

**UTILITIES INVESTIGATION REPORT**  
**MIXED USE DEVELOPMENT**  
**ANSON STREET, ST. GEORGES BASIN**

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**CLIENT: MR DAVID DEBATTISTA**





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**Table of Revisions**

Rev	Date	Details
Draft	23/3/12	Issued for Review
00	27/4/12	Issued for DA application
01	28/2/17	Revised layout
02	2/3/17	Revised to matrix
03	6/3/17	Revised layout

Report Prepared by:

Caroline Griffiths

**Allen Price and Scarratts**



## 1. INTRODUCTION

Mr David deBattista is proposing a mixed residential and commercial development over lots 1 and 6 DP1082382 off Anson Street, St Georges Basin. The expected yield of the proposal is 15 buildings consisting of 88 x 2bed & 292 x 3bed residential units and 2,233m<sup>2</sup> of commercial space, plus associated parking. See Appendix A, layout plan and yield summary for proposed developments.

Buildings A & B are subject to a determination of an existing submitted DA.

The subject site is currently zoned part Mixed Use B4 and part General Residential R1 under the Shoalhaven Local Environmental Plan 2014.

## 2. THE SITE

The existing site comprises the two parcels mentioned above totalling approximately 3.59Ha of land. The site is located at the eastern edge of the St Georges Basin commercial area, and fronts Anson Street, St Georges Basin (see figure 1).

The site is bounded by private property to the north, south, east and west, with a small Public Reserve to the north east. Anson Street bisects the property and there are two local streets connecting the land to the north with the existing road network, one of which is physically constructed. The property to the south is fully cleared and developed; while to the east are developed residential lots. To the west is a mix of developed residential lots and developed and undeveloped commercial lots.

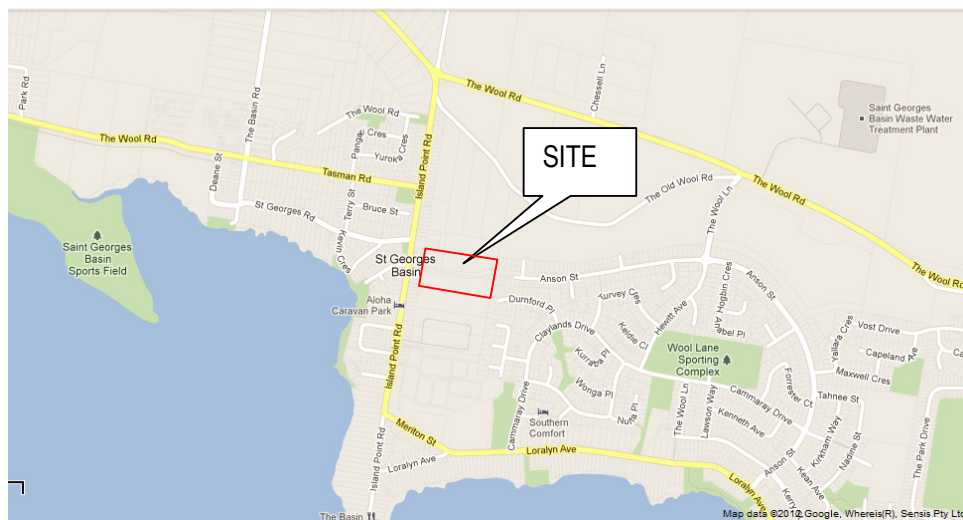


Figure 1: Site Plan

The site predominantly is comprised of gently sloping land to the west.

The site is predominantly cleared. Vegetation clearing has been undertaken by Shoalhaven City Council for the construction of the Road networks and under development application SF10111 in preparation for further development. There are scattered trees and isolated patches of undisturbed vegetation that remain.

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### 3. INFRASTRUCTURE REVIEW

The following infrastructure has been reviewed as outlined below:

Sewer – Shoalhaven Water  
Water Supply – Shoalhaven Water  
Road and Stormwater drainage– Shoalhaven City Council  
Electricity Reticulation – Endeavour Energy  
Telecommunications – Telstra & NBNco

A drawing showing approximate locations of existing infrastructure is shown in Appendix B. This plan also shows the proposed sewerage construction within the site to service the development.

#### 3.1. SEWERAGE INFRASTRUCTURE

##### 3.1.1 PHYSICAL INFRASTRUCTURE

The site is currently partially serviced with sewerage reticulation and there is an approved design to fully service the remainder of the site that will cater for the proposed development (Appendix B). If the land to the north of Anson Street is subdivided, additional sewer will be required to be provided to cater for this. As part of Shoalhaven Water's Development Servicing Plans for Sewerage Services (2013), it has been identified that upgrading or augmentation of the existing sewerage pumping station (SPS17) at the end of Collette Place is proposed however there is no upgrading or augmentation of the existing sewerage gravity mains (GM) leading into SPS 17 proposed.

An assessment (Appendix C) of the capacity of the existing GM upstream, through and downstream of the development, has been undertaken based upon design information provided by Shoalhaven Water and WSA sewer design.

The results are that the line immediately upstream of the development has a maximum capacity of 284ETs and an expected load of 229.9 ETs and is adequate to cater for orderly development permissible for the current zonings. The existing sewer downstream of the development site typically has a maximum capacity of 284 ETs (but in some locations is as low as 164ETs) but an expected load from development (other than the proposed development) are well above these values for all bar one line thus indicating that even without the proposed development the existing sewer is inadequate to cater for orderly development permissible for the current zonings. It has also been determined that were the site to be developed with single storey mixed commercial/medium density buildings the gravity sewer mains outside the site will still be inadequate to cater for this basic level of development.

As the capacity of the sewer lines will not be exceeded as a result of this development alone, and the existing sewer will be inadequate to cater for orderly development permissible for the current zonings, we believe that the sewer lines from the existing manhole EA/9 to the Collette Place SPS17 require upgrading by Shoalhaven Water, independent of this development. We have raised the matter with Shoalhaven Water on 10 November 2011 (see Appendix D). At the time of writing this report Shoalhaven Water have not made any formal reply to our correspondence, however in a telephone conversation with Ljupco Lazarevski on 2 March 2017 it was indicated that there was no proposal under the current Development Servicing Plans for sewerage Services (2013) for any other upgrading within this system other than that noted above.

In conclusion, the sewerage infrastructure that is proposed to be installed by the developer will adequately service the development and provides no constraints to development proceeding. It is noted however the existing sewerage infrastructure downstream of the site will not adequately service either the development or

for that matter any other development permissible in the zone (even single story mixed commercial/medium density buildings). The inadequacies of the existing sewerage infrastructure are the responsibility of Shoalhaven Water and need to be addressed as this inadequacy will restrict development for the whole precinct from proceeding.

### **3.1.2 DEVELOPMENT CONTRIBUTIONS**

The development contributions payable are in accordance with DSP2005 indexed to current rates.

This contribution is paid to Shoalhaven Water prior to the release of the Construction Certificate.

## **3.2. WATER SUPPLY INFRASTRUCTURE**

### **3.2.1 PHYSICAL INFRASTRUCTURE**

The site is currently serviced with water supply infrastructure via an existing DN250 main located along the southern side of Anson Street.

Water supply reticulation to each building will be the responsibility of the developer. Water mains are assumed to be adequately sized to cater for the necessary requirements of Shoalhaven Water for pressure and flow including provision of fire hoses to the buildings in accordance with AS2419.1 to ensure suitable water is available for fire fighting purposes.

In conclusion, the existing water supply infrastructure, installed by Shoalhaven Water, and the proposed water supply infrastructure to be installed by the developer will adequately service the development and provides no constraints to development.

### **3.2.2 DEVELOPMENT CONTRIBUTIONS**

The development contributions payable are in accordance with DSP2005 indexed to current rates.

This contribution is paid to Shoalhaven Water prior to the release of the Construction Certificate.

## **3.3. ROAD AND STORMWATER DRAINAGE INFRASTRUCTURE AND WASTE SERVICES**

### **3.3.1 PHYSICAL INFRASTRUCTURE**

The Road link connecting Anson Street and Island Point Road, including roundabout at the intersection of Anson Street and Island Point Road as well as a link to the IGA shopping complex is constructed and includes the provision of sealed residential access and associated stormwater drainage. Consultation with Shoalhaven City Council indicates that this piped drainage system has been designed to cater for the 1:5 year event, on the assumption that the surrounding properties are undeveloped. Consequently the proposed development will be required to provide stormwater detention to limit the discharge from the site to the pre-developed case in accordance with DCP2014. No additional Road network infrastructure is proposed or required for the development.

It is assumed the roads constructed by Shoalhaven City Councils contractor through the development are to an acceptable standard for public road and will be suitable for waste collections services and access. A noted exception is the provision of street lighting which has not been constructed with the road network (see section 3.4) and will be required to be constructed as part of this application.



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In conclusion, the road and stormwater drainage infrastructure currently constructed is adequate to serve the development (including waste collection services) and provides no constraint to the development. On-site detention will be a requirement of any development, in accordance with DCP2014, limiting the post-developed flows to the pre-developed case.

### **3.3.2 DEVELOPMENT CONTRIBUTIONS**

The development contributions payable are in accordance with the Shoalhaven Section 94 Contributions Plan 2010.

These contributions are paid to Shoalhaven City Council prior to the release of the Subdivision Certificate.

## **3.4. ELECTRICITY INFRASTRUCTURE**

### **3.4.1 PHYSICAL INFRASTRUCTURE**

The site has access to existing overhead electrical cables infrastructure in Island Point Road, to the west, and underground electrical cables infrastructure in Anson Street, to the east, all owned and operated by Endeavour Energy (EE). The location of the existing infrastructure is shown on APA drawing 24889-09 (Appendix B). Design and construction of Street lighting and internal underground reticulation (including provision of pad mount substation(s) if and as required) within the development will be fully funded by the developer.

No correspondence with EE as regards the expected load for the development has been made or is possible until such time as the development has been determined. Once approval is granted to the development application will be made to EE to determine the requirements, it is anticipated this will be the need for a level 3 Service provider to undertake a design for the Electrical supply. This will determine whether the existing system does or does not have the capacity to cater for the full expected load. Funding arrangements for this will be determined at design stage.

In conclusion, the electrical infrastructure that is proposed to be installed by the developer will adequately service the development.

### **3.4.2 DEVELOPMENT CONTRIBUTIONS**

The funding arrangements for electrical infrastructure are documented in the IPART report “Capital Contribution and Repayments for Connections to Electricity Distribution Networks in New South Wales” – Final Report - April 2002.

The IPART determination outlines the manner in which funding for the various aspects of any required works are calculated. Some works are funded by Endeavour Energy (e.g. zone substation augmentation and high voltage works feeding more than one development), some works are developer funded (e.g. high and low voltage reticulation) and some works are jointly funded.

The final breakdown on funding arrangements will be determined once detailed electrical designs are carried out and proposed works approved by Endeavour Energy.

## **3.5. TELECOMMUNICATIONS INFRASTRUCTURE**

### **3.5.1 PHYSICAL INFRASTRUCTURE**

The site is currently serviced with telecommunications services to the existing dwelling.





Telstra has a statutory requirement to service all developments with telecommunications services. The pit and pipe infrastructure for this is provided 100% by the Developer and the cables/fibre optic provided 100% by NBNco (if within the footprint) or Telstra under the current operating practices. To that end, during the installation of the electrical infrastructure, the Developer will arrange for supply of labour and materials (pit and pipe) to service the development, with the final infrastructure installation to be scheduled by either NBNco or Telstra (as applicable) to suit the requirements for supply at construction stage.

The development will be registered with Telstra and NBNco to determine which authority the development falls under and to allow the appropriate organisation to provide the necessary pre-provisioning services. Closer to the construction phase, a design will be undertaken, at the developers expense and an Application for Reticulation will be made to enable Telstra or NBNco (as applicable) to allow any works required outside the development to be completed.

In conclusion, the telecommunications infrastructure will be installed partially by the developer and partially by Telstra or NBNco and will service the development to current requirements. Hence, telecommunications infrastructure provides no constraints to development proceeding.

### **3.5.2 DEVELOPMENT CONTRIBUTIONS**

Development costs for both Telstra and NBNco are dependent upon a combination of the number of units and the costs of upgrading works to the existing infrastructure network outside the development (if any are required) at the time of application.

The final breakdown on funding arrangements will be determined once the applications are made and an agreement between the appropriate provider and the developer has been completed.

### **3.6. CONCLUSION**

Assessment of the existing gravity sewer indicates that the sewer transportation system is inadequate for orderly development permissible for the current zonings for the whole precinct. There is no proposal currently to upgrade the gravity lines outside the development site (both upstream and downstream of the site). The inadequacy of the existing downstream gravity lines is a potential constraint to the development, however as this affects development for the whole precinct these works are the responsibility of Shoalhaven Water.

Gravity sewer reticulation will be provided within the site by the developer, designed to cater for the proposed development, and is not a constraint to development proceeding.

Correspondence with Shoalhaven Water indicates that the water trunk main is currently available to the development. Any internal Water supply will be provided throughout the development by the developer.

Residential standard road access is available and is suitable to service the development. Stormwater drainage associated with the road construction is suitable for the site in a pre-developed state and consequently on-site detention will be required to be provided to cater for the proposed development.

Electrical reticulation infrastructure will be provided within the development by the developer, and is not a constraint to development proceeding.

Waste services will not be a constraint to development proceeding as all roads are public roads to Council standards.



Telecommunications will not be a constraint to development as Telstra has a statutory obligation to supply the necessary services to the development.

**Appendices:**

Appendix A: Proposed layout and yield

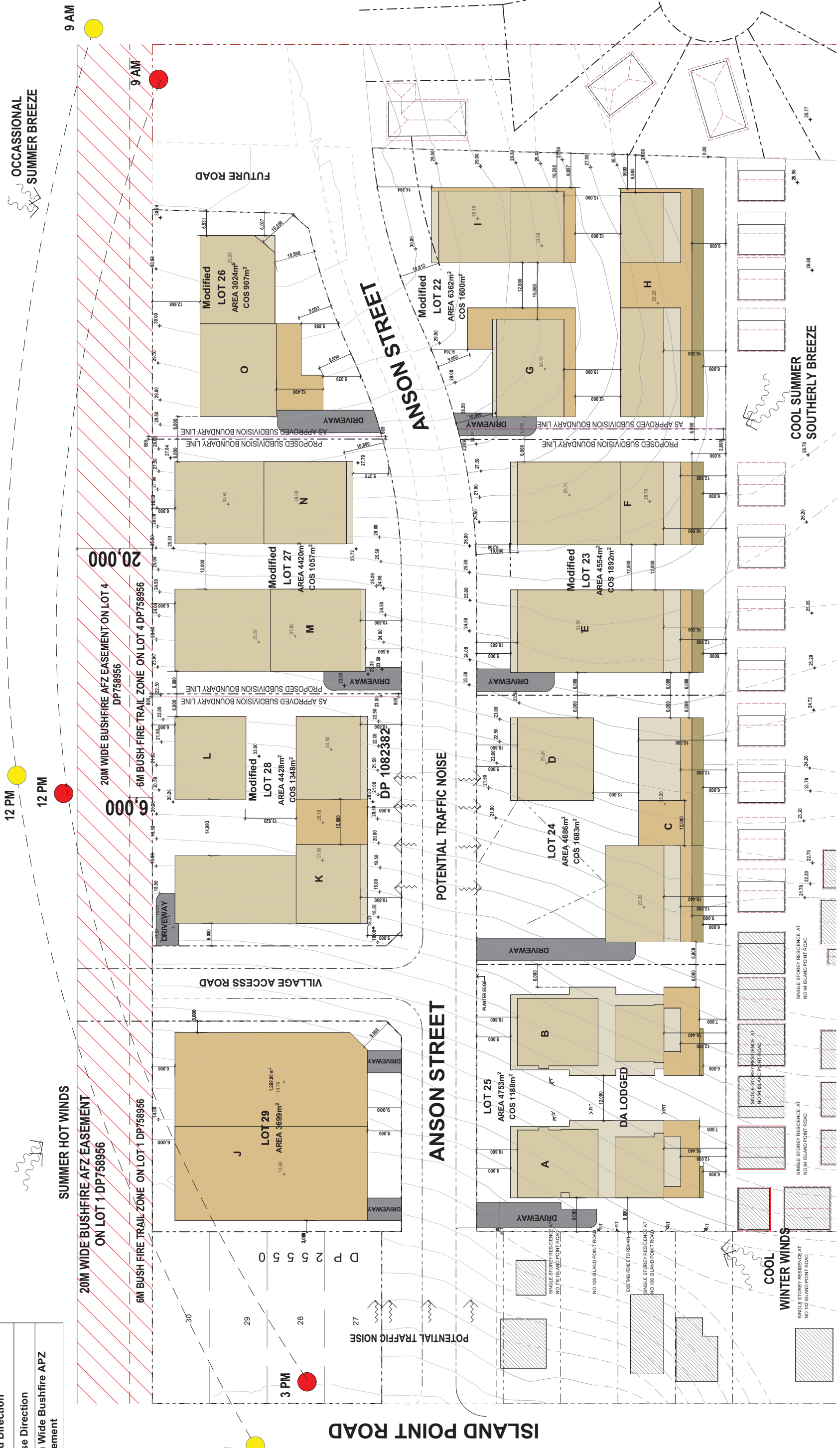
Appendix B: Sewer Reticulation Design - APA Drawing ref 24889-09 and 24889-10

Appendix C: Sewer strategy – APS drawing ref 25215-401 & 25215-402

Appendix D: Correspondence to Shoalhaven Water



LEGEND	
	Hot Summer Sun
	Low Winter Sun
	Wind Direction
	Noise Direction
	20m Wide Bushfire APZ Easement

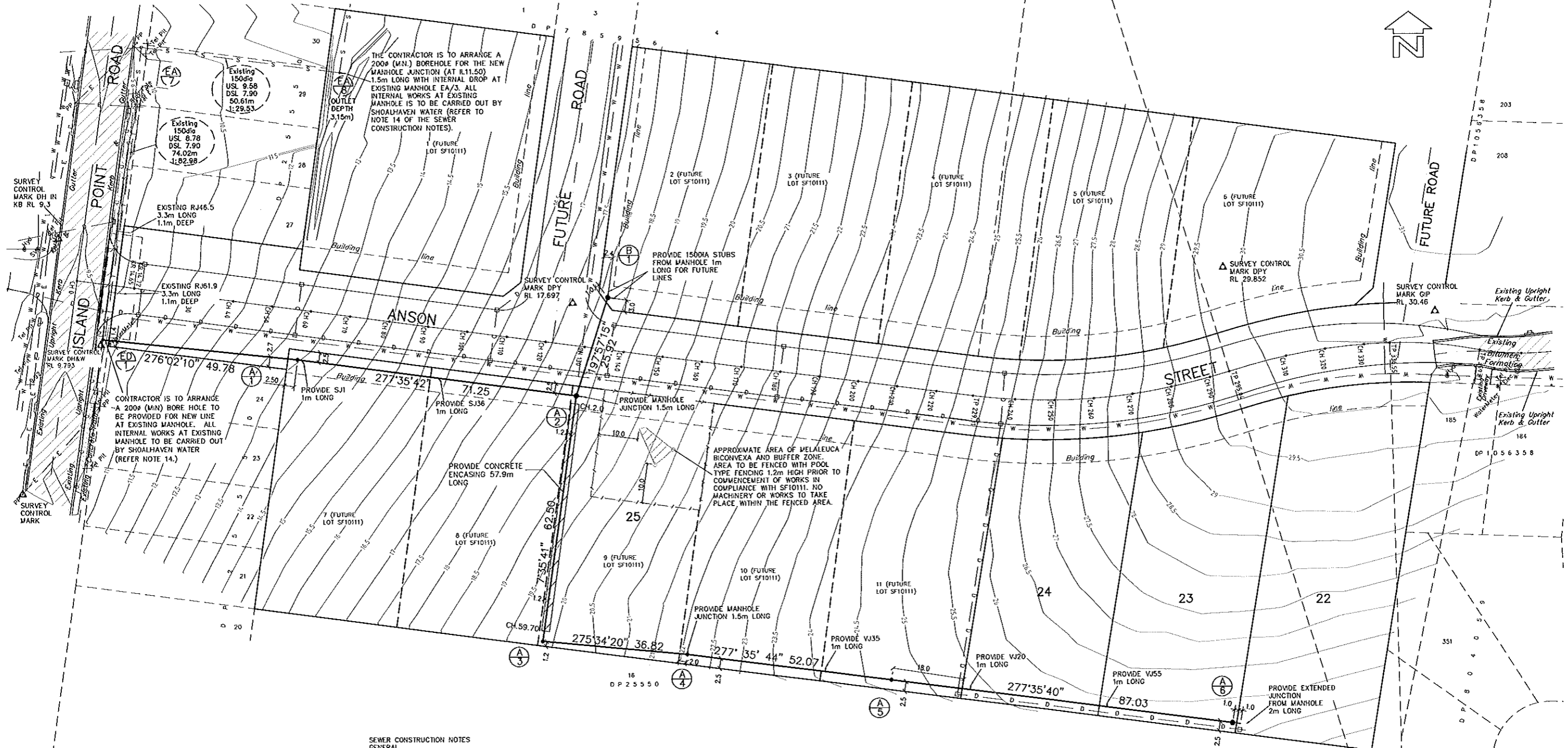


Site & Analysis Plan  
Scale 1:500

<b>SHOBHA DESIGNS</b> ARCHITECTS & URBAN DESIGNERS Suite 21, 1-7 Jordan St, Gladstone NSW 2111 PHONE : 02 98700020 EMAIL : nilesh@shobhadesign.com.au	PROJECT <b>MASTER PLAN - BUILDING ENVELOPE AND MASSING FOR LOTS 22 TO 28, DP 1082382, ANSON STREET, ST. GEORGES BASIN NSW</b>	Drawing Name <b>MASTER PLAN - SITE &amp; ANALYSIS PLAN</b>	Date 3/2017	Date of Issue 3/2017
	CLIENT <b>David De Battista</b>	Issue No. Amendments	Drawn By MUMRA M	Date MM & TT
shobha	Checked By NILESH MUNOT	Drawn By MUMRA M	Date MM & TT	Drawing Scale @ A1 <b>1:500</b>
shobha	Checked By NILESH MUNOT	Drawn By MUMRA M	Date MM & TT	Layout ID <b>M01</b>
shobha	Checked By NILESH MUNOT	Drawn By MUMRA M	Date MM & TT	Revision <b>A</b>

MASTERPLAN – Approximate yield

BUILDING	A	B	C	D	E	F	G	H	
ZONING	AS PER DA	AS PER DA	ZONE R1 GENERAL RESIDENTIAL	ZONE R1 GENERAL RESIDENTIAL	ZONE R1 GENERAL RESIDENTIAL	ZONE R1 GENERAL RESIDENTIAL	ZONE R1 GENERAL RESIDENTIAL	ZONE R1 GENERAL RESIDENTIAL	
SITE AREA (M <sup>2</sup> )			4686		4554		6362		
BUILDING ENVELOPE FOOTPRINT AREA (M <sup>2</sup> )			1250	484	1126	1126	710	1335	
HEIGHT			4 STOREYS	4 STOREYS	4 STOREYS	4 STOREYS	4 STOREYS	4 STOREYS	
TOTAL ENVELOPE AREA			3235	1896	4037	4037	2379	4587	
75% OF ENVELOPE AREA			2426	1422	3027	3027	1784	3440	
DEVELOPMENT MIX			3 BED – 18 2 BED - 5	3 BED – 9 2 BED - 5	3 BED – 24 2 BED - 4	3 BED – 24 2 BED - 4	3 BED – 12 2 BED - 5	3 BED – 24 2 BED - 9	
RESIDENTIAL PARKING SPACES			44	26	54	54	32	62	
RETAIL/COMMERCIAL PARKING SPACES	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
BUILDING	I	J	K	L	M	N	O		
ZONING	ZONE R1 GENERAL RESIDENTIAL & B4 MIX USE	ZONE B4 MIX USE	ZONE B4 MIX USE	ZONE B4 MIX USE	ZONE B4 MIX USE	ZONE B4 MIX USE	ZONE B4 MIX USE	ZONE B4 MIX USE	
SITE AREA (m2)	6362	3699	4428		4420		3024		
BUILDING ENVELOPE FOOTPRINT AREA (m2)	764	2549	1625	415	1108	1034	1173		
HEIGHT	4 STOREYS	2 STOREYS	4 STOREYS	4 STOREYS	4 STOREYS	4 STOREYS	4 STOREYS		
TOTAL ENVELOPE AREA (m2)	2829	5098	5966	1660	4320	4098	4341		
75% OF ENVELOPE AREA (m2)	2121	3823	4474	1245	3240	3073	3255		
DEVELOPMENT MIX	3 BED – 16 2 BED - 4	3 BED – 17 2 BED – 5 COMMERCIAL/RETAIL – 1433sqm	3 BED – 27 2 BED – 8 COMMERCIAL/RETAIL – 800sqm	3 BED – 8 2 BED - 4	3 BED – 25 2 BED – 5	3 BED – 24 2 BED - 5	3 BED – 24 2 BED - 7		
RESIDENTIAL PARKING SPACES	38	42	66	22	58	56	59		
RETAIL/COMMERCIAL PARKING SPACES	N/A	40	23	N/A	N/A	N/A	N/A		



**SEWER CONSTRUCTION NOTES**  
GENERAL

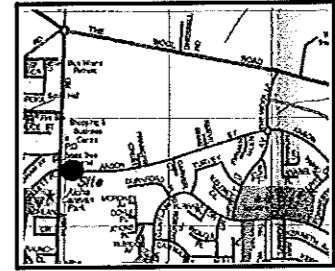
- GENERAL NOTES**
- The contractor shall comply with the requirements of the Occupational Health and Safety Act 2000, which requires employers to ensure the health, safety and welfare of employees.
  - The contractor shall at all times exercise all necessary precautions appropriate to ensure the safety of all persons on the work site or in the vicinity of the work site.
  - Sediment and erosion control measures are to be implemented prior to construction work commencing and maintained during the construction phase. Sediment and erosion control measures are to incorporate those as detailed on the Soil and Water Management Plan included in the road and drainage plans. Measures should also incorporate those as set out in Council's standard annexure "Erosion Control Measures for Work Undertaken by Contractors During the Installation of Utility Services".
  - The contractor is to gain approval under Section 138 of the Roads Act 1993 prior to commencing construction within all road reserves.
  - Traffic control measures in accordance with AS 1742.3 are to be in place and maintained at all times. Traffic Control Plan is to be submitted to Council and approved prior to construction work commencing.
  - The contractor shall ensure that the residents adjacent to the construction zone are not affected by dust or undue noise during construction and are not deprived of all weather access nor are subjected to additional stormwater runoff at all times during construction.
  - To limit the impact of the construction on adjoining owners, all works shall be restricted to the hours of 7am-6pm Monday to Friday and 8am-3pm Saturday. No work shall take place on Sundays or Public Holidays.
  - All work shall be set out by the surveyor prior to the commencement of construction, upon request. Two (2) days notice required.
  - The contractor shall not disturb any survey control marks. Should any survey control mark be disturbed or obliterated, the contractor shall notify the superintendent immediately. The contractor shall have the marks replaced at his expense.
  - Prior to commencement of excavation the contractor shall determine the location of all services and will be responsible for adjustment of services and repair of any damage to Council's infrastructure. Such repair or reinstatement to be carried out immediately to the satisfaction of the Subdivision and Development Manager and/or Shoohaven Water.

- Prior to commencing work on site the contractor shall provide the superintendent evidence that they have current public risk and compensation insurance policies.
- Any modifications/deviations or amendments to the approved design plans are to be submitted in writing to the Superintendent for submission to Shoohaven Water for their approval. Approval from Shoohaven Water is to be granted before any such alterations are implemented by the contractor.
- Cross hatching denotes service limit of block (calculated at 1:60).
- All sewerage construction shall be performed in accordance with Water Services Association of Australia - Sewerage Code of Australia - WSA 02-2002 Version 2.3 and Supplement to the Water Services Association of Australia - Sewerage Code of Australia (WSA 02-2002 Version 2.3) Version 1 and with any other special requirements and standards of Shoohaven City Council.
- UPVC pipes and fittings are to be rubber ring jointed, class SN4 and manufactured in accordance with AS/NZ 1260. Pipe lengths are to be maximum 3m long.
- The contractor shall provide all labour, materials and equipment necessary for the entire works. The contractor shall arrange for all pipes and fittings to be inspected by the superintendent and the Shoohaven Water Inspector prior to the opening of any trenches on site. The contractor shall give not less than 24 hours notice when requesting an inspection under this clause.
- If rock is encountered the superintendent is to be advised immediately so a record of amount can be made.
- Where shown on the plan and/or longitudinal sections, sewer lines are to be concrete encased with 20Vpa concrete 150mm thick all round.
- Where concrete encasing is required, provision of contraction joints in the concrete encasement at the face of each pipe socket shall be provided. Concrete encasement is to commence and finish at a flexible joint. Backfilling over the concrete encased pipeline is not to be undertaken within 48 hours of placing concrete and until "Works As Executed" (WAE) details of the encasement have been obtained by the surveyor.
- All junction/junction sidelines are to be laid at a minimum grade of 1:60 (including extended junctions).
- Risers to be placed where shown on the longitudinal sections or where the depth from the invert of the I.D. to the finished surface level is greater than 2m.
- The contractor is to take extra care with manhole construction to ensure that sufficient fall is provided through each manhole. The design fall across each manhole should allow for the continuation of grade plus the design drop at centre of manhole. Refer to table for details.
- Where lampholes are specified, the contractor is to provide a manhole cover and surround over the constructed lamphole to indicate the position of the lamphole as a requirement of Shoohaven Water.
- The contractor is to arrange for internal works at existing manholes to be done by Shoohaven Water (at the developer's expense). All external works including excavation, supply of fittings, backfilling and reinstatement of the construction area will be the responsibility of the contractor.
- All disturbed areas affected by the works are to be grass seeded and fertilised at the completion of works.

**TABLE SHOWING FALLS TO BE CONSTRUCTED THROUGH MANHOLES**

MANHOLE	DESIGN FALL AT MANHOLE CENTRE	DESIGN FALL ACROSS MANHOLE (ALLOWS FOR CONTINUATION OF GRADE)
ED/1 (EXISTING MH)	120	160
A/1 (LINE A)	50	110
A/2 (LINE A)	EXTERNAL DROP	50 ACROSS BASE
A/2 (LINE B)	80	110
A/3 (LINE A)	80	100
A/4 (LINE A)	EXTERNAL DROP	50 ACROSS BASE
A/4 (MHJ 90°)	EXTERNAL DROP	50 ACROSS BASE
A/5	50	70
A/6 (MHJ 0°)	50	65
B/1 (STUB 3°)	50	65
B/1 (STUB 92°)	80	95
EA/8 (MHJ 0°)	INTERNAL DROP	50 ACROSS BASE

**Locality Sketch**



NOTE: ALL TREES AND VEGETATION TO BE REMOVED AS REQUIRED TO ALLOW CONSTRUCTION WORKS IN ACCORDANCE WITH THESE DRAWINGS.

Subdivision No. 9795  
These construction plans comprising 2 sheets and subject to the amendments shown in red are the water/wastewater construction plans referred to in the letter of approval issued by Shoohaven City Council Dated 8/12/11

**TELSTRA**  
"BEFORE YOU DIG"  
BEWARE: Damage to telephone cables can disrupt communication services and cost YOU money. For prompt location of telephone cables ring 1100  
Calls to this number are free

**BEWARE!**  
THE CONTRACTOR IS TO VERIFY THE LOCATION OF ALL EXISTING SERVICES PRIOR TO COMMENCEMENT OF CONSTRUCTION AND SHALL BE RESPONSIBLE, AT THE CONTRACTOR'S EXPENSE, FOR ANY REPAIRS TO DAMAGE CAUSED DURING CONSTRUCTION.

RATIO:  
**1 : 500**  
(AT A1 SIZE)

DATUM:  
AUSTRALIAN HEIGHT DATUM  
ORIG: WS 184 SPIKE  
IN POWER POLE  
RL 11.177  
DATE OF PLAN: MARCH 2008

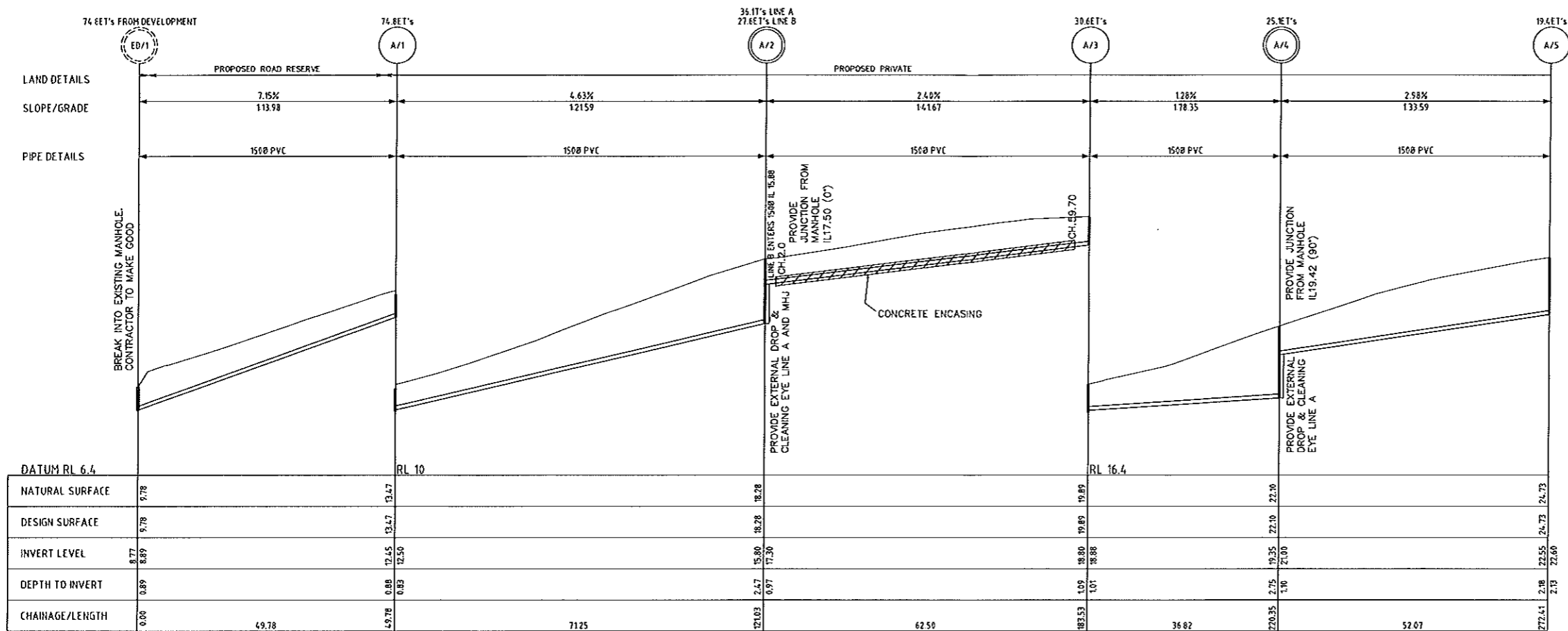
SURVEY	APR & OTHERS	REVISION	BY	DATE
DESIGN	CEG	01	CEG	10.03.2008
DRAWN	AS	02	CEG	11.04.2008
CHECKED	MJP	03	CEG	12.05.2008
		04	CEG	28.06.2010
		05	CEG	06.07.2010
		06	CEG	05.08.2010
		07	CEG	30.09.2011
		08	CEG	02.12.2011

**allen, price & associates**  
land and development consultants  
75 plunkett street, nowra, nsw. 2541  
phone: (02) 4421 4544 fax: (02) 4522 1621 DX 5310 nowra  
consultants@allenprice.com.au www.allenprice.com.au

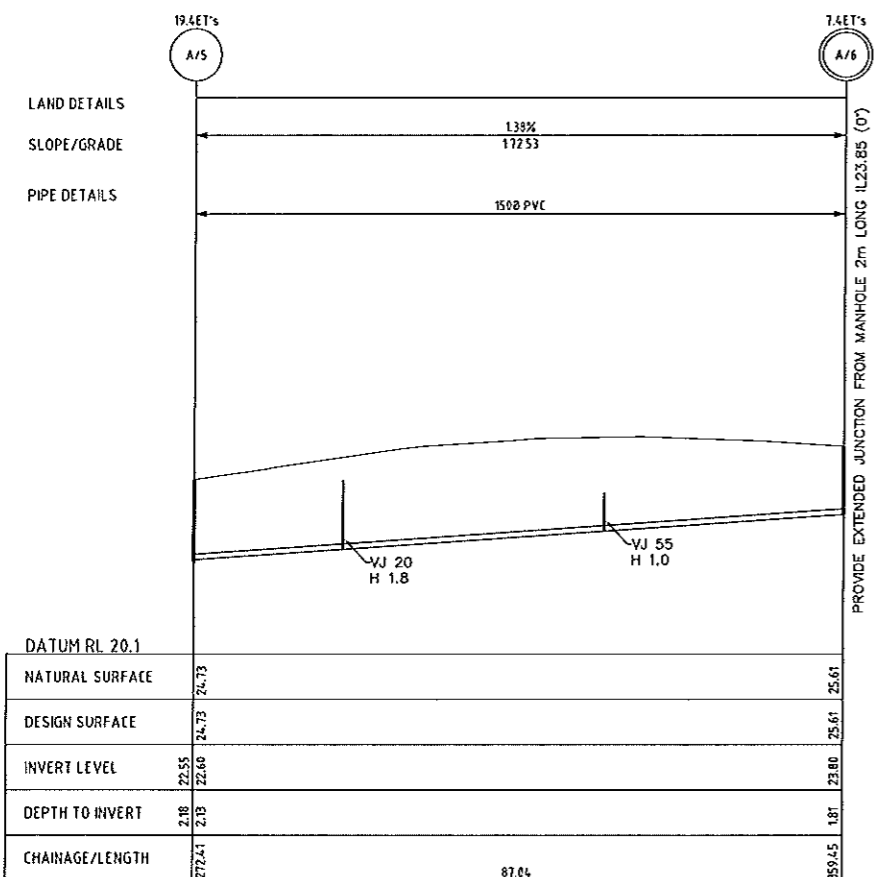
**PLAN SHOWING SEWER RETICULATION LAYOUT (SF9795) OVER LOT 1 & 6 DP1082382 AT ISLAND POINT ROAD ST.GEORGES BASIN FOR EASTERN GREY PTY LTD**

REF. No. **24889-09**  
SHEET **1** OF 2 SHEETS  
REVISION **08**

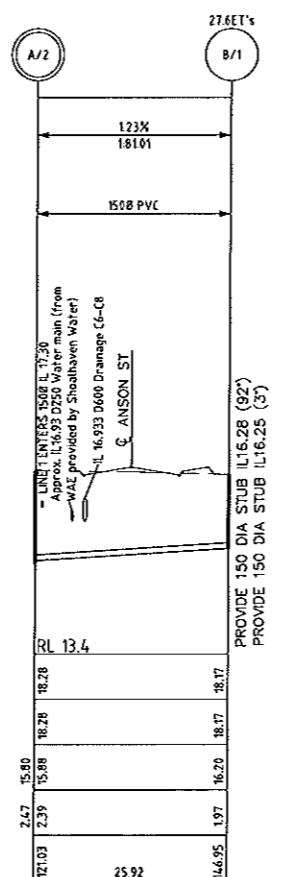




SEWER LONGITUDINAL SECTION FOR LINE A  
SCALES: HORIZONTAL 1500 VERTICAL 1:100



SEWER LONGITUDINAL SECTION FOR LINE A  
SCALES: HORIZONTAL 1500 VERTICAL 1:100



SEWER LONGITUDINAL SECTION FOR LINE B  
SCALES: HORIZONTAL 1500 VERTICAL 1:100

Subdivision No. 9795  
These construction plans comprising 2 sheets and subject to the amendments shown in red are the water/wastewater construction plans referred to in the letter of approval issued by Shoalhaven City Council Dated 8/12/11  
Shoalhaven City Council  
Shoalhaven Water Management



RATIO:  
**1 : 500**  
(AT A1 SIZE)

DATUM:  
AUSTRALIAN HEIGHT DATUM  
ORIG: WS 184 SPIKE  
IN POWER POLE  
RL 11.177  
DATE OF PLAN: MARCH 2008

SURVEY	APR & OTHERS	REVISION	BY	DATE
DESIGN	CEG	00 FOR COUNCIL APPROVAL	CEG	10.03.2008
DRAWN	AS	01 SEWER LAYOUT AMENDED	CEG	19.03.2008
CHECK'D	MJP	02 SEWER LAYOUT AMENDED	CEG	11.04.2008
		03 SEWER AMENDED - SCC EMAIL 29.04.2008	CEG	12.05.2008
		04 PLAN AMENDED TO SHOW SCC ROAD DESIGN	CEG	23.06.2010
		05 PLAN AMENDED AS PER SCC EMAIL 6.7.2010	CEG	08.07.2010
		06 SEWER LAYOUT AMENDED	CEG	05.08.2010
		07 SEWER LAYOUT AMENDED	CEG	30.09.2011
		08 SEWER AMENDED - SCC EMAIL 05.12.2011	CEG	02.12.2011

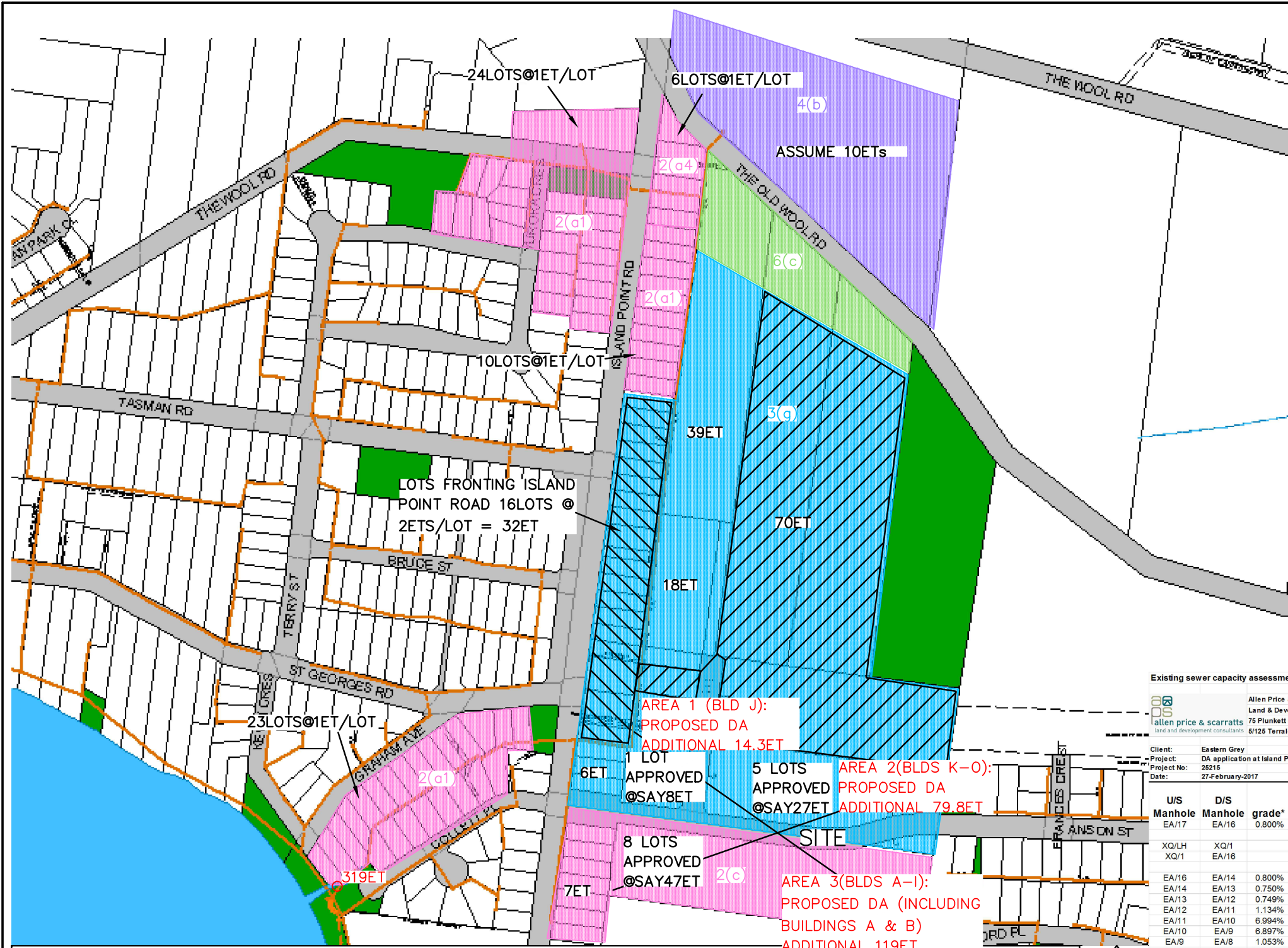
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PLAN SHOWING SEWER LONGITUDINAL SECTION (SF9795) OVER LOT 1 & 6 DP1082382 AT ISLAND POINT ROAD ST. GEORGES BASIN FOR EASTERN GREY PTY LTD

REF. No. **24889-10**  
SHEET **2** OF 2 SHEETS  
REVISION **08**



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MEDIUM DENSITY CALCULATION FOR LOTS 2 & 4 DP78956 AND 68 & 69 DP25550 FOR SF9847 (APA REF 25137) DETERMINED THAT AN APPROXIMATE DENSITY FOR FUTURE DEVELOPMENT IN 3(g) ZONED LAND IS 1ET/430m<sup>2</sup> OF LAND. THIS DENSITY IS ADOPTED FOR ALL CALCULATIONS IN THIS ZONE AND THE 2(c) PORTION OF THE SUBJECT SITE UNLESS NOTED OTHERWISE.

ASSUMED ALL 2(a1), 2(a4) AND 2(c) ARE AT 1ET/LOT  
 ASSUMED ALL 6(c) AT 0ETS

**CONCLUSION:**  
 AT MAXIMUM CAPACITY FOR 150DIA SEWER FOR MIN GRADE AT 1:60 OF 284ET, DOWNSTREAM LINE (WEST OF ISLAND POINT ROAD) IS ALREADY OVER CAPACITY WITH EXISTING, APPROVED AND FUTURE ZONED DEVELOPMENT, IRRESPECTIVE OF ANY DEVELOPMENT OCCURRING ON THE DEVELOPMENT SITE.

**ZONING AREAS**

- 2(a1), 2(a4) and 2(c)
- 3(g) (lots fronting Island Point Road)
- 3(g) (lots in SF9847)
- other 3(g) zones
- 4(b)
- 6(c)



Existing sewer capacity assessment

Allen Price & Scarratts  
 Land & Development Consultants  
 75 Plunkett Street NOWRA  
 5/125 Terralong Street KIAMA

Client: Eastern Grey  
 Project: DA application at Island Point Road St. Georges Basin  
 Project No: 25215  
 Date: 27-February-2017

U/S Manhole	D/S Manhole	grade*	size	Capacity of line (SW sup to WSA)	Existing ET's	Over/Under Capacity	ET's from Development	Total ET's	Over/Under Capacity with DA
EA/17	EA/16	0.800%	150DN	193	24	Under	0	24	n/a - upstream of development
XQ/LH	XQ/1		150DN	284	10	Under	0	10	n/a - upstream of development
XQ/1	EA/16		150DN	284	14	Under	0	14	n/a - upstream of development
EA/16	EA/14	0.800%	150DN	193	43	Under	0	43	n/a - upstream of development
EA/14	EA/13	0.750%	150DN	185	47	Under	0	47	n/a - upstream of development
EA/13	EA/12	0.749%	150DN	185	84	Under	0	84	n/a - upstream of development
EA/12	EA/11	1.134%	150DN	231	120	Under	0	120	n/a - upstream of development
EA/11	EA/10	6.994%	150DN	284	138	Under	0	138	n/a - upstream of development
EA/10	EA/9	6.897%	150DN	284	166	Under	0	166	n/a - upstream of development
EA/9	EA/8	1.053%	150DN	223	211	Under	0	211	n/a - upstream of development
EA/8	EA/7	3.386%**	150DN	284	219	Under	14.3	233.3	n/a - upstream of development
ED/1	EA/7	1.210%**	150DN	240	87	Under	198.8	285.8	Over
EA/7	EA/6A	3.120%	150DN	284	306	Over	213.1	519.1	Over
EA/6A	EA/6	3.120%	150DN	284	308	Over	213.1	521.1	Over
EA/6	EA/5B	0.850%	150DN	172	310	Over	213.1	523.1	Over
EA/5B	EA/5A	0.850%	150DN	172	310	Over	213.1	523.1	Over
EA/5A	EA/5	0.850%	150DN	172	317	Over	213.1	530.1	Over
EA/5	EA/4	3.117%	150DN	284	324	Over	213.1	537.1	Over
EA/4	EA/3	1.857%	150DN	284	326	Over	213.1	539.1	Over
EA/3	EA/2	2.891%	150DN	284	328	Over	213.1	541.1	Over
EA/2	EA/1	0.600%	150DN	164	329	Over	213.1	542.1	Over

\* grades of lines have been taken from designs provided from Shoalhaven Water  
 \*\* grades of lines by survey



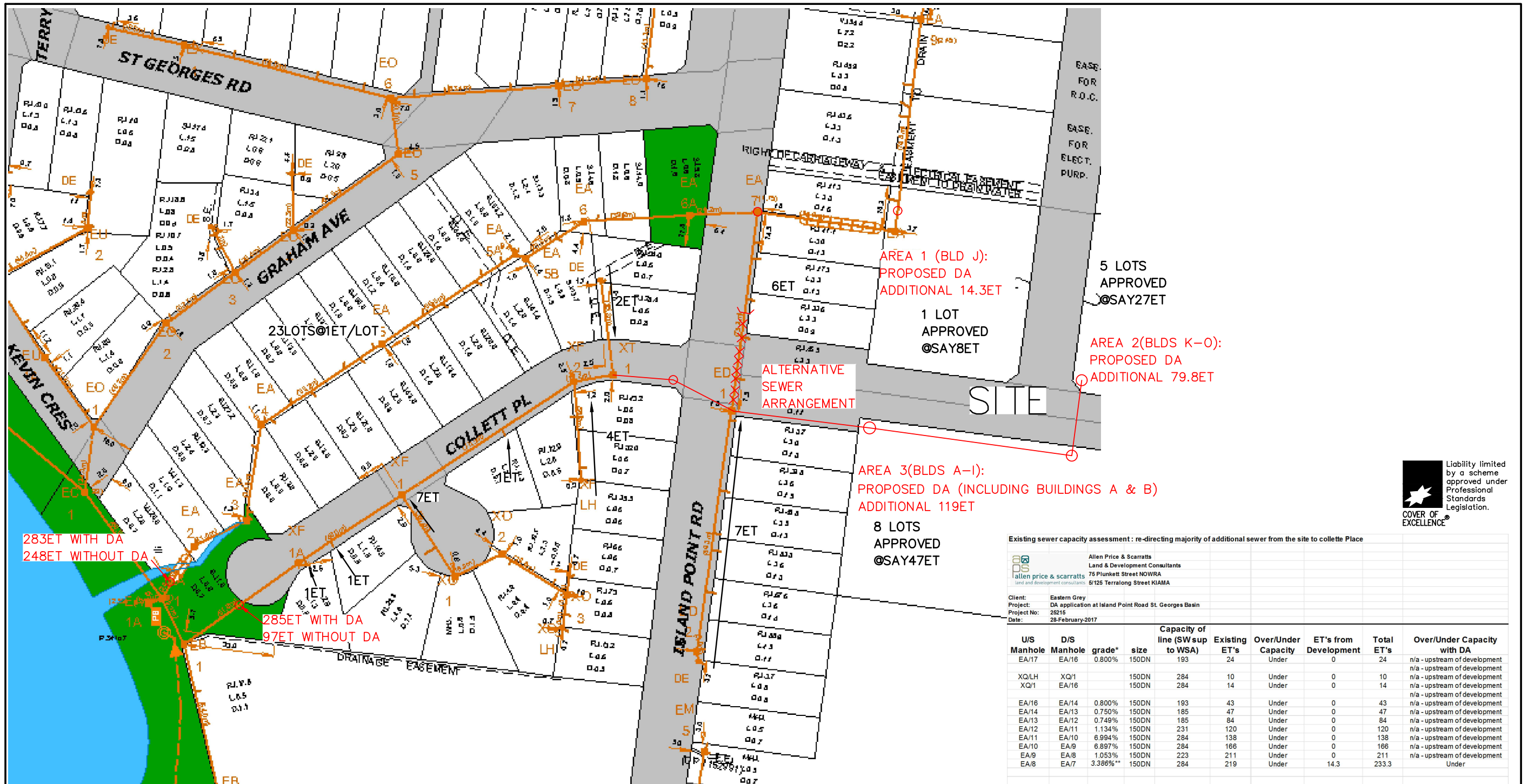
This wastewater asset information is issued free-of-charge by Shoalhaven City Council and is taken from "works-as-executed" plans. The information shown is indicative only and does not necessarily show the exact position of wastewater assets. Shoalhaven City Council does not accept responsibility for the information contained on this plan. If required, the assets should be located by survey.



REV	DESCRIPTION	BY	DATE	<b>allen price &amp; scarratts pty ltd</b> land and development consultants Nowra Branch: 75 Plunkett Street, Nowra NSW 2541 Kiama Branch: 5/125 Terralong Street, Kiama NSW 2533 phone:(02) 4421 6544 fax:(02) 4422 1821 consultants@allenprice.com.au www.allenprice.com.au	<b>MASTER PLAN -PROPOSED DEVELOPMENT</b> <b>PLAN OF SEWER STRATEGY</b> <b>OVER LOT 1 &amp; 6 DP 1082382</b> <b>AT ISLAND POINT ROAD</b> <b>FOR EASTERN GREY PTY LTD</b>	RATIO: <b>NTS</b> (AT A3 ORIGINAL)	DATE OF PLAN: OCTOBER 2011	
0	FOR DA ASSESSMENT	CEG	07.11.2011				DRAWING NUMBER <b>25215-401</b>	SHEET <b>1</b>
1	ETS AMENDED	CEG	27.04.2012					OF <b>1</b>
2	LAYOUT AMENDED	CEG	28.02.2017					



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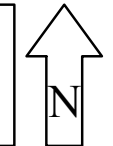
Existing sewer capacity assessment : re-directing majority of additional sewer from the site to collette Place

U/S Manhole	D/S Manhole	grade*	size	Capacity of line (SWsup to WSA)	Existing ET's	Over/Under Capacity	ET's from Development	Total ET's	Over/Under Capacity with DA
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EA/8	EA/7	3.386%**	150DN	284	219	Under	14.3	233.3	Under
EA/7	EA/6A	3.120%	150DN	284	225	Under	14.3	239.3	Under
EA/6A	EA/6	3.120%	150DN	284	227	Under	14.3	241.3	Under
EA/6	EA/5B	0.650%	150DN	172	229	Over	14.3	243.3	Over
EA/5B	EA/5A	0.650%	150DN	172	229	Over	14.3	243.3	Over
EA/5A	EA/5	0.650%	150DN	172	236	Over	14.3	250.3	Over
EA/5	EA/4	3.117%	150DN	284	243	Under	14.3	257.3	Under
EA/4	EA/3	1.857%	150DN	284	245	Under	14.3	259.3	Under
EA/3	EA/2	2.691%	150DN	284	247	Under	14.3	261.3	Under
EA/2	EA/1	0.600%	150DN	164	248	Over	14.3	262.3	Over
Re-direct sewer from ED/1 to XT/1 in Collette Place									
ED/1	XT/1	NEW	150DN	284.0	81	Under	198.8	279.8	Under
XT/1	XF/2	unknown	150DN	unknown	83	Assumed Under	198.8	281.8	unknown - assumed over
XF/2	XF/1	4.173%	150DN	284.0	88	Under	198.8	286.8	Over
XF/1	XF/1A	0.988%	150DN	214.0	97	Under	198.8	295.8	Over
XF/1A	EB/1	2.290%	150DN	284.0	97	Under	198.8	295.8	Over

\* grades of lines have been taken from designs provided from Shoalhaven Water  
 \*\* grades of lines by survey



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0 1 2	FOR DA ASSESSMENT ETS AMENDED LAYOUT AMENDED	CEG CEG CEG	07.11.2011 27.04.2012 28.02.2017				<b>DRAWING NUMBER          25215-402</b>	SHEET <b>1</b> OF 1





allen, price & associates  
land and development consultants

10 November 2011  
Our Ref: 25215 CEGceg  
Your Ref:

The General Manager  
Shoalhaven City Council  
PO Box 42  
NOWRA NSW 2541

Attention: Mr Ljupco Lazarevski  
Shoalhaven Water

Dear Sir

**DEVELOPMENT AT ISLAND POINT ROAD, ST GEORGES BASIN, FOR EASTERN GREY PTY LIMITED**

Enclosed is one (1) copy of our Sewer Strategy and alternate sewer strategy our plan ref 25215-401 rev 0 and 25215-402 rev 0 in support of the above Development Application.

In the preparation of these plans there are a number of assumptions that have been made.

Firstly it is assumed that all the 2(a1), 2(a4) and 2(c) zones are developed at 1ET per Lot. The area to the north and west of the intersection of The Wool Road & Island Point Road is assumed to only have 1ET but we acknowledge that there is potential for additional drainage of sewer from this area but it is outside our ability to be able to anticipate. With the relatively small area in comparison to the rest of the catchment area this is unlikely to be significant.

The area of 4(b) zoned land north of The Old Wool Road is estimated at 10ETs but this would depend very much on the type of future development occurring on this land.

All 3(g) land fronting Island Point Road is assumed to be Sewered at 2ETs per lot, which is not unreasonable with the possibility of say 1 or 2 retail type shops at ground level and dwellings or offices at first floor level.

The rate for sewer load for all the other 3(g) land has been estimated based upon the calculation we undertook for SF9847 which indicated that most developments would be developed on these zoned sites in this area at a rate of 1ET/430m<sup>2</sup>.

With the above assumptions and based upon the sewer design grade details you supplied us, it appears that without any development on our clients site, the sewer lines downstream will exceed their capacity as a result of reasonably expected upstream development. If the WSAA (and Shoalhaven Water's supplement) is used and with consideration that the sewer is



existing, the system would seem in places (particularly lines EA/6-EA/5A) that the lines are approaching the point of exceeding their capacity.

For the purposes of this assessment PWD has been adopted as the assessment was commenced before WSAA was adopted by Shoalhaven Water. We note that using WSAA would allow approximately 10% additional capacity in the sewer system.

The alternate sewerage option for the development of running the sewer down Collette Place to reduce the impact upon the existing sewer line EA. However Line XF/1-XF-1A exceeds capacity for Collette Place under PWD (this line would be close to capacity using WSAA) and there is no significant benefit to this option for the upstream developments.

A secondary alternative is to upgrade the sewer to 225 dia providing ample capacity for future development, particularly of the 3(g) zoned land. This could involve breaking into the existing sewer EA/7-EA/6 (on the west side of Island Point Road), running a new 225 dia line south along Island Point Road to Collette Place and into XT/1. Then upgrade lines from XT/1 to EB/1 to 225 dia.

Our assessment of the sewer system indicates that with other developments in the area our client's proposal is not the only factor in the overloading of the existing sewer. It already seems that Shoalhaven Water should consider upgrading the line immediately upstream of our client's site and downstream of the site to the existing larger lines immediately prior to PS 8. It would be appropriate that this upgrade be covered by upgrade works in the DSP. We note that the upgrade of PS 8 already appears as being required within Council's DSP to accept increased loads in the region and as such it should come as no surprise that some of the sewer lines leading into this PS are also close to becoming over capacity in the near future.

If you have any further queries regarding this matter, please do not hesitate to contact the writer.

Yours faithfully  
ALLEN, PRICE & ASSOCIATES

A handwritten signature in blue ink, appearing to read 'Caroline E Griffiths'.

Caroline E Griffiths

Encl