

Cattle Bay Marina Water and Wastewater Servicing Strategy

1 INTRODUCTION

Eden Resort Hotel Pty Ltd has commissioned Royal HaskoningDHV to undertake water and wastewater servicing investigations for a new development in Cattle Bay, NSW.

The site is located approximately 1 kilometre west of the Eden town centre on the NSW south coast, in the Bega Valley local government area. The site adjoins Cattle Bay Road to the east and encompasses part of Cattle Bay to the south. Refer **Figure 1**.

The development involves a new marina and temporary land facilities.

This study has been prepared to define the water and wastewater servicing strategy for the new development and includes investigations of the following elements:

- Development description, refer Section 2.
- Study area, refer Section 3.
- Planning context (references to Local Environmental Plan, development consent), refer Section 4.
- Identification and assessment of the water demands and servicing options, refer Section 5.
- Identification and assessment of the wastewater loadings and servicing options, refer Section 6.
- Conclusion, refer Section 7.

2 DEVELOPMENT DESCRIPTION

Plans of the proposed marina are presented in **Appendix A**. The development comprises:

- Total of approximately 154 berths in three floating pontoon arms restrained by piles.
- Fixed wave attenuator located seaward of the southern pontoon arm.
- Minor refurbishment of the existing wharf.
- Provision of power, lighting, water, firefighting equipment, mobile 'muck truck' (for small scale pump out) and security access controls to the pontoons and berths.
- Temporary car park comprising 97 spaces plus 3 loading/unloading spaces.
- Temporary 'portable' buildings to house marina administration and toilets:
 - Temporary building 1 will contain Female WC (WC - 2, Hand Wash Basin – 2), Male WC (WC-1, Urinals-2, Hand Wash Basin-2) and Accessible Unisex Facility (WC-1, Hand Wash Basin -1, Shower – 1).

- Temporary building 2 will contain meeting room with kitchen and storage.

The temporary facilities will be replaced by the resort and residential proposal when it is developed.

3 STUDY AREA

The study area covers the development site and the existing water and wastewater infrastructure sites in Cattle Bay.

3.1 DEVELOPMENT SITE

The development site is located on Lots 2 and 4 of DP 1138056, Cattle Bay Road and the adjoining waters of Cattle Bay within Twofold Bay, Eden NSW.

Lot 2 is owned by Eden Resort Hotel Pty Ltd (ERH) and has an area of 1.67 hectares. It contains the majority of the remains of the Heinz cannery. The site comprises a series of level concrete building slabs. They are the remaining foundations of the cannery buildings that previously occupied the site, the majority of which have now been demolished. Two obsolete cannery buildings, 1-3 storeys high, remain in the north eastern corner of the cleared area and are generally outside the subject site. They do not form part of the site that is subject to this proposal.

Lot 4 comprises a strip of foreshore land commencing northwards from the seawall to the rear of the beach.

The subject site plan is shown in **Figure 2**.

3.2 EXISTING WATER AND WASTEWATER INFRASTRUCTURE

3.2.1 Existing Water Infrastructure

The nearest Council's water infrastructure includes DN150 water main in Cattle Bay Road.

3.2.2 Existing Wastewater Infrastructure

There is an existing sewer rising main outside cannery buildings - see picture below.



The nearest Council wastewater infrastructure outside the subject site includes sewer manhole DZ1 in Cattle Bay Road from which a gravity main transports flow to wastewater pumping station PS3 located near the intersection Cattle Bay Road and Chandos Street.

4 PLANNING CONTEXT

The proposed works are located within the Bega Valley Local Government Area (LGA).

The relevant environmental planning instrument is the Bega Valley Local Environmental Plan 2013.

According to this Plan, construction of public water and wastewater infrastructure does not require consent.

5 WATER SERVICING STRATEGY

5.1 CONNECTION TO EXISTING WATER INFRASTRUCTURE

Consultation with the Bega Valley Shire Council regarding providing the water services for the proposed development is under way.

This report suggests provision of the water supply from the existing DN150 water main located in Cattle Bay Road.

5.2 PROPOSED WATER SUPPLY CONNECTIONS

The development would have two connections to Bega Valley Shire Council water supply system:

- domestic water supply connection; and
- water connection for servicing of firefighting hydrants.

The domestic water supply would provide potable water for the following:

- 154 marina berths (potable water will be provided from taps integrated into the service pedestals).
- Temporary buildings 1 and 2.
- Fire hose reels.

5.3 AVAILABLE PRESSURE AT THE CONNECTION POINT AND THE REQUIRED PRESSURE.

5.3.1 Available Pressure at the Connection Point

A pressure test has been undertaken on DN150 Council's water main at the corner of Cattle Bay Road and Chandos Street on 6 June 2014. The residual pressure ranged from 200 kPa to 900 kPa.

The results of the test are included in **Appendix B**.

5.3.2 Minimum Service Pressure Required for Domestic and Commercial Applications

The minimum service pressures for the domestic and commercial water supply applications according to Water Supply Code of Australia WSA 03-2002 are as follows:

- Desirable minimum service pressure – 200 kPa (20 metres) for domestic application and 250 kPa (25 metres) for commercial application.
- Minimum service pressure (Note 1) – 6 to 15 metres for domestic and commercial application.

Note 1: Water Agency written approval shall be obtained for service pressures less than the “desirable minimum”.

It is noted that during the peak day demand the service pressure at the Marina would be less than the 20 metres. Hydraulic modelling of the water supply system will be undertaken during the concept design stage.

5.3.3 Minimum Residual Pressure Required for Firefighting

The minimum fire hydrant outlet flow rates and pressures according the AS 2419.1-2005 are as follows:

Fire Hydrant Type	Minimum Required Flow Rate (L/s)	Minimum Required Residual Pressure in NSW (kPa)
Feed fire hydrant, unassisted	10	150
Attack fire hydrant, unassisted	10	250
Internal and external fire hydrants when boosted by a fire brigade pumping appliance	10	700

Notes:

1. 'Unassisted' specifies the system performance characteristics achieved by a water agency's system or other elevated reservoir, before a fire brigade pumping appliance is connected to the system. On-site pumps must not be used to achieve this performance. If pumps are required, then fire hydrants will need to have attack fire hydrant performance and be located in accordance with Clause 3.2.2.2(c) of AS 2419.1-2005.
2. In a system that incorporates a fire brigade booster assembly, external above-ground fire hydrants, accessible by a fire brigade pumping appliance, if located as attack fire hydrants, need only have feed fire hydrant unassisted performance (see Clause 3.2.2.2(d) of AS 2419.1-2005).

Hydraulic modelling of the firefighting water supply system will be undertaken during the concept design stage. If the residual pressure is found to be less than the minimum residual pressure required in AS 2419.1-2005, then a pressure boosting system will be incorporated into the firefighting water supply design.

5.4 WATER DEMAND

The water demand was calculated using Development Servicing Plan (Bega Valley Shire Council, 2013), WSAA standards and NSW Water Directorate Section 64 Determinations of Equivalent Tenements.

The estimated marina water demand is based on information provided from three marinas included in **Appendix C**.

The water demands estimated for the Cattle Bay Marina and Temporary Facilities are detailed in **Appendix D** and summarised below:

- Domestic Water Supply Peak Hour Demand – 1.8 L/s
- Fire Hydrants Water Supply – 20 L/s

5.4.1 Marina Water Demand

The marina average annual consumption and peak day demand are based on information from 3 marinas (70 berth marinas in Middle Harbour and Pittwater and 50 berth marina in Sydney Harbour). The data is included in **Appendix C**.

The marina peak day consumption is based on assumption 1 boat per day in each berth using 41.9 L/day each.

The peak hour demand was calculated in accordance with WSAA Water Supply Code of Australia.

5.4.2 Temporary Buildings

The residential equivalent tenements are in accordance with NSW Water Directorate Section 64 Determinations of Equivalent Tenements Guidelines.

The residential average consumption (205 L/s) is in accordance with Development Servicing Plan (Bega Valley Shire Council, 2013).

The peak day demand and peak hour demand were calculated in accordance with WSAA Water Supply Code of Australia.

5.4.3 Fire Hose Reels

The fire hose reels will be connected to the domestic water supply, whereas the fire hydrants will be connected to a special hydrant service. The water demand calculations allowed for 2 fire hose reels operating simultaneously providing a minimum flow of 0.63 L/s each in accordance with AS 3962-2001.

5.4.4 Fire Hydrants

The fire hydrants will have its own water supply service, supplied from the existing land based infrastructure. The water demand calculations allowed for 2 fire hydrant outlets to flow simultaneously, minimum required flow rate per outlet 10 L/s in accordance with AS 2419.1-2005.

6 WASTEWATER SERVICING STRATEGY

6.1 CONNECTION TO EXISTING WASTEWATER INFRASTRUCTURE

Consultation with the Bega Valley Shire Council regarding providing the wastewater services for the proposed development is under way.

This report suggests transporting the wastewater from the development to the existing manhole DZ1. A gravity main transports flow from DZ1 to the wastewater pumping station PS3. Both, the manhole DZ1 and PS3 are located in proximity of the site.

The following facilities would produce wastewater to be discharged into the Council wastewater system:

- Marina pump out (manual).
- Temporary buildings 1 and 2.

6.2 WASTEWATER LOADINGS

The wastewater loadings were calculated using Development Servicing Plan (Bega Valley Shire Council, 2013) and NSW Water Directorate Section 64 Determinations of Equivalent Tenements.

The estimated wastewater loadings are detailed in the attached calculations and summarised below:

- Peak Wet Weather Flow – 0.4 L/s

6.2.1 Temporary Buildings

The residential equivalent tenements were calculated in accordance with the NSW Water Directorate Section 64 Determinations of Equivalent Tenements Guidelines.

The residential average dry weather flow was calculated in accordance with Development Servicing Plan (Bega Valley Shire Council, 2013) - 508 L/ET/Day.

6.2.2 Marina Pump Out

Sewage is proposed to be removed from the holding tanks of vessels at the marina and disposed of to the on-land sewerage system by means of a mobile sewage pump out trolley ('Muck Truck', as supplied by Superior Jetties, or similar). The pump out operation is detailed in **Section 6.3**.

The pump out flow rate would be 0.02 L/s.

6.2.3 Bilge Water

All marina berth tenants will be inducted in the use of, and supplied with, a bilge water absorbing pad as part of rules and regulations of the marina. The bilge absorbing pad will absorb any oil from the bilges. The bilge water will then be disposed of via certified collection.

6.3 MARINA PUMP OUT

As noted above, sewage is proposed to be removed from the holding tanks of vessels at the marina and disposed of to the on-land sewerage system by means of a mobile sewage pump out trolley ('Muck Truck', as supplied by Superior Jetties, or similar). The proposed mobile unit is shown in **Appendix E**.

The operation would take place as follows:

- The trolley is wheeled to the required point adjacent to the vessel on the floating marina and the flexible discharge hose is attached to the holding tank on the vessel.
- The unit is attached to the power available on the marina at the service pedestal. The unit is also fitted with a battery in the event power is not available on the marina for any reason.
- The pump discharges the sewage from the holding tank on the vessel into the tank within the mobile unit. The tank within the unit has a capacity of 90 litres which would accommodate the majority of vessels permanently berthed at the marina. Should the holding tank on the vessel exceed the size of the tank on the mobile unit, the mobile unit can be used a number of times.
- The mobile unit is wheeled to an on-land connection point to the local sewerage system.

The use of a mobile sewage pump out system has the benefit of taking the pump out system to the vessel rather than relying on the vessel owner to bring the vessel to a dedicated pump out facility. It enables the marina operator to be more proactive in satisfying its commitments under an Environment Protection Licence (EPL) and Operational Environmental Management Plan (OEMP).

During development of this report Royal HaskoningDHV provided responses to a number of questions that the Bega Valley Shire Council raised about the mobile pump out operation. This consultation is detailed in **Appendix E**.

7 CONCLUSION

There is a long history to the development of marina facilities in Twofold Bay. The economic and social benefits of a Marina to Eden and the Bega Valley Shire are self-evident and have long been recognised.

The proposed development would create only small scale water demand and wastewater loadings.

It is proposed to provide the water supply from the existing DN150 water main located in Cattle Bay Road.

It is proposed to transport the wastewater from the development to the existing manhole DZ1. A gravity main transports flow from DZ1 to the wastewater pumping station PS3. Both, the manhole DZ1 and PS3 are located in proximity of the site.

Figures

Figures

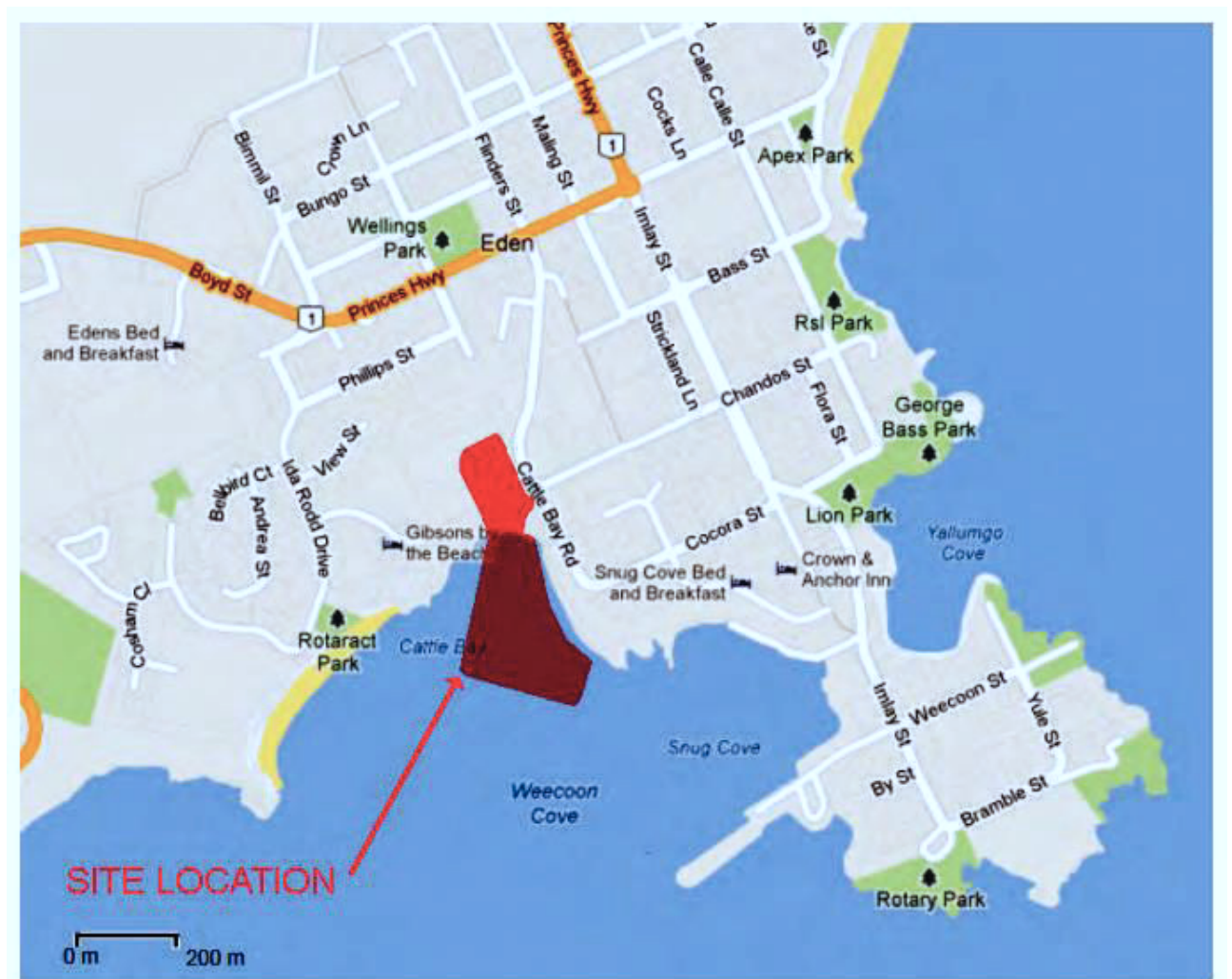


FIGURE 1 –LOCATION OF SUBJECT SITE WITHIN EDEN

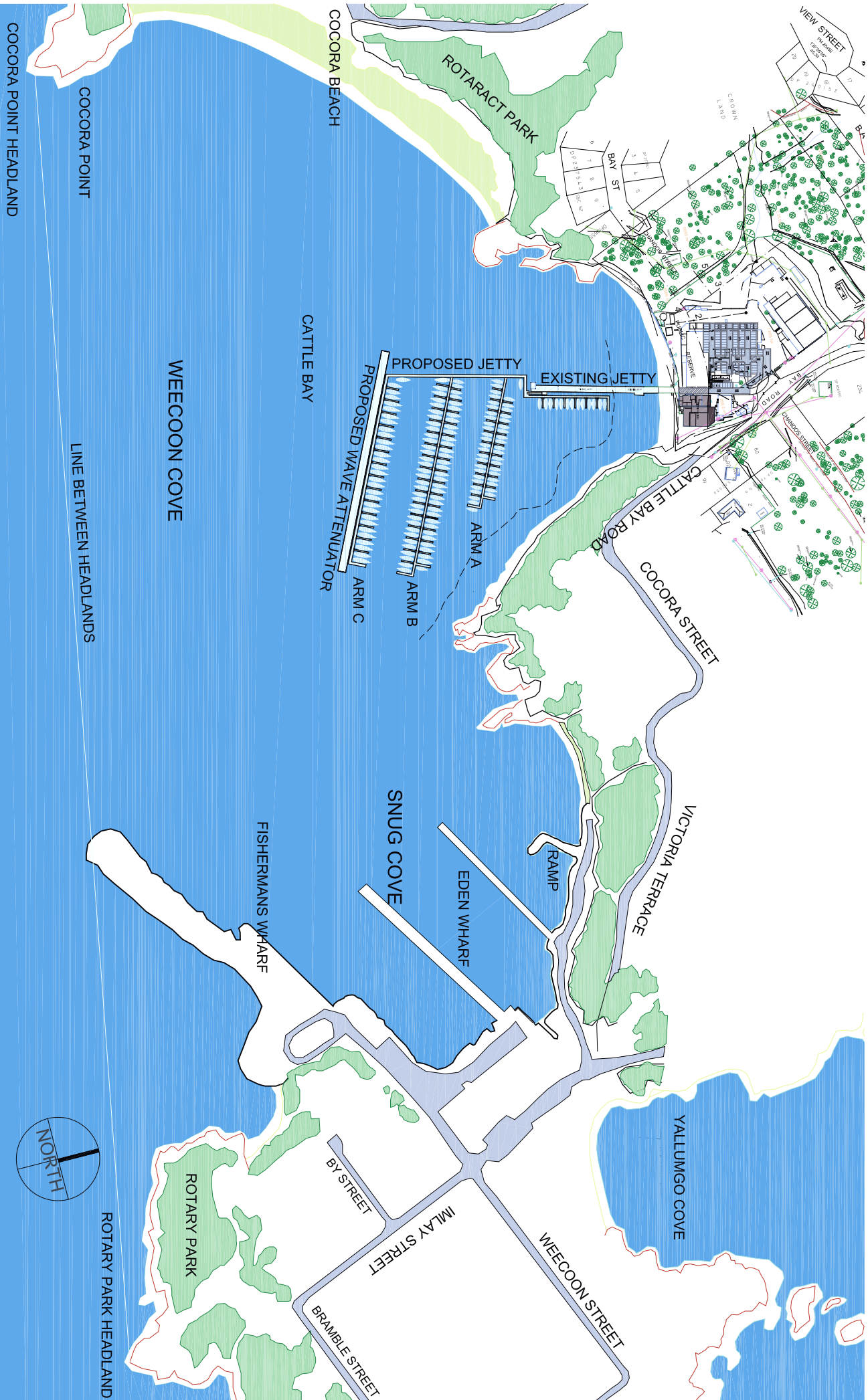
(Source: Proposed Marina and Temporary Land Facilities Environmental Impact Assessment, Inspire Urban Design and Planning Pty Ltd and Haskoning Australia Pty Ltd, 21 May 2013)



FIGURE 2 – SUBJECT SITE PLAN

(Source: Proposed Marina and Temporary Land Facilities Environmental Impact Assessment, Inspire Urban Design and Planning Pty Ltd and Haskoning Australia Pty Ltd, 21 May 2013)

Appendix A – Drawings



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PROJECT :

STAGE ONE - PROPOSED
MARINA DEVELOPMENT,
CATTLE BAY, EDEN, NSW

CLIENT :

EDEN RESORT
HOTEL PTY LTD

TOWN PLANNING CONSULTANT :

INSPIRE URBAN DESIGN + PLANNING
Tel. 0411 486 768 | www.inspireplanning.com
PO Box 7277 South Sydney Business Hub NSW 2015

ARCHITECT :

BLACK
architecture and project management
PO Box 439, Alexandria, NSW 1435
NSW Registration No. 6026, ABN: 26 686 957 832
Tel (02) 8971 6565 Mob 0414 765 104
Email: kevinhynblack@blackapm.com

DRAWING TITLE :

CONTEXT PLAN
INDICATING PROPOSED SITE
LAYOUT & MARINA LAYOUT



DWG NO.:

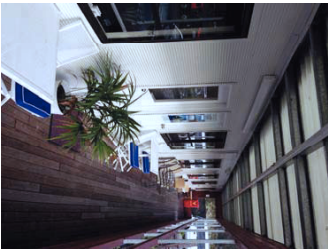
DA-A-01

SCALE	1:35000(A3)	ISSUE
PROJECT NO.		
DRAWN BY	KLB	
CHECKED BY	KLB	
ISSUE DATE	8-05-13	
ISSUED FOR	DIVERT APPLICATION	

A



proposed temporary accommodation viewed from entrance steps



view along deck



typical office accom



typical tea room

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PROJECT :
STAGE ONE - PROPOSED
MARINA DEVELOPMENT,
CATTLE BAY, EDEN, NSW

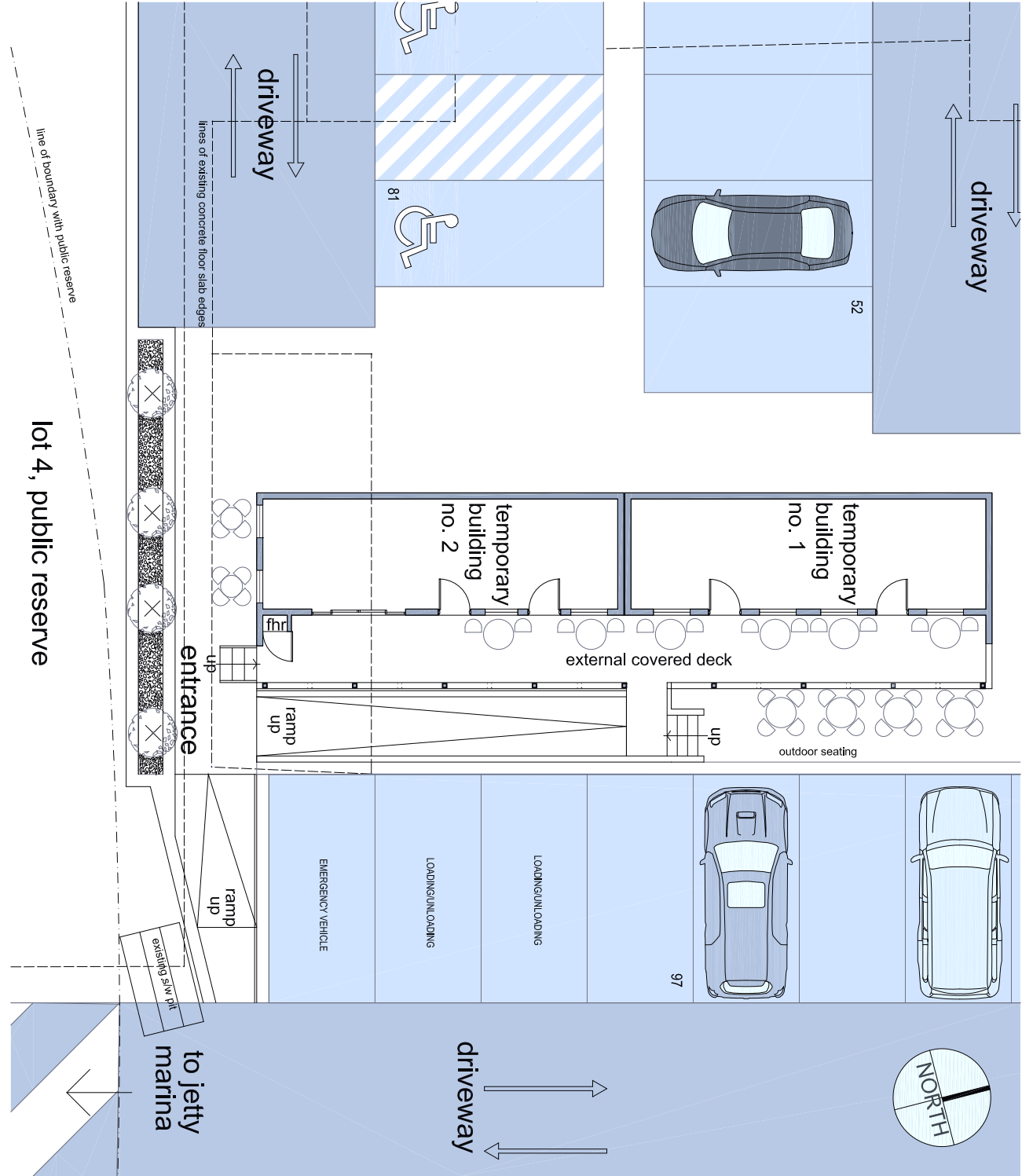
CLIENT :
EDEN RESORT
HOTEL PTY LTD

TOWN PLANNING CONSULTANT :
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DRAWING TITLE :
TEMPORARY BUILDINGS
FLOOR PLAN AND
TYPICAL IMAGES

DWG NO. :
DA-A-03
SCALE : 1:100@A3
PROJECT NO. :
DRAWN BY : KLB
CHECKED BY : KLB
ISSUE DATE : 6-05-2013
ISSUED FOR : DWENT APPLICATION



Appendix B – Correspondence with Council



Bega Valley Shire Council

17 June 2014

Haskoning Australia Pty Ltd
Suite 5, Level 5
100 Walker Street
North Sydney NSW 2060

M. Van Tilburg 20/06/14

Dear Sir/Madam,

Water Flow and Pressure test at Cattle Bay Road, Eden: Lot 2 DP 1138056

Further to your application for water flow and pressure test received 6th June 2014, I enclose the following information:-

Pressure and flow at nearest accessible hydrant on Council's 150mmØ water main locate at the corner of Cattle Bay Road and Chandos Street, Eden.

Flow in litres per second	Residual pressure in Kpa @ 8:30 am on 11 th June 2014
30 (maximum permissible flow)	200
25	500
20	600
15	750
10	850
5	880
0	900

The above pressure information was obtained by field pressure testing. The recorded pressure data may fluctuate from time to time depending on the system demand, time of day, reservoir levels etc. This data should be used as a guide only and not be used as available water for any development requirements!

It should be noted that a qualified hydraulic consultant should be engaged to assess internal fire fighting requirements.

If you need further information about this matter, please contact myself on (02) 6499 2159.

**ADDRESS ALL
CORRESPONDENCE TO:**

PO Box 492
Bega NSW 2550
DX 4904
ABN 26 987 935 332

Council Chambers
Zingel Place, Bega

PHONE
(02) 6499 2222
FAX
(02) 6499 2200

INFORMATION
www.begavalley.nsw.gov.au
EMAIL
council@begavalley.nsw.gov.au

M. Van Tilburg
Michael Van Tilburg
Civil Assets Specialists
Water and Sewerage Services

Appendix C – Example Marina Water Usage and Sewage Pumpout

EXAMPLE MARINA

50 Berth Marina in Sydney Harbour					
Month	Water Usage		Sewage Pump hours run	Sewage Pumped	Pumped Flow
	L	L/berth/day	Hrs	L	L/s
January	49,000	31.61	2	144	0.02
February	31,000	22.14	3	216	0.02
March	25,000	16.13	2	144	0.02
April	19,000	12.67	1	72	0.02
May	15,000	9.68	0.5	36	0.02
June	12,000	8.00	0.5	36	0.02
July	4,000	2.58	0.5	36	0.02
August	4,000	2.67	1	72	0.02
September	20,000	12.90	3	216	0.02
October	22,000	14.67	3.5	252	0.02
November	30,000	19.35	4	288	0.02
December	51,000	34.00	5	360	0.02

Total per 50 berths

282,000

L/ 1 berth/ annum

5,640

Peak month - December

Peak month demand

34.00

L/day

Assumed 1 boat in each berth

Peak Day Demand for 154 berths

5,236.00

L/day/154 berths

Peak Hour Demand for 154 berths

Peak Hour Factor

5

(WSAA standard)

Peak Hour Demand

0.30

L/day/154 berths

50 berth marina

Annual Water usage & Sewage pumpout

Month	Water usage - litres	Sewage pum hours run	Sewage pumped - litres
January	49,000	2	144
February	31,000	3	216
March	25,000	2	144
April	19,000	1	72
May	15,000	0.5	36
June	12,000	0.5	36
July	4,000	0.5	36
August	4,000	1	72
September	20,000	3	216
October	22,000	3.5	252
November	30,000	4	288
December	51,000	5	360
TOTAL	282,000	26	1872

EXAMPLE MARINA

70 Berth Marina in Sydney Harbour					
Month	Water Usage		Sewage Pump hours run	Sewage Pumped	Pumped Flow
	L	L/berth/day	Hrs	L	L/s
January	65,000	41.94	4	288	0.02
February	42,000	30.00	3	216	0.02
March	33,000	21.29	2.5	180	0.02
April	24,000	16.00	2	144	0.02
May	18,000	11.61	1.75	126	0.02
June	11,000	7.33	1	72	0.02
July	6,000	3.87	1	72	0.02
August	5,000	3.33	2	144	0.02
September	18,000	11.61	2	144	0.02
October	21,000	14.00	3	216	0.02
November	38,000	24.52	4	288	0.02
December	58,000	38.67	5	360	0.02

Total per 50 berths	339,000	31	2,250
L/ 1 berth/ annum	6,780		

Peak month - January

Peak month demand **41.94** L/day

Assumed 1 boat in each berth

Peak Day Demand for 154 berths

6,458.06 L/day/154 berths

Peak Hour Demand for 154 berths

Peak Hour Factor **5** (WSAA standard)

Peak Hour Demand **0.37** L/day/154 berths

70 berth Marina Sydney Middle Harbour

Annual water consumption

Annual Sewage waste

Month	Water usage - litres	Sewage pump hours run	Sewage pumped - litres
January	65,000	4	288
February	42,000	3	216
March	33,000	2.5	180
April	24,000	2	144
May	18,000	1.75	126
June	11,000	1	72
July	6,000	1	72
August	5,000	2	144
September	18,000	2	144
October	21,000	3	216
November	38,000	4	288
December	58,000	5	360
TOTAL	339,000	31.25	2250

Appendix D – Cattle Bay Marina Water Demand and Wastewater Loadings

CATTLE BAY MARINA AND TEMPORARY LAND FACILITIES PROJECT

1 PROPOSED DEVELOPMENT

Offshore Marina	154 Berths
Temporary Building 1	Female WC containing WC - 2, Hand Wash Basin - 2; Male WC containing WC-1, Urinals-2, Hand Wash Basin-2; Accessible Unisex Facility containing WC-1, Hand Wash Basin -1, Shower - 1
Temporary Building 2	Kitchen sink

2 WATER DEMAND CALCULATIONS

2.1 Water Supply for the Marina Facilities

Development	Standard Unit				Design Average Consumption (kL/ET/annum)	Average Day		Peak Day Demand			Peak Hour Demand		
		Number	ET/ Item	Total ET		(kL/year)	(kL/day)	Peak Day Factor	Total Demand (kL/day)	(L/s)	Peak Hour Factor	Total Demand (kL/day)	(L/s)
Marina	Berth	154	0.6	92.4	6.78	1,044	2.86		6.458	0.07	5.00	32.290	0.37
Temporary Building 1	WC	4	0.4	1.6	205	328	0.90	2	1.797	0.02	5.00	8.986	0.10
Temporary Building 1	Shower	1	0.4	0.4	205	82	0.22	2	0.449	0.01	5.00	2.247	0.03
Temporary Building 2	Kitchen Sink	1	0.4	0.4	205	82	0.22	2	0.449	0.01	5.00	2.247	0.03
Fire Hose Reels	operating simul.	2	0.63 L/s each		205								1.26
TOTAL				95		1,536	4.209		9.154	0.11		45.77	1.79

Notes:

1. The fire hose reels will be connected to the domestic water supply, whereas the fire hydrants (see below) will be connected to a special hydrant service.
2. Allowed for 2 fire hose reels operating simultaneously providing a minimum flow of 0.63 L/s each, refer AS 3962-2001.
3. The marina average annual consumption and peak day demand are based on information from 3 marinas (70 berth marinas in Middle Harbour and Pittwater and 50 berth marina in Sydney Harbour).
4. The marina peak day consumption is based on assumption 1 boat per day in each berth using 41.9 L/day each.
5. The residential equivalent tenements are in accordance with NSW Water Directorate Section 64 Determinations of Equivalent Tenements Guidelines.
6. The residential average consumption (205 L/s) is in accordance with Development Servicing Plan (Bega Valley Shire Council, 2013).
7. The peak day demand and peak hour demand were calculated in accordance with WSAA Water Supply Code of Australia.

2.2 Water Supply for Hydrants

Allowed for 2 fire hydrant outlets to flow simultaneously, minimum required flow rate per outlet 10 L/s, refer AS 2419.1-2005.
The fire hydrants will have its own water supply service, supplied from the existing land based infrastructure.

Hydrants	Fire Fighting Flow	20.00
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3 WASTEWATER LOADINGS

3.1 Wastewater from the Temporary Buildings

Development					Average Dry Weather Flow L/s	r	Peak Dry Weather Flow L/s	Stormwater Allowance L/s/ ET	Peak Wet Weather Flow L/s
	Standard Unit	Number	ET/ Item	Total ET					
Temporary Building 1	WC	4	0.63	2.5	0.015	6.36	0.09	0.15	0.24
Temporary Building 1	Shower	1	0.63	0.6	0.004	8.31	0.03	0.04	0.07
Temporary Building 2	Kitchen Sink	1	0.63	0.6	0.004	8.31	0.03	0.04	0.07
TOTAL				4					0.38

Notes:

1. The gravity main would transport wastewater to the existing manhole DZ1. Gravity mains transports flow from DZ1 to Wastewater Pumping Station PS3. Both, manhole DZ1 and pumping station PS3 are located in proximity of the development site.
2. The residential equivalent tenements were calculated in accordance with the NSW Water Directorate Section 64 Determinations of Equivalent Tenements Guidelines.
3. The residential average dry weather flow was calculated in accordance with Development Servicing Plan (Bega Valley Shire Council, 2013) - 508 L/ET/Day.

3.2 Pump Out

Sewage is proposed to be removed from the holding tanks of vessels at the marina and disposed of to the on-land sewerage system by means of a mobile sewage pump out trolley ('Muck Truck', as supplied by Superior Jetties, or similar).

Pump Out Flow Rate	L/s	0.020
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3.3 Bilge Water Pump Out

All marina berth tenants will be inducted in the use of, and supplied with, a bilge water absorbing pad as part of rules and regulations of the marina. The bilge absorbing pad will absorb any oil from the bilges. The bilge water will then be disposed of via certified collection.

3.4 Total Wastewater Flow to manhole DZ1 and pumping station PS3	L/s	0.40
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Appendix E – Muck Truck



90 L storage tank

Rechargeable battery power supply

In / out diaphragm pump

Operation component housing

Cattle Bay Marina and Temporary Facilities Project

Item	Council Question	RH Response
1.	Establish the volume (capacity) of the muck truck	90 L waste storage, refer to the attached photo.
2.	How it travels along the wharves (electronic / or on rails)	Muck Truck is pushed along the wharves on wheels, refer to the attached photo.
3.	Does it pick up from a number of boats before discharging or only one at a time	Only one at a time.
4.	How is the prevention of spills accommodated: a. with the muck truck b. at the receiving area (where the boats are) c. at the discharge location	a. spill kit b. procedure and training for use of Muck Truck, spill kit c. at the discharge point will be purpose built bunded area.
5.	No provision for any 'cam-lock' type facility is permitted within Council reticulation system – more details on this proposal is required and a different arrangement maybe required	Currently, the muck truck is proposed to be discharged via a cam lock fitting. An alternate connection system will be investigated to meet Council reticulation requirements. Please advise of available alternatives.
6.	Is there a 'bund' area at discharge location	Yes, there will be a bunded area at the discharge point.
7.	Is there sampling point for the quality of discharge to Council sewer	Provision will be made for a sampling point for the quality of discharge to Council sewer - at the discharge point.
8.	Is there a need for washdown / cleaning the 'muck truck'	Minimal, if required would be done at the bunded area by a trained operator.
9.	What are the odour issues and how are they addressed with a. the Muck Truck b. at discharge location	a. The Muck Truck is a fully enclosed system. b. It is a sealed connection point, minimal odour issues are expected.
10.	Is the discharge location within public area	Location to be confirmed.