



QUOTE

Q-SE2004566

30/1/2018

Solgen Energy Pty Ltd ABN: 21 131 625 600
 P 1300 660 704 F 1300 660 370 E sales@solgen.com.au

Bill To:
 Taylor Construction Group
 Level 13/157 Walker St,
 North Sydney NSW 2060
 Australia

Ship To
 Taronga Zoo
 Bradleys Head Road
 Mosman NSW 2088
 Australia

TOTAL (ex GST)
\$69,039.1

Project	System Size (kWp)	Est. STCS	Terms	Sales Rep
10904P5 Taronga Zoo	67.2	1207	Net 30	Clint Sulway

Item	QTY	Rate	Price (ex GST)
67.20kW SOLAR PV SYSTEM	1		\$102,103.12

- 224 x Talesun Solar 300W modules
- 1 x SMA STP25000TL Inverters
- 1 x SMA STP20000TL Inverters
- 1 x SMA STP15000TL Inverters
- Balance of System Components
- Framing - Flush and tilt on metal
- Installation (including report & documentation)

EXCLUSIONS

1. Structural Assessment
2. All roof access and safety equipment

ASSUMPTIONS

1. 3 Pole isolator space in MSB
2. Inverters located within 10m of MSB
3. Roof is metal with screw lines
4. Taylor Construction to supply all roof access and safety equipment
5. Single connection point

AUSGRID GRID CONNECTION REQUIREMENT FOR 30 TO 100KW

Initial assessment by Ausgrid	1	\$2,727.48	\$2,727.48
Commissioning by Ausgrid	1	\$746.70	\$746.70
Mandatory secondary protection relay	1	\$2,260.00	\$2,260.00

MONITORING

SMA Cluster Controller Device (Small) for the monitoring and control of SMA inverters. Supports max. 25 SMA devices.	1	\$1,176.00	\$1,176.00
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METERING

Bi-Directional Metering	1	\$700.00	\$700.00
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Q-SE2004566

Solgen Energy Pty Ltd
 Level 1 | 33 Herbert Street
 St Leonards NSW 2065
solgen.com.au

General Terms
 Quotation valid for 30 days from issue
 STCs discount subject to changes in market value
 and changes in legislation.



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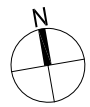
Item	QTY	Rate	Price (ex GST)
ADDITIONAL ITEMS			
Tilt Leg 15/30 ° kit	102	\$15.40	\$1,570.80
SMALL SCALE TECHNOLOGY CERTIFICATES			
Less Small-scale Technology Certificates	1,207	\$-35.00	\$-42,245.00
Subtotal			\$69,039.10
GST			\$6,903.91
Total (inc GST)			\$75,943.01



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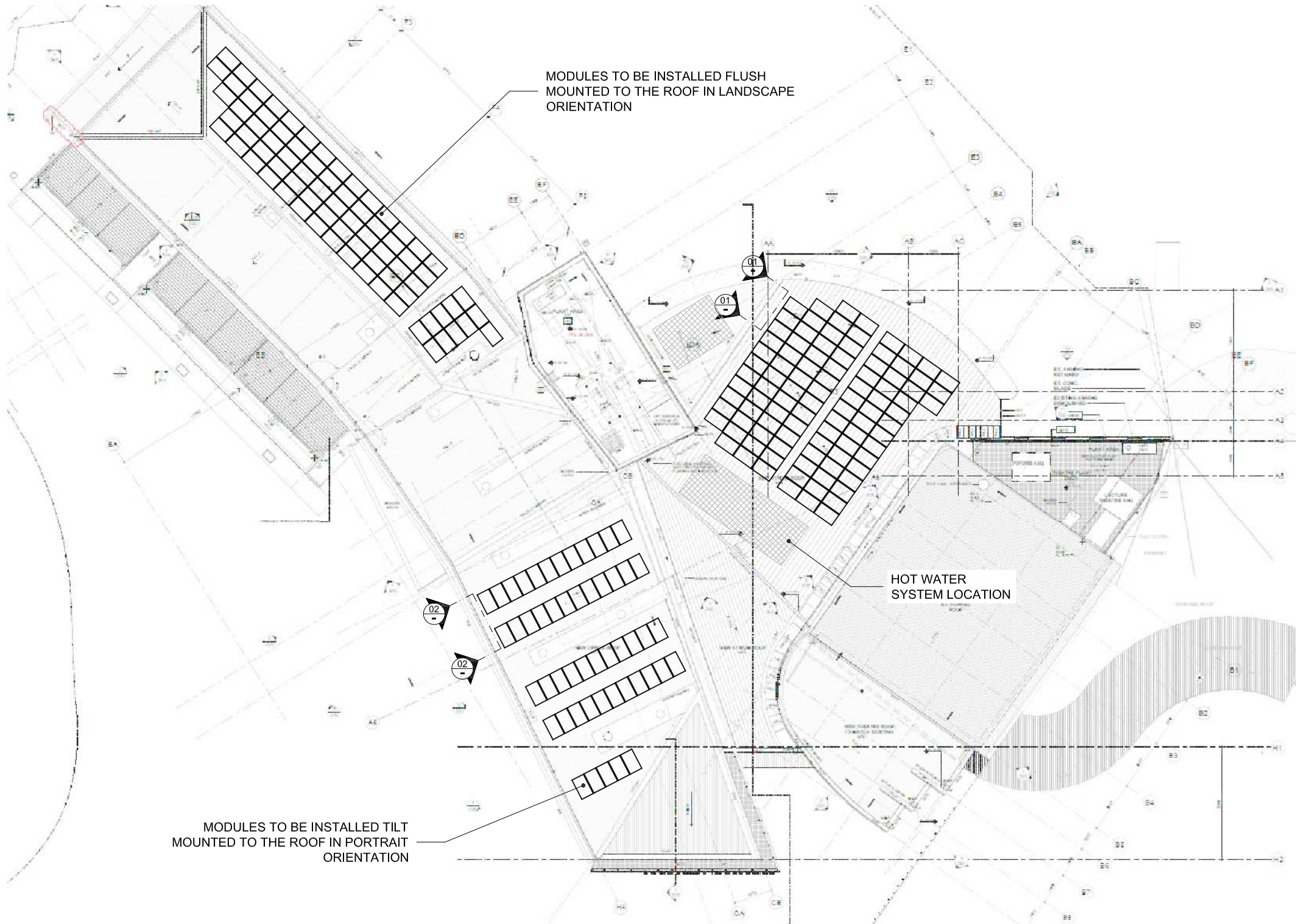
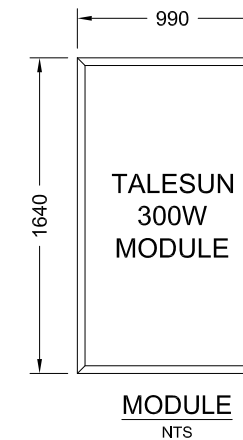


ITEM	SPECIFICATION	QTY
MODULE	TALESUN 300W	224
INVERTER	SMA STP 25000TL	1
	SMA STP 20000TL	1
	SMA STP 15000TL	1
TOTAL		67.20kWp

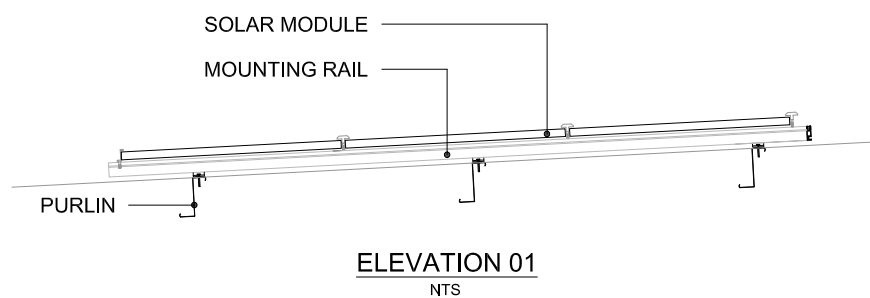


GENERAL NOTES:

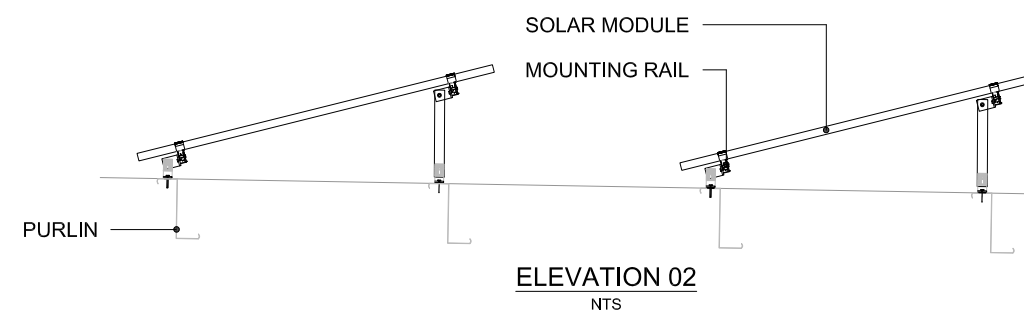
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4. EXACT LOCATION OF ALL PARTS OF THE INSTALLATION TO BE DETERMINED ON SITE.
5. DETAILED SHADING ANALYSIS TO BE CONDUCTED ON SITE.
6. ALL CLAMPED ROOF FIXINGS MUST BE INSTALLED DIRECTLY ABOVE ROOF PURLINS.
7. SCREWED ROOF FIXINGS TO REPLACE EXISTING ROOF SCREWS.



ROOF LAYOUT
NTS



ELEVATION 01
NTS



ELEVATION 02
NTS

Rev	Description	Date	Checked	Authorised
B	SOLAR PANELS RELOCATED	18.10.17	D.P.	T.D.
A	PRELIMINARY DESIGN	18.09.17	N.T.	T.D.

PROJECT:
TARONGA ZOO
BRADLEYS HEAD ROAD, MOSMAN, NSW 2088

CLIENT:
TAYLOR CONSTRUCTION GROUP

SOLGEN ENERGY PTY LTD
T: 1300 660 704 WEB: www.solgen.com.au
F: 1300 660 370 EMAIL: info@solgen.com.au

DRAWING TITLE:
67.20kWp PHOTOVOLTAIC SYSTEM LAYOUT

SCALE	DRAWN	CHECKED	AUTHORISED	SIZE
AS SHOWN	E. SISON	N. TAM	T. DELANEY	A3
	Date: 18.09.2017	Date: 18.09.2017	Date: 18.09.2017	
DRAWING No.	D-GE-10904P5-102			Rev
				B



Bluewater Plumbing (NSW) Pty Ltd
"A Division of The Bluewater Group"
ABN: 83 158 086 661

PO Box 6709, Baulkham Hills BC NSW 2153
Telephone: (02) 9894 2544
Facsimile: (02) 9475 0252
www.thebluewatergroup.com.au

Taronga Quote Proposal for Solar Upgrade

In this package we will be supplying and installing the below Solar package to coincide with the current gas Storage systems to be used as boosters only.

The solar preheat plant has allowed for a 50% solar contribution to provide an annual energy saving of 29%.

I have outlined the cost as base on the required components to provide and install the complete system excluding the initial contract inclusion of the gas tanks to remain as the booster system.

See the attached PDF for the heater plant break down for Supply with all allowances and assumptions.

Supplying 2 x hot water plants – 1 x Domestic Hot Water 1 x Laboratory Sink Hot Water
Both plants have individual Solar Collectors, storage tanks and a gas boosted tank.

Breakdown of Costs:

2 x Heavy Duty Gas Boosted Storage tanks with pipe work and Installation <i>(included in subcontract)</i>	\$0.00
2 x Solar hot water plants w/t panels, tanks and roof frames <i>(Supply only)</i>	\$29,000.00
Installation of panels on roof <i>(by others)</i>	\$5000.00
Materials for install including new pipework from plant room to roof <i>(4 x 20mm copper pipe runs from plant room to roof inc. lagging and clipping for solar flow and return lines. Also extra pipe work within plantroom to hook up the extra 3 storage tanks and circulating pumps for each system)</i>	\$2500.00
Labour for install of pipework and runs including fire rating and insulation <i>(estimated out at 2 x guys for a week period (8hrs) total 80hrs @ \$95.00)</i>	\$7600.00
Coring of Slab for pipework <i>(new core holes for Solar return pipework from plant room to roof)</i>	\$2000.00
Design and Co-ordination for System <i>(drawings and workshop design)</i>	\$1000.00

Total cost for variation = \$47,100.00

BLUEWATER PLUMBING

"At Bluewater Plumbing, we pride ourselves on being at the forefront of excellence in the plumbing industry"

www.thebluewatergroup.com.au



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Inclusions and Exclusions

Included with in the quoted price:

- Supply of all components including roof mounted brackets, fittings and all pipe work
- Fire rating for all penetrations and solar lagging for flow and return pipework
- Installation of all components including tanks pumps and panels mounted on frames
- Commissioning and testing of the system including Warranty and O&M Manuals
- BMS control for pumps and heater allocation
- Balancing of the system to achieve optimal performance

Excluded from the quoted price:

- Crane lift for panels to a location on the roof (as discussed to utilise onsite crane)
- Waterproofing if required once frame is installed (should not be required)
- Electrical wiring for Solar pumps and panels

BLUEWATER PLUMBING

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www.thebluewatergroup.com.au



Enquiry No: 20170703CPORTELLI2

05th October, 2017
Bluewater Plumbing
Unit 13, 5 Gladstone Road
Castle Hill NSW 2153

Attention: Aaron Thiphorp

Phone: (02) 88537446
e-mail: aaron@thebluewatergroup.com.au

Taronga Institute of Science & Learning (REV 4)
RHEEM HOT WATER DESIGN RECOMMENDATION

Thank you for the opportunity to provide solutions for your hot water requirements.

Rheem water heaters are suitable for all fuel types.

We have pleasure in submitting the following proposal for your consideration.

PROJECT DETAILS

This project consists of 2 x plants:

Plant 1 – Laboratory Sink Hot Water

- 9 x Lab Sinks

Plant 2 - Domestic Hot Water

- 19 x Hand Basins
- 4 x Showers
- 2 x Dishwashers
- 2 x Washing Machines
- 1 x Cleaners Sink

RHEEM RECOMMENDED SPECIFICATION

WATER HEATING PLANT:

We propose the following water heating plants:

Plant 1 – Laboratory Sink Hot Water

1 x Rheem model 621265 Gas (Indoor) water heaters providing up to 620 litres of hot water over the 1 hour peak period.

WEIGHT and PLANT SPACE inclusive of service clearances:

Maximum weight (in operation): 394kg

1 x Rheem model 621265 Gas (Indoor) water heaters require 1m(W) x 1m(D)

GAS and ELECTRICAL REQUIREMENTS:

- Gas consumption 110MJ/hr.
- Each unit supplied with a single 3 pin plug and 2m lead for a 10Amp GPO.
- A BMS module can be added to each heater.

SOLAR PREHEAT PLANT 1: 50% Solar Contribution

Solar Preheat:

4 x Rheem model NPT200 collectors
2 x Variable Pitch Frames 2 x Collector

Solar Storage:

1 x Rheem model 610430 storage units
1 x Solar Controller
2 x Sensor Leads

WEIGHT and PLANT SPACE inclusive of service clearances:

4 x NPT200 Collectors with frames weigh approximately 208kg full

4 x NPT200 Collectors installed in 1 x array of 4 x collectors require a flat roof area of 4.9m(W) x 3.5(D)

1 x Rheem 610430 storage tanks weigh approximately 527kg (full)

1 x Rheem 610430 storage tanks require an area of 1m(W) x 1m(D)

SOLAR DESIGN

The design was determined from the following data:

- Solar radiation level for Sydney in December is 23.5 MJ per m² per day
- Water temperature rise of 50°C
- Plant has been designed to contribute 45% of required hot water in December and provide a 29% annual energy saving (excluding pipework losses)
- Collectors inclined 35° to the horizontal and facing north in an unshaded position

Plant 2 - Domestic Hot Water

1 x Rheem model 621275 Gas (Indoor) water heaters providing up to 970 litres of hot water over the 1 hour peak period.

WEIGHT and PLANT SPACE inclusive of service clearances:

Maximum weight (in operation): 462kg

1 x Rheem model 621275 Gas (Indoor) water heaters require 1m(W) x 1m(D)

GAS and ELECTRICAL REQUIREMENTS:

- Gas consumption 200MJ/hr.
- Each unit supplied with a single 3 pin plug and 2m lead for a 10Amp GPO.
- A BMS module can be added to each heater.

SOLAR PREHEAT PLANT 2: 50% Solar Contribution

Solar Preheat:

8 x Rheem model NPT200 collectors
4 x Variable Pitch Frames 2 x Collector

Solar Storage:

2 x Rheem model 610430 storage units
1 x Solar Controller
2 x Sensor Leads

WEIGHT and PLANT SPACE inclusive of service clearances:

8 x NPT200 Collectors with frames weigh approximately 416kg full

8 x NPT200 Collectors installed in 1 x array of 8 x collectors require a flat roof area of 9.3m(W) x 3.5(D)

2 x Rheem 610430 storage tanks weigh approximately 1054kg (full)

2 x Rheem 610430 storage tanks require an area of 2m(W) x 1m(D)

SOLAR DESIGN

The design was determined from the following data:

- Solar radiation level for Sydney in December is 23.5 MJ per m² per day
- Water temperature rise of 50°C
- Plant has been designed to contribute 45% of required hot water in December and provide a 29% annual energy saving (excluding pipework losses)
- Collectors inclined 35° to the horizontal and facing north in an unshaded position

ASSUMPTIONS

ALLOWANCES:

We have made the following allowances in determining the plant required to supply the project.

- Hand Basins – 3 uses per basin over peak hour @ 2L per use
- Lab Sinks – 4 uses per sink over peak hour @ 15L per use
- Dishwashers – 1 use per dishwasher @ 50L per use
- Showers – 4 uses per shower @ 25L per use
- Washing machine – 1 use per washing machine @ 70L per use
- Cleaners sink – 2 uses over peak hour @ 15L per use

HOT WATER CONSUMPTION:

The estimated hot water consumption for the project is:

Plant 1 – Laboratory Sink Hot Water

- 540 litres over a 1 hour peak period
- 810 litres per day

Plant 2 - Domestic Hot Water

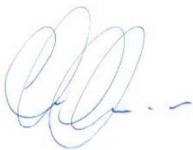
- 664 litres over a 1 hour peak period
- 996 litres per day

*These costs are supplied for budget purposes only and are exclusive of GST. It should be noted that installation costs have not been included. Rheem Australia products are available through a network of merchants. These budget costs are valid for a period of 90 days.

This proposal is based on information and detail available at the time of design and should be checked for accuracy with the consulting firm and /or installing contractor prior to placement of order or installation.

We thank you for the opportunity to provide you with this information. If we can be of any further assistance please contact the Rheem Commercial Sales Department on 132 552.

Yours faithfully,

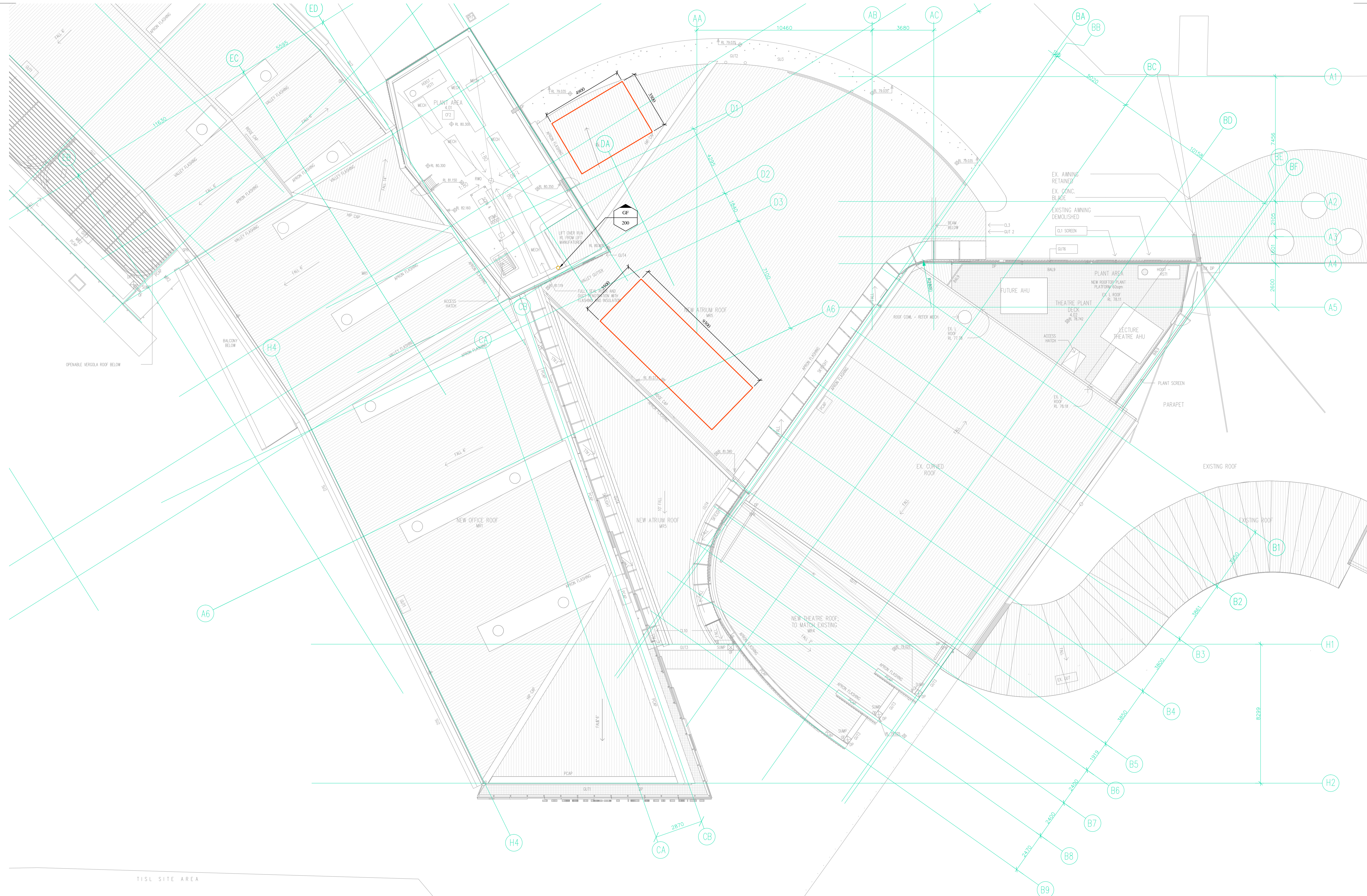


Christopher Portelli
Technical Sales Manager NSW
Rheem Australia Pty Ltd



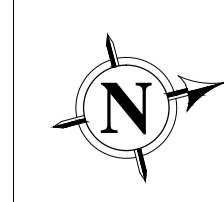
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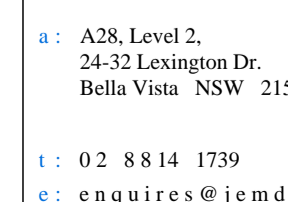


COORDINATED REFERENCE DRAWING						
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	MECH.					
	ELEC.					
01	ISSUED FOR REVIEW	13-10-17	CIVIL			
REVISION	REASON FOR ISSUE	DATE	SERVICE	DRAWING NUMBER	REV	DATE

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 f: (02) 9475 0252
 w: www.thebluewatergroup.com.au



JEM design (Australia) Pty Ltd
 a: A28, Level 2,
 24-32 Lexington Dr.
 Bella Vista NSW 2153
 t: 02 8814 1739
 e: enquires@jemdesign.com.au
 w: www.jemdesign.com.au



PROJECT DESCRIPTION
TARONGA INSTITUTE OF SCIENCE AND LEARNING
BRADLEY'S HEAD ROAD, MOSMAN 2088
DRAWING TITLE
HYDRAULIC SERVICES
ROOF PLAN
WATER AND GAS PLAN

DRAWN BY	DM	VALIDATED BY	PM
DESIGNED BY	DM	REVIEWED BY	PM
SHEET SIZE	A1	REVISION	A
SCALE	1:100	DATE	JUN 2017
PROJECT NUMBER	SY170067		
DRAWING NUMBER	H-205		

Variation Notice – 8

Taronga Zoo - IOS

Project Name: Taronga Institute of Science
 Project Address: Bradley Head Road, Mosman NSW 2088
 Variation Issue Date: 17/11/2017

Variation 8 – Additional Power for solar hot water

- Supply and Installation of Two (2) GPO for controllers.
- Supply and Installation of Two (2) 10amp Hardwire circuits - for the circulating pumps
- Supply and Installation of Conduit work in the plant room.
- Test and Commission all Works.

Item	Total
Break Up of Costs	
<i>Labour – 36 hours @ \$80 per hour.</i>	<i>Value \$2,880.00</i>
<i>Material</i>	
TPS – 90 x \$1.10/m = \$99.00	<i>Value \$99.00</i>
GPO, RCBO, Conduit - \$220.00	<i>Value \$220.00</i>
Sundries – screws, Saddles, cables ties, tape etc. = \$95.00	<i>Value \$95.00</i>
	<i>Value \$3,294.00</i>
Variation Total (Exc. GST)	\$3,294.00





BORGER CRANE HIRE AND RIGGING SERVICES

PTY LTD ABN 98 001 947 413



Head Office / Depot / Postal

40 Kilty Crescent, Glendenning NSW 2761

Phone: 02 9832 1044 Fax: 02 9832 1033

www.borgercranes.com

admin@borgercranes.com

24 Gross Street, Carrington NSW 2295

Phone: 02 4961 3002 Fax: 02 4961 4561

Depot

Rates Schedule

Taylor Constructions

** 24 hour – 7 days * Site Tower Crane * Transport solutions * Job Planning * OH&S Compliant*

20T – 130T CRANES (CRANES WITH MAIN BOOM AND FLY)

Crane Size	Crew	Minimum Hire Onsite	Hourly Rate Ex GST
20 Tonne Franna with side slope computers	Driver / One Dogman	2 hours	\$220.00
25 Tonne Franna with side slope computers	Driver / One Dogman	3 hours	\$260.00
25 Tonne Franna with superlift and side slope computers	Driver / One Dogman	3 hours	\$300.00
20 Tonne City-Crane	Driver / One Dogman	3 hours	\$220.00
45 Tonne City-Crane	Driver / One Dogman	4 hours	\$290.00
40 Tonne All-Terrain	Driver / One Dogman	3 hours	\$260.00
55 Tonne All-Terrain	Driver / One Dogman	4 hours	\$290.00
60 Tonne All-Terrain	Driver / One Dogman	4 hours	\$320.00
80 Tonne All-Terrain	Driver / One Dogman	4 hours	\$360.00
90 Tonne All-Terrain	Driver / One Dogman	4 hours	\$400.00
100 Tonne All-Terrain	Driver / Two Dogman	4 hours onsite + \$1,000 each way	\$485.00
130 Tonne All-Terrain	Driver / Two Dogman	4 hours onsite + \$1,250 each way	\$550.00

**(160 TONNE TO 500 TONNE CRANES RIGGED WITH MAIN BOOM
NEXT PAGE)**