



Road Network Investigation Report
For
Wagait Shire Council

Date: November 2018

1 Document Control Page

This document has been prepared by the Local Government Association of the Northern Territory (*LGANT*) for the Wagait Shire Council (*WSC*) for the purposes of documenting *WSC*'s existing road network.

The revision and distribution of this document are provided within the following table. This document is uncontrolled when printed.

Table 1 - Revision Register

Revision	Date of Creation	Description	Author
A	31.10.18	Draft for Review	Nick Gellatley
0	13.11.18	Final	Nick Gellatley

Table 2 - Distribution Register

Revision	Date of Issue	Name of Recipient	Position / Organisation
A	2.11.18	Mark Sidey	CEO, WSC
0	19.11.18	Mark Sidey	CEO, WSC

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3 Executive Summary

At the request of Wagait Shire Council (WSC), the Local Government Association of the Northern Territory (LGANT) has undertaken a desktop and visual inspection of the WSC road network.

This inspection has identified the following issues, contributing factors and improvement strategies.

Table 3 – Findings Summary

Issue	Visual Approximated Occurrence	Possible Contributing Factor	Possible Improvement Strategy
Localised Flooding	2 identified areas	Topography	Upgrade drainage structures
Edge Drop	3,860m	Pavement / Shoulder Width Shoulder Structure and Height Hardening of bitumen Insufficient driveway pavement	Shoulder rehabilitation, pavement enrichment and potential shoulder and seal widening (refer to Appendix B for standard cross section) Upgrade driveway pavements (refer to Appendix D)*
Edge Break	2,630m		
Cracking	6,750m		
Service Crossing	25 crossings	Inadequate trench rehabilitation	Rehabilitate pavement structure in conjunction with road enrichment projects
Raveling	8,750m ²	Hardening of bitumen	Pavement enrichment
Potholes	2 pot holes	Water retention	Patch repairs Resheet to improve run-off
Unprotected Culverts	26 unprotected headwalls (excluding driveway culverts)	Limited clearance from roadway	Extend culvert lengths Provide safety barriers
Unprotected Drains	2,510m	Erosion affecting batter angles and drain depths	Erosion protection structures (e.g. rock matting) Safety barriers

*Consideration for council policy development of appropriate driveway treatments

3.1 Improvement Considerations

Due to the limited data available on the maintenance activities of WSC road network it unclear where the assets are within their respective renewal lifecycles. It was noted that ride quality within the network, generally speaking and with the exception of specific areas, did not present immediate issues.

Given the timing of this report is at the start of wet season conditions, it is not envisaged that WSC will be in a position for undertaking significant works on the road network until dry season conditions return in 2019. As such, there is an opportunity to reinvestigate the road condition at the end of the wet season 18/19 using this report for baseline data to provide comparison and estimation of deterioration rates to better define priority areas.

Overall, the information in this report is envisaged to support long-term asset maintenance planning. LGANT recommends that WSC adopts regular monitoring of asset condition to support subsequence prioritisation and proactive measures for maintenance works.

3.2 Identification of priority maintenance

From the visual inspection of the pavement condition in October 2018, the following priority road sections were identified from a maintenance perspective:

- **92 Cox Drive** – Large frequency of pothole repairs – refer to **Appendix C** for a standard floodway section that could be applied to remediate area
- **Erickson Crescent (between Massey St and Brisbane St)** – Large frequency of cracking, effect on ride quality noticeable, envisaged that resheeting is required as pavement surface has lost some consistency
- **Mungalo Road and Forsyth Crescent** – large frequency of raveling – review whether pavement enrichment is appropriate, resheet may be required



Photo: 92 Cox Drive



Photo: Erickson Crescent Pavement Cracking



Photo: Mungalo Road Raveling



Photo: Forsyth Road Raveling

The issues of exposed drainage structures are an immediate liability to council. Protection for road users around these structures may be able to be sourced through the Black spot program particularly around larger drainage and culvert structures that are located within close proximity to the roadway. There are funding allocations within the Black Spot program dedicated to road safety audit recommendations that may be an avenue for WSC to access funding.

LGANT recommends that these issues should be further investigated from a road and pedestrian safety perspective to provide an adequate indication of the current risk profile and potential funding avenues.



Photo: Unprotected Culvert Wagait Tower Road and Dalmeny Street Intersection



Photo: Unprotected Culvert Erickson Crescent

4 Project Summary

4.1 Background

WSC requested assistance from LGANT on 26 September 2018 regarding the inspection and development of maintenance schedules of its road assets following a recent concern raised by a local resident over the condition of WSC's road assets.

In response to request from WSC, LGANT offered its services in undertaking site investigations and reporting to support WSC's documentation and administration of its road network.

4.2 Objectives

The objectives of LGANT's services for this investigation included:

- a. Document the existing road network for WSC
- b. Review the existing condition of WSC's road network
- c. Provide information regarding maintenance options of the existing road network for WSC's consideration

4.3 Scope of Works

The scope of works for this investigation included:

- a. Desktop review of WSC's road network
- b. Project and data gathering meeting WSC's CEO, Mark Sidey, (Held on 17/10/2018)
- c. Site visit and visual inspection of road network
- d. Reporting

4.4 Limitations

This report is based on the following data:

- Anecdotal information from the data gathering meeting
- A visual inspection of the road network

Additional data that could further supplement findings within this report may include:

- Documented works and/or field studies (e.g. geotechnical reports, survey maps, design reports) completed for the existing road network
- Secondary inspections to support identification of the potential deterioration rates of the existing road network
- Technical field investigations that may include deflection testing and geotechnical analysis
- Crash data information

5 Wagait Shire Council Road Network

5.1 Extent of Network

WSC is responsible for approximately 14km of roads within the Wagait community located approximately 8km west of Darwin. Please see the following **Figure 1** for the locality of WSC and **Figure 2** for an image of WSC's existing road network.

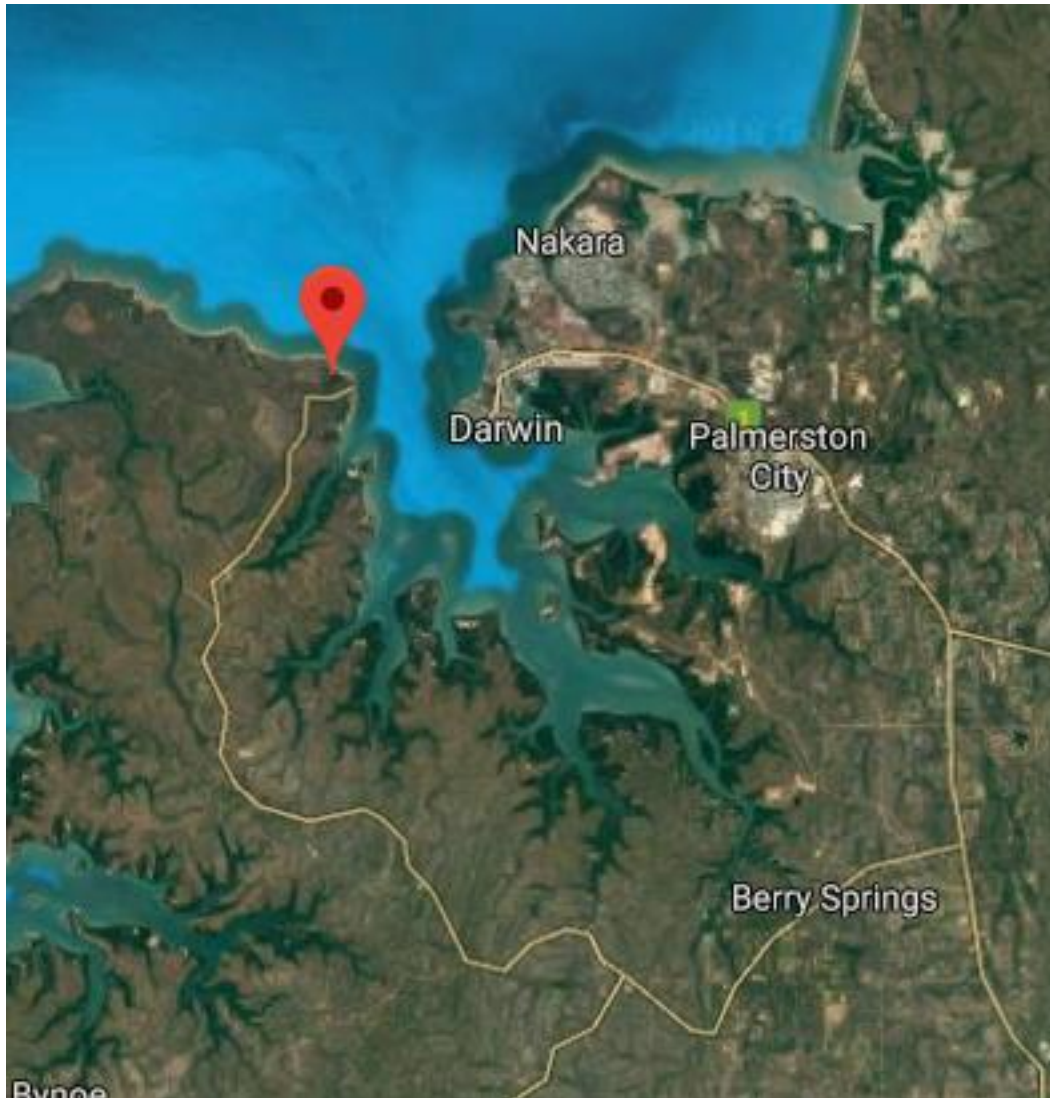
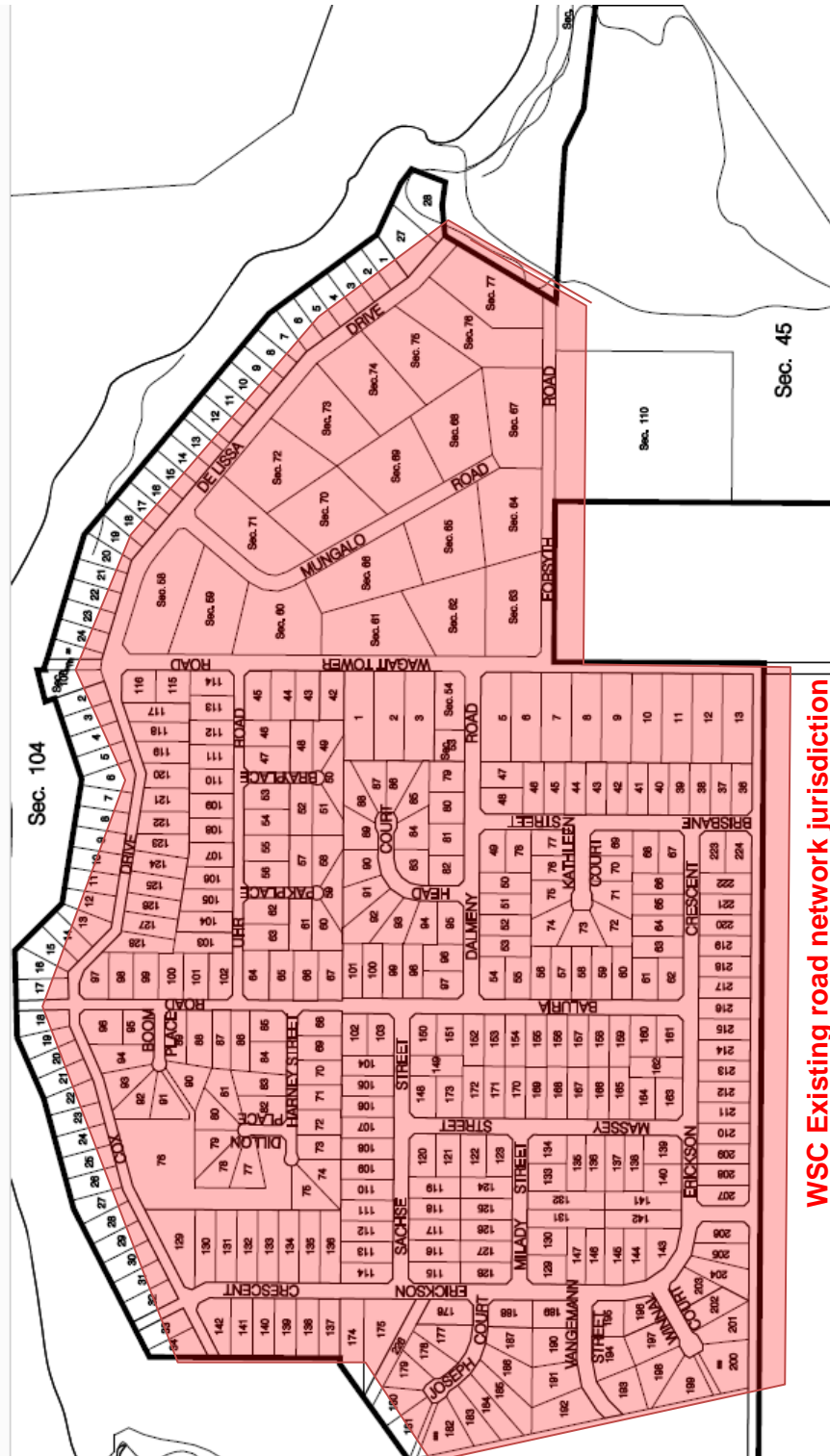


Figure 1 – Locality of Wagait Shire Council



WSC Existing road network jurisdiction

Figure 2 – Wagait Shire Council Existing Road Network

Road Network Investigation Report for Wagait Shire Council

5.2 Usage and Classification

There is no traffic count data for the Wagait Shire. The Wagait Shire population is approximately 450 within 388 ratable properties. Within the community the following regular traffic flows were identified:

- Daily work commuting between residential homes to the Mandorah Jetty which has approximately 60 car spaces.
- Community school bus that undertakes daily pick up and drop off activities across the majority of the road network
- Water cart operations from local supply point to local residential homes

An AADT of approximately 200 was estimated across the network with the most trafficked roads identified as:

1. Wagait Tower Road
2. Dalmeny Road
3. Erickson Crescent

Under Section 22.1.3 of the Draft Subdivision and Development Guidelines roads within the Wagait Shire are classified under Local Access Roads.

5.3 Topography

Wagait is a low lying coastal community with generally flat topography. WSC advised that several properties experience flooding (sheet flow) during wet season conditions; however, the road network, with the exception of a floodway on Cox Drive, remains operational throughout the wet season. This suggests that fill material has been used to raise road levels above natural surface level.

5.4 Road Geometry

The roads within Wagait are typically 6m wide with a center crown crossfall. Typically vertical and horizontal alignments have a relatively small grade and straight, with the exception of specific road sections.

5.5 Drainage

Drainage structures supporting the road network include:

- Unlined Open Drains
- Open V Drains
- Culverts

Scour erosion was noted in the majority of open drainage structures and sedimentation within most culvert structures; however, it was advised by WSC that the drainage network rarely experiences overflow incidents of any significance.

5.6 Services

The following services were noted for the Wagait Shire:

- **Power:** Above ground poles and lines
- **Communications:** Underground Telstra cables with numerous road crossings (WSC advised NBN accessibility was being achieved through satellite)
- **Water:** Not reticulated, water is available through a collection point off Vangemann Street

5.7 Asset History

From the data gathering meeting the following information was provided by WSC.

5.7.1 Road Network Chronology

- The first development at Wagait Beach occurred in the 1960's which is presumed to include the construction of the following roads:
 - Wagait Tower Road
 - Cox Drive
 - De Lissa Drive
- A second development occur at Wagait in the 1980's which is presumed to include the construction of all other roads in Wagait with the exception of:
 - Mungalo Road
 - Forsyth Road
- Mungalo Road is presumed to have been built sometime in the late 1990's
- Forsyth Road is presumed to have been built sometime in the early 2000's

Please refer to the following **Figure 3** for a diagrammatic of the Wagait's development History.

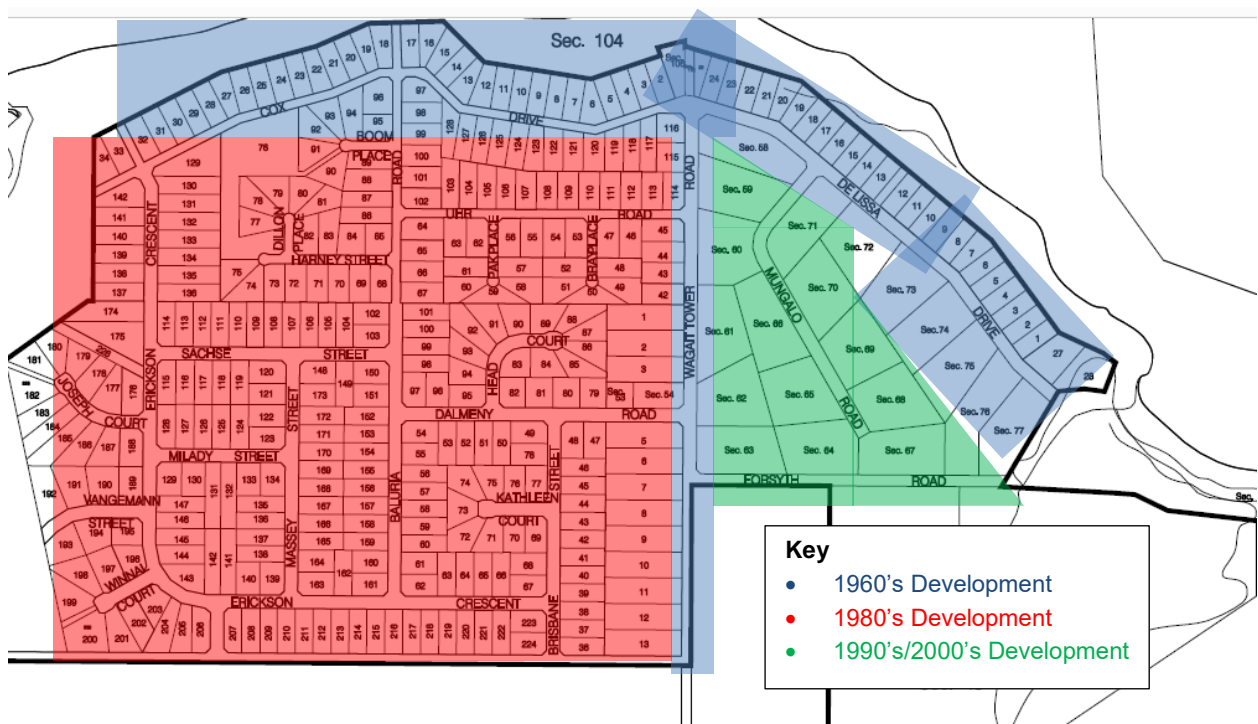


Figure 3 – Wagait Road Development History Approximation

5.7.2 Maintenance Activity and Frequency

The entire WSC road network has undergone shoulder maintenance / rehabilitation within the past 18 months (as of October 2018). WSC has no records of prior maintenance of similar nature; however, provided an estimate that maintenance of this nature was generally occurring within 10 year intervals.

Other known maintenance activities of the WSC road network include patch repairs of potholes undertaken by WSC maintenance crews.

5.7.2.1 Known Maintenance Issues

A road section adjacent to 92 Cox Drive has been identified as a maintenance concern, requiring patch repairs following every wet season. This section of road appears to function as a floodway and has been noted to be inundated for approximately 3 months during wet season periods. Please refer to the following **Figure 4** for a photo of the identified area of maintenance concern.



Figure 4 – Road section of maintenance concern, 92 Cox Drive

A road section adjacent to 105 De Lissa Drive has been identified as a maintenance concern due to consistent edge drop forming that has been associated with the current topography. Please refer to **Figure 5** for a photo of the identified area of maintenance concern.



Figure 5 – Road section of maintenance concern, 105 De Lissa Drive

5.7.3 Maintenance Funding

The total allocation of Roads to Recovery funding between FY14/15 to FY18/19 is documented on the Australian Government Department of Infrastructure, Regional Development and Cities as being \$173,620. Three projects for Wagait are detailed on the website for FY17/18 for upgrades at Wagait Tower Road, De Lissa Drive and Forsyth Road totaling an Australian Government contribution of \$65,591.

WSC provided the following breakdown of works completed within the Roads to Recovery funding allocation between FY14/15 to FY18/19:

Financial Year	Works Description	Funding Amount Allocated
15/16	Road shoulder remediation to majority of network	\$101,734
16-17	Drainage works and replace culvert on Forsyth Road	\$11,795
18-19	Complete road shoulder remediation	\$60,091
Total Funding Allocation		\$173,620

6 Road Condition Summary October 2018

6.1 Assessment Methodology

LGANT used the following assessment methodology to develop findings and recommendations.

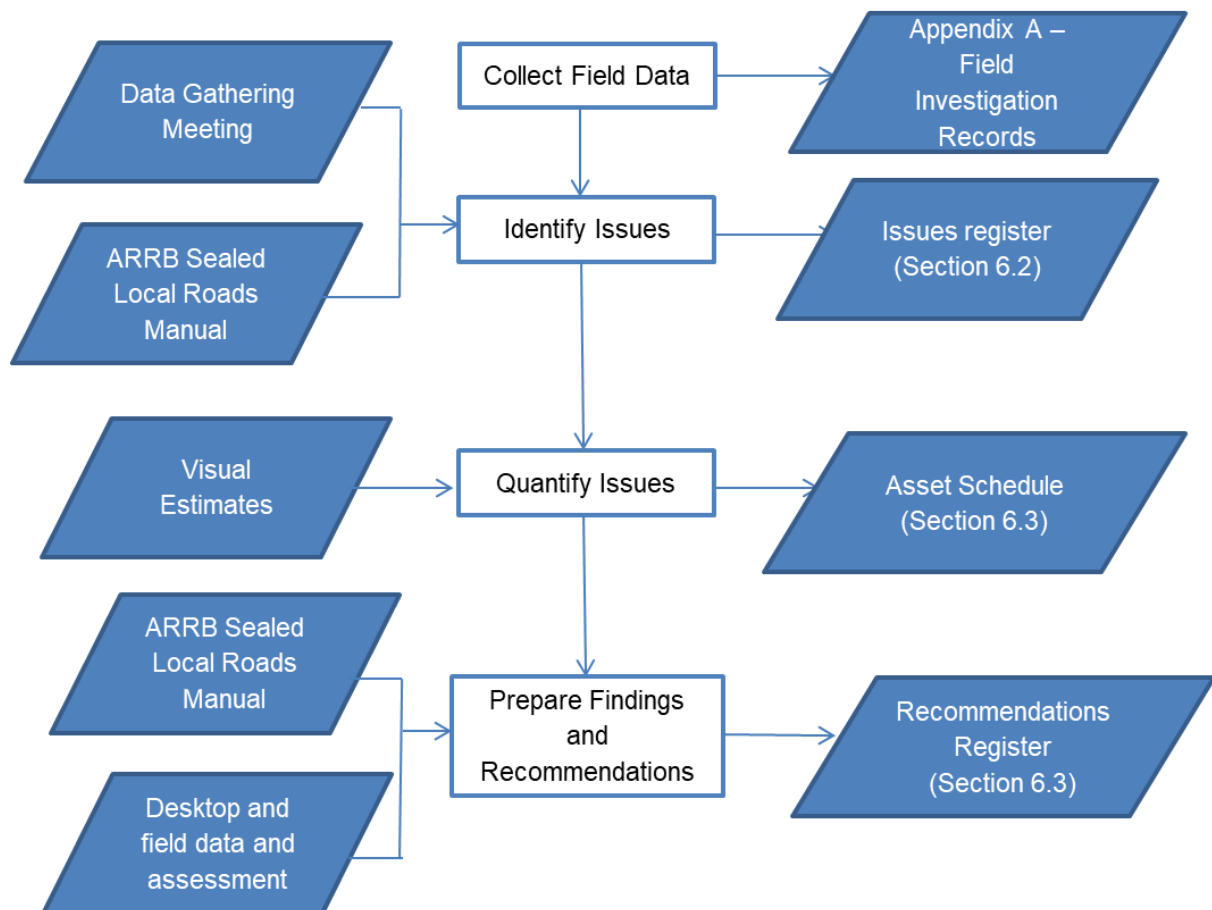


Figure 6 – Assessment Methodology

6.2 Identified issues

Based on the information provided at the data gathering meeting and field observations, the following issues have been identified within the road network as summarized in the below **Table 4**.

Table 4 - Issues Register

Issue No.	Raised By	Description	Status
1	WSC	Flooding and maintenance of road section adjacent to 92 Cox Drive	Outstanding
2	WSC	Edge drop occurring at road section adjacent to 105 De Lissa Drive	Outstanding
3	Community member	Concern raised of pavement condition near the intersection of Baluria Road and Erickson Crescent	Outstanding
4	Community member	Concern raised over property flooding at 25 Dalmeny Road	Outstanding
5	WSC	Additional pavement loading and subsequent maintenance requirements at Vangemann St from the location of Shire water extraction point	Outstanding
6	Community member	Concern raised over pedestrian accessibility past a culvert inlet on the Western verge of Wagait Tower Road adjacent to Uhr Road.	Outstanding
7	LGANT	Safety concerns around unprotected drainage structures	Outstanding
8	LGANT	Condition and future maintenance of underground service crossings across the road network	Outstanding
9	LGANT	Raveling of pavement surfaces near intersections, cul-de-sacs and along Mungalo Road	Outstanding
10	LGANT	Edge drops around driveways and sloping shoulders	Outstanding
11	LGANT	Cracking of pavement surfaces within certain sections of the road network	Outstanding
12	LGANT	Potholes and depressions within certain sections of the road network	Outstanding

6.3 Asset Overview

The following **Table 5** provides a visual estimate of approximate quantities of the identified issues of WSC road network. This table has been generated for the purposes of comparing the extent of each issue in prioritizing maintenance activities; however, should not be regarded as an accurate figure for budgeting purposes. It is envisaged that maintenance scope of works would generally be completed for entire road or verge sections for constructability, economy of scale and road consistency purposes.

Table 5 – Asset Summary and Approximate Maintenance Issues Quantities

Road	Road Class	Length (km)	Identified Issues								
			Localised Flooding (Item)	Edge Drop (m)	Edge Break (m)	Cracking (m)	Service Crossing (item)	Raveling (m2)	Potholes (item)	Unprotected Culverts (item)	Unprotected Drains (m)
Baluria Road	Local Access	1.1		A		1100	3	A			
Boom Place	Local Access	0.1					1	100			
Bray Place	Local Access	0.15			150	150			R-1	2	150
Brisbane Street	Local Access	0.5	1		500	500	2	50			200
Cox Drive	Local Access	1.3	1	750	400	1300	2	200	1, R-2		600
Dalmeny Road	Local Access	0.6		30	30	600	3	50	R-1	6	10
De Lissa Drive	Local Access	1.05		30		200		600		2	400
Dillon Place	Local Access	0.1						100		2	
Erickson Crescent	Local Access	1.8		800	200	1800	3	A		3	100
Forsyth Road	Local Access	0.4						2400	R-1		50
Harney Street	Local Access	0.25		250	250		2	100	1	2	
Head Court	Local Access	0.25		100	100	100		150		2	
Joseph Court	Local Access	0.25		50	50		1	100			
Kathleen Circuit	Local Access	0.1				100		100			
Massey Street	Local Access	0.55		550	550	200	3	100			200
Milady Street	Local Access	0.3						100			300
Mungalo Road	Local Access	0.7				200		4200		2	
Pak Place	Local Access	0.15		30	30			100		2	
Sachse Street	Local Access	0.55		500	200		1	100	1		200
Uhr Road	Local Access	0.6		600			2	50			200
Vangemann Street	Local Access	0.25		10	10		1	50			
Wagait Tower Road	Local Access	1.3		60	60	500	1	A		3	
Winnal Court	Local Access	0.1		100	100			100			100
TOTAL		12.45	2	3860	2630	6750	25	8750	2	26	2510

Road Network Investigation Report for Wagait Shire Council

6.4 Findings and Recommendations

Overall the pavement condition of the roads operated by WSC provided a consistent surface for a good road user ride quality. The issues identified were typically low severity with the exception of specific instances.

The following **Table 6** details potential contributing factors and proposed recommendations for addressing the identified issues.

Table 6 - Recommendations Register

Issue No.	Description	Potential Contributing Factors	Recommendation
1	Flooding 92 Cox Drive (<i>annual pothole maintenance</i>)	<ul style="list-style-type: none"> Water retention Base / Sub-base failure 	a. Upgrade road section to incorporate floodway (Refer Appendix C)
2	Edge drop 105 De Lissa Drive	<ul style="list-style-type: none"> Vertical geometry Un-stabilised shoulder 	b. Provide shoulder stabilization c. Realign shoulder geometry
3	Pavement condition Baluria Road and Erickson Crescent	<ul style="list-style-type: none"> Oxidisation of bitumen / pavement hardening Cyclical weakening of pavement edges Insufficient pavement width 	d. Pavement enrichment or re-sheet e. Shoulder rehabilitation and stabilisation (refer Appendix B for shoulder width)
4	Property flooding at 25 Dalmeny Road	<ul style="list-style-type: none"> Additional hardstand at adjacent private property Road run-off 	f. Table drain for verge (potential concrete invert for driveways, refer to Appendix D)
5	Vangemann St Shire water extraction point	<ul style="list-style-type: none"> Distress at affected road did not seem more adverse than typical road network 	NA
6	Pedestrian accessibility of Wagait Tower Road adjacent to Uhr Road.	<ul style="list-style-type: none"> Erosion at culvert entrance 	g. Extend existing culvert and reinstate verge
7	Unprotected drainage structures	<ul style="list-style-type: none"> Erosion Insufficient culvert lengths / clear path No safety barriers 	h. Erosion protection structures i. Extend existing culverts for clear space j. Safety barriers
8	Underground service crossings	<ul style="list-style-type: none"> Poor trench reinstatement 	k. Resheet affected section (approximate 2m width)
9	Raveling of pavement surfaces	<ul style="list-style-type: none"> Oxidisation of bitumen / pavement hardening 	l. Pavement enrichment or re-sheet

Issue No.	Description	Potential Contributing Factors	Recommendation
10	Edge drops and edge breaks	<ul style="list-style-type: none"> • Cyclical weakening of pavement edges • Insufficient pavement width • Driveway geometry 	<p>m. Shoulder rehabilitation and stabilisation (refer Appendix B for shoulder width)</p> <p>n. Driveway geometry and pavement properties</p>
11	Cracking of pavement surfaces	<ul style="list-style-type: none"> • Oxidisation of bitumen / pavement hardening • Cyclical weakening of pavement edges • Insufficient pavement width 	<p>o. Pavement enrichment or re-sheet</p> <p>p. Shoulder rehabilitation and stabilisation (refer Appendix B for shoulder width)</p>
12	Potholes and depressions	<ul style="list-style-type: none"> • Water retention 	<p>q. Patch repair</p> <p>r. Re-sheet</p>

7 Conclusion

Of the issues identified there are common potential contributing factors that may be addressed in supporting strategic upgrades to the WSC road network.

7.1 Pavement and Shoulder Condition

Issues related to pavement and shoulder condition can be attributed to the following potential factors:

- Hardening of bitumen
- Insufficient pavement width
- Inadequate driveway pavement

In strategically addressing the potential for ongoing maintenance issues for the pavement and shoulder condition the following strategy could be applied:

- Scoping staged rehabilitation works to include:
 - Shoulder rehabilitation
 - Pavement enrichment for entire pavement plus consideration of additional 500mm seal on each shoulder to increase seal width (refer to Appendix B for standard cross section)
 - Upgrade affected driveway pavements (refer to Appendix D for standard details)

7.2 Drainage Structures

Issues related to pavement and shoulder condition can be attributed to the following potential factors:

- Erosion of unlined drains creating dangerous grades and depths
- Insufficient clear or protection of culvert structures

In strategically addressing the drainage structures following strategy could be applied:



- Introducing erosion protection structures within unlined drains (e.g. rock sheeting)
- Either increase clear width of drainage structures or providing safety barriers around the assets



Photo: Example erosion protection Massey Street

Appendix A

Field Investigation Records

A1. Baluria Road - Field Record October 2018			
Inspection Date		Locality and Chainage Set Out	
17.10.18			
Inspected By:			
Nick Gellatley			
Issues raised prior to inspection:			
Pavement cracking near Erickson Crescent			
General Description			
Road is generally in good condition with a uniform surface with the exception of 3 service crossing. Issues have been identified predominately around intersections.			
Identified Issues			
Flooding	No	Affected Area	NA
Edge Drop	Yes	Affected Area	Refer to edge break
Edge Break	Yes	Affected Area	Refer to Dalmeny Street and Sachse Street
			
Edge breaks at Sachse Intersection			
Cracking	Yes	Affected Area	Cracks along road section, most pronounced within CH0.0-0.4

Road Network Investigation Report for Wagait Shire Council

A1. Baluria Road - Field Record October 2018



Longitudinal Cracking between Erickson Crescent and Dalmeny Road

Service Crossing	Yes	Affected Area	CH0.25, Sachse Street, CH0.9
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Service crossing approximate Chainage 0.25

Road Network Investigation Report for Wagait Shire Council

A1. Baluria Road - Field Record October 2018



Service crossing adjacent to Sachse Street



Service Crossing approximate Chainage 0.9

A1. Baluria Road - Field Record October 2018

Ravelling	Yes	Affected Area	Uhr Road and Boom Place Intersections
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Ravelling Uhr Road Intersection



Ravelling Boom Place Intersection

Potholes	No	Affected Area	NA
Unprotected Drainage Structures	Yes	Affected Area	Refer to Dalmeny Street Report

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A2. Boom Place - Field Record October 2018			
Inspection Date		Locality and Chainage Set Out	
17.10.18			
Inspected By:			
Nick Gellatley			
Issues raised prior to inspection:			
NIL			
General Description:			
Road is generally in good condition with a uniform surface with the exception of a service crossing adjacent to Baluria Road and some loose gravel / raveling at the cul-de-sac.			
Identified Issues			
Flooding	No	Affected Area	NA
Edge Drop	Yes	Affected Area	Baluria Road Intersection
			
Edge drop at Baluria Road Intersection			
Edge Break	Yes	Affected Area	Refer to Edge drop
Cracking	No	Affected Area	NA
Service Crossing	Yes	Affected Area	Baluria Road Intersection

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A2. Boom Place - Field Record October 2018



Service Crossing adjacent to Baluria Road




Ravelling	Yes	Affected Area	Cul-de-sac
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Ravelling and unprotected drainage structure at Boom Place cul-de-sac



Potholes	No	Affected Area	NA
Unprotected Drainage Structures	Yes	Affected Area	Residential driveways, refer to ravelling

Road Network Investigation Report for Wagait Shire Council

A3. Bray Place - Field Record October 2018			
Inspection Date		Locality and Chainage Set Out	
19.10.18			
Inspected By:			
Nick Gellatley			
Issues raised prior to inspection:			
NIL			
General Description:			
Road is generally in good condition with a uniform surface with the exception of some raveling near Uhr Road intersection and its cul-de-sac.			
Identified Issues			
Flooding	No	Affected Area	NA
Edge Drop	Yes	Affected Area	Residential Driveway (approximate Ch0.05)
			
Edge drop off residential driveway			
Edge Break	Yes	Affected Area	CH0.1
			
Edge break approximate chainage 0.1			

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A3. Bray Place - Field Record October 2018

Cracking	Yes	Affected Area	Uhr Road Intersection
			
Longitudinal Cracking near Uhr Road			
Service Crossing	No	Affected Area	NA
Ravelling	Yes	Affected Area	Uhr Road Intersection and cul-de-sac
			
Ravelling adjacent to Uhr Road			

A3. Bray Place - Field Record October 2018





Ravelling at cul-de-sac

Potholes	No	Affected Area	NA
Unprotected Drainage Structures	Yes	Affected Area	Uhr Road Intersection



Unprotected culvert at Uhr Road intersection

A4. Brisbane Street - Field Record October 2018			
Inspection Date		Locality and Chainage Set Out	
17.10.18			
Inspected By:			
Nick Gellatley			
Issues raised prior to inspection:			
Flooding of local residence at Dalmeny Road Intersection			
General Description:			
Road is generally in ok condition providing a consistent surface; however, longitudinal cracks and edge breaks are forming along the roadway indicating potential future maintenance requirements.			
Identified Issues			
Issue	Yes/No	Affected Area	Details
Flooding	Yes	Affected Area	Local Residence at Dalmeny Road Intersection
			
Residence location of flooding complaint			
Edge Drop	Yes	Affected Area	Refer to Edge Break
Edge Break	Yes	Affected Area	Majority of eastern side of roadway

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A4. Brisbane Street - Field Record October 2018



Edge break at CH0.0



Edge break between CH0.0-CH0.1

A4. Brisbane Street - Field Record October 2018



Edge Break between CH0.2-0.3



Edge break between CH0.4-0.5

Cracking	Yes	Affected Area	Length of roadway, most affected between CH0.0-0.1
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A4. Brisbane Street - Field Record October 2018



Cracking between CH0.0-CH0.1



Cracking between CH0.1-CH0.2

A4. Brisbane Street - Field Record October 2018



Cracking between CH0.4-CH0.5

Service Crossing	Yes	Affected Area	CH0.75 and Kathleen Circuit Intersection
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Service Crossing adjacent to Kathleen Circuit

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A4. Brisbane Street - Field Record October 2018



Service crossing at approximately CH0.75

Ravelling	Yes	Affected Area	Erickson Crescent, Kathleen Circuit and Dalmeny Street Intersections
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Ravelling at Erickson Crescent Intersection

A4. Brisbane Street - Field Record October 2018



Ravelling at Kathleen Circuit Intersection



Ravelling at Dalmeny Street Intersection

Potholes	No	Affected Area	NA
Unprotected Drainage Structures	Yes	Affected Area	Driveway culverts between CH0.1-CH0.5

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A4. Brisbane Street - Field Record October 2018



Drainage structure CH.02



Drainage structure CH0.4

A5. Cox Drive - Field Record October 2018			
Inspection Date		Locality and Chainage Set Out	
17.10.18			
Inspected By: Nick Gellatley			
Issues raised prior to inspection: Flooding at road section adjacent to 92 Cox Drive			
General Description: Road is generally in good condition with a uniform surface with the exception of odd potholes and patch repairs, service crossings and a floodway crossing.			
Identified Issues			
Flooding	Yes	Affected Area	CH0.9
			
Floodway crossing at approximate Chainage 0.9			
Edge Drop	Yes	Affected Area	Refer to Edge break
Edge Break	Yes	Affected Area	Ch0.7

A5. Cox Drive - Field Record October 2018



Edge break at approximate chainage 0.7

Cracking	Yes	Affected Area	CH0.25 and CH0.3
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Cracking and undulation of pavement at chainage 0.25

Road Network Investigation Report for Wagait Shire Council

A5. Cox Drive - Field Record October 2018



Longitudinal cracking at approximate chainage 0.3

Service Crossing	Yes	Affected Area	CH0.4 and Baluria Road Intersection
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Service Crossing approximate chainage 0.4

A5. Cox Drive - Field Record October 2018



Service crossing adjacent to Baluria Road Intersection

Ravelling	Yes	Affected Area	Ch1.4
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Ravelling at road section past Erickson Crescent

Potholes	Yes	Affected Area	CH1.05
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Road Network Investigation Report for Wagait Shire Council

A5. Cox Drive - Field Record October 2018







Pot hole forming at Chainage 1.05

Unprotected Drainage Structures	Yes	Affected Area	CH0.1 - CH0.7
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Unprotected driveway culverts approximate chainage 0.3

Road Network Investigation Report for Wagait Shire Council

A6. Dalmeny Street - Field Record October 2018			
Inspection Date		Locality and Chainage Set Out	
17.10.18			
Inspected By:			
Nick Gellatley			
Issues raised prior to inspection:			
NIL			
General Description:			
Road is generally in good condition with a uniform surface with the exception of a number service crossings and a raveling around Brisbane St and Head Court.			
Identified Issues			
Flooding	No	Affected Area	NA
Edge Drop	Yes	Affected Area	Refer edge break
Edge Break	Yes	Affected Area	Baluria Street Intersection
			
Edge breaks at Baluria Street Intersection			
Cracking	Yes	Affected Area	CH0.4-CH0.6
			
Cracking at CH0.5			

A6. Dalmeny Street - Field Record October 2018

Service Crossing	Yes	Affected Area	CH0.15, CH0.45 and CH0.55
			
<p style="text-align: center;">Service Crossing approximate chainage 0.15</p>			
			
<p style="text-align: center;">Service Crossing approximate chainage 0.45</p>			

A6. Dalmeny Street - Field Record October 2018



Service crossing approximate chainage 0.55

Ravelling	Yes	Affected Area	Brisbane Street, Head Crescent and Baluria Road
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Ravelling at Head Crescent

Road Network Investigation Report for Wagait Shire Council

A6. Dalmeny Street - Field Record October 2018



Ravelling at Baluria Road

Potholes	No	Affected Area	NA
Unprotected Drainage Structures	Yes	Affected Area	Wagait Tower Road Intersection, CH0.15 and Baluria Road Intersection



A6. Dalmeny Street - Field Record October 2018



Unprotected Drainage Structure Dalmeny Street Intersection





Unprotected Drainage Structure approximate chainage 0.15

A6. Dalmeny Street - Field Record October 2018



Unprotected drainage structure Wagait Tower Road

A7. De Lissa Drive - Field Record October 2018			
Inspection Date		Locality and Chainage Set Out	
17.10.18			
Inspected By:			
Nick Gellatley			
Issues raised prior to inspection:			
NIL			
General Description:			
Road is generally in good condition with a uniform surface with the exception of edge drop of the roads cul-de-sac. Some cracking and the appearance of potential future raveling is present in the roadway indicating potential future maintenance requirements.			
Identified Issues			
Flooding	No	Affected Area	NA
Edge Drop	Yes	Affected Area	Cul-de-sac
			
Area affected by regular edge drop at cul-de-sac			
Edge Break	No	Affected Area	NA
Cracking	Yes	Affected Area	CH0.0-0.3

Road Network Investigation Report for Wagait Shire Council

A7. De Lissa Drive - Field Record October 2018



Pavement cracking approximate chainage 0.2

Service Crossing	No	Affected Area	NA
Raveling	Yes	Affected Area	Mungalo Road – CH0.8



Raveling at Mungalo Road Intersection

Road Network Investigation Report for Wagait Shire Council

A7. De Lissa Drive - Field Record October 2018



Appearance of potential raveling at approximate chainage 0.8

Potholes	No	Affected Area	NA
Unprotected Drainage Structures	Yes	Affected Area	CH0.45 and CH0.95



Unprotected drainage structure approximate chainage 0.45


Road Network Investigation Report for Wagait Shire Council

A7. De Lissa Drive - Field Record October 2018



Unprotected driveway culvert approximate chainage 0.95

A8. Dillon Place - Field Record October 2018

Inspection Date	Locality and Chainage Set Out
19.10.18	
Inspected By:	
Nick Gellatley	
Issues raised prior to inspection:	
NIL	
General Description:	
Road is generally in good condition with a uniform surface with the exception of raveling at the intersection with Harney Street and cul-de-sac.	

Identified Issues			
Flooding	No	Affected Area	NA
Edge Drop	No	Affected Area	NA
Edge Break	No	Affected Area	NA
Cracking	No	Affected Area	NA
Service Crossing	No	Affected Area	NA
Raveling	Yes	Affected Area	Harney Street Intersection and cul-de-sac



Raveling at Harney Street Intersection

A8. Dillon Place - Field Record October 2018





Raveling at Cul-de-sac

Potholes	No	Affected Area	NA
Unprotected Drainage Structures	Yes	Affected Area	CH0.05



Unprotected culvert at approximate chainage 0.05

A9. Erickson Crescent - Field Record October 2018			
Inspection Date		Locality and Chainage Set Out	
17.10.18			
Inspected By:			
Nick Gellatley			
Issues raised prior to inspection:			
Poor road condition around Baluria Road			
General Description:			
Road is generally in good condition with a uniform surface with the exception of the road section between Massey Street and Brisbane Road where the extent of road cracking is starting to affect road surface conditions.			
Identified Issues			
Flooding	No	Affected Area	NA
Edge Drop	Yes	Affected Area	CH0.0-0.8
			
Edge drop approximate chainage 0.3			

A9. Erickson Crescent - Field Record October 2018



Edge drop approximate chainage 0.4

Edge Break	Yes	Affected Area	Refer edge drop
Cracking	Yes	Affected Area	Length of roadway, most severe at Cox Drive intersection and CH1.25-CH1.8



Cracking Cox Drive Intersection

Road Network Investigation Report for Wagait Shire Council

A9. Erickson Crescent - Field Record October 2018



Cracking approximate chainage 0.2



Cracking approximate chainage 1.6

Service Crossing	Yes	Affected Area	Sachse Street, Milady Street and Winnal Court
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Road Network Investigation Report for Wagait Shire Council

A9. Erickson Crescent - Field Record October 2018



Service crossing Sachse Street Intersection



Service crossing Milady Street Intersection

A9. Erickson Crescent - Field Record October 2018



Service crossing Winnal Court

Raveling	Yes	Affected Area	Milady Street, Vangemann Street, Winnal Court, Massey Street and Brisbane Street
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Raveling Milady Street Intersection

A9. Erickson Crescent - Field Record October 2018



Raveling Vangemann Street Intersection



Raveling Winnal Court Intersection

A9. Erickson Crescent - Field Record October 2018



Raveling Massey Street Intersection



Raveling Baluria Road Intersection

A9. Erickson Crescent - Field Record October 2018



Ravelling Brisbane Street Intersection

Potholes	No	Affected Area	NA
Unprotected Drainage Structures	Yes	Affected Area	CH0.45, CH0.95 and CH1.1



Culvert approximate chainage 0.45

Road Network Investigation Report for Wagait Shire Council

A9. Erickson Crescent - Field Record October 2018




Culvert approximate chainage 0.95



Unprotected drains and driveway culverts approximate chainage 1.1

A10. Forsyth Road - Field Record October 2018

Inspection Date	Locality and Chainage Set Out
19.10.18	
Inspected By: Nick Gellatley	
Issues raised prior to inspection: NIL	
General Description:	
Road is generally in good condition with a uniform surface with the exception of raveling at the intersection with Wagait Tower Road and recreational park entry.	

Identified Issues			
Flooding	No	Affected Area	NA
Edge Drop	No	Affected Area	NA
Edge Break	No	Affected Area	NA
Cracking	No	Affected Area	NA
Service Crossing	No	Affected Area	NA
Raveling	Yes	Affected Area	Wagait Tower Road Intersection and along roadway



Raveling at Wagait Tower Road Intersection

A10. Forsyth Road - Field Record October 2018



Raveling at approximate chainage 0.15



Raveling at recreational centre entrance



Potholes	No	Affected Area	NA
Unprotected Drainage Structures	Yes	Affected Area	Pedestrian culvert adjacent to Wagait Tower Road

Road Network Investigation Report for Wagait Shire Council

A10. Forsyth Road - Field Record October 2018



Unprotected drainage structure adjacent to Wagait Tower Road

A11. Harney Street - Field Record October 2018			
Inspection Date		Locality and Chainage Set Out	
19.10.18			
Inspected By:			
Nick Gellatley			
Issues raised prior to inspection:			
NIL			
General Description:			
Road is generally in good condition with a uniform surface with the exception two service crossings and of raveling at the intersection with Baluria Road and cul-de-sac.			
Identified Issues			
Flooding	No	Affected Area	NA
Edge Drop	Yes	Affected Area	Refer to Edge break
Edge Break	Yes	Affected Area	Cul-de-sac
			
Edge drop and break at cul-de-sac			
Cracking	Yes	Affected Area	Length of Road

Road Network Investigation Report for Wagait Shire Council

A11. Harney Street - Field Record October 2018



Pavement cracking at approximate chainage 0.1

Service Crossing	Yes	Affected Area	Baluria Road Intersection and CH0.15
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Service Crossing near Baluria Road Intersection

Road Network Investigation Report for Wagait Shire Council

A11. Harney Street - Field Record October 2018



Service crossing approximate chainage 0.15

Raveling	Yes	Affected Area	Harney Street Intersection and cul-de-sac
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Raveling at Baluria Road Intersection

Road Network Investigation Report for Wagait Shire Council

A11. Harney Street - Field Record October 2018



Raveling at cul-de-sac

Potholes	Yes	Affected Area	Cul-de-sac
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Pot hole at cul-de-sac



Unprotected Drainage Structures	Yes	Affected Area	Intersection at Dillon Place
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Road Network Investigation Report for Wagait Shire Council

A11. Harney Street - Field Record October 2018



Unprotected culvert crossing at Dillon Place Intersection

A12. Head Court - Field Record October 2018			
Inspection Date		Locality and Chainage Set Out	
17.10.18			
Inspected By:			
Nick Gellatley			
Issues raised prior to inspection:			
NIL			
General Description:			
Road is generally in good condition with a uniform surface with the exception of raveling at the intersection with Dalmeny Street and cul-de-sac.			
Identified Issues			
Flooding	No	Affected Area	NA
Edge Drop	Yes	Affected Area	Cul-de-sac
			
Edge drop at cul-de-sac			
Edge Break	No	Affected Area	NA
Cracking	Yes	Affected Area	CH0.1

Road Network Investigation Report for Wagait Shire Council

A12. Head Court - Field Record October 2018



Cracking approximate chainage 0.1

Service Crossing	No	Affected Area	NA
Raveling	Yes	Affected Area	Dalmeny Street Intersection and cul-de-sac



Raveling at Dalmeny Street Intersection



Potholes	No	Affected Area	NA
Unprotected Drainage Structures	Yes	Affected Area	CH0.2

Road Network Investigation Report for Wagait Shire Council

A12. Head Court - Field Record October 2018



Unprotected Culvert approximate chainage 0.2

A13. Joseph Court - Field Record October 2018			
Inspection Date		Locality and Chainage Set Out	
19.10.18			
Inspected By:			
Nick Gellatley			
Issues raised prior to inspection:			
NIL			
General Description:			
Road is generally in good condition with a uniform surface with the exception of a service crossing and raveling at the intersection with Erickson Crescent and cul-de-sac.			
Identified Issues			
Flooding	No	Affected Area	NA
Edge Drop	Yes	Affected Area	Erickson Crescent Intersection
			
Edge drop at Erickson Crescent Intersection			
Edge Break	No	Affected Area	NA
Cracking	No	Affected Area	NA
Service Crossing	Yes	Affected Area	CH0.15

A13. Joseph Court - Field Record October 2018



Service Crossing approximate chainage 0.15

Raveling	Yes	Affected Area	Erickson Crescent Intersection and cul-de-sac
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Raveling Erickson Crescent Intersection

A13. Joseph Court - Field Record October 2018



Raveling cul-de-sac

Potholes	No	Affected Area	NA
Unprotected Drainage Structures	No	Affected Area	NA

A14. Kathleen Circuit - Field Record October 2018			
Inspection Date		Locality and Chainage Set Out	
17.10.18			
Inspected By:			
Nick Gellatley			
Issues raised prior to inspection:			
NIL			
General Description:			
Road is generally in good condition with a uniform surface with the exception of raveling at the intersection with Brisbane Street and cul-de-sac.			
Identified Issues			
Flooding	No	Affected Area	NA
Edge Drop	No	Affected Area	NA
Edge Break	No	Affected Area	NA
Cracking	Yes	Affected Area	CH0.05
			
Cracking at approximate chainage 0.05			
Service Crossing	No	Affected Area	NA
Raveling	Yes	Affected Area	Harney Street Intersection and cul-de-sac

Road Network Investigation Report for Wagait Shire Council

A14. Kathleen Circuit - Field Record October 2018



Raveling at Brisbane Street Intersection



Raveling at Cul-de-sac

Potholes	No	Affected Area	NA
Unprotected Drainage Structures	No	Affected Area	NA

Road Network Investigation Report for Wagait Shire Council

A15. Massey Street - Field Record October 2018			
Inspection Date		Locality and Chainage Set Out	
19.10.18			
Inspected By:			
Nick Gellatley			
Issues raised prior to inspection:			
NIL			
General Description:			
Road is generally in good condition with a uniform surface with the exception of raveling at the intersections and two service crossings.			
Identified Issues			
Flooding	No	Affected Area	NA
Edge Drop	Yes	Affected Area	Refer to edge break
Edge Break	Yes	Affected Area	Length of road
			
Edge break approximate chainage 0.1			

A15. Massey Street - Field Record October 2018



Edge break approximate chainage 0.35

Cracking

Yes

Affected Area

CH0.3-CH0.5



Cracking at approximate chainage 0.3

Service Crossing

Yes

Affected Area

Sachse Street and
Milady Street
Intersections and
CH0.3

Road Network Investigation Report for Wagait Shire Council

A15. Massey Street - Field Record October 2018



Service crossing at Sachse Street Intersection



Service crossing at Milady Street Intersection

A15. Massey Street - Field Record October 2018



Service crossing at CH0.3

Raveling	Yes	Affected Area	Sachse Street, Milady Street and Erickson Crescent Intersections
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Raveling at Sachse Street Intersection

A15. Massey Street - Field Record October 2018



Raveling at Milady Street Intersection



Raveling at Erickson Crescent Intersection



Potholes	No	Affected Area	NA
Unprotected Drainage Structures	Yes	Affected Area	CH0.1

Road Network Investigation Report for Wagait Shire Council

A15. Massey Street - Field Record October 2018



Unprotected open drain and culvert structures approximate chainage 0.1

A16. Milady Street - Field Record October 2018			
Inspection Date		Locality and Chainage Set Out	
19.10.18			
Inspected By:			
Nick Gellatley			
Issues raised prior to inspection:			
NIL			
General Description:			
Road is generally in good condition with a uniform surface with the exception of raveling at the intersections with Massey Street and Erickson Crescent.			
Identified Issues			
Flooding	No	Affected Area	NA
Edge Drop	No	Affected Area	NA
Edge Break	No	Affected Area	NA
Cracking	No	Affected Area	NA
Service Crossing	No	Affected Area	NA
Raveling	Yes	Affected Area	Massey Street and Erickson Crescent Intersections
			
Raveling at Massey Street Intersection			

A16. Milady Street - Field Record October 2018





Raveling at Erickson Crescent

Potholes	No	Affected Area	NA
Unprotected Drainage Structures	Yes	Affected Area	Road length



Unprotected drainage structures along southern edge of roadway

A17. Mungalo Road - Field Record October 2018			
Inspection Date		Locality and Chainage Set Out	
17.10.18			
Inspected By:			
Nick Gellatley			
Issues raised prior to inspection:			
NIL			
General Description:			
Road is subject to raveling across a number of portions of the road section.			
Identified Issues			
Flooding	No	Affected Area	NA
Edge Drop	No	Affected Area	NA
Edge Break	No	Affected Area	NA
Cracking	Yes	Affected Area	CH0.15
			
Cracking at approximate chainage 0.15			
Service Crossing	No	Affected Area	NA
Raveling	Yes	Affected Area	Road length

Road Network Investigation Report for Wagait Shire Council

A17. Mungalo Road - Field Record October 2018



Raveling at De Lissa Road Intersection



Raveling at approximate chainage 0.25

A17. Mungalo Road - Field Record October 2018





Raveling at approximate chainage 0.4

Potholes	No	Affected Area	NA
Unprotected Drainage Structures	Yes	Affected Area	CH0.2



Unprotected culvert at approximate chainage 0.2

Road Network Investigation Report for Wagait Shire Council

A18. Pak Place - Field Record October 2018			
Inspection Date		Locality and Chainage Set Out	
19.10.18			
Inspected By:			
Nick Gellatley			
Issues raised prior to inspection:			
NIL			
General Description:			
Road is generally in good condition with a uniform surface with the exception of raveling at the intersection with Uhr Road and cul-de-sac.			
Identified Issues			
Flooding	No	Affected Area	NA
Edge Drop	No	Affected Area	NA
Edge Break	Yes	Affected Area	Uhr Road Intersection
			
Edge break at Uhr Road Intersection			
Cracking	No	Affected Area	NA
Service Crossing	No	Affected Area	NA
Raveling	Yes	Affected Area	Uhr Road Intersection and cul-de-sac

Road Network Investigation Report for Wagait Shire Council

A18. Pak Place - Field Record October 2018



Raveling at Uhr Road Intersection



Raveling at Cul-de-sac



Potholes	No	Affected Area	NA
Unprotected Drainage Structures	Yes	Affected Area	Uhr Road Intersection

Road Network Investigation Report for Wagait Shire Council

A18. Pak Place - Field Record October 2018



Unprotected drainage structure Uhr Road Intersection

A19. Sachse Street - Field Record October 2018			
Inspection Date		Locality and Chainage Set Out	
19.10.18			
Inspected By:			
Nick Gellatley			
Issues raised prior to inspection:			
NIL			
General Description:			
Road is generally in good condition with a uniform surface with the exception of raveling at the Erickson Crescent and Baluria Road intersections.			
Identified Issues			
Flooding	No	Affected Area	NA
Edge Drop	Yes	Affected Area	Length of road – Northern side
			
Edge drop approximate chainage 0.1			

A19. Sachse Street - Field Record October 2018



Edge drop approximate chainage 0.3

Edge Break	Yes	Affected Area	Refer to edge drop
Cracking	No	Affected Area	NA
Service Crossing	Yes	Affected Area	CH0.35



Service Crossing approximate chainage 0.35

Road Network Investigation Report for Wagait Shire Council

A19. Sachse Street - Field Record October 2018

Raveling	Yes	Affected Area	Erickson Crescent and Baluria Road Intersections
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Raveling at Erickson Intersection



Raveling at Baluria Road Intersection

A19. Sachse Street - Field Record October 2018

Potholes	Yes	Affected Area	Ch0.2
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Pothole approximate chainage 0.2

Unprotected Drainage Structures	Yes	Affected Area	CH0.1-0.25
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Unprotected culverts at approximate chainage 0.1

Road Network Investigation Report for Wagait Shire Council

A20. Uhr Road - Field Record October 2018			
Inspection Date		Locality and Chainage Set Out	
19.10.18			
Inspected By:			
Nick Gellatley			
Issues raised prior to inspection:			
NIL			
General Description:			
Road is generally in good condition with a uniform surface with the exception of raveling at the intersections with Pak Place, Bray Place and Wagait Tower Road.			
Identified Issues			
Flooding	No	Affected Area	NA
Edge Drop	Yes	Affected Area	Length of Road
			
Edge drop approximate chainage 0.2			
Edge Break	No	Affected Area	NA
Cracking	No	Affected Area	NA
Service Crossing	Yes	Affected Area	CH0.35 and Wagait Tower Road Intersection

Road Network Investigation Report for Wagait Shire Council

A20. Uhr Road - Field Record October 2018



Service crossing approximate chainage 0.35



Service crossing Wagait Tower Road Intersection

Raveling	Yes	Affected Area	Pak Place, Bray Place and Wagait Tower Road
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Road Network Investigation Report for Wagait Shire Council

A20. Uhr Road - Field Record October 2018



Raveling at Pak Place Intersection



Raveling at Bray Place Intersection

A20. Uhr Road - Field Record October 2018





Raveling at Wagait Tower Road

Potholes	No	Affected Area	NA
Unprotected Drainage Structures	Yes	Affected Area	CH0.4-CH0.6



Unprotected drainage structure and driveway culverts approximate chainage 0.4

Road Network Investigation Report for Wagait Shire Council

A21. Vangemann Street - Field Record October 2018			
Inspection Date		Locality and Chainage Set Out	
19.10.18			
Inspected By:			
Nick Gellatley			
Issues raised prior to inspection:			
NIL			
General Description:			
Road is generally in good condition with a uniform surface with the exception of raveling at the intersection with Erickson Crescent.			
Identified Issues			
Flooding	No	Affected Area	NA
Edge Drop	Yes	Affected Area	CH0.2
			
Edge drop at approximate chainage 0.2			
Edge Break	No	Affected Area	NA
Cracking	No	Affected Area	NA
Service Crossing	Yes	Affected Area	CH0.15

A21. Vangemann Street - Field Record October 2018



Service crossing approximate chainage 0.15



Raveling	Yes	Affected Area	Erickson Crescent Intersection
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Raveling at Cul-de-sac

Potholes	No	Affected Area	NA
Unprotected Drainage Structures	No	Affected Area	NA

Road Network Investigation Report for Wagait Shire Council

A22. Wagait Tower Road - Field Record October 2018			
Inspection Date		Locality and Chainage Set Out	
17.10.18			
Inspected By:			
Nick Gellatley			
Issues raised prior to inspection:			
NIL			
General Description:			
Road is generally in good condition with a uniform surface with the exception of raveling at the various intersections and localized edge breaks around driveway accesses.			
Identified Issues			
Flooding	No	Affected Area	NA
Edge Drop	Yes	Affected Area	Refer to edge break
Edge Break	Yes	Affected Area	Various driveways
			
Edge drop and break at approximate chainage 0.2			

A22. Wagait Tower Road - Field Record October 2018



Edge breaks and cracking at approximate chainage 0.6



Edge breaks at approximate chainage 1.0

A22. Wagait Tower Road - Field Record October 2018

Cracking	Yes	Affected Area	Various locations along roadway
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Cracking at approximate chainage 0.1



Cracking at approximate chainage 0.5

Road Network Investigation Report for Wagait Shire Council

A22. Wagait Tower Road - Field Record October 2018



Cracking approximate chainage 1.1



Cracking at Cox Drive intersection

A22. Wagait Tower Road - Field Record October 2018

Service Crossing	Yes	Affected Area	Dalmeny Street Intersection
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Service crossing Dalmeny Street

Raveling	Yes	Affected Area	Forsyth Road Intersection
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Raveling at Forsyth Road Intersection

Potholes	No	Affected Area	NA
Unprotected Drainage Structures	Yes	Affected Area	CH0.4, CH0.75 and CH1.05

Road Network Investigation Report for Wagait Shire Council

A22. Wagait Tower Road - Field Record October 2018



Unprotected culvert at approximate chainage 0.4





Unprotected culvert at approximate chainage 0.75

A22. Wagait Tower Road - Field Record October 2018



Unprotected culvert crossing at approximate chainage 1.05

A23. Winnal Court - Field Record October 2018			
Inspection Date		Locality and Chainage Set Out	
19.10.18			
Inspected By:			
Nick Gellatley			
Issues raised prior to inspection:			
NIL			
General Description:			
Road is generally in good condition with a uniform surface with the exception of raveling at the intersection with Erickson Crescent and cul-de-sac.			
Identified Issues			
Flooding	No	Affected Area	NA
Edge Drop	Yes	Affected Area	Cul-de-sac, driveways
			
Edge drop at cul-de-sac			

A23. Winnal Court - Field Record October 2018



Edge drop at driveway

Edge Break	No	Affected Area	NA
Cracking	No	Affected Area	NA
Service Crossing	No	Affected Area	NA
Raveling	Yes	Affected Area	Erickson Crescent Intersection and cul-de-sac



Raveling at Erickson Crescent Intersection

Road Network Investigation Report for Wagait Shire Council

A23. Winnal Court - Field Record October 2018



Raveling at Cul-de-sac

Potholes	No	Affected Area	NA
Unprotected Drainage Structures	Yes	Affected Area	CH0.05

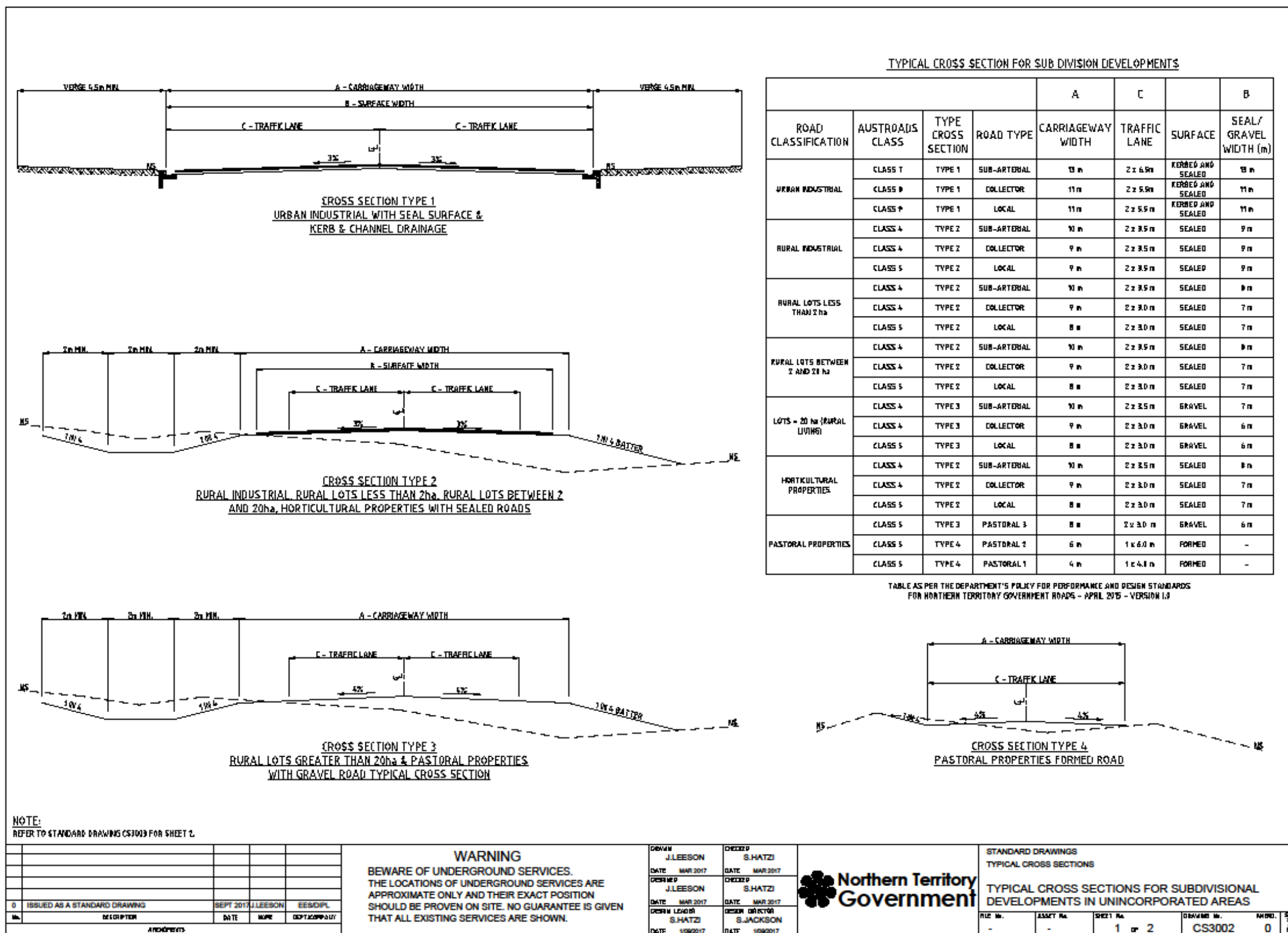


Unprotected drain and driveway culvert at approximate chainage 0.05

Road Network Investigation Report for Wagait Shire Council

Appendix B

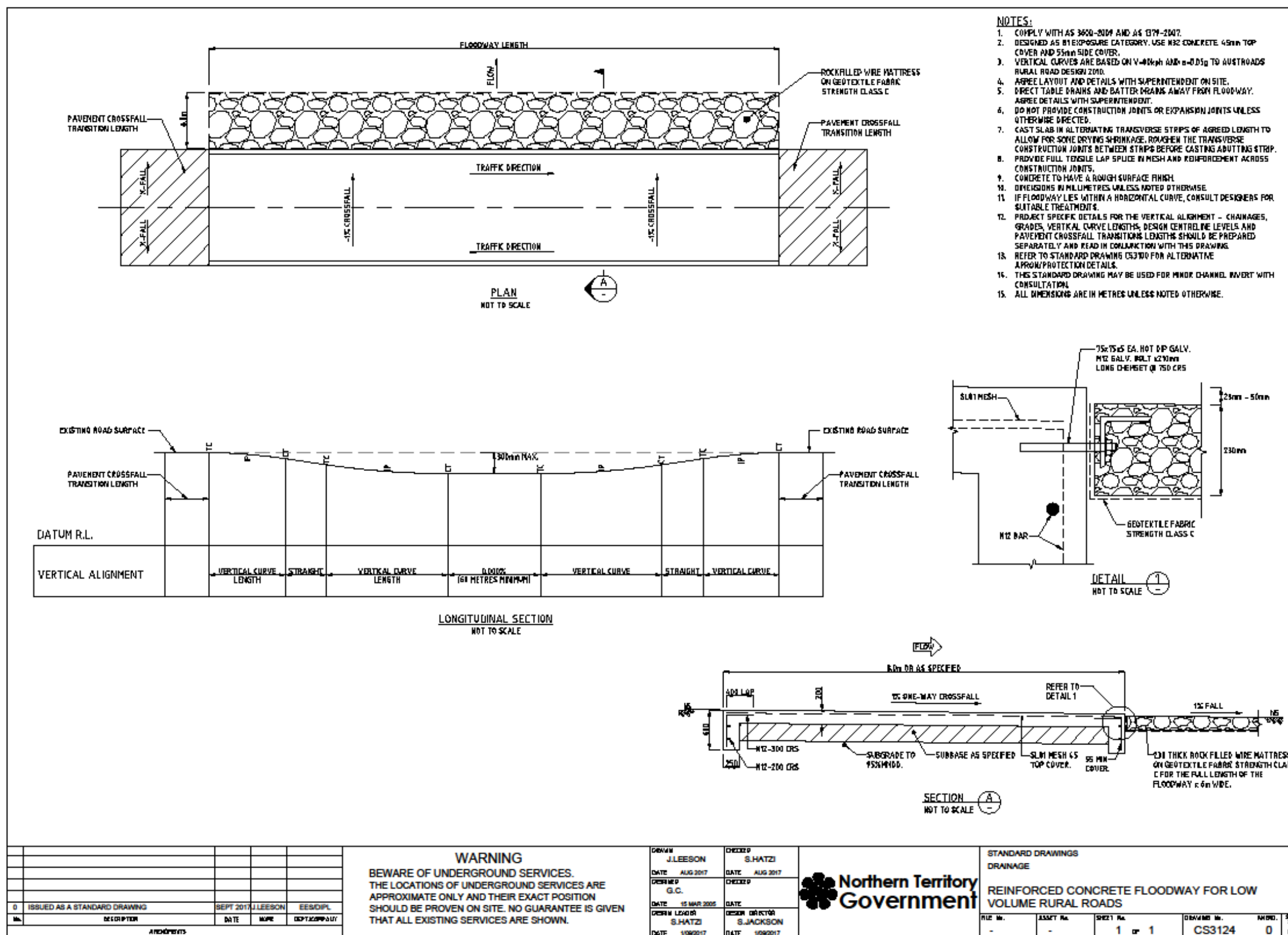
Typical Cross Sections



CS3002_REV_0 RELEASED 15/11/2017

Appendix C

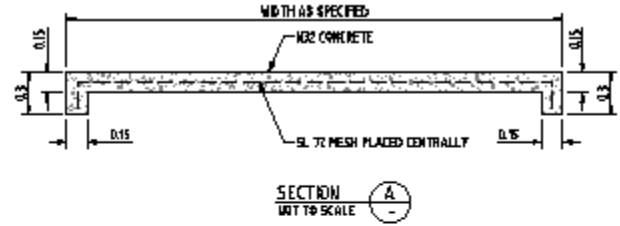
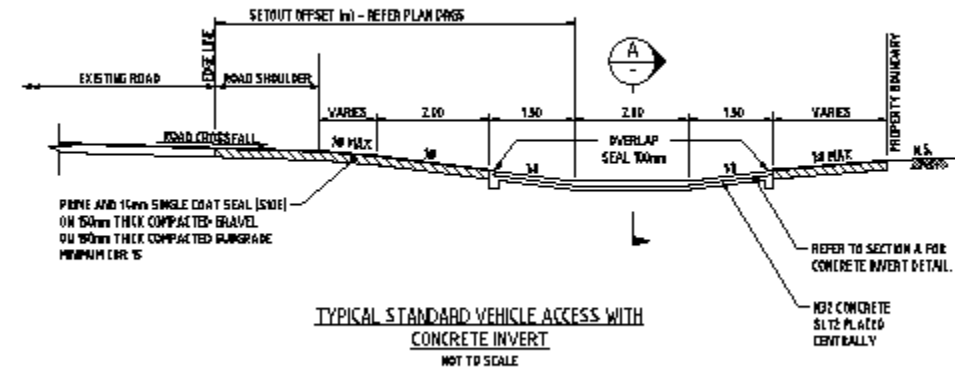
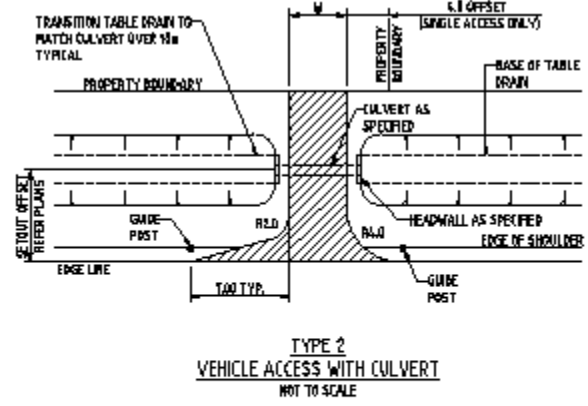
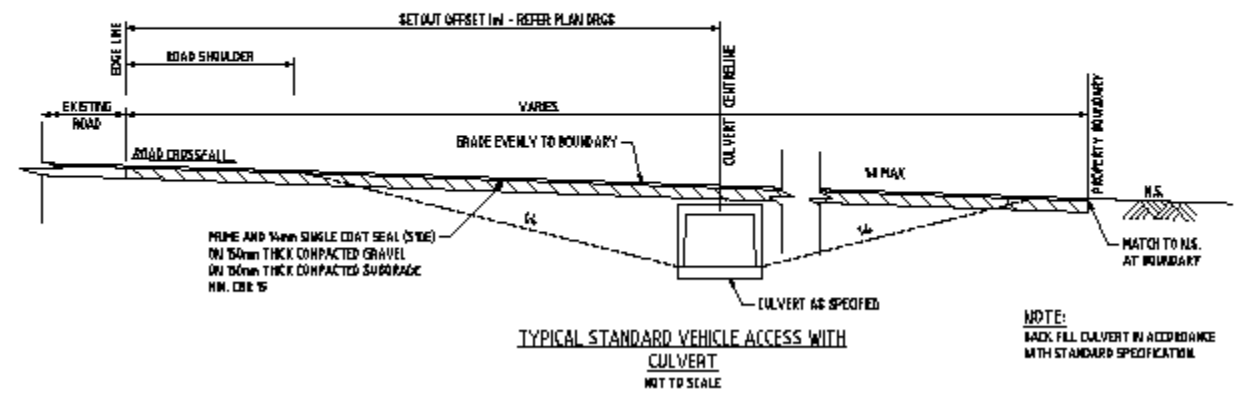
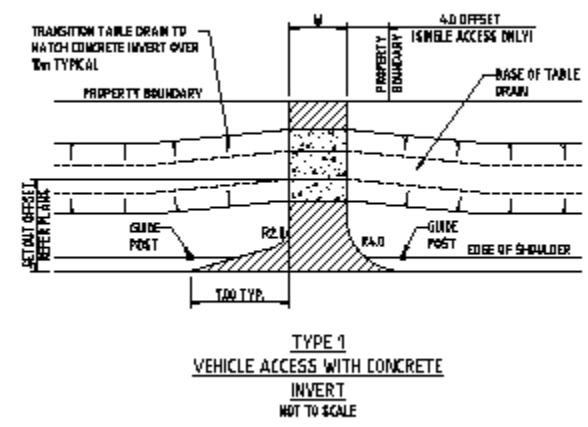
Typical Floodway Section



CS3124_0101_15/02/2017 RELEASED 15/02/2017

Appendix D

Typical Concrete V - Drain



- NOTES:**
- ACCESS WIDTH 3.0m FOR SINGLE ACCESS 3.6m FOR DOUBLE ACCESS
 - ESTABLISH INVERT ON A COMPACTED SUBGRADE AND MATCH TO TABLE DRAIN INVERT LEVELS
 - CONCRETE SHALL BE CLASS M32 WITH SL 75 MESH PLACED CENTRALLY - 50mm MINIMUM COVER
 - TYPICAL MINIMUM TABLE DRAIN GRADE IS 1:50
 - UPSTREAM AND DOWNSTREAM PROTECTION WORKS MAY BE REQUIRED - EACH SITE SHALL BE INDIVIDUALLY ASSESSED
 - PROPERTY ACCESSES ADJACENT AN UNSEALED ROAD MAY BE UNSEALED
 - IN THE EVENT THE ACCESS IS LOCATED OFF A SEALED ROAD THEN
 - PROVIDE A SAWCUT INTO SOUND UNCONTAMINATED PAVEMENT MATERIAL
 - LAP TOPMOST COAT OF SEAL 250mm OVER SAWCUT
 - ENSURE THE JOINT IS A SMOOTH TRANSITION OVER THE EXISTING SEAL WITHOUT FORMING INVERTS OR CRESTS
 - ACCESSES TO CATER FOR LARGE VEHICLES WILL REQUIRE INDEPENDENT DESIGN, AND BE SUBMITTED TO THE DEPARTMENT FOR APPROVAL PRIOR TO CONSTRUCTION
 - DESIGN VEHICLE IS A LIGHT VEHICLE
 - IN SITUATIONS WHERE THERE IS NO ROAD DRAINAGE, THE CONCRETE INVERT CAN BE OMITTED AS APPROVED
 - EXISTING DRAINAGE IS TO NOT BE COMPROMISED
 - TYPE 1 ACCESS ARRANGEMENT IS TO BE USED WHERE THE LEVEL DIFFERENCE FROM THE EDGE OF THE SHOULDER AND THE TABLE DRAIN INVERT IS LESS THAN 180mm. WHERE THE LEVEL DIFFERENCE IS GREATER THAN 180mm, AN APPROPRIATE CULVERT IS TO BE DESIGNED AND PROVIDED
 - MINIMUM CULVERTS TO BE USED ARE 450mm HIGH ABOVE ON 375 DIA. RCP
 - ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE

NO.	DESCRIPTION	DATE	NAME	DEPT/COMPANY
0	ISSUED AS A STANDARD DRAWING	SEPT 2013	J. LEEBSON	RES/OPPL

WARNING
 BEWARE OF UNDERGROUND SERVICES.
 THE LOCATIONS OF UNDERGROUND SERVICES ARE APPROXIMATE ONLY AND THEIR EXACT POSITION SHOULD BE PROVEN ON SITE. NO GUARANTEE IS GIVEN THAT ALL EXISTING SERVICES ARE SHOWN.

REVISION	BY	DATE	CHECKED	DATE
1	BYRNE	APRIL 2017	S. HATZI	APRIL 2017
2	BYRNE	APRIL 2017	S. HATZI	APRIL 2017
3	S. HATZI	10/02/17	S. JACKSON	10/02/17



STANDARD DRAWINGS		RURAL RESIDENTIAL PROPERTY ACCESS	
FILE No.	ASSET No.	SHEET No.	PROJECT No.
-	-	1 of 1	CS3005
		ISSUED	REVISED
		0	A1