7 May 2015

Secretary
Department of Planning & Environment
23-33 Bridge Street
SYDNEY NSW 2000

Attn: Chris Ritchie, Manager Industry, Key Sites and Social Projects

Dear Ms McNally,

RE: LINDT FACILITY PROJECT (SSD 14-6620) – SECTION 96 MODIFICATION – STATEMENT OF ENVIRONMENTAL EFFECTS

1.0 Introduction

On 26 November 2014, the Department of Planning & Environment (the Department), as delegate of the Minister for Planning, approved a development application from Qanstruct (Aust.) Pty Limited (Qanstruct) for the development of a warehouse and manufacturing facility for Lindt & Sprüngli Australia (Lindt) and Toll Global Logistics (Toll) on a 6.6 hectare site in Sydney Business Park, located in the Marsden Park Industrial Precinct in Western Sydney (see **Figures 1** and **2**).

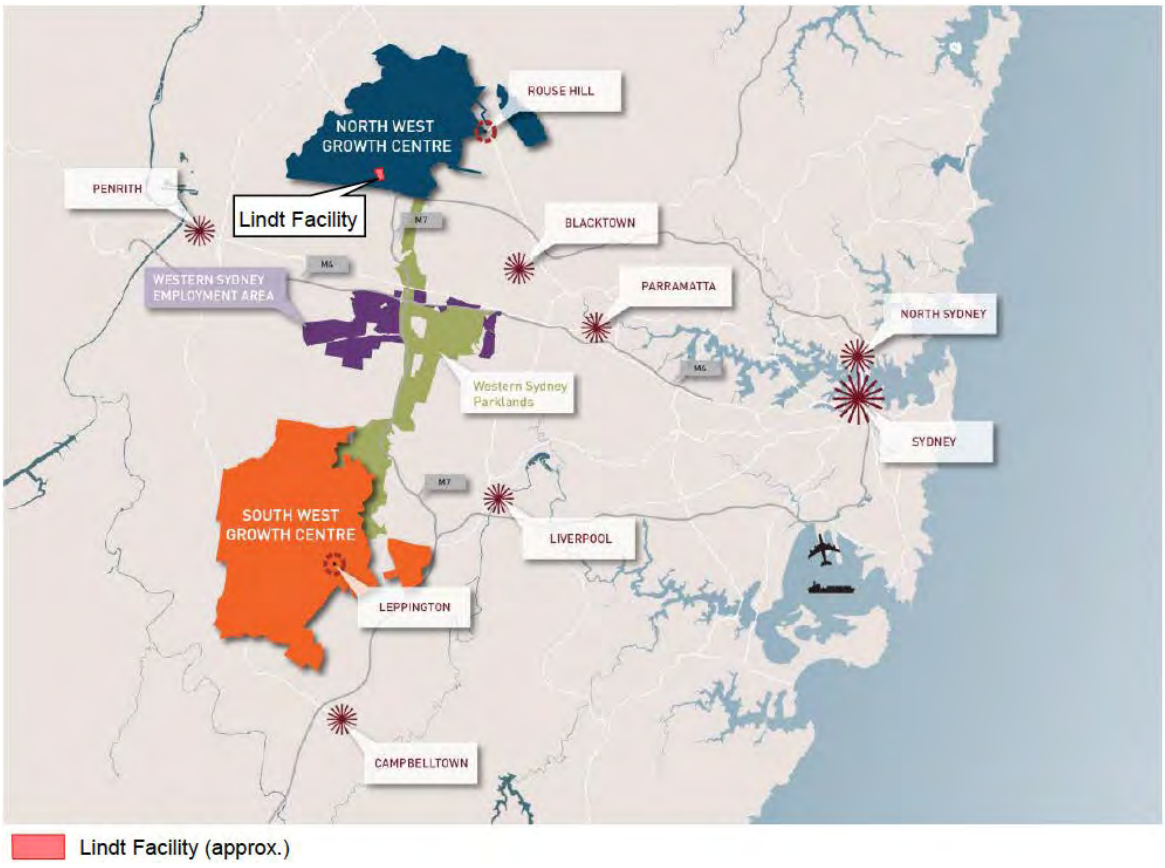

Figure 1: *Regional Context*

Figure 2: *Location Plan* – Sydney Business Park Master Plan

The facility, known as the Lindt Facility Project, will be used to store and distribute Lindt's range of premium packaged chocolates, and for chocolate making and the baking of foods for Lindt's range of cafes and third party stores. It will also accommodate Lindt's Australian administrative headquarters. The facility is currently under construction.

The layout of the approved project is shown on **Figures 3** and **4**, and is described in detail in the Environmental Impact Statement (EIS) dated August 2014.

Detailed design for the project has identified the need for a small number of changes to the facility as approved. Consequently, Qanstruct is proposing to make minor modifications to the development consent for the project to accommodate these changes, as detailed below.

This Statement of Environmental Effects (SEE) has been prepared by PJEP Environmental Planning to support the modification application for the proposed changes, which are considered able to be assessed under Section 96(1A) of the *Environmental Planning and Assessment Act 1979*.

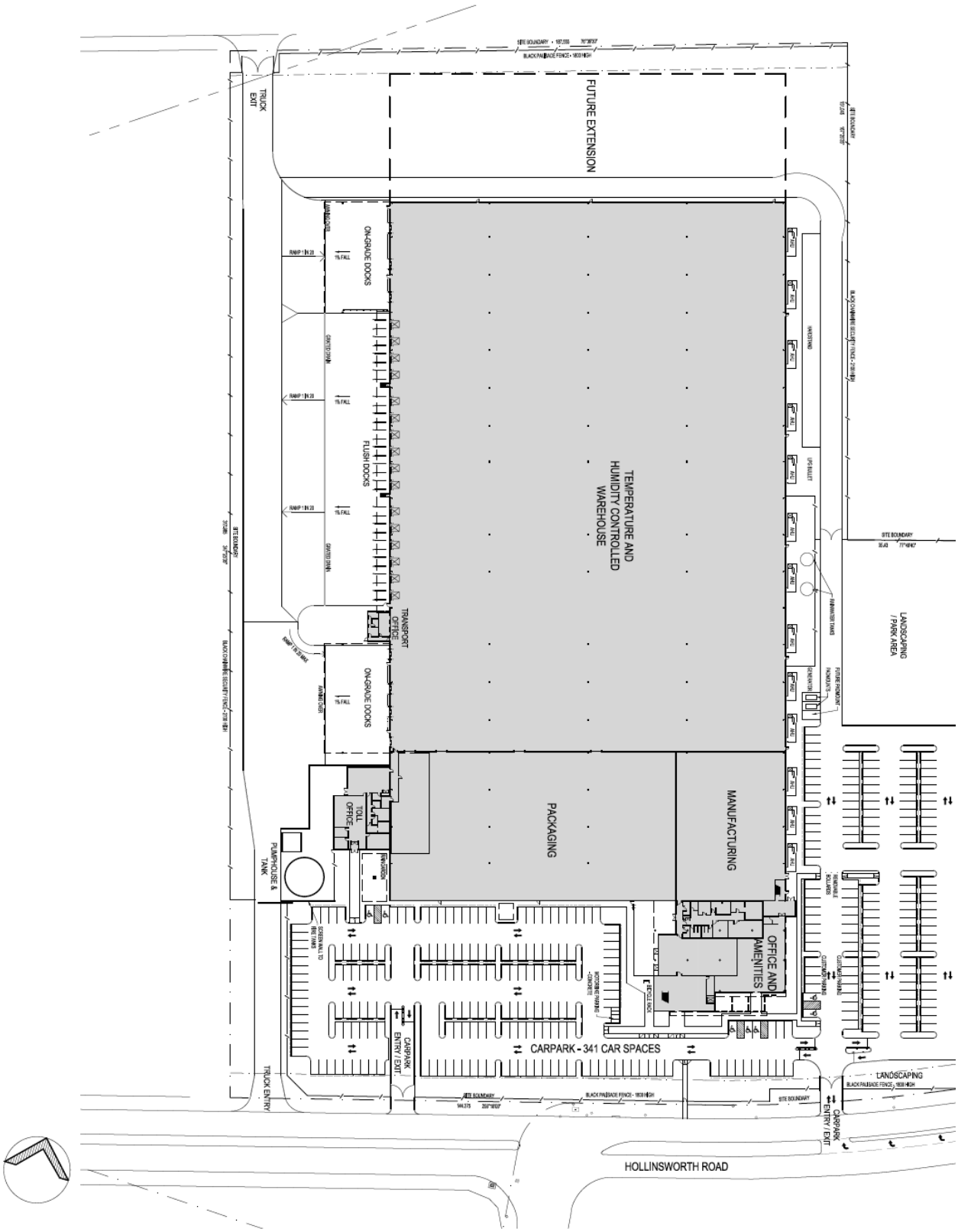

Figure 3: *Site Plan – As Approved*

Figure 4: *Elevations – As Approved*

2.0 Proposed Modifications

The proposed changes to the Lindt Facility are shown on **Figures 5** and **6**, and include:

- *Link way added to eastern elevation* – an internal walkway has been added to the south-eastern corner of the facility to link the warehouse and manufacturing area with the showroom/factory outlet. External plant and equipment that was in this area has been relocated, including the rainwater tanks which would now be located underground below the eastern outdoor/park area;
- *Windows added to southern elevation of warehouse* – a number of windows with louvres have been added to increase natural lighting and amenity for staff;
- *External colour schedule amended* - the colour schedule for the warehouse has been amended to provide greater visual interest and a more contemporary palette. In particular, the southern warehouse facade has been amended to integrate with the colour scheme on the other warehouse facades (nb. this façade was coloured blue on the approved plans), and the eastern elevation has been amended to provide greater variation;
- *Skylight and plant added to office roof* – a skylight has been added to the roof of the ancillary office to increase natural lighting and reduce energy use, and a rooftop plant area has been added to service the office. The plant area would be screened with louvres to integrate with the design of the facility and mitigate any visual impacts; and
- *Legal point of discharge location amended* – the stormwater point of discharge has been relocated from the north-western corner of the site to the north-eastern corner, with the change reflecting detailed stormwater design for the facility.

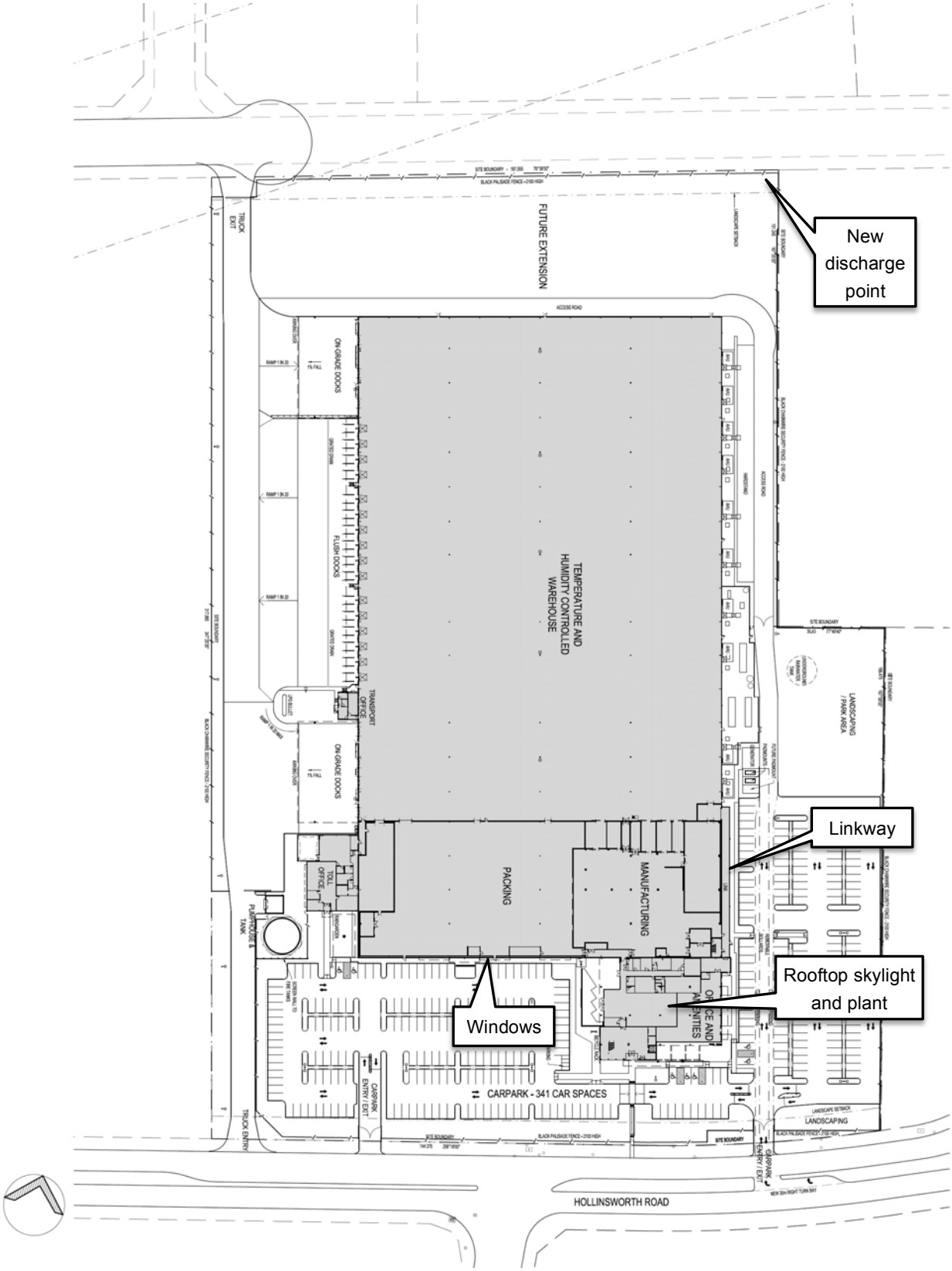

Figure 5: *Site Plan – As Proposed*

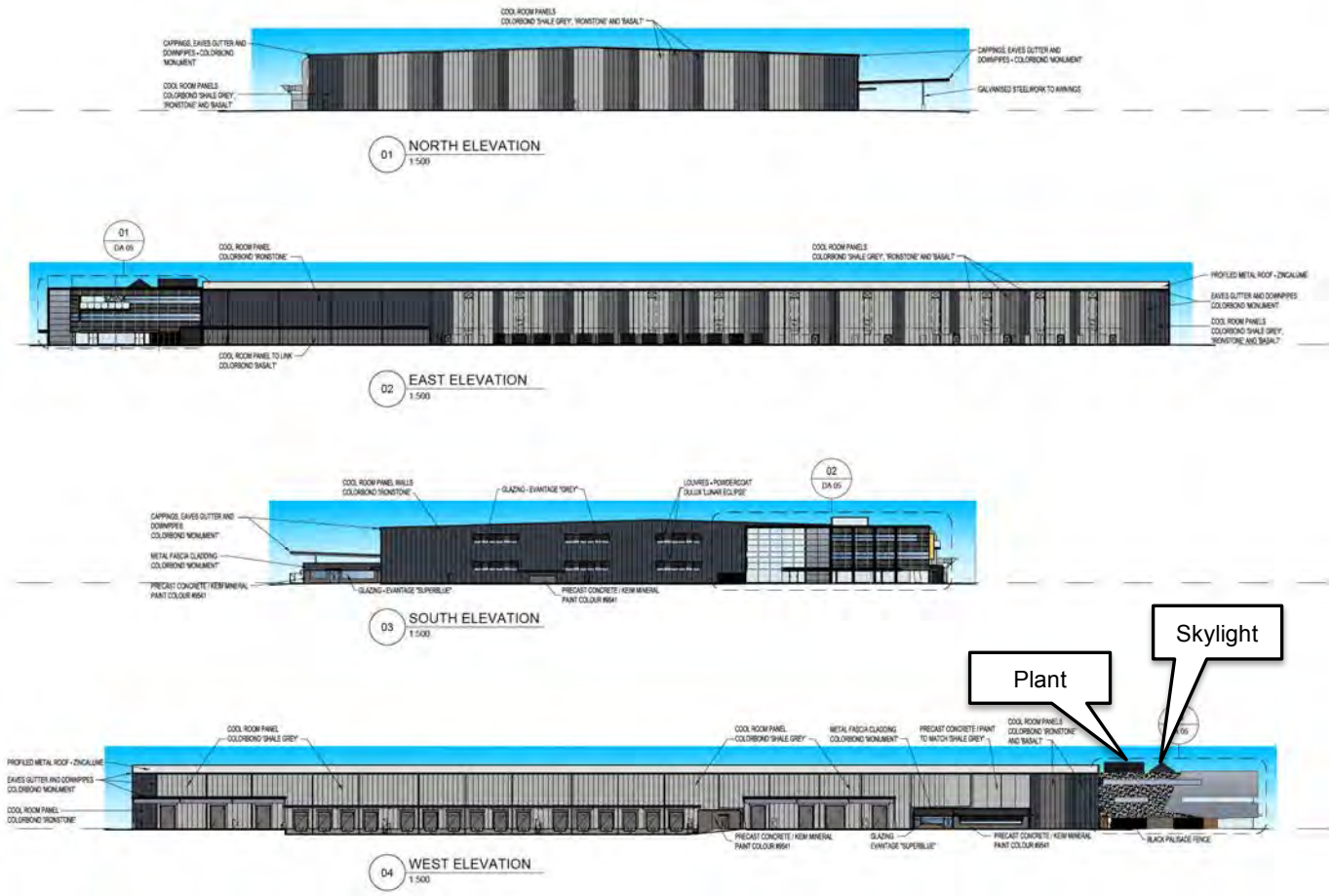

Figure 6: *Elevations – As Proposed*

In addition, some minor changes to buildings areas have occurred following detailed design of the facility. The proposed changes are shown in detail on the revised architectural plans in **Attachment 1** and revised Stormwater Management Plan in **Attachment 2**. A revised development areas schedule based on the proposed modification is provided in the following table.

Table 1: *Lindt Facility Development Schedule*

Aspect	***Facility Detail***		
	As Approved	***As Proposed***	***Difference***
Site Area	65,940 m^2	65,940 m^2	No change
Building Areas			
- Warehouse[1]	20,330 m^2	20,445 m^2	+115 m^2
- Manufacturing and Packaging	5,010 m^2	4,950 m^2	-60 m^2
- Ancillary Office	3,420 m^2	3,450 m^2	+30 m^2
- Showroom/Factory Outlet	315 m^2	315 m^2	No change
- Gross Floor Area[2]	29,075 m^2	29,160 m^2	+85 m^2
- Total Ground Floor Building Area	26,865 m^2	26,930 m^2	+65 m^2
Awning Area	1,740 m^2	1,800 m^2	+60 m^2
Hardstand Area	20,980 m^2	20,990 m^2	+10 m^2
Landscaping Area	15,500m^2 (approx.)	15,500m^2 (approx.)	No change
Site Cover	41%	41%	No change

Aspect	*Facility Detail*		
	As Approved	*As Proposed*	*Difference*
Floor Space Ratio	44%	44%	No change
No. Office Levels	3	3	No change
Building Height (exc. plant)	13.9 m	13.9 m	No change
Building Height (inc. skylight, rooftop plant)	Not defined	14.5 m	n/a
Minimum Building Setbacks			
- Hollinsworth Road	28 m	28 m	No change
- Northern Road (Road 5)	46.5 m	46.5 m	No change
Parking Spaces	341 car spaces (inc. 7 disabled) 4 motorbike spaces	341 car spaces (inc. 7 disabled) 4 motorbike spaces	No change

1 Includes 315m^2 battery charging area and 125m^2 linkway

2 Excludes lift, stairs, store and balcony areas

Proposed Changes to Approval Instrument

The proposed modification would require relatively minor amendments to the development consent, including amendments to:

- *Condition B2, Terms of Consent* – to add reference to the modification application and this SEE;
- *Condition B7, Limits of Consent* – to update the maximum floor areas;
- *Condition C6, Rainwater Harvesting* – to amend the reference to the Civil Design Report to the version included within this SEE; and
- *Appendix 1, Plans and Elevations* – to update the applicable site plans and elevations.

3.0 Planning Context

Section 96 of the EP&A Act

The Minister for Planning was the consent authority for the original development application, and is therefore the consent authority for the proposed modification.

Under Section 96(1A) of the *Environmental Planning and Assessment Act 1979* (EP&A Act), a consent authority may modify a development consent if it:

(a) is satisfied that the proposed modification is of minimal environmental impact;
(b) is satisfied that the development as modified is substantially the same development as the development as originally granted;
(c) has notified the application in accordance with the regulations or a development control plan, if required; and
(d) it has considered any submissions made concerning the proposed modification.

It is considered that the proposal represents a minor modification of the development as originally approved, as it:

- does not affect the approved use of the facility;
- does not involve any significant change to the layout of the facility;
- does not affect the development's consistency with any environmental planning instrument (see below); and
- would not result in any significant change to the environmental effects of the development (see Section 4).

Consequently, it is considered that the proposed modification can be considered and determined under Section 96(1A) of the EP&A Act.

Environmental Planning Instruments

The following environmental planning instruments are relevant to the Lindt Facility and the proposed modification:

- *State Environmental Planning Policy (SEPP) No.33 – Hazardous and Offensive Development;*
- *SEPP No.55 – Remediation of Land;*
- *SEPP No.64 – Advertising and Signage;*
- *SEPP (State and Regional Development) 2011;*
- *SEPP (Infrastructure) 2007; and*
- *SEPP (Sydney Region Growth Centres) 2006* (the Growth Centres SEPP).

The proposed modification does not alter the project's consistency with any of these instruments.

The Growth Centres SEPP is the dominant environmental planning instrument applying to the site. Appendix 5 of the SEPP contains the *Marsden Park Industrial Precinct Plan* (the Precinct Plan), which provides the key development controls applicable to the site.

Part 4 of the Precinct Plan provides a number of principal development standards for development in the Marsden Park Industrial Precinct, and Parts 5 and 6 provide a number of additional applicable provisions. An assessment of the development as modified against these standards and provisions is provided in the following table. As indicated in the table, it is considered that the modified development is able to be carried out in a manner that is consistent with all of the applicable standards and provisions of the SEPP.

Table 2: *Marsden Park Industrial Precinct Plan Compliance – As Modified*

Clause	*Issue*	*Key Controls Summary*	*Complies*	*Comments*
4.1	Minimum Subdivision Lot Size	Applicable minimum lot size is 2,000m^2	Yes	• No change
4.3	Height of Buildings	Applicable maximum building height for the site is 16 metres	Yes	• The proposed maximum building height including the rooftop plant (ie.14.5m) is within the maximum building height.
4.4	Floor Space Ratio (FSR)	Applicable FSR for the site is 0.7:1	Yes	• No change
5.4	Miscellaneous Permissible Uses	Clause 5.4(4) applies to industrial retail outlets, and provides that the retail outlet gross floor area (GFA) must not exceed 40% of the total building GFA, or 400 m^2, whichever is lesser	Yes	• No change

Clause	Issue	Key Controls Summary	Complies	Comments
5.6	Architectural Roof Features	Provides controls for architectural roof features	Yes	• The amended facility does not involve architectural roof features above the maximum building height, and the proposed rooftop plant would be located so as to minimise obtrusiveness and would be screened
6.1	Public Utility Infrastructure	Requires consent authority to be satisfied that required infrastructure is or will be available	Yes	• No change
6.4	Development Controls – Native Vegetation Retention Areas and Riparian Protection Areas	Requires consent, and provides standards, for clearing of native vegetation in mapped native vegetation retention areas (NVRA) and riparian protection areas (RPA)	Yes	• No change
6.5	Development Controls – Existing Native Vegetation Areas	Restricts clearing in mapped existing native vegetation areas (ENVA)	Yes	• No change

Growth Centres Development Control Plan

The *Blacktown City Council Growth Centre Precincts Development Control Plan 2010* (the Growth Centres DCP) provides detailed guidance for development within the parts of the North West Growth Centre that are within the Blacktown LGA.

An assessment of the development as modified against the applicable development controls in these parts is provided in the following table.

As indicated in the table, the development as modified is considered to comply with all of the development controls in the DCP.

Table 3: *BCC Growth Centres DCP Compliance*

Clause	Issue	Key Controls Summary	Complies	Comments
Part 2: Precinct Planning Outcomes				
2.2	Indicative Layout Plan	Requires development to be generally consistent with the Indicative Layout Plan (ILP), with any variations to be demonstrated to be consistent with the precinct planning vision.	Yes	• No change
2.3	Flooding and Water Cycle Management	Requires residential development to be generally above the 1% AEP flood level, and provides controls for flood affected land.	Yes	• No change

Clause	Issue	Key Controls Summary	Complies	Comments
		Provides stormwater quantity and quality controls.	Yes	• The amended facility complies with the stormwater criteria in the DCP – see Section 4.
2.3.2	Salinity and Soil Management	Requires salinity reports and salinity management plans for applications in areas of potential salinity and soil aggressivity risk	Yes	• No change
		Requires soil and water management plans to be prepared	Yes	• An updated Stormwater Management Plan has been prepared for the proposal – see Attachment 2.
2.3.3	Aboriginal and European Heritage	Requires archaeological and heritage assessments for applications on land identified as having potential archaeological and heritage value	Yes	• No change
2.3.4	Native Vegetation and Ecology	Restricts clearing/development in riparian areas, other than for essential infrastructure	Yes	• No change
		Restricts clearing of native vegetation, and requires development to avoid significant impact on the ecological values of the E2 Zone	Yes	• No change
		Requires a landscape plan to be prepared	Yes	• No change
2.3.5	Bushfire Hazard Management	Requires Asset Protection Zones (APZs) and bushfire hazard management measures	Yes	• No change
2.3.6	Site Contamination	Requires site contamination assessments to be undertaken	Yes	• No change
2.3.7	Odour assessment and control	Notes that existing land uses have potential to generate odour	Yes	• No change
Part 6: Employment Lands Subdivision and Development Controls				
6.2	Subdivision	Provides controls relating to subdivision in the employment lands.	Yes	• No change
6.3	Landscape Design	Provides landscape design controls, including provision of landscaping/shade trees in car parks, and provision of communal outdoor landscape areas (3% of site area in the IN2 zone).	Yes	• No change

Clause	*Issue*	*Key Controls Summary*	*Complies*	*Comments*
6.4.1	Setbacks	Requires buildings and hardstand to be set back at least 7.5m from the front boundary, with the setback area fully landscaped	Yes	• No change
6.4.2	Building Design and Siting	Provides controls aimed at providing high quality architectural design and presentation to street frontages	Yes	• The amended facility retains a high design quality, paying particular attention to the key facades fronting both Hollinsworth Road (the primary frontage) and Road 5 – see Section 4.
6.4.3	External Building Materials and Colours	Provides controls aimed at ensuring buildings provide a combination of high quality, durable, low maintenance and sustainable finishes and materials	Yes	• The amended facility has been designed to a high quality in a manner that is consistent with the development controls – see Section 4.
6.4.4	Entrance Treatment	Requires entries to be clearly visible and address the primary street frontage	Yes	• The building has been designed with a prominent entrance to the primary street frontage – see Section 4.
6.4.5	Ancillary Buildings, Storage and Service Areas	Requires that ancillary structures are integrated into the building design, setback and/or appropriately screened.	Yes	• The building has been designed to ensure that ancillary structures are well setback from the street frontages and/or appropriately screened – see Section 4.
6.5	Ecologically Sustainable Development	Provides controls aimed at maximising energy and water use efficiency, and management of waste and discharges	Yes	• The amended facility includes additional sustainability measures, including additional windows to the warehouse and a skylight to the ancillary office.
6.6	Fencing, Signage and Lighting	Applicable controls include: • palisade fencing to be provided to front boundaries and side boundaries within the setback; • plastic-coated chainwire fencing can be provided to side fencing; • fencing to be setback 1m from the front property boundary • signage to relate to the business use and not occupy more than 10% of any facade	Yes	• No change

Clause	*Issue*	*Key Controls Summary*	*Complies*	*Comments*
6.7	Access and Parking	Provides controls requiring vehicles to enter and exit sites in a forward direction, and provide safe and efficient on-site circulation	Yes	• No change
6.8	Car Parking	Applicable car parking rates include: • 1 space per 75 m^2 for GFA up to 7,500 m^2; • 1 space per 200 m^2 for GFA over 7,500 m^2; and • 1 space per 40 m^2 for ancillary office GFA; • 2% of parking spaces should be provided for disabled parking. Bicycle parking facilities are to be provided.	Yes	• The amended facility does not affect compliance with the applicable carparking controls – see Section 4.
6.9	Waste Management	Requires waste management plans for development using best practice waste management principles	Yes	• No change
6.10	Safety and Surveillance	Requires development to meet 'Crime Prevention Through Environmental Design CPTED' principles	Yes	• No change
Schedule 3: Marsden Park Industrial Precinct				
2	Subdivision Planning and Design	Provides the planning vision for the precinct	Yes	• No change
2.3	Odour Management	Requires that consideration be provided for sensitive uses (such as dwellings) in the '2OU' odour buffer area of existing odour sources (poultry farms) in the locality	Yes	• No change
2.4.1	Development of the Quarry Site	Provides controls for development within the 'quarry site'	Yes	• No change
3	Neighbourhood and Subdivision Design	Provides additional estate wide controls, including additional public transport and pedestrian cycle network controls	Yes	• No change
4	Development in Residential Zones	Provides additional controls for residential development	Yes	• No change

Clause	Issue	Key Controls Summary	Complies	Comments
5	Employment Lands Subdivision and Development Controls	Provides additional controls relating to street types, development adjoining Richmond Road and South Street, development surrounding the existing caravan park, and ESD, including a requirement for 15% of the site area to be landscaped/pervious	Yes	• No change

4.0 Environmental Issues

Consideration of the environmental effects of the proposed modification is presented in the following table.

In summary, it is considered that the proposal would not result in any significant change to the environmental effects of the project as approved.

Table 4: *Consideration of Environmental Effects*

Issue	Consideration
Design and Visual	It is considered that the proposed modifications to the layout of the facility would not result in any adverse impacts on the design quality of the project or visual amenity of the locality. Indeed, the proposed modifications have been designed in part to improve the design quality of the facility. The proposed link way integrates with the design of the larger warehouse, and would be well set back from the public domain. The proposed colour changes to the warehouse would increase the visual appeal of the warehouse by adding additional colour variation, and the change to the colour of the southern façade (from Lindt blue to a darker 'Ironstone' colour) would tie in more appropriately with the colour scheme of the facility as a whole. The additional windows to the southern warehouse façade would increase articulation and visual interest of this façade. The proposed rooftop plant above the ancillary office would be screened with louvres to minimise any adverse visual impacts, with the screening coloured to integrate with the design of the wider facility. The proposed modifications do not involve any changes to the approved site landscaping.
Soil and Water	The proposed modification does not involve any change to the approved disturbance area of the project, or the total area of impervious area on the site, and as such would not result in any significant change to the soil and water aspects of the approved development. A revised Stormwater Management Plan has been prepared for the facility as modified, which addresses the proposed amended point of discharge for site stormwater, and the detailed consultation with Blacktown City Council as required under Condition D2 of the development consent (see Attachment 2). The plan includes updated MUSIC modelling which confirms that the stormwater design complies with the applicable stormwater quality criteria in the Growth Centres DCP.

Issue	Consideration
Noise	The proposed modification does not involve any significant change to the noise emissions associated with the approved facility. As required under the development consent, Lindt will be required to comply with applicable noise criteria during construction and operation of the development.
Air Quality and Odour	The proposed modification does not involve any significant change to air or odour emissions associated with the approved facility. As required under the development consent, Lindt is required to implement all reasonable and feasible measures to minimise and manage dust and odour emissions associated with the project.
Flora and Fauna	The proposed modification does not involve any changes to the approved disturbance area of the site or site landscaping. As such, the proposal is not expected to result in any biodiversity impacts.
Heritage	The proposed modification does not involve any changes to the approved disturbance area of the site, and would not adversely impact any identified heritage sites.
Traffic and Parking	The proposed modification would not result in any significant change in traffic generation associated with the project, or involve any change to internal and external access and circulation associated with the facility. The proposed modifications (including the 125m^2 link way) would increase the gross floor area of the warehouse marginally (by 85 m^2, or less than 1 per cent), which would marginally increase the required parking provision under the Growth Centres DCP. The approved facility has a total of 341 parking spaces. Consideration of this parking provision against the requirements of the Growth Centres DCP is provided in the following table. As shown, the approved parking provision continues to comply with the requirements of the Growth Centres DCP based on the revised floor areas.
Wastes and Hazards	The proposed modification would not significantly alter the generation or management of wastes associated with the approved project, or affect the hazards associated with the facility.
Utilities and Services	The proposal is not expected to affect the capacity of utilities and services associated with the approved project.

Table 4A: *Parking Provision*

Landuse	Gross Floor Area (m^2)	Required Parking Space Rate	Total Required	Proposed Spaces
Industrial	30,085[1]	1 per 75m^2 for GFA <7,500m^2	100	341
		1 per 200m^2 for GFA >7,500m^2	113	
Office	3,450	1 per 40m^2	87	
Retail/showroom	315	1 per 22m^2 where GFA >200m^2	14	
Total	33,850[1]		314	

[1] Includes the proposed warehouse/manufacturing GFA of 25,395m^2 plus the future expansion area of 4,690m^2

5.0 Conclusion

Having regard to all the salient environmental, social and economic issues, it is considered that the development as modified represents reasonable and suitable development of the land. It is respectfully requested that the Department (as delegate of the Minister for Planning), having due regard for the information submitted in this document, grants approval to the proposed modifications to the Lindt Facility Project at Marsden Park.

Should you have any enquiries in relation to this matter, please do not hesitate to contact me on 0400 392 861.

Yours faithfully,
PJEP Environmental Planning

Phil Jones
Principal Environmental Planner

Cc: Qanstruct, Lindt, Toll, Sydney Business Park
Attachments:

Attachment 1	Revised Architectural Plans
Attachment 2	Revised Stormwater Management Plan

ATTACHMENT 1:
REVISED ARCHITECTURAL PLANS

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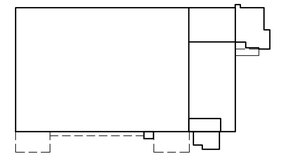

KEY PLAN

DIMENSIONS MUST NOT BE SCALED FROM DRAWINGS.

ALL DIMENSIONS TO BE CONFIRMED ON SITE PRIOR TO THE COMMENCEMENT OF ANY WORK.

REV.	DATE	AMENDMENT	SIGNED
C	30-04-15	ISSUED FOR SECTION 96	JTC
B	25-07-14	CARPARK ISLANDS UPDATED TO MATCH CIVIL DESIGN	JTC
A	10-07-14	ISSUED FOR DEVELOPMENT CONSENT	JTC

CLIENT

Qanstruct Partner of choice
500 Burwood Road Hawthorn Victoria 3122
Telephone (03) 9810 8300 mail@mnia.com.au

PROJECT

NEW FACILITY
16 HOLLINSWORTH RD
MARSDEN PARK NSW

ARCHITECT

MNIA ARCHITECTS
Level 4, 8 Help St, PO Box 1212, Chatswood NSW 2067
Telephone (02) 9495 6400 mail@mnia.com.au

TITLE

SITE / FLOOR PLAN

DATE	07-07-14	PROJECT No.	STATUS
SCALE	1:500 (B1)	1423	AR/DA
DRAWN	JTC		
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APPROVED		DA 01	/C

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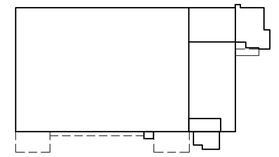

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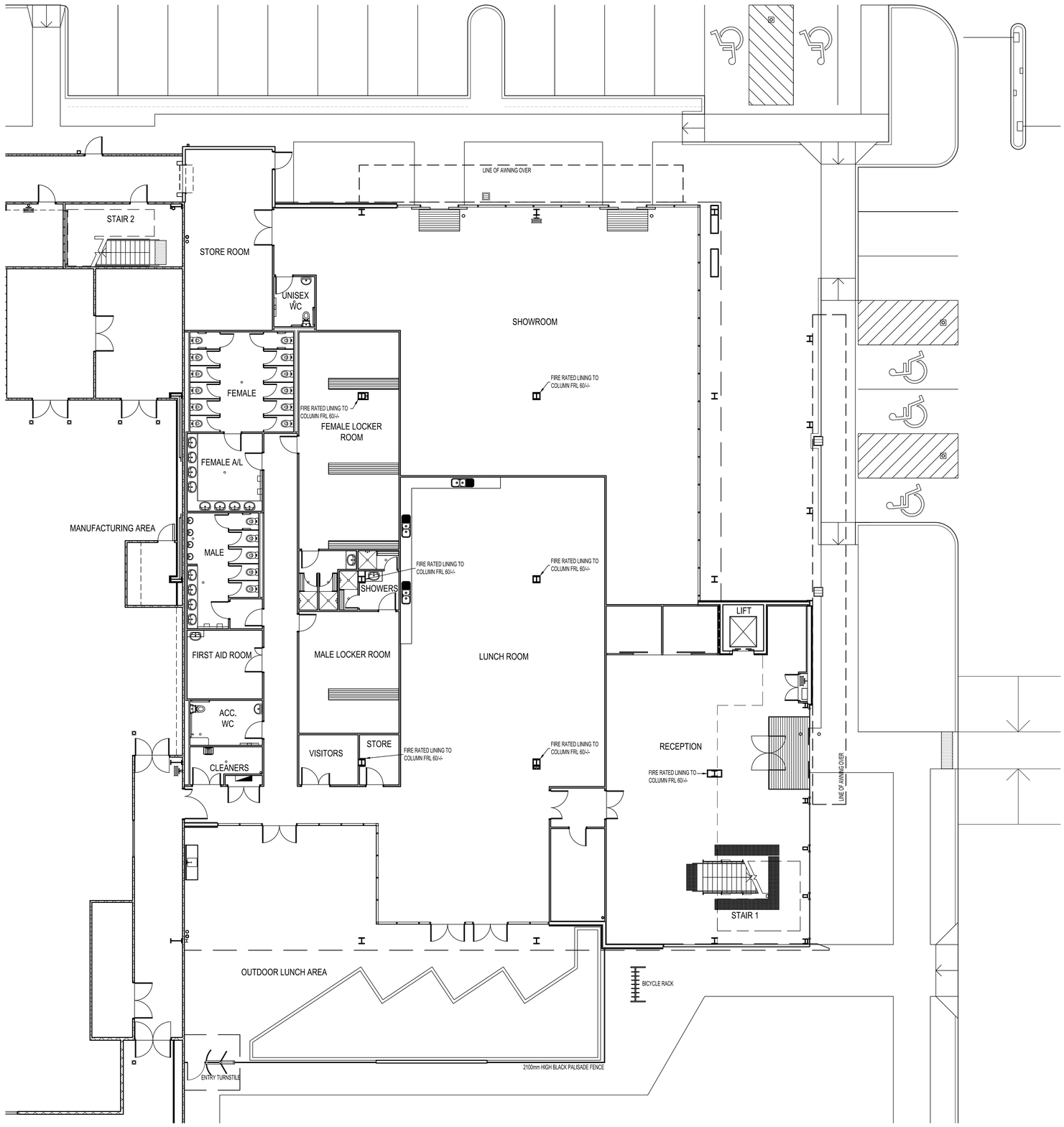

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LINDT & SPRÜNGLI

TOLL

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PROJECT

NEW FACILITY
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MARSDEN PARK NSW

ARCHITECT

MNIA ARCHITECTS

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TITLE

OFFICE AND AMENITIES
GROUND FLOOR PLAN

DATE	09-07-14	PROJECT No.	STATUS
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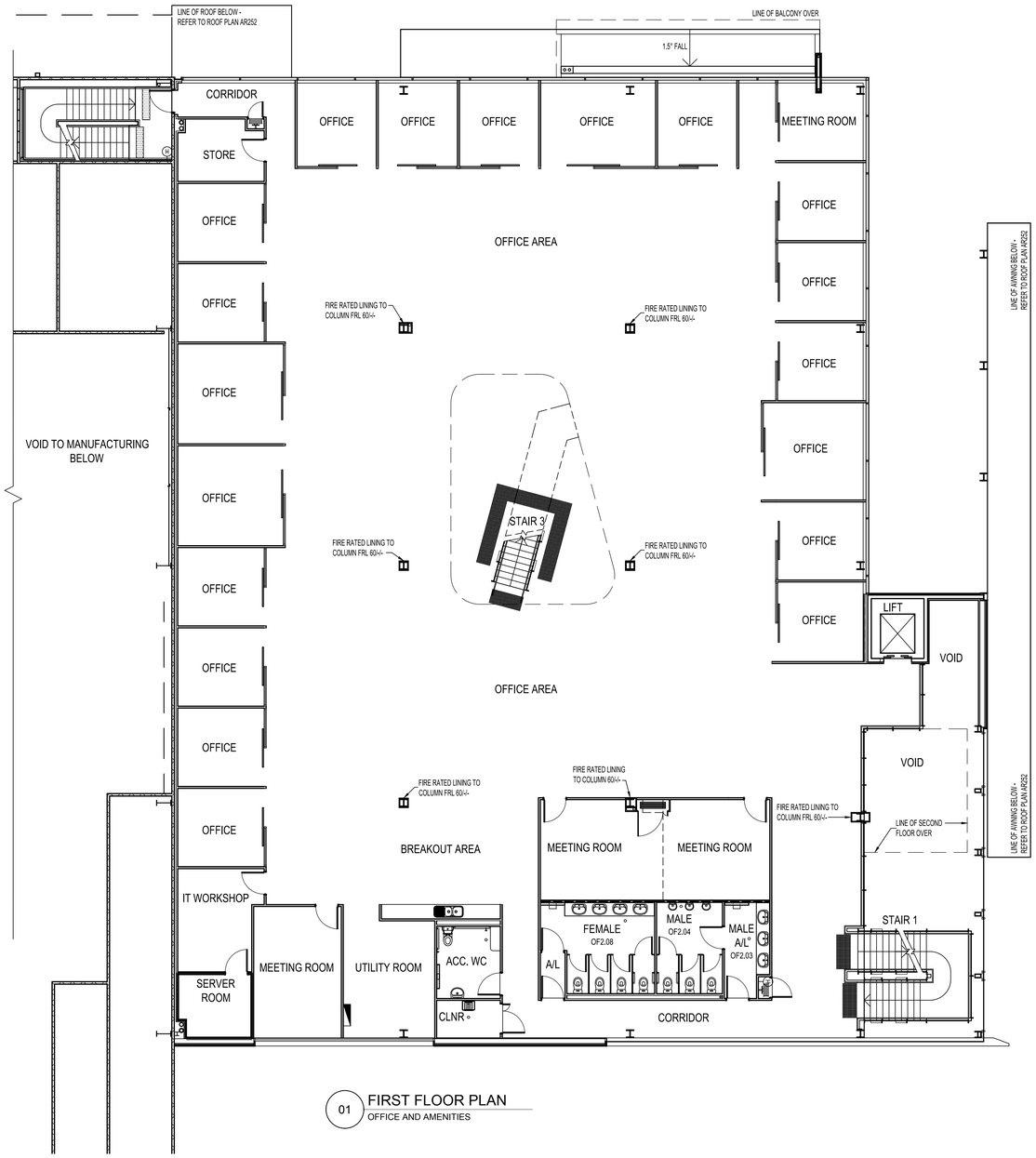
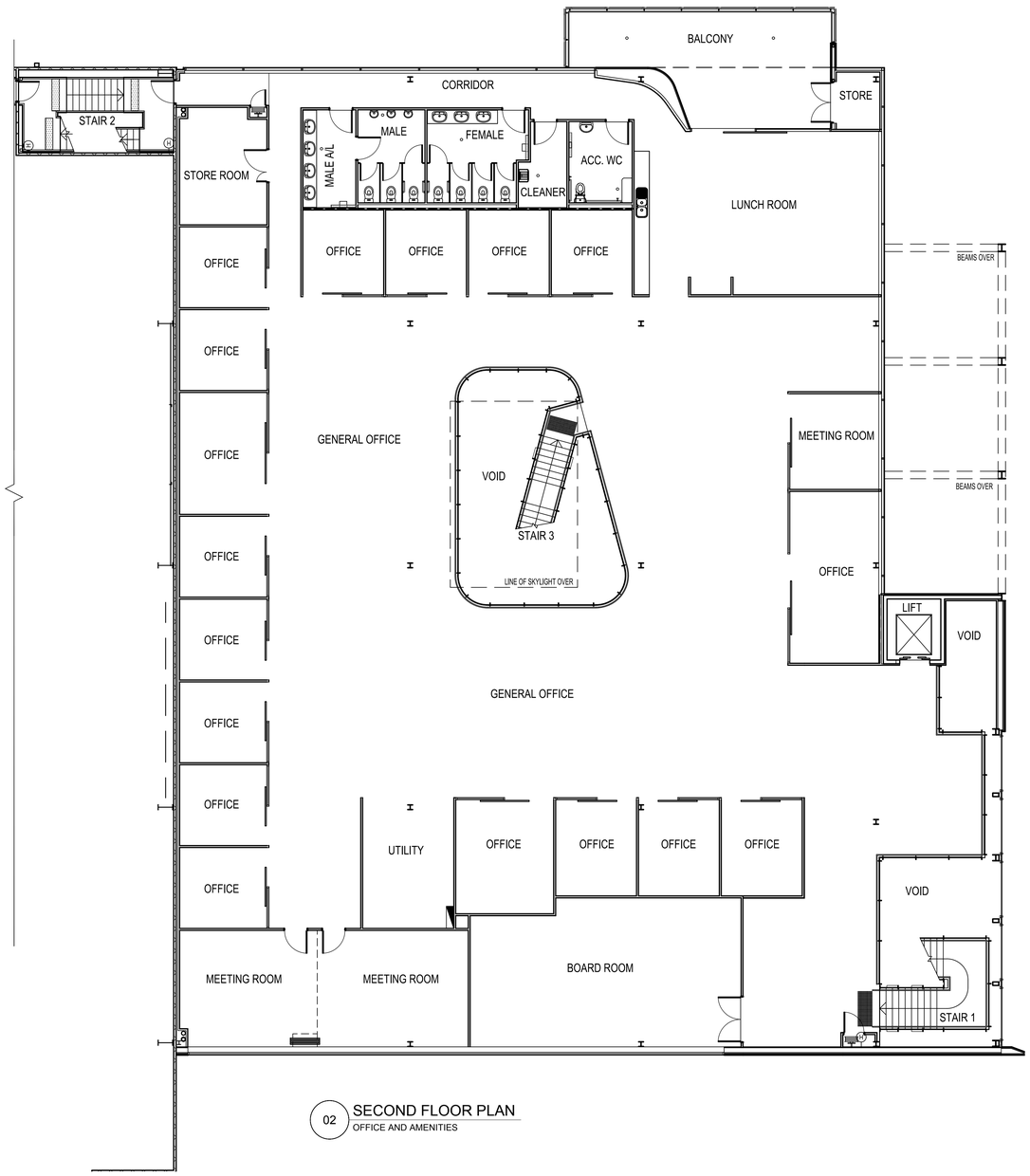
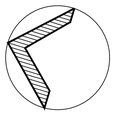
DRAWN	JTC		
CHECKED		DWG No.	REV No.
APPROVED		DA 02	/B

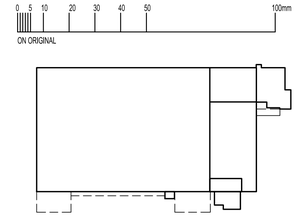


01 FIRST FLOOR PLAN
OFFICE AND AMENITIES



02 SECOND FLOOR PLAN
OFFICE AND AMENITIES





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TITLE

OFFICE AND AMENITIES
FIRST AND SECOND
FLOOR PLANS

DATE	09-07-14	PROJECT No.	STATUS
SCALE	1:100 (B1)	1423	AR/DA
DRAWN	JTC		
CHECKED		DWG No.	REV No.
APPROVED		DA 03	/B

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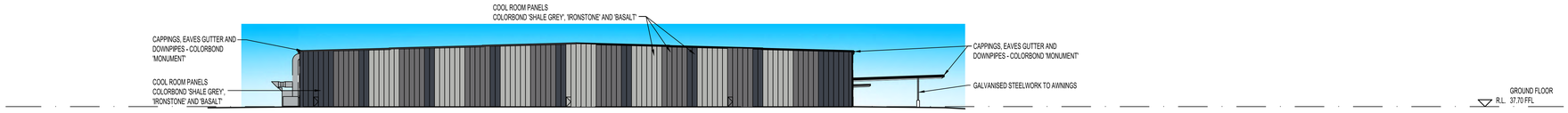
ON ORIGINAL



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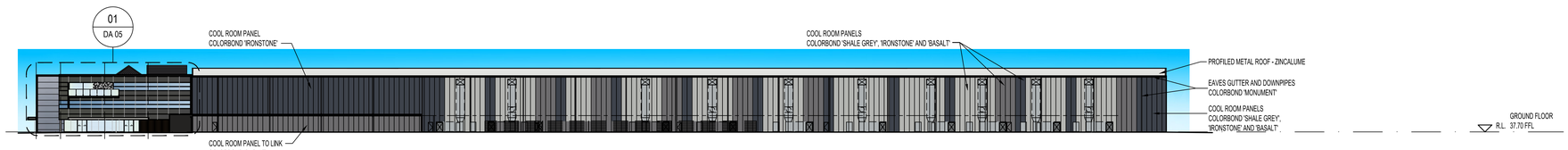

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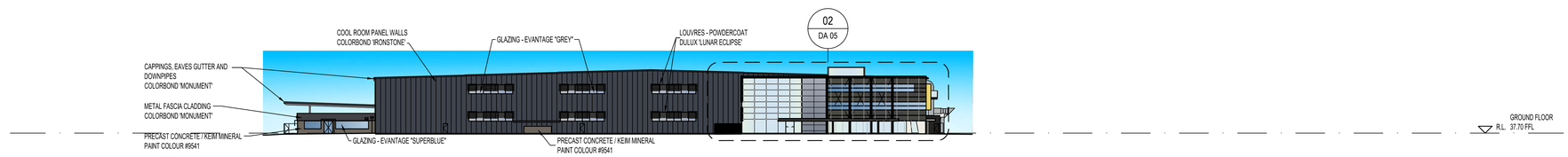

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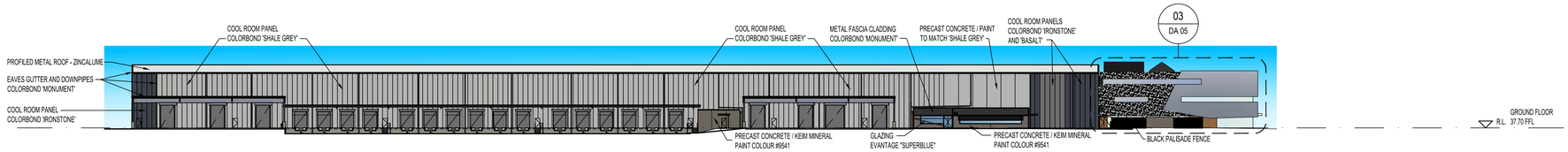

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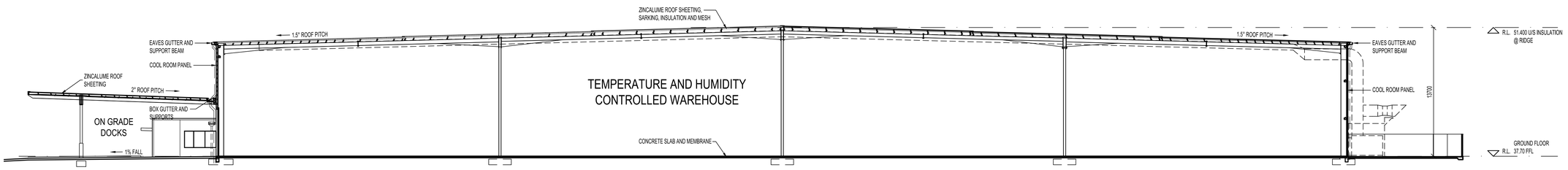
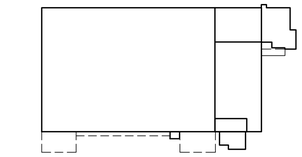


05 SECTION
1:200



KEY PLAN

DIMENSIONS MUST NOT BE SCALED FROM DRAWINGS.

ALL DIMENSIONS TO BE CONFIRMED ON SITE PRIOR TO THE COMMENCEMENT OF ANY WORK.

REV.	DATE	AMENDMENT	SIGNED
B	30-04-15	ISSUED FOR SECTION 96	JTC
A	10-07-14	ISSUED FOR DEVELOPMENT CONSENT	JTC

LINDT & SPRÜNGLI

TOLL

CLIENT

Qanstruct Partner of choice

500 Burwood Road Hawthorn Victoria 3122
Telephone (03) 9810 8300 mail@mnia.com.au

PROJECT

NEW FACILITY
16 HOLLINSWORTH RD
MARSDEN PARK NSW

ARCHITECT

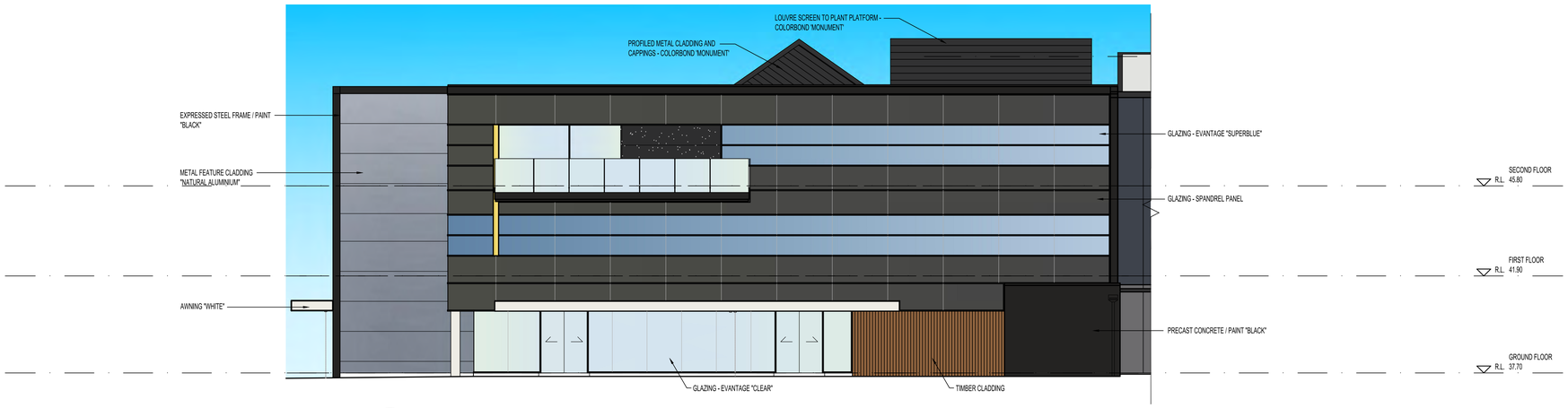
MNIA ARCHITECTS

Level 4, 8 Help St, PO Box 1212, Chatswood NSW 2067
Telephone (02) 9495 6400 mail@mnia.com.au

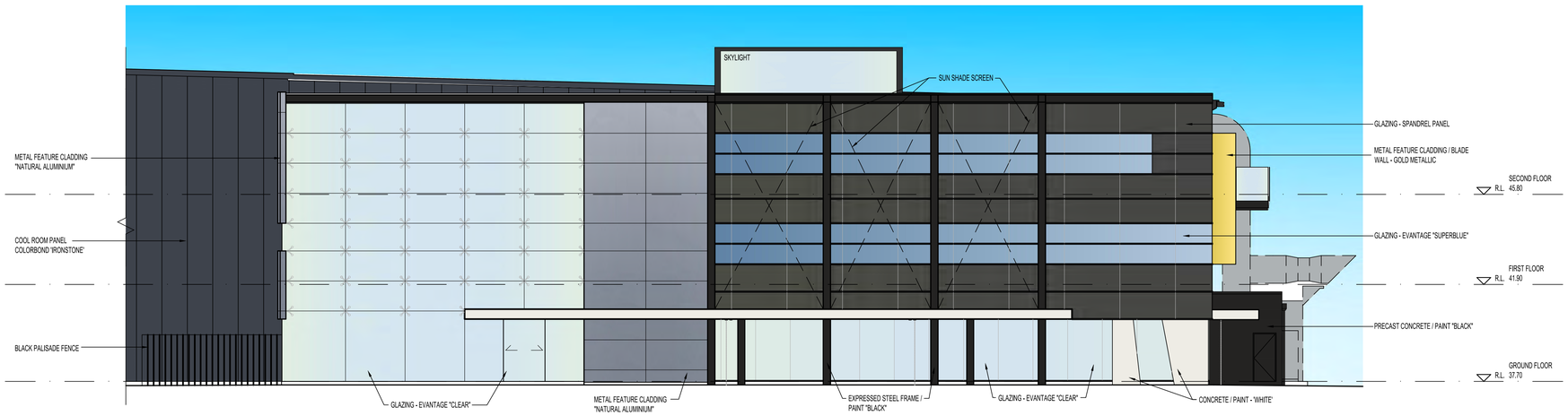
TITLE

ELEVATIONS AND SECTION

DATE	09-07-14	PROJECT No.	STATUS
SCALE	AS SHOWN (B1)	1423	AR/DA
DRAWN	JTC		
CHECKED		DWG No.	REV No.
APPROVED		DA 04	/B



01 EAST ELEVATION
OFFICE AND AMENITIES



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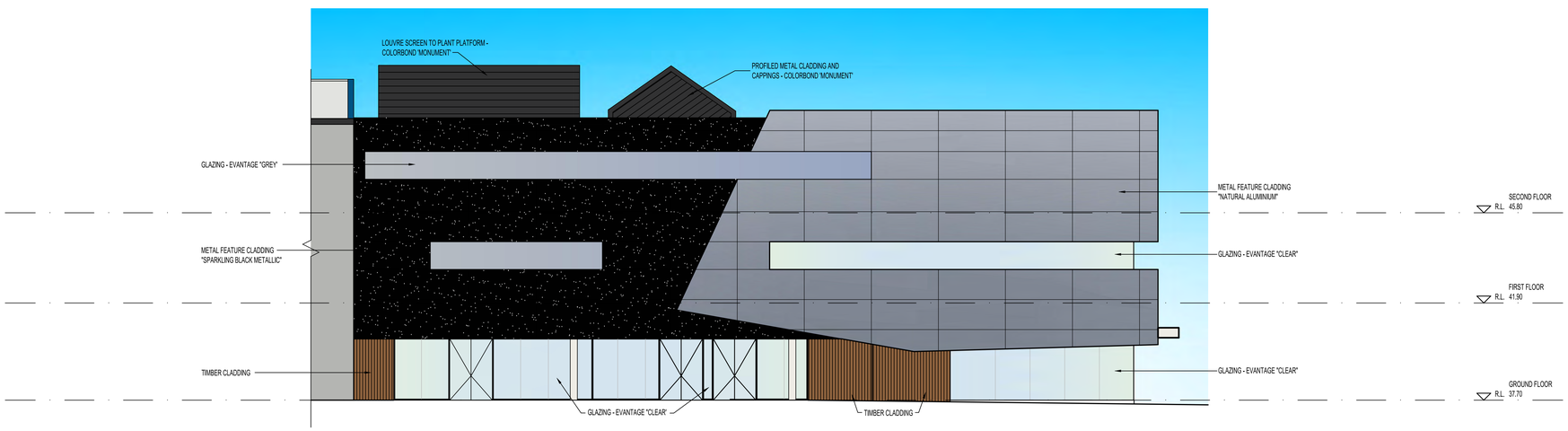
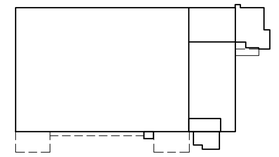
OFFICE AND AMENITIES



03 WEST ELEVATION
OFFICE AND AMENITIES

0 5 10 20 30 40 50 100mm
ON ORIGINAL



KEY PLAN

REV.	DATE	AMENDMENT	SIGNED
B	30-04-15	ISSUED FOR SECTION 96	JTC
A	10-07-14	ISSUED FOR DEVELOPMENT CONSENT	JTC

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MARSDEN PARK NSW

ARCHITECT

MNIA ARCHITECTS

Level 4, 8 Help St, PO Box 1212, Chatswood NSW 2067
Telephone (02) 9495 6400 mail@mnia.com.au

TITLE

OFFICE AND AMENITIES
ELEVATIONS

DATE	09-07-14		PROJECT No.	STATUS
SCALE	1:100	(B1)	1423	AR/DA
DRAWN	JTC			
CHECKED			DWG No.	REV No.
APPROVED			DA 05	/B

ATTACHMENT 2:
REVISED STORMWATER MANAGEMENT PLAN

ADELAIDE | MELBOURNE

CELEBRATING 40 years
fmg ENGINEERING
incorporating BURNS HAMILTON

Level 1, 2 Domville Ave
Hawthorn VIC 3122
P 03 9815 7600
F 03 9815 7602
ABN 58 083 071 185

fmgengineering.com.au

STORMWATER MANAGEMENT PLAN

Site Address:	Lot 125 Hollinsworth Rd, Marsden Park, NSW 2705
Council:	Blacktown City Council
Application No:	SSD 6620
FMG Ref:	S17901 - 223602
Report by:	Rebecca Gale
Date:	20 March 2015
Revision:	3

Appendices

A	Drainage Design Plans Sediment & Erosion Control Plans
B	Stormwater360 Treatment Details
C	MUSIC file, Catchment Plan.pdf
D	Pit Entry Capacity, Raingarden 2

1.0 Introduction

The following report considers the management of surface and groundwater impacts during construction and operation of the proposed development at 920 Richmond Road, Marsden Park. The development includes the construction of:

- Warehouse / factory building
- Adjoining office buildings
- Hardstand area with loading docks
- Car park
- Fire access track
- Landscaped / garden area

The drainage and earthworks design is based upon the Architectural Site Plan by MNIA Architects (Rev 1), dated 6 March 2015.

2.0 Reference Documentation

- Engineering Guide for Development, Blacktown City Council, 2005
- Blacktown Development Control Plan (Part R), Blacktown City Council, 2006
- Marsden Park Industrial Precinct Post Exhibition Water Cycle Management Strategy Report ("*SMS*"), by J. Wyndham Prince, dated February 2011
- Developer Handbook for Water Sensitive Urban Design ("*DHWSUD*"), Blacktown City Council, November 2013
- Australian and New Zealand Guidelines for fresh and marine water quality: Volume 1 – The guidelines
- Environmental Management Plan, Qanstruct, 6 November 2014

3.0 Existing Conditions

The site is located within the Marsden Park Industrial Precinct, 40km north-west of Sydney's CBD, which was rezoned for development in 2010. Prior to development, the subject site originally comprised open grassland and a dam.

The Sydney Business Park (SBP) infrastructure surrounding the site is currently under construction; works currently underway include:

- New road (Hollinsworth Road) along the southern site boundary

- New road (currently “Road 5A”) and stormwater drain along the northern site boundary
- Substantial earthworks at the subject site

4.0 Stormwater Management during construction

During the construction phase, the potential exists for significant increases in the amount of pollutants, particularly sediment, exported from the site. In line with Qanstruct’s Environmental Management Plan (EMP), the following measures will be implemented to maintain the quality of stormwater discharged the site:

- Straw bale bunds with a geofabric covering
- Geotextile filter fabric fences
- Site access pad with geofabric, gravel layer and 300mm high berm

Appendix C of the EMP contains an example of an Inspection Record that will document checks that take place weekly, and after every rainfall event, to monitor the functionality of the sediment control measures. Checks include:

- That all silt fences / geofabrics are fixed firmly
- That all barriers catch water flow
- That excess sediment has not built up
- That there is no erosion surrounding the barrier
- That the structures / trapping measures are in good condition

The Inspection Record also registers any remedial actions that have taken place, which might include:

- Replacement
- Improving stability
- De-silting

Where observation of water quality parameters indicate ineffectiveness of the treatment measures, then audits of the stormwater discharge for the site will be carried out. The audit will include tests of colour, suspended solids and pH. Where results indicate, system improvements will be implemented to bring these parameters in-line with requirements.

5.0 Stormwater Management following construction

Introduction

The following excerpt from the SMS describes on-lot stormwater management concepts that guided the analysis of the entire park:

> *"A rainwater tank or tank will be strategically placed within each allotment to harvest, store and allow roof runoff to be reused for toilet flushing, hot water and external irrigation. All external hardstand areas will be directed to a Gross Pollutant Trap (GPT), which will pre-treat the runoff before it is discharged into a raingarden (bio-retention/filtration) system representing at least 1% of the allotment. The remaining pervious areas of the allotment, where elevations permit, will be directed into the raingarden, which will be connected to the formal drainage network."*

The stormwater design for the subject site adheres to this vision:

Stormwater is generally divided up into 2 components: the eastern drainage system and the western drainage system. Both collect run-off via grated pits (with Enviropod A3 inserts), grated trenches, raingardens and agricultural drains which connect to the north east corner of the site via underground drains.

Roof water connects into the underground drainage system.

Both drainage systems connect through a filtration system before joining to discharge to the SBP drain along Road 5A, which is yet to be constructed.

The end treatment filtration system consists of a Stormwater360 StormFilter Tank.

The attached "Catchment Plan" in Appendix C shows how rainwater over the site will we collected and treated.

Modelling of the stormwater management system indicates that is meets City of Blacktown best practice requirements.

Managing Flows

Pipe Capacities:

Pipe flow calculations were carried out with the following parameters:

- ARI 20 years
- Storm length: 5 minutes
- Min. time of concentration: 6 minutes
- Co-efficient of run-off for roofs, paths and pavements: 0.9
- Co-efficient of run-off for landscaped areas: 0.3
- Manning's Number for PVC: 0.011
- Manning's Number for RCP: 0.013

Rainfall intensities were calculated using charts from Australian Rainfall & Runoff Volumes 1 and 2. Runoff was calculated using the Rational Method.

Pit Entry Capacities

Calculated using the Rational Method and Sharp-crested Weir Formula ($Q = 0.5 \times 1.66 \times L \times h^{3/2}$), the depth of water over grated pits was checked to ensure depths stay well below 150mm. The following parameters were used:

- 100 year ARI, 5 minute storm
- Rainfall Intensity: 217 mm/hr
- Perimeter length (calculation 1): x2 sides of the pit, i.e.1.8m
- Blockage factor: 0.5
- Weir co-efficient: 1.66
- Co-efficient of run-off: 0.9

The height of water over the grated pit in Raingarden 2 was checked to ensure ponding over the pit is less than 50mm, assuming blockage of 25%. Refer to computations in Appendix D.

Roof Drainage

Depending on the scope of the required drainage for the various elements, the following codes and guidelines were utilised to ensure adequately sized gutters, sumps, rainheads and downpipes:

- AS3500.3:2003 Stormwater drainage

- EBS – Notes on the Science of Building (CSIRO, 1978) NSB152,153,154
- Roof Drainage by KG Martin (CSIRO 1973)

Box gutters were designed for a 100 year ARI storm and eaves gutters to a 20 year ARI storm, both 5 minutes in duration.

Flood levels

With the aim of matching into boundary levels and ensuring adequate drainage of the site, a finished floor level of RL37.70m AHD was selected. There are no flood level requirements for the site. The levels surrounding the building have been designed so the building will not flood in a 100 year ARI 5 minute storm event.

Stormwater Quality Management

Objectives

The following key stormwater quality objectives have been identified by the SMS and the Blacktown Development Control Plan:

- 90% reduction is gross pollutant loading
- 85% reduction in total suspended solids loading
- 65% reduction in total phosphorous loading
- 45% reduction in total nitrogen loading
- 90% reduction in total hydrocarbon loading

Modelling

FMG modelled the drainage design in the MUSIC program (version 5.1). Set-up files, including meteorological and runoff data were obtained from Blacktown City Council and utilised in the model.

Source Nodes

Source nodes were obtained from Blacktown City Council and calibrated according to DHWSUD, and include:

- Landscaped areas
- Road areas (car parking, fire access track and hardstand)
- Other impervious areas (footpaths)
- Roof areas

Treatment Nodes

Bioretention

Refers to 'raingardens' located within traffic islands and bioretention swales. Parameters were inputted in accordance with DHWSUD and the details (refer to drainage design). All Bioretention areas have at least a 400mm deep filtration layer, with pollutant removing vegetation such as those deemed appropriate by Blacktown LGA (such as those listed in "WSUD Information Sheet No. 5"). Refer to landscape architect for species.

Gross Pollutant Traps

All surface water of road areas that is collected in grated pits (excluding those collected via raingardens) will run through *Enviropod A3* inserts. Refer to the attached details. Rainwater from the roof will additionally run through junction pits with these inserts (each pit is designed with a minimum of 350mm between the invert of the inlet and the obvert of the outlet). A maximum 2 no. downpipes will run through each pit.

Filtration

Consists of a Stormwater360 Stormfilter Tank with 80 no. 1.6L/s cartridges. The device has high flow diversion and energy dissipaters built in. The manufacturers have recommended that the baffle will not be required as the low flow splitters incorporated into the design will be sufficient. Refer to the attached details.

Results

The proposed treatment train was calculated to meet and exceed Council objectives:

- 99% reduction is gross pollutant loading
- 85% reduction in total suspended solids loading
- 65% reduction in total phosphorous loading
- 46% reduction in total nitrogen loading

Ongoing Monitoring

Along with the supply of the Stormfilter filter tank and Enviropods, Stormwater360 will provide ongoing maintenance of these treatment measures, including:

- 4 monthly service to all Enviropods
- Annual service of filters
- Disposal of all contaminants

APPENDIX A

CIVIL DESIGN DRAWINGS /

SEDIMENT & EROSION CONTROL PLAN

APPENDIX B

STORMWATER360 PRODUCT DETAILS

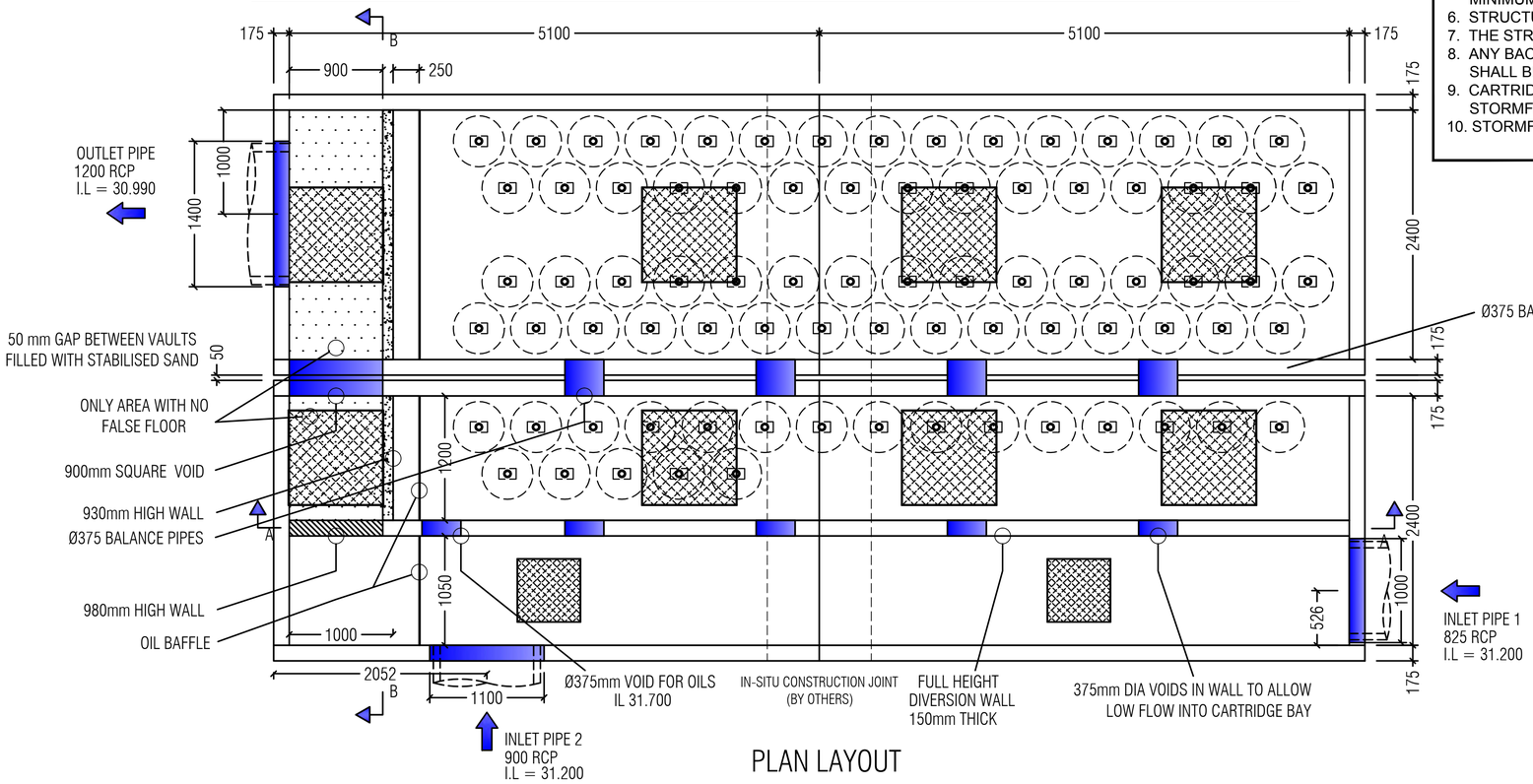
STORMFILTER DESIGN TABLE

- STORMFILTER TREATMENT CAPACITY VARIES BY NUMBER OF FILTER CARTRIDGES INSTALLED AND BY REGION SPECIFIC INTERNAL FLOW CONTROLS. CONVEYANCE CAPACITY IS RATED AT 80L/S.
- THE STANDARD CONFIGURATION IS SHOWN. ACTUAL CONFIGURATION OF THE SPECIFIED STRUCTURE(S) PER CIVIL ENGINEER WILL BE SHOWN ON SUBMITTAL DRAWING(S).
- ALL PARTS PROVIDED AND INTERNAL ASSEMBLY BY STORMWATER360 UNLESS OTHERWISE NOTED.

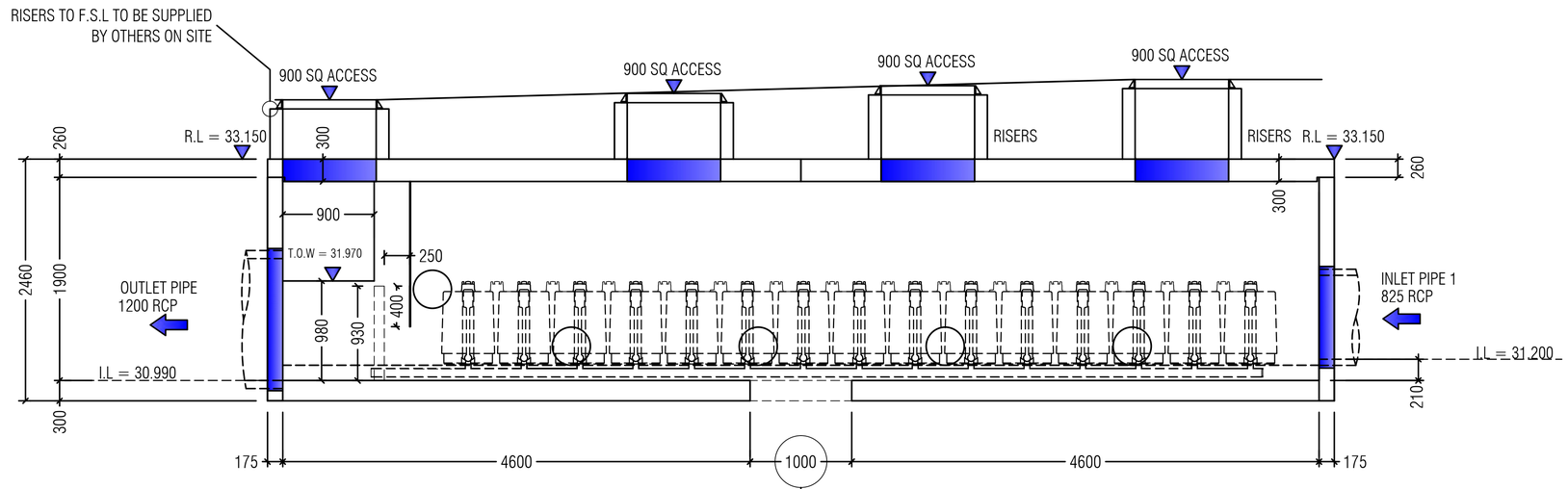
CARTRIDGE HEIGHT	690		460		310	
SYSTEM HYDRAULIC DROP (H - REQ'D. MIN.)	930		700		550	
TREATMENT BY MEDIA SURFACE AREA L/S/m2	1.4	0.7	1.4	0.7	1.4	0.7
CARTRIDGE FLOW RATE (L/s)	1.42	0.71	0.95	0.47	0.63	0.32

GENERAL NOTES

1. INLET AND OUTLET PIPING SHALL BE SPECIFIED BY SITE CIVIL ENGINEER (SEE PLANS) AND PROVIDED BY CONTRACTOR. STORMFILTER IS PROVIDED WITH OPENINGS AT INLET AND OUTLET LOCATIONS.
2. IF THE PEAK FLOW RATE, AS DETERMINED BY THE SITE CIVIL ENGINEER, EXCEEDS THE PEAK HYDRAULIC CAPACITY OF THE PRODUCT, AN UPSTREAM BYPASS STRUCTURE IS REQUIRED. PLEASE CONTACT STORMWATER360 FOR OPTIONS.
3. THE FILTER CARTRIDGE(S) ARE SIPHON-ACTUATED AND SELF-CLEANING. THE STANDARD DETAIL DRAWING SHOWS THE MAXIMUM NUMBER OF CARTRIDGES. THE ACTUAL NUMBER SHALL BE SPECIFIED BY THE SITE CIVIL ENGINEER ON SITE PLANS OR IN DATA TABLE BELOW. PRECAST STRUCTURE TO BE CONSTRUCTED IN ACCORDANCE WITH AS3600.
4. SEE STORMFILTER DESIGN TABLE FOR REQUIRED HYDRAULIC DROP. FOR SHALLOW, LOW DROP OR SPECIAL DESIGN CONSTRAINTS, CONTACT STORMWATER360 FOR DESIGN OPTIONS.
5. ALL WATER QUALITY PRODUCTS REQUIRE PERIODIC MAINTENANCE AS OUTLINED IN THE O&M GUIDELINES. PROVIDE MINIMUM CLEARANCE FOR MAINTENANCE ACCESS.
6. STRUCTURE AND ACCESS COVERS DESIGNED TO MEET AUSTROADS T44 LOAD RATING WITH 0.0m TO 2.0m FILL MAXIMUM.
7. THE STRUCTURE THICKNESSES SHOWN ARE FOR REPRESENTATIONAL PURPOSES AND VARY REGIONALLY.
8. ANY BACKFILL DEPTH, SUB-BASE, AND OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY SITE CIVIL ENGINEER.
9. CARTRIDGE HEIGHT IS 690mm (SHOWN). CARTRIDGE HEIGHT AND ASSOCIATED DESIGN PARAMETERS PER STORMFILTER DESIGN TABLE.
10. STORMFILTER BY STORMWATER360: SYDNEY (AU) PHONE: (02) 8335 1888, BRISBANE (AU) PHONE: (07) 3714 9556.



PLAN LAYOUT



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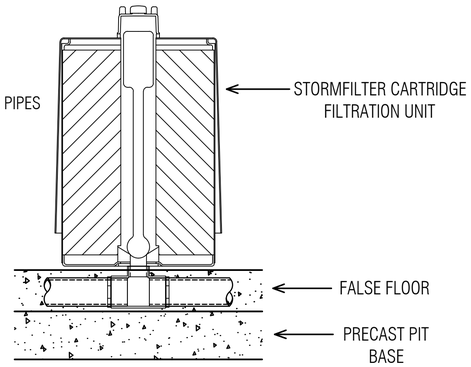


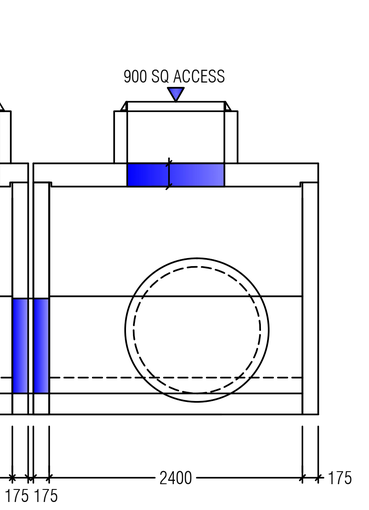
STORMFILTER CARTRIDGE DETAIL

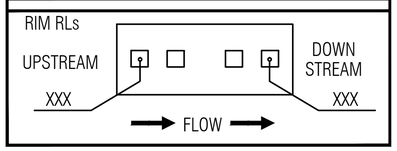
SITE SPECIFIC DATA REQUIREMENTS

STRUCTURE ID	XXX
WATER QUALITY FLOW RATE (L/S)	128
PEAK FLOW RATE (L/S)	1841
RETURN PERIOD OF PEAK FLOW (yrs)	20
# OF CARTRIDGES REQUIRED	80
CARTRIDGE HEIGHT (310, 460 or 690mm)	690
MEDIA TYPE (PERLITE, PERLITE/ZEOLITE OR ZPG)	ZPG

PRECAST MAX. LIFT WEIGHT	28000kg
PRECAST LID WEIGHT	7800kg

PIPE DATA:	I.L.	MATERIAL	DIAMETER
INLET PIPE #1	31.200	R.C.P.	825
INLET PIPE #2	31.200	R.C.P	900
OUTLET PIPE	30.990	R.C.P.	1200





Stormwater360

Lindt Warehouse Marsden Park

80 CARTRIDGE STORMFILTER SYSTEM
10.2m x 2.4m x 2.0m HIGH VAULT
STANDARD PRODUCT DRAWING

DRAWING 1 F

DATE: 19.02.15 | FILE NAME: 04683_80CSFV_1F | DRN: W.J. | CHK: M.W.

APPENDIX C

MUSIC MODEL & CATCHMENT PLAN

LEGEND

- ROAD DIRECTLY TO STORMFILTER
- ROAD TO RG 1
- ROAD TO ENVIROPOD
- ROOF TO ENVIROPOD
- OTHER TO RAINGARDEN 2
- ROOF TO ENVIROPOD +TANK
- OTHER DIRECTLY TO STORM FILTER
- OTHER TO ENVIROPOD
- OTHER TO RAINGARDEN 1
- L'SCAPE DIRECTLY TO STORMFILTER
- L'SCAPE TO ENVIROPOD
- EP — ENVIROPOD

460,990,100 sq mm
1,690,056,000 sq mm
785,522,000 sq mm
96,803,580 sq mm
260,530,900 sq mm
215,345,300 sq mm
1,256,155,000 sq mm
44,905,090 sq mm
5,386,766,000 sq mm
5,034,014,000 sq mm
932,091,600 sq mm
23,679,170,000 sq mm
1,381,469,000 sq mm
501,311,500 sq mm
1,573,169,000 sq mm
1,470,744,000 sq mm
1,017,332,000 sq mm
28,027,040 sq mm
200,465,200 sq mm
PROPOSED LOT 125
IN UNREGISTERED PLAN OF SUBDIVISION OF
LOT 100 IN DP 1169150 & LOT 16 IN DP 262886
OLD DAM
CURRENTLY BEING FILLED
AREA BEING FILLED
FFL 37.70
HOLLINSWORTH ROAD

CATCHMENT AREAS

SCALE 1:500 @ A1

APPENDIX C

COMPUTATIONS FOR PIT IN RAINGARDEN 2

fmg ENGINEERING incorporating BURNS HAMILTON

PROJECT | LINDT

JOB NO | 223602 BY | RG

SHEET | PONDING OVER RAINGARDEN PIT DATE | 12/1/14 CHECK | RA

Rational Method

Landscaped area : 167 m^2

Pavement area : 575 m^2

I = 157 mm/hr (20 year ARI, 6 min tc)

$$Q = CIA/360$$

$$= \frac{(0.3)(157)(0.0167) + (0.9)(157)(0.0575)}{360}$$

$$= 0.02475 \ m^3/s$$

Weir Formula

Blockage factor = 0.75

Weir Co-efficient = 1.66

L = 0.9m × 4
= 3.6m

$$Q = 0.75 \times 1.66 \times L \times h^{3/2}$$

$$h = \left(\frac{Q}{0.75 \times 1.66 \times L} \right)^{2/3}$$

$$= \left(\frac{0.02475}{0.75 \times 1.66 \times 3.6} \right)^{2/3}$$

$$= 0.031 \ m \text{ , i.e } 31mm < 50mm$$