammable;
- All residences and commercial premises are at least 100m distant from storage locations;
- Storages are located in areas which drain to the existing or new wastewater treatment system, so any spillages from tank or bund ruptures, or from unloading accidents would be safely contained on site (i.e. not drain into the stormwater system).

6.16.3.2 Mitigation Measures

The mitigation measures for chemical hazards during Transition would be the same as for the operation of the New Paper Mill and are discussed in greater detail in the following section.

6.16.4 Operation

6.16.4.1 Impacts

Compared to the Existing Paper Mill, there would be a reduction in hazards from dangerous goods storage and use once the New Paper Mill is fully operational and both existing paper machines are fully decommissioned. The reduction in hazards would result from new purpose built chemical storage and delivery areas, a reduction in the maximum quantities of some dangerous goods stored on site and a greater distance between chemical storage areas and residences.

In the New Paper Mill there would be substantial reductions in the quantities of diesel and Class 6.1 substances stored on site compared to the Existing Paper Mill.

Apart from ammonium persulphate, the quantities of other dangerous goods stored in the New Paper Mill would be similar to the Existing Paper Mill.

The majority of Class 5.1, 6.1 and 8 substances would be stored in the main New Chemical Storage Area. Diesel and LPG will be stored in refuelling areas in the northern area of the site. Gases (apart from LPG) will be stored in the Engineering Store. The Class 3 substance will be stored in the New Boiler Room.

During Operation the quantities of Class 5.1, 6.1 and 8 substances would exceed SEPP 33 screening level guidelines and consequently a PHA for these substances was required. The PHA concluded that there was negligible off site risks relating to the storage and use of these substances on site as:

- Potential risks to surround receptors would only arise if there was direct contact with the substances, which is unlikely given they are not explosive or flammable;
- All residences are at least 200m distant and commercial premises are at least 100m distant from storage locations;
- Storages are located in areas which drain to the existing or new wastewater treatment system, so any spillages from tank or bund ruptures, or from unloading accidents would be safely contained on site (i.e. not drain into the stormwater system).

Overall, there will be a significant reduction in hazard with the operation of the New Paper Mill compared to the Existing Paper Mill. This will also result in an overall decrease in the cumulative hazard risk and risk contour for the Botany/Randwick region.

Delivery of Chemicals

Presented in **Table 6-28** is a summary of suppliers, delivery routes and approximate number of deliveries per week for major chemicals. In terms of risk from the transport of these substances, the direct chemical delivery route uses major road transport routes and does not deviate into suburban streets. This presents very little risk to surrounding receptors.

There are two other chemical deliveries a day that would include Class 3, 5, 6.1 and 8 substances. This equates to approximately 14 deliveries a week which is below the SEPP 33 screening level threshold for all substances except Class 6.1 substances.

The delivery volumes and frequencies of other dangerous goods on site are considered low and not to warrant any special consideration.

- **Table 6-28: Transport Routes of the Delivery of Chemicals**

Chemical Class	Supplier	Traffic Route	Approx No. of Deliveries Per Week
Classes 2.1 and 2.2	-	Vary dependent on deliveries to other customers	4
Class 3	USF Chemfeed - Homebush	Foreshore Road, General Holmes Drive, Botany Road / O'Riordan Street, Gardeners Road, Ricketty Street (Canal Rd), Princes Highway, Forrest Road, Stoney Creek Road, King Georges Road, Homebush Bay Drive.	2
	Veolia - Seven Hills[1]	-	
Class 6.1 and 8	Orica – Botany	Denison Road, Beauchamp Road and Botany Road.	4
	Spectrum - North Ryde	Hermitage Road West Ryde, Victoria Road,, Western Distributor Freeway, Elizabeth Street, Park Street, William Street, Bourke Street, Eastern Distributor, Dowling Street,, Wentworth Ave, Denison Street, Beauchamp Road, Botany Road.	
Class 8 - Sulphuric Acid	Port Kembla	Southern Freeway, Mt Ousley Road, Princes Hwy, President Avenue Kogarah, West Botany Street, Botany Road, Foreshore Drive.	2
Class 5.1	Manildra - Auburn	South Parade, Auburn, Coronation Drive to Lidcombe, Centenary Drive (Homebush Bay Drive), Roberts Road, King Georges Road, Stoney Creek Road to Bexley, Forrest Road to Rockdale, Bay Street, General Holmes Drive, Botany Road.	2

1 – Supplier did not provide transport route due to security concerns

6.16.4.2 Mitigation Measures

The following mitigation measures are proposed to reduce hazards associated with the storage of dangerous goods on site:

- As Machine No.7 and No. 8 are decommissioned, there would be a staged removal of chemicals and storage facilities;
- New Chemical Storage Areas and a Delivery Area would be constructed which comply to all standards and codes and drains to the new wastewater system;
- The detailed design of the new Chemical Storage Areas would be reviewed by a relevant specialist;

- The quantities of diesel and Class 6.1 substances stored on site would decrease once the New Paper Mill is fully operational; and
- The new Chemical Storage Areas would be located further away from residences.

6.17 Energy and Water Use

6.17.1 Existing

The primary energy sources for paper making are electricity and natural gas. Water is also required in significant quantities. Electricity, natural gas and water consumption for the Existing Paper Mill, the Transition and the operation of the New Paper Mill are summarised in **Table 6-29**. Also presented in the table is data on the amount of resources consumed per unit area of paper produced. This measure provides information on the efficiency of the New Paper Mill.

6.17.2 Construction

6.17.2.1 Impacts

Energy and water use for construction would be insignificant compared to the long term operation of the New Paper Mill and therefore no detailed assessment has been undertaken.

6.17.2.2 Mitigation Measures

The following mitigation measures would be implemented to minimise energy and water use:

- All construction equipment would be maintained to appropriate standards; and
- Wherever possible town water use would be minimised during construction with the preferable source of water for construction being groundwater/stormwater from Long Dam.

6.17.3 Transition

6.17.3.1 Impacts

Electricity and gas use during the Transition would be marginally higher than that used in the Existing Paper Mill. The combined operation of the New Paper Mill and one of the existing machines during the transition would have approximately the same energy efficiency as the current paper making operation.

Overall water use in the Transition would increase from the current 5.0 ML/day to approximately 5.6 ML/day. Town water consumption would decrease from the current 1.4 ML/day to approximately 0.9 ML/day while groundwater/stormwater extraction from Long Dam would increase from 3.6 ML/day to approximately 4.8 ML/day. The combined operation of the New Paper Mill and one of the existing machines during the Transition would have approximately the same water use efficiency as the current paper making operation.

6.17.3.2 Mitigation Measures

The following mitigation measures would be implemented to minimise energy and water use:

- The new paper making machine would incorporate modern technology which allows improved process control and design and uses less energy and water to produce the same area of paper;
- Other auxiliary processes to the paper making machine would be designed to minimise energy and water use (eg. lighting, energy efficient motors etc); and
- The use of groundwater/stormwater extracted from Long Dam would be maximised and used for some processes that currently use town water – resulting in a reduction in town water use.

- **Table 6-29: Energy and Water Consumption**

		Annual Consumption			
Resource	**Unit**	**Existing Mill**	**Transition**	**New Mill**	**Change %**
Electricity	MW.hr	122,800	161,700	163,900	33
Gas	GJ	1,951,000	2,115,700	2,310,000	18
Water					
City Water	kl	500,700	326,200	224,300	-55
Groundwater/Stormwater	kl	1,325,000	1,733,800	1,845,800	39
Total	kl	1,825,700	2,060,000	2,070,100	13
		Consumption per million m^2 of paper			
Resource	**Unit**	**Existing Mill**	**Transition**	**New Mill**	**Change%**
Electricity	MW.hr	62.4	74.7	61.0	-2
Gas	GJ	992	978	860	-13
Water					
City Water	kl	255	151	83	-67
Stormwater/Groundwater	kl	674	802	687	2
Total	kl	928	952	770	-17

6.17.4 Operation

6.17.4.1 Impacts

Electricity and gas use for the New Paper Mill would be higher than that used in the Existing Paper Mill. However, the electricity consumption per unit area of paper produced would decrease by 2% and the Natural Gas consumption per unit area of paper produced would decrease by about 13% compared with the existing situation. These improvements would be achieved partly through improved technology and partly through the use of a single machine instead of the two machines to produce the required output.

Water use associated with operation of the New Paper Mill is expected to increase from the current 5.0 ML/day to approximately 5.7 ML/day. Town water consumption would decrease from

the current 1.4 ML/day to approximately 0.6 ML/day while stormwater/groundwater consumption would increase from 3.6 ML/day to approximately 5.1 ML/day.

The increased water use efficiency of the New Paper Mill would result in overall water consumption per unit area of paper reducing by about 17%. Town water usage would reduce by more than 60% per unit area of paper produced while groundwater/stormwater usage would remain relatively unchanged.

6.17.4.2 Mitigation Measures

The following mitigation measures would be implemented to minimise energy and water use:

- The new paper making machine would incorporate modern technology which allows improved process control and design – and uses less energy and water to produce the same area of paper;
- Other auxiliary processes to the paper making machine would be designed to minimise energy and water use (eg. lighting, energy efficient motors etc);
- A single paper making machine in comparison to two machines would increase the overall efficiency of paper making (eg. single process water system, less pumps); and
- The use of groundwater/stormwater extracted from Long Dam would be maximised and used for some processes that currently use town water – resulting in a reduction in town water use.

6.18 Waste Management and Minimisation

6.18.1 Existing

Both the NSW and Commonwealth governments have a number of policies and legislation to minimise waste generation, to encourage recycling/reuse and to ensure the correct identification and disposal of waste. Randwick City Council encourages all businesses to adopt a waste management plan to facilitate sustainable waste management in accordance with the principles of ESD.

Relevant legislation and policies regarding waste management in NSW include:

- *Waste Avoidance and Resource Recovery Act 2001*;
- *Protection of the Environment Operations Act 1997*;
- *Environmental Guidelines: Assessment, Classification & Management of Liquid and Non – Liquid Wastes*; and
- National Waste Minimisation and Recycling Strategy.

Liquid Waste

Wastewater and stormwater management are outlined in **Section 6.7** and **Section 6.6,** respectively.

Solid Waste

There are two types of solid waste generated at Botany, namely Biosolids (cellulose fines and inorganic fillers) and Solid Waste.

Biosolids are generated by the wastewater treatment and from the wastepaper fine cleaning and screening process. The volume of Biosolids generated is determined by the quality of waste paper collected, which may contain more or less inorganic filler materials. Generally the quantity of Biosolids produced increases as the inorganic filler material in the waste paper increases. Currently approximately 9,000 tonnes of Biosolids is trucked to Narellan each year for beneficial re-use in large agricultural, landscaping and land rejuvenation programs.

Solid Waste (i.e. plastics, rubber, glass, rags, wire, metal, sand, timber, wet strength paper and some fibre) is removed early in the papermaking process through separation within the hydrapulpers and coarse cleaning and screening system. The total quantity of Solid Waste leaving the Paper Mill and going to landfill is approximately 23,000 tonnes per year. This equates to an efficiency of currently approximately 91 kg of landfill waste per net tonne of finished product. This solid waste is disposed of at a licensed landfill at Kemps Creek.

6.18.2 Construction

6.18.2.1 Impacts

Solid Waste

As outlined in **Section 6.3.2** AMCOR intends to re-use most of the excavated fill material on-site. The majority of fill material is likely to be classified as inert or solid waste, with some potential pockets classifying as industrial or hazardous waste. A final waste classification would determine the quantities of spoil suitable for re-use or requiring disposal.

Demolition Materials

Where appropriate and practicable waste materials generated by demolition activities would be transported off-site and taken to an appropriate recycling facility. The items to be recycled would typically include bricks, concrete, timber, steel, iron, aluminium and copper.

The quantity of demolition materials able to be recycled off-site, or requiring disposal off-site, is currently unknown. Further information relating to these quantities would be determined during the detailed design phase for the proposed New Paper Mill. All waste transported off-site for disposal would be disposed of at a licensed landfill using a licensed waste contractor.

Demolition substances including plasterboard, scrap timber and asbestos would be disposed of or recycled at the registered facilities outlined in **Table 6-30**.

- **Table 6-30: Waste Disposal Facilities**

Waste Type	Tip	Recycle / Landfill	Distance From Site
Asbestos	Enviroguard, Mamre Rd Erskine Park	Landfill	50 km
General Waste: timber, plasterboard, plastic	Kurnell Landfill, Captain Cook Drive Kurnell	Landfill	22 km
Steel, iron etc	Metal Salvage Botany	Recycle	4 km
Timber – large	Various	Recycle	Various

Asbestos

Many buildings to be demolished as part of site preparation works contain asbestos. AMCOR has an asbestos register for the Paper Mill site, which contains a description of the areas containing asbestos and any actions taken to remove the asbestos. The majority of asbestos is located within the roof sheeting and linings of the old mill buildings. Other forms of asbestos that have been identified include asbestos cement wall and ceiling sheeting, electrical boards containing asbestos, pipelagging and asbestos insulation for the boilers. Approximately 34,400 m^2 of asbestos will be removed from the roof sheeting and linings of buildings to be demolished.

Approximately 6,800 m of guttering and pipeline lagging (steam and water) located within the old mill area will also be removed.

The removal of this asbestos sheeting and pipework would be undertaken in accordance with relevant WorkSafe Australia standards and a Remediation Action Plan that would be developed for the project. The Plan would contain procedures for the removal of all the hazardous materials found on the site, including asbestos cement sheeting, friable asbestos insulation and synthetic mineral fibres (SMF). Asbestos removal would also comply with Clause 42 of the *Protection of the Environment Operations (Waste) Regulation 2005* which will commence in March 2006.

PCB in Transformers

An inventory of the transformers on the Paper Mill site was undertaken during 1999, with the oil in the transformers being tested for PCBs. Of the 50 transformers tested 2 had levels of PCB (>50 ppm), 12 had levels (2-50 ppm) and the remainder were classified as PCB free. There are also some capacitors on site which show PCB contamination.

PCB contaminated capacitors, transformers and oil within the New Paper Mill development area would be removed and disposed of by a suitably licensed contractor.

6.18.2.2 Mitigation Measures

The overriding principles applied to waste management during construction would be to minimise the amount of wastes generated, to recycle or reuse waste where possible and to dispose of all non-recyclable wastes in a responsible manner. The specific requirements for waste minimisation and management during the construction of the New Paper Mill would be detailed in a Waste Management Plan to be prepared for the construction phase of the project.

The following mitigation measures would be included in the Waste Management Plan for the construction phase of the project:

- Specific waste management measures would be developed including waste avoidance, re-use, recycling and disposal procedures in accordance with the *Waste Avoidance and Resource Recovery Act, 2001;*
- All waste generated would be classified using the *Environmental Guidelines: Assessment, Classification & Management of Liquid and Non –Liquid Wastes* and, based on the classification, would be disposed of by an appropriately licensed transporter and disposal location;
- Commercial contractors would remove domestic wastes generated during construction from the site;
- Any waste oils, greases and chemicals generated during the construction phase would be stored in appropriately bunded areas prior to removal by a licensed recycling contractor;
- Excess construction materials would be minimised through accurate design and ordering;
- Minimal packaging from suppliers would be specified for all construction materials wherever practicable;
- Building wastes would be reused wherever possible;
- Any soils contaminated through fuel/oil and or chemical spillage would be excavated and transported to an approved licensed disposal centre, any excavations would be filled with suitable clean soil; and
- Construction workers would be trained in waste minimisation and disposal procedures.

6.18.3 Transition

6.18.3.1 Impacts

Waste impacts associated with Transition would be similar to those of the operation of the New Paper Mill and are discussed in the following section.

6.18.3.2 Mitigation Measures

Waste management and minimisation measures associated with Transition would be similar to those of the operation of the New Paper Mill and are discussed in the following section.

6.18.4 Operation

6.18.4.1 Impacts

Solid Waste

As with the Existing Paper Mill, the New Paper Mill would generate Biosolids and Solid Waste.

The quantity of Biosolids generated by the New Paper Mill would increase from the current 9,000 tonnes to approximately 10,800 tonnes. Currently all Biosolids are sent to Narellan for beneficial re-use. This would continue with the New Paper Mill.

The quantity of solid waste produced per unit area of paper produced by the New Paper Mill would decrease compared with the Existing Paper Mill, although the overall volume of solid waste would increase (by 22% to 28,300 tonnes/year) due to the higher production. The New Paper Mill would employ improved technology, enabling more effective fibre separation and capture during the papermaking process.

The improvements in plant efficiency and the resulting reductions in quantities of solid waste per unit of paper are in line with the NSW Government's commitment to reducing the volume of waste sent to landfill within Sydney.

6.18.4.2 Mitigation Measures

The specific requirements for waste minimisation and management during the operation of the New Paper Mill would be detailed in the Operational EMP. The following mitigation measures would be included in the OEMP:

- Specific waste management measures would be developed including waste avoidance, re-use, recycling and disposal procedures in accordance with the *Waste Avoidance and Resource Recovery Act, 2001.*;
- All waste generated would be classified using the *Environmental Guidelines: Assessment, Classification & Management of Liquid and Non –Liquid Wastes* and, based on the classification, would be disposed of by an appropriately licensed transporter and disposal location;
- Chemical drums and tote drums would be reused and/or recycled;
- Pallets and other incoming packaging material would be reused and/or recycled as much as possible and otherwise disposed of as general waste;
- Minimal packaging from suppliers would be specified for all operational materials wherever practicable; and
- Workers would be trained in waste minimisation and disposal procedures.

6.19 Cumulative Impacts

6.19.1 Existing Environment

Cumulative impacts must be considered to ensure that existing and future developments in combination with the proposed development do not cause an unacceptable impact on the surrounding environment and community. Other relevant developments which need to be considered in conjunction with the New Paper Mill would be any industrial or other development which would be constructed and operated in the same period as the New Paper Mill.

6.19.2 Construction

6.19.2.1 Impacts

New industrial or other developments that could be constructed at the same time as the New Paper Mill may result in increased amenity impacts on the surrounding community. Apart from the Port Botany Expansion, there is no information on any new large developments in the vicinity of the New Paper Mill. It is possible that some construction activities associated with Port Botany Expansion will coincide with the construction of the New Paper Mill. The initial construction activities for the Port Botany Expansion would involve reclamation of areas of Botany Bay. These activities would generally not generate significant site noise impacts, however, traffic and traffic noise impacts from the haulage of fill material to the reclamation site are likely to be significant. At the time of preparing this report there was no indication on the timing and noise impacts from the Port Botany Expansion. Possible future changes in the boundary of the AMCOR site would release land for industrial redevelopment. This would not occur in conjunction with this proposal and would not have any cumulative impacts during construction.

6.19.2.2 Mitigation Measures

The following mitigation measure would be implemented to minimise any potential cumulative impacts:

- Consultation with DoP and Council would be undertaken to identify any new proposed large developments whose construction period would overlap with the New Paper Mill;
- If the Port Botany Expansion proceeds within a similar construction timeframe, consultation with Sydney Ports would be undertaken to minimise potential traffic and noise impacts; and
- Appropriate measures to minimise cumulative impacts would be implemented as required.

6.19.3 Transition & Operation

The operation of the New Paper Mill would be a potential source of cumulative impacts with the existing industry in the area. However, as assessed in the previous sections these impacts would be negligible as over all the New Paper Mill would have lower noise, odour, traffic and water

quality impacts compared with the Existing Paper Mill. Overall the operation of the New Paper Mill would not result in any unacceptable cumulative impacts.

6.19.3.1 Mitigation Measures

The mitigation measures detailed in previous sections would minimise any cumulative impacts.

7. Environmental Management

7.1 Introduction

Two Environmental Management Plans for the project would be prepared – a Construction Environmental Management Plan (CEMP) and an Operational Environmental Management Plan (OEMP). The EMPs would be based on the mitigation and monitoring measures proposed in **Section 0.** The two EMPs are further discussed in the following sections.

7.2 Construction Environmental Management Plan

A Construction Environmental Management Plan (CEMP) would be prepared by the construction contractors on behalf of AMCOR in accordance with NSW State Government Policy. The CEMP would detail the operating conditions and temporary environmental protection measures to mitigate the impact of construction activities. AMCOR would be responsible for ensuring they are implemented.

The CEMP would include actions to comply with any relevant Minister's Conditions of Approvals, any other approvals issued by government authorities (Eg. EPL), commitments made in the Statement of Commitments and recognised best environmental practice.

The following supplementary plans to the CEMP would also be prepared:

- Community Liaison Strategy;
- Construction Waste Management Plan;
- Construction Noise Management Plan;
- Construction Dust Management Plan;
- Soil and Water Management Plan;
- Construction Traffic Management Plan;
- Remediation Action Plan (for asbestos – and potentially contaminated soils).

7.3 Operational Environmental Management Plan

Prior to the commissioning of the New Paper Mill, an Operational Environmental Management Plan (OEMP) would be prepared by or on behalf of AMCOR. The aim of the OEMP is to act principally as an environmental operations manual for use by AMCOR. The OEMP is also an advisory document for the regulatory authorities, and would be updated regularly to reflect any changes in the operation of the New Paper Mill or regulatory requirements. The OEMP would include actions to comply with any relevant Minister's Conditions of Approvals, any other approvals issued by government authorities (Eg. EPL), commitments made in the Statement of

Commitments and recognised best environmental practice. AMCOR would be responsible for ensuring the OEMP is implemented.

The completed OEMP would include:

- environmental goals;
- environmental performance measures;
- responsibilities for the environmental management of the project;
- training of staff in environmental awareness and environmental best practice;
- timing for implementation of mitigation measures;
- records and document management;
- continuous improvement process arising from auditing and monitoring activities;
- regular and clear monitoring and auditing procedures; and
- clear guidelines for emergencies, corrective action, and procedures to notify potentially affected parties and authorities.

The following supplementary plans to the OEMP would also be prepared:

- Air Quality Management Plan; and
- Stormwater Management Plan.

7.4 Monitoring

7.4.1 Construction Monitoring

Monitoring during the construction phase would include:

- Noise levels at nearby residents if there were any complaints. Noise levels would be compared against statutory requirements;
- Dust emissions from excavation and demolition works. Dust levels would be compared against the DEC's Dust Depositional Goals;
- Water quality of any off-site construction water discharges;
- Excess fill and waste materials destined for disposal or reuse;
- Drainage and sediment and erosion controls; and
- Compliance with the CEMP.

7.4.2 Operations Maintenance and Monitoring

A monitoring program would be developed by AMCOR for the operation of the New Paper Mill. Monitoring requirements would be detailed in the OEMP prepared for the project. Most

monitoring requirements would be determined by the licences and approvals issued for the New Paper Mill, and would comply with the requirements of the National Pollutant Inventory (NPI). It is likely that the following monitoring would be undertaken:

- Initial measurements of stormwater quality, noise and odour to ensure that the predicted emissions are being achieved;
- Quantity and quality of wastewater discharged to the sewer and Botany Bay;
- Quantity of groundwater extracted from bores; and
- Noise and odours in response to complaints – and regular annual monitoring.

8. Draft Statement of Commitments

GENERAL

1) Development will be carried out generally as described in *New Paper Mill Project B9, Environmental Assessment*, prepared by Sinclair Knight Merz and dated October 2006;

2) The Applicant will notify the Director-General, Council and the DEC of the events listed under a) to d) below. Notification will be in writing and received at least two weeks prior to the particular event.

   a) commencement of the demolition period;

   b) commencement of the construction period. In the event that construction is staged and/ or subject to multiple Construction Certificates, notification will be undertaken at the commencement of each stage and/ or Certificate;

   c) commencement of the transition period; and

   d) commencement of the operation period.

PRODUCTION LIMIT

3) At no time will more than one of the existing paper-making machines (No.7 and No. 8) be commercially operated concurrently with the new paper mill. For the purpose of this condition, "operated" will be defined as any activity involving either the existing No. 7 or No. 8 paper-making machine that results in the production, or intended production, of paper or paper products from that machine.

4) The production capacity of the new paper mill will be limited to approximately 345,000 tonnes per annum of finished product. For the purpose of this condition, "approximately" will be within 15% of 345,000 tonnes per annum, subject to compliance with environmental parameters specified in this approval and/ or any Environment Protection Licence for the new paper mill.

DEMOLITION

5) All demolition works undertaken on the site will be conducted in accordance with the provisions of *AS2601-1991 The Demolition of Structures*, as in force at 1 July, 1993.

6) All demolition activities involving asbestos will be carried out in accordance with the relevant WorkCover Guidelines and Clause 42 of the Protection of the Environmental Operations (Waste) Regulation 2005.

Elevation of Structures

7) Prior to the commencement of the construction period and as required, the Applicant will obtain the written approval of the Sydney Airports Corporation Limited for all temporary and permanent structures associated with the new paper mill and requiring approval under the

Civil Aviation (Buildings Control) Regulations. The Applicant will submit to the Director-General, a copy of the written approval of SACL for these structures within 14 days of receiving the approval.

SERVICES

8) Prior to the commencement of the construction period, the Applicant will obtain written evidence that satisfactory arrangements have been made with the relevant energy, water, sewerage, gas and telephone service authorities for the provision of relevant utilities to the new paper mill.

Trade Waste and Sewer Access

9) The Applicant will obtain a Section 73 Compliance Certificate from SWC under the *Sydney Water Act 1994*. In seeking the Compliance Certificate, the Applicant will supply to SWC all information necessary for SWC to assess the impacts of the New Paper Mill on SWC's infrastructure.

10) AMCOR would enter into negotiations with Sydney Water to increase the availability of the SWSOOS to receive wastewater discharges in wet weather. This would include investigating other on-site management measures to eliminate untreated process water discharges to Botany Bay;

11) The New Paper Mill would be designed and operated to meet the requirements of Section 120 of the Protection of the Environment Operations Act.

HAZARDS MANAGEMENT

12) Impervious bunds will be constructed around all stores of dangerous goods on the site. Bunds will be designed and installed in accordance with the DEC's Environment Protection Manual Technical Bulletin – Bunding and Spill Management" and with relevant Australian Standards.

13) In relation to dangerous goods, the New Paper Mill will comply with the requirements of the *Occupational Health and Safety Act 2000*, as administered by WorkCover NSW, and if necessary be licensed under that Act.

NOISE MANAGEMENT

14) Construction and demolition activities associated with the new paper mill that are likely to cause an audible noise impact on any residential property will only be conducted during normal construction hours, namely:

    a) 7:00 am to 6:00 pm, Mondays to Fridays inclusive;

    b) 8:00 am to 1:00 pm on Saturdays;

    c) at no time on Sundays or Public Holidays.

Construction and demolition activities associated with the new paper mill that do not cause an audible noise impact on any residential property may be conducted at any time.

15) Delivery of materials required for construction and demolition activities associated with the new paper mill are permitted outside normal construction hours provided:
    a) the delivery of material is required by police or other relevant authority for safety reasons; and/ or
    b) the operation or personnel or equipment of the new and/ or existing paper mill is endangered.

    Should a) and/ or b) be applicable, the Applicant will undertake to notify the DEC and affected residents of the delivery prior to the event. Should a delivery be required in the case of an emergency, the Applicant will undertake to notify the DEC and affected residents within a reasonable period.

16) Audible construction and demolition activities outside normal construction hours may only be varied with the prior written approval of DEC.

17) The New Paper Mill would be designed and operated to meet the following noise limits at all sensitive receivers:
    a) Daytime (7am-6pm Mon to Sat and 8am-6pm Sunday & Public Holidays) = LA_{eq} 50 dB(A)
    b) Evening (6pm-10pm) = LA_{eq} 49 dB(A)
    c) Night (At all other times except daytime and evening) = LA_{eq} 47 dB(A)

ODOUR MANAGEMENT

18) The New Paper Mill would be designed and operated to not cause the emission of offensive odours from the premises and meet the requirements of Section 129 (1) of the Protection of the Environment Operations Act

19) If, after the New Paper Mill was to become operational, offensive odours were found to be emitted, AMCOR would investigate the source and cause of the offensive odours and implement reasonable and feasible mitigation measures to reduce the impacts to acceptable levels. These mitigation measures may include:
    a) Reviewing and modifying operational processes and procedures;
    b) Reviewing and modifying water management processes;
    c) Modification of site infrastructure including stacks heights, exhaust flows and water management systems;
    d) Reviewing and implementing any new proven effective technology.

CONTAMINATION

20) Before construction commences, further investigations will be undertaken to clearly identify the type and extent of any soil contamination. If required a Remediation Action Plan would be prepared and implemented.

HERITAGE

21) An appropriately qualified archaeologist will be present on site when bulk excavations are occurring to identify any unknown indigenous heritage sites or relics.

22) Archival recording of heritage structures and site associations as recommended in the heritage assessment will be undertaken prior to demolition.

23) In the event that an Aboriginal relic is uncovered on the site, all activities in the vicinity of the relic will cease and the Applicant will notify the Department of Environment and Conservation immediately. Where applicable, relevant guidelines and requirements of legislation would be complied with.

24) In the event that any unknown non-indigenous relic is uncovered on the site at any time, all activities in the vicinity of the relic will cease and the Applicant will notify the Heritage Office immediately. Where applicable, relevant guidelines and requirements of legislation would be complied with.

GROUNDWATER

25) A control system on the groundwater bores at Snape Park will be installed to control groundwater extraction rates in relation to the New Paper Mill water requirements and to minimise overall groundwater extraction.

CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

26) The Applicant will prepare and submit for the approval of the Director-General a Construction Environmental Management Plan at least a month before demolition commences. The CEMP would be prepared in consultation with DEC and Council and address issues, impacts and mitigation measures associated with demolition and construction. The CEMP would be prepared in accordance with *Guideline for the Preparation of Environmental Management Plans* (DIPNR 2004)

Construction Noise Management Plan

27) At least a month before demolition commences the Applicant will prepare and submit for the approval of the Director-General, a Construction Noise Management Plan. The Plan will include:

    a) identification of potentially noise-affected properties and applicable noise goals for those properties;

    b) best management practices and mitigation measures;

c) performance goals for the site with regard to noise emissions during the construction period;

d) details of noise-producing equipment to be employed on the site, including equipment noise levels;

e) measures to be employed to minimise noise emissions and noise impacts, demonstrating best practice in design, operation and maintenance of equipment;

f) a program to monitor noise emissions from the site, and methods to be employed to monitor noise emissions;

g) details of procedures to receive community complaints in relation to noise impacts, and

h) contingency measures to deal with incidents when exceedences of noise limits have occurred, or noise complaints have been received.

Construction Dust Management Plan

28) At least a month before demolition commences the Applicant will prepare and submit for the approval of the Director-General, a Construction Dust Management Plan. The Plan will:

a) be prepared and implemented with an aim to minimise, so far as practical, air quality impacts on surrounding land uses during construction*;*

b) identify existing and potential sources of dust and specification of appropriate monitoring intervals and locations.;

c) detail measures to minimise the generation of dust;

d) contain actions to ameliorate impacts if they exceed the relevant criteria; and

e) contain details of a reactive management system intended to reduce the day-to-day impacts of dust.

Construction Soil and Water Management Plan

29) At least a month before demolition commences the Applicant will prepare and submit for the approval of the Director-General, a Soil and Water Management Plan. The Plan will :

a) be prepared in accordance with the Department of Housing's publication *Managing Urban Stormwater: Soils and Construction*; and

b) detail measures to be employed during the demolition and construction periods to minimise soil erosion and prevent sediment from the site polluting lands and/ or waters;

c) identify the potential for, and mitigation measures against, erosion and sedimentation associated with the transition and operation periods;

30) In the event that dewatering is to occur on the site, the Applicant will apply to DNR for any necessary licence or approval, and will meet any reasonable requirement of DNR in this respect.

Construction Waste Management Plan

31) At least a month before demolition commences the Applicant will prepare and submit for the approval of the Director-General a Construction Waste Management Plan. The Plan will :

a) be prepared and implemented with an aim to detail measures to minimise the production and impact of waste produced at the new paper mill during the demolition and construction, through the implementation of waste reduction, reuse and recycling principles;

b) identify types and quantities of waste materials produced on the site during the demolition and construction;

c) detail programs aimed at minimising the production of waste at the site through the implementation of management measures;

d) details of potential reuse and recycling avenues for waste materials produced on the site, including collection and handling procedures;

e) details of appropriate disposal routes in the event that reuse and recycling avenues are not available or are not practicable; and

f) detail programs for involving and encourage employees and contractors to minimise domestic waste production on the site and reuse/ recycle where appropriate.

Construction Traffic Management Plan

32) The Applicant will prepare for the approval of the Director-General (and in consultation with Council and RTA) a Construction Traffic Management Plan. The plan would be submitted at least a month before demolition commences.

OPERATIONAL ENVIRONMENTAL MANAGEMENT PLAN

33) The Applicant will prepare and submit for the approval of the Director-General an Operational Environmental Management Plan (OEMP) at least a month before commissioning of the New Paper Mill commences. The OEMP would be prepared in consultation with DEC and address issues, impacts and mitigation measures associated with commissioning, transition and operation of the New Paper Mill. The OEMP would be prepared in accordance with *Guideline for the Preparation of Environmental Management Plans* (DIPNR 2004). The OEMP would detail management measures for the following environmental aspects:

a) Noise

b) Waste

c) Stormwater and Process Water

d) Heritage

e) Traffic

f) Air Quality

g) Groundwater

h) Chemicals and fuels

Operational Air Quality Management Plan

34) The Applicant will prepare and submit for the approval of the Director-General an Air Quality Management Plan at least a month before construction of the paper machine building commences. The Plan will :

a) be prepared and implemented with an aim to minimise, so far as practical, air quality impacts on surrounding land uses during the transition and operation periods of the new paper mill;

b) identify existing and potential sources of dust and odours .

c) include an air quality monitoring plan prepared in accordance with the DEC's publication *Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales*. This will include:

I. ongoing performance assessments and validation of no offensive odours; and

II. a full odour emissions survey to confirm that during the Transition phase odour impacts would not be greater than the combined operation of existing B7 and B8 machines or a fully operational B9 (whichever is greater).

d) include actions to ameliorate impacts if they exceed the relevant criteria;

e) include design of a reactive management system intended to reduce the day-to-day impacts of dust and odours as a result of activities associated with the new paper mill;

f) include the establishment and operation of a meteorological station complying with the *Approved methods for sampling and analysis* and the *Australian Standard AS2923- 1987*, at the site. The meteorological station will provide measurements including wind speed, wind direction, temperature and variability of wind direction to be monitored continuously.

Operational Water Management Plan

35) The Applicant will prepare a Water Management Plan for the approval of the Director-General. The Water Management Plan would be submitted at least a month before construction commences. The Water Management Plan will consider:

a) Stormwater Management including

1) details of all catchment areas within the site, including potential sources of water pollution within each catchment, treatment and/ or discharge points for each catchment and a water quality testing regime for each catchment, if appropriate;

2) calculations, designs and plans for all stormwater systems, including pipes, drainage lines, screens and flow-balancing devices with clear justification of each system's ability to effectively handle stormwater under all likely conditions;
3) measures to segregate stormwater draining from different areas of the site, depending on the quality and treatment requirements (if any) of the water;
4) measures to prevent uncontrolled run-off (where permissible) from the site impacting on surrounding land uses;

b) Process Water Management, including

details of how site water consumption will be minimised through water reuse and recycling;

details of all process water treatment systems for the new paper mill, including programs for the maintenance of the systems and water quality monitoring regimes, where appropriate.

Landscape and Visual Amenity Management Plan

36) The Applicant will prepare in consultation with Council and submit for the approval of the Director-General a Landscape and Visual Amenity Management Plan. The Plan would be submitted at least a month before construction of the paper machine building commences. The Plan will detail measures to minimise the impacts of the new paper mill on local visual amenity and will consider :

a) Landscape Management, including:
1) details of all landscaping to be undertaken on the site, including flora species, location of grassed areas, garden beds and other vegetated areas, and mature height and width measurements for all flora species;
2) details of the maximisation of flora species endemic to the locality in landscaping the site;
3) measures to prevent vehicle encroachment onto landscaped areas;
4) a program to ensure that all landscaped areas on the site are maintained in a tidy, healthy state and that the appearance of landscaped areas is comparable to the design intention for those areas.

b) Visual Amenity Management, including:
1) colours, materials, architectural features and finishes of all external surfaces on the site, and how these will be compatible with adjacent development to maintain the integrity and amenity of the building and streetscape;
2) a program to ensure that the appearance of the site is maintained to a standard comparable to the intended and designed appearance of the site;

Community Liaison Group

37) The Applicant will continue to liaise with the Botany Mill Community Liaison Group (CLG) on matters affecting the local community, compliance with conditions of this consent and the environmental performance of the new paper mill. The Applicant will make provision for meeting facilities and other reasonable expenses of the CLG. The Applicant will take minutes of each CLG meeting and submit a copy of those minutes to DEC with its regular reporting under its Environmental Protection Licence and will provide a copy to the Director-General and Council on request.

38) A Community Liaison Plan would be prepared in consultation with the Botany Mill CLG (with a copy being provided to the Director-General) to detail consultation and communication activities and strategies to inform and consult the community on the demolition, construction and initial operation of the New Paper Mill.

Complaints Procedure

39) Prior to the commencement of the demolition period, the Applicant will ensure that the following are available for community complaints:

    a) a telephone number on which complaints about the new paper mill can be registered; and

    b) a postal address where written complaints may be lodged.

    The Applicant will meet the requirements for complaints handling as detailed in the EPL for the facility. The Complaints Register will be made available at any time for inspection by the Director-General, the DEC or Council.

Environmental Representative

40) Prior to the demolition period, the Applicant will nominate at least one Environmental Representative who will be:

a) responsible for all Management Plans required under this consent;

b) responsible for considering and advising on matters specified in the conditions of this consent, and compliance with such matters;

c) responsible for receiving and responding to complaints;

d) required to facilitate an induction and training program for all persons involved with the construction and operation of the new paper mill; and

e) given the authority and independence to require reasonable steps to be taken to avoid or minimise unintended or adverse environmental impacts, and failing the effectiveness of such steps, to stop work immediately if an adverse impact on the environment is likely to occur.

The Applicant will notify the Director-General of the name(s) and contact details of the Environmental Representative (s) upon appointment, and any changes to that appointment.

9. Conclusions

9.1 Justification of the Proposal

The *EP&A Regulation, 2000* requires that an EA include:

"the reasons, justifying the carrying out of the development or activity in the manner proposed, having regard to biophysical, economic and social considerations and the principles of ecologically sustainable development."

The following sections document the justification for the New Paper Mill.

9.1.1 Social Considerations

The operation of the New Paper Mill will result in significant social benefits, namely:

- an improvement in visual amenity;
- a reduction in noise and odour impacts;
- increases the quantity of and efficiency in wastepaper recycled;
- considerable reduction in hazards associated with the storage of dangerous goods on site;
- removal of asbestos, PCBs and contaminated material from site; and
- retention of 140 direct jobs in production and contract maintenance.

The negative social impacts include a slight increase in heavy traffic along Botany Road.

There will be some temporary negative impacts during the construction phase including: increased noise, traffic and dust. Positive impacts include the generation of approximately 400 jobs during the construction and up to 60% of the capital budget being spent directly within the Australian economy.

9.1.2 Economic Considerations

There will be substantial economic benefits both to AMCOR and NSW associated with the New Paper Mill namely;

- generation of about 400 jobs during construction;
- up to 60% of the capital budget being spent directly within the Australian economy during construction;
- transformation of more wastepaper into a resource rather than waste product;
- the production of stronger and lighter paper allowing lighter packaging products to be produced which may reduce transport and handling costs across many industries;

- elimination of the need to import lightweight packaging paper in the future:
- an increase in the efficiency of the paper making process in terms of energy, water and raw material use;
- retention of 140 direct jobs in production and contract maintenance; and
- 574 indirect jobs maintained (employment multiplier of 4.1 for this region).

The only negative economic impact will be a decrease in the number of employees required to operate the New Paper Mill.

9.1.3 Biophysical Considerations

There will be a number of biophysical improvements associated with the New Paper Mill namely:

- A reduction in the volume of wastewater discharged into Botany Bay – with further potential reductions once a new Trade Waste Agreement is negotiated with Sydney Water;
- Improved on-site stormwater management;
- Reduction in the quantity of greenhouse gases emitted per unit of paper produced;
- Reduction in town water use – and improvement in water use efficiency;
- Decrease in the volume of Solid Waste sent to landfill per unit of paper produced; and
- Decrease in risk to the environment associated with the storage of hazardous chemicals on site and the presence of contaminated material.

9.1.4 Ecologically Sustainable Development (ESD) Assessment

The NSW Government defines ESD as:

"development that uses, conserves and enhances the community's resources so that ecological processes, on which life depends, are maintained and the total quality of life now and in the future can be increased."

According to Schedule 2 of the *EP&A Regulation, 2000* the goals and principles of ecologically sustainable development need to be considered. The core objectives of ecologically sustainable development are:

- to enhance individual and community well-being by following a path of economic development that safeguards the welfare of future generations;
- to provide for equity within and between generations; and
- to protect biological diversity and maintain essential ecological processes and life-support systems.

In preparing this EA, the potential environmental impacts from the proposed activities have been investigated and a range of mitigation measures developed. The mitigation measures in **Section 0** address these principles in the context of environmental impact. In terms of the proposed development the following ESD assessment is presented:

- Precautionary principle – the Existing Paper Mill does not pose a threat of serious environmental damage.
- Intergenerational equity – the New Paper Mill would enhance the health of the environment for future generations through:
  - improved environmental performance of the New Paper Mill;
  - increased volume of wastepaper able to be recycled;
  - improved efficiency in energy and water use per unit of paper produced;
  - reduction in hazardous chemical usage and storage; and
  - removal of asbestos, contaminated soils and PCBs from the Botany site.
- Conservation of biological diversity (biodiversity) and ecological integrity- the New Paper Mill will result in reduced impacts on the ecology of Botany Bay through the reduction in wastewater discharges and the improved stormwater management.
- Improved valuation and pricing of environmental resources – the recycling of wastepaper to produce packaging material creates positive financial and environmental values for wastepaper when the alternative of disposing wastepaper to landfill has a significant financial and environmental cost.

Therefore, in relation to ESD it is concluded that the New Paper Mill will:

- Not cause irreversible effects on the environment nor threaten ecosystem integrity;
- Ensure that the health, diversity and productivity of the environment will be maintained for the benefit of future generations;
- Not have a detrimental effect on the conservation of biological diversity;
- Increases the valuation and pricing of wastepaper; and
- Improves the value of wastepaper that is presently going to landfill.

9.2 Conclusions

The existing paper machines at the Botany site are old and produce a finished paper product that does not meet the requirements of modern packaging applications. Environmental impacts from the Existing Paper Mill such as: noise and odour impacts; the episodic discharge of wastewater to Botany Bay; and the absence of stormwater treatment, although acceptable, are not best practice because of the age of the site infrastructure and somewhat ad hoc development of the site. The

Existing Paper Mill could continue operation for the next 5-10 years, however, eventually paper making with the dated technology would become uneconomic and the site would have to close. This could have a significant impact on wastepaper recycling in NSW as approximately 40% of the paper collected in NSW is processed at the Paper Mill.

After consideration of alternative locations, processes and designs AMCOR proposes to construct a new "state of the art" high technology Paper Mill on the existing site at Botany. The New Paper Mill would be able to recycle approximately 17% more wastepaper using less energy and water per unit of finished product and producing less solid and liquid process wastes per unit of finished product. Also the New Paper Mill would be designed to specifically include mitigation measures to reduce the impact of noise and odours. The odour and noise impacts from the operation of the New Paper Mill would decrease compared to the Existing Paper Mill. Other environmental benefits from the proposed New Paper Mill include a reduction in wastewater discharges to Botany Bay, improved management of stormwater, a reduction in greenhouse gas emissions per unit of paper produced and a decrease in the hazards associated with chemical storage on site.

There would be some negative impacts and these would mainly occur during construction and the Transition phase. During construction there would be increased noise, traffic and dust. During the Transition phase there would be increased use of energy and raw materials.. Odour should remain similar to the existing situation during the Transition phase.

This EA assessed the impact of the New Paper Mill and found that there would be significant environmental, social and economic improvements over the Existing Paper Mill and the New Paper Mill would not have a major impact subject to the incorporation of the appropriate mitigation measures.

9.3 Certification of the Author of Environmental Assessment

This Environmental Assessment has been prepared by Jonas Ball from Sinclair Knight Merz, 100 Christie St, St Leonards NSW. To the best of his knowledge, this Environmental Assessment does not contain information that is false or misleading.

Jonas Ball

Date: 12 December 2006

10. References

ANZECC (1992). Water Quality Guidelines for Marine and Freshwater Systems.

Bay Councils (1998) State of Botany Report

Coffey Geosciences Pty Ltd (2000). Proposed Botany Paper Mill Geotechnical and Environmental Investigation (27 June 2000).

Department of Land & Water Conservation (2000) Botany Sands Beds (GWMA 018), Botany Basin, NSW – Northern Southern and Western Zones Status Report No:2

Environment Protection Authority NSW (1998) Guidelines for the NSW Site Auditor Scheme.

Environment Protection Authority NSW (1994) Guidelines for Assessing Service Station Sites.

Ferguson, C; Long, J; & Simeoni, M (1995) Stormwater Monitoring Project 1994 Annual Report, Prepared for the Clean Waterways Programme

Golder Associates (2006), Environmental and Geotechnical Investigation, Fibre Packaging Plant, Matraville NSW, Report prepared for AMCOR Fibre Packaging Pty Ltd, September 2006

Graham Brooks and Associates (2005), Assessment of Heritage Impact Proposed Demolition, AMCOR, August 2005

Graham Brooks and Associates (1997) Preliminary Heritage Assessment AMCOR Paper Australia Botany Mill.

HLA (1999) Boiler Emission Testing AMCOR Packaging Botany Mill September 1999.

John Graham and Associates (1992) A report to establish the cultural significance of the old paper mill and the wall facing McCauley Street. Report prepared for APM Botany.

Julie Bindon & Associates (1997), Erection of a Bulk Store, AMCOR Paper Australia, Botany Mill Site Development Application Statement of Environmental Effects.

Masson & Wilson (1997), Proposed Bulk Store at Australian Paper Manufacturers, Botany Mill Traffic Report. Prepared for Griffin Projects.

Randwick City Council (1998) Randwick Local Environment Plan

Sydney Water (1998) Licensing Sewerage Overflows Volume 2 – Georges River and Southern Beaches Geographic Area. Prepared by Sinclair Knight Merz for Sydney Water.

Unisearch (1992) Review of Borewater Resources for APM Botany Mill

URS (2002) Port Botany Expansion Environmental Impact Statement Volume 2.

Whelans – WBCM (1992) Submission to Randwick City Council Randwick Draft Heritage Plan APM Building McCauley Street Matraville. Prepared for Australian Paper Manufacturers Limited.

Woodward-Clyde (October 1999) Project 100 Site Selection Study. Prepared for AMCOR Packaging.

Woodward-Clyde (June 1999) Preliminary Soil and Groundwater investigation of western part of Botany Mill. Prepared for AMCOR Packaging.

Appendix A Consultation & Planning

Consultation

The following table summarises the Part 3A requirements for the EA and indicates where each of the issues is addressed within the document.

Matters to be Addressed	Where Addressed in the EA
Strategic The Environmental Assessment must be prepared to a high technical and scientific standard and must include:	
▪ an executive summary;	**Provided as separate document**
▪ a description of the proposal, including construction, operation, and staging;	**Section 5**
▪ an assessment of the environmental impacts of the project, with particular focus on the key assessment requirements specified below;	**Section 6**
▪ justification for undertaking the project with consideration of the benefits and impacts of the proposal;	**Section 3 & Section 8**
▪ a draft Statement of Commitments detailing measures for environmental mitigation, management and monitoring for the project; and	**Provided as separate document**
▪ certification by the author of the Environment Assessment that the information contained in the Assessment is neither false nor misleading.	**Section 8**
Air Quality The EA should assess air quality impacts of the proposed development. The assessment must be prepared in accordance with *Approved Methods for the Modelling and Assessment of Air Pollutants in NSW* (EPA, 2001), *Assessment and Management of Odour from Stationary Sources in NSW* (EPA, 2001) and *Technical Notes: Draft Policy: Assessment and Management of Odour from Stationary Sources in NSW* (EPA, 2001). This assessment must specifically focus on the following:	
▪ Point source emissions and odour impacts during operation: and	**Section 6.11.4 and Appendix A**
▪ Particulate impacts during construction.	**Section 6.11.2 and Appendix A**
Water Quality This EA should assess water quality impacts associated with the development, including details of the expected water balance for the site. Particular focus must be placed on:	
▪ Minimisation of water consumption;	**Section 6.17**
▪ Justification for any increase in groundwater extraction and the effects of this extraction on the aquifer; and	**Section 6.4**
▪ Wastewater disposal options and selection, with regard to wastewater quality and quantity, flow buffering and the preference to minimise discharges to Botany Bay.	**Section 6.7**
Traffic and Transport The EA should consider traffic implications of the proposed development including	

Matters to be Addressed	Where Addressed in the EA
▪ Capacity, safety and design of key haulage routes to and from the development site; and	**Section 6.9**
▪ Details of road infrastructure upgrades, particularly at the entrance to the site.	**Not required as no road or entrance upgrades proposed**
Noise The EA should include: ▪ Noise impacts of the proposed development during construction and operation, including operational traffic noise, consistent with the criteria and assessment guidance provided in: *NSW Industrial Noise Policy* (EPA, 1999) and *Environmental Criteria for Road Traffic Noise* (EPA, 1999)	**Section 6.10 and Appendix A**
Visual and Landscaping The EA should assess the impact of the proposed development on visual amenity and urban form, including ▪ Specific reference to the setback of the development from the site boundary and adjacent roads; and	**Section 6.2**
▪ External treatments of buildings and	**Section 6.15**
▪ associated advertising in the context of State Environmental Planning Policy No.64 – Advertising and Signage.	**Appendix A**
General Environmental Risk Analysis – notwithstanding the above key assessment requirements, the Environmental Assessment must include an environmental risk analysis to identify potential environmental impacts associated with the project (construction and operation), proposed mitigation measures and potentially significant residual environmental impacts after the application of proposed mitigation measures. Where additional key environmental impacts are identified through this environmental risk analysis, an appropriately detailed impact assessment of these additional key environmental impacts must be included in the Environmental Assessment.	**Section 6**
You must undertake an appropriate and justified level of consultation with the following parties during the preparation of the Environmental Assessment: ▪ NSW Department of Environment and Conservation; ▪ NSW Department of Natural Resources; ▪ Randwick City Council; and ▪ the local community. The Environmental Assessment must clearly indicate issues raised by stakeholders during consultation, and how those matters have been addressed in the Environmental Assessment.	**Section 1.4.2 & Appendix A**

During the preparation of this EA, consultation with the following government authorities was undertaken with regard to issues that need to be addressed within the EA:

- Department of Environment and Conservation – Requirements provided via PFM and Environmental Assessment Requirements;
- Department of Natural Resources – Letter sent but no requirements provided;
- Roads and Traffic Authority – Letter sent but no requirements provided;
- Sydney Water – Requirements provided via PFM and additional letter;
- Botany City Council Letter sent but no requirements provided;
- Randwick City Council Requirements - provided via PFM and Environmental Assessment Requirements;
- Sydney Ports Corporation – Letter sent and requirements provided;
- Local Aboriginal Land Council - Letter sent but no requirements provided;

The following table summarises the issues/concerns/comments raised in the correspondence received from the above organisations.

Authority Consulted	Date of Letter	Comments/Issues Raised	Where Addressed in the EA
Sydney Ports Corporation	27/06/05	**Process Water Discharge** ▪ Sydney Ports Corporation advised they are the owner of Bunnerong Canal and concurrence would be needed to discharge water from the New Paper Mill.	**Section 2.6 and Section 6.7**
Sydney Water	21/07/05	**Development Referral and Compliance** ▪ The EA must include requirements to meet Sydney Water's S73 compliance requirements for development (i.e. management of potable water demand, discharge to the SWSOOS, trade waste requirements, stormwater discharge requirements and backflow prevention).	**Section 6.6 & 6.7**
		▪ The EA must assess how potable use and wet weather discharges to the SWSOOS would be reduce.	**Section 6.7 & 6.17**
		Water Supply ▪ The EA must include options for reducing potable water use.	**Section 6.17**
		▪ The EA must examine water (potable, recycled, stormwater and wastewater) management and consider the following:	
		– Increased bore water draws;	**Section 6.4**
		– Shandying process water;	**Not required**
		– Greater draws from on site stormwater detentions;	**Section 6.6**
		– Capture of roof water;	**Section 6.6**
		– Use of Orica treated water;	**Section 5.8**

Authority Consulted	Date of Letter	Comments/Issues Raised	Where Addressed in the EA
		– Operation of site drainage systems to provide greater process water supply; and – Upgrading on site water treatment to provide further recycled supply.	**Section 6.6 & 6.17** **Section 6.7**
		Sewage ■ The proposals altered effluent discharge arrangements would require renegotiation of AMCOR's Trade Waste Agreement. ■ The EA must assess how discharge flow rates, volumes and quantity will alter as a result of the proposal. This assessment must be conducted in consultation with Sydney Water. ■ Sydney Water understands the proposal would result in an increase in wastewater discharge from 1450 to 1470 ML per year. Therefore requests the EA must assess possible mechanisms to reduce and/or balance wastewater discharges to sewer. ■ The EA must include a further assessment of mechanisms to eliminate current stormwater discharges to the SWSOOS.	**Section 6.7 & Ongoing** **Section 6.7 & Ongoing** **Section 6.7** **Section 6.6 & 6.7**
		Stormwater ■ Sydney Water advised they are the owner of Bunnerong Canal. ■ The EA must address how stormwater quantity and quality would change as a consequence of the development. ■ Stormwater quantity requirements (i.e. on site detention) would be specified.	**Section 6.6** **Section 6.6** **Section 6.6**

SEPP 64 Assessment

Assessment Criteria – Schedule 1	Assessment of Proposed Signage
Character of the Area	
Is the proposal compatible with the existing or desired future character of the area or locality in which it is proposed to be located?	The building signs could be seen from a commercial area in McCauley St, Botany Road and Port Botany. These areas are either industrial or commercial in nature and therefore the proposed signage is compatible
Is the proposal consistent with a particular theme for outdoor advertising in the area or locality?	The proposal does not involve outdoor advertising
Special Areas	
Does the proposal detract from the amenity or visual quality of any environmentally sensitive areas, heritage areas, natural or other conservation areas, open space areas, waterways, rural landscapes or residential areas?	The signage would not be visible from residential areas. The proposed site is located distant from any environmentally sensitive areas, heritage areas, natural or other conservation areas, open space areas, waterways and rural landscapes and therefore any signage would not detract from amenity or visual quality.
Views and Vistas	
Does the proposal obscure or compromise important views?	The signage would not obscure or compromise important views as it would be below the roof line.
Does the proposal dominate the skyline and reduce the quality of vistas?	The signage would not dominate the skyline or the quality of vistas as it would be below the roof line in an industrial area.
Does the proposal respect the viewing rights of other advertisers?	The proposal would not affect the viewing rights of any advertisers.
Streetscape, Setting or Landscape	
Is the scale, proportion and form of the proposal appropriate for the streetscape, setting or landscape?	The signage is appropriate in size and form for the setting which is industrial/commercial streetscape.
Does the proposal contribute to the visual interest of the streetscape, setting or landscape?	The signage would assist in “breaking up” the essentially monolithic visual nature of the buildings.
Does the proposal reduce clutter by rationalising and simplifying existing advertising?	There is no existing signage in this area to replace or rationalise
Does the proposal screen unsightliness?	No
Does the proposal protrude above buildings, structures or tree canopies in the area or locality?	The signage does not protrude above buildings, however will be above screening vegetation around the buildings.
Site and Building	
Is the proposal compatible with the scale, proportion and other characteristics of the site or building, or both, on which the proposed signage is to be located?	The signage is appropriate for the large size and other characteristics of the building. The signage would assist in “breaking up” the essentially monolithic visual nature of the buildings.
Does the proposal respect important features of the site or building, or both?	The signage would not impact upon any important features of the building or site
Does the proposal show innovation and imagination in its relationship to the site or building, or both?	The signage would assist in “breaking up” the essentially monolithic visual nature of the

	buildings.
Associated Devices and Logos with Advertisements and Advertising Structures	
Have any safety devices, platforms, lighting devices or logos been designed as an integral part of the signage or structure on which it is to be displayed?	AMCOR's corporate style and logo would be included within the signage.
Illumination	
Would illumination result in unacceptable glare?	Illumination would not result in acceptable glare
Would illumination affect safety for pedestrians, vehicles or aircraft?	Illumination would not affect safety
Would illumination detract from the amenity of any residence or other form of accommodation?	The signage would not be visible from residences or other accommodation
Can the intensity of the illumination be adjusted, if necessary?	Yes
Is the illumination subject to a curfew?	No curfew is proposed
Safety	
Would the proposal reduce the safety for any public road?	The signage would not affect the safety of any public roads
Would the proposal reduce the safety for pedestrians or bicyclists?	The signage would not affect the safety of pedestrians or cyclists
Would the proposal reduce the safety for pedestrians, particularly children, by obscuring sightlines from public areas?	No sightlines would be affected