

Environmental Assessment Report



August 2016

**Modification #7 – Increase in B9
Paper Mill Maximum Production
Limit**

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1		First Draft	J. Ball	J. Ball	
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ConsultInfra

**78 Burns Road
Wahroonga NSW 2076
P: 0419 297 436**

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1 Introduction

1.1 Background

Orora (formerly AMCOR Packaging) obtained project approval under Part 3A of the *Environmental Planning and Assessment Act 1979* in 2007 (Application No. 05_120) for the construction and operation of the B9 Paper Mill at its site in Matraville, Sydney. The B9 Paper Mill has been built and commenced full production in early 2013.

The original project approval for the B9 Paper Mill specified a maximum limit of production of no more than 383,763 tonnes of paper annually (Schedule 2 Condition 5(a)). Orora is seeking to increase the maximum production limit to 425,000 tonnes of paper annually, an increase of approximately 10%.

It is also appropriate to remove reference to the maximum production limit during the transition period (Schedule 2, Condition 5(b)) as the transition period as defined in the EA did not occur and now that the B9 Paper Mill is fully operational is not relevant.

1.2 Regulatory requirements

The key planning assessments which form the approved project are the original 2007 Environmental Assessment and Modification #2. While there have been other modifications to the project approval, these have not changed the operational performance or criteria of the B9 Paper Mill. Therefore the basis of the approved project would be the original 2007 EA and Modification #2.

The Department of Planning and Environment (DPE) is also currently considering a modification (#6) to the approved project to allow Orora to upgrade its Water Treatment Plant (WTP) and to use biogas generated during the water treatment process to power a gas generator.

An increase in the maximum production limit of B9 Paper Mill would require a modification to its existing Part 3A approval, specifically Minister's Condition of Approval (MCoA) Schedule 2 Condition 5(a). This MCoA states:

5. *The Proponent shall ensure that the project does not produce more than:*
- a) 383,763 tonnes per annum of paper

Based on an initial assessment of the approved project and impacts from the proposed maximum production limit, no other MCoA would require modification.

Other existing regulatory approvals which require consideration due to the proposed increase in maximum production limit include:

- Environment Protection Licence under POEO Act – based on an initial assessment no changes to the EPL would be required. Note that the EPL was recently updated in April 2016 and will be updated for the upgraded WTP if approved by DPE.
- Water Management Licence for groundwater extraction –the volumes of groundwater extracted are predicted to decrease or remain the same due to current works being undertaken on Orora's water supply infrastructure (Long Dam). Water use for the increased maximum production limit would still be below the extraction limits contained in the current Water Management Licenses.
- Trade waste discharges – while the volume of wastewater discharged in the sewer network would increase slightly, the wastewater volumes would continue to comply with the trade waste agreement limits. Modification #6 is currently being considered by DPE which includes an upgraded Water Treatment Plant (WTP) which would improve the quality of treated wastewater discharged into the sewer.

No other approvals would require modification.

This report provides a description of the impacts of the proposed increase in maximum production limits and consultation that would be undertaken for the modification environmental assessment report (Modification #7). Based upon this report Orora is seeking any additional Secretary's requirements that the Department of Planning request be addressed in the Modification #7 Environmental Assessment Report.

1.3 Consultation with regulatory agencies

Orora has already commenced consultation with relevant regulatory agencies. A summary of the agencies consulted and the outcomes of the consultation are presented in **Table 1**.

Table 1: Consultation with regulatory agencies

Agency	Issue raised during consultation
Department of Planning	Additional operational impacts
Sydney Water	Additional information on expected trade waste discharge quality and quantity
EPA (Meeting - 27/1/15)	Operational noise Operational air quality including SO _x , NO _x and odour Waste generation, management and disposal Chemical use and management

Randwick City Council would be consulted during the exhibition of the modification assessment report.

2 Justification for the increase in maximum production limit

The B9 Paper Mill is Orora's flagship paper making facility in Australia and its largest capital investment in the company's 140 year history.

The B9 Paper Mill which commenced production in early 2013 is one world's newest and best performing wastepaper mills. It produces a high quality paper product for use in the manufacture of cardboard and other packaging products. The B9 Paper Mill can produce a variety of different weights and widths of paper to meet all customers' requirements. It is one of the most efficient producers of paper requiring substantially less energy, raw product and water to produce a unit of paper when compared to other wastepaper mills.

The B9 Paper Mill primarily provides product for Orora's global packaging businesses as well as other customers in the regions. Because of the high quality product and the ability to meet customer requirements', the B9 Paper Mill is increasingly exporting more paper via Port Botany to North America. The amount of paper products being exported is more than was originally envisaged in the original EIS.

The B9 Paper Mill demonstrates Orora's commitment to supporting the Australian manufacturing industry as well as increased exporting of finished products to the rest of the world.

The justification for increasing the maximum production limit of the B9 Paper Mill includes:

- More efficient use of an existing resource and capital
- Improving the quality and quantity of paper products the B9 Paper Mill can produce and market
- Ensuring the economic sustainability of an Australian manufacturing industry
- Maintaining and increasing the local, State and Australian economic benefits from manufacturing
- Increasing non-resource exports from Australia.

3 Increase in maximum production limit

The original project approval for the B9 Paper Mill specified a maximum limit of production of no more than 383,763 tonnes of paper annually (Schedule 2 Condition 5(a)). Orora is seeking to increase the maximum production limit to 425,000 tonnes of paper annually, an increase of approximately 10%.

The proposed maximum production limit of 425,000 tonnes of paper annually has been selected to ensure sufficient approved capacity for predicted growth in paper demand over at least the next 5 years – and also to remain largely consistent with the existing impacts of the B9 Paper Mill.

The amount of paper currently produced by the B9 Paper Mill is determined by market demand. So even though the maximum production limit may be increased to 425,000 tonnes of paper annually, the new maximum production limit may not be reached in the short term if there is insufficient demand for paper the B9 Paper Mill produces.

The amount of paper produced every day varies depending on demand and the type of paper product being manufactured. Currently the B9 Paper Mill is operating close to its maximum capacity on some days, whereas on other days it is operating at well below its maximum capacity. There have been 46 days over the last year of operation where the daily output of the B9 Paper Mill has exceeded 1,400 tonnes per day – at this rate annualised over the year (365 days), the actual production would be greater than 510,000 tonnes. The average production rate is much lower and includes planned and unplanned downtime and days where the paper products are being manufactured at a much lower rate. The environmental impact assessments presented in the original EA and Modification #2 for issues such as noise and air quality have assumed the worst-case scenario, that is the B9 Paper Mill operating at full production (>1400 tonnes per day). The change in the maximum production limit would not result in any increased impact on a specific day, rather there would be more days in the year when the B9 Paper is operating at maximum daily output.

The proposed increase in the maximum production limit would not require any additional infrastructure to be built. The existing B9 paper machine and its auxiliary components such as water treatment plants, boiler house, waste paper yard, roads, utilities and other infrastructure do not require any augmentation to allow for the increased maximum production limit.

The B9 Paper Mill already has approval to operate 24 hours a day, 365 days a year, so there would be no change to its approved operating hours.

The only changes in environmental impacts from its current performance with the increased maximum production limit would be:

- Traffic movements associated with increased deliveries of waste paper, dispatch of finished paper products, deliveries of process chemicals and removal of paper making waste
- Increased use of process chemicals/fuel, water, power and gas for paper making
- Increased generation of waste and wastewater

The maximum amount of paper the B9 Paper Mill has produced in a year since becoming operational is 381,700 tonnes between July 2015 and June 2016. This period and volume of paper is used to define the current performance of the B9 Paper Mill. There is strong demand for the B9 Paper Mill products, and based on predicted demand and current improving performance of the paper machine, the demand for paper products would exceed the current maximum production limit in the next year.

To assess the impacts of the proposed increase in maximum production limit, each environmental aspect has been compared to the approved project operational criteria and to current actual performance. Many of the operational criteria assumed for the environmental assessments of the approved project were extremely conservative – and therefore in most cases the current actual performance and the environmental performance with the increased maximum limit would be lower.

4 Environmental impacts and assessment

4.1 Waste

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

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 Biosolids are trucked to a number of locations (Bringelly, Canyonleigh, Lithgow, and Narellan) each year for beneficial re-use in large agricultural, landscaping and land rejuvenation programs.

Also Orora is currently seeking approval from DPE for the construction and operation of an upgraded WTP. The upgraded WTP would include secondary treatment of process water before its discharge into the sewer network. The upgraded WTP would produce biosolids which would be beneficially reused for land application (subject to testing and approval). It is estimated that the upgraded WTP would generate an additional 3200 tonnes of biosolids every year.

General 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 using coarse cleaning and screening system. The majority of this material is transported to Newcastle for further processing and conversion into a biofuel which is then exported and used as a coal replacement in concrete kilns. Material which has no energy value, is segregated and disposed of at licensed landfill at Kemps Creek.

Presented in **Table 2** below are the volumes of solid waste in the 2007 Environmental Assessment, the current performance of B9 Paper Mill and the predicted volumes from the increased maximum production limit. The B9 Paper Mill is currently producing more biosolids and solid waste per unit of paper than was originally predicted. However 100% of the biosolids are reused and greater than 90% of solid waste is processed into coal replacement material.

With the proposed increase in maximum production limits the volumes of biosolids and General Solid Waste (non-putrescible) would increase proportionally.

The B9 Paper Mill is currently undergoing an upgrade program to further improve the fibre recovery from incoming waste paper. This upgrade program will primarily focus on the Solid Waste component and is expected to be operational from September 2016.

Table 2: Solid waste generation

Parameter	2007 Environmental Assessment (345,000 tonnes/yr)	Current performance (381,700 tonnes/yr)	Increased capacity (425,000 tonnes/yr)
Biosolids (tn/year)	10,800 (Reuse 100%)	20,403 (Reuse 100%)*	22,994(Reuse 100%)*
Solid waste (tn/year)	28,300 (Reuse 0%)	37,953 (Reuse >90%)	42,773 (Reuse >90%)

*Does not include additional 3200 tonnes per annum of biosolids from upgraded WTP

The only other key waste product generated by the B9 Paper Mill is waste oil used in lubricating the paper machine. Approximately 10,000L is generated every year – which is sent to a waste oil recycler. There is no expectation that the quantities of waste oil generated would increase with increased production limits. All waste oil will continue to be recycled where appropriate.

4.2 Wastewater

The B9 Paper Mill currently discharges an average of 5.5 ML of water a day into the sewer system managed by Sydney Water. With the proposed increase in maximum production limit this would increase on average by 5% to 5.8 ML per day. Orora has renegotiated its trade waste agreement with Sydney Water. As part of the updated agreement, there is a provision for additional capacity should it be required.

With the operation of the upgraded WTP, the quality of treated wastewater discharged into the sewer system would improve significantly with BOD and other pollutants at levels typically found in domestic sewage. The B9 Paper Mill is one of the highest volume trade waste dischargers into the SWSOOS sewer network and consequently it is expected that there would be benefits to Sydney Water in terms of reduced STP treatment costs and improved asset lives from the improvement in wastewater quality.

4.3 Water use

The majority of the fresh water used in the paper making process is groundwater from a borefield in Snape Park, approximately 2km north of the site. The extracted groundwater is discharged into an adjacent stormwater channel where it eventually flows to Long Dam, a small artificial lake about 200m west of the B9 Paper Mill. Depending on antecedent rainfall, the water in Long Dam is a combination of stormwater and groundwater. Orora extracts the water from Long Dam for use in the papermaking process. In 2007, Orora installed a new control system at the Snape Park borefield to limit groundwater extraction to periods of need (based upon the water level in Long Dam), rather than continuous pumping as was occurring previously.

Orora is currently upgrading Long Dam and its associated infrastructure. It is expected that the new sheet pile banks would substantially reduce the loss of water from Long Dam into the surrounding sandy geology. In turn this will reduce groundwater volumes extracted at Snape Park which is used to supply Long Dam.

In 2013, Orora renegotiated its groundwater extraction licences with the NSW Office of Water as part of the implementation of the Water Sharing Plan for the Botany Sands Aquifer and the associated introduction of the Water Management Act 2000 and licensing for the aquifer. Previously the volume of groundwater Orora was able to extract was uncapped. With the revised licences Orora's extraction is capped at 2,920 ML per year. In the last calendar year Orora extracted 2,902ML of water with the remainder of water from stormwater (or potable water see below).

The B9 Paper Mill also uses potable water from the reticulated water supply network managed by Sydney Water. This water is used for paper making processes which require a higher quality of water than that from Long Dam. Less than 5% of all water used through the process is from the reticulated water supply network.

Presented in Table 3 below are the water use volumes predicted for the approved project, the current performance of B9 Paper Mill and the predicted volumes from the increased maximum production limit

The Paper Mill has put significant effort into reducing Reticulated (City) water in favour of groundwater. There will continue to be a focus on water reuse and reduction programs into the future.

Table 3: Water use

Parameter	2007 Environmental Assessment (345,000 tonnes/yr)	Current performance (381,700 tonnes/yr)	Increased capacity (425,000 tonnes/yr)
Reticulated Water (kL/year)	224,300	90,370	90,000
Groundwater (kL/year)	1,845,800	2,746,106	< 2,665,000*
Total	2,070,100	2,995,000	3,010,000

* The expected reduction shown is expected to be delivered primarily from the Long Dam upgrade. The increase in water consumption related to mill output is factored into this value.

4.4 Energy use

The B9 Paper Mill burns gas from the reticulated gas network in the boiler house to produce steam for the paper making process. In the future, biogas generated from an upgraded WTP will also be combusted for energy generation. Biogas would be produced in the anaerobic reactor of an upgraded WTP and used by a 1.5MW gas engine to generate electricity. It is estimated that the biogas generator would supply about 5% of the B9 Paper Mill's requirements.

Electricity is used to power the paper machine and other auxiliary components.

Presented in Table 4 below are the gas and electricity use volumes predicted for the approved project, the current performance of B9 Paper Mill and the predicted volumes from the increased maximum production limit.

The total gas consumption is significantly better than predicted as a result the efficiency of the equipment. Orora would expect the specific consumption (GJ/NT) for gas to remain constant as output increases. Electricity consumption is greater than expected and this is a function of total mill performance and an underestimation of the total energy requirement in the original design. Orora expects that the specific energy consumption (MWhr/NT) will improve as output increases.

Table 4: Energy use

Resource	Unit	2007 Environmental Assessment (345,000 tonnes/yr)	Current performance (381,700 tonnes/yr)*	Increased capacity (425,000 tonnes/yr)*
Annual Consumption				
Electricity	MW.hr	163,900	191,788	210,375
Gas	GJ	2,310,000	1,729,160	1,997,500
Consumption per Net Tonne of Paper				
Resource	Unit			
Electricity	kW.hr	468	509	495
Gas	GJ	6.6	4.6	4.7

*Does not include any energy savings from the biogas power generation

4.5 Operational traffic

Modification #2 included changes to operational traffic management, volumes and impacts from that proposed in the original 2007 EA. The original 2007 EA proposed that all traffic would enter and exit the site from the Botany Road/Bumborah Point Rd access. Modification #2 changed the exit location for heavy and commercial vehicles to McCauley Street, through two new exit locations (See Table 5). Predicted average and peak traffic numbers were also reduced in Modification #2 due to improved operational estimates. The Modification #2 Traffic assessment is attached in Appendix A.

Now the B9 Paper Mill has been operational for over two years there is more detailed information on the actual number of vehicles entering and exiting the site. The current actual traffic numbers are compared to predicted traffic numbers from Modification #2 in **Table 6**. The current actual traffic numbers are lower and the distribution is different than those predicted in Modification #2 due to:

- Changes in the sources of wastepaper – Orora is sourcing wastepaper from large collection centres and suppliers, both in NSW and interstate, which has meant most of the waste paper is delivered by a lower number of larger trucks. Previously the wastepaper was delivered by a large range of smaller vehicles including many trucks 6 tonnes or less.
- A fundamental change in the supply of waste paper into the B9 Paper Mill has been driven by these increased interstate deliveries utilising B-Double trucks and the consolidations of loads at off-site waste paper depots. The final transport leg from the depot to the B9 Site is performed primarily by

semi-trailer which significantly reduces the traffic impacts to the road network directly adjacent to the Mill.

- Changes in the heavy vehicle fleet delivering finished paper product – The majority of the heavy vehicle fleet delivering the finished paper products from the B9 Paper Mill are B-Doubles which has reduced the number of heavy vehicle movements.
- Additionally, a significant amount of the site's production is exported to North America and South East Asia. This shift in customer based has meant that a large proportion of the finished product leaving the site is via shipping containers to the Port of Botany. The container delivery path is exiting the Botany Site southbound onto McCauley Street, to Botany Road and then into the Port of Botany via Bombora Point Road.

Table 5: Traffic - Site entry and exit locations

Vehicle type	Entry to site	Exit from site
Employee and visitor light vehicles	Botany Rd/ Bumborah Point Rd	Botany Rd/ Bumborah Point Rd
Heavy vehicles and commercial vehicles	Botany Rd/ Bumborah Point Rd	McCauley St (Raymond Avenue intersection)
Finished product heavy vehicles	Botany Rd/ Bumborah Point Rd	McCauley St (Finished product exit road)

Table 6: Average Daily traffic volumes

Parameter	Approved project (From Mod #2) (388,000 tonnes/yr)	Current performance (377,000 tonnes/yr)	Increased capacity (425,000 tonnes/yr)
Waste Paper Deliveries:			
B-Doubles	4	10	11
Semi-Trailers	31	31	35
Rigids (< 15 tonne loads)	147	58	65
Starch/Chemicals Deliveries:			
Semi-Trailers	2	3	3
Finished Product Despatch:			
B-Doubles & HPV's*	16	10	12
Semi-Trailers	31	30	34
Solid Waste Removal:			
Truck and Dog Trailer	6	6	7
General Waste:			
Rigids (Front load, hook bins etc.)	1	1	1
Total Heavy Vehicles	238	149	168
Other General Traffic:			
Light Vehicles (Cars, Utilities etc.)	150	150	150
Total	388	299	318

* Note HPV trucks are twin trailer vehicles but have >15% improved carrying capacity over B-Doubles. The impact is a reduction in the number of truck movements required to move the produced volumes.

While the number of heavy vehicles accessing the B9 Paper Mill is significantly below the predictions in Modification #2, the distribution of heavy vehicles across the day and throughout the week is also different than that predicted in Modification #2. The features of the current heavy vehicles access patterns include:

- Heavy vehicles numbers accessing the site during the weekend are substantially lower (about 60% lower) compared to numbers on weekdays. Any impacts from heavy vehicle movements on surrounding sensitive receivers would be lower during weekends compared to weekdays.
- The majority of heavy vehicle movements (about 70%) occur during the day time hours.
- A higher proportion of heavy vehicle movements occur at night time than originally predicted because:
 - There has been a significant increase in the amount of papers product exported – this increases the number of container loads to the Port Botany. Port Botany has incentives in place to receive containers after hours in an effort to improve the performance of the Port and traffic impacts to the surrounding road network. This is an advantage which the B9 Paper Mill can utilise because of its proximity to Port Botany.
 - Not all of the recycled paper require to operate the B9 Paper Mill can be sourced from NSW. As a result, there are a number of wastepaper deliveries which arrive from interstate in the evening and night. This scheduling is mandated by the travel time from both Queensland and Victoria and the pressure on the transport companies to maximise operational hours within the operating constraints of the drivers. The increases in deliveries of wastepaper during the evening and night time periods is the largest increase in heavy vehicle movements, compared to dispatches of finished product or other activities.

The traffic impacts of increasing the maximum production limit would be minimal with an additional 19 heavy vehicle movements a day compared to the current traffic movements. This would still be significantly below the heavy vehicle movements predicted in Modification #2 on which the impacts of B9 Paper Mill have been assessed and approved.

The traffic assessment for Modification #2 concluded that the adjacent intersections and roads affected by the B9 Paper Mill's traffic movements would not experience a loss in Level of Service – and consequently there would be negligible impact on surrounding roads from the B9 Paper Mill's operations. The assessment also considered the sale and development of excess land at the site – and concluded the traffic impacts from further development of the site was likely to be minor. It should be noted that the data is 6 years old and the current conditions will be heavily influenced by the operation of the Port of Botany and its recent expansion. Having said this, neither of the impact intersections (Botany Road/Bumborah Point Road and McCauley Street/Botany Road) have demonstrated any impacts from the increase in Port related traffic.

Transport companies are moving deliveries outside of the peak traffic times (6am to 4pm) in order to improve driver and truck scheduling and as a result there are an increased number of heavy vehicle movements in the evening and night. This shift coupled with the incentives offered by the Port of Botany to increase container deliveries outside peak periods has significantly reduced the impact of the B9 Paper Mill on the road networks in the peak periods.

There have been no reported traffic management issues associated with current heavy vehicle movements from the B9 Paper Mill and this would be expected to continue into the future.

The operational noise impacts of the heavy vehicle movements are discussed in the following section.

4.6 Operational noise

As noted previously, the B9 Paper Mill has approval to operate 365 days a year, 24 hours a day. Therefore there would be no change in the operating hours associated with the increased maximum production limit.

Also Orora are not seeking, at this stage, to modify its existing operational noise criteria.

The controlling period for noise compliance has been identified from previous monitoring and modelling and is the night time (i.e. 10pm to 6am). All operational night time noise modelling has assumed that the B9 Paper Mill is operating at full capacity - that is all noise generating sources of the B9 Paper Mill are operational.

The only differences between the night time, day time and evening noise generation scenarios and assessments are the number and location of heavy vehicles accessing, on-site and exiting the site. As noted in Section 4.5, the number of heavy vehicles accessing the site in the night time is higher than numbers predicted in Modification #2. However a resultant increase in noise impacts and complaints has not occurred as:

- Noise monitoring has shown the compliance with existing operational noise criteria
- Hourly heavy vehicle movements are still relatively low and movements are distributed across the night time hours- rather than a peak in a single hour
- There is significant noise mitigation provided by the B7 building, B8 building and new development of the McCauley Street precinct. The new development on McCauley Street especially provides mitigation for all heavy vehicles leaving the site. Previously compliance with noise criteria was marginal for sensitive receivers along Australia Avenue due to heavy vehicles exiting the site.

With the increased maximum production limit there would be increased vehicle movements at night – however the increase would be small (an extra of about 5 heavy vehicle movements). Sensitive receivers may experience more or longer periods of higher noise, however, the noise generated would still be below the operational noise criteria.

It is noted that the final operational noise mitigation measures for the B9 Paper Mill have yet to be determined and approved. Any final operational noise mitigation measures would be based upon the updated heavy vehicle movements for the higher maximum production limit. While the B7 building remains, operational noise criteria for an increased maximum production limit would be achieved without any additional works.

4.7 Operational air quality

The potential air quality impacts from the operation B9 Paper Mill include:

- Odours from the paper making process
- Pollutants generated from the burning of gas in the boiler house to produce steam

The B9 Paper Mill would not generate any additional odours with a higher maximum production limit. Since the operation of the B9 Paper Mill commenced in October 2013 the number of odour complaints have reduced significantly. There have been five odour complaints since October 2013. It should be recognised that the B9 Paper Mill does not have odour unit objectives or limits – rather the odour performance is managed through the requirement to comply with Section 129 of the POEO Act – which provides that Orora must not cause or permit the emission of any offensive odour. This requirement would continue with the proposed increased maximum production limit.

Under its Condition L2.2 of its EPL, the B9 Paper Mill has load limits on a number of key pollutants from the burning of gas in the boiler house to produce steam. The B9 Paper Mill currently only emits 25% of its allowable annual maximum NO_x limit and about 1% of its allowable annual maximum coarse and fine particulate limits (See Table 7). With the new biogas generator NO_x emissions would increase by about 75% from current levels, however would still be below the EPL load limit. This does not take into account the reduction in NO_x profile of

the site, as the less electricity would be used from alternative sources. The increase in particulates from the new biogas generator would be very low and likely to be about 1% of current EPL load limits.

With the proposed increase in the annual maximum production limits, the quantity of pollutants emitted would increase by about 10% - but would still be significantly below the EPL limits.

Table 7: Annual air pollutant limits and performance

Parameter	Approved project (From EPL)	Current performance*	Increased capacity
Nitrogen Oxides (kg/year)	126,000	30,959 (25%)	40,000 (<32%)
Fine Particulates (kg/year)	14,000	157 (1%)	175 (<2%)
Coarse Particulates (kg/year)	11,100	106 (1%)	120 (<2%)

* Number in brackets percentage of annual EPL load limit

4.8 Hazards

The type and quantity of chemicals/fuel stored at the B9 Paper Mill is presented in Table 8. The amount of chemicals stored on site would not change with the proposed increased maximum production limit. The number of vehicle delivering chemicals to the site would increase slightly to replenish used supplies. The increase in hazard to surrounding residential area would be negligible as:

- The increase in the number of chemical/fuel deliveries is small.
- There are no new chemical storage areas and the existing storage areas are distant from residential areas
- Chemical deliveries would enter the site via the Botany Road access which is distant from residential areas
- Most of the chemical and fuels used are not extremely hazardous.

No further assessment of hazard is planned for the proposed increased maximum production limit

Table 8: Type and quantity of chemicals

List of Dangerous Goods Storages above Placard Quantities					
Depot ID	UN Number	Proper Shipping Name + description	DG class	Packaging Group	Max Storage and Type
CAU 1	1824	Sodium Hydroxide Solution	8	II	10 kL bulk
TNK 1	1791	Hypochlorite solution	8	II	2.3 kL bulk
RO 1	1824	Sodium Hydroxide solution - 50%	8	II	400 l bulk
DIE 1		Diesel	C1		14.5 kL bulk
LPG 1	1075	LPG	2.1		2.2 kL bulk
DAF 1	1791	Hypochlorite solution	8	III	1 kL - IBC
RO 2 - (also TNK23)	2693	Bisulfites, aqueous solutions, NOS	8	III	2 kL - IBCs
TNK 2 - (also TNK21)	1824	Sodium Hydroxide - Solution – 50%	8	II	1 kL - IBC
TNK 3 (also TNK17)	2924	Flammable liquids, corrosive	3 sub 8	III	1 kL - IBC
RO 1a (near RO 1)	1789	Hydrochloric Acid	8	II	100 L drums
RO 1b	1824	Sodium Hydroxide solution -50%	8	II	100 L drums
GAS1	1001	Acetylene	2.1		1,000 l in total water volume - in cages
	1075	LPG	2.1		
	1006	Argon	2.2		
	1072	Oxygen	2.2 / 5.1		
Natural Gas	1075	Natural gas	2.1		Pipeline
MIL 1 & 2	1791	Hypochlorite solution	8	II	6 kL bulk
MIL 4	3265	Corrosive liquid acidic, organic N.O.S.	8	II	200 l bulk
MIL 3	1814	Potassium Hydroxide solution	8	II	2 kL - IBCs
MIL 5	1791	Hypochlorite solution	8	II	1 kL - IBC

4.9 Construction impacts

As no works would be required to increase the maximum production limit of the B9 Paper Mill, there would no construction impacts.

Appendix A

Modification #2 – Traffic impact assessment

New Paper Mill – Project B9 Modification No.2

TRAFFIC AND ACCESS ASSESSMENT

- Final
- April 2010



New Paper Mill – Project B9 Modification No.2

TRAFFIC AND ACCESS ASSESSMENT

- Final
- April 2010

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

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1. Introduction

1.1. Background

AMCOR Packaging (Australia) Pty Ltd's ("AMCOR") paper recycling facility at Botany currently receives and processes approximately 40% of the waste paper collected in NSW. Waste paper and cardboard is processed to make a brown paper suitable for the production of boxes and other containers. The finished product is used locally as well as exported interstate and overseas. All paper entering and leaving the site does so via road, with some transferred to rail or shipping outside the site.

1.2. Previous Approval

Project approval for AMCOR's New Paper Mill (the "B9 Project") was granted by the Minister for Planning on 20 July 2007 (Application No. 05_120). This approval covered the construction and operation of a new paper making facility, including the replacement of two existing paper machines at their Botany site. These works will result in an increase in production capacity from 250,000 to 345,000 tonnes per year.

1.3. Modification Submission

Since the approval of the B9 Project in 2007, detailed design of the New Paper Mill has progressed significantly. As a result, a number of modifications are required to ensure the New Paper Mill will operate safely, efficiently and with minimal environmental impact.

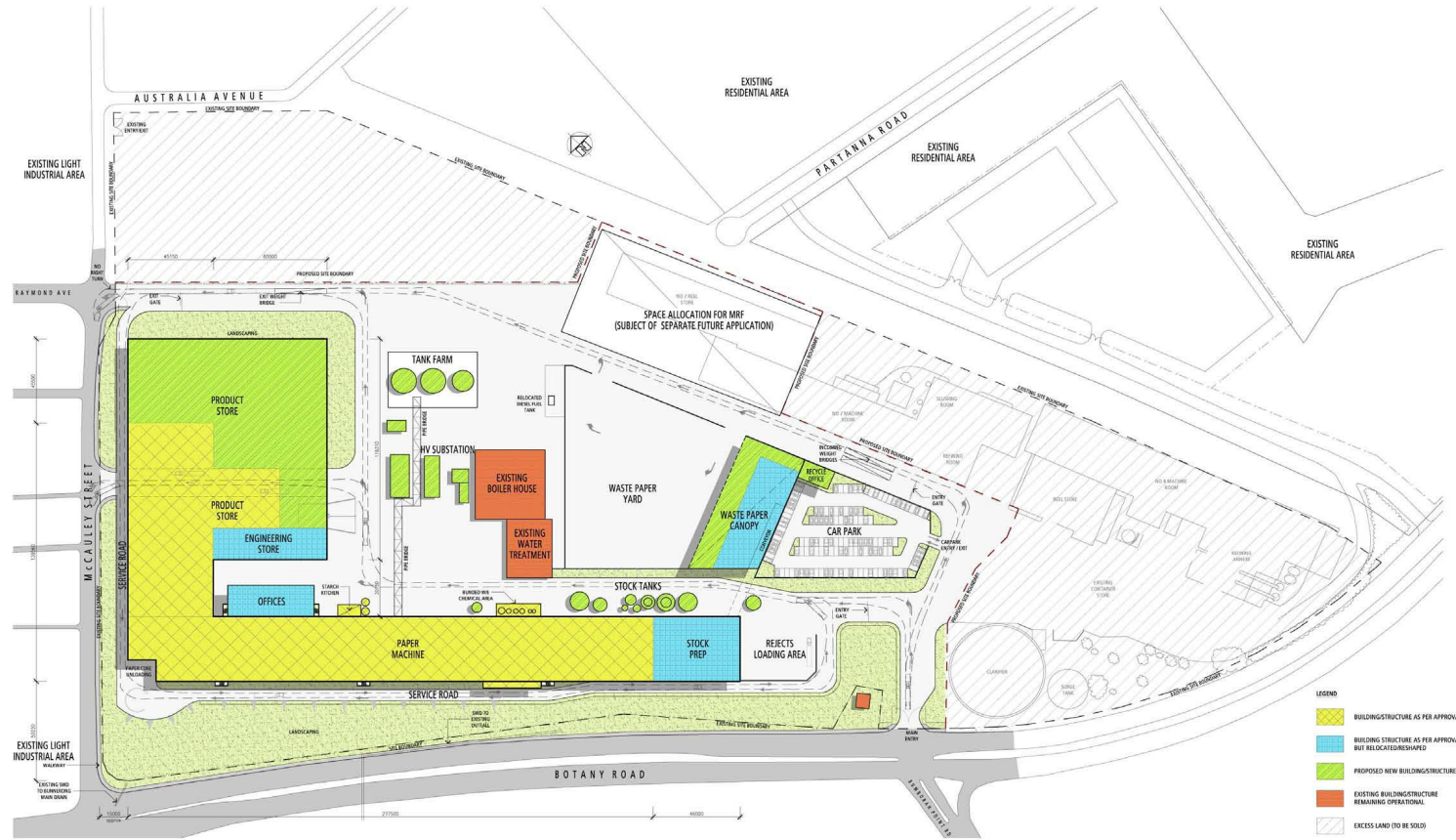
An initial Modification Report was lodged with the Department of Planning in May 2009. The proposed modifications to the Approved Project in May 2009 were similar to those described below including subdivision and limited use of McCauley Street for AMCOR vehicles. Submissions from Randwick City Council and the RTA on the proposed changes were received and many of the issues raised in the submissions related to traffic management and impacts of the modifications on external roads to the New Paper Mill. The major issue raised in the submissions was that RTA was not prepared to support the proposed changes to the phasing of the traffic lights at the Botany Road/Bumborah Point intersection to facilitate vehicles exiting the AMCOR site at Botany Road. Without this change in phasing of the traffic lights, the level of service at the intersection would be unacceptable to RTA, AMCOR and other road users. This as well as other issues required AMCOR to reconsider its proposed traffic arrangements for the site. This report contains information on the proposed revised traffic arrangements and assesses their impact.

The modifications to the approved project (relevant to traffic) being sought are:

- Relocation of the existing Engineering Store vehicle access further south along McCauley Street to opposite Raymond Avenue;
- An additional vehicle exit only access on McCauley Street for Finished Product vehicles (including B-Doubles);
- Use of the accesses on McCauley Street for the exit of heavy vehicles from AMCOR's operations (including B-Doubles);
- The upgrade of McCauley Street from Botany Road to Raymond Avenue to make it suitable for B-Double use as well as use by other heavy vehicles;
- Changes in the site layout as a result of further development of the design;
- An increase in the size of the Finished Product store; and
- Subdivision of Lot 1 DP772737 to allow the sale of excess land, to fund the development of the New Paper Mill.

The overall concept design for the changes in site layout and traffic movements is shown in **Figure 1-1**, while a proposed potential concept plan showing how the subdivided land is likely to be developed is shown in **Figure 1-2**.

■ **Figure 1-1 Proposed Modification**



AMCOR MODIFICATION TO APPROVED DA LAYOUT
 CNR BOTANY ROAD & McCaULEY STREET, MATRAVILLE NSW

PROJ NO: 09117 TP01d

DATE: OCT 09
 DRAWN BY: GF
 SCALE @ A1: 1:1000
 SCALE @ A3: 1:2000



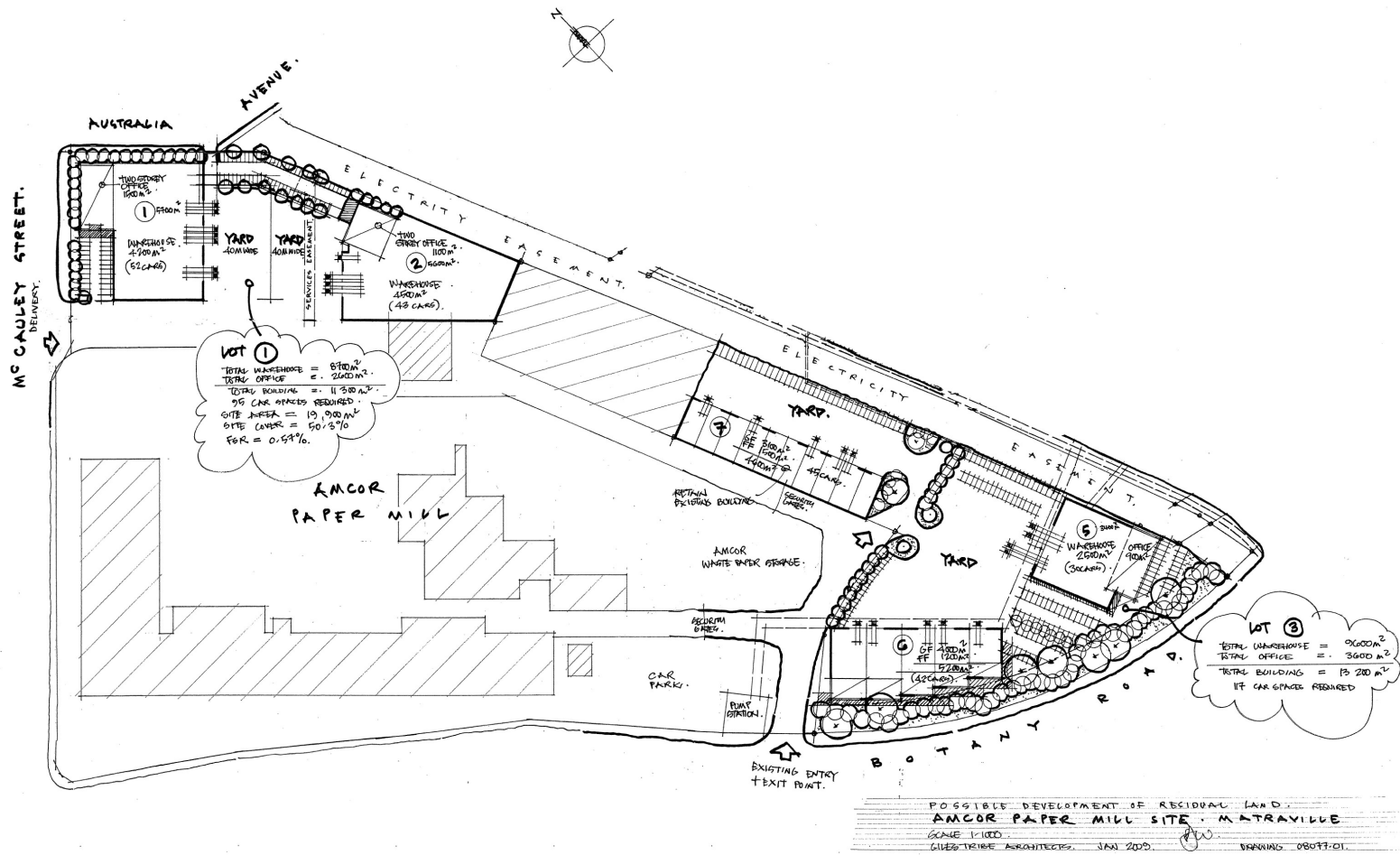
NOTE: DIMENSIONS APPROXIMATE ONLY, INCLUDING 10,000m² PRODUCT STORE LAYOUT

NO.	DATE	REVISION	BY	CHK
1	30-08-09	ISSUE TO CLIENT	GF	AV
A	06-11-09	REVISION AS PER CLIENT	GF	AV
B	09-11-09	REVISION AS PER CLIENT	GF	AV
C	11-11-09	REVISION AS PER CLIENT	GF	AV
D	23-11-09	REVISION AS PER CLIENT	GF	AV

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 8 gordon street, sydney victoria 3181 australia phone 611 398 700
 f 61 3 9516 8655 e 61 3 9516 8500 www.watsonyoung.com.au

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■ Figure 1-2 Concept Plan for Subdivided Land



SINCLAIR KNIGHT MERZ

1.4. Director General's requirements

In response to the requested modification to the approved application, the Director General outlined Conditions of Approval for the proposed modification. Those conditions relevant to this traffic and access assessment are outlined below:

- A detailed description of transport issues, including:
 - A description of the existing environment, using sufficient baseline data;
 - An assessment of the potential impacts of the modification, including any cumulative impacts, taking into consideration any relevant guidelines, policies, plans and statutory provisions;
 - A description of the measures that would be implemented to avoid, minimise, mitigate and/or offset the impacts of the modification; and
- Key Issues: Transport – including details of new and revised site access to service the existing project and new subdivision, internal roads and parking; details of traffic types and volumes to be generated; predicted impacts on road safety and capacity of the road network.

In addition, the RTA and Randwick City Council required additional information, as summarised below:

- The amount of traffic to be generated by the development;
- Details of parking and access (for both AMCOR and the subdivided lots), and compliance with relevant codes and standards;
- Details of service vehicle movements;
- Intersection analysis;
- Identification of any road network infrastructure requirements required to maintain existing levels of service; and
- Swept path analysis of the longest vehicle exiting and entering AMCOR and the subdivided lots.

This Traffic and Transport Assessment addresses the Director General's requirements, and addresses the concerns raised by the RTA and Randwick City Council from the exhibition of the original modification report.

2. Existing Situation

The AMCOR paper mill site (the site) is conveniently located adjacent 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., The site is bounded to the south and east by Botany Road and the electricity easement, to the north by Australian Avenue and to the west by McCauley Street.

Offices and warehouses are located opposite the site on the north-west side of McCauley Street between Botany Road and Raymond Avenue. Port Botany is opposite the site on the southern side, with two direct accesses onto Botany Road (Gate B1 & Gate B2). North of the site are predominantly residential properties and a small recreational park (Purcell Park). A location map is presented in **Figure 2-1**.

2.1. Surrounding Road Network Conditions

The main traffic access to the AMCOR site is via a signal controlled intersection on Botany Road at Bumborah Point Road.

Botany Road is a major arterial road serving the Port Botany area and industrial land uses. It connects to Foreshore Road and thence to General Holmes Drive, Southern Cross Drive and the M5 Motorway, an important link in the local, regional and state road network. These roads are RTA approved B-double routes. In the vicinity of the site, Botany Road is a six-lane two-way road with slip lanes and right-turn bays provided at major intersections. A median island is also provided, dividing Botany Road into two carriageways.

McCauley Street, which adjoins the western boundary of the site, is a local road, providing access to commercial and residential areas. McCauley Street carries a low amount of traffic, although a report by Masson and Wilson (1997) indicated that there was a through traffic movement from the north to the south with drivers wishing to access Botany Road. The intersection of McCauley Street and Botany Road is controlled by traffic signals. There are two site access points on McCauley Street; the northernmost being the car park access and the southernmost connecting to the internal access road on site. This access is currently not in use.

Beauchamp Road is a local collector road and carries a significant proportion of heavy vehicle traffic. However, Randwick City Council has indicated that they are attempting to discourage further heavy vehicle use of Beauchamp Road. Bunnerong Road intersects with Botany Road and provides main road access to the site from the eastern suburbs.

A summary of existing traffic volumes along the surrounding road network is provided in **Table 2-1**.

■ Figure 2-1 Site



■ **Table 2-1 Existing Daily Traffic Volumes**

Road	Location	AADT	Source (Year)
Botany Road	West of Beauchamp Rd	35,826	RTA (2002)
	East of Beauchamp Rd	20,331	RTA (2002)
	South of Mill Pond Rd	27,237	RTA (2002)
Bunnerong Road	North Beauchamp	19,582	RTA (2002)
Beauchamp Road	North of Botany Rd	17,164	RTA (2002)
	West of Bunnerong Rd	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)
McCauley Street	-	1,700	Randwick Council (1997)

Intersection counts were undertaken at the McCauley Street / Botany Road intersection in May 2007 as part of the *Project B9 Construction Traffic Management Plan* (SKM 2007). The surveys revealed that approximately 150 vehicles utilise McCauley Street during both the AM and PM peak periods.

2.2. Public Transport

A designated bus zone is provided on the northern side of Botany Road between the site’s main access and McCauley Street. The bus zone location is shown on **Figure 2-1**, while the bus stop is shown in **Figure 2-2**. Buses are operated by the State Transit Authority. Bus routes L09 and 309 travel on Botany Road in an eastbound direction. Botany Road is one of the major bus routes to the bus depot in Bumborah Point Road.

Currently, only bus route 309 provides a full day service on this route. The bus service L09 (an express service) only operates during the PM peak on weekdays and does not operate on weekends. The bus frequency during the AM and PM peak period is approximately 15 minutes, with a 1 hour frequency during off-peak periods¹.

No patrons were observed at the bus stop during visits to site. Currently, no footpath or bus shelter is provided at the bus stop.

No passenger train service is provided near the site.

¹ The AM peak period of the bus service is 5:00 – 6:00am and the PM peak period is 3:00 – 6:00pm. Source: Sydney Buses Timetable - Port Botany / Eastgardens to City.

- **Figure 2-2: Bus Stop on Botany Road (Eastbound)**



2.3. Parking

2.3.1. On-street Parking

Site observations indicate that there is a demand for on-street parking in McCauley Street due to local residential and commercial activities. Unregulated parking occurs on vacant land adjoining the site. Site observations also indicate that the highest demand for on street parking spaces in McCauley Street is close to Botany Road. This demand gradually decreases towards the north into the residential area. **Figure 2-3** shows on street parking on the southern end of McCauley Street.

Parking is prohibited along Botany Road near the site due to the operation of “No Stopping” restrictions.

On-street parking spaces are also available in Australia Avenue and other local streets such as Moorina Avenue and Partanna Avenue. They are typical local residential streets with average to low demand for on street parking.

- **Figure 2-3: On-street parking on McCauley Street, looking south towards Botany Road.**



2.3.2. Off-street Parking

The AMCOR paper mill site has one internal car park providing approximately 100 parking spaces on site. The car park is located next to the existing office building, and is accessed from the main access on Botany Road.

2.4. Cyclist

There is no designated cycle route near the site and no cyclists were observed during site observations.

2.5. Pedestrians

Site observations indicate that pedestrian movements surrounding the site are low. There is no footpath provided on either side of Botany Road in the vicinity of the site. All three surveyed signalised intersections along Botany Road had no designated signal phasing for pedestrians. No waiting patrons were observed at the bus stop during site visits. Based on these observations, it is anticipated that pedestrian movement on Botany Road is low.

McCauley Street has relatively higher pedestrian movements due to the adjoining commercial and residential activities. A footpath is provided on the north-western side of McCauley Street to provide access for pedestrians. There is no footpath on the south-eastern side of McCauley Street.

It is proposed, as part of the approval for the New Paper Mill, that footpaths would be constructed along the south eastern side of McCauley Street and along the Botany Road frontage of the site.

3. Proposed Access Arrangements

The proposed access arrangements are summarised in the table below.

■ **Table 3-1: Proposed access arrangements**

Location/Activity	Vehicle Type	Enter Site	Exit Site
Botany Road Precinct	All vehicles	Botany Rd/ Bumborah Point Rd	Botany Rd/ Bumborah Point Rd
New Paper Mill & Materials Recycling Facility	Employee and visitor light vehicles	Botany Rd/ Bumborah Point Rd	Botany Rd/ Bumborah Point Rd
New Paper Mill & Materials Recycling Facility	Heavy vehicles and commercial vehicles	Botany Rd/ Bumborah Point Rd	McCauley St
McCauley Street Precinct	All vehicles	McCauley St	McCauley St

Apart from vehicles accessing the McCauley Street Precinct all other vehicles would enter the site through the Botany Road/Bumborah Point Road intersection. While there would be one left turn lane into the site from Botany Road a section of 4-lane internal road (2 in and 2 out) would be constructed between the existing Botany Road intersection and the proposed subdivision site access. Access to the AMCOR site will be via the left lane of this new road, while access to the Botany Road Precinct will be via the right lane. The existing incoming weighbridge will be removed and replaced by two new weighbridges located inside the AMCOR site, at a position approximately 170m from the intersection of Bumborah Point Road and Botany Road. All light and heavy vehicles from the Botany Road Precinct and all AMCOR’s employee and visitor light vehicles would exit the site via the Botany Road/Bumborah Point Road intersection. All heavy and commercial vehicles would exit the site via the proposed McCauley Street accesses.

Access to the McCauley Street Precinct would be via a new access on McCauley Street directly opposite Raymond Avenue, forming a four legged intersection. Apart from Finished Product vehicles, all of AMCOR’s heavy and commercial vehicles would also use this intersection to exit the site, with all vehicles required to exit the site to the south. Finished Product vehicles would use another proposed exit further south along McCauley Street. The proposed shared access arrangements are shown in **Figure 1-1**. Emergency vehicles would access the site through both the Botany Road and McCauley Street accesses. Both accesses would be designed in accordance with Austroads requirements for B-Doubles to ensure that larger vehicles can safely access the site should the need arise.

McCauley Street, south of Raymond Avenue will comprise two 3.5 metre lanes in order to safely accommodate the turning movements of B-Doubles, as discussed in detail in **Section 7.1**.

4. Trip Generation and Distribution

Trip generation and distributions were determined for the following:

- The Existing Paper Mill;
- The New Paper Mill;
- The Materials Recycling Facility (“MRF”), which will be the subject of a separate Part 3A Environmental Assessment; and
- The new development precincts (based upon a likely land use).

4.1. Existing Paper Mill

Surveys were undertaken in May 2007 as part of the *Project B9 Construction Traffic Management Plan* (SKM 2007) at the intersection of Botany Road / Bumborah Point Road and the main AMCOR access and the intersection of Botany Road / McCauley Street. This survey information was used to identify the times in the AM and PM periods when peak traffic movements occurred. At the Botany Road / Bumborah Point Road intersection, the AM peak period was between 8 and 9AM, while at the Botany Road / McCauley Street intersection the AM peak period was earlier, between 7 and 8AM. The PM peak period at both intersections was between 3 and 4pm.

A total of 58 vehicles were observed accessing the site from the Botany Road entrance during the AM peak, with a total of 42 observed during the PM peak (See **Table 4-1**). A total of 154 and 150 vehicles were observed accessing McCauley Street from Botany Road during the AM and PM peaks respectively.

The 2007 traffic counts were used to forecast future (2018) traffic volumes at the McCauley Street/ Botany Road intersection (See **Table 4-2**). At the request of the Roads and Traffic Authority and Council, a growth rate of 3.5% was used, being the growth rate generally adopted for the Port Botany precinct. This rate is similar to the 4% growth rate derived by comparing the 2007 counts and counts collected at the same intersections in 2005 for the *Project B9 EIS* (SKM, 2005). It should be noted that when the new Paper Mill (Project B9) is operational the existing Paper Mill will be decommissioned. The number of vehicles accessing the site once the B9 Project is operational is based on the maximum capacity of the New Paper Mill and therefore a zero growth rate factor has been applied as no additional traffic will be generated in the future.



■ **Table 4-1 2007 traffic volumes**

Location	Direction	2007 Survey	
		Hourly AM Peak	Hourly PM Peak
Botany Road Entrance	In	34	6
	Out	24	36
	Total	58	42
McCauley Street	In	85	53
	Out	69	97
	Total	154	150

■ **Table 4-2 Predicted 2018 traffic volumes**

Location	Direction	Predicted 2018	
		Hourly AM Peak	Hourly PM Peak
McCauley Street	In	118	73
	Out	96	134
	Total	213	208

4.2. Project B9 / Materials Recycling Facility

4.2.1. General Traffic Movements

Presented in the following tables is general information on the average total number of AMCOR vehicles predicted to be accessing the site (See **Table 4-3**) and predicted peak traffic movements (number and time period) for specific types of vehicles associated with Project B9 and the MRF (See **Table 4-4 and 4-5**).

■ **Table 4-3: Total average weekday vehicles¹**

Type of Vehicle	AAWDT ²		
	B9	MRF	B9 + MRF
Waste Paper Deliveries:			
B-Doubles	4		4
Semi Trailers	31		31
Rigids (Compactors, Tippers, Tray Trucks - 2 to 15 tonne load).	147	85	232
Starch / Chemicals Deliveries:			
Semi Trailers	2		2
Finished Product Despatch:			
B-Doubles	16		16
Semi Trailers	31		31
Solid Waste Removal:			
Truck and Dog Trailer	6		6
Recyclables:			
Semi Trailers		8	8
General Waste:			
Rigids (Front loading hook bins etc.)	1		1
General Traffic (Staff, Contractors, Visitors, Couriers, Deliveries).			
Light Vehicles (Cars, Vans, Utilities etc)	150	25	175
Total	388	118	506

¹ The numbers in this table represent the number of vehicles accessing the site. Each vehicle generates 1 in movement and 1 out movement.

² Annual Average Week Day Traffic - i.e. the number of vehicles that access the site during an average week day.

■ **Table 4-4 Project B9 vehicles – Peak Hourly traffic**

Predicted B9 traffic movements (i.e. in and out)	Peak Traffic (Hourly)	Peak Traffic Hours
Compactors, Self tippers, etc.	34	Between 7am and 10am
Semi trailers	16	Between 6am and 8am Between 2 pm and 3 pm
B-Doubles	8	Between 2 pm and 3 pm
General traffic (cars, utes etc)	40 40	Between 6.30am and 7.30am Between 3pm and 4 pm
Other semi trailers (starch and chemicals)	6	These deliveries will be planned to occur outside of peak periods

Table 4-5 Material Recycling Facility vehicles - Peak Hourly traffic

Material Recycling Facility traffic movements (i.e. in and out)	Peak Traffic (Hourly)	Timing of peak
Compactor trucks, tippers and semi-trailers	36	Between 8:30am -9:30am
	36	Between 11:00am -12:00pm
	36	Between 1:30pm- 2:30pm
General traffic (staff cars)	20	Between 1.30pm and 2.30pm

4.2.2. Traffic movements during peak periods

As discussed in Section 4.1, at the Botany Road / Bumborah Point Road intersection the AM peak period was between 8 and 9AM, while at the Botany Road / McCauley Street intersection the AM peak period was earlier, between 7 and 8AM. The PM peak period at both intersections was between 3 and 4pm. AMCOR vehicles using McCauley Street and the Botany Road access during these peak periods was estimated. The anticipated traffic, as advised by AMCOR, from Project B9 is shown in **Table 4-6**, for the MRF in **Table 4-7** and for employee traffic in **Table 4-8**.

- **Table 4-6 Split of peak hour Project B9 traffic**

Access	Peak	In	Out
Botany Road	AM	62	0
	PM	32	0
McCauley Street	AM	0	62
	PM	0	32

- **Table 4-7: Split of peak hour MRF traffic**

Access	Peak	In	Out
Botany Road	AM	18	0
	PM	3	0
McCauley Street	AM	0	18
	PM	0	3

- **Table 4-8: Split of peak hour Employee traffic**

Access	Peak	In	Out
Botany Road	AM	6	6
	PM	6	41
McCauley Street	AM	0	0
	PM	0	0

The total number of AMCOR vehicles utilising the Botany Road access and accessing Botany Road via McCauley Street in the AM and PM peaks is shown in **Table 4-9**. Approximately 92 and 82 vehicles are estimated to access the site via the Botany Road access during the AM and PM peaks respectively.

■ **Table 4-9: Total vehicles in 2018 associated with Project B9 and MRF**

Location	Direction	AM	PM
Botany Road Entrance	In	86	41
	Out	6	41
	Total	92	82
McCauley Street	In	0	0
	Out	80	35
	Total	80	35

The total number of vehicles utilising both McCauley Street and the Botany Road entrance in 2018 (including background and MRF) are shown in **Table 4-10**. In total, approximately 92 vehicles are expected to utilise the Botany Road entrance in the AM peak, while 293 vehicles would utilise McCauley Street. In the PM peak, approximately 82 vehicles would utilise the Botany Road entrance, with 243 utilising McCauley Street.

■ **Table 4-10: Total vehicles in 2018, including background and Project B9 and MRF traffic**

Location	Direction	AM	PM
Botany Road Entrance	In	86	41
	Out	6	41
	Total	92	82
McCauley Street	In	118	73
	Out	176	169
	Total	293	243

4.3. Subdivided Lots

The gross area of the proposed subdivision sites is approximately 50,000 m². As indicated by **Figure 1-2**, it is likely that gross 6,200 m² will be developed as office buildings and gross 18,800 m² will be developed as warehouse space. Indicative land uses are shown in **Table 4-11** for each area of subdivided land.

■ **Table 4-11: Subdivided Land Distribution**

Land Parcel	Area (m ²)	Site coverage	Warehouse area (m ²)	Office area (m ²)
McCauley Street Precinct	23,600	50%	9,200	2,600
Botany Road Precinct	26,400	50%	9,600	3,600
Total	50,000	-	18,800	6,200

Based upon typical employment rates for the likely land use in the new precincts, employment generation will be approximately 1 person per 15 m² of the office area and 1 person per 100 m² of warehouse space. Based on trip rates identified in the RTA Guide to Traffic Generating Developments (0.318 AM peak vehicle trips and 0.365 PM peak vehicle trips per employee for Employment land uses (Table 3.4, Guide to Traffic Generating Developments v2.2, NSW RTA, 2002), the number of trips the subdivided sites would be expected to generate were estimated. These estimates include both employee vehicles movements as well as heavy and commercial vehicle movements associated with the subdivision. The resulting employee distribution and AM and PM trip numbers are shown in **Table 4-12**. In total, the subdivisions are expected to generate approximately 601 additional employees, resulting in an additional 191 trips in the AM peak and 219 trips in the PM peak.

■ **Table 4-12 Subdivision Trip Generation**

Land Parcel	Jobs			AM Peak Vehicle Trips	PM Peak Vehicle Trips
	Office	Warehouse	Total		
McCauley Street Precinct	173	92	265	84	97
Botany Road Precinct	240	96	336	107	123
Total	413	188	601	191	219

Traffic from the McCauley Street Precinct was assumed to access the site via McCauley Street, while traffic from the Botany Road Precinct was assumed to access the site via the Botany Road/ Bumborah Point Road intersection. It was assumed that directional splits would not differ from those of the existing AMCOR facility. As such, existing directional splits at the intersection were utilised to determine future movement volumes. The splits used are shown in Appendix B. The additional traffic resulting from the subdivision is shown in **Table 4-13**.

- **Table 4-13 Additional traffic volumes in 2018 associated with the subdivision**

Location	Direction	AM	PM
Botany Road Entrance	In	67	20
	Out	40	102
	Total	107	122
McCauley Street	In	53	16
	Out	32	80
	Total	84	96

The total number of vehicles utilising both McCauley Street and the Botany Road entrance (including background, B9, MRF and subdivision traffic) are shown in **Table 4-14**. In total, approximately 199 vehicles are expected to utilise the Botany Road entrance in the AM peak, while 378 vehicles would utilise McCauley Street. In the PM peak, approximately 204 vehicles would utilise the Botany Road entrance, with 339 utilising McCauley Street.

- **Table 4-14 Total traffic volumes in 2018, including background, Project B9, MRF and subdivision traffic**

Location	Direction	AM	PM
Botany Road Entrance	In	153	61
	Out	46	143
	Total	199	204
McCauley Street	In	171	89
	Out	207	250
	Total	378	339

4.4. Scenario Comparison

As can be seen in **Table 4-15**, in the 2018 scenario with the additional vehicles associated with the subdivision, substantially more vehicles will be accessing the site, with the majority of additional vehicles utilising the Botany Road access.



■ **Table 4-15 Scenario Comparison – Traffic Generation**

		2018 base		2018 with B9 & MRF		2018 with B9 & MRF & subdivision	
		AM	PM	AM	PM	AM	PM
Botany Road Entrance	In	34	6	86	41	153	61
	Out	24	36	6	41	46	143
	Total	58	42	92	82	199	204
McCauley Street	In	118	73	118	73	171	89
	Out	96	134	176	169	207	250
	Total	213	208	293	243	378	339

4.5. Trip Allocation

Turning movements for these trips at the two analysed intersections were allocated according to current patterns, as it was assumed that these patterns would not change substantially.

5. Traffic Impacts

The cumulative impacts of existing traffic, Project B9 traffic, MRF traffic and the proposed subdivision traffic were assessed, focusing on the impacts of the additional traffic on the nearby intersections of Botany Road / Bumborah Point Road and Botany Road / McCauley Street.

Vehicle turning movement counts were undertaken at both these intersections in 2007 as part of the Project B9 Construction Traffic Management Plan. These counts have been taken as the base case scenario. The anticipated traffic growth rates were estimated by comparing the survey results from July 2005 and May 2007, collected as part of project B9 EIS and project B9 CTMP respectively. A traffic growth rate of 3.5% per annum has been estimated in Botany Road west of Bumborah Point Road. This growth rate has been used to project traffic volumes at the intersections in 2018.

5.1. Intersection Analysis

The intersections were analysed using the Sidra Intersection modelling software. It calculates the amount of delay experienced by vehicles using an intersection, and gives a Level of Service (LoS) rating which indicates the relative performance of that intersection with regard to the average delay (in seconds per vehicle) experienced by vehicles at the intersection. At signalised intersections, overall intersection delay and Level of Service is taken as the average delay reported for all movements. The Sidra Intersection analysis of the operating conditions can be compared to the performance criteria set out in **Table 5-1**.

■ **Table 5-1: Level of Service Criteria**

Level of Service	Average Delay per Vehicle (sec/veh)	Traffic Signals and Roundabouts	Give Way and Stop Signs
A	Less than 15	Good Operation	Good operation
B	15 to 28	Good with acceptable delays and spare capacity	Acceptable delays and spare capacity
C	29 to 42	Satisfactory	Satisfactory, but accident study required
D	43 to 56	Operating near capacity	Near capacity and accident study required
E	57 to 70	At capacity; at signals incidents will cause delays. Roundabouts require other control mode	At capacity, requires other control mode
F	Over 70	Extra capacity required	Extreme delay, traffic signal or other major treatment required.

Source: RTA *Guide to Traffic Generating Developments*, version 2.2-2002

An intersection operating at Level of Service E or F is operating at or above capacity, with vehicles at these intersections experiencing substantial delays. Level of Service of D or better is generally

considered acceptable in peak periods when future traffic is not taken into account, while Level of Service C is considered acceptable for future designs.

The intersections of Botany Road with Bumborah Point Road and McCauley Street were analysed using SIDRA Intersection for both the base case (existing AMCOR) and for future conditions (2018) with B9 and MRF (See **Table 5-2** and **Table 5-3** respectively). The latest traffic light phasing data from the RTA was used to undertake the analysis. A peak flow factor of 30min/60min was assumed. Signalised pedestrian crossings were included on the northern, southern and eastern approaches of the Botany Road / McCauley Street intersection for both 2018 scenarios. Fifty pedestrians per hour were assumed on each crossing.

■ **Table 5-2 Existing Intersection Operation, Base Case 2007 (as surveyed)**

Intersection	AM Peak		PM Peak	
	LoS	Average Delay (Seconds)	LoS	Average Delay (Seconds)
Botany Road / Bumborah Point Road	B	16	B	20
Botany Road / McCauley Street	A	14	A	14

■ **Table 5-3 Future Intersection Operation, 2018 with Project B9 & MRF Traffic**

Intersection	AM Peak		PM Peak	
	LoS	Average Delay (Seconds)	LoS	Average Delay (Seconds)
Botany Road / Bumborah Point Road	A	13	B	22
Botany Road / McCauley Street	B	19	B	17

The intersections were also analysed for future conditions (2018) with B9, MRF and and Precinct traffic included (See **Table 5-4**).

■ **Table 5-4 Future Intersection Operation, 2018 with Project B9, MRF & Subdivision Traffic**

Intersection	AM Peak		PM Peak	
	LoS	Average Delay (Seconds)	LoS	Average Delay (Seconds)
Botany Road / Bumborah Point Road	B	15	B	26
Botany Road / McCauley Street	B	22	B	20

The results of the Sidra Intersection analysis show that the existing intersections in the vicinity of the proposed development would continue to comfortably accommodate traffic volumes from future network traffic growth and the additional traffic generated by the proposed development. Therefore there would be no significant impact on the intersections from the proposed development.

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A detailed review of the Botany Road / Bumborah Point Road intersection analysis results for the eastbound shared left turn and through lane was undertaken in order to ascertain whether a dedicated left turn lane would be required to reduce the impact of left turning traffic on through traffic. The delay for this lane was found to be 2.9 seconds in the AM peak and 5.5 seconds in the PM peak with the subdivision in place. The anticipated arrival rate of left turning vehicles is 144 vehicles in the AM (including 105 heavy vehicles) and 14 vehicles in the PM (0 heavy vehicles), resulting in an arrival rate of 2.4 vehicles per minute during the AM peak and 0.2 vehicles per minute during the PM peak. Given the anticipated low impact of the left turn on through traffic in the lane, a dedicated turn lane is not warranted.

5.2. Weighbridge Queuing

Incoming weighbridges would be located near the Waste Paper Yard. Based on preliminary analyses, off-site queuing of vehicles on Botany Road would not occur.

6. Parking Impacts

6.1. Parking

Parking requirements were assessed for both the proposed AMCOR operations and new precincts

Currently there are approximately 100 parking spaces on site, located in the main car park at the Botany Road entrance.

6.1.1. B9 Project

Due to efficiencies in production associated with the new paper mill, the overall demand for parking at the AMCOR site will decrease. However, the number of spaces within the AMCOR site is not expected to change as a result of the B9 Project.

6.1.2. Under the Modification

Under the proposed modification, the number of spaces provided will not change, with the car park layout altering slightly from the existing in association with the relocation of the office building. Of the 100 spaces provided, two will be dedicated to use by persons with a disability. These two spaces will be conveniently located.

The proposed car park layout will likely consist of 2 aisles with 90° parking on both sides. The spaces and aisles will be designed in accordance with AS/NZS 2980.2:2004 *Parking Facilities Part 1: Off-Street Car Parking*, which require the following minimum dimensions for 90° angled employee (User type 1 parking):

- Parking space dimensions: 2.4m width x 5.4m length;
- Aisle width: 6.2m (plus 300mm where spaces are provided on one side only);
- Driveway width (Access Class 1): 3.0 to 5.5m (combined); and
- Disabled space dimensions (from *AS2890.1-1993*, Figure 2.2, page 10): 3.2m width x 5.4m length.

The preliminary designs for the car park layout meet these requirements.

6.2. Subdivided Lots

As the nature of the usage of those lots which are to be redeveloped cannot be confirmed until after their sale, comment cannot be made on the adequacy of parking provision at these sites. Despite this, indicative estimates of parking requirements can be provided based on similar land uses within the area and estimated warehouse and office space to be developed.

Estimated parking requirements at the three lots are shown in **Table 6-1**, based on the land being used for both office and warehousing purposes. In total, approximately 218 spaces will be required across the various lots.

■ **Table 6-1 Estimated Parking Requirements for Excess Land**

Land Parcel	Estimated number of spaces required			
	Office	Warehouse	Total	Rounded Total
PARKING RATE ¹	1 space per 40m ² GFA	1 space per 300m ² GFA	-	-
McCauley Street Precinct	65	31	96	96
Botany Road Precinct	90	32	122	122
TOTAL	155	63	217.7	218

¹ RTA *Guide to Traffic Generating Developments* (2002), and Randwick City Council *Development Control Plan* (1998).

6.3. Summary

The number of spaces provided for use by AMCOR staff and visitors (100 spaces) will not change under the modification, although overall parking demand is expected to decrease. The layout of the car park is likely to change as a result of the relocation of the office building. The redesigned car park facility would comply with Council and RTA requirements.

Based on estimates of land uses for the excess land, it is likely that approximately 96 spaces will be required for the McCauley Street Precinct and 122 spaces for the Botany Road precinct.

7. McCauley Street and Botany Road Access

7.1. Upgrade of McCauley Street

It is likely that an upgrade of McCauley Street would be required to accommodate the additional traffic from AMCOR's operations and the McCauley Street Precinct. Consultation with Randwick Council has been undertaken to establish their requirements for the upgrade of McCauley Street and they have confirmed the following:

- Parallel parking on both sides of McCauley St with a parking lane width of 2.3m;
- Traffic lane width of 3.5m; and
- Verge width between the eastern kerb of McCauley Street and AMCOR's fence of 3m.

A concept layout has been prepared for McCauley Street including parking and consideration of sweep paths from the two new accesses on McCauley Street. This is attached in Appendix A. It has been assumed that McCauley Street will require rebuilding to the centre line of the existing road.

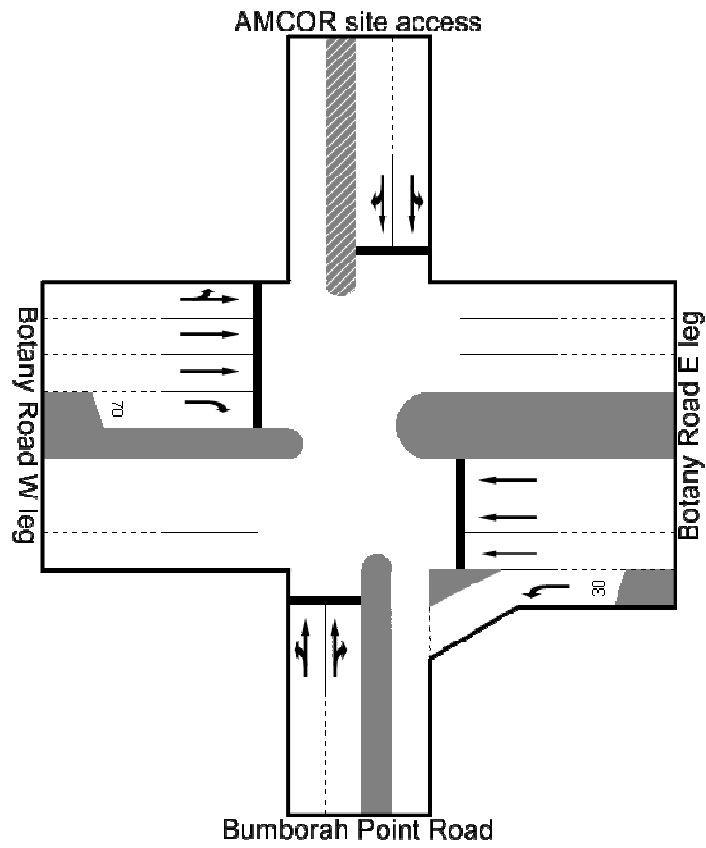
It should be noted that AMCOR is only applying for approval for B-Doubles to use the southbound lane of McCauley Street.

Minor modifications of the kerb and traffic islands at the McCauley Street/ Botany Road intersection would be required.

7.2. Botany Road Access

Presented in **Figure 7-1** is the proposed lane arrangement at the Botany Road access. As noted in previous sections the road would increase to four lanes within the site to separate AMCOR and Botany Road Precinct vehicles.

- Figures 7-1 Botany Road Access



8. Summary and Conclusion

8.1. Potential Impacts

It is expected that the subdivision of the excess land at AMCOR's site would generate additional traffic at the McCauley Street / Botany Road and Bumborah Point Road / Botany Road intersections. The impact of the additional vehicles on the operation of these intersections is not sufficient to cause undue delay to other road users, with both intersections expected to continue operating at an acceptable level of service in 2018.

8.2. Proposed Mitigation Measures

The proposal includes the provision of an upgrade access on McCauley Street directly opposite Raymond Avenue, forming a four legged intersection and the provision of an additional exit only access for Finished Product vehicles south of Raymond Avenue on McCauley Street.

All parking and access facilities for both the AMCOR site and the subdivided lots would be designed in accordance with the appropriate codes and standards.

Additional mitigation measures to ensure that vehicles exiting the site into McCauley Street turn left (ie southbound) away from residential areas include:

- Appropriate signage – including no left turn signs if required;
- Kerbs, traffic islands and other physical measures developed in consultation with Randwick City Council;
- Driver education for all vehicles utilising the site; and
- Visual monitoring of traffic leaving the site.

8.3. Conclusion

The additional vehicles anticipated to utilise the McCauley Street intersection are not sufficient to cause undue delay to other vehicles at the intersection, as the additional vehicle volume is within the design constraints of the McCauley Street intersection.

The Level of service of operation at the Botany Road / Bumborah Point Road and the Botany Road / McCauley Street intersections are acceptable with the proposed development traffic and background growth.

The additional vehicles generated by the proposed modification will not have a detrimental effect on road safety at either intersection.

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All parking and access facilities for both the AMCOR site and the subdivided lots would be designed in accordance with the appropriate codes and standards.

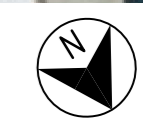
This assessment has found that the proposed modification has a minimal impact on road network operations, and its approval is recommended on traffic grounds.



Appendix A – Concept Design McCauley Street

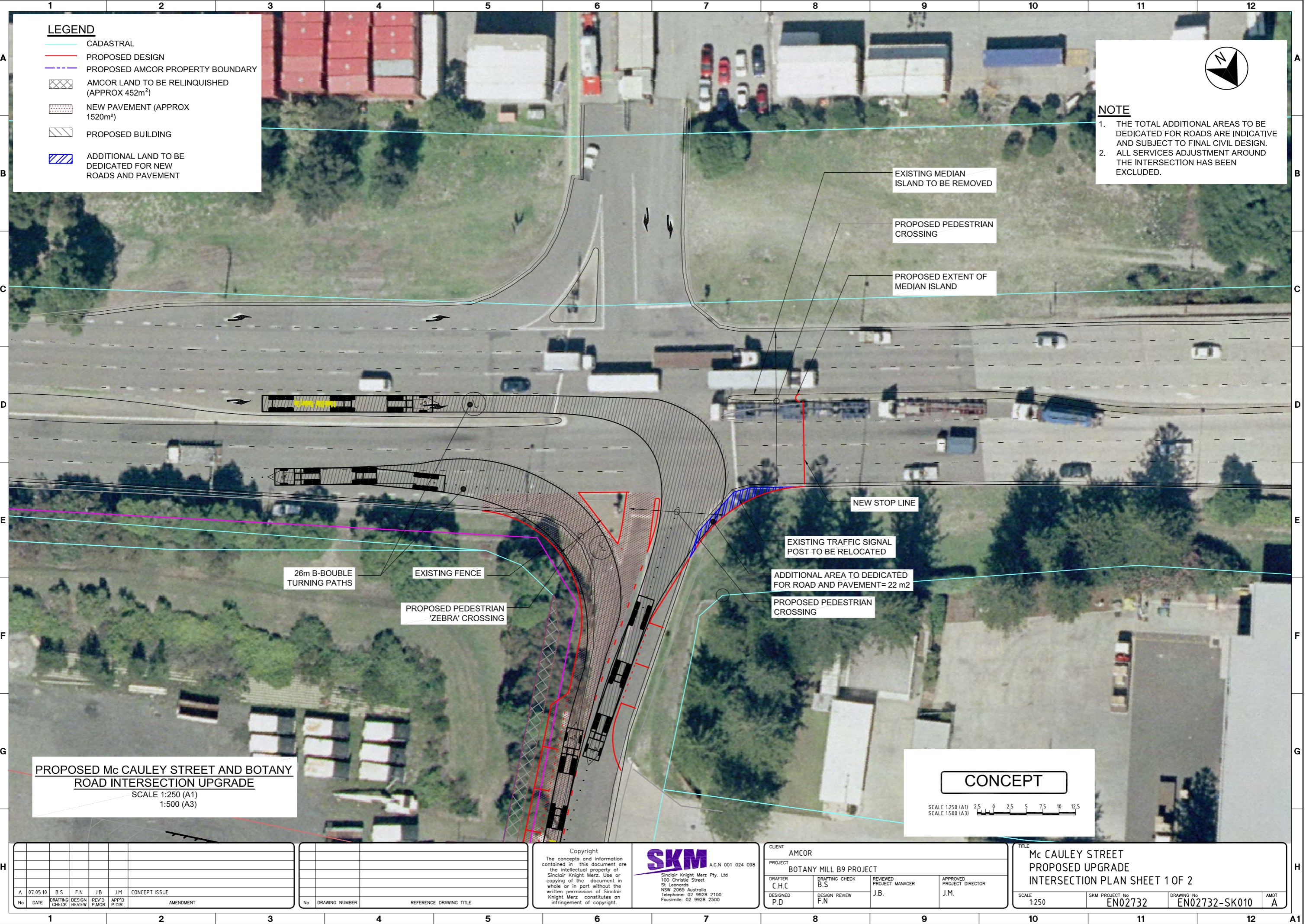
LEGEND

- CADASTRAL
- PROPOSED DESIGN
- - - PROPOSED AMCOR PROPERTY BOUNDARY
- AMCOR LAND TO BE RELINQUISHED (APPROX 452m²)
- NEW PAVEMENT (APPROX 1520m²)
- PROPOSED BUILDING
- ADDITIONAL LAND TO BE DEDICATED FOR NEW ROADS AND PAVEMENT



NOTE

1. THE TOTAL ADDITIONAL AREAS TO BE DEDICATED FOR ROADS ARE INDICATIVE AND SUBJECT TO FINAL CIVIL DESIGN.
2. ALL SERVICES ADJUSTMENT AROUND THE INTERSECTION HAS BEEN EXCLUDED.



PROPOSED Mc CAULEY STREET AND BOTANY ROAD INTERSECTION UPGRADE
 SCALE 1:250 (A1)
 1:500 (A3)

CONCEPT

SCALE 1:250 (A1) 2.5 0 2.5 5 7.5 10 12.5
 SCALE 1:500 (A3)

No	DATE	DRAFTING CHECK	DESIGN REVIEW	REV'D P.MGR	APP'D P.DIR	CONCEPT ISSUE
A	07.05.10	B.S	F.N	J.B	J.M	CONCEPT ISSUE
AMENDMENT						

No	DRAWING NUMBER	REFERENCE DRAWING TITLE

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SKM A.C.N 001 024 098
 Sinclair Knight Merz Pty. Ltd
 100 Christie Street
 St Leonards
 NSW 2065 Australia
 Telephone: 02 9928 2100
 Facsimile: 02 9928 2500

CLIENT AMCOR			
PROJECT BOTANY MILL B9 PROJECT			
DRAFTER C.H.C	DRAFTING CHECK B.S	REVIEWED PROJECT MANAGER J.B.	APPROVED PROJECT DIRECTOR J.M.
DESIGNED P.D	DESIGN REVIEW F.N		

TITLE Mc CAULEY STREET PROPOSED UPGRADE INTERSECTION PLAN SHEET 1 OF 2			
SCALE 1:250	SKM PROJECT No EN02732	DRAWING No EN02732-SK010	AMDT A

Plot Date: 07 May 2010 @ 17:04:21 Login Name: ccolorado Cad File: \\skmconsulting.com\SyD\Projects\NBIF\Projects\NB11000\Deliverables\Drawings\Civil\Sketches\11901491-C-SK010-01.dwg



Appendix B – Directional Turning Movement Splits

2018 - B9 & MRF traffic

8-9am		AMCOR Gate	H	77%	15%	8%	Botany Rd		
			L	64%	0%	36%			
94%	94%	L					L	H	
		T					R	0%	0%
		R					T		
H	L					L	Bumborah Pt Rd		
Botany Rd				L	T	R			
						6%			
						6%			
						L			
						H			

3-4pm		AMCOR Gate	H	50%	0%	50%	Botany Rd		
			L	81%	0%	19%			
0%	75%	L					L	H	
		T					R	0%	0%
		R					T		
H	L					L	Bumborah Pt Rd		
Botany Rd				L	T	R			
						25%			
						100%			
						L			
						H			

7-8am		McCauley St	H	77%	15%	8%	Botany Rd		
			L	64%	0%	36%			
		L					L	H	
		T					R		
		R					T		
H	L					L	Port Gate		
Botany Rd				L	T	R			
						L			
						H			

3-4pm		McCauley St	H	50%	0%	50%	Botany Rd		
			L	81%	0%	19%			
		L					L	H	
		T					R		
		R					T		
H	L					L	Port Gate		
Botany Rd				L	T	R			
						L			
						H			

2018 - subdivision traffic

8-9am		AMCOR Gate	H	16%	3%	2%	Botany Rd		
			L	11%	0%	6%			
28%	30%	L					L	H	
		T					R	0%	0%
		R					T		
H	L					L	Bumborah Pt Rd		
Botany Rd				L	T	R			
						2%			
						2%			
						L			
						H			

3-4pm		AMCOR Gate	H	12%	0%	12%	Botany Rd		
			L	48%	0%	12%			
0%	8%	L					L	H	
		T					R	0%	0%
		R					T		
H	L					L	Bumborah Pt Rd		
Botany Rd				L	T	R			
						3%			
						6%			
						L			
						H			

7-8am		McCauley St	H	16%	3%	2%	Botany Rd		
			L	11%	0%	6%			
		L					L	H	
		T					R		
		R					T		
H	L					L	Port Gate		
Botany Rd				L	T	R			
						2%			
						2%			
						L			
						H			

3-4pm		McCauley St	H	12%	0%	12%	Botany Rd		
			L	48%	0%	12%			
0%	8%	L					L	H	
		T					R	0%	0%
		R					T		
H	L					L	Port Gate		
Botany Rd				L	T	R			
						3%			
						6%			
						L			
						H			