Botany Paper Mill Upgrade

PRELIMINARY ENVIRONMENTAL ASSESSMENT

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Contents

Document history and status

Revision	Date issued	Reviewed by	Approved by	Date approved	Revision type

Distribution of copies

Revision	Copy no	Quantity	Issued to

Printed:	19 December 2006
Last saved:	11 April 2005 03:38 PM
File name:	Document2
Author:	Jonas Ball
Project manager:	Jonas Ball
Name of organisation:	AMCOR Fibre Packaging
Name of project:	Botany Paper Mill Upgrade
Name of document:	Planning Focus Meeting Notes
Document version:	
Project number:	EN01786

1. Introduction

AMCOR Fibre Packaging proposes to install a major paper making facility, utilising a 100% recycled waste paper fibrous furnish, at their Botany site, NSW. The facility, 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 2800 000 tonnes per year. Replacement of the two 1960's vintage paper machines with a single machine, incorporating modern technology, will result in significant increases in efficiency of the paper making process. The upgraded mill will produce significant savings in energy use per unit of paper production, will reduce quantities of solid waste sent to landfill, and improve the local amenity due to lower odour and noise emissions. Services infrastructure on the south western boundary of the site would be demolished to make way for the new facility. Decommissioning of the existing paper making machines would occur following construction and successful commissioning of the new plant.

A similar upgrade to the Botany Mill was proposed in 2000 (Project 100), however, this did not proceed. The current proposed upgrade differs from the Project 100 in that:

- The new building housing the paper mill is located in the south western corner of the site and is further away residents;
- The increase in capacity of the mill is smaller than proposed in Project 100;
- There will be less changes to auxillary components.

AMCOR Fibre Packaging is now seeking to gain development approval for the proposed paper making facility at the Botany Site.

The proposed development is classed as State Significant Development under the provisions of the *Environmental Planning and Assessment Act, 1979 (EP&A Act)*. Under State Environmental Planning Policy No. 34, a development of this nature will be assessed by the Department of Infrastructure, Planning and Natural Resources with the Minister as the consent authority.

The development is also 'integrated' within the meaning of Section 90 of the Act, and the NSW DEC would be an integrated approval authorities for the development.

Sinclair Knight Merz has prepared this document, on behalf of AMCOR Fibre Packaging, to provide necessary background information and project details to appropriate regulatory authorities for consideration at the Planning Focus Meeting. It provides a description of proposed upgrades and a description of the likely environmental impacts of the works. It also provides preliminary recommendations for mitigation measures that could be implemented to reduce any potentially adverse impacts identified with Project 100.

1.1 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 Fibre 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.

The old machines and plant derived drying from steam from a coal fired boiler, located to the west of the present boiler house. Following decommissioning of the previous paper making machines, buildings within the western area of the site have fallen into disuse. All the original machinery previously located in the old finishing and coating areas in the western part of the site has been dismantled, leaving largely unoccupied buildings. The old coating area has been converted to a maintenance and engineering section.

1.2 AMCOR Fibre Packaging Background

AMCOR is one of the world's leading integrated packaging and paper companies, having substantial packaging businesses in Australia and New Zealand, Europe, North America and Asia. AMCOR operates over 150 plants, manufacturing metal, plastic and paper packaging, producing a range of consumer and industrial products. AMCOR has more than 19 452 employees worldwide, with 200 people employed at the Botany Mill. At the end of the 1998-99 financial year, net operating profits were $290 million on sales of $6 049 million. At June 1999 total assets were $6 353 million.

AMCOR Fibre Packaging, Australia's leading wastepaper recycler, produces corrugated box and carton products from mainly recycled paper or plantations. Approximately 85% of AMCOR's fibrous raw material for papermaking is sourced from either wastepaper (approximately 630,000 tonnes of wastepaper was collected during 1998-99) or plantations.

1.3 Project Objectives and Justification

AMCOR Fibre Packaging's Botany mill is one of Australia's largest fully recycled paper operation. The main products from the Botany mill include corrugating medium and linerboards, supplying both the domestic market and international markets predominantly within Australia and South-east Asia.

The upgraded Paper Mill will allow continued paper board production, with improvements in efficiency and environmental performance of the plant. Upgrading the technology of the two existing paper machines is not considered viable, due to their age and the obsolete technology associated with these machines.

Operation of the existing No. 7 and No. 8 paper machines at the Botany Mill site have the following disadvantages:

- The life span of the existing plant is estimated at 5 years. If the plant is not upgraded within this period it will close down;
- In comparison to modern technology each machine produces paper at less than half the speed of new machines;

- The product is limited to basis weights above 108 gsm, which is some 20-30 gsm heavier than desirable for some light weight applications.
- The quality uniformity both across the paper web and down the paper web has higher variation 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.

Through its proposal to construct a new paper machine at the Botany Site, amongst other advantages, AMCOR Fibre Packaging would improve its competitiveness and operational efficiencies. 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, more effective fibre separation and reduced waste volumes sent to landfill. The light weight packaging product produced by upgraded Paper Mill will have a business multiplier effect, generating production cost benefits and lowering the cost of packaging downstream. The upgraded Paper Mill proposal will also allow for lower cost paper products,

If upgraded Paper Mill were not to proceed and current operating practices were maintained at the Botany Site, paper board production would be at higher costs. This would impact on the competitiveness of the paper board product internationally and domestically. The current plant also only has a limited lifespan of 5 years after which it would be forced to close down permanently.

2. Description of Site & Surrounding Areas

2.1 AMCOR Botany Mill Site Description

The AMCOR Fibre Packaging facility is located on a 15.5 hectare site within the Matraville Industrial area. 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.

An aerial photograph of the site in its local context is given in **Figure 2.1**. A site layout map showing the existing facility is given in **Figure 2.2**.

The upgraded Paper Mill is to be located on the south-western end of the site, currently occupied by derelict and active services infrastructure.

The site is fairly flat, sloping gradually down from the north-west to south-east. The elevation ranges between approximately 8 m AHD (adjacent to the northern boundary) to 4 m AHD (adjacent to the Botany Road).

2.2 Description of Locality and Surrounding Environment

2.2.1 Surrounding Land Use

The nearest residential dwellings to the Botany Mill site 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 2.1**, the nearest residences, located off Partanna Avenue and Australia Avenue, are approximately 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.

2.2.2 Zoning and Planning

The current zoning of the AMCOR Fibre packaging site at Botany is 4A (Industrial zone) under the provisions of Randwick Local Environmental Plan.

2.2.3 Traffic Access and Transport

Traffic access to the site is through a signal controlled intersection on Botany Road, a major heavy vehicle route providing access to the feeder arterial road network to the west, north and south via Foreshore Road and General Homes Drive.

McCauley Street, adjoining the western boundary of the Mill site, is a local road, providing access to commercial and residential areas. AMCOR has a site access located off McCauley Street.

Weekday traffic flows on Botany Road at McCauley Street, as quoted by Masson & Wilson (Oct 1997), are around 15 000 vehicles per day, varying with day to day port related activities. Traffic flows on McCauley Street are relatively low, consisting mainly of commercial traffic travelling to offices located off McCauley Street, and residential traffic off Australia Avenue. Heavy vehicles access a public weighbridge on the western side of McCauley Street.

Currently a fleet of trucks transports wastepaper to the Botany Mill for recycling. The average capacity of the existing fleet is approximately 3 tonnes, consisting of smaller trucks, which collect wastepaper directly from local Council areas within the eastern suburbs of Sydney. A proportion of the current truck fleet carry up to 20 tonnes, transporting compacted paper from regional collection depots and further afield.

Pit waste, collected during the fibre cleaning process, is transported from the site for disposal at the St Marys Landfill depot. Pit waste, currently equating to approximately 7-8 truck movements per day, is collected by a private waste contractor. There are no time restrictions on the removal of this waste from the Botany site.

Transport of finished product from the site occurs mainly in 20 tonne trucks, and is unrestricted in terms of allowable times for transport.

The total number of heavy vehicle movements to and from the Botany Mill site is approximately 12 000 per year, with peak daily heavy vehicle movements being around 40 (Masson & Wilson 1997). The heavy vehicles accessing the site are generally articulated, with a mix of smaller vehicles.

The delivery of chemicals to the site typically involves five semi trailer loads per day of liquid starch and one truck load of caustic soda per week.

All trucks transporting wastepaper to the site must be weighed on site at AMCOR's weighing station before and after offloading. Vehicles transporting finished product and waste from the site must also be weighed prior to leaving the site.

2.2.4 Water Discharges

The AMCOR site has three major water discharge points, these being to the:

- Stormwater system – for "clean" runoff from building roofs, car parks etc
- South Western Suburbs Ocean Outfall Sewer (SWSOOS) – for treated wastewater from the paper making process and runoff from the paper storage areas
- Bunnerong Canal – cooling water and excess wastewater when the SWSOOS is near capacity (usually wet weather). The canal eventually discharges into Botany Bay

AMCOR has a Sydney Water Trade Wastewater Agreement, which places limits on discharge of wastewater to the SWSOOS system. The Sydney Water Trade Wastewater Agreement limits the maximum daily discharge to 9 Ml/day, under normal operating conditions. The average daily discharge is limited to 6 Ml/day, with an instantaneous maximum pumped rate of discharge being 280 l/sec. Temporarily this limit has been reduced to 600 kL/hr (167 /sec) whilst SydneyWater are performing maintenance on the sewer.

The Trade Wastewater Agreement specifies that effluent discharge to the SWSOOS system is to be controlled and / or disabled during times of high flow within the sewer (as registered at the Customer's Control Room telemetered from Sydney Water's sewer gauging station at Hayden Place), and diverted to the Bunnerong Canal which eventually discharges into Botany Bay. In addition to the discharge quantity limits, restrictions are placed on pollutant loadings within the discharge, as outlined in **Table 2.1**.

- **Table 2.1: Water Quality Licence Limits**

Pollutant	Acceptance Standard	Maximum Daily Mass (kg/day)	Long Term Avg. daily mass (kg/day)
BOD5		14,800	7010
Suspended solids	600 mg/l	1,240	608
Grease	45 mg/l	210	130
Sulphates	300 mg/l	1300	540

In addition to these limits, temperature must not exceed 38 degrees celcius and pH should be within the range of 7 - 10

Industrial discharges to Botany Bay, including AMCOR's discharge, are regulated under Licensing limits imposed by the NSW DEC. The DEC licence states that treated process water may be discharged to the Bunnerong outfall canal when the SWSOOS sewer is unavailable. The non-filterable residue (suspended solids) content of this discharge water must not exceed 200 mg/l. Discharge of treated process water to Bunnerong outfall has occurred 3% of the time over a long period. Over the last year, 0.7% of the total flow from the site was discharged into the Bay – on a total of 4 occasions.

The main impacts of direct discharges from industry to waterways are associated with oxygen depleting substances and suspended solids within the receiving environment.

Under AMCOR's DEC Licence, volume discharge to Bunnerong outfall Canal must not exceed 180 000 kl/day or 125 kl/minute. The total volume discharge includes process and saltwater dilution water.

2.2.5 Botany Bay Environment

Since the days of the early British colony alterations to land use and the physical environment within Botany Bay and its catchment have had a significant impact on water quality. Urban development has encroached upon over 50% of the Bay's shores, with many commercial, industrial and port facilities adjoining the northern perimeter.

Botany Bay has a sandy seabed, with an average depth of five metres. The relative shallowness of the Bay typically generates a relatively rough wave action. Water movement within the Bay is primarily driven by wind

and tidal action. Dredging for port and other major developments (including Kingsford Smith Airport) has increased water depths in the northern section of the Bay and altered wave energy directions. This has had a substantial influence on erosion within areas to the south of the Bay during the past 30 years.

The natural flow regimes within Botany Bay and its feeder waterways have been substantially altered since European settlement. Construction of sea walls, stabilisation of river banks and reclamation of wetlands and waterway areas has influenced the natural flows. In particular, channelisation and urban development have produced increased wet weather flows to Botany Bay, potentially increasing turbidity and concentrations of pollutants in the water column.

There are two main freshwater inflows to Botany Bay: the Georges River and Cooks River. A number of sources affect water quality within Botany Bay and its feeder waterways. These include:

- Groundwater;
- Stormwater;
- Sewerage Overflows; and.
- Industrial Discharge.

A discussion of Groundwater is included in **Section 2.2.6**.

Stormwater entering Botany Bay comprises direct rainfall on the waterways and runoff from the surrounding catchment areas. Runoff water is capable of transporting a variety of ground surface pollutants into the receiving waters of Botany Bay. Landuse within the surrounding environment largely dictates the type and concentration of pollutants carried within stormwater runoff, with urban stormwater typically containing high concentrations of:

- animal faeces;
- herbicides, pesticides and garden fertilisers;
- particulates, silt and sediment;
- fuels, oil and grease; and
- Rubber compounds;

Wet weather sewerage overflows into the Georges and Cooks River discharge into Botany Bay. The natural flushing provided within the lower estuarine and marine areas in Botany Bay serves to reduce the impact of overflows on water quality within the Bay. The main impacts within the Georges and Cooks Rivers relate to faecal coliform loadings rather than suspended solids, nitrogen or phosphorous.

When Sydney Water declares that their SWSOOS system is unavailable Botany Bay is the receiving environment for water discharges from the AMCOR site. This has occurred 3% of the time over a long period. Over the last year only 0.7% of the total flow from the site was discharged into the bay.

2.2.6 Hydrology and Groundwater

The AMCOR site is located on land situated above the Botany Sands aquifer, which stretches from the major recharge zone at Centennial Park to the Botany Bay foreshore. The aquifer comprises 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 (Egis 1999). The regional groundwater flow for both the shallow and deep groundwater horizons is in a south to south-west direction, discharging into Botany Bay.

Woodward Clyde (June 1999) identified the groundwater table beneath the old mill area to be approximately 4.0 to 4.3 m AHD in the north of the site to 1.6-2.1 m in the south.

Groundwater has previously been extracted for drinking, stock water, irrigation and industrial processes. Increasing contamination over recent years has restricted current use to a number of high water-use industries in the Botany area, including AMCOR Fibre Packaging.

Groundwater within the urban areas surrounding Botany Bay is contaminated by industrial discharge, sewage exfiltration, landfill leachate, domestic fertiliser and chemical usage. Woodward Clyde (June 1999) found that ground water within the northern boundary of the AMCOR Botany site (the up-gradient side of the site) contains concentrations of lead, zinc, phosphorous, nitrates and total organic carbon that slightly exceed ANZECC criteria for the protection of marine ecosystems. Concentrations of nitrates, phosphorous and total organic carbon measured outside the northern boundary of the AMCOR Botany site were also found to marginally exceed the ANZECC criteria for the protection of marine ecosystems. Towards the southern border of the AMCOR site, groundwater contains variably elevated concentrations above the ANZECC criteria for the protection of marine ecosystems for phosphorous.

Since 1999 it is possible the groundwater beneath the AMCOR site has become contaminated with HCB from the Orica site. Additional sampling would be undertaken to determine if this has occurred.

2.2.7 Water Use at AMCOR's Botany Mill

Existing water usage at the site consists of approximately 1 Ml/day of town water and 5 Ml/day of bore water. Water usage on site also includes approximately 24 Ml/day being circulated through a clarifier, of which approximately 80% is reused on site.

2.2.8 Soils and Geology

The AMCOR Fibre Packaging site is located approximately 10 km south of the Sydney CBD, within the Botany Basin. Hawkesbury Sandstone underlies quaternary sediments, which exist to a depth of approximately 80 m within the basin. The quaternary sediments consist predominantly of unconsolidated to semi-consolidated permeable sands. These are interspersed with lenses and layers of peat, peaty sands, silts and clay.

The majority of the AMCOR site has been sealed with concrete or asphalt pavement. As outlined in **Section 2.2.15**, industrial use at the AMCOR Paper Mill site has resulted in some areas of soil contamination, the main area being restricted to the southern end of the western part of the site.

2.2.9 Flora and Fauna

The AMCOR Botany Mill site has previously been cleared of vegetation to make way for extensive industrial development on the site. The absence of any significant flora and fauna on the site dates back to the early twentieth century, when paper manufacturing first occurred on the site.

Aquatic flora within Botany Bay and the lower Georges River consists of mangrove habitats, saltmarsh habitats, seagrass beds and macroalgae. Seagrasses provide an important habitat for fish and a positive influence in bottom stability and nutrient recycling. Extensive losses of this seagrass habitat has occurred on the northern shoreline of the Bay. Wave induced erosion and pollutants are thought to be the main reasons for this decline.

Aquatic fauna within the Bay and surrounding tributaries consists of a variety of fish, migratory bird and macroinvertebrate communities. Significant commercial fisheries and shellfish leases (including oyster farming) exist within the lower Georges River and Botany Bay. Past studies have shown that stormwater flows can have a significant impact on aquatic fauna in parts of Botany Bay.

2.2.10 Archaeology and Heritage

The Botany Mill site has been highly disturbed in the past. There is little likelihood of any sites of indigenous archaeological significance remaining.

The history of industrial usage at the site, as outlined in **Section 1.1**, has various items of heritage significance. The APM Building c1902 at 19 McCauley St Matraville (Old Finishing Mill building) is listed as a heritage item under the Randwick Local Environmental Plan.

As part of a submission to Randwick City Council's Randwick Draft Heritage Plan John Graham and Associates (1992) carried out an assessment of the heritage significance of the Botany Mill site. The 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 along McCauley Street, was determined to have limited townscape merit in its context and to have limited architectural merit.

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). The condition of some of these palm trees has since deteriorated and some have died.

Graham Brooks and Associates Pty Ltd (1997) undertook an assessment of the heritage significance of the Botany Mill site for the proposed Botany Mill Bulk Store DA. This assessment concluded with similar findings to the John Graham and Associates report, stating that the buildings, which can be identified as part of the earliest phase of 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. The site of former occupation of AMCOR's Botany 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 Graham Brooks and Associates report concluded that 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 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.

2.2.11 Noise

The existing noise environment within the area surrounding the Botany mill site is dominated by sources typical of urban industrial areas. Background noise levels experienced at the boundary of the mill typically range between 50-60 dBA. These noise levels are also influenced by activities associated with operation of the Port Botany Complex, road traffic, air transport and residential noise.

Very few residential dwellings existed adjacent to the mill site when it first began to operate in 1901. 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 50 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.

Noise generated at the AMCOR mill site has occasionally generated complaints from the local community. AMCOR are addressing noise complaints and are actively pursuing noise controls at the site, including establishment of noise exclusion zones, modifications to items of plant and equipment, and planned maintenance and upgrade programs, in order to minimise adverse noise impacts within the local community. As outlined in **Section 2.2.14**, a community Liaison Group has been established to discuss noise and other aspects associated with the mill.

2.2.12 Air Quality

Air quality within the area surrounding the AMCOR site is influenced by both local and regional pollutant sources, including road traffic, 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 AMCOR Botany site.

The main source of air emissions at the Botany site is the natural gas fired boiler, which is currently used to generate steam for the paper making process. Emissions from the boiler include oxides of carbon, nitrogen and sulphur, particulate matter and fluoride. Emission of these substances from the boiler stack is controlled under the Clean Air Regulations 1998 for Group A installations. Recent boiler stack emission testing (HLA 1999) has shown that emissions concentrations for these substances fall within the regulatory limit conditions. HLA also conducted stack testing for trace metals, and polycyclic aromatic hydrocarbons, which were not detected during the sampling.

Odour emission from the AMCOR site can occur as a result of evaporation of treated wastewater from roof vents in the No. 7 and No. 8 machines, and previously from the treatment plant clarifiers. Previous methods of removing biological organisms from the wastewater stream were sometimes inadequate, resulting in odorous emissions from the clarifiers and the roof vented steam. After Project 100 did not proceed, DEC placed a pollution reduction program on the Botany Mill which required it to undertake odour reduction works. These odour reduction works have been undertaken and have resulted in a significant decrease in odour complaints and perceptions from the surrounding community.

Odours also arise from the SWSOOS, which passes nearby to the site. This section of the SWSOOS is known to have significant odour problems due to sewage becoming septic. A dosing plant to control odour and concrete corrosion from the generation of H_2S gas has been installed by Sydney Water approximately 2 km upstream of the Botany site.

2.2.13 Landscape and Visual

The location of the upgraded Paper Mill is adjacent to Botany Road and distant from residences. Views from these residents consist of the intervening vegetation, other residential dwellings, industrial buildings and facilities associated with the Port of Botany with Botany Bay, Kurnell Peninsula and the ocean in the distance.

Recent landscaping works between the site and nearest residences has, to some extent, ameliorated the visual impact of the existing industrial environment.

The visual character of the site is largely industrial, comprising large brick, metal and fibro type factory buildings. The most prominent features of the 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.

2.2.14 Social

As shown by the complaint register, noise and odours generated from AMCOR's industrial operations produce perhaps the most significant social impacts. Residents located near the AMCOR site 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.

2.2.15 Site Contamination

The preliminary groundwater and soil investigation of the western part of the Botany Mill (Woodward Clyde, 1999) shows that the extent of 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 there is potential for pockets of contamination not detected within the preliminary investigation.

Previous industrial use at the AMCOR Paper Mill site has resulted in some areas of minor soil and groundwater contamination, the main area being restricted to the southern end of the western part 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 southern part of the site adjacent to Botany Road. Woodward Clyde (June 1999) state 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 making plant and equipment has been removed from this area and some of the buildings have been demolished. Woodward Clyde (June 1999) found weakly elevated concentrations of some parameters characteristic of the impact of organic matter on groundwater within this are of the site.

The analytical testing results for metals, total petroleum hydrocarbons, semivolatile organic compounds and polycyclic aromatic hydrocarbons in the soils within the western area of the site were below the screening level assessment guidelines. Concentrations of copper and lead, sampled adjacent to the clarifier and caustic soda storage tank, exceeded the screening level assessment guidelines, as did the lead sampling conducted in the southern carpark. Trace quantities of asbestos fibre were found in several boreholes scattered throughout the western end of the site. The samples of halogenated organic compounds analysed showed generally consistent and low concentrations.

3. Description of Proposal

3.1 The Paper Manufacturing Process

Waste paper, typically old cardboard boxes, newsprint, white papers, cartonboards and paper bags, is trucked to the Botany Mill for use in the production of corrugated paper board. The wastepaper is stored temporarily within the waste paper storage area and transferred onto conveyors, via forklift, to the hydrapulpers. A large turning metal rotor in the base of the pulpers slushes the water and paper around, separating the wastepaper individual fibres. Contaminants, such as plastics, rubber, metal, are removed from the pulpers and the slurry mix undergoes a series of screenings.

The separated fibres are sucked through holes in an extraction plate in the pulpers and pumped to the first of a multi-stage cleaning process. A fractioner separates long and short fibres, which are stored in separate silos awaiting further processing in the paper machine.

From the storage silos, the cleaned and refined fibres are frayed in the refiner room and spread over a plastic mesh, where excess water is drained. The sheet of paper is then passed through a series of roll presses. The web of fibres is squeezed to further remove 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 corrugated board. The final product is a finished 15 km long sheet of paper, which is wound onto Jumbo rolls weighing between 10-12 tonnes. The finished reel will then be cut to customer order sizes, dropped through a hatch to the machine floor level where a forklift then stacks or loads the reel for shipping to the customer.

3.2 Proposed Paper Making Operations

The overall paper making process at the new Botany Plant will not differ to that of the existing operation outlined in **Section 3.1**. The only differences will be in the technology used within some of the process units and the production capacity of the plant. The technology adopted within the new plant will generate a significant increase in production capacity of the plant, and greatly improve environmental performance of the paper making operation. An outline of the proposed modifications to the existing site is provided in the following sections.

3.2.1 Proposed Location

The new paper machine will be located in a dedicated building along the southern boundary of the site, in the western corner. This area comprises a number of both redundant and currently operational service's infrastructure and the old gatehouse building.

3.2.2 Plant Layout and Equipment

The new paper machine will be located within the existing AMCOR site boundary, within the south western area of the site. An indicative layout of the new facilities in relation to existing facilities is shown in **Figure 3.1**. It must be noted that some of the ancillary areas to the paper manufacturing area may move.

The equipment for waste paper processing will be located within a largely enclosed building having a footprint approximately 250 m long by 50 m wide. The height of the new machine building ranges between 2½ storeys in the northern end to approximately 4 storeys in the southern end. The new machine will be a 5.66 m machine, having a capacity of 860 t/day. This capacity is greater than the current combined capacity of the No.7 and No.8 Machines, which is 705 t/day. The new machine will be located on two floors of the new building.

The composition of the building is yet to be determined, however it is likely that, with the exception of the western-wall of the plant, the entire building is likely to be metal (steel) clad or pre cast concrete. A number of fibre storage silos (nominally 8) will be located adjacent to the southern border of the new facility building. These silos will be approximately 2 storeys high, consisting of stainless steel.

The visual appearance of the new facility will be designed to take into account the existing industrialised character of the site landscape and its surrounds.

3.2.3 Raw Materials

The range of raw materials used within the new paper making facility will not differ from existing. The primary input materials used include:

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

Energy usage is outlined in **Section 0**.

Production capacity of the new facility is expected to increase from the current 250 000 tonnes/year of finished product, to approximately 280 000 tonnes/year. The consumption of waste paper input to the process will necessarily increase from approximately 280 000 tonnes/year (currently) to approximately 310 000 tonnes/year.

Associated with the increase in production at the AMCOR site, starch consumed within the process is expected to increase from the present 13 300 tonnes/year to 14 260 tonnes/year.

Water use associated with the new facility is not expected to change significantly from the existing water usage at the site. Consumption is expected to increase from the current 1 850 Ml/year to approximately 1 860 Ml/year. Town water usage per net tonne of paper produced will remain largely unchanged. Bore water usage per net tonne of paper produced is expected to reduce from 5.5 kl/net tonne to 4.4 kl/net tonne, resulting in marked improvements in the efficiency of water used at the site.

The estimated raw materials usage during operation of the existing and upgraded Botany Paper Mill is summarised in **Table 3.1**.

- **Table 3.1: Raw Materials Consumption**

	Unit	Existing Operation	New Mill Operation
Waste Paper	(tonnes/year)	273 500	341 000
Starch	(tonnes/year)	13 300	14 260
Water Use	(Ml/yr)	1 850	1 860
- City Water	(kl/net tonne)	2.0	2.0
- Bore Water	(kl/net tonne)	5.5	4.0

3.2.4 Energy Requirements

The primary energy sources for the paper mill are electricity and steam. The electricity, natural gas, and steam usage during operation of the existing and upgraded Botany Paper Mill is summarised in **Table 3.2**.

- **Table 3.2: Energy Use**

	Unit	Existing Operation	New Mill Operation
Power Demand	KWhr/net tonne	510	385
Power Usage	(MWhr)	14.26	13.82
Yearly Power Usage	(GW)	123	120
Steam Demand	(tonnes steam/net tonne paper)	2.55	2.2
Natural Gas[#]			

[#]*Data not available at the time of preparation of this report*

The new mill will be more energy efficient than the current operation. Power demand will reduce from 510 kWhr/net tonne of paper produced to approximately 385 kWhr/net tonne. Yearly power usage at the site will reduce from the current 123 GW to approximately 120 GW with operation of the new facility. Access to electricity will be as for the existing situation, via the mains grid.

Currently, steam used within the drying process is generated on site through the use of a natural gas fired boiler. Existing steam demand is approximately 2.55 tonnes per tonne of paper produced. The increased efficiency of the new plant will likely reduce this consumption to approximately 2.2 tonnes of steam per tonne of paper produced.

Steam for the new paper mill would be sourced from a new steam package plant consisting of two 35 tonne/hr gas fired boilers.

Natural gas may be used within a gas fired hood on the new paper machine, should this option proceed. The hood would contain a gas flame burner, which heats air and directs hot air into the process, maintaining evaporation from the paper board.

3.2.5 Site Services

The site is currently serviced by the full range of infrastructure facilities supporting paper making operations. Operation of the new facility is not expected to result in any significant change to the current level of demand or service. Some services will, however, require relocation during demolition of existing buildings and construction of the new paper making machine.

3.2.6 Traffic Access and Transport

A detailed traffic study will be undertaken for upgraded Paper Mill to determine traffic access from Botany Road and traffic management details within the site. The traffic study will include an assessment of the change in location of internal roads and routes taken by vehicles transporting wastepaper to the site and finished product from the site.

The existing access points off McCauley Street, Australia Avenue and Moorina Avenue will be maintained. It is likely that the McCauley Street access could be required for maintenance and the delivery of chemicals the new paper machine.

Based on the estimates of raw materials usage, solid waste disposal, and finished product delivery a preliminary estimate of truck movements to and from the Botany site has been prepared for the Project 100 facility. **Table 3.3** provides a summary of the preliminary existing and forecast truck movements at the site.

Table 3.3: Daily Vehicle Movements

Activity	Existing Operations	New Mill Operations
Heavy Vehicle Movements		
Waste paper	271	338
Finished product	34	43
Solid waste (to landfill)	7.4	5.2
Starch delivery	5	5
Chemical delivery	0.5	0.5
Total Heavy	318	392
Light Vehicle Movements		
Shift work	108	48
Staff and Maintenance	200	130
Total Light Vehicles	308	178

Source: AMCOR P100 Environmental List (6/03/2000)

Heavy vehicle movements associated with upgraded Paper Mill are likely to increase from approximately 318 movements per day to approximately 392 movements per day. This increase comprises 67 movements associated with the delivery of waste paper to the site, which may occur between the hours of 7 am-6 pm, and 9 vehicle movements associated with the transport of finished product from the site, which may occur any time around the clock.

The transport of solid (pit) waste to St Marys Landfill site will reduce from 7.4 to 5.2 vehicle movements per day.

Light vehicle movements associated with the operation of the new plant are expected to reduce from 308 per day to approximately 178 per day.

3.2.7 Finished Products

Finished products will be designed to optimise the operation of AMCOR's new high speed corrugators. Paper on the new machine will be produced in jumbo rolls weighing about 29 tonnes with a width of 5.66 metres and a length of approximately 34 km. These jumbos will be cut down into 10 customer reels each weighing about 2.9 tonnes that will fit directly into the backstand of AMCOR's high speed corrugators, which are 2.8 metres wide. The reels will be stored within the reel storage area at Botany until despatched to a customer plant.

3.2.8 Waste Management

Existing waste management arrangements at the site involve treatment of liquid effluent (process water and stormwater runoff), disposal of solid pit waste and boiler flue gas emissions.

Liquid Waste

A Dissolved Air Flotation (DAF) system has recently been commissioned to treat effluent. Following installation of the DAF water treatment system the solids level in liquid effluent discharge has been be reduced.

The volume of liquid effluent discharged from the site is expected to increase from approximately 1 500 Ml/year to 1 550 Ml/year following installation of the new facility. Liquid effluent discharge per tonne of paper produced is expected to reduce from 6.21 kl/tonne to 5.0 kl/tonne.

Runoff from building roofs on site will be collected, directed into Long dam and discharged into Botany Bay as occurs in the current situation. Other surface runoff and wastewater from the papermaking process will be collected within the drain network and directed to the treatment plant for cleaning.

Solid Waste

The current solid waste management practices used on site are considered adequate to meet the demands of the upgraded Paper Mill.

Approximately 20,000 tonnes per annum of sludge, generated by the watsewater treatment plant, is used for agricultural potting mix and soil conditioning. The volume of sludge generated is determined by the quality of waste paper collected, which may contain more or less non-fibrous material. Generally the quantity of sludge produced increases with more non-fibrous material in the waste paper.

The installation of the new paper making machine will result in improvements in fibre recovery during the wastepaper cleaning process. This will reduce the quantity of pit waste generated on site. Currently pit waste is trucked to St Marys landfill for disposal. Production of pit waste with upgraded Paper Mill is expected to reduce from the current 80 000 tonnes /year to approximately 65 000 tonnes/year. This represents an 18% reduction in solid waste generation at the site.

Solid waste from upgraded Paper Mill will be trucked to St Marys Landfill or used for beneficial land application, as occurs with current operations.

3.2.9 Construction Works and Program

Overview

The development will involve demolition of the existing buildings, site preparation and concreting works, erection of the new buildings and installation/commissioning of the machinery and plant.

Buildings will be demolished, concrete slabs removed, and underground drains, water lines and sewer lines will be relocated. Equipment to be used on site during the preparation works would typically include:

- Graders;
- Trucks;
- Backhoes;
- Compactors;
- Concrete trucks;

Remediation of some of the land is likely to be required which will involve the removal of contaminated fill and the replacement with clean fill.

Once the site is cleared and levelled holes for the footings are made and the concrete slab is laid. Construction of the building can then commence. Construction of the building and installation of machine equipment would typically involve the use of:

- Trucks;

- Cranes;
- Sheet metal working; and
- Bored Piles.

Materials transported by truck to the site will be offloaded and erected at the site using cranes. Support girders would first be erected, followed by the steel clad or pre-cast concrete walls and roofing. The building components would be constructed off site and transported to site for assembly. Following completion of the building structure, installation and commissioning of papermaking equipment can occur.

There is the potential for some overlap between the erection of paper making equipment as the building exterior is being completed. However the majority of machine installation will be undertaken following completion of the building structure.

The paper making machinery would be assembled off site and transported to site in pieces 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 will be provided to enable machinery to be lifted to the first and second floors of the building. Access for construction vehicles and cranes would most likely be from McCauley Street.

Following assembly of the equipment, a series of 'dry' pre-commissioning tests will be undertaken to check the mechanical, electrical and safety systems of the plant. Upon successful completion of the pre-commissioning test, paper board manufacture will commence at the new Botany Paper Mill.

The existing waste paper hangar and storage area located on the north-eastern end of the site will be used for temporary storage of construction equipment and supplies.

Construction Timetable

Demolition, earthworks and site preparation works be undertaken during daylight hours. Following erection of the new facility building, it is likely that machine installation works will be undertaken around the clock. These installation works would be non-audible at the nearest residences.

The construction timetable would typically involve:

- Demolition of existing buildings - March 2001-May 2001
- Construction of new building May 2001-November 2001
- Installation of Paper Machine November 2001-October 2002
- Plant Trials and Additional works October 2002 – February 2003
- Full scale production – March 2003

3.2.10 Hours of Operation

The new Paper Mill would operate 24 hours per day, seven days per week and 52 weeks per year. A down time of 3 days per year will be necessary for general maintenance, services and repairs to the machine equipment.

Finished product will be loaded onto trucks and transported from the site 24 hours/day, 7 days/week. Wastepaper will be transported to the site between 7 am-6pm 7 days per week. The existing DEC 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. These conditions are likely to apply to the new operation.

3.2.11 Security, Safety and Emergency Procedures

During construction the site will be secured using temporary fencing.

The fire safety system will be designed in accordance with the AMCOR underwriters requirements and relevant Fire Safety Standards.

4. Discussion of Environmental Impacts

4.1 Potential Impact of Proposal

4.1.1 Surrounding Landuse

Currently, the nearest residences to the Botany Mill Site are located off Partanna Avenue and Australia Avenue, are approximately 50 m from the mill boundary. The nearest residences to the new facility, located within the western area of the site, will be those located off Australia Avenue, as shown in **Figure 3.1**.

4.1.2 Soils, Hydrology and Groundwater

The existing paper mill site is already highly disturbed, being predominantly covered by buildings or concrete and asphalt surfaces. During demolition and site preparation works for the new facility, there will be substantial ground disturbance at the site. Soil and water quality impacts during construction of the new facility are outlined in **Section 4.2.3**.

Following construction, the site will again be predominantly sealed by buildings, concrete or asphalt surfaces. Soil erosion impacts are not likely to be experienced after disturbed areas are stabilised. Operation of the new plant is therefore not likely to have an adverse impact on soils at the site.

The upgraded building would be located on an area where previous minor soil contamination has been measured. Additional soil testing and classification would be undertaken before the area is remediated, with the soil being disposed of at an appropriately licensed facility.

Groundwater is currently extracted from the Botany Sands aquifer at the rate of approximately 5 ML/day. Extraction will remain at this rate with the upgraded Paper Mill. It should be noted that extraction of groundwater for the Botany Mill is undertaken up-gradient of the HCB groundwater plume from the Orica chemical plant. It is unknown whether groundwater beneath the Botany Mill is affected by the HCB plume, however, this would be determined in the EIS.

Current water management practices carried out at the AMCOR site will be continued with installation of the new facility. Observation of these principles, and improvements in water treatment at the site will mean that impacts from upgraded Paper Mill on hydrology, flooding and groundwater are not likely to be significant.

4.1.3 Water Quality and Wastewater Management

The discharge of process effluent and stormwater runoff from the AMCOR site to Botany Bay will have an ongoing impact with operation of the new facility. This impact is, however, is likely to reduce with the introduction of an improved water management system at the site.

Although water use at the site is expected to increase by approximately 10 Ml/year, improvements to plant efficiency will result in a reduction in water usage per tonne of paper produced (refer to **Table 3.1**).

Currently, wastewater from the AMCOR Botany Mill site is treated at a new DAF wastewater treatment plant and either re-used within the paper making process, or discharged to Sydney Water's SWSOOS sewer in accordance with Trade Wastewater agreement No. 726 between AMCOR and Sydney Water.

Following recent installation of the new DAF treatment plant, levels of suspended solids being discharged in wastewater under the Sydney Water Trade Wastewater Agreement have reduced. This improvement in wastewater quality has been particularly beneficial during times when Sydney Water declares that the SWSOOS to be unavailable and AMCOR is forced to discharge treated wastewater into Botany Bay. The reduction in suspended solids concentration will have a reduced impact on the aquatic environment.

All surface runoff from the site will be collected within one of two drain networks, as occurs with the existing situation. Washdown water and runoff water will be directed to the new DAF treatment plant for treatment, and either re-used within the process or discharged to sewer. Runoff from other areas of the site is collected within the stormwater system and discharged to Botany Bay.

Given the variety of sources contributing to water pollution within Botany Bay (outlined in **Sections 2.2.4** and **2.2.6**), it is difficult to determine the specific impacts from AMCOR's trade waste, stormwater discharge and trade wastewater on the Bay during times when the SWSOOS is unavailable.

4.1.4 Flora and Fauna

The absence of any significant flora and fauna on the AMCOR site indicates little conservation value. The proposed development will not have any significant impacts on flora and fauna at the Botany site.

Suspended solids and turbidity can impact on marine plants, including seagrasses. Solids loading within runoff or treated discharge water to Botany Bay have potentially influenced the losses in seagrass communities that have previously occurred along the northern border of the Bay. The reduction in suspended solids concentration within the wastewater and stormwater discharge during weather flows is considered to have a reduced impact on aquatic flora and fauna within the Botany Bay receiving environment.

4.1.5 Archaeology and Heritage

A search of the Aboriginal Sites Register, held by the National Parks and Wildlife Service, will be undertaken as part of environmental impact investigations for the works. Any known Aboriginal sites or relics within or adjacent to the site of the proposed works will be identified through this search. The likelihood of aboriginal relics on the site would be thoroughly investigated prior to the commencement of any earthworks that may be required on site. Should relics of particular indigenous archaeological heritage be found, negotiations with NPWS and the Local Aboriginal Land Council would be undertaken to determine appropriate methods for documenting and recording these to allow their removal.

As outlined in **Section 2.2.10**, the Old Finishing Mill building (APM Building c1902 at 19 McCauley St Matraville) is listed as a heritage item under the LEP. The heritage significance of the site was found to relate more to the industrial activity of paper making than to the architectural qualities of the remaining Old Finishing

Mill buildings themselves. However, this building would not be affected by the development. An associated gatehouse near the south western corner would be need to be demolished

As outlined in **Section 2.2.10**, the Graham Brooks and Associates heritage assessment (1997) made the following comments relating to the heritage significance of the Old Finishing Mill buildings at the Botany Mill site:

- The significance of the buildings, which can be identified as part of the earliest phase of mill, has been severely reduced by the removal of specialised papermaking equipment from within and the extensive modifications made to the buildings over their life.
- The original water tower, and the face brick façade of the adjacent building does not carry high significance and does not demand retention. It should, however, be subjected to archival recording prior to any demolition for redevelopment to maintain records of this example of early 20th Century mechanical engineering.
- The AMCOR Botany site has some significance for its association with members of the Royal Veteran's Corps.

The John Graham and Associates report (1992) recommended that in order to preserve any heritage significance remaining, the buildings contained between Power Road and Australia Avenue, McCauley Street and Mill Road should be professionally photographically recorded under the supervision of an industrial archaeologist. Negotiation with Randwick Council would be undertaken to ascertain the most appropriate methods for documenting and recording buildings to allow their removal and maintain an adequate record of their heritage significance.

4.1.6 Traffic and Transport

As outlined in **Section 2.2.3**, access to the site is currently through a signal controlled intersection on Botany Road. The upgraded Paper Mill may result in a marginal increase in the number of trucks servicing the site (refer to **Table 3.3**). A traffic access and management study will provide a detailed outline of likely impacts on the transport system and the best methods for mitigating these impacts. A preliminary discussion of transport movement forecasts is provided below.

4.1.7 Noise

The No. 7 and No. 8 paper making machines currently operating at the site are located adjacent to the northern boundary, near residences located in Partanna Avenue and Murrabin Avenue. The layout of No. 7 machine currently directs noise towards these residences. This has resulted in the installation of a number of noise attenuation items on this machine. Heavy vehicle noise associated with current operation of the plant also results in noise impacts at nearest residences.

As shown in **Figure 3.1**, the new facility will locate the main noise sources towards the south-western area of the site, within the vicinity of the Botany Road and McCauley Street intersection. Layout and exterior components of the facility will be sensitive to the proximity of surrounding residential dwellings. Transport routes for

wastepaper delivery and transport of product from the site will also be designed to consider potential noise impacts on the nearby residential community.

Consideration of minimising noise impacts at nearest sensitive receivers will be an integral component of the design of the new plant.

The existing EPA Licence conditions relating to operation of the mill specify that the L_{A90} noise level at the nearest residential boundary (or any other noise sensitive premises such as a school or hospital) shall not exceed 50 dBA during the hours of 9 pm-7 am. Any new equipment installed on the premises must not exceed an L_{Amax} of 40 dB(A) when measured or computed within 1 m of the nearest residential boundary (or any other noise sensitive premises) to the site.

Appropriate noise mitigation measures will be implemented at the new plant to attenuate operational noise to those specified within the new Licence. Options for mitigation measures typically involve:

- Façade treatment to the new machine building;
- Acoustic enclosures for external fixed plant and air intakes; and
- External noise barriers along critical sections of the plant boundary.

An extensive community consultation and awareness program has been established by AMCOR to target noise issues within the community. A number of noise pollution reduction programs have been embarked upon at the site, including establishment of noise exclusion zones, modifications to items of plant and equipment, and planned maintenance and upgrade programs. The community consultation program will extend throughout the design and construction phase of this work.

A noise impact investigation for operation of the upgraded Paper Mill will be undertaken as part of environmental investigations.

4.1.8 Air Quality

The upgraded Paper Mill will be required to incorporate a new steam raising boiler system and air emissions would most likely be equal to or better than current air emissions from the site. The new package plant boilers would utilise modern technology, operating at a higher efficiency than the current steam generator.

The increased efficiency of the new paper making plant would reduce steam consumption per tonne of paper produced. This improvement in operating efficiency is considered to generate positive benefits for air quality.

Odour emissions, currently resulting from steam venting of treated process water (outlined in **Section 2.2.12**), are likely to reduce following installation of the new facility.

At worst, air emissions from the new plant are likely to be equal to air emissions from the site under current operation, and upgraded Paper Mill is therefore not expected to have any adverse impacts on air quality.

An air quality assessment, investigating the benefits of upgraded Paper Mill, will be undertaken as part of further environmental investigations for the works.

4.1.9 Landscape and Visual

The existing visual character of the site is largely industrial, comprising brick, fibro fabric buildings, concrete storage tanks, pipework, exhaust stacks, scrubbers and ducting. The upgraded Paper Mill will be developed to minimise the visual impacts by designing the components to be consistent with the existing industrialised nature at the site and surrounds.

The upgraded Paper Mill will involve demolition and removal of a number of existing derelict infrastructure in the south western corner of the site. The new facility will somewhat consolidate processing and storage areas, removing a number of existing storage areas from the visual catchment of the site, replacing them with a building that is compatible with the existing plant architecture. This is considered to improve the plant's visual character when viewed from nearby residential areas.

4.1.10 Social and Economic

Social impacts of the upgraded Paper Mill will largely be restricted to community perceptions in regard to the noise impact of paper making operations and heavy vehicle traffic. Other community concerns are likely to be the effect of additional traffic on the local road network, and the removal of heritage items from the Botany Site.

The new facility represents the opportunity for improvements in environmental performance of the site. Emissions to water and air are likely to reduce as a result of upgraded Paper Mill. Noise emissions are also likely to reduce in line with the stricter noise control licensing conditions that are likely to be imposed on the new facility. Traffic noise impacts will also be managed to minimise adverse impacts at nearby residences.

The presence of paper manufacturing and paper recycling activities on the site is recognised as providing considerable public benefit. Not only will upgraded Paper Mill result in over $300 million in investment in NSW, it will produce up to 400 construction jobs in Sydney.

When integrated with the community consultation program the potential social impacts resulting from upgraded Paper Mill are expected to be positive.

4.1.11 Waste Management and Minimisation

The generation of solid waste at the new facility will have an ongoing impact. As outlined in **Section 3.2.8** improved efficiency of the cleaning process utilised within the new facility will reduce the quantity of solid waste sent to landfill by approximately 18%. This saving produces a flow on effect in reducing the number of truck movements associated with transport of waste from the site.

All other domestic wastes generated on site will be disposed of in accordance with EPA requirements.

The quantity of liquid effluent discharged from the site will increase as a result of the increased production capacity. The volume of liquid effluent released per tonne of paper produced will, however, reduce as a result of upgraded Paper Mill.

The upgraded Paper Mill is therefore considered to have significant beneficial impacts in terms of waste minimisation from AMCOR operations at the Botany Mill.

4.1.12 Site Contamination

As outlined in **Section 2.2.15**, some areas of soil contamination, the main area being restricted to the southern end of the western part of the site, have resulted from the years of industrial use at the AMCOR Paper Mill site. Preliminary borehole sampling conducted within the western part of the site by Woodward Clyde (June 1999) showed that the extent of contamination is not likely to present a significant risk of harm to human health or the environment. Reference should, however be made to the Woodward Clyde report prior to demolition and site preparation works, so that appropriate protective measures can be adopted during construction works.

4.1.13 Servicing

Construction of the new facility will require relocation of some infrastructure facilities supporting the paper making process. Operation of the new facility is not expected to result in any significant change to the current level of demand or service, and is therefore not considered to have a significant impact on services within the area.

4.2 Potential Construction Impact of Proposal

4.2.1 Noise

Noise during construction of the upgraded Paper Mill will result from transport of machinery and construction equipment and the operation of mobile plant on site. The typical construction activities, outlined in **Section 3.2.9**, could result in noise impacts at nearest residential receivers to the site.

In order to minimise adverse noise impacts during construction, "noisy" works would be limited to the hours of 7 am-6 pm Monday to Friday and 8am to 1pm on Saturday. Following erection of the new facility building, activities, which are not noisy, related to machine installation in the buildings would be undertaken around the clock.

It is likely that the north-eastern warehouse will be used as a store for construction equipment. Noise impacts from vehicles transporting these goods from the store to the site of the new paper machine may generate significant noise impacts at nearest residences along Partanna Avenue, Murrabin Avenue and Australia Avenue. In determining an appropriate route for construction access, consideration will be given to potential noise impacts.

A noise impact investigation for the construction phase of the works will be undertaken as part of environmental investigations for upgraded Paper Mill.

4.2.2 Air Quality

Dust represents the greatest potential air quality impact relating to construction of upgraded Paper Mill. Dust is likely to be generated during

- demolition of the existing buildings;

- stockpiling of demolition material;
- earth moving activities and site preparation works;
- transportation of the demolition and construction material to and from the site.

Exhaust emissions, including particulates, oxides of nitrogen, sulphur and carbon from the operation of construction plant and equipment would also affect air quality. Dust and vehicle emissions during construction would be controlled using effective management practices including:

- maintaining all equipment used on site in an efficient condition and operating equipment in a proper and efficient manner;
- Dust generating activities (ie. demolition and earthworks) would be avoided or minimised during dry and windy conditions;
- All disturbed areas would be kept sufficiently damp and stabilised as soon as practical to prevent or minimise wind blown dust;
- trucks transporting demolition material from the site would be covered after loading to prevent wind blown dust emissions and spillages.

A Dust Management Plan for the bulk earthworks and demolition works would be prepared and implemented for upgraded Paper Mill.

4.2.3 Soil and Water Quality

The main potential source of water pollution during construction works is erosion of exposed soil areas, causing sedimentation and turbidity. This is most likely to occur if loose, unconsolidated soil is exposed to the runoff of surface water.

Suspended matter and increased turbidity can significantly reduce light available to marine environments. This can impact on the food chain by altering plant and seagrass growth, and reducing the number of fish and other species. Impacts from pollutant loading within runoff water during construction of upgraded Paper Mill on the aquatic fauna within Botany Bay are not likely to be significant, provided appropriate controls are practised.

While the site for the new facility is being prepared, any runoff from disturbed land would be controlled using sedimentation basins, silt fences and the like, thereby minimising potentially adverse impacts on water quality. A soil and water management plan will be developed for the site to control runoff water during construction works. Typical mitigation measures for ameliorating any soil and associated water quality impacts during the construction phase of upgraded Paper Mill would include:

- Preparation and implementation of a Soil and Water Management Plan for the construction phase of the works to guard against soil erosion and sedimentation.

- Erosion and sedimentation control measures would be installed as a first step in land disturbance stages and remain in place until the erosion hazard of the works reverts to its pre-existing level;
- Silt fences would be installed on the downslope side of all disturbed areas to trap sediments from being transported into the adjacent coastal waters;
- All fuel and oil storage areas would be bunded to contain at least 120% of the maximum capacity of the largest storage tank/container.

The release of fuels, oils, lubricants and other chemicals used during construction works could also result in adverse impacts if allowed to enter the stormwater system. The construction activities would generate solid wastes including sediment control structure debris, packaging and domestic litter. If these are transported into the stormwater system, they can have adverse aesthetic effects and can harm aquatic fauna.

4.2.4 Waste Generation

During the removal of concrete slabs, buildings and infrastructure present within the western area of the site, a significant amount of solid waste will be generated.

Asbestos sheeting, present in most of the roofs of the old mill buildings, will be removed in accordance with relevant Australian standards and WorkCover guidelines. The AMCOR site Asbestos Register will be referred to during this process to ensure that all asbestos containing substances are identified and treated accordingly. Other contaminated material would be either stabilised on site or removed and transported off-site to a registered storage facility.

4.2.5 Traffic

The level of construction traffic expected with upgraded Paper Mill may have an impact on the local road network, however, given the relatively high percentage of heavy vehicle use on the surrounding roads this impact may be small. Access to the site is likely to be via the McCauley Street access. A detailed traffic study will be undertaken to investigate construction traffic impacts.

5. Identification of Integrated Approvals

It is possible that the development is "integrated" within the meaning of *Section 91 of the EP&A Act*. Integrated development provisions would apply if there are likely to be changes to the existing Environment Protection Licence (POEO Act – DEC) or use of bore water (Water Act – DIPNR).

6. Relevant Planning Controls

6.1 Overview

The following sections consider compliance of upgraded Paper Mill with relevant planning instruments and development control plans, namely:

- State Environmental Planning Policy No. 11 – Traffic Generating Developments (SEPP 11);
- State Environmental Planning Policy No. 33 – Hazardous And Offensive Development (SEPP 33)
- Randwick Local Environmental Plan 1998; and
- Randwick Development Control Plan (DCP) No. 2 – Parking Controls

6.2 State Environmental Planning Policy No. 11 – Traffic Generating Developments

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 SEPP11, and the DA will need to be referred to the Roads and Traffic Authority (RTA) for its consideration.

6.3 Randwick Local Environmental Plan 1998 (LEP)

6.3.1 Zoning

As outlined in **Section 2.2.2** the AMCOR Fibre packaging site at Botany site is zoned 4A (Industrial Zone) under the provisions of the Randwick Local Environmental Plan. The upgraded Paper Mill is permissible with consent under the 4A zone.

6.3.2 Objectives

Objectives of the 4A zoning relevant to the paper making facility include:

a) accommodating traditional and modern forms of industrial developments and encouraging economic and employment growth;

b) encouraging development of and accommodating innovation in types of industrial development;

c) enhance and improve the physical environment by minimising disturbances caused by air, water, noise and other pollutants.

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

- the new paper making facility involves erecting and operating a modern paper making machine on an established industrial site;
- the new facility will encourage economic growth by improving efficiency of the current process;

- upgraded Paper Mill will result in an improvement in the quality of trade wastewater discharged to Botany Bay, an improvement (or at least no change) in air emissions, and little change in noise emissions.

6.3.3 Floor Space Ratio

Clause 32(4) of the LEP specifies a maximum floor space ratio of 1:1 for buildings within zone 4A.

6.3.4 Heritage Provisions

As outlined in **Section 2.2.10**, the heritage significance of the site relates more to the historical industrial activity of paper making than to the architectural qualities of the remaining Old Finishing Mill building. A Heritage Impact Assessment will be prepared and submitted with the Development Application.

6.3.5 Development Control Plan No.2

The provision of parking and car spaces will be addressed as the project is further developed.

6.4 State Environmental Planning Policy No. 33 – Hazardous And Offensive Development (SEPP 33)

It should be noted that chlorine is no used on site and only relatively small quantities of other dangerous goods are stored on site. A preliminary hazard analysis will be undertaken following the guidelines of the Hazardous Industry Planning Advisory Paper No. 6 – Guidelines for Hazard Analysis. The Preliminary Hazard Analysis (PHA) would identify potentially hazardous components of the proposal and analyse these with respect to their potential consequences on the surrounding environment and community. The risks of the proposed operations would be quantified in the context of planning and the surrounding landuse.

7. Summary of Preliminary Mitigation Measures

The upgraded Paper Mill at AMCOR's Botany Mill site will produce considerable improvements in paper production at the site. Paper board making capacity is expected to increase from the current 250 000 tonnes per year to around 280 000 tonnes per year. The new paper making machine will result in significant savings in energy use per unit of paper production at the Botany Mill site, and will reduce quantities of solid waste sent to landfill. Replacement of the two existing machines with a single machine, utilising modern technology will result in significant increases in efficiency of the paper making process.

A summary of the key issues associated with the upgraded Paper Mill are outlined in Table 7.1 and Table 7.2.

Table 7.1: Construction Impacts & Mitigation Measures

Aspect	Impact	Mitigation Measures
Noise	Increase in noise levels at surrounding residences	▪ Limited working hours for noisy construction activities ▪ Consultation with surrounding residences
Traffic	Minor increase in traffic levels	▪ Major access will be from Botany Road through site, with some access from McCauley Street
Water Quality	Potential for erosion & sedimentation from exposed areas Potential chemical spillages etc	▪ Preparation and implementation of erosion and sedimentation control plan ▪ Spillage and chemical storage plan
Hydrology & Groundwater	None	▪ None
Air quality	Dust generation from disturbed surfaces	▪ Minimisation of disturbed ground ▪ Preparation and implementation of a Dust Management Plan for bulk earthworks and demolition works
Flora & Fauna	None	▪ None
Archaeology	Unknown but likely to be none	▪ Search of Aboriginal site database
Heritage	Minor with demolition of local government heritage listed building	▪ Documenting and recording of heritage structure prior to removal
Contaminated material	Moderate impact with asbestos buildings and some contaminated soil	▪ Preparation and implementation of a Remediation Action Plan ▪ Correct disposal of contaminated material
Social	Impacts from noise, traffic and dust	▪ Community consultation

Table 7.2: Operational Impacts & Mitigation Measures

Aspect	Impact	Mitigation Measures
Noise	Potential increase in noise levels at surrounding residences	☐ Acoustic enclosures and external barriers for certain items of fixed plant and air intakes ☐ Noise mitigation features incorporated in design.
Traffic	Minor increase in traffic levels	☐ Major access will be from Botany Road through site. Delivery of Starch and other chemicals to the new plant is likely to be from McCauley Street access.
Water Quality	Discharge of wastewater	☐ Wastewater Treatment Plant will reduce suspended solids concentration in discharge water
Hydrology & Groundwater	Use of groundwater	☐ Decrease in the amount of water used per unit of paper production
Air quality	Emissions from boiler	☐ Construction of more efficient steam generation facility on site ☐ Reduced odour
Flora & Fauna	None	☐ None
Archaeology	None	☐ None
Heritage	None	☐ None
Contaminated material	None	☐ None
Social	Impacts from noise & traffic	☐ Community consultation
Waste	Disposal of pulp waste	☐ Decrease in waste volume with new process
Energy	Process uses considerable energy	☐ Decrease in energy usage per unit of paper produced with new process
Visual	Large factory buildings	☐ Design visual character of buildings to complement existing landscape

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