



SERVICING STRATEGY
for
**THE PROPOSED RIVERSIDE
DEVELOPMENT AND IMMEDIATE
ENVIRONS**
LOTS 10 & 40 in DP 270100
RIVERSIDE AT TEA GARDENS

***PREPARED BY
TATTERSALL LANDER
PTY LTD
DEVELOPMENT CONSULTANTS
May 2016***

DEVELOPMENT CONSULTANTS IN ENGINEERING, SURVEYING, PLANNING & ENVIRONMENTAL



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INTRODUCTION

The Proposal

Sheargold Group have engaged Tattersall Lander Pty Ltd to update the previously prepared servicing strategy for Riverside and adjoining environs. This updated servicing strategy has been prepared in consultation with the appropriate Services Agencies, including;

- MidCoast Water for Water & Sewer Reticulation,
- Essential Energy for Electrical Reticulation,
- Telstra & NBN Co for Communications.

Note: Natural Gas is not available and has not been pursued.

This Servicing Strategy has been prepared to consider a holistic approach for the provision of essential services to the area of north Tea Gardens and to be a lead document for the reticulation of major services to other adjoining areas as well as to the future potential major development sites of North Shearwater, Hawks Nest North, Myall River Downs and the partly serviced Tea Gardens Industrial Park and Shearwater.

A copy of the overall Servicing Strategy Project Site is contained within Appendices C, D and E. Note that Riverside is highlighted and adjoining parcels/future development projects are indicated.

Great Lakes Council has prepared a Tea Gardens & Hawks Nest Conservation & Development Strategy as a strategic document to direct the decision making for the development of identified areas. Riverside is one of the identified areas for development and as it is adjoining the current extents of Tea Gardens is a pivotal development for the reticulation of essential services to most other potential developments to the north, east and west of the site.

As part of the Conservation & Development Strategy, the provision of essential reticulated services is provided through the Riverside project and as can be seen when viewing the attached plans, the intent of the C&DS is adequately addressed. It is to be noted that in

discussions with MidCoast Water, other more appropriate servicing for Hawks Nest North are also considered.

Site Description

The Riverside Project contains land that is generally to the east of Myall Street, north of the Myall Quays Commercial Precinct and Shoreline Drive, south of Toonang Drive and adjoins the Myall River.

The land is generally flat in nature and cleared of any significant vegetation. The current proposed Development Plan has evolved from the previously approved layout, to further reduce the development area and produce a particular footprint that seeks to achieve a balanced outcome within the constraints of the site and the various legislative, planning and operational aspects that can be legitimately achieved.

The site constraints with the land being of a generally flat nature have contributed to MidCoast Water undertaking the construction and commissioning of a large capacity state of the art regional Vacuum Sewer Pumping Station which is located off Spinifex Avenue, west of Myall Street. This type of infrastructure has become a viable option and for this site, an ideal technology that has significant positive environmental outcomes.

Tattersall Lander has prepared a servicing strategy for the roll out of the reticulated sewer servicing for all lands within the catchment that this critical infrastructure facility can legitimately service. These plans, included in Appendix C, have yet to be formally approved by MidCoast Water but their continued development has been undertaken with regular input oversight from MidCoast Water, who are quite comfortable with the proposed arrangements and are already using these plans as a basis for the introduction of sewer services to the adjoining Tea Gardens Industrial Park and the North Shearwater project that is currently undergoing construction certificate designs for Stage 1 of that project..

Areas to the southern side of the Riverside development site are already serviced by a reticulated gravity sewer system and reticulated water supply. Redundancies in the water supply have been developed to assist MidCoast Water in guaranteeing the provision of its services to other areas within Tea Gardens and this has provided a higher level of supply for MidCoast Water customers.

Reticulated water supplies are available to the current Commercial Area and in part these services are being utilised to service the proposed development. Extensions to the reticulated water system are indicated in Appendix D. Note that with the reticulated water, MidCoast Water is going to provide a second supply to Hawks Nest via the North Shearwater, Riverside and the Hawks Nest North developments. Currently MidCoast Water are somewhat exposed if the single pipe water supply adjacent to the Singing Bridge to Hawks Nest is disrupted.

Essential Energy have recently undertaken a significant upgrade to its electrical supply network at Tea Gardens in anticipation of future development roll-out, including the Riverside project. Existing overhead and underground services have been identified and are indicated on plans contained in Appendix E.



Photograph 1 – Typical Landform to the north of the Shopping Centre

Land Ownership

Both lots 10 and 40 DP 270100 is owned by the Sheargold Group Pty. Limited. Copies of the Titles are contained in *Appendix B*. Adjoining lands that contain the MidCoast Water Vacuum Sewer Pump Station are owned by Tea Gardens Properties and discussions are ongoing about providing appropriate service corridors through this land.

Adjoining Development



Photograph 2 – Commercial/Retail Centre on Myall Quays Boulevard

All of the existing development that has either development approval or is constructed in the vicinity of the Shopping Centre or the most northern extremities of Stages 7 and 8 are adequately serviced by reticulated services from existing trunk infrastructure. Parts of the servicing of these areas will be appropriately extended to support the servicing of the new areas.

Reticulation of Sewer Services

It is proposed to service the Riverside development and other adjacent lands with the vacuum sewer system linked to the existing regional Vacuum Sewer pump station. This pump station was designed with this catchment in mind, and has significant capacity to easily cater for all proposed and future developments within the catchment.

Appendix C contains plans for the reticulation of the Vacuum Sewer system. The overall system currently envisages a roll out of 10 vacuum lines. Three (3) of these lines are to be directed towards Riverside, the Tea Gardens Industrial Park, Shearwater Estate backlog and North Shearwater. To the south of the pump station, another vacuum line continues to be extended to service the expanding Palm Lake Resort Tea Gardens retirement village (formerly the Hermitage Retirement Village). Further mains are planned to extend to service lands to the west.

This type of vacuum sewer system has significant environmental advantages over the usual gravity service. Typical advantages are:-

1. Less pumping stations and this means less potential for environmental discharges.
2. Less pumping stations requiring long term maintenance.
3. Significantly less long term groundwater infiltration as the system uses welded plastic PE pipes.
4. Significantly less access chamber infiltration from stormwater as the system uses less access chambers.
5. Reduced pipe depths so that the water table will be intercepted less often.
6. Significantly lower wet weather allowances providing higher control of flows experienced at the treatment plant at Hawks Nest.

Disadvantages of the system only relate to the location of the services into the front of the dwellings, generally the footpath, and for Greenfield developments, this presents an additional service that needs to be accommodated. Access to valve chambers on a 24 hour basis is one of the requirements of the service. A typical street services design and footpath allocations have been prepared and are included in Appendix G.

Riverside would have required the provision of at least eight conventional pumping or lifting stations and this service has been completely replaced by one coordinated vacuum system. A significant reduction in infrastructure costs and future maintenance costs that are inherent with these services has been achieved.

The Vacuum Sewer Pumping Station was planned and constructed to cater for a development rollout that has been significantly stalled in the past decade. At present MidCoast Water have built and operate a hugely underutilised facility. MidCoast Water keenly anticipate the commencement and continued rollout of the Riverside development to allow a more efficient and cost effective operation of their asset.

A small Sewer Rising Main linking MidCoast Water's Bore Fields in the north to the Vacuum Pump Station has been laid through the Riverside development site, and will require minor adjustments as the Riverside development is rolled out. The current rising main between the Vacuum Pump Station to the North Hawks Nest Treatment Plant is nearing capacity, and MidCoast Water have programmed a significantly upgraded Rising Main construction which will be required once the Riverside development starts to come online.

Reticulation of Water Services

Appendix D contains a proposed reorganisation of major water supply services from the existing dual supplies in Myall Street to a triple main pipe supply via North Shearwater. This third supply will also be potentially extended to Hawks Nest North via a connection point at the northern parts of the Riverside project. MidCoast Water have agreed to the general arrangements detailed here and are in the process of undertaking detailed modelling to confirm and finalise nominated main sizes.

Redundancies within the system for reticulated water have been designed to accommodate overall MidCoast Water requirements and the introduction of this third water main will have significant advantages to all existing clients in the current Tea Gardens/Hawks Nest supply area.

MidCoast Water has, in anticipation of the imminent extension of development options for the north of Tea Gardens, recently completed the upgrading and augmentation of potable water storages at the Viney Creek Road Reservoirs. An additional 8.1ML reservoir has been commissioned and will provide sufficient capacity for the future immediate (~10 – 15 years) potable water requirements from the various potential developments.

MidCoast Water has a secure coastal bore water supply that has a known supply capacity far in excess of the requirements of the currently considered potential developments at Riverside, Myall River Downs to the west of Riverside, North Shearwater to the north of Riverside and Hawks Nest North.

While previously proposed for new developments at Riverside and the surrounding lands, comprehensive analysis and discussions with MidCoast Water have concluded that provision of a recycled water supply system is not viable at Tea Gardens and will no longer be pursued.

Reticulation of Electrical and Communication Services

Electrical (refer Appendix E) and Communications (Appendix F) are considered to be merely an extension of existing services. Essential Energy were provided with Riverside proposed layouts many years ago so they could commence planning and designs for the accommodation of the major new linkages from the existing overhead supplies.

Again these services are providing redundancies to the provision of services which will significantly help in the reduction of brown outs that are of continuing concern in Tea Gardens. Essential Energy have already relocated and upgraded their main supply substation facility and Maintenance Service Depot, and a major 33Kv substation alongside the Pacific Highway adjacent to Viney Creek Road East, in anticipation of the proposed development rollout at Riverside and the surrounding lands.

Communication upgrades have already seen Telstra provide additional services to Tea Gardens. Telstra have provided “fibre to the node” for Palm Lake Resort, Tea Gardens (formerly The Hermitage) and have offered via its “Smart Communities” program, the provision of services to the other parts of Riverside. Existing infrastructure includes fibre-optic technology and this is available along Myall Street connecting the main Telstra Depot/Communications Tower to the Pacific Highway network.

In addition, discussions with NBN Co have indicated that when the project gets to subdivision construction stage NBN services will be incorporated into the development. NBN backlog to the existing Tea Gardens township is currently scheduled for the second half of 2017.

CONCLUSION

This Servicing Strategy provides for the logical and practical understanding for the provision of essential services for all future residents of Riverside and other adjoining developments. The redundancies that are created are providing high level future resident satisfaction and Service Agency support. The new technology of a Vacuum Sewer service has significant environmental attributes including;

- Dramatic reduction in Sewer Pumping Station Facilities (cost/environmental discharges).
- Reduce excavations and therefore less groundwater interceptions.
- Negligible wet weather impacts on the infrastructure.

This Pumping Station has been commissioned in 2007 and now provides services to Palm Lake Resort, Tea Gardens and the service mains will be extended and made available to provide services for the initial lots made developable in Riverside. Backlog programs for the Tea Gardens Industrial Area and Shearwater will also be accommodated in the roll out of these services.

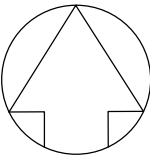
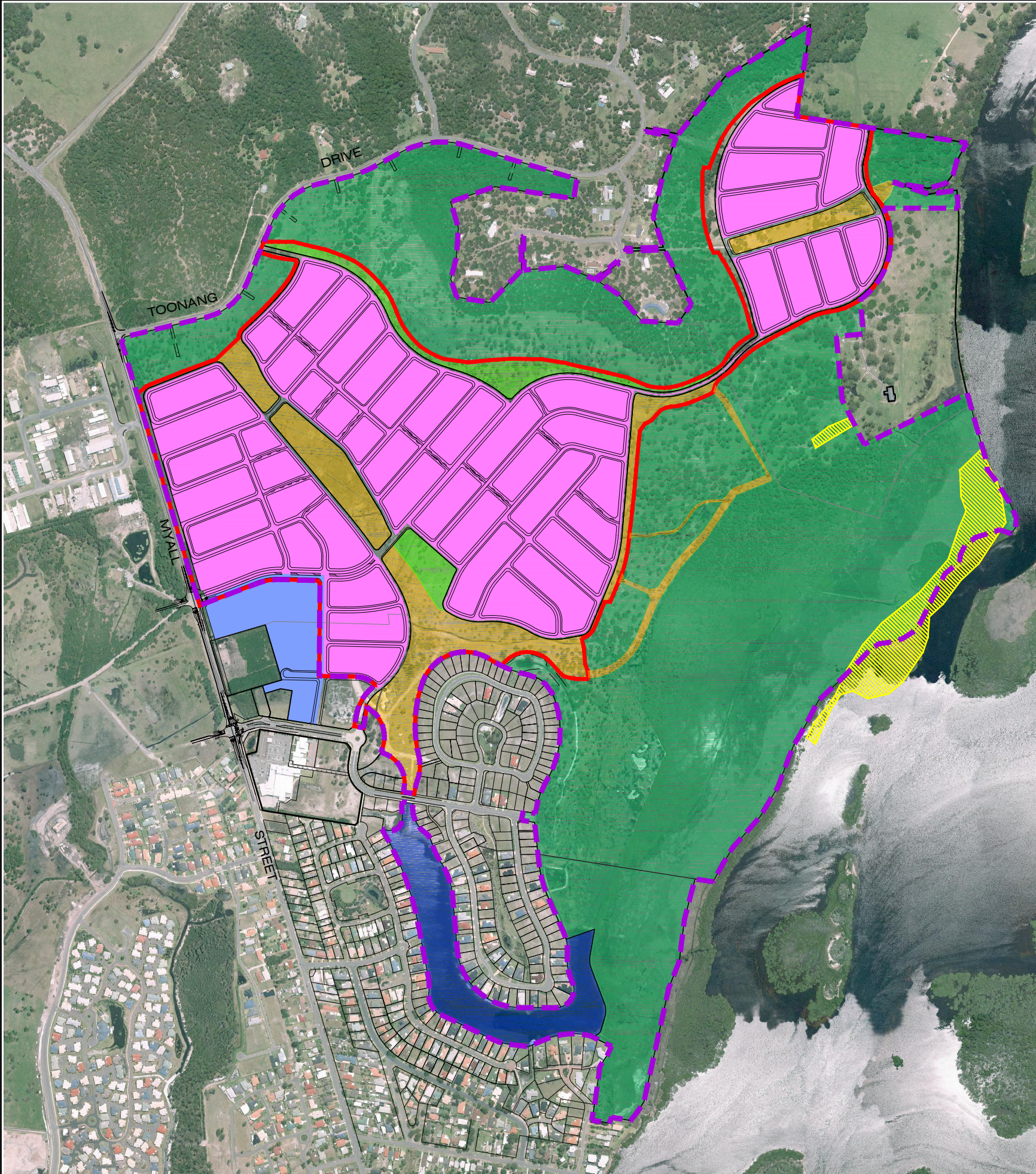
MidCoast Water has also provided sufficient spare capacity with the augmentation of the potable water storages at the Viney Creek Road Reservoirs to ensure that development is not inhibited or restricted by any lack of supply capacity.

Communications and electrical reticulation will be provided as part of a coordinated process that is appropriately timed in conjunction with developer needs and Service Authority requirements.

Due to the holistic approach for the provision of services to all areas of the Strategy, undue demands on Supply Authorities is not considered to be excessive and as the Agencies have been historically engaged at all times with the provision of their services to the Riverside site. In several instances, the Authorities have already installed upgraded infrastructure in anticipation of the Riverside development, and eagerly await its rollout to allow proper utilisation of their upgraded assets.

Appendix A:

Development Application Plan



ITEM	DESCRIPTION	Ha	%	APPROX YIELD
	Extent of Site - 'Riverside' concept plan	212.5Ha		
	Development Footprint	88.9Ha	41.8%	
	Conservation	113.9Ha	53.6%	
	Existing Lakes	6.9Ha	3.2%	
	Open Space / Water Management	13.6Ha	6.4%	
	Active Recreation Area	3.8Ha	1.8%	
	Low Density Residential	66.2Ha	31.2%	935 Dw = 14.1/Ha
	Future Commercial	4.9Ha		
	Location of Known Midden			
	Existing House			

B	Riverbank Reserve & Commercial Area Excluded	AV	AV			
A	Original Issue	AV	AV			
REV	DETAILS OF AMENDMENT	DESIGNED	DRAWN	CHECKED	APPROVED	DATE

* Denote the original signature and date when revision was issued.

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R.C.03 CONCEPT PLAN

RIVERSIDE
TEA GARDENS

COUNCIL GREAT LAKES	REFERENCE 21500155	
PARISH	SHEET SIZE	A1
SCALE 1:5000 on A1	SHEET No. 3	
DATE : Plotted 14:22 03/05/16		

Appendix B:

Copy of Certificate of Title

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - TITLE SEARCH

FOLIO: 40/270100

SEARCH DATE	TIME	EDITION NO	DATE
21/10/2015	11:29 AM	3	17/3/2014

LAND

LOT 40 IN COMMUNITY PLAN DP270100
AT TEA GARDENS
LOCAL GOVERNMENT AREA GREAT LAKES
PARISH OF COWEAMBAH COUNTY OF GLOUCESTER
TITLE DIAGRAM DP270100

FIRST SCHEDULE

SGD 1 PTY LIMITED (T AI445524)

SECOND SCHEDULE (14 NOTIFICATIONS)

- 1 RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
- 2 INTERESTS RECORDED ON REGISTER FOLIO 1/270100
- 3 ATTENTION IS DIRECTED TO THE MANAGEMENT STATEMENT OF THE
COMMUNITY SCHEME FILED WITH THE COMMUNITY PLAN
- 4 BK 864 NO 856 LAND EXCLUDES MINERALS
- 5 DP738450 EASEMENT TO DRAIN WATER 6 METRE(S) WIDE AFFECTING
THE PART(S) SHOWN SO BURDENED IN THE TITLE DIAGRAM
- 6 DP738450 RESTRICTION(S) ON THE USE OF LAND
- 7 DP786548 RESTRICTION(S) ON THE USE OF LAND
- 8 DP1118863 EASEMENT FOR ACCESS OVER TRACK IN USE AFFECTING THE
PART(S) SHOWN SO BURDENED IN THE TITLE DIAGRAM
- 9 DP270100 EASEMENT TO DRAIN WATER VARIABLE WIDTH AFFECTING THE
LAND ABOVE DESCRIBED (DOC.10)
- 10 DP270561 EASEMENT TO DRAIN WATER VARIABLE WIDTH (E1)
AFFECTING THE PART(S) SHOWN SO BURDENED IN DP270561
(DOC.1)
- 11 DP270561 EASEMENT FOR ACCESS AND MAINTENANCE 4 METRE(S) WIDE
AFFECTING THE PART(S) SHOWN SO BURDENED IN DP270561
(DOC.1)
- 12 DP280012 EASEMENT FOR MAINTENANCE AND ACCESS 4 METRE(S) WIDE
AFFECTING THE PART(S) SHOWN SO BURDENED IN DP280012
- 13 DP280002 EASEMENT TO DRAIN WATER 5 METRE(S) WIDE (D)
APPURTENANT TO THE LAND ABOVE DESCRIBED (DOC.3)
- 14 DP280002 RIGHT OF ACCESS & EASEMENT FOR SERVICES (E)
AFFECTING THE PART(S) SHOWN SO BURDENED IN DP280002
(DOC.3)

END OF PAGE 1 - CONTINUED OVER

FOLIO: 40/270100

PAGE 2

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

213366jd

PRINTED ON 21/10/2015

* Any entries preceded by an asterisk do not appear on the current edition of the Certificate of Title. Warning: the information appearing under notations has not been formally recorded in the Register. InfoTrack an approved NSW Information Broker hereby certifies that the information contained in this document has been provided electronically by the Registrar General in accordance with Section 96B(2) of the Real Property Act 1900.

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - TITLE SEARCH

FOLIO: 10/270100

SEARCH DATE	TIME	EDITION NO	DATE
21/10/2015	11:29 AM	5	17/3/2014

LAND

LOT 10 IN COMMUNITY PLAN DP270100
AT TEA GARDENS
LOCAL GOVERNMENT AREA GREAT LAKES
PARISH OF COWEAMBAH COUNTY OF GLOUCESTER
TITLE DIAGRAM DP270100

FIRST SCHEDULE

SGD 2 PTY LIMITED (T AI445262)

SECOND SCHEDULE (7 NOTIFICATIONS)

- 1 RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
- 2 INTERESTS RECORDED ON REGISTER FOLIO 1/270100
- 3 BK 864 NO 856 LAND EXCLUDES MINERALS WITHIN THE PART SHOWN SO
BURDENED IN THE TITLE DIAGRAM
- 4 DP738450 RESTRICTION(S) ON THE USE OF LAND AFFECTING THE PART
SHOWN SO BURDENED IN THE TITLE DIAGRAM
- 5 DP786548 RESTRICTION(S) ON THE USE OF LAND AFFECTING THE PART
SHOWN SO BURDENED IN THE TITLE DIAGRAM
- 6 AB527646 THIS LOT DOES NOT FORM PART OF A COMMUNITY SCHEME
- 7 DP1118863 EASEMENT FOR ACCESS OVER TRACK IN USE APPURTENANT TO
THE LAND ABOVE DESCRIBED

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

213366jd



PRINTED ON 21/10/2015

Appendix C:

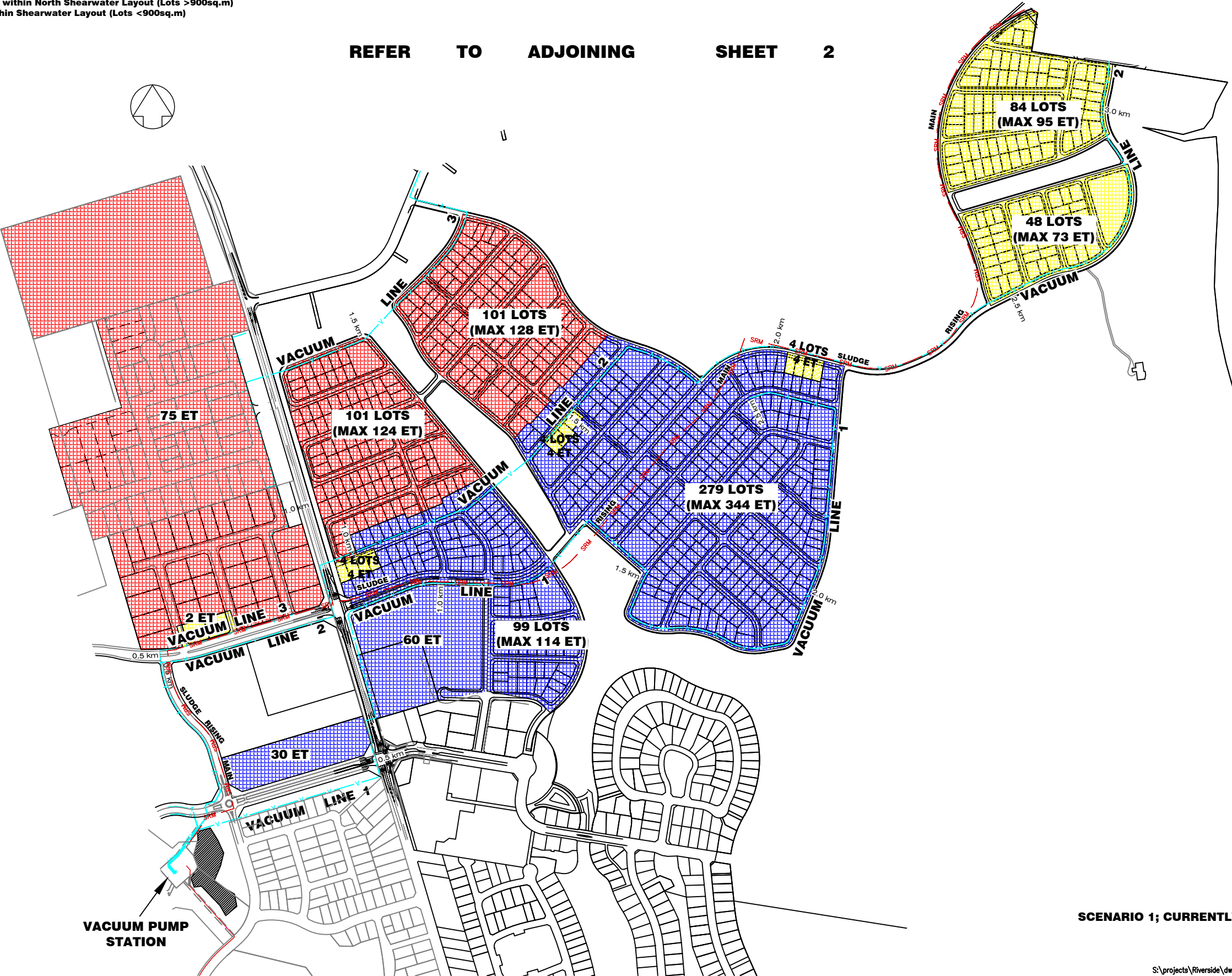
Reticulated Vacuum Sewer Servicing Strategy

ASSUMPTIONS;


- 1ET/2500m² for Industrial Lots
- 5ET allowance for former landfill site
- 1ET per existing lot in Shearwater Estate (no possibility of further subdivision)
- 1ET for reservoir site
- 1ET/Lot on standard residential land within Riverside Estate
- 0.8ET/300sq.m on nominated Development & Dual Occ corner lots
- 1ET/300sq.m on development lots within Riverside Estate
- 60ET allowance for larger lots and Pony Club site
- 0.8ET/300sq.m within North Shearwater Layout (Lots >900sq.m)
- 1ET per lot within Shearwater Layout (Lots <900sq.m)

	VACUUM LINE	CAPACITY	ET TAKEUP	AVAILABLE CAPACITY	INDICITIVE MAIN LENGTH
	1	675	548	127	2.5 km
	2	675	457 / 875	218 / -200	5.2 km
	3	675	404 / 661	271 / 14	3.6 km

REFER TO ADJOINING SHEET 2

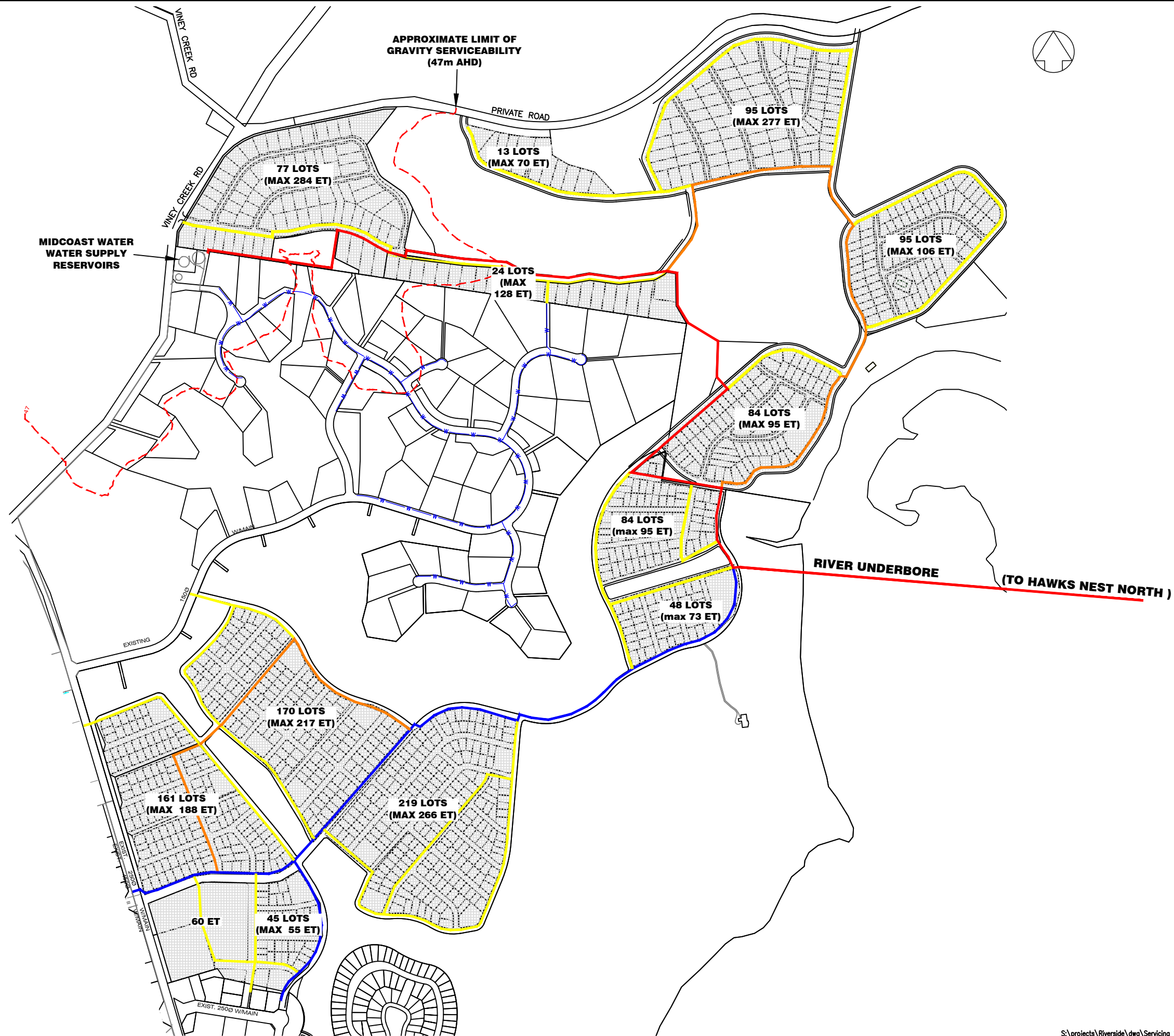


SCENARIO 1; CURRENTLY NOMINATED CATCHMENT LOADINGS

AMENDMENTS:							FILE No: 213366	DRAWN:	SCALE:	HORIZONTAL		VERTICAL		<div>TATTERSALL LANDER PTY LTD</div> <div>DEVELOPMENT CONSULTANTS</div> <div>ENGINEERING, SURVEYING & PLANNING</div> <div>2 Bourke St. P.O.Box 580</div> <div>RAYMOND TERRACE 2324</div> <div>Phone (02) 49871500</div> <div>Fax (02) 49871733</div> <div>Email: admin@tatlond.net.au</div> <div></div> <th>PROJECT</th>		PROJECT			
REV.	AMENDMENT	DESIGN	DRAWN	CHECKED	APPROVED	DATE	SHEET 1 OF 2	CHECKED:	HORIZONTAL: 1:4000	CO-ORDINATE SYSTEM:	DATUM:	B.M. ADOPTED:	PLotted 14:04 04/05/16						
									PLOT SCALE: 1:2	MARKS ADOPTED:	EAST:	NORTH:	PLOT FILE/DWG No.: 20600220						
							DATE:	PASSED:	SHEET SIZE: A1										
K	New Layout - Shearhold Group	AV	AV	-	-	26/06/15*													
J	Revised Lot Layout	DWK	DWK	-	-	31/08/12*													
I	Modify Route Selection & ET Count	DWK	DWK	-	-	1/12/11*													
H	Revised Development Footprint	AV	AV	DWK*	BL*														

Appendix D:

Reticulated Water Servicing Strategy



450 WATER MAIN
250 WATER MAIN
200 WATER MAIN
150 WATER MAIN
100 WATER MAIN
ALL OTHER
STREETS



S:\projects\Riverside\dwg\Servicing Strategies\Riverside W & S strategy.dwg

AMENDMENTS:										PROJECT									
REV.	AMENDMENT	DESIGN	DRAWN	CHECKED	APPROVED	DATE	FILE No. 213366	DRAWN:	SCALE:	CO-ORDINATE SYSTEM:	DATUM:	2 Bourke St.	P.O.Box 580	FUTURE SERVICING OF TEA GARDENS POTABLE WATER SERVICING STRATEGY					
H	New Layout - Sheargold Group	AV	AV	-	-	26/06/15*	SHEET 0 OF 1	CHECKED:	HORIZONTAL: 1:5000	MARKS ADOPTED:	B.M. ADOPTED:	RAYMOND TERRACE	2324						
G	Revised Lot Layout	DWK	DWK	-	-	1/12/11*	DATE:	PASSED:	PLOT SCALE: 1:2	EAST:	RI:	Phone	(02) 49871500						
F	Revised Development Footprint	AV	AV	DWK*	BL*	1/12/11*			SHEET SIZE: A1	NORTH:		Fax	(02) 49871733						
E	Revised Riverside Layout & ET Count	AV	AV	DWK*	BL*	1/11/10*			Local Government Area GREAT LAKES	MIDCOAST WATER PROJECT ASSET No.	PLOT FILE/DWG No.: 20600198								
										Plotted 14:41 04/05/16									
										Email: admin@tatlond.net.au									