

Appendix A

SPECIES LISTS

Gawler East Ecological Survey					
Proposed development area (main site)					
2008 to 2010					
Genus	Scientific name	Common name	EPBC Act	NPW Act	Regional rating (Southern Lofty)
LEGUMINOSAE	<i>Acacia acinacea</i>	Gold Dust Wattle			
LEGUMINOSAE	<i>Acacia pycnantha</i>	Golden wattle			
ROSACEAE	<i>Acaena echinata</i>	Sheeps burr			
GRAMINEAE	<i>Aristida behriana</i>	Brush-wire grass			U
LILIACEAE	<i>Arthropodium strictum</i>	Chocolate lily			
CHENOPODIACEAE	<i>Atriplex suberecta</i>	Lagoon saltbush			
GRAMINEAE	<i>Austrodanthonia caespitosa</i>	Common Wallaby-grass			
GRAMINEAE	<i>Austrodanthonia geniculata</i>	Kneed Wallaby-grass			
GRAMINEAE	<i>Austrodanthonia pilosa</i>	Velvet Wallaby-grass			
GRAMINEAE	<i>Austrodanthonia setacea</i>	Small-flower Wallaby-grass			
GRAMINEAE	<i>Austrodanthonia sp.</i>	Wallaby grass			
GRAMINEAE	<i>Austrostipa blackii</i>	Crested Spear-grass			
GRAMINEAE	<i>Austrostipa nitida</i>	Balcarra Spear-grass			
GRAMINEAE	<i>Austrostipa scabra</i>	Rough Spear-grass			
GRAMINEAE	<i>Austrostipa eremophila</i>	Rusty Spear-grass			U
GRAMINEAE	<i>Austrostipa sp.</i>	Spear grass			
NYCTAGINACEAE	<i>Boerhavia dominii</i>	Tar-vine			
CYPERACEAE	<i>Bolboschoenus caldwellii</i>	Sea Club-rush			
AMARYLLIDACEAE	<i>Calostemma purpureum</i>	Garland lily			
CONVOLVULACEAE	<i>Calystegia sepium</i>	Greater bindweed/ Large bindweed			U
CENTROLEPIDACEAE	<i>Centrolepis sp.</i>				
EUPHORBIACEAE	<i>Chamaesyce drummondii</i>	Milk weed			
CHENOPODIACEAE	<i>Chenopodium pumilio</i>	Clammy Goosefoot			
GRAMINEAE	<i>Chloris truncata</i>	Windmill Grass			
CONVOLVULACEAE	<i>Convolvulus erubescens</i>	Pink bindweed			
CRASSULACEAE	<i>Crassula colorata</i>	Dense crassula			
CRASSULACEAE	<i>Crassula decumbens</i>	Spreading crassula			
CYPERACEAE	<i>Cyperus gymnocaulos</i>	Spiny Sedge			
CYPERACEAE	<i>Cyperus validus</i>				
LILIACEAE	<i>Dianella revoluta var. revoluta</i>	Black-antherFlax-lily			
DROSERACEAE	<i>Drosera auriculata</i>	Sundew			

Gawler East Ecological Survey					
Proposed development area (main site)					
2008 to 2010					
Genus	Scientific name	Common name	EPBC Act	NPW Act	Regional rating (Southern Lofty)
DROSERACEAE	<i>Drosera whittakeri</i>	Scented sundew			
CYPERACEAE	<i>Eleocharis acuta</i>	Common Spike-rush			
GRAMINEAE	<i>Enneapogon nigricans</i>	Black heads			
MYRTACEAE	<i>Eucalyptus camaldulensis</i> var. <i>camaldu</i>	River Red Gum			
MYRTACEAE	<i>Eucalyptus leucoxylon</i> (planted)	SA Blue Gum			
MYRTACEAE	<i>Eucalyptus porosa</i>	Mallee Box			U
GERANIACEAE	<i>Geranium retrorsum</i>	Grassland Geranium			
HALORAGACEAE	<i>Gonocarpus tetragynus</i>	Variable Raspwort			
GOODENIACEAE	<i>Goodenia pinnatifida</i>	Mother ducks			U
GOODENIACEAE	<i>Goodenia</i> sp.	Goodenia			
JUNCACEAE	<i>Juncus kraussii</i>	Sea Rush			
JUNCACEAE	<i>Juncus</i> spp.	Rush			
GRAMINEAE	<i>Lachnagrostis filiformis</i>	Blown-grass			
LILIACEAE	<i>Lomandra effusa</i>	Scented mat-rush			R
LILIACEAE	<i>Lomandra micrantha</i>	Small-flower Mat-rush			
LILIACEAE	<i>Lomandra multiflora</i> ssp. <i>dura</i>	Scented Mat-rush			
LILIACEAE	<i>Lomandra densiflora</i>	Soft Mat-rush			U
LYTHRACEAE	<i>Lythrum hyssopifolia</i>	Lesser Loosestrife			
CHENOPODIACEAE	<i>Maireana brevifolia</i>	Short-leaf Bluebush			
CHENOPODIACEAE	<i>Maireana enchylaenoides</i>	Wingless bluebush			U
BORAGINACEAE	<i>Myosotis australis</i>	Austral forget-me-not			R
HALORAGACEAE	<i>Myriophyllum</i> sp.	Milfoil			
GRAMINEAE	<i>Panicum effusum</i>	Hairy panic			
GRAMINEAE	<i>Phragmites australis</i>	Common reed			
ASPLENIACEAE	<i>Pleurosorus rutifolius</i>	Blanket fern			U
GRAMINEAE	<i>Poa labillardieri</i>	Common Tussock-grass			
PORTULACACEAE	<i>Portulaca oleracea</i>	Common Purslane			
AMARANTHACEAE	<i>Ptilotus spathulatus</i>				
CHENOPODIACEAE	<i>Salsola tragus</i>	Prickly saltwort			
CYPERACEAE	<i>Schoenoplectus validus</i>	River club-rush			
COMPOSITAE	<i>Senecio</i> sp.	Groundsel			

Gawler East Ecological Survey					
Proposed development area (main site)					
2008 to 2010					
Genus	Scientific name	Common name	EPBC Act	NPW Act	Regional rating (Southern Lofty)
COMPOSITAE	<i>Senecio odoratus</i>	Scented Groundsel			
MALVACEAE	<i>Sida corrugata</i>				
COMPOSITAE	<i>Solenogyne dominii</i>	Smooth solenogyne			U
STACKHOUSIACEAE	<i>Stackhousia monogyna</i>	Creamy Candles			
GRAMINEAE	<i>Themeda triandra</i>	Kangaroo grass			
TYPHACEAE	<i>Typha domingensis</i>	Narrow-leaf Bulrush			
COMPOSITAE	<i>Vittadinia cervicalis</i>				
COMPOSITAE	<i>Vittadinia cuneata</i>	Fuzzy New Holland Daisy			
CAMPANULACEAE	<i>Wahlenbergia stricta ssp. stricta</i>	Tall Bluebell			
LEGUMINOSAE	<i>*Acacia cyclops</i>	Western coastal wattle			
LEGUMINOSAE	<i>*Acacia saligna</i>	Golden wreath, Orange Wattle			
GRAMINEAE	<i>*Aira caryophyllea/cupaniana</i>	Hair-grass			
COMPOSITAE	<i>*Arctotheca calendula</i>	Cape weed			
LILIACEAE	<i>*Asphodelus fistulosus</i>	Onion weed			
GRAMINEAE	<i>*Avena fatua</i>	Wild oat			
GRAMINEAE	<i>*Avena sativa</i>	Bearded Oat			
CALLITRICHACEAE	<i>*Callitriche stagnalis</i>	Common Starwort			
CRASSULACEAE	<i>*Crassula alata</i>	Three-part crassula			
CRASSULACEAE	<i>*Crassula natans</i>				
GRAMINEAE	<i>*Brachypodium distachyon</i>	False Brome			
GRAMINEAE	<i>*Briza major</i>	Large Quaking-grass			
GRAMINEAE	<i>*Bromus catharticus</i>	Prairie Grass			
GRAMINEAE	<i>*Bromus diandrus</i>	Great Brome			
CHENOPODIACEAE	<i>*Chenopodium album</i>	Fat Hen			
CHENOPODIACEAE	<i>*Chenopodium murale</i>	Nettle-leaved goosefoot			
COMPOSITAE	<i>*Cirsium vulgare</i>	SpearThistle			
COMPOSITAE	<i>*Cynara cardunculus</i>	Artichoke thistle			
GRAMINEAE	<i>*Cynosurus echinatus</i>	Rough Dog's-tail Grass			
GRAMINEAE	<i>*Dactylis glomerata</i>	Cocksfoot			
GRAMINEAE	<i>*Digitaria sanguinalis</i>	Crab Grass			

Gawler East Ecological Survey					
Proposed development area (main site)					
2008 to 2010					
Genus	Scientific name	Common name	EPBC Act	NPW Act	Regional rating (Southern Lofty)
GRAMINEAE	<i>*Echinochloa crus-galli</i>	Barnyard Grass			
GRAMINEAE	<i>*Eragrostis cilianensis</i>	Stink Grass			
GRAMINEAE	<i>*Ehrharta longiflora</i>	Annual Veldt Grass			
GRAMINEAE	<i>*Eleusine sp.</i>	Crowsfoot grasses			
GERANIACEAE	<i>*Erodium cicutarium</i>	Cut-leaf Heron's-bill			
GERANIACEAE	<i>*Erodium moschatum</i>	Musky Heron's-bill			
MYRTACEAE	<i>*Eucalyptus albopurpurea</i>	Port Lincoln Mallee			
MYRTACEAE	<i>*Eucalyptus odorata</i>	Peppermint Box			
FUMARIACEAE	<i>*Fumaria capreolata</i>	White-flower Fumitory			
UMBELLIFERAE	<i>*Foeniculum vulgare</i>	Fennel			
GRAMINEAE	<i>*Hordeum murinum</i>	Barley grass			
GRAMINEAE	<i>*Hordeum sp.</i>	Barley-grasses			
GUTTIFERAE	<i>*Hypericum perforatum</i>	St Johns Wort			
COMPOSITAE	<i>*Hypochaeris glabra</i>	Smooth Cat's Ear			
COMPOSITAE	<i>*Hypochaeris radicata</i>	Rough Cat's Ear			
COMPOSITAE	<i>*Lactuca serriola</i>	Prickly Lettuce			
CRUCIFERAE	<i>*Lepidium africanum</i>	Common peppergrass			
GRAMINEAE	<i>*Lolium spp.</i>	Ryegrass			
SOLANACEAE	<i>*Lycium ferocissimum</i>	African boxthorn			
MALVACEAE	<i>*Malva parviflora</i>	Marshmallow			
LABIATAE	<i>*Marrubium vulgare</i>	Horehound			
LEGUMINOSAE	<i>*Medicago minima</i>	Woolly burr-medic			
LEGUMINOSAE	<i>*Medicago polymorpha</i>	Burr-medic			
GRAMINEAE	<i>*Nassella leucotricha</i>	Texas Needlegrass			
IRIDACEAE	<i>*Morea setifolia</i>	Thread Iris			
SOLANACEAE	<i>*Nicotiana glauca</i>	Tree Tobacco			
OLEACEAE	<i>*Olea europaea</i>	European Olive			
OXALIDACEAE	<i>*Oxalis pes-caprae</i>	Sour sob			
OXALIDACEAE	<i>*Oxalis corniculata</i>	Creeping oxalis			
GRAMINEAE	<i>*Pennisetum clandestinum</i>	Kikuyu			
GRAMINEAE	<i>*Pennisetum villosum</i>	Feathertop			

Gawler East Ecological Survey					
Proposed development area (main site)					
2008 to 2010					
Genus	Scientific name	Common name	EPBC Act	NPW Act	Regional rating (Southern Lofty)
GRAMINEAE	* <i>Phalaris aquatica</i>	Canary grass			
GRAMINEAE	* <i>Piptatherum miliaceum</i>	Rice Millet			
PLANTAGINACEAE	* <i>Plantago coronopus</i>	Bucks-horn Plantain			
PLANTAGINACEAE	* <i>Plantago lanceolata</i>	Ribwort			
GRAMINEAE	* <i>Poa annua</i>	Winter Grass			
POLYGONACEAE	* <i>Polygonum aviculare</i>	Wire weed			
RESEDACEAE	* <i>Reseda lutea</i>	Mignonette			
CRUCIFERAE	* <i>Rorippa nasturtium-aquaticum</i>	Watercress			
IRIDACEAE	* <i>Romulea minutiflora</i>	Guildford grass			
IRIDACEAE	* <i>Romulea rosea</i>	Common Onion-grass			
ROSACEAE	* <i>Rosa canina</i>	Dog rose			
POLYGONACEAE	* <i>Rumex crispus</i>	Curled dock			
POLYGONACEAE	* <i>Rumex obtusifolius</i>	Broad-leaf Dock			
LABIATAE	* <i>Salvia verbenaca</i>	Wild sage			
DIPSACACEAE	* <i>Scabiosa atropurpurea</i>	Scabious			
ANACARDIACEAE	* <i>Schinus molle</i>	Pepper Tree			
GRAMINEAE	* <i>Setaria verticillata</i>	Sticky grass			
SOLANACEAE	* <i>Solanum linnaeanum</i>	Apple of Sodom			
SOLANACEAE	* <i>Solanum nigrum</i>	Black Nightshade			
LEGUMINOSAE	* <i>Trifolium sp.</i>	Clover			
LEGUMINOSAE	* <i>Trifolium angustifolium</i>	Narrow-leaf Clover			
LEGUMINOSAE	* <i>Trifolium campestre</i>	Hop Clover			
LEGUMINOSAE	* <i>Trifolium dubium</i>	Suckling Clover			
LEGUMINOSAE	* <i>Trifolium strictum</i>				
URTICACEAE	* <i>Urtica urens</i>	Stinging nettle			
COMPOSITAE	* <i>Sonchus oleraceus</i>	Common Sow-thistle			
LEGUMINOSAE	* <i>Vicia sativa</i>	Common Vetch			
GRAMINEAE	* <i>Vulpia bromoides</i>	Squirrel-tail Fescue			
GRAMINEAE	* <i>Vulpia myorus</i>	Fescue			
SOLANACEAE	* <i>Withania somnifera</i>	WinterCherry			
COMPOSITAE	* <i>Xanthium spinosum</i>	Bathurst Burr			

Gawler East Ecological Survey					
Proposed development area (main site)					
2008 to 2010					
Genus	Scientific name	Common name	EPBC Act	NPW Act	Regional rating (Southern Lofty)
*introduced species					

AVES	FAMILY	SCIENTIFIC NAME	COMMON NAME	EPBC	NP&W	AMLR NRM	Adelaide Plains sub-region
AVES	ACANTHIZIDAE	<i>Acanthiza chrysorrhoa</i>	Yellow-rumped thornbill			U	M
AVES		<i>Aphelocephala leucopsis</i>	Southern whiteface			V	M
AVES		<i>Smicromis brevirostris</i>	Weebill				
AVES	ACCIPITRIDAE	<i>Aquila audax</i>	Wedge-tailed eagle				
AVES		<i>Circus assimilis</i>	Spotted harrier				
AVES		<i>Haliastur sphenurus</i>	Whistling kite			U	M
AVES	ACROCEPHALIDAE	<i>Acrocephalus australis</i>	Reed-warbler				
AVES	AEGOTHELIDAE	<i>Aegotheles cristatus</i>	Australian owl-nightjar				
AVES	ALAUDIDAE	* <i>Alauda arvensis</i>	Eurasian skylark				
AVES	ANATIDAE	<i>Anas gracilis</i>	Grey teal				
AVES		<i>Anas superciliosa</i>	Black duck				
AVES		<i>Chenonetta jubata</i>	Australian wood duck				
AVES		<i>Egretta novaehollandiae</i>	White-faced heron				
AVES	ARTAMIDAE	<i>Artamus cyanopterus</i>	Dusky woodswallow				
AVES		<i>Cracticus tibicen</i>	Australian magpie				
AVES	CACATUIDAE	<i>Cacatua galerita</i>	Sulphur-crested cockatoo				
AVES		<i>Eolophus (Cacatua) roseicapilla</i>	Galah				
AVES		<i>Cacatua sanguinea</i>	Little corella				
AVES	CAMPEPHAGIDAE	<i>Coracina novaehollandiae</i>	Black-faced cuckoo-shrike				
AVES	CHARADRIIDAE	<i>Vanellus miles</i>	Masked lapwing				
AVES	COLUMBIDAE	* <i>Columba livia</i>	Rock dove				
AVES		* <i>Streptopelia chinensis</i>	Spotted turtle-dove				
AVES	CORCORACIDAE	<i>Corcorax melanorhamphos</i>	White-winged chough		R	V	M
AVES	CORVIDAE	<i>Corvus coronoides</i>	Australian raven				
AVES		<i>Corvus mellori</i>	Little raven				
AVES	CUCULIDAE	<i>Cacomantis pallidus</i>	Pallid cuckoo			V	M
AVES	FALCONIDAE	<i>Falco berigora</i>	Brown falcon				
AVES		<i>Falco cenchroides</i>	Nankeen kestrel				
AVES		<i>Falco longipennis</i>	Australian hobby				
AVES		<i>Falco peregrinus</i>	Peregrine falcon		R	R	M
AVES	FRINGILLIDAE	* <i>Carduelis carduelis</i>	European goldfinch				
AVES	HALCYONIDAE	<i>Todiramphus sanctus</i>	Sacred kingfisher				
AVES		<i>Dacelo novaeguineae</i>	Kookaburra				

AVES	FAMILY	SCIENTIFIC NAME	COMMON NAME	EPBC	NP&W	AMLR NRM	Adelaide Plains sub-region
AVES	HIRUNDINIDAE	<i>Cheramoeca leucosterna</i>	White-backed swallow				
AVES		<i>Petrochelidon ariel</i>	Fairy martin			U	M
AVES		<i>Hirundo neoxana</i>	Welcome swallow				
AVES	LARIDAE	<i>Chroicocephalus novaehollandiae</i>	Silver gull				
AVES	MALURIDAE	<i>Malurus cyaneus</i>	Superb fairy-wren				
AVES	MEGALURIDAE	<i>Cincloramphus cruralis</i>	Brown songlark				
AVES		<i>Megalurus gramineus</i>	Little grassbird				
AVES		<i>Anthochaera carunculata</i>	Red wattlebird				
AVES		<i>Epthianura albifrons</i>	White-fronted chat			U	M
AVES		<i>Lichenostomus penicillatus</i>	White-plumed honeyeater				
AVES		<i>Manorina melanocephala</i>	Noisy miner				
AVES		<i>Phylidonyris novaehollandiae</i>	New-Holland honeyeater				
AVES	MEROPIDAE	<i>Merops ornatus</i>	Rainbow bee-eater	Migratory			
AVES	MONARCHIDAE	<i>Grallina cyanoleuca</i>	Magpie lark				
AVES	MOTACILLIDAE	<i>Anthus novaeseelandiae</i>	Richards pipit				
AVES	PACHYCEPHALIDAE	<i>Pachycephala rufiventris</i>	Rufous Whistler			U	M
AVES	PARDALOTIDAE	<i>Pardalotus punctatus</i>	Spotted pardalote				
AVES		<i>Pardalotus striatus</i>	Striated pardalote				
AVES	PASSERIDAE	<i>*Passer domesticus</i>	House sparrow				
AVES	PETROICIDAE	<i>Petroica goodenovii</i>	Red-capped robin			V	M
AVES	PHASIANIDAE	<i>Coturnix pectoralis</i>	Stubble quail				
AVES	PHALACROCORACIDAE	<i>Phalacrocorax sulcirostris</i>	Little pied cormorant				
AVES	PODARGIDAE	<i>Podargus strigoides</i>	Tawny frogmouth			U	M
AVES	PODICIPEDIDAE	<i>Tachybaptus novaehollandiae</i>	Australian grebe				
AVES	PSITTACIDAE	<i>Glossopsitta concinna</i>	Musk lorikeet				
AVES		<i>Neophema elegans</i>	Elegant parrot		R		
AVES		<i>Northiella haematogaster</i>	Blue bonnet				
AVES		<i>Platycercus elegans adelaidae</i>	Adelaide rosella				
AVES		<i>Psephotus haematonotus</i>	Red-rumped parrot			U	M
AVES		<i>Trichoglossus haematodus</i>	Rainbow lorikeet				
AVES	RALLIDAE	<i>Fulica atra</i>	Eurasian coot				
AVES		<i>Gallinula tenebrosa</i>	Dusky moorhen				
AVES		<i>Gallirallus philippensis mellori</i>	Buff-banded rail			V	H

AVES	FAMILY	SCIENTIFIC NAME	COMMON NAME	EPBC	NP&W	AMLR NRM	Adelaide Plains sub-region
AVES		<i>Porphyrio porphyrio</i>	Purple swamphen				
AVES		<i>Porzana fluminea</i>	Australian spotted crane				
AVES	SCOLOPACIDAE	<i>Gallinago hardwickii</i>	Latham's snipe		gratory, Aquatic		
AVES	STRIGIDAE	<i>Ninox novaeseelandie</i>	Southern boobook				
AVES	STURNIDAE	* <i>Sturnus vulgaris</i>	Common starling				
AVES	THRESKIORNITHIDAE	<i>Threskiornis spinicollis</i>	Straw-necked ibis				
AVES	TIMALIIDAE	<i>Zosterops lateralis</i>	Silvereeye				
MAMMALIA		<i>Macropus fuliginosus</i>	Western grey kangaroo				
MAMMALIA		<i>Macropus robustus</i>	Euro				
MAMMALIA		* <i>Oryctolagus cuniculus</i>	European rabbit				
MAMMALIA		* <i>Lepus capensis</i>	Brown hare				
MAMMALIA		* <i>Mus musculus</i>	House mouse				
MAMMALIA		<i>Pseudocheirus peregrinus</i>	Common ringtail possum				
MAMMALIA		<i>Tachyglossus aculeatus</i>	Short-beaked echidna				
MAMMALIA		<i>Trichosurus vulpecula</i>	Common brushtail possum		R		
MAMMALIA		* <i>Vulpes vulpes</i>	European red fox				
REPTILIA		<i>Cryptoblepharus plagioccephalus</i>					
REPTILIA		<i>Christinus marmoratus</i>	Marbled gecko				
REPTILIA		<i>Delma mollerii</i>	Delma				
REPTILIA		<i>Hemiergis peronii</i>	Lowlands earless skink				
REPTILIA		<i>Lerista bougainvillii</i>	Bougainvilles skink				
REPTILIA		<i>Menetia greyii</i>	Common dwarf skink				
REPTILIA		<i>Morethia sp.</i>	Morethia				
REPTILIA		<i>Pogona barbata</i>	Eastern bearded dragon				
REPTILIA		<i>Tiliqua rugosa</i>	Sleepy lizard				
REPTILIA		<i>Tiliqua scincoides</i>	Common blue tongue				
REPTILIA		<i>Parasuta flagellum</i>	Little hooded snake				
REPTILIA		<i>Pseudonaja textilis</i>	Eastern brown snake				
AMPHIBIA		<i>Crinia signifera</i>	Common toadlet				
AMPHIBIA		<i>Limnodynastes dumerilii (SCR)</i>	Pobblebonk				
AMPHIBIA		<i>Limnodynastes tasmaniensis (SCR)</i>	Spotted marsh frog				

Appendix B

**PHOTOGRAPHS (SPRING 2008
AND SUMMER 2008/09)**



Photo B1: River red gum woodland with anthropogenic understorey (Dead Man's Pass, adjacent to the site)



Photo B2: Main watercourse on site, eastern reach, looking east.



Photo B3: Main watercourse on site, western reach with riparian grassland and sedgeland, looking west



Photo B4: Dry woodland patches dominated by mature Mallee box, central eastern section of the site



Photo B5: *Acacia acinacea*. This plant is the only large native shrub recorded in the site.



Photo B6: Iron-grass (*Lomandra effusa* – *L. multiflora* ssp. *dura*) Natural Temperate Grassland of South Australia.



Photo B7: Example of potential small reptile habitat along the eastern reach of the main watercourse



Photo B8: Fair to good quality reptile habitat, especially for Flinders Ranges worm-lizard



Photo B9: Example of reptile habitat.



Photo B10: *Parasuta flagellum* (sub-adult) sheltering under the rock (on the right in photo 9).



Photo B11: *Cynara cardunculus* (Artichoke thistle) infestation. Dominant weed in this site



Photo B12: Infestation of *Echium plantagineum* (Salvation jane). Typical infestation over much of the site.



Photo B13: South facing section of the site with anthropogenic vegetation



Photo B14: Severe grazing impacts. Nil native species remain here in the central section of the site.



Photo B15: *Solanum linnaeanum* (Apple of Sodom)



Photo B16: *Withania somnifera* (Winter cherry)



Photo B17: Severe livestock grazing and trampling impacts in the Iron-grass Community.



Photo B18: Severe grazing impacts indicated by the bonsai-like *Lomandra* tussocks



Pitfall line 1



Pitfall line 2



Pitfall line 3



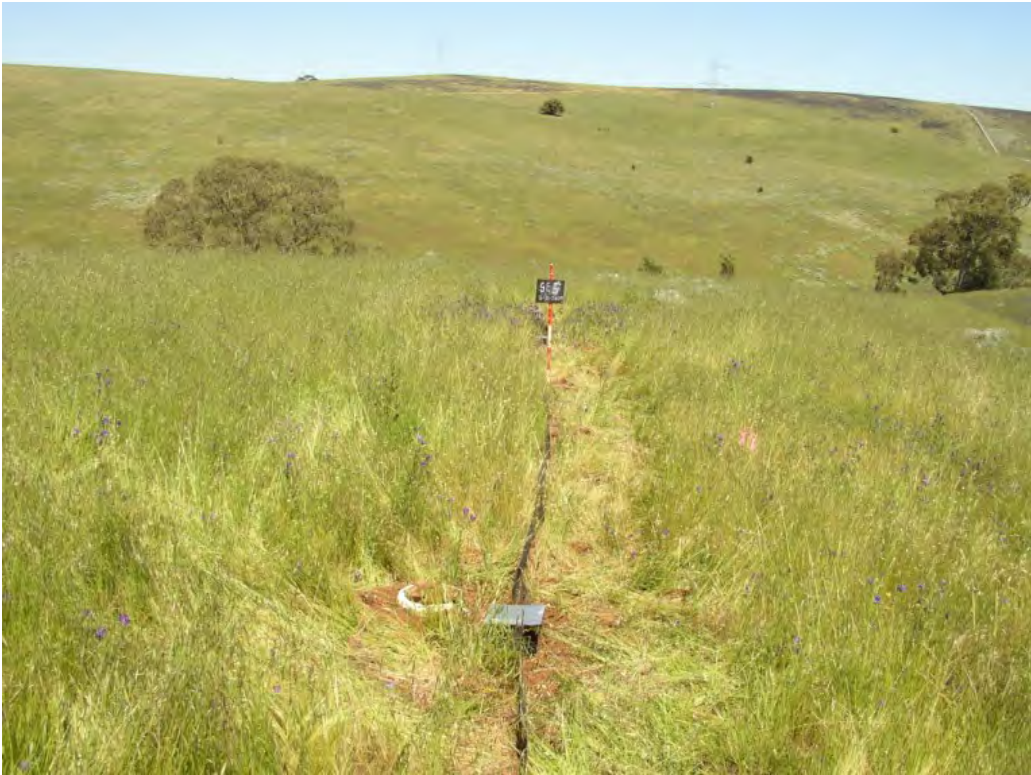
Pitfall line 4



Pitfall line 5



Pitfall line 6



Pitfall line 7



Pitfall line 8



EBS Ecology
125 Hayward Avenue
Torrensville, SA 5031
www.ebsecology.com.au
t. 08 7127 5607

WGA

WALLBRIDGE GILBERT
AZTEC

Springwood Communities

Springwood Residential Development

SITE SERVICES REPORT

Project No. 070975

Doc No. WGA070975-RP-CV-0013

Rev. D

14 June 2019

WGA

Revision History

Rev	Date	Issue	Originator	Checker	Approver
A	06/06/2019	Draft Issue for Comment	SMc		
B	12/06/2019	Planning Approval	SMc	DB	DB
C	13/06/2019	Final Issue	SMc	DB	DB
D	14/06/2019	Minor Amendments	SMc	DB	DB

CONTENTS

1 INTRODUCTION	1
1.1 Background	1
1.2 Purpose Of The Report	2
1.3 Site Infrastructure Reference Information	2
2 WASTEWATER	3
2.1 Existing Site Infrastructure	3
2.1.1 Calton Road	3
2.1.2 Cheek Avenue	3
2.1.3 Existing Springwood Development	3
2.1.4 Gawler East Link Road	3
2.2 Service Authority Requirements	3
2.3 Wastewater Master Planning	4
2.3.1 General Wastewater Master Planning	4
2.3.2 Early Stages Master Planning	5
2.3.3 Overall Development Network Capacity	5
2.3.4 SA Water Internal Network Master Planning	5
3 POTABLE WATER	6
3.1 Existing Site Infrastructure	6
3.1.1 Barossa Trunk Main	6
3.1.2 Calton Road	6
3.1.3 Cheek Avenue	6
3.1.4 Balmoral Road	6
3.1.5 Existing Springwood Development	6
3.1.6 Gawler East Link Road	7
3.2 Service Authority Requirements	7
3.3 Potable Water Master Planning	8
3.3.1 Staged Potable Water Master Planning	8
3.3.2 SA Water Internal Network Master Planning	8
3.4 Barossa Trunk Main	8
3.4.1 Road Crossings	8
3.4.2 Road and Allotment Alignments	9
4 ELECTRICAL INFRASTRUCTURE	10
4.1.1 ElectraNet Infrastructure	10
4.1.2 Calton Road (SAPN)	10
4.1.3 Cheek Avenue (SAPN)	10
4.1.4 Balmoral Road (SAPN)	10
4.1.5 Existing Development (SAPN)	10
4.2 Electrical Masterplanning	11
4.3 Electranet Easements	11
4.3.1 275kV Transmission Line	11
4.3.2 132kV Transmission Line	11

5 GAS INFRASTRUCTURE	13
5.1 Existing Infrastructure	13
5.1.1 SEA Gas Port Campbell to Adelaide Pipeline	13
5.1.2 Calton Road (APA Group).....	13
5.1.3 Existing Springwood Development (APA Group)	13
5.2 Gas Master Planning.....	13
5.3 Sea Gas	13
5.3.1 Road Crossings	14
5.3.2 Utility Crossings	14
5.3.3 Easement Land Usages and Setbacks	14
5.3.4 Main Line Valve Buffer	14
6 COMMUNICATIONS INFRASTRUCTURE	15
6.1 Existing Infrastructure	15
6.1.1 Calton Road.....	15
6.1.2 Existing Springwood Development.....	15
6.2 Communications Master Planning	15

Appendices

Appendix A SITE MASTER PLAN

Appendix B EXISTING INFRASTRUCTURE

Appendix C STAGING PLAN

Appendix D SERVICES MASTER PLANS

1 INTRODUCTION

1.1 BACKGROUND

Wallbridge Gilbert Aztec (WGA) have been engaged by Springwood Communities to provide a Site Services Master Plan Report consolidating planning correspondence from respective service authorities for the proposed Springwood Residential Development in Gawler East.

The proposed Springwood site is approximately 186.1 ha, located approximately 1.5 km east of the Gawler Town Centre and 37 km north of the Adelaide City Centre. The proposed development is bordered by Balmoral Road to the east, Calton Road to the north, predominantly undeveloped farming land to the west, and undeveloped, vacant land to the south. The southern boundary is adjacent the South Para River. A locality sketch of the Development site, outlined in red, is shown in Figure 1. The site is characterised by relatively undulating topography, with grades ranging between 5-18% in the developable areas. The site is currently zoned residential and has previously been used as farm land and sand mining.

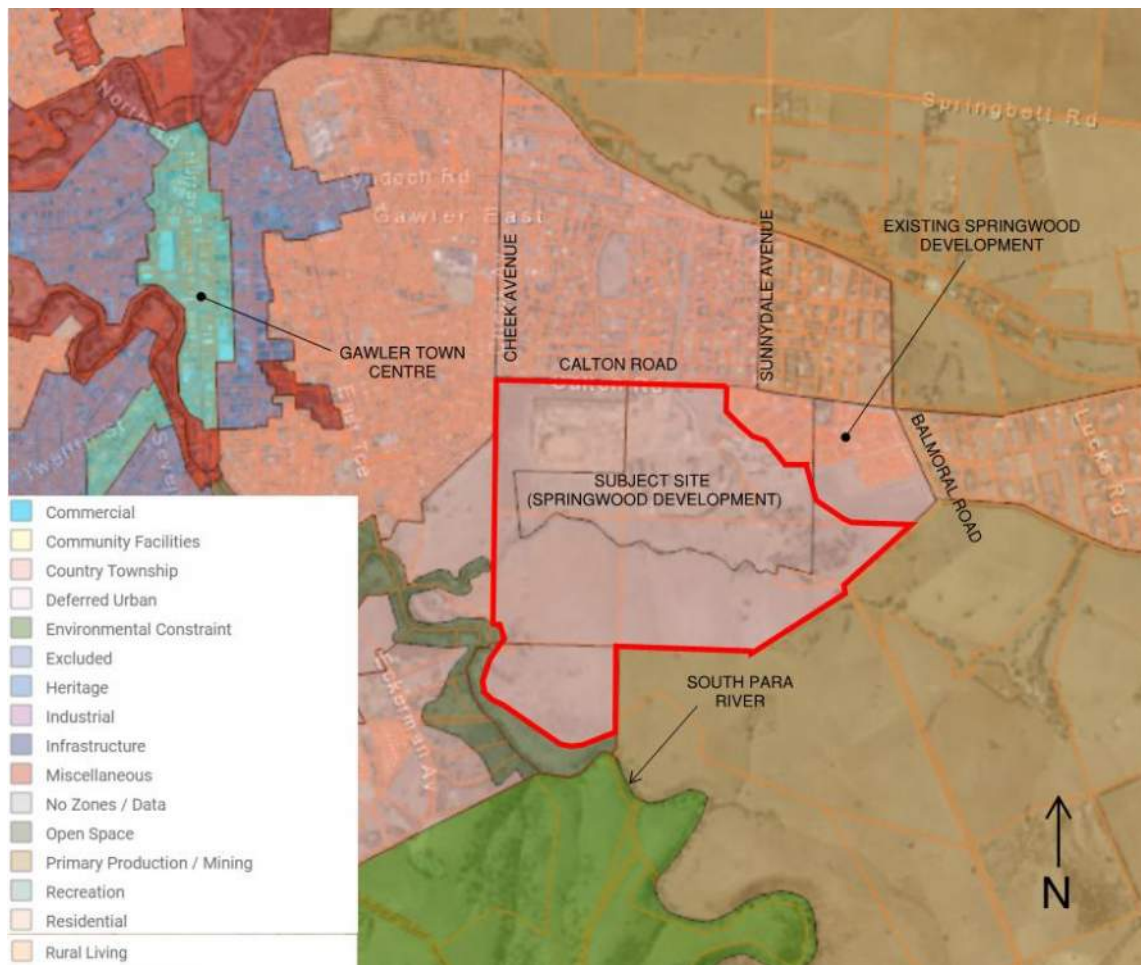


Figure 1 - Site Locality and Zoning (Location SA Map Viewer, Government SA, 2019)

The investigations have assumed the proposed subdivision comprises approximately 1414 allotments, incorporating a range of dwelling types and allotments sizes. This number is inclusive of proposed retail, commercial and specialty allotments as identified on the master plan. The current master plan for the Development, prepared by Tract Consultants Pty Ltd, is included in Appendix A.

1.2 PURPOSE OF THE REPORT

The purpose of this report is to:

- Complete an investigation into the infrastructure currently servicing the proposed site, assessing the existing infrastructure availability and capacity;
- Attain an appreciation of the requirement for augmentation or upgrade works that may be associated with development of each site; and
- Consolidate investigations to provide supporting information and justification for development of the site.

1.3 SITE INFRASTRUCTURE REFERENCE INFORMATION

The location and capacity of existing services within the vicinity of the proposed development site has been investigated and is detailed within the following sections of this report. Service authorities have been consulted to acquire background information and formalise potential supply arrangements for a potential development.

It is noted that significant planning has already been undertaken for the subject site by authorities when supplying the developed area to the north-east. Formal supply arrangements will largely incorporate this existing infrastructure, which was sized taking into account the proposed development area that is the subject of this report.

The following key authorities have been consulted in seeking infrastructure input:

- **Potable Water** – SA Water
- **Wastewater** – SA Water
- **Electricity Supply** – SA Power Networks (SAPN)
- **Gas** – APA Group (APA) and South East Australia Gas Pty Ltd (SEA Gas)
- **Telecommunications** – Opticomm
- **Stormwater** – Town of Gawler/ City of Barossa (refer accompanying WGA Stormwater Management Strategy)

2 WASTEWATER

2.1 EXISTING SITE INFRASTRUCTURE

Information on the existing infrastructure has been obtained through correspondence with SA Water, with supporting information sought through a Dial Before You Dig (DBYD) search, Aquamap, use of the SA Government's Location SA Map Viewer and through WGA's involvement in the existing portion of Development to the north-east of the subject site. Appendix B contains further information relating to the existing sewer network, with a summary provided in this Section.

2.1.1 Calton Road

A combined pumping (DN100/ DN150 PVC) and gravity (DN225 PVC) sewer system exists within Calton Road. This was installed in 2015 as part of the existing Springwood Development and is owned and operated by SA Water.

Two pump stations were installed as part of this work, one just east of Cockshell Avenue and another located between Sunnysdale Avenue and Easton Drive. Both pump stations are on the southern side of Calton Road, within SA Water registered easements inside the Development boundary. This system conveys wastewater to the west of the proposed Development, and ultimately discharges to a pump station located in Paterson Terrace.

2.1.2 Cheek Avenue

Cheek Avenue contains a single gravity sewer drain operated by SA Water (DN150 PVCU), which conveys wastewater north to Holness Avenue.

2.1.3 Existing Springwood Development

An SA Water owned sewer network has been installed within the existing Development on a staged basis. This network currently drains to the Calton Road sewer, servicing 387 allotments. This number comprises both built and future dwellings, indicated by the existing Development area in Figure 1.

2.1.4 Gawler East Link Road

The Gawler East Link Road is currently under construction at the time of this report. A DN225 PVC gravity main will be installed as part of this work within the Calton Road Connector, which is the section between Calton Road and the Gawler East Link Road. Connections will be installed at strategic locations based on the current proposed Springwood Master Plan throughout the Village Centre area defined by the Preliminary Staging Plan in Appendix C.

2.2 SERVICE AUTHORITY REQUIREMENTS

SA Water has advised that a portion of the proposed development can be serviced via the existing wastewater infrastructure within Calton Road, discussed in Section 2.1 of this report. Further work would be required external to the proposed development site should the capacity of the Calton Road network be exceeded. The following summarises SA Water requirements to be met as part of the proposed development, as well as the capacity of the current infrastructure:

- The Paterson Terrace Pump Station Upgrade, which was completed prior to the Calton Road Sewer installation, increased the sewer network capacity to cater for 660 residential allotments from the proposed Springwood Development. This number is inclusive of the 387 residential allotments created as part of the existing Springwood Development, to the north-east of the site, as discussed in Section 2.1;
- Future development beyond 660 residential allotments would trigger a sewer pumping network to be installed, extending from the site's western boundary to the gravity main installed within the Gawler East Link Road and Potts Road. This gravity main is under construction at the time of this report, as part of the Gawler East Link Road project;
- Design and construction of any new wastewater infrastructure would be in accordance with SA Water Network Infrastructure Standards; and
- Any easements required for the provision of wastewater services would need to be vested to SA Water free of cost.

Figure 2 demonstrates the preliminary SA Water assessment criteria and collection point for wastewater generated as part of the proposed development exceeding 660 allotments.

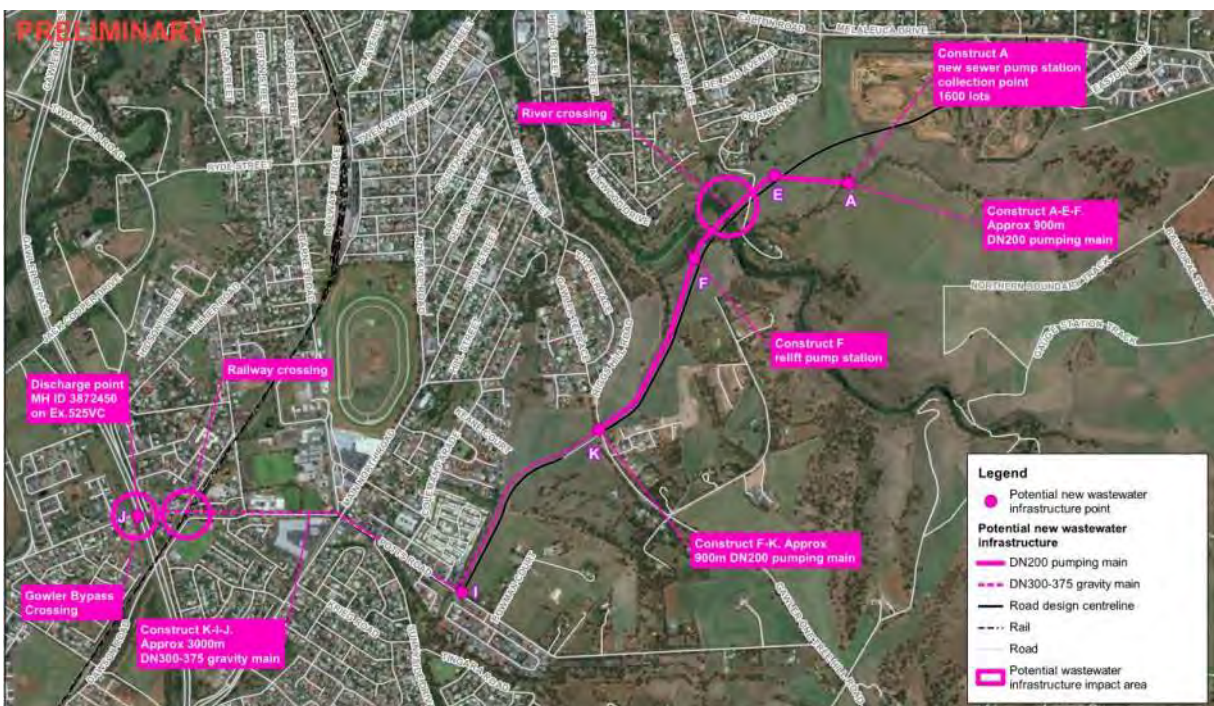


Figure 2 – Preliminary Sewer Layout with Proposed Collection/ Discharge Points (WSP, 2018)

2.3 WASTEWATER MASTER PLANNING

2.3.1 General Wastewater Master Planning

The waste water master plan for the development is based upon the Preliminary Staging Plan provided in Appendix C. It is noted that the existing terrain predominantly falls toward the central drainage channel, running east-west through the proposed Development site. On this basis, a combination of gravity sewer and internal pumping mains would be required to convey wastewater to the following collection points:

1. Calton Road – connections can be made to the existing Springwood wastewater network, or directly to the gravity sewer in Calton Road. This only applies until the 660-allotment threshold is reached; and

2. Pump Station A – would be installed in the location shown in Figure 2 and convey wastewater north, to the Development’s western boundary, and connect to the future pumping main infrastructure within the Gawler East Link Road.

2.3.2 Early Stages Master Planning

Given the trigger point of 660 residential allotments, any future development would be designed in the initial stages to discharge to the existing Calton Road sewer. Based upon the Preliminary Staging Plan in Appendix C, construction of the Village Centre, Village 2 and Village 3 could be undertaken without exceeding this trigger point.

Village Centre

Wastewater generated by the Village centre is proposed to discharge to Calton Road via the Calton Road Connector, constructed as part of the Gawler East Link Road Project. A gravity sewer main (DN225 PVC) has been approved for construction through the Calton Road Connector, which is intended to service the proposed Village Centre.

Village 2

The majority of the proposed Village 2 can be serviced by gravity sewer already installed as part of the existing Springwood Development. A small portion of Village 2, currently identified as Stage 3, could be connected to the Calton Road Connector gravity sewer.

Village 3

Given the existing topography throughout this area, it is anticipated that Village 3 would need to drain to a new pump station to be installed at the most downstream point of the Village (southern end). From this pump station, wastewater could be conveyed to the Calton Road Connector gravity sewer infrastructure.

Village 7

Newly developed allotments fronting Calton Road can be individually connected directly to the Calton Road gravity sewer.

2.3.3 Overall Development Network Capacity

With provision of SA Water infrastructure within the Gawler East Link Road, from the site’s western boundary to Potts Road, wastewater for the Development can be effectively managed without external infrastructure investment.

2.3.4 SA Water Internal Network Master Planning

SA Water is currently updating their internal sewer concept plans for the proposed development, based on the currently proposed roads and allotment master plan developed by Tract Consultants Pty Ltd. This is anticipated to be available mid-2019, and to be in line with the overall development connection requirements set out in this report. These concepts would be the basis of detailed design for wastewater infrastructure.

3 POTABLE WATER

3.1 EXISTING SITE INFRASTRUCTURE

Information on the existing infrastructure has been obtained through correspondence with SA Water, with supporting information sought through a Dial Before You Dig (DBYD) search and use of the SA Government's Location SA Map Viewer, as well as through WGA's experience with the existing Springwood Development. Appendix B contains further information relating to the existing potable water network, with a summary provided in this Section.

3.1.1 Barossa Trunk Main

A DN750 MSCL potable main, known as the Barossa Trunk Main currently exists through the site, running between Balmoral Road and Eckerman Ave. This main services Gawler and the northern portion of the greater metropolitan area. Most of the alignment is above ground, installed on concrete supports, however there are multiple discrete sections of the trunk main that have been diverted underground.

3.1.2 Calton Road

Currently three potable water mains exist within Calton Road. These can be summarised as follows:

- A DN450 MSCL potable water main within the southern verge of Calton Road, which has been confirmed as abandoned;
- An SA Water owned DN650 MSCL potable water main within the southern verge of Calton Road, located between the proposed Development boundary and the abandoned DN450; and
- An SA Water owned DN450 MSCL potable water main within the northern verge of Calton Road.

3.1.3 Cheek Avenue

Cheek Avenue contains a potable water main operated by SA Water (DN150 AC) running parallel to the proposed western site boundary and continuing south-west along Cork Road.

3.1.4 Balmoral Road

There are two potable water mains within Balmoral Road, both DN450 MSCL, with one located in each of the verges (east and west). The main within the eastern verge connects into the Barossa Trunk Main, which generally runs southeast-northwest through the proposed site.

3.1.5 Existing Springwood Development

An SA Water owned potable water network has been installed within the existing Development on a staged basis. This network currently connects to the Calton Road DN650 MSCL main, as well as the Balmoral Road DN450 MSCL main.

3.1.6 Gawler East Link Road

The Gawler East Link Road is currently under construction at the time of this report. A DN375 PVC-M potable water main will be installed as part of this work, which creates a link between Potts Road and Calton Road. Branches will be installed at strategic locations based on the current proposed Springwood Master Plan, which would allow future development to easily connect to this trunk infrastructure.

3.2 SERVICE AUTHORITY REQUIREMENTS

SA Water has advised that the proposed development can be serviced via the existing potable water infrastructure within Calton Road, the Gawler East Link Road and the existing Springwood network to the north-east of the site. The following summarises the SA Water requirements to be met as part of the proposed development:

- A 250mm PVC-M trunk main would need to be installed through the proposed Collector Road, creating a link between the Highfield area of the existing Springwood Development, and the Gawler East Link Road;
- Design and construction of the new potable water supply infrastructure shall be in accordance with SA Water Network Infrastructure Standards; and
- Any easements required for the provision of water supply services would need to be vested to SA Water free of cost.

Figure 3 demonstrates the SA Water assessment criteria and potable water supply points required to service the proposed development.



Figure 3 – Preliminary Potable Water Layout (WSP, 2018)

3.3 POTABLE WATER MASTER PLANNING

3.3.1 Staged Potable Water Master Planning

Upon completion of the Gawler East Link Road Project, the majority of the required trunk main identified in Figure 3 will be in place. As part of the proposed future development, it would be required to construct a DN250PVC-M link between the Highfield area of the existing Development at the site's north-eastern boundary, and the Calton Road Connector. Based on the Preliminary Staging Plan provided in Appendix C, it is currently anticipated that this link would occur during construction of Village 2.

It is also identified in Figure 3 that a link to the Barossa Trunk Main is required. This was completed in Stage 6A of the existing Springwood Development.

Village Centre

The Village centre is proposed to be serviced by the main installed within the Calton Road Connector, as part of the Gawler East Link Road Project. Connections have been provided at strategic locations based on the current master plan developed by Tract Consulting Pty Ltd. These have been sized to cater for retail and commercial sites as per the land usages illustrated in Appendix A.

Future Villages

Potable water reticulation infrastructure would be installed within the roads for each stage of the proposed Development. These can be connected by utilising the branches installed from the DN250 PVC-M trunk main as part of the Gawler East Link Road Project.

3.3.2 SA Water Internal Network Master Planning

SA Water is currently updating their internal potable water concept plans for the proposed development, based on the proposed roads and allotment master plan developed by Tract Consultants Pty Ltd. This is anticipated to be available mid-2019, and to be in line with the overall development connection requirements set out in this report. This would be used as the basis for detailed stage design for the Development.

3.4 BAROSSA TRUNK MAIN

As discussed in Section 3.1, the Barossa Trunk Main runs through the proposed Development on a SW-NE alignment. This is installed within a 10.0m wide registered SA Water easement. The position of the pipe within the easement tends to vary and is not located centrally. The trunk main presents a physical constraint to potential future development, however this has been carefully considered throughout the master planning process based on detailed survey information.

3.4.1 Road Crossings

The positioning of road crossings has been strategically considered against the alignment of the Barossa Trunk Main, as the majority of the alignment is currently above ground. Crossing points have been chosen at existing gullies, where the trunk main has been diverted underground. These points are currently used as farming access tracks.

During detailed design of any future road crossing, consideration would be given to minimum vertical clearances relative to the trunk main for both roads and services. SA Water would be involved in the auditing of design and construction of any future crossing points.

The intent would be to construct roads vested to the Town of Gawler (Council), which would extinguish the existing easement for the width of the road reserve, while retaining the easement on either side.

As part of the existing Springwood Development, a successful road crossing was constructed over an underground section of the Barossa Trunk Main. This crossing is located at Burford Street and included multiple service crossings. By following similar design and construction procedure for future road crossings, similarly successful outcomes would be delivered.

3.4.2 Road and Allotment Alignments

As illustrated by the current master plan in Appendix A, no development is proposed over the existing SA Water easement, except for the road crossings discussed in Section 3.4.1. Road reserves are proposed on the current master plan abutting the existing easement.

SA Water has previously advised that the minimum offset from a new allotment boundary to the centreline of the Barossa Trunk Main would need to be 6.60m. This can be achieved in all locations through the proposed Development.

4

ELECTRICAL INFRASTRUCTURE

Information on the existing infrastructure has been obtained through correspondence with SA Power Networks (SAPN) and ElectraNet, with supporting information sought through a Dial Before You Dig (DBYD) search and use of the SA Government's Location SA Map Viewer. Appendix B contains further information relating to the existing electrical distribution network, with a summary provided in this Section.

4.1.1 ElectraNet Infrastructure

Two transmission lines, owned and operated by ElectraNet, currently traverse the proposed Development site. These include:

- A 275kV transmission line currently runs north-south through the Development, parallel to the western boundary of the proposed Village Centre. This extends from the overall site's northern boundary to the southern boundary and is located within a 100m ElectraNet easement.
- A 132kV transmission line runs north-south through the site, approximately parallel to the site's western boundary. This line begins at the Cheek Avenue/ Calton Road intersection and extends to the southern boundary of the Development. The infrastructure is located centrally within a 30m ElectraNet easement.

4.1.2 Calton Road (SAPN)

An SAPN 11kV high voltage overhead line currently runs parallel to the proposed Development's northern boundary. This overhead line is located within the northern verge of Calton Road.

4.1.3 Cheek Avenue (SAPN)

An SAPN 11kV high voltage overhead line currently runs parallel to the proposed Development's western boundary. This overhead line is located within the western verge of Cheek Avenue, and transitions to a high voltage underground cable at Cork Road.

4.1.4 Balmoral Road (SAPN)

An SAPN 11kV high voltage overhead line currently runs parallel to the proposed Development's eastern boundary. This overhead line is located within the western verge of Balmoral Road. This network has multiple connection points to Calton Road and Balmoral Road.

4.1.5 Existing Development (SAPN)

A high voltage underground electrical distribution network, owned by SAPN, has been installed throughout the existing Development to the north-east of the site.

4.2 ELECTRICAL MASTERPLANNING

The electrical underground network for the proposed Development would be installed on a staged basis as part of the common service trench. It will be necessary to install high voltage feeders throughout the Development based on the overall masterplan.

In the early stages of the Development, it will be necessary to complete an HV feeder between the Highfield area of the existing Development and Calton Road. This would be intended to follow the alignment of the main internal collector road and the Calton Road Connector.

In order to service the proposed Village Centre, as identified on the Preliminary Staging Plan in Appendix C, it will be required to install two new runs of HV cable along the Calton Road Connector, as well as the installation of new stobie poles and load switches to connect to the Calton Road high voltage overhead network.

SAPN has advised that a future substation will be required within the Development boundary, with the exact timing and configuration to be determined based on an assessment of loading requirements. WGA, in consultant with Springwood, will continue to liaise with SAPN to finalise the trigger point for this infrastructure.

4.3 ELECTRANET EASEMENTS

4.3.1 275kV Transmission Line

The 275kV transmission line discussed in Section 4.1, is located within a 100m easement running north-south, as shown in Appendix A. No allotments have been proposed within this easement area. Short sections of road, perpendicular to the transmission line, have been proposed to cross beneath the alignment. These would be designed to the minimum vertical and horizontal clearances required by ElectraNet. Development within this zone would consist of mainly landscape/ open space area, in order to comply with the requirements set out in ElectraNet's '*Land Use Guidelines for Electricity Transmission Corridors*,' 2013.

4.3.2 132kV Transmission Line

The 132kV transmission line discussed in Section 4.1, is located within a 30m easement running north-south, as illustrated in Appendix A. It is also shown on the masterplan that a new road is proposed to run parallel to this transmission line, south from Cheek Avenue and beyond the Gawler East Link Road. The alignment for this road has been determined by applying the minimum clearance requirements set out in ElectraNet's '*Land Use Guidelines for Electricity Transmission Corridors*,' 2013.

Figure 4 shows the basis for the road design, taking into account the proposed lighting as the nearest physical constraint. A minimum 15m horizontal clearance can be achieved between the future lighting and the existing transmission lines based on the chosen road alignment.

HORIZONTAL CLEARANCE FROM LIGHTPOLE TO 132 kV TRANSMISSION LINE

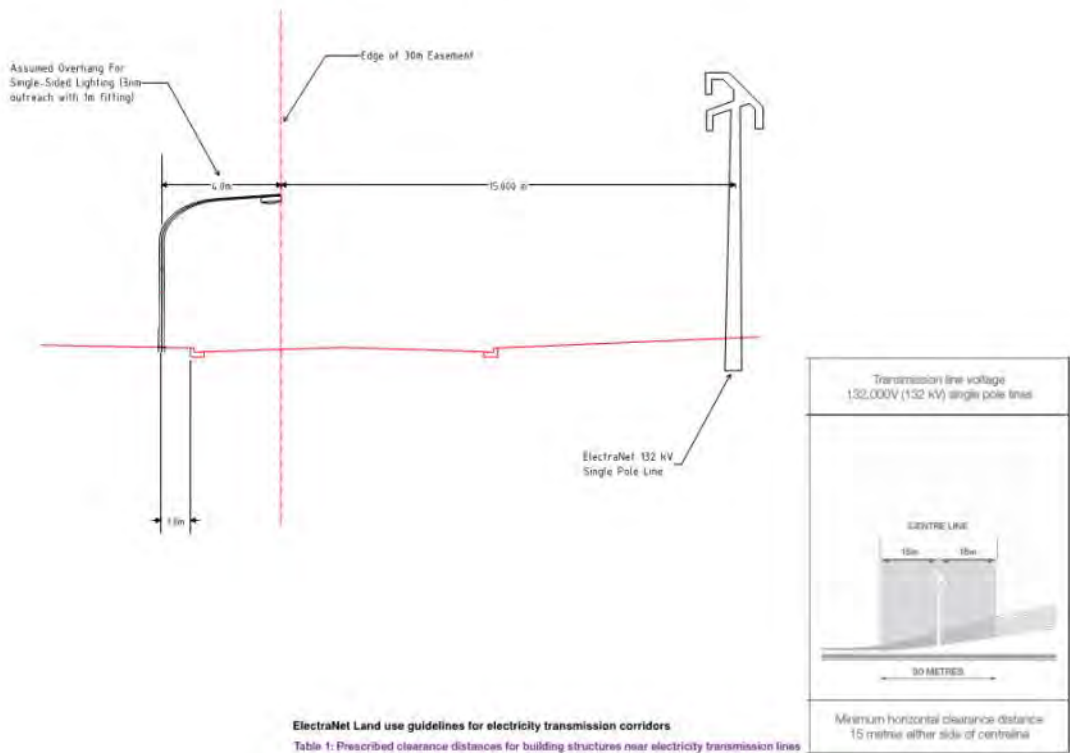


Figure 4 - ElectraNet Clearance Requirements for Parallel Road Design (WGA, 2019)

5

GAS INFRASTRUCTURE

5.1 EXISTING INFRASTRUCTURE

Information on the existing infrastructure has been obtained through correspondence with APA Group and South East Australia Gas Pty Ltd (SEA Gas), with supporting information sought through a Dial Before You Dig (DBYD) search and detailed survey through the proposed Development site. Appendix B contains further information relating to the existing potable water network, with a summary provided in this Section.

5.1.1 SEA Gas Port Campbell to Adelaide Pipeline

A 450mm diameter high pressure gas transmission pipeline, owned and operated by South East Australia Gas Pty Ltd (SEA Gas), currently traverses the proposed Development site running parallel to the Barossa Trunk Main, in a northeast to southwest direction between Balmoral Road and the site's western boundary. This gas main is part of the Port Campbell to Adelaide Pipeline and has a maximum operating pressure of 15,306 kPa. The depth of cover over the pipe generally exceeds 1.20m and is located within a 15m wide easement.

5.1.2 Calton Road (APA Group)

A 280mm high pressure gas main exists within Calton Road, installed prior to Stage 1 of the existing Springwood Development. This main is owned and operated by APA Group and it currently services the existing Development at the north-east of the proposed site.

5.1.3 Existing Springwood Development (APA Group)

An APA Group owned gas network has been installed within the existing Development on a staged basis within the Common Service Trench. This network currently connects to the Calton Road 280mm high pressure main.

5.2 GAS MASTER PLANNING

APA Group has advised the new development is considered normal urban growth and can be serviced via the existing gas infrastructure. No headworks have been identified as being required, however there will be a 125mm high pressure gas main link required from Calton Road to the proposed Development's western boundary to be undertaken on a staged basis. New gas infrastructure will be installed within the common service trench and progressively extended through each stage of the development.

5.3 SEA GAS

A Safety Management Study (SMS) workshop was carried out in 2017 to assess the relationship between the Springwood Master Plan and the SEA Gas Port Campbell to Adelaide Pipeline. The findings of the SMS were considered throughout the master planning process to support SEA Gas in its compliance with 'AS 2885.2008, Pipelines – Gas and Liquid Petroleum.'

This section provides a summary of Springwood master plan considerations, as it relates to the SEA Gas SMS.

5.3.1 Road Crossings

Road crossings have been proposed at three locations coinciding with the Port Campbell to Adelaide Pipeline. These crossings would need to be designed in accordance with AS 2885 and SEA Gas requirements and will likely require concrete protection to protect the pipeline from vehicle loading and future excavation. Side protection will also be considered if there is a likelihood of directional boring in future for services maintenance or installation.

A successful crossing of the SEA Gas main at Burford Street was completed as part of the existing Springwood Development. The crossing included the construction of mechanical protection and the installation of services above and beneath the pipeline. Similar design and construction procedure would be followed to deliver future road crossings of the SEA Gas main.

5.3.2 Utility Crossings

Utility crossings for other services required to cross the Port Campbell to Adelaide Pipeline would be designed to comply with the appropriate standards and to achieve the necessary clearances. Designs would be approved by SEA Gas and give consideration to future connection points and potential maintenance requirements to minimise the risk of future excavation in the vicinity of the pipeline, similar to the previously constructed Burford Street crossing.

5.3.3 Easement Land Usages and Setbacks

No development has been proposed over the easement, with the exception of road crossings. It has been advised that open space is a permissible land usage, including landscape and shared paths.

5.3.4 Main Line Valve Buffer

The main line valve (MLV) compound shown on the master plan in Appendix A, requires a buffer zone a minimum of 45m between the associated vent stack and the nearest residence as a noise protection measure, and as a hazardous area exclusion zone to remove ignition sources from the area. The current master plan has designated open space within this zone only.

Within the Main Line Valve compound there is an Emergency Vent for the SEA Gas pipeline. This vent is designed to rapidly evacuate gas in the event of a pipeline emergency. The Safety Management Study notes that residential dwellings should not be located within a buffer zone of approximately 220m from an emergency vent. A 220m buffer zone would currently sit outside of the existing SEA Gas easement and accordingly we understand that it is the intention of SEA Gas to relocate this vent to ensure its ongoing compliance with AS2885. We understand that SEA Gas and its regulator, Department of Energy and Mining, has identified and secured rights over an appropriate site for this relocated vent. Accordingly, no allowance has been made for this buffer zone.

6 COMMUNICATIONS INFRASTRUCTURE

6.1 EXISTING INFRASTRUCTURE

Information on the existing infrastructure has been obtained from a Dial Before You Dig (DBYD) search and through discussion with Opticomm. Multiple communication infrastructure assets are located in direct proximity to the development site.

6.1.1 Calton Road

Opticomm cable exists within Calton Road, installed prior to Stage 1 of the existing Springwood Development. This main is owned and operated by Opticomm and currently services the existing Development at the north-east of the proposed site.

6.1.2 Existing Springwood Development

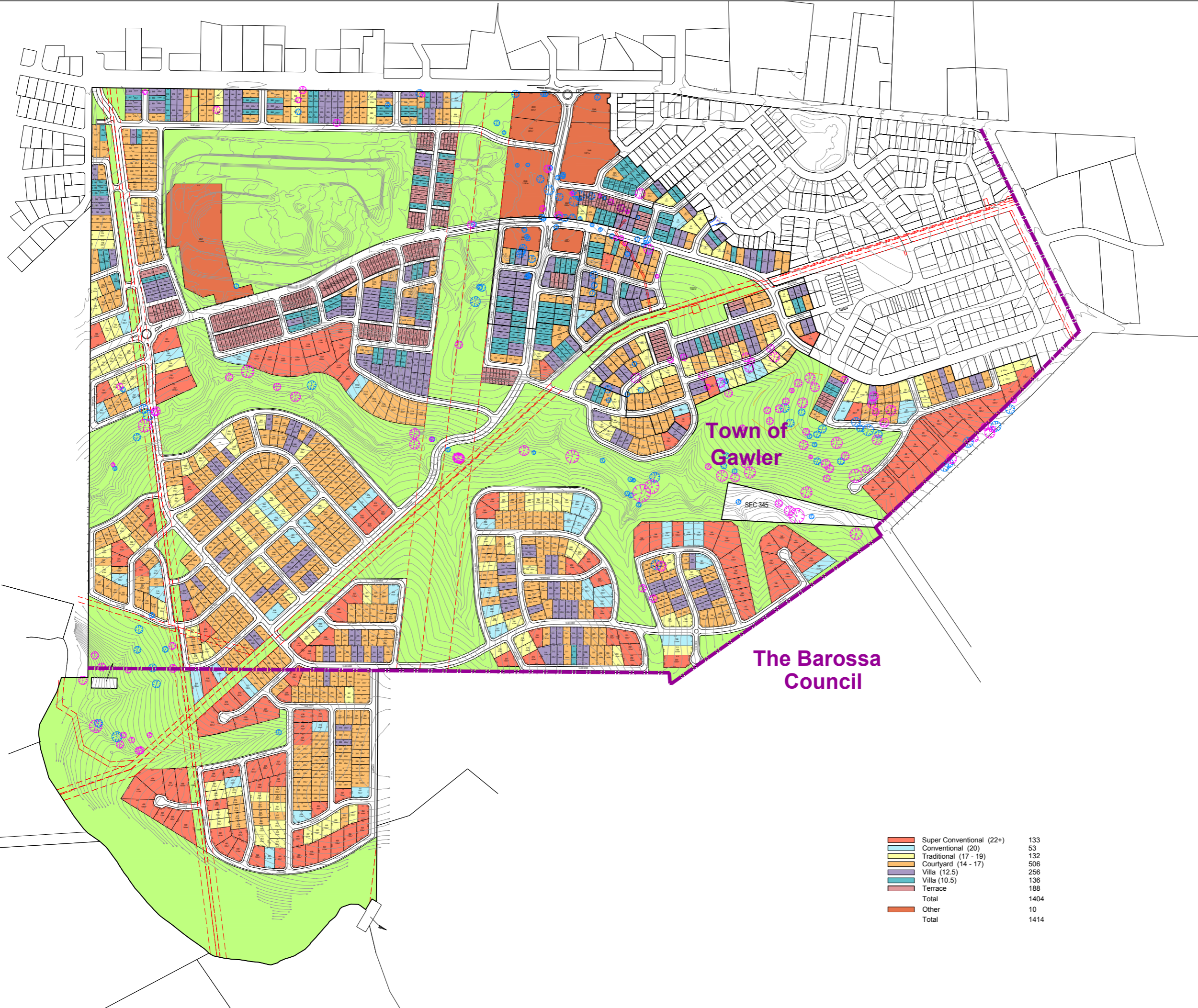
An Opticomm owned in-service pit and pipe network has been installed within the existing Development on a staged basis within the Common Service Trench. This network currently connects to cable installed within the Calton Road verge.

6.2 COMMUNICATIONS MASTER PLANNING

Through liaison with Opticomm, it has been confirmed that the proposed development is within the capacity of their existing network. The head end equipment installed during Stage 1 of the existing Development to the north-east was designed to account for future allotments associated with the newly proposed Springwood Development. Connection to the network would come from the existing Development adjacent the proposed Village 2 and Village 3 as per the Preliminary Staging Plan in Appendix C.

APPENDIX A

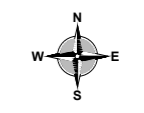
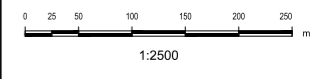
SITE MASTER PLAN



Development No. / /
 Town of Gawler
 Development No. / /
 The Barossa Council

Proposed Plan of Division
 Allotment 2 in F7765
 Allotment 1 in F13468
 Allotment 9010 & 9011 in D114845
 Allotment 7030 in D119118
 Allotment 4 in D28814
 Hundred of Barossa
 in the area named
**GAWLER EAST
 & KALBEEBA**

CT 6166/896 CT 6205/146
 CT 6162/249 CT 6162/334
 CT 6164/173 PT CT 6212/430



Town of
 Gawler

The Barossa
 Council

Super Conventional (22+)	133
Conventional (20)	53
Traditional (17 - 19)	132
Courtyard (14 - 17)	506
Villa (12.5)	256
Villa (10.5)	136
Terrace	188
Total	1404
Other	10
Total	1414

No. of proposed allotments	1414
Total area	186.1ha
Reserve area	73.57ha
Length of new roads	20.15k

Contour interval 2m.
 Datum AHD.

Vide Titles for disposition of easements.
 Road pavements shown are indicative only.

****Not to be used for detailed engineering design.****

Dimensions and areas are subject to survey.

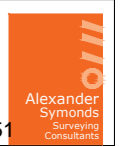
© ALEXANDER & SYMONDS PTY LTD Original Sheet Size A0
Glenn Ian Hordacre
 LICENSED SURVEYOR

REF:	A010816
DWG NO.:	A010816-CG OVERALL REV B
REVISION:	B
DEL:	6.06.2019

Alexander & Symonds Pty Ltd
 11 King William Street Kent Town,
 South Australia 5067
 PO Box 1050 North Town, SA 5071
 DX 209 AHN 93007 753 988

T (08) 8330 1666
 F (08) 8362 0099
 W www.alexander.com.au
 E adelaide@alexander.com.au

+ Property + Law + Engineering
 + Construction + Surveying
 + Spatial Information



APPENDIX B

EXISTING INFRASTRUCTURE



Existing Springwood Development Site

Springwood Development Site

Waste Water Gravity Main

Waste Water Pumping



DO NOT SCALE PAPER PRINT



LIMITS OF CONTRACT & SEQUENCE OF WORKS

WORK BY CONSTRUCTOR
1. Construct new pumping stations at 'A' and 'C'.
Complete with all structures, pipework, electrical and mechanical plant and equipment, telemetry requirements, vehicle access and site works, in accordance with S.C.M. Section M, in readiness for commissioning. Note: All telemetry requirements to be surveyed and installed by accredited SA Water Panel member.

Pump Station @ 'A'
Pump Sump: = 2100mm ID.
2 Pumps installed, one duty and one standby.
Pump Duty: Max Q = 11.0L/s at H = 10.6m. (Preliminary duty only).
Typical pumps:
Twin ABS Sulzer model XFP 100E.CB1.PE40/4 or similar approved.

Switch Board Rating: = 2 x 22kW.
Max Power (P): = 8W. (4kW per pump) (Preliminary power only).
Required power supply to the Pump Station site
415 V @ 50 Hz.

NOTE:
1. Q, H and P are subject to final design.
2. Valve Chamber pipework at Pump Station A to be PE DN125mm.
3. Determine the electrical requirement and arrange with SA Power Networks for the provision of supply

Pump Station @ 'C'
Pump Sump: = 2100mm ID.
2 Pumps installed, one duty and one standby.
Pump Duty: Max Q = 22.0L/s at H = 16.8m. (Preliminary duty only).
Typical pumps:
Twin ABS Sulzer model XFP 100E.CB1.PE90/4 or similar approved.

Switch Board Rating: = 2 x 22kW.
Max Power (P): = 18kW. (9kW per pump) (Preliminary power only).
Required power supply to the Pump Station site
415 V @ 50 Hz.

NOTE:
1. Q, H and P are subject to final design.
2. Valve Chamber pipework at Pump Station C to be PE DN160mm.
3. Determine the electrical requirement and arrange with SA Power Networks for the provision of supply.

- 2. Construct the reticulation sewer 'C'-B' as shown.
3. Construct new pumping main 'A'-B' (100mm. PVC-O Class PN 16 pipe).
4. Construct new pumping main 'C'-D' (150mm. PVC-O Class PN 16 pipe).
...
8. Abandon existing sewer 'E'-F' (Connection to existing Private Tankering Sump)
Seal branch of abandoned sewer from within Control M.H. at 'E'.
Excavate and remove entire sewer from 'E'-F'.

*Constructor shall be accredited by SA Water to undertake this work.

WORK BY DEVELOPER AT DEVELOPERS EXPENSE

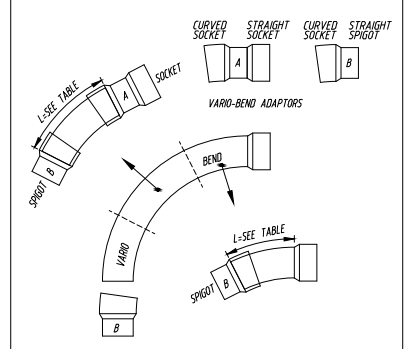
- 1. Abandon existing Private Tankering Sump at 'F'.
All existing sewage within the abandoned Private Tankering Sump is to be captured and removed from the site without any spillage.
Remove cover slab and top 750mm of Private Tankering Sump and backfill with cement treated sand.
Backfill from top of sump to natural surface level with suitable material in accordance with SCM Section G to match the existing site and conditions.

CONNECTIONS

- Connection to future lot 5002 to be 150mm
Connections are to be constructed similar to SCM K3 & K4. Unless Noted Otherwise.
Connection to future lot 5002 to be laid under the 650mm water main with jump up at boundary similar to SCM K6

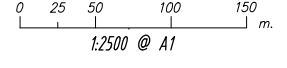
'VARIO-BEND' CUTTING TABLE

Table with columns: DEFLECTION (DEGREES, %), LENGTH (mm) (HORIZ./VERT. BEND, R=3000mm, R=635mm, L=12.5mm PER 1°), and other technical details.



NOTES:
(1) POSSIBLE VARIO-BEND ALTERNATIVES USING THE TWO ADAPTORS:
- SOCKET/SPIGOT BEND
- SOCKET/SOCKET BEND
- SPIGOT/SPIGOT BEND
(2) BEND CONFIGURATION:
PIPES SHALL BE LAID FROM THE DOWNSTREAM END OF THE SYSTEM, WITH THE SOCKET ENDS FACING UPGRADE. WHERE POSSIBLE, BENDS CONFIGURATIONS SHALL BE CONSISTENT WITH THIS APPROACH
(3) BEND RADII:
- HORIZONTAL/VERTICAL BENDS RADIUS=3000mm (TO CENTERLINE)
- HORIZONTAL BEND IMMEDIATELY UPSTREAM OF MS RADIUS=635mm (TO CENTERLINE)

LOCALITY PLAN



EXISTING SERVICES

- Prior to commencing any construction works, the constructor shall locate and depth all other existing underground services in vicinity of works.
It shall be noted that there may be other existing underground services in the vicinity of works other than those shown on these drawings.
It shall be the constructor's responsibility to determine if other underground services are present and have all services located and depthed prior to commencing works.

FITTING SCHEDULE

Table with columns: LINE No./DIST, DEF.L ANGLE, FITTING TYPE. Lists various fittings like PUMP SUMP, CONTROL M.H., M.S. 225, etc.

NOTES:
1. The larger R=3000mm bend shall be used for all bends except where used in conjunction with a maintenance shaft.

AS CONSTRUCTED DETAILS table with columns: Soil, Watertable, Date of Construction, Field Check, Bedding, and Certified by.

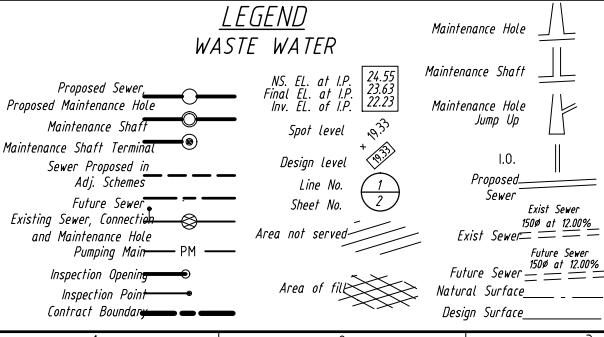


Table with columns: Sheet No, Length, Prog. Total, Pipe Description, Easement Or Land To Be Acquired, Reference For Acquisition, Special Conditions, Signature & Date.

LEGEND
H.Bend = Horizontal Vario-bend
V.Bend = Vertical Vario-bend
MSE = Maintenance Shaft Elbow
MSJ = Maintenance Shaft Junction
MST = Maintenance Shaft Terminal
MS = Maintenance Shaft
MH = Maintenance Hole
IO = Inspection Opening

Standard SA Water Notes:
All connections to be 9100mm UNO
All easements to be 3m wide UNO
Sewer to be located centrally in easement UNO
Connection Locations refer SCM page K1
All connections to be laid similar to K3 & K4 UNO
All lines are available both sides UNO

AUTHORIZATION
Signature: / /
Date: / /
Name: CHARTERED ENGINEER

WALLBRIDGE & GILBERT
Consulting Engineers
JOB NO DESIGN DRAWN CHECKED DIRECTOR
WADD1993 GPB GPB AL DB

GAWLER EAST EAST RIDING SEWER AND PUMPING MAIN IN CALTON ROAD AND SA WATER LAND LOCATION PLAN. Includes SA Water logo, drawing number 90002/15, and sheet number 1 OF 10.

The accuracy of the information shown here is not guaranteed and no responsibility is accepted by the Crown SA Water or their officers, agents or servants for any loss of damages caused by negligence or otherwise. Standard SA Water Notes of an error and/or omission or misdescription hereon, whether caused by negligence or otherwise.

BAR CODE



Existing Springwood Development Site

Water Main

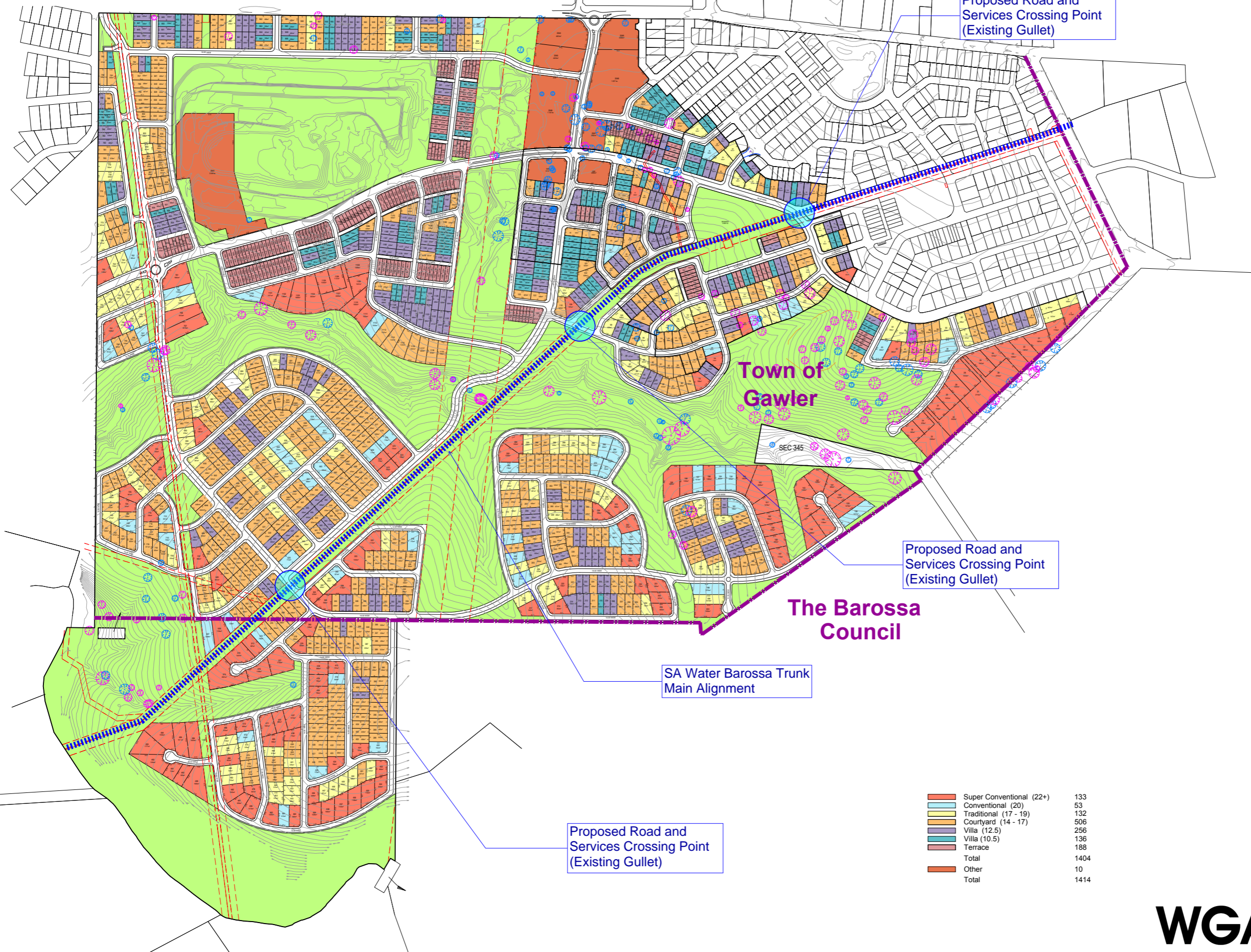
—

Springwood Development Site

Barossa Trunk Main

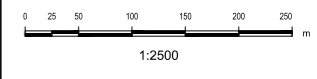


Existing SA Water Barossa Trunk Main Alignment Through the Springwood Development



Development No. / /
Town of Gawler
Development No. / /
The Barossa Council

Proposed Plan of Division
Allotment 2 in F7765
Allotment 1 in F13468
Allotment 9010 & 9011 in D114845
Allotment 7030 in D119118
Allotment 4 in D28814
Hundred of Barossa
in the area named
GAWLER EAST & KALBEEBA
CT 6186896 CT 6205146
CT 6186249 CT 6162334
CT 6184173 PT CT 6212430



Town of
Gawler

The Barossa
Council

SA Water Barossa Trunk
Main Alignment

Proposed Road and
Services Crossing Point
(Existing Gullet)

Proposed Road and
Services Crossing Point
(Existing Gullet)

Proposed Road and
Services Crossing Point
(Existing Gullet)

Super Conventional (22+)	133
Conventional (20)	53
Traditional (17 - 19)	132
Courtyard (14 - 17)	506
Villa (12.5)	256
Villa (10.5)	136
Terrace	188
Total	1404
Other	10
Total	1414

No. of proposed allotments	1414
Total area	186.1ha
Reserve area	73.57ha
Length of new roads	20.15k

Contour interval 2m.
Datum AHD.

Vide Titles for disposition of easements.

Road pavements shown are indicative only.

****Not to be used for detailed engineering design.****

Dimensions and areas are subject to survey.

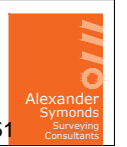
REF:	A010816
DWG NO.:	A010816-CG OVERALL REV B
REVISION:	B
DEL:	5.06.2019

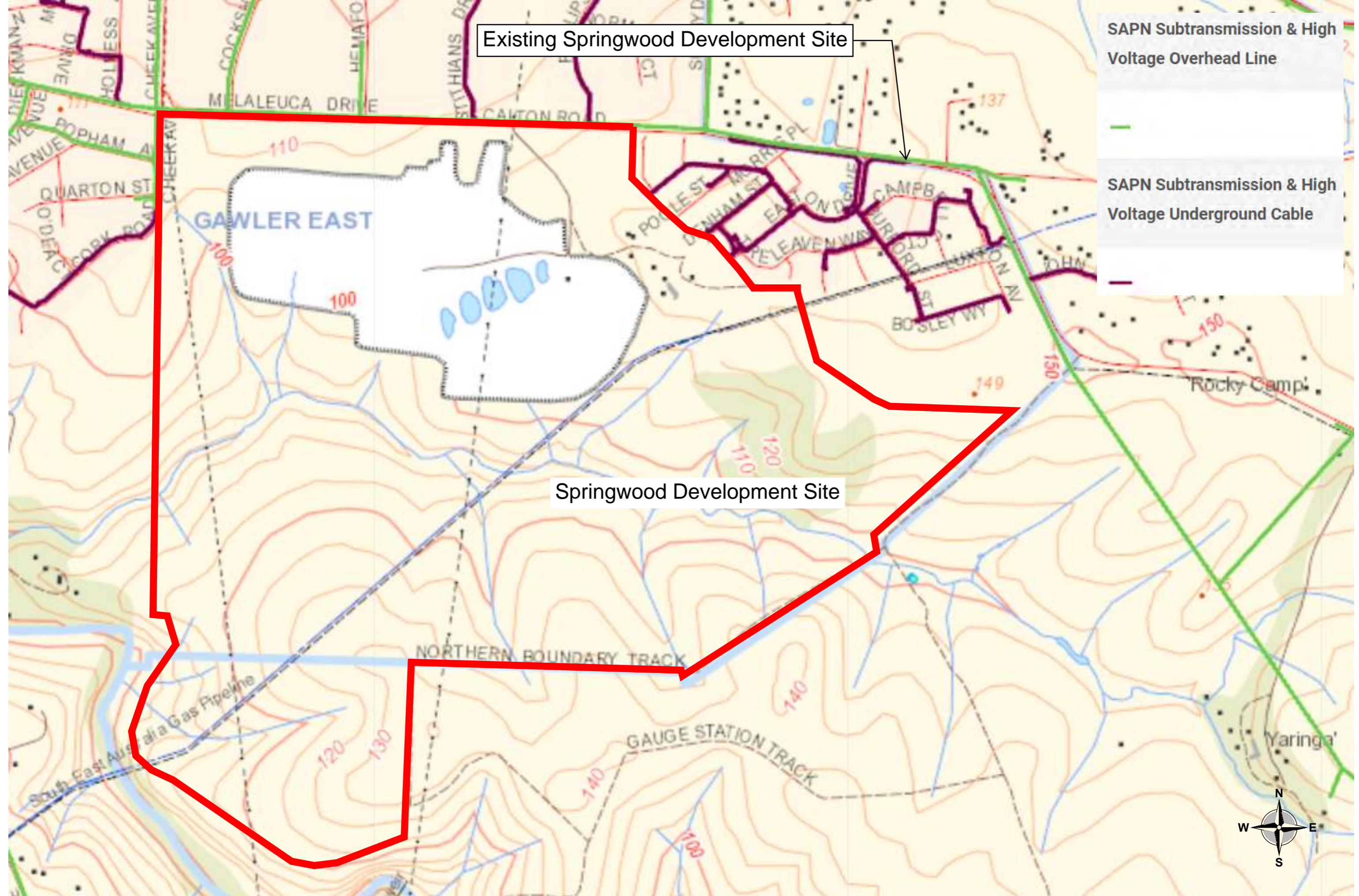
© ALEXANDER & SYMONDS PTY LTD Original Sheet Size A0
Glenn Ian Hordacre
LICENSED SURVEYOR

Alexander & Symonds Pty Ltd
11 King William Street Kent Town,
South Australia 5067
PO Box 1050 North Town, SA 5071
DX 209 AHN 93007 753 988

T (08) 8330 1466
F (08) 8362 0099
W www.alexander.com.au
E adelaide@alexander.com.au

+ Property + Land + Planning + Construction + Spatial Information



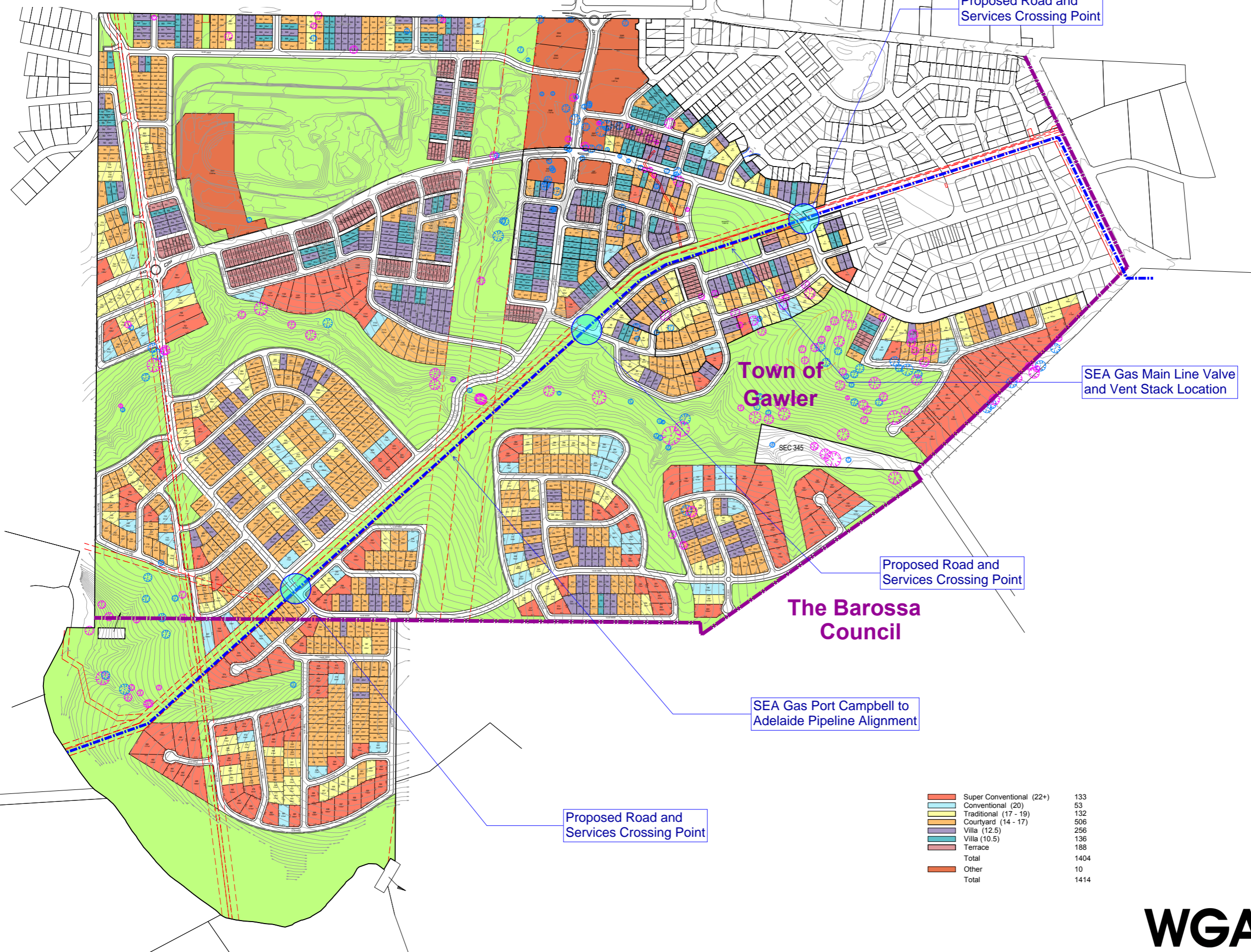


Existing Springwood Development Site

Springwood Development Site

- SAPN Subtransmission & High Voltage Overhead Line
- SAPN Subtransmission & High Voltage Underground Cable

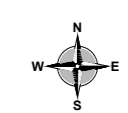
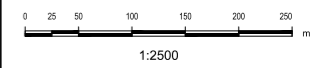
Existing SEA Gas Port Campbell to Adelaide Pipeline Alignment Through the Springwood Development



Development No. / /
Town of Gawler

Development No. / /
The Barossa Council

Proposed Plan of Division
Allotment 2 in F7765
Allotment 1 in F13468
Allotment 9010 & 9011 in D114845
Allotment 7030 in D119118
Allotment 4 in D28814
Hundred of Barossa
in the area named
**GAWLER EAST
& KALBEEBA**
CT 6166/896 CT 6255/146
CT 6168/249 CT 6162/334
CT 6164/173 PT CT 6212/430



Super Conventional (22+)	133
Conventional (20)	53
Traditional (17 - 19)	132
Courtyard (14 - 17)	506
Villa (12.5)	256
Villa (10.5)	136
Terrace	188
Total	1404
Other	10
Total	1414

No. of proposed allotments	1414
Total area	186.1ha
Reserve area	73.57ha
Length of new roads	20.15k

Contour interval 2m.
Datum AHD.

Vide Titles for disposition of easements.
Road pavements shown are indicative only.
Not to be used for detailed engineering design.

Dimensions and areas are subject to survey.

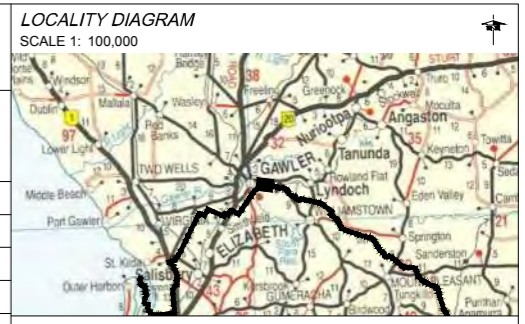
© ALEXANDER & SYMONDS PTY LTD Original Sheet Size A0
Glenn Ian Hordacre
LICENSED SURVEYOR

REF: A010816
DWG NO.: A010816-CG OVERALL REV B
REVISION: B
DEL: 5.06.2019

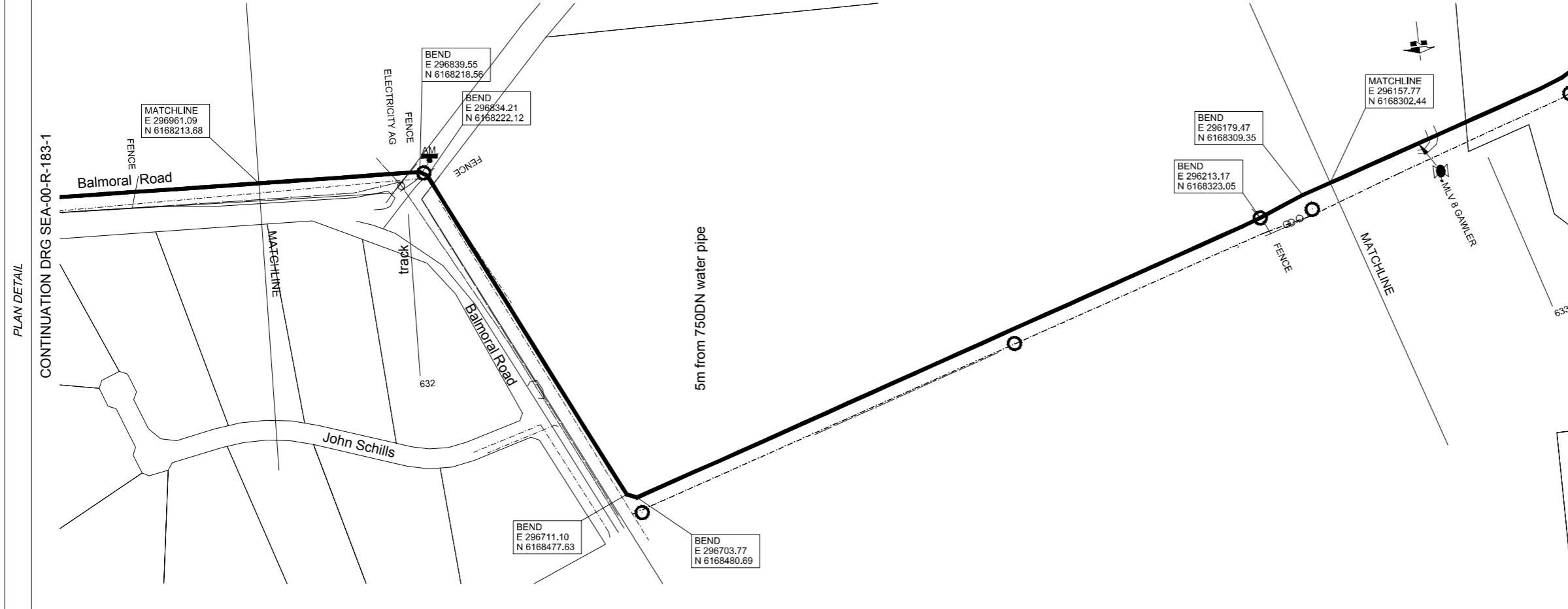
Alexander & Symonds Pty Ltd
11 King William Street Kent Town,
South Australia 5067
PO Box 1050 North Town, SA 5071
DX 209 AHN 93007 753 988
T (08) 8330 1666
F (08) 8362 0099
W www.alexander.com.au
E adelaide@alexander.com.au



PROPERTY	OWNER DETAILS	CT555600 SA229 D G*LAW-SMITH	CT5254989 SA231 H D*AMES & ORS
	R.O.W. SCHEMATIC		



ENVIRONMENTAL	FLORA/FAUNA MGT	
	WEED MGT	
	DISEASE MGT	
	SOILS MGT	
	HERITAGE MGT	



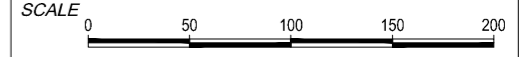
POINT NUMBER	CODE	DRAWING NUMBER	WALL THICK	DEPTH COVER	COATING	OFFSETS		MARKER TAPE	OFFSETS	
						US	DIS		US	DIS
43291	EL a	SEA-99-C-014	10.1	1200	1.275 Tril			ConcSlab		

POINT NUMBER	CODE	DRAWING NUMBER	OFFSET	TYPE CODE	CP NO.	TYPE DESC.

SURVEY	FEATURE	CODE	POINT NUMBER	MEASURED DIST (MD)
			EL a	43291
		FN	43289	632.005
		FN	43290	632.026

DESIGN	DEFLECTION ANGLE	POINT NUMBER	MEASURED DIST (MD)
		31418928"	13776
	3064247"	13780	632.017
	4002903"	13781	632.301
	4005004"	13782	632.309
		13783	632.809
		13784	632.824
		13785	632.843
		13786	632.861

ENGINEERING	APPURTENANCE	WALL THICKNESS	DEPTH OF COVER MINIMUM (mm)	COATING	MARKER TAPE	PIPE LOCATION CLASS
		10.1	1200	1.275 Trilam	Marker tape	
		12.1	1300	Trilaminate	Concrete slab	
		10.1	1200	1.275 Trilam	Marker tape	
		12.1	1300	Trilaminate	Marker tape	
		10.1	1200	1.275 Trilam	Marker tape	R2



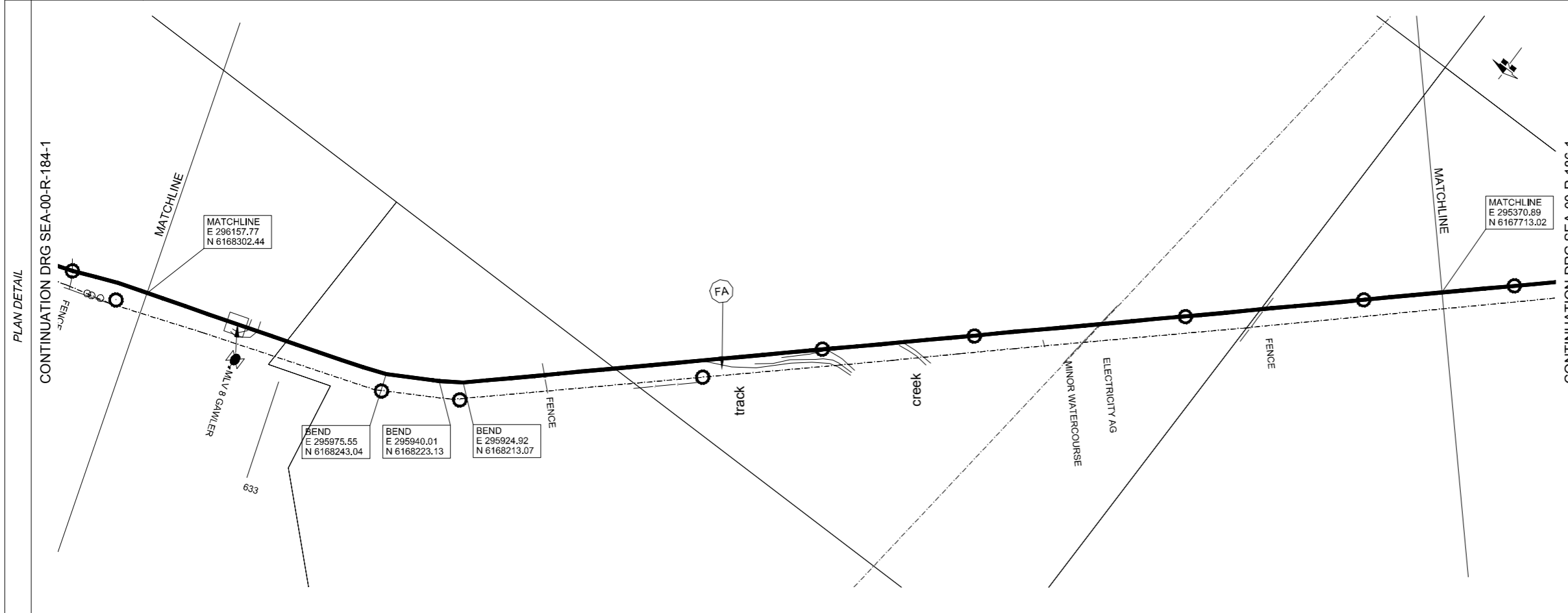
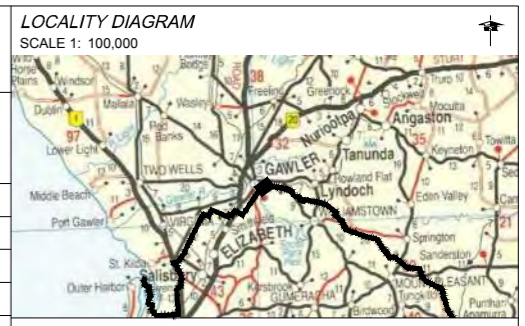
REV	DATE	DESCRIPTION	DRN	CHK	QA
4	19/08/04	GENERAL PLAN UPDATES	KAJ	SJR	MHD
3	20/01/04	AS BUILT DATA ADDED	KAJ	SJR	MHD
2	25/03/03	POST-RISK ASSESSMENT	KAJ	SJR	MHD
1	07/03/03	ENGINEERING RE-DESIGN	KAJ	SJR	MHD
0	03/12/02	PRE RISK ASSESSMENT	KAJ	SJR	MHD
A	17/10/02	ISSUED FOR DISCUSSION	SJR	MHD	FYF

PIPELINE ALIGNMENT PLAN SHEET 184 OF 242 PORT CAMPBELL to ADELAIDE PIPELINE		
DRN	SJR	KP RANGE 629.625 - 630.625
DGN	KBR	MEASURED DIST 631.889 - 632.884
CHK	JJB	SCLJV APPROVAL - SPIE
QA	MHD	DRAWING No.
DATE	19/08/04	SEA-00-R-184-1
		REV 4

SCALE	MEASURED DIST	631.889	632.0	632.5	632.884
	DESIGN KP SCALE	629.625	630.0	630.5	630.625

DESIGN KP = MEASURED DIST - 2.264

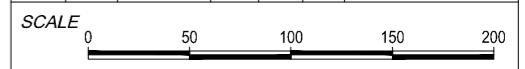
PROPERTY	OWNER DETAILS	CT5254989 SA231 H D'AMES & ORS	CT5866534 SA232 CSR READYMIX PTY LTD	CT5254893 SA231 H D'AMES & ORS	CT5214198 SA233 M M'AMES
	R.O.W. SCHEMATIC				
ENVIRONMENTAL	FLORA/FAUNA MGT	Native Vegetation			
	WEED MGT				
	DISEASE MGT				
	SOILS MGT	Watercourse (permit)			
	HERITAGE MGT				



POINT NUMBER	CODE	DRAWING NUMBER	WALL THICK	DEPTH COVER	COATING	OFFSETS		MARKER TAPE	OFFSETS	
						US	DIS		US	DIS
80992	WC		10.1	1400	1.275 Tr			Nil		
43308	EL a	SEA-99-C-014	10.1	1300	1.275 Tr			Nil		

POINT NUMBER	CODE	DRAWING NUMBER	OFFSET	TYPE CODE	CP NO.	TYPE DESC.
82278		SEA-99-E-018		FA		Potential measurement test point

SURVEY	FEATURE	
	CODE	
	POINT NUMBER	
DESIGN	MEASURED DIST (MD)	633.196 43306 FN
	DEFLECTION ANGLE	
	POINT NUMBER	
ENGINEERING	MEASURED DIST (MD)	633.057 13787 2d2429" 633.075 13788 8d58'47" 633.116 13789 4d53'14" 633.134 13790 8d16'41"
	APPURTENANCE	MLV 8 (FA)
	WALL THICKNESS	10.1 12.1 10.1 12.1 10.1 12.1 10.1 12.1
SCALE	DEPTH OF COVER MINIMUM (mm)	1300 1400 1200 1400 1300 1400 1500 1600 1500 1600 1400 1600 1400 1600 1500 1600 1200 1300 1500 1600 1200 1400 1300 1200 1300 1200
	COATING	1.275 Trilam Trilaminate 1.275 Trilam
	MARKER TAPE	Nil
	PIPE LOCATION CLASS	R2 T1
	MEASURED DIST	632.884 633.0 631.0 633.5 631.5 633.880 631.625



REV	DATE	DESCRIPTION	DRN	CHK	QA
4	19/08/04	GENERAL PLAN UPDATES	KAJ	SJR	MHD
3	20/01/04	AS BUILT DATA ADDED	KAJ	SJR	MHD
2	25/03/03	POST-RISK ASSESSMENT	KAJ	SJR	MHD
1	07/03/03	ENGINEERING RE-DESIGN	KAJ	SJR	MHD
0	03/12/02	PRE RISK ASSESSMENT	KAJ	SJR	MHD
A	17/10/02	ISSUED FOR DISCUSSION	SJR	MHD	FYF

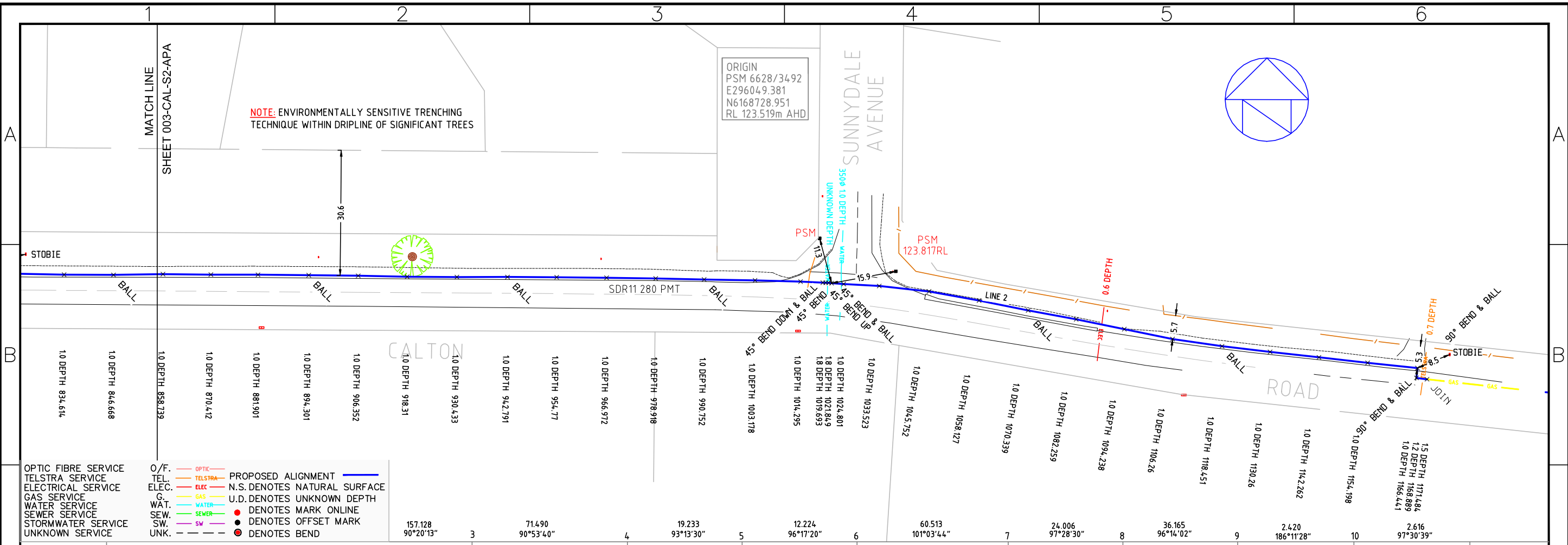
Spie Capag Australia Pty

 SCLJV Spie Capag / Lucas JV

 Spie Capag s.a.

PIPELINE ALIGNMENT PLAN
SHEET 185 OF 242
PORT CAMPBELL to ADELAIDE PIPELINE

DRN	SJR	KP RANGE	630.625 - 631.625
DGN	KBR	MEASURED DIST	632.884 - 633.880
CHK	JJB	SCLJV APPROVAL - SPIE	
QA	MHD	DRAWING No.	SEA-00-R-185-1
DATE	19/08/04	REV	4



DEFLECTION ANGLES		RIGHT 0.5° NON STANDARD	RIGHT 2.3° NON STANDARD	RIGHT 3.1° NON STANDARD	RIGHT 4.8° NON STANDARD	LEFT 3.6° NON STANDARD	LEFT 1.3° STANDARD	RIGHT 90° STANDARD	LEFT 90° STANDARD	JOIN
BEND MGA 94 COORD. ZONE 54		E295973.209 N6168719.518	E296044.690 N6168718.402	E296063.893 N6168717.320	E296076.043 N6168715.981	E296135.432 N6168704.370	E296159.234 N6168701.247	E296195.185 N6168697.320	E296194.924 N6168694.914	E296197.083 N6168694.638

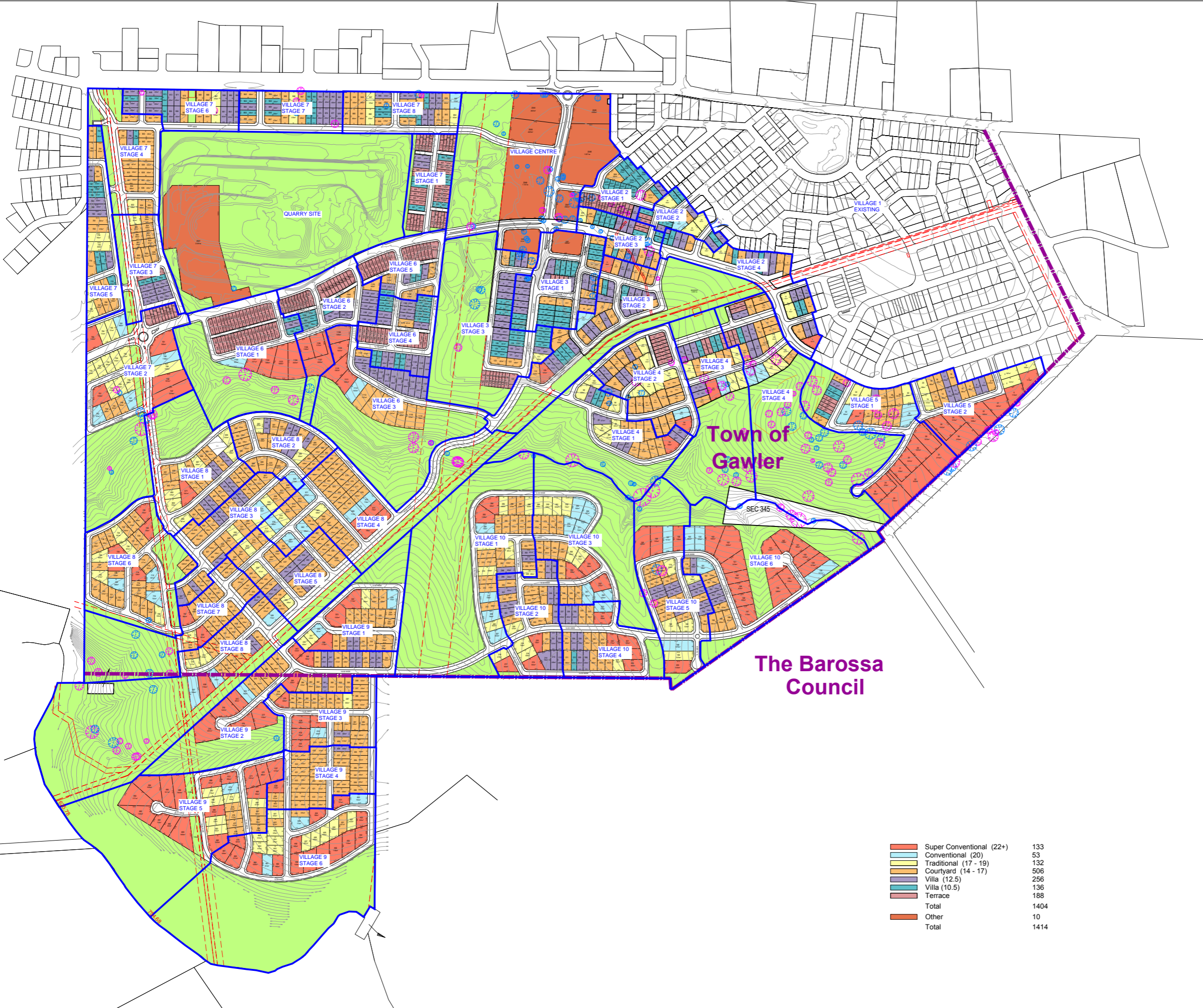
CHAINAGE	ELEVATION	DESCRIPTION
858.739	119.621	SN
870.412	119.646	SN
881.901	119.687	SN
894.301	119.818	BALL
906.352	119.973	SN
918.31	120.124	SN
930.433	120.36	SN
942.791	120.728	BALL
954.77	121.031	SN
966.972	121.426	SN
978.918	121.791	SN
990.752	122.265	BALL
1003.178	122.746	SN
1014.295	123.241	SN
1019.693	123.509	45° V BEND
1020.420	123.552	45° V BEND
1021.150	123.595	45° V BEND
1021.849	123.637	45° V BEND
1024.801	123.741	SN
1033.523	124.019	SN
1045.752	124.241	SN
1058.127	124.733	SN
1070.339	124.991	SN
1082.259	125.329	SN
1094.238	125.458	SN
1106.26	125.653	SN
1118.451	125.68	BALL
1130.26	125.642	SN
1142.262	125.436	SN
1154.198	125.224	SN
1166.441	124.949	90° BEND
1168.889	125.061	90° BEND
1171.484	124.98	END CAP

REV.	DESCRIPTION	DATE	SURVEY	DRAWN	CHECKED	APPROVED	SURVEY BY:	THIS DRAWING REMAINS THE SOLE PROPERTY OF APT O&M SERVICES PTY.LTD. ANY UNAUTHORISED USE IN FULL OR PART THEREOF WITHOUT THE WRITTEN PERMISSION OF THE COMPANY WILL RESULT IN LEGAL ACTION	APA Group APT O&M Services Pty Ltd A.B.N. 11 112 358 586	Envestra Investing in energy infrastructure A.B.N. 19 078 551 685	TITLE: AS CONSTRUCTED SURVEY CALTON ROAD GAWLER EAST NVEST 280 PMT
0	PROPOSED ALIGNMENT	28.06.2012					ENGINEERING SURVEYS PTY LTD Tel: +61 8 8340 4469 www.engsurveys.com.au				SHEET 004 OF 004
1	0.4m SHIFT IN ALIGNMENT AND SURVEY MARKS ADDED	09.08.2012	MB	SJC		D. ENGLAND					METREAGE 858.3 TO METREAGE 1171.4
2	CHANGE IN ALIGNMENT (BEND 9-12) TO AVOID RECENT TRENCH	14.01.2013	SJC	SJC							
3	AS CONSTRUCTED	23.05.2013	PMP	PMP							

MAP: 24-C	SCALE: A3 1:1000	DATE: 28/06/2012	DESIGNED:	DRAWN:	CHECKED:	APPROVED:	W/O No. 578907	DRG. No. 004-CAL-S2-APA	A3
-----------	------------------	------------------	-----------	--------	----------	-----------	----------------	-------------------------	----

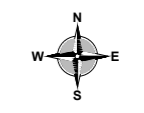
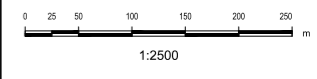
APPENDIX C

STAGING PLAN



Development No. / /
 Town of Gawler
 Development No. / /
 The Barossa Council

Proposed Plan of Division
 Allotment 2 in F7765
 Allotment 1 in F13468
 Allotment 9010 & 9011 in D114845
 Allotment 7030 in D119118
 Allotment 4 in D28814
 Hundred of Barossa
 in the area named
**GAWLER EAST
 & KALBEEBA**
 CT 6186896 CT 6205146
 CT 6186249 CT 6162334
 CT 6184173 PT CT 6212430



**Town of
 Gawler**

**The Barossa
 Council**

Super Conventional (22+)	133
Conventional (20)	53
Traditional (17 - 19)	132
Courtyard (14 - 17)	506
Villa (12.5)	256
Villa (10.5)	136
Terrace	188
Total	1404
Other	10
Total	1414

No. of proposed allotments	1414
Total area	186.1ha
Reserve area	73.57ha
Length of new roads	20.15k

Contour interval 2m.
 Datum AHD.

Vide Titles for disposition of easements.

Road pavements shown are indicative only.
 Not to be used for detailed engineering design.

Dimensions and areas are subject to survey.

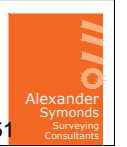
© ALEXANDER & SYMONDS PTY LTD Original Sheet Size A0
Glenn Ian Hordacre
 LICENSED SURVEYOR

REF:	A010816
DWG NO.:	A010816-CG OVERALL REV B
REVISION:	B
DEL:	6.06.2019

Alexander & Symonds Pty Ltd
 11 King William Street Kent Town,
 South Australia 5067
 PO Box 1050 Kent Town, SA 5071
 DX 209 AHN 93007 753 988

T (08) 8330 1666
 F (08) 8362 0099
 W www.alexander.com.au
 E adelaide@alexander.com.au





+ Property + Land + Planning + Construction
 Spatial Information



APPENDIX D

SERVICES MASTER PLANS






LEGEND:	
EXISTING SEWER GRAVITY MAIN	
EXISTING SEWER PUMPING MAIN	
POTENTIAL GRAVITY SEWER MAIN	
POTENTIAL SEWER PUMP STATION LOCATION	





LEGEND:

EXISTING POTABLE WATER MAIN	
LINK ROAD 250mm TRUNK MAIN	
PROPOSED 250mm TRUNK MAIN LINK	
PROPOSED INTERNAL RETICULATION NETWORK	