

15 May 2018

Commercial and Industrial Property
Attention: Mr Darryl Smith
Suite 59, Upper Deck Jones Bay Wharf
26-62 Pirrama Road
PYRMONT NSW 2009

Dear Sir

Re: Quarry Road, Erskine Park, NSW (Cleanaway Facility)
SSD 7075 Mod 3- Drainage Impacts of Additional Impervious Area

We provide this letter in support of Modification 3 to SSD 7075 at 85 Quarry Road, Erskine Park. Specifically, this letter reviews the effect of the additional impervious area on the stormwater management system in relation to the proposed truck parking bays.

As part of Mod 3, it is proposed that a truck parking bay is provided adjacent to the truck entry driveway coming off Quarry Road. The NSW Department of Planning and Environment requires confirmation that the stormwater management system approved under SSD 7075 Mod 2 can cater for the proposed increase in impervious area and this letter has been prepared to confirm this.

The total site area is 3.72 Ha and constitutes 86% impervious surface. The introduction of the 300m² parking area results in an increase of impervious area to total of 87% (refer enclosed architectural layout). An assessment of the effect on the documented stormwater management system has been made using DRAINS hydrologic and hydraulic modelling software. It is noted that the increase in impervious area is associated with the catchment being attenuated and treated by the open stormwater management basin located on the north-west corner of the site, as shown on drawing **Co13523.00-C41** as enclosed to this letter.

A summary of our assessment is discussed below:

- Total Site Area = 3.72 Ha
- Truck bay catchment area = 300 m²
- Increase in total impervious area over site = 1.10%
- Increase in total site runoff (before attenuation) = 0.003m³/s
- Increase in Basin Attenuation Volume due to increased impervious area = 1.5 m³
- Change in water surface level = 0.003m (3mm)
- No increase in runoff confirmed following attenuation.

The DRAINS modelling has confirmed that the increase in stormwater runoff from changing the pervious area to being impervious results in an approximate increase of 1% and the increase in basin volume required is 1.5m³ or approximately 0.4% of the total volume provided. Further the 3mm increase in water surface level due to the 1.5m³ additional storage volume can be accommodated within the provided detention system with sufficient freeboard to the basin bund level.

Given the above, the minor increase in attenuation storage due to the additional impervious area is considered negligible, and can be managed within the stormwater management basin as detailed.

This letter is provided by Costin Roe Consulting Pty Ltd and confirms the NSW DPE requirements have been met. Please contact the undersigned if clarifications of any of the above items are required.

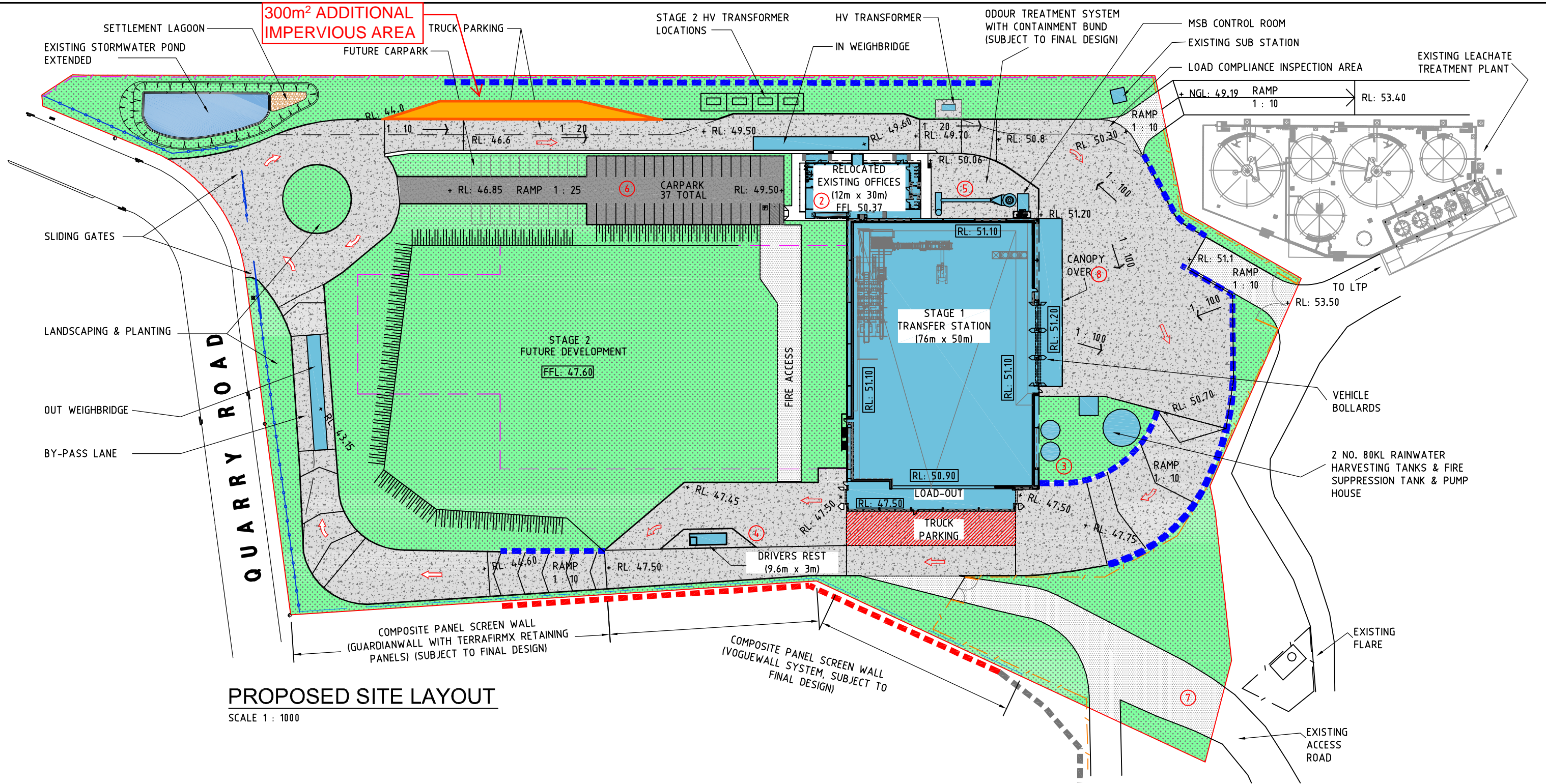
Yours faithfully,

COSTIN ROE CONSULTING PTY LTD

A handwritten signature in black ink, appearing to read 'M. Wilson', with a stylized flourish at the end.

MARK WILSON MIEAust CPEng NER
Director

Encl. Architectural layout showing additional impervious area
Costin Roe Consulting drawing Co13523.00-C41.



PROPOSED SITE LAYOUT
SCALE 1 : 1000

LEGEND

- | | | | |
|----------------------|--------------------|------------------------------------|---|
| DEVELOPMENT BOUNDARY | GRAVEL HARDSTAND | EXISTING FENCELINE | 2.4M HIGH NEW COMPOSITE PANEL SCREEN WALL |
| ASPHALT HARDSTAND | LANDSCAPED AREAS | 1.5M HIGH NEW BLACK PALISADE FENCE | EXISTING RETAINING WALL REMOVED/MODIFIED |
| CONCRETE HARDSTAND | TRAFFIC DIRECTIONS | CHAIN LINK FENCE | PROPOSED RETAINING WALL |

- SCHEDULE OF CHANGES
1. ADDITIONAL TRUCK PARKING TO NTH DRIVEWAY
 2. OFFICE LAYOUT REVISED
 3. PROPOSED STAGE 2 ADDITION DELETED, 2x80KL RW TANKS NOTED
 4. DRIVERS REST ADDED TO STH DRIVEWAY
 5. NTH ELEVATION DUCT WORK REVISED
 6. ADDITIONAL STAGE 1 CAR PARKING
 7. EXISTING ACCESS ROAD IN STH WEST RETAINED
 8. EAST CANOPY RAISED BY 500MM

PROJECT :
ERSKINE PARK RMF - STAGE 1
WASTE TRANSFER STATION
FOR
CLEANAWAY WASTE
MANAGEMENT LTD



ARCHITECTS DOCUMENTATION:

NICHOLAS & ALEXANDER ARCHITECTS
37 Bevan Street, Albert Park, 3206
Tel: 9696 5822
Email: naarch@bigpond.net.au
A.C.N. 070 432 932

PROPOSED SITE LAYOUT - STAGE 1 - MOD 3		DATE MARCH 2018	
DEVELOPMENT CONSENT		SCALE AS SHOWN @ A3	
DRWG. No.	DOCUMENTATION JH	SHEET. No.	REV.
17567	DRAWN JH	003	18
	CHECKED ND		

PIT SCHEDULE - STORMWATER NETWORK 'A'

PIT No.	GRATE RL	DEPTH	TYPE	SIZE	COMMENT
PIT A01	50.85	1440	SGGP	900x900	
PIT A02	50.85	1730	SGGP	900x900	
PIT A03	51.10	1000	SGGP	900x900	
PIT A04	50.71	1940	KIP	900x900	1.8m LINTEL
PIT A05	50.33	1000	SGGP	900x900	
PIT A06	50.00	840	SGGP	900x900	
PIT A07	49.27	1980	SJP	900x900	
PIT A08	49.45	2020	KIP	900x900	1.8m LINTEL
PIT A09	49.31	2200	SJP	900x900	
PIT A10	47.36	2230	SJP	1050x1050	
PIT A11	NO LONGER USED				
PIT A12	NO LONGER USED				
PIT A13	48.83	1000	KIP	900x900	1.8m LINTEL
PIT A14	48.95	1210	SJP	900x900	
PIT A15	48.83	1000	KIP	900x900	1.8m LINTEL
PIT A16	44.25	2230	SGGP	900x900	
PIT A17	44.00	2100	SGGP	900x900	
PIT A18	44.25	1910	SGGP	1050x1050	
PIT A19	42.79	1010	SGGP	1050x1050	
PIT A20	44.00	2310	SGGP	1050x1050	
PIT A21	50.70	1000	SGGP	900x900	
PIT A22	43.31	1130	SGGP	900x900	
PIT A23	43.35	1780	SJP	1050x1050	
PIT A24	51.15	1000	SGGP	900x900	
PIT A25	42.50	2040	BIP	2100x2100	
PIT A26	50.95	1650	SGGP	900x900	

PIT SCHEDULE - STORMWATER NETWORK 'B'

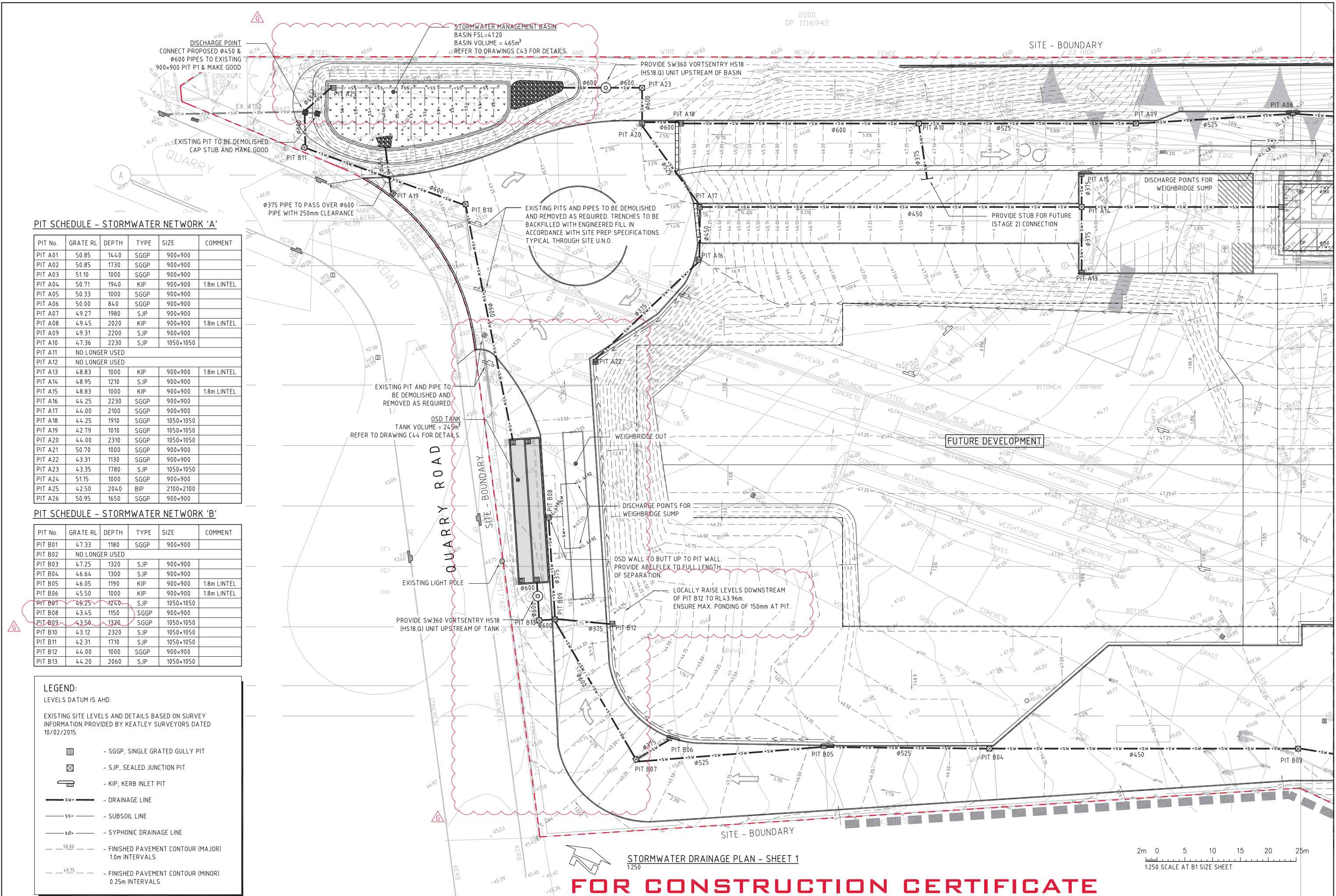
PIT No.	GRATE RL	DEPTH	TYPE	SIZE	COMMENT
PIT B01	47.33	1180	SGGP	900x900	
PIT B02	NO LONGER USED				
PIT B03	47.25	1320	SJP	900x900	
PIT B04	46.64	1300	SJP	900x900	
PIT B05	46.05	1190	KIP	900x900	1.8m LINTEL
PIT B06	45.50	1000	KIP	900x900	1.8m LINTEL
PIT B07	45.25	1240	SJP	1050x1050	
PIT B08	43.45	1150	SGGP	900x900	
PIT B09	43.50	1320	SGGP	1050x1050	
PIT B10	43.12	2320	SJP	1050x1050	
PIT B11	42.31	1710	SJP	1050x1050	
PIT B12	44.00	1000	SGGP	900x900	
PIT B13	44.20	2060	SJP	1050x1050	

LEGEND:

LEVELS DATUM IS AHD.

EXISTING SITE LEVELS AND DETAILS BASED ON SURVEY INFORMATION PROVIDED BY KEATLEY SURVEYORS DATED 10/02/2015.

- SGGP, SINGLE GRATED GULLY PIT
- SJP, SEALED JUNCTION PIT
- KIP, KERB INLET PIT
- DRAINAGE LINE
- SUBSOIL LINE
- SYPHONIC DRAINAGE LINE
- FINISHED PAVEMENT CONTOUR (MAJOR) 1.0m INTERVALS
- FINISHED PAVEMENT CONTOUR (MINOR) 0.25m INTERVALS



STORMWATER DRAINAGE PLAN - SHEET 1
1:250

FOR CONSTRUCTION CERTIFICATE

REVISED AS CLOUDED	20.04.18	F
REVISED AS CLOUDED	27.02.18	E
ISSUED FOR CONSTRUCTION CERTIFICATE	24.01.18	D
REVISED AS CLOUDED	17.11.17	C
ISSUED FOR TENDER	10.11.17	B
ISSUED FOR INFORMATION	27.10.17	A
AMENDMENTS	DATE	ISSUE

REVISED AS CLOUDED
AMENDMENTS

10.05.18 G
DATE ISSUE

ARCHITECT	CLIENT
Nicholas & Alexander Architects 37 Bevan Street, Albert Park VIC 3206 E-mail: narch@narch.net.au Tel: (03) 9696 5822 Fax: (03) 9696 5833	CIP DEVELOPING RELATIONSHIPS BUILDING SUCCESS

PROJECT	DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF.
PROPOSED DEVELOPMENT CLEANAWAY MANAGEMENT FACILITY ERSKINE PARK, NSW	MW	TW	OCT-17	B1	AS SHOWN	C013523.00-C41	

CONSULTANT	Costin Roe Consulting Pty Ltd. Consulting Engineers Level 1, 8 Windmill Street Wahia Bay, Sydney NSW 2000 Tel: (02) 9551-7099 Fax: (02) 9241-3731 email: mail@costinroe.com.au @
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PRECISION	COMMUNICATION	ACCOUNTABILITY
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DRAWING TITLE	DRAWING No	ISSUE
STORMWATER DRAINAGE PLAN SHEET 1	C013523.00-C41	G

Costin Roe Consulting

REFER TO DRAWING C42 FOR CONTINUATION