



SEALING OF UNSEALED ROADS WITHIN BUILT-UP AREAS

Copper Coast Council



Document History and Status

Rev	Description	Author	Reviewed	Approved	Date
A	Draft for Council	AA	TN	CEO/Council	
B	Updates following Council review	AA	TN	CEO/Council	

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1. Introduction

The purpose of this plan is to set guidelines for the management of unsealed urban roads within the Copper Coast Region. A built-up/urban road refers to a road surrounded by residential, commercial or industrial buildings, usually contains speed zones of 40-60km and is defined within the town boundaries.

This plan is to be read in conjunction with the following associated Council documents:

- Copper Coast Council Infrastructure & Asset Management Plan 2017-2027
- 5 Year Transport Plan
- 5 Year Stormwater Management Plan
- 5 Year Sealed Footpath Plan

This plan has been prepared to demonstrate Council's aim, over a 5 year view, to seal, unsealed roads, by the way of priority within the townships of Kadina, Moonta, Port Hughes, Paskeville, and Wallaroo.

Years 2021/2025 are to be determined once individual road assessments are undertaken using the criteria set out within this document.

Each road will be inspected monthly over summer and winter across the next 12 months. Data such as dust, corrugation, potholing, rutting and moisture content will be recorded.

As a result, Copper Coast Council staff will monitor the performance of the following council roads:

Table 1: Moonta & Port Hughes List

Road ID	Road Name	Length (m)
289	Wilkinson Street	631
820	Gilbert Street	75
828	St Andrews Drive	134
839	Goldsworthy Road	270
919	Wedge Road	865
920	Wedge Road	535
921	Wedge Road	164
926	Retallick Road	866
1249	Beare Road	278
1250	Beare Road	267
1251	Glover Street	182
1285	Monmouth Street	167
1288	Monmouth Street	338
1289	Moonta Road	458
1290	Moonta Road	371
1291	Moonta Road	226
1331	Moonta Road	225
1332	Moonta Road	382
1333	Moonta Road	459
1334	Cambridge Street	222
1341	Carlisle Street	430
1347	Andrew Street	315
1348	Moonta Road	954
1349	Fuss Street	80
1350	Fuss Street	389

1351	Chapman Road	558
1430	Rossiters Road	801
1431	Tank Road	235
1511	Tank Road	850
1342	East Terrace	1700

Table 2: Kadina list

Road ID	Street Name	Length (m)
337	Unnamed Road A	413
338	Datson Road	746
342	Recreation Road	73
343	Recreation Road	220
595	No 3 Lane	147
596	No 3 Lane	112
597	No 3 Lane	124
599	No 3 Lane	83
600	No 3 Lane	85
601	No 3 Lane	84
602	No 3 Lane	86
608	No 3 Lane	86
609	No 4 Lane	113
611	No 4 Lane	93
612	No 4 Lane	28
613	No 4 Lane	84
614	No 4 Lane	85
615	No 4 Lane	86
697	No 5 Lane	49
844	Daly Street	279
848	Creswell Terrace	283
849	Young Street	200
852	Dalrymple Street	73
853	Constable Street	211
854	Flinders Street	79
856	Young Street	76
865	Haynes Street	580
866	West Lake Street	93
868	Hargrave Street	311
869	Hargrave Street	127
872	Raymond Street	103
873	Raymond Street	105
874	Raymond Street	107
875	Dangerfield Street	148
877	Lukeman Street	153
878	Lukeman Street	133
879	Lukeman Street	137
881	Stagg Street	129
882	Stagg Street	284
1023	Walter Road	263
1024	Walter Road	192

1025	Franklin Road	318
1026	Franklin Road	193
1027	Barkla Road	388
1031	Robinson Road	182
1032	Robinson Road	151
1033	Robinson Road	283
1035	Unnamed Road 8	216
1036	Walter Road	136
1037	Musgrave Terrace	514
1040	Stirling Terrace	130
1041	Stirling Terrace	455
1049	Paulson Road	343
1051	West Terrace	118
1052	West Terrace	175
1090	No 5 Lane	85
1091	No 5 Lane	85
1138	Martin Terrace	112
1139	Martin Terrace	617
1154	Clare Street	130
349	Brittain Road	640

Table 3: Wallaroo list

Road ID	Street Name	Length (m)
310	Stanyer Lane	68
330	Gouge Street	230
622	Thorne Street	102
624	Thorne Street	117
625	Thorne Street	55
626	Thorne Street	56
627	Thorne Street	42
628	Thorne Street	66
632	Beaton Street	68
1189	Harbison Road	393

Table 4: Paskeville list

Road ID	Street Name	Length (m)
1526	Railway Terrace	485
1527	Second Street	122
1528	Fifth Street	242
1529	School Terrace	230
1542	Sixth Street	76
1545	Second Street	95
1546	Third Street	56

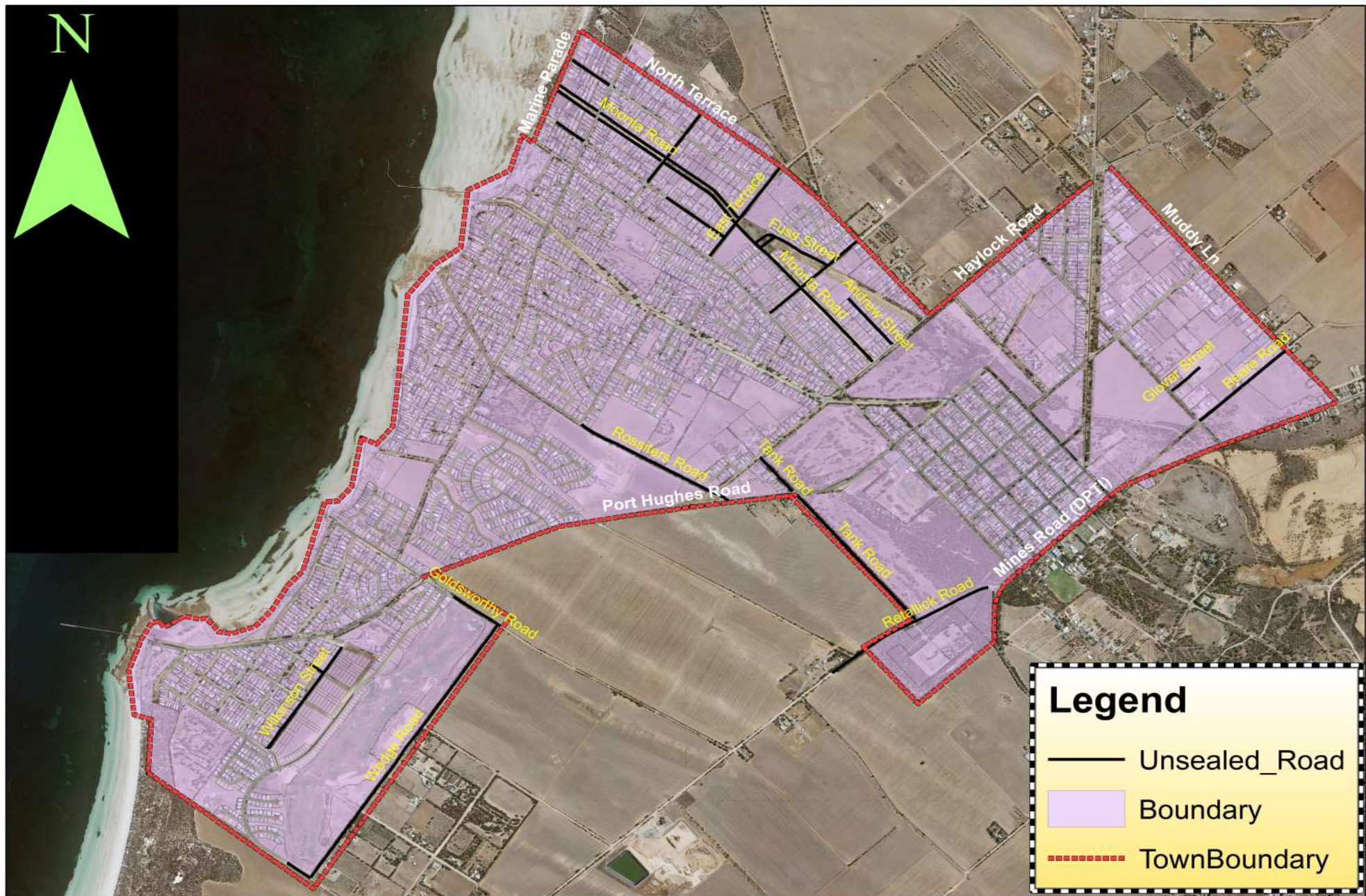


Image 1: Unsealed roads within townships of Moonta and Port Hughes

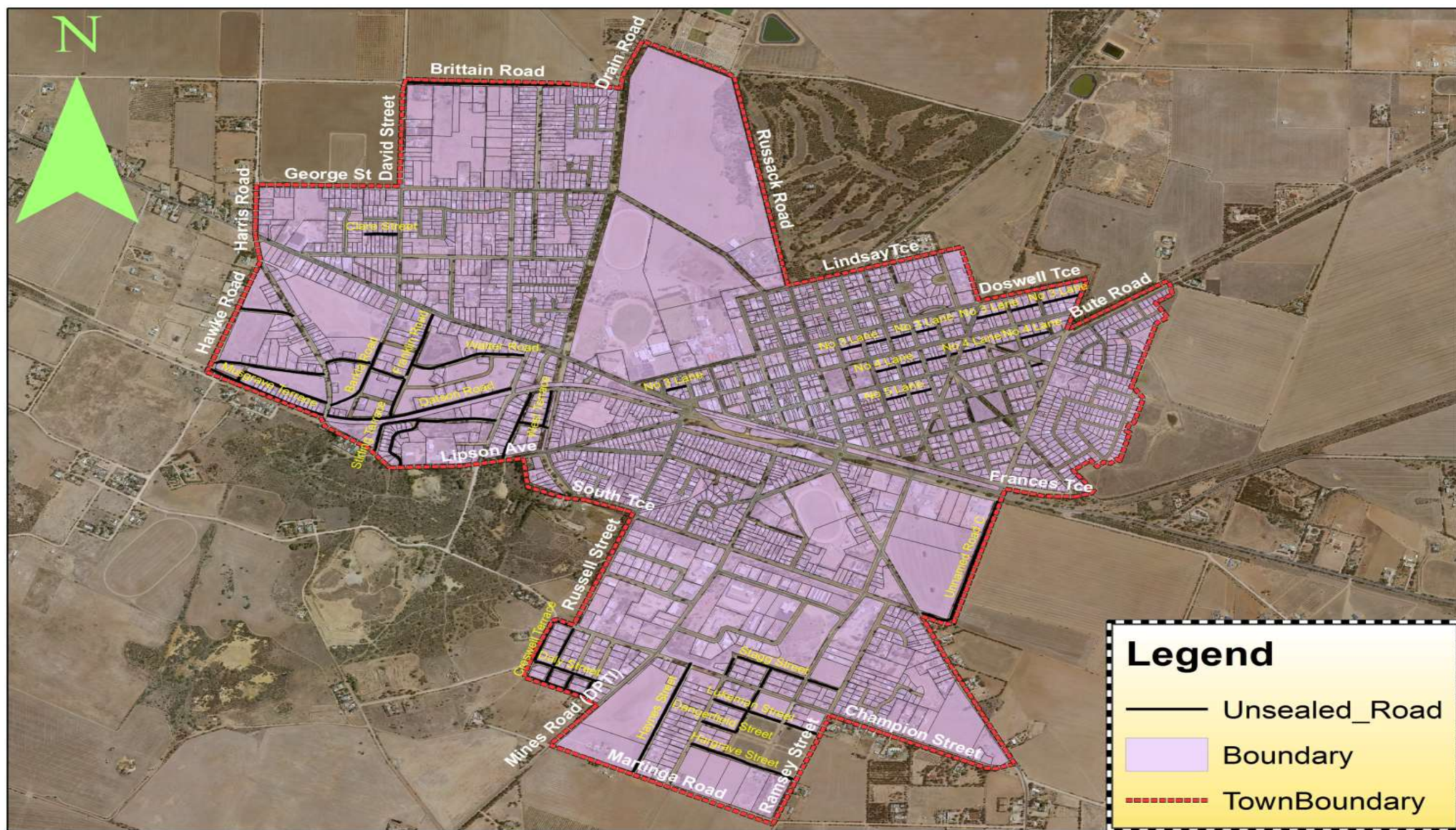


Image 2: Unsealed roads within township of Kadina

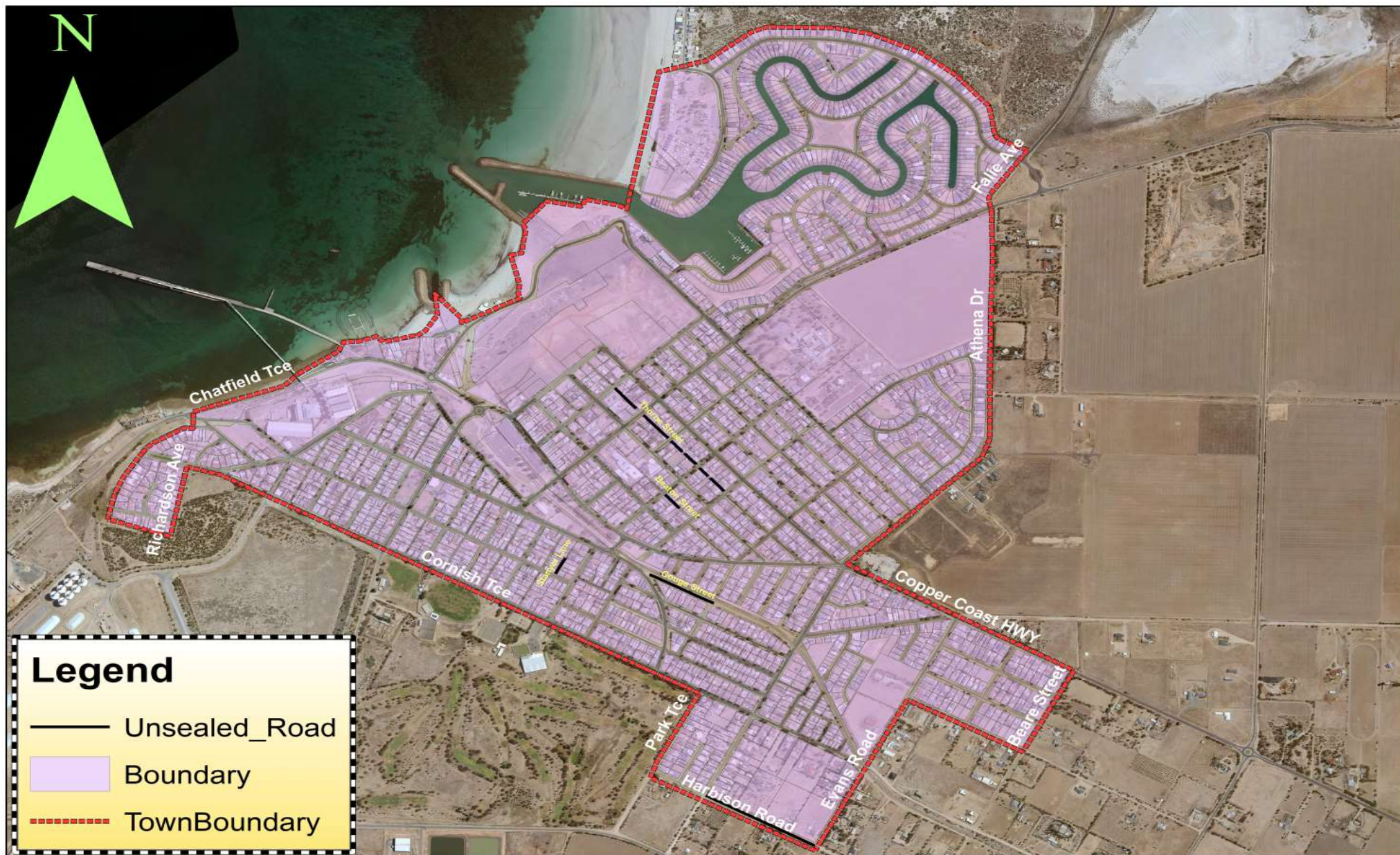


Image 3: Unsealed road within township of Wallaroo



Image 4: North Beach township (no unsealed road within North Beach)



Image 5: Unsealed road within township of Paskeville

2. Process

All unsealed roads within built-up areas will be assessed against the numerical scoring system set out in *item 3 - Assessment*. Roads reaching the maximum score will be added to the works schedule for consideration of sealing in the future works programs.

3. Assessment

A comprehensive survey of all unsealed roads will be undertaken. Information on approximate traffic volumes, road safety, drainage, pavement condition, total number of residents, maintenance issues and cost, bicycle and pedestrian level of service, and strategic significance will be recorded. In addition, customer service requests in the past will be taken into consideration to confirm whether the subject road needs major upgrade.

Adopted criteria and weightings for the assessment are including:

Criteria	Maximum Score	Scoring Points
Traffic Volumes	7	0 points 0-50 vehicle/s per day (vpd) 1 point 50-100 vpd 2 points 100-150 vpd 3 points 150-200 vpd 4 points 200-250 vpd 6 points greater than 250 vpd Add one additional point for more than 10% commercial vehicles
Benefits to community (Strategic Significance)	6	0 points (No Through Roads <80m) 2 points (No Through Roads >80m) 4 points (Local Roads) 6 points (Collector Roads)
Maintenance cost and effort prior to upgrade	5	1 low 2 3 Medium 4 5 High
Safety Consideration Actual accidents	8	1 point per recorded accident
School bus route	2	Add 1 point if school bus route
Number of houses	6	Number of houses divided by number of blocks (Length of street will be considered),
Neighbourhood concerns	5	1-5 points Issues to be considered: <ul style="list-style-type: none">• Serious health issues e.g. asthma, heart issues• Dust effect on business• Past customer request
Bicycle and pedestrian route	3	1-3 Whether road can provide access to a key centre e.g. town centre, shops, recreational activities etc.

4. Special Circumstances

If a road does not meet the criteria for sealing, Council may contribute 50% of the cost of sealing of appropriate lengths of previously unsealed urban roads. However, this will be subject to the availability of finance and if landowners are prepared to contribute their portion of the 50% of the cost of the works in accordance with Councils Upgrade of Roads Policy.

5. Plan for the future

Council will be unable to seal all unsealed roads in the built-up zone in the next five years due to the large number of them. As a result, the roads indicated below have been removed from the list; however, they will be added in the future if funding is available.

- All laneways, since they serve less than 30 cars per day and service solely to residents whose main entrance is from the lane way.
- Some of the houses are accessible through two roads, such as Gouge Street in Wallaroo. Roads where residents who have access to at least one sealed road have been removed from the list.
- Some of our roads have no dwellings or only a few houses, such as Constable Street in Kadina and Barkla Road in Wallaroo Mines.

The table below shows the final list of roads that would highly benefit the community if they were sealed, pending budget availability.

Moonta and Port Hughes

Road ID	Street Name	Length (m)	Average daily traffic	Average daily traffic score	Benefits to community score	Maintenance cost & effort prior to upgrade score	Safety consideration score	School bus route score	Number of houses score	Neighbourhood concerns score	Bicycle and pedestrian route score
289	Wilkinson Street	631									
820	Gilbert Street	75									
828	St Andrews Drive	134									
839	Goldsworthy Road	270									
919	Wedge Road	865									
920	Wedge Road	535									
921	Wedge Road	164									
926	Retallick Road	866									
1249	Beare Road	278									
1250	Beare Road	267									
1251	Glover Street	182									
1285	Monmouth Street	167	70	1	4	4	0	0	5	4	1
1288	Monmouth Street	338	70	1	4	4	0	0	5	4	1
1289	Moonta Road	458	110	2	6	5	0	0	4	4	1
1290	Moonta Road	371	110	2	6	5	0	0	5	4	1
1291	Moonta Road	226	110	2	6	5	0	0	4	4	1
1331	Moonta Road	225	110	2	6	5	0	0	4	4	1
1332	Moonta Road	382	110	2	6	5	0	0	5	4	1
1333	Moonta Road	459	110	2	6	5	0	0	4	4	1
1334	Cambridge Street	222	50	1	4	5	0	0	5	4	1
1341	Carlisle Street	430	90	1	6	5	0	0	5	4	0
1347	Andrew Street	315	100	2	0	4	0	0	4	3	0
1348	Moonta Road	954	110	2	6	6	0	0	4	4	0
1349	Fuss Street	80									
1350	Fuss Street	389									
1351	Chapman Road	558	70	1	6	5	0	0	4	4	0
1430	Rossiters Road	801	100	2	6	4	0	0	1	3	1
1431	Tank Road	235									
1511	Tank Road	850									
1342	East Terrace	1700	144	2	6	4	0	0	4	4	0

Kadina			Average daily traffic	Average daily traffic score	Benefits to community score	Maintenance cost & effort prior to upgrade score	Safety consideration score	School bus route score	Number of houses score	Neighbourhood concerns score	Bicycle and pedestrian route score
Road ID		Length (m)									
337		413									
338	Datson Road	746									
342	Recreation Road	73									
343	Recreation Road	220									
595	No 3 Lane	147									
596	No 3 Lane	112									
597	No 3 Lane	124									
599	No 3 Lane	83									
600	No 3 Lane	85									
601	No 3 Lane	84									
602	No 3 Lane	86									
608	No 3 Lane	86									
609	No 4 Lane	113									
611	No 4 Lane	93									
612	No 4 Lane	28									
613	No 4 Lane	84									
614	No 4 Lane	85									
615	No 4 Lane	86									
697	No 5 Lane	49									
844	Daly Street	279	75	1	6	4	0	0	3	3	0
848	Creswell Terrace	283									
849	Young Street	200	100	2	6	4	0	0	4	3	0
852	Dalrymple Street	73									
853	Constable Street	211									
854	Flinders Street	79									
850	Young Street	78	100	2	6	4	0	0	4	3	0
865	Haynes Street	580	107	2	4	3	0	0	5	3	0
866	West Lake Street	93									
868	Hargrave Street	311									

869	Hargrave Street	127										
872	Raymond Street	103										
873	Raymond Street	105										
874	Raymond Street	107										
875	Dangerfield Street	148										
877	Lukeman Street	153										
878	Lukeman Street	133										
879	Lukeman Street	137										
881	Stagg Street	129										
882	Stagg Street	284										
1023	Walter Road	263										
1024	Walter Road	192										
1025	Franklin Road	318										
1026	Franklin Road	193										
1027	Barkla Road	388										
1031	Robinson Road	182										
1032	Robinson Road	151	50	1	4	4	0	0	2	4	0	
1033	Robinson Road	283	50	1	4	4	0	0	2	4	0	
1035	Unnamed Road 8	216										
1036	Walter Road	136										
1037	Musgrave Terrace	514	58	1	4	4	0	0	5	3	0	
1040	Stirling Terrace	130	36	1	4	3	0	0	4	3	0	
1041	Stirling Terrace	455	36	1	4	3	0	0	2	3	0	
1049	Paulson Road	343										
1051	Unnamed Road C	118										
1052	West Terrace	175										
1090	No 5 Lane	85										
1091	No 5 Lane	85										
1138	Unnamed Road C	112										
1139	Unnamed Road C	617										
1154	Clare Street	130										
349	Brittain Road	640	80	1	6	5	0	1	4	4	0	

Wallaroo

Road ID	Street Name	Length (m)	Average daily traffic	Average daily traffic score	Benefits to community score	Maintenance cost & effort prior to upgrade score	Safety consideration score	School bus route score	Number of houses score	Neighbourhood concerns score	Bicycle and pedestrian route score
310	Stanyer Lane	68									
330	Gouge Street	230									
622	Thorne Street	102									
624	Thorne Street	117									
625	Thorne Street	55									
626	Thorne Street	56									
627	Thorne Street	42									
628	Thorne Street	66									
632	Beaton Street	68									
1189	Harbison Road	393									

Paskeville

Road ID	Street Name	Length (m)	Average daily traffic	Average daily traffic score	Benefits to community score	Maintenance cost & effort prior to upgrade score	Safety consideration score	School bus route score	Number of houses score	Neighbourhood concerns score	Bicycle and pedestrian route score
1526	Railway Terrace	485	80	1	6	3	0	0	4	3	0
1527	Second Street	122									
1528	Fifth Street	242									
1529	School Terrace	230									
1542	Sixth Street	76									
1545	Second Street	95									
1546	Third Street	56									

6. Final list summary

- **Moonta**

Road ID	Street Name	Length (m)	Final Score
1290	Moonta Road	371	23
1332	Moonta Road	382	23
1291	Moonta Road	226	22
1331	Moonta Road	225	22
1333	Moonta Road	459	22
1289	Moonta Road	458	22
1348	Moonta Road	954	22
1341	Carlisle Street	430	21
1342	East Terrace	1700	20
1334	Cambridge Street	222	20
1351	Chapman Road	558	20
1285	Monmouth Street	167	19
1288	Monmouth Street	338	19
1430	Rossiters Road	801	17
1347	Andrew Street	315	13

- **Kadina**

Road ID	Street Name	Length (m)	Final Score
349	Brittain Road	640	21
849	Young Street	200	19
850	Young Street	78	19
1037	Musgrave Terrace	514	17
865	Haynes Street	580	17
844	Daly Street	279	17
1032	Robinson Road	151	15
1033	Robinson Road	283	15
1040	Stirling Terrace	130	15
1041	Stirling Terrace	130	13

- **Paskeville**

Road ID	Street Name	Length (m)	Final Score
1526	Railway Terrace	485	17

According to the data analysis, residents of Wallaroo and North Beach townships have greater access to sealed roads, whereas residents of Moonta townships demand more care. This outcome is also backed by a five-year transportation plan community consultation, as seen on the next page. More than half of the comments received are from Moonta Bay residents who live on Moonta Road, Carlisle Street, Chapman Road, and Monmouth Street. Council's Stormwater Management Plan for the Townships of Moonta and Port Hughes, issued in 2013, recognises the need for stormwater infrastructure upgrades in this area. Controlling runoff is challenging in the absence of other components such as kerb, swale drain, and seal, all of which are missing in this area, but it is not impossible. Council recently (2021) completed detailed stormwater design for Moonta Road, and East Terrace. Furthermore, Council constructed a retention basin, swale drain, and underground pipe along East Terrace and Moonta Road, as well as sealed half of the East Terrace length.

The Township of Kadina's, Wallaroo Mines area has restricted access to sealed roads, with the only sealed roads being Lipson Road, Lipson Ave, and Port Road (State Government). As a result, more attention is required in this area, and community comment on the five-year transport plan supports this approach.

- Public Comment Submissions for the 5-Year Transport Plan**

Document Number	Surname	Other Names	Description	Property Address	FILE NUMBER
ILT20201891	JOHNSON	RAYLYN ANN	Public comment submission for sealing of unsealed roads in built up areas.	MOONTA ROAD MOONTA BAY 5558	18.20.2
IEM20205599	RYAN	CAROLINA	Submission on amendments to Draft 5 year Transport Plan - Carlisle Street & Moonta Road to be sealed.	MOONTA ROAD MOONTA BAY 5558	18.20.2
ILT20201958	RICHARDS	DZINTRA	Public comment submission form - Request for sealing of East Terrace, Moonta Bay.	CAMBRIDGE STREET MOONTA BAY 5558	18.20.2
ILT20201966	MAIL	CHRISTINE ELLEN	Public comment submission for Upgrade/Seal Moonta Road.	MOONTA ROAD MOONTA BAY 5558	18.20.2
IEM20205724	LUDWIG	BARBARA CAROLYN	Public Submission form--roads	CHAPPLE STREET MOONTA BAY 5558	18.20.2
IEM20205786	ALLEN	AMANDA JANE	Public comment submission - Draft Five Year Transport Plan	TANK ROAD MOONTA 5558	18.20.2
ILT20201982	HUDSON	BRONWYN LYNETTE	Response to the Draft Council 5 Year Transport Plan	MOONTA ROAD MOONTA BAY 5558	18.20.2
ILT20201983	JONES	DOROTHY ANN	Public Comment Submission Form - Bitumising of East Terrace, Moonta Bay	CAMBRIDGE STREET MOONTA BAY 5558	18.20.2
ILT20201984	DRUMMOND	MELISSA ANN	Public Comment Submission Form - Request a Sealed Road, Robinson Road, Wallaroo Mines	ROBINSON ROAD WALLAROO MINES 5554	18.20.2
ILT20201985	FRANKS	DAVID JOHN	Public Comment Submission Form - Request a Sealed Road, Robinson Road, Wallaroo Mines	ROBINSON ROAD WALLAROO MINES 5554	18.20.2
ILT20201986	MORLEY	JILL LORRAINE	Public Comment Submission Form - Request a Sealed Road, Robinson Road, Wallaroo Mines	ROBINSON STREET WALLAROO MINES 5554	18.20.2
ILT20202008	MUNDY	JAQUELINE CRAIB	Public submission form - Resurface Robinson Road, Kadina.		18.20.2
ILT20202009	KERR	DIANNE KAYE	Public comment submission form - Sealing of Moonta Road, Moonta Bay.	MOONTA ROAD MOONTA BAY 5558	18.20.2
ILT20202010	MATTINGLY	KEVIN WILLIAM	Public comment submission form - Sealing Monmouth Street, Moonta Bay.	MONMOUTH STREET MOONTA BAY 5558	18.20.2
ILT20202011	KING	PAULINE PATRICIA	Public comment submission form - Sealing Monmouth Street, Moonta Bay.	MONMOUTH STREET MOONTA BAY 5558	18.20.2
ILT20202012	LATHAM	MARTIN GRANVILLE	Public comment submission form - Sealing of Robinson Road, Wallaroo Mine.	ROBINSON ROAD WALLAROO MINES 5554	18.20.2
ILT20202013	NEWTON	BRYAN JOHN	Public comment submission form - Sealing Monmouth Street, Moonta Bay.	MONMOUTH STREET MOONTA BAY 5558	18.20.2
ILT20202014	COPPER COAST LIFESTYLE VILLAGE		Public comment submission form - Footpaths to be constructed along Majors Road, North Moonta and James Place.		18.20.2
IEM20205893	MCLACHLAN	KEVIN MARTIN	Public Submission for 5 Year Draft Transport Plan.	CARLISLE STREET MOONTA BAY 5558	18.20.2
IEM20205919	MCCULLOCH	IAN MURRAY	Public Submission for 5 Year Draft Transport Plan.	NARANGGA TERRACE MOONTA BAY 5558	18.20.2
ILT20202028	PHILPOTT	RAYMOND DERICK	Public Submission for 5 Year Draft Transport Plan.	MOONTA ROAD MOONTA BAY 5558	18.20.2
ILT20202029	COPPER COAST RESIDENTS AND RATEPAYERS ASSOCIATION		Public Submission for 5 Year Draft Transport Plan.		18.20.2

7. Plan for the next five years

2021/22

Moonta Road, ID number 1290 and 1332, between Coast Road and Carlisle St, approximately 752 meter long. Due to the lack of information at this early stage, estimating the actual cost of this project is incredibly challenging. However, when compared to a recent completed project (David Street, Kadina), a reasonable project estimate of \$450,000 for road construction, including pavement and two coat spray seal, and perhaps kerb along one side (property), directing runoff into the centre of Moonta Road (future swale drain) has been ascertained.

2022/23

Moonta Road, IDs 1291 and 1331, between Marine Parade and Coast Road, about 450 meter long. Project estimate, \$270,000 based on the assumptions stated above.

2023/24

Moonta Road, IDs 1289 and 1333, between Carlisle St and East Terrace, about 920 meter long. Project estimate, \$550,000 based on the assumption stated above.

2024/25

Moonta Road, IDs 1348, between East Terrace and Haylock Road, about 960 meter long. Project estimate, \$600,000 including pavement and a two-coat spray seal, as well as kerbs on both sides of the road to divert runoff into an existing underground drainage pipe.

2025/26

Brittain Road, Kadina, score suggest it should proceed Moonta Rd, however, it is proposed that Musgrave Terrace, Wallaroo Mines, be sealed to enhance the length of the sealed road inside this neighbourhood as discussed above. Musgrave Road, Wallaroo Mines (Kadina), Road ID 1037, between Lipson Ave to the last residential house, about 400 meter long. Project estimate, \$240,000 including pavement and a two-coat spray seal, as well as a kerb on the residential side and runoff directed to a swale on the other side. Budget capacity notwithstanding, could allow for Brittain Rd to be undertaken also in this year, at a budget estimate of \$380,000.

Please keep in mind that it is occasionally possible to seal a road that is not specified here. For example, if Narangga Terrace in Moonta Bay is kerbed to control storm water, Carlisle Street may be improved first, as all storm water runoff is toward Carlisle Street and then the Moonta Road open Channel. Otherwise, the degree of service increases in one location while decreasing drastically a few metres away.

8. Cost Opinions

The pricing estimated above is based on a recent project, David Street, Kadina. The road was unsealed, the scope included constructing two road layers and sealing with a two coat spray seal. In addition, kerb was constructed along the residential side and a swale drain was constructed the opposite side to manage stormwater, as shown below. The section of road was 500 meters long and the average daily traffic was less 100 vehicles per day.

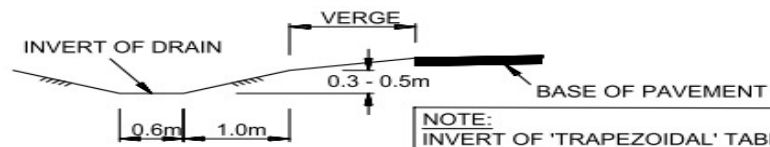


The overall project cost is shown to the right; approximately \$300,000 was spent for this project; therefore, if the total cost is divided by the length, which was 500 metres, it can be concluded that \$600 is required to construct 1 metre of road length that includes kerb on one side and swale drain on the other. However, as previously stated, the ultimate cost is determined by a variety of elements such as final design drawings, current market circumstances and rates, the economic situation at the time of the tender, price escalation, construction methodology, soil conditions, and so on.

Description	Cost
Survey	\$3,500.00
CBR Report	\$1,315.00
Design Review	\$4,000.00
Service locating	\$272.00
Kerb set out	\$3,000.00
Kerb preparation	\$38,000.00
Rollover kerb & two pram ramp	\$37,000.00
Road set out	\$4,000.00
Road construction including seal	\$130,000.00
Swale Drain	\$17,500.00
Mob/Demob	\$1,200.00
	\$60,000.00
sum	\$299,787.00

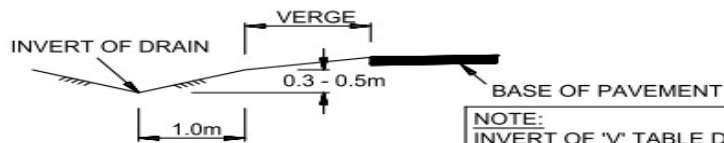
It is obvious that creating a kerb is highly costly when compared to alternative options such as a swale drain. A Consultants recent cost estimate to construct a 290-meter earth swale was \$5,800, or \$20 per linear metre, whereas a recent cost estimate for kerb was \$138 per metre. When choosing this option, extra expenses such as installing box culverts for each driveway to guarantee homeowners have unobstructed access to their property, current soil quality, and ongoing maintenance for staff to maintain the asset need to be considered.

Field Gully Pits	No.	\$ 3,500	31	\$ 108,500	2	\$ 7,000
Connection to existing stormwater system	Item	\$ 2,500	6	\$ 15,000	2	\$ 5,000
Earth Swale	Lin.m	\$ 20	290	\$ 5,800	190	\$ 3,800
Temporary capped end	No.	\$ 500	1	\$ 500	2	\$ 1,000
As-constructed Survey	Item	\$ -	1	\$ 15,000	1	\$ 4,000



NOTE:
INVERT OF 'TRAPEZOIDAL' TABLE DRAINS
TO BE BELOW THE BASE OF PAVEMENT.

'TRAPEZOIDAL' CUT TYPE



NOTE:
INVERT OF 'V' TABLE DRAINS TO BE
BELOW THE BASE OF PAVEMENT.

'V' CUT TYPE

TYPICAL OPEN TABLE DRAINS