

KIPT Road Freight Options Assessment



Contents

1.0 Overview	1
2.0 Heavy Vehicle Volumes	4
3.0 Forestry Freight Road Hierarchy & Specifications	6
4.0 Road Assessments	7
4.1 Option 2.....	11
4.1.1 Playford Highway A	11
4.1.2 Stokes Bay Road.....	15
4.1.3 Bark Hut Road.....	19
4.1.4 McBrides Road	22
4.1.5 North Coast Road	25
4.2 Option 5.....	29
4.2.1 Playford Highway	29
4.2.2 Ropers Road	34
4.2.3 Gap Road	38
4.2.4 North Coast Road	41
4.3 Option 6.....	44
4.3.1 Springs Road	44
4.3.2 Rose Cottage Road.....	47
5.0 Summary of Assessments.....	50
5.1 Evaluation Framework results	50
5.2 Upgrade and Maintenance estimates.....	51
5.3 Assessment Outcomes	52
5.0 Funding Options	53

Appendix A	Evaluation Framework
B	Assessment Criteria Results
C	Upgrade & Maintenance Preliminary Estimates

1.0 Overview

Osman Solutions has been engaged by Kangaroo Island Plantation Timbers Ltd (KIPT) to undertake evaluations of the shortlisted road access routes for the mobilisation of timber freight on Kangaroo Island.

The routes assessed are based on the freight port being approved for Smith Bay.

Walbridge & Gilbert (W&G) undertook a Route Assessment in October 2016 with the purpose of that assessment being to examine the condition of the existing road network and its suitability to accommodate heavy vehicle movements. The assessment by W&G was based on timber transportation being by 19m semi-articulated vehicles which are general access vehicles which do not require permits to access public roads.

In June 2017 a Discussion Paper, prepared by Osman Solutions, was prepared based on B-Double vehicles which are Restricted Access vehicles to:-

-) Engage in formal discussions with Kangaroo Island Council (KIC) to establish timber freight access routes.
-) Provide an overview of the evaluation of all options identified in the W&G Route Assessment (October 2016) and subsequently identified on further discussions and assessment.
-) Provide a short list of access route options for Smith Bay along with roads required to access plantations for the first five years of harvest operations.
-) Establish a framework to evaluate short listed options.
-) Establish freight road specifications for two way freight movement based on a road access hierarchy for timber freight.

Department of Planning, Transport and Infrastructure (DPTI's) Heavy Vehicle Access Framework (HVAF) is the basis for the evaluation of freight routes. The HVAF provides policy and direction for meeting the main objectives in SA's Strategic Plan for heavy vehicle operations including development of road freight networks and corridors for heavy vehicles which take into account environmental and social issues.

Heavy Vehicle Operations are divided into three (3) categories

-) General Access (ie Semi articulated vehicles)
-) Restricted Access by Gazette Notice
-) Restricted Access by Permit

Based on the W&G assessment and subsequent discussions the following options were reviewed:-

- J Option 1 – Stokes Bay Road / North Coast Road
- J Option 2 – Stokes Bay Road / Bark Hut Road / McBrides Road / North Coast Road
- J Option 3 – Stokes Bay Road / right of way access / McBrides Road / North Coast Road
- J Option 4 – Bark Hut Road / McBrides Road / North Coast Road
- J Option 5 – Ropers Road / Gap Road / North Coast Road
- J Option 6 – Stokes Bay Road / Bark Hut Road / McBrides / Springs Road / Rose Cottage Road / North Coast Road
- J Option 7 – Stokes Bay Road / Pioneer Bend Road / McBrides Road / North Coast Road
- J Option 8 – Boxer Road / North Coast Road
- J Option 9 – Unmade Road Reserves

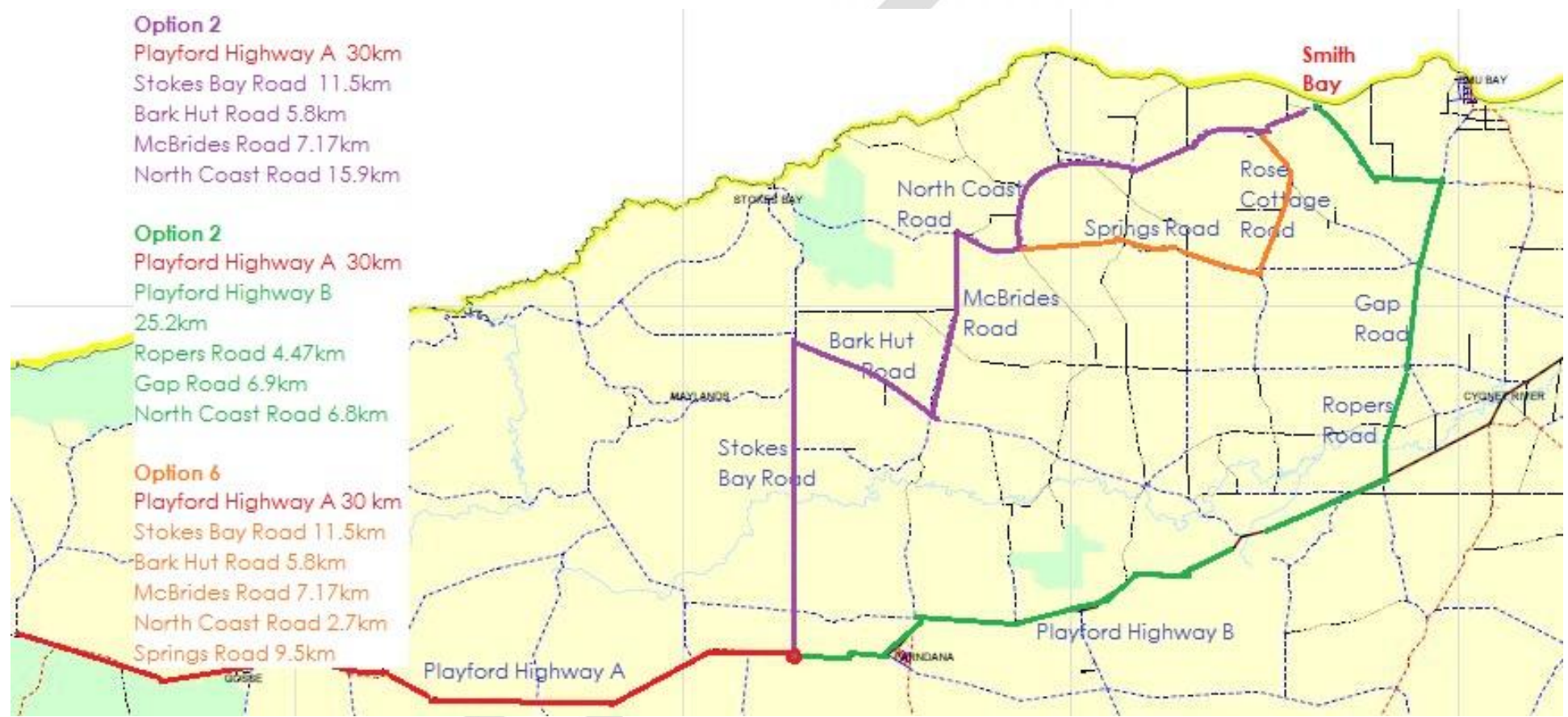
Based on those assessments and as agreed with Kangaroo Island Council (KIC) the route options shortlisted for assessment are:-

- J Option 2 – Playford Highway / Stokes Bay Road / Bark Hut Road / McBrides Road / North Coast Road
- J Option 5 – Playford Highway / Ropers Road / Gap Road / North Coast Road
- J Option 6 – Playford Highway / Stokes Bay Road / Bark Hut Road / McBrides Road / North Coast Road / Springs Road / Rose Cottage Road / North Coast Road.

The Evaluation Framework used in undertaking assessments of the shortlisted options is contained in **Appendix A**.

The assessments are based on existing conditions, acknowledging that there will be investment into upgrading the roads to ensure the freight task is done safely and efficiently.

KIPT Road Freight Options Assessment



2.0 Heavy Vehicle Volumes

Forestry yield and generated volumes of heavy vehicles was supplied in W&Gs assessment based on semi articulated vehicles with a maximum load of 30 tonnes gross which are general access vehicles. This report is based on B Double vehicles with a maximum load of 42.5 tonnes gross which are restricted access vehicles. For the purpose of looking at heavy vehicle volumes, calculations have also been done for A Double vehicles with a maximum load of 60 tonnes.

It is considered with the projected volumes of timber to be harvested and mobilised to the proposed freight port facility that the use of B-Double or possibly larger Restricted Access Vehicles on a Gazetted Restricted Access route as opposed to semi-trailer movements which are General Access Vehicles (no approvals required) would be preferred due to:-

-) Reduced number of truck vehicle movements resulting in less impact on the road network, amenity and environment.
-) Improved safety for all road users by way of upgrading the roads and intersections where required.
-) Improved efficiencies for the freight task.

As per the W&G assessment, KIPT provided the following information regarding vehicle movements

-) Harvesting will occur year-round.
-) There will be some variation from year to year in total harvest tonnage.
-) The daily frequency of haulage movements will be influenced by shipping schedules and storage capacity at the Smith Bay wharf.
-) It is acknowledged that haulage may be affected by flooding and fire risks. Harvesting and haulage will be scheduled according to local conditions, with areas prone to flooding being harvested during summer months and drier areas harvested in winter months.
-) Timber transportation will occur Monday – Friday.

KIPT has highlighted that schedules for the harvesting and shipping of timber will be dependent on demand and other external factors. For the purposes of this assessment, the projections summarised in the table below have been assumed.

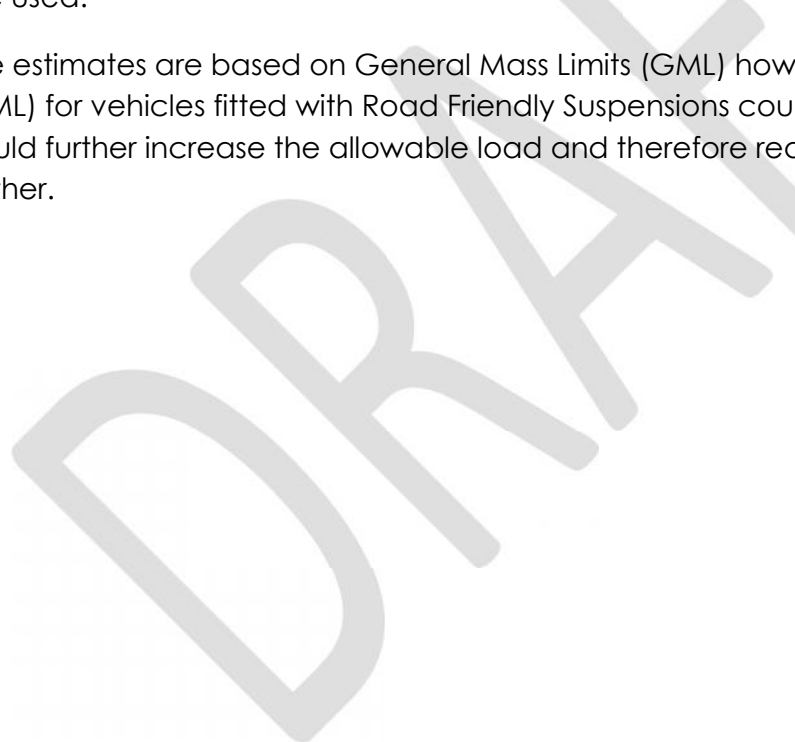
Daily Heavy Vehicle Volumes							
Tonne	Semi Trips (30 t GML)		B Double (42.5 t GML)		A Double (60 t GML)		
	Annual Trips	Daily Trips	Annual Trips	Daily Trips	Annual Trips	Daily Trips	
400,000	26,667	107	18,824	75	13,333	53	
500,000	33,333	133	23,529	94	16,667	67	
600,000	40,000	160	28,235	113	20,000	80	
700,000	46,667	187	32,941	132	23,333	93	

Trip represents a two-way vehicular movement and includes an empty return journey

A typical year for freight movement is 250 working days, which excluded weekends and public holidays

Based on the table above, during an average 12 hour freight movement day there would be a Semi Trailer making the journey to Smith Bay every 14 minutes if transporting 400,000 to Smith Bay per annum. If B-Doubles make that journey the frequency is reduced to every 19 minutes and reduced further again if A Doubles are used.

The estimates are based on General Mass Limits (GML) however Higher Mass Limits (HML) for vehicles fitted with Road Friendly Suspensions could be applied for which could further increase the allowable load and therefore reduce vehicle movements further.



3.0 Forestry Freight Road Hierarchy & Specifications

Due to the nature of forestry practices, being that year round access will be required to the proposed Smith Bay Wharf and seasonal access during harvest operations to the various plantations it is recommended that there be a Forestry Freight Road Hierarchy with fit for purpose specifications.

Smith Bay Wharf Access (Core Roads)	Year round, ongoing access done under Restricted Access by Gazette Notice
Seasonal Plantation Access (Local Access Roads)	During harvest operations under Restricted Access by Permit

The primary purpose of a road hierarchy is to ensure that appropriate management, engineering design, construction standards and maintenance practices are applied to a road based on its function. It also enables more efficient use of limited resources by allocating funding to those roads that are in greater need and on which expenditure is better justified and higher returns obtained. Special purpose roads ie quarry, logging or tourist roads should be made to fit existing classifications rather than establish a separate classification¹.

In accordance with Council's Transport Infrastructure Asset Management Plan, the highest classification for unsealed rural roads is C1 (Bark Hut Road, Springs Road, North Coast Road) and for sealed rural roads are A (Arterial) and B (Collector).

It is recommended that the Smith Bay Wharf Access route be constructed and maintained to a Class B unsealed standard (previously not required by Council for unsealed rural roads) with Seasonal Plantation Access roads be maintained to their existing standard where it is safe for two heavy vehicles, such as B-Doubles, to pass safely.

Smith Bay Wharf Access (Core Roads)	8m wide carriageway 0.75m shoulders (each side) 80km speed limit for heavy vehicle operations
Seasonal Plantation Access (Local Access Roads)	6m wide carriageway 0.75m shoulders (each side) 60kkm speed limit for heavy vehicle operations

¹ ARRB Unsealed Road Manual, Guidelines to Good Practice P 4.2

4.0 Road Assessments

DPTI's Heavy Vehicle Access Framework (HVAF) is the basis for the evaluation of freight routes. The framework is designed to demonstrate the ability of the proposed Restricted Access Vehicle to be physically and safely accommodated along the proposed route. The effect on amenity, the environment and impact on local communities will be considered.

The framework also reflects KIPT's route selection criteria being:-

-) Safety
-) Efficiency of the freight task (cost per tonne)
-) Minimise impact on other road users and property owners
-) Timelines to enable an approved route to be operational
-) Cost implications

The evaluation framework was presented to Kangaroo Island Council for review and approval as part of the options shortlisting process. The scoring applied is based on a 1 – 5 approach, whereby:-

1	Excellent – satisfies prescribed criteria for the length of the assessed road section
2	Good – meets prescribed criteria with either some constraints or minority section that is only 'fair' to 'poor'
3	Fair – not at prescribed criteria that can be addressed
4	Poor – multiple issues that could impact safety, environment or community which can be addressed
5	Very poor – significant issues that will impact either safety, environment or community

The Evaluation Framework used in undertaking assessments of the shortlisted options is contained in **Appendix A**.

Below is an overview of the areas being assessed and the relevant criteria.

Existing Road Conditions

The existing road conditions including width, shoulders, clearances, condition (surface & pavement) and geometry were assessed to enable upgrade requirements to be determined.

The upgrade standard will provide for an 8m wide carriageway with 0.75m shoulders which will enable a 9.5m clearance for two heavy vehicles to pass at 80km/hr. The sealed roads assessed (Stokes Bay Road and Playford Highway) both have sealed carriageways of 6m with 1m shoulders (unsealed) which will require the shoulders to be sealed to enable two heavy vehicles to pass safely. There are some sections along both sealed roads assessed that

will only provide for a 7m total width without extensive and expensive upgrades, predominantly over rivers and waterways.

Geometry is an important consideration, particularly as the nature of the terrain through to Smith Bay has multiple rolling valleys and rises. These changes in grade lead to speed variations, breaking and gear changes. In the case of haulage roads, a flatter grade will enable a more constant speed, demand less of both vehicle and driver and generally lower vehicle operating costs. Also grades create speed disparities between vehicle types. This can lead to queuing and overtaking requirements².

Drainage & Bridges

Drainage is an important consideration to ensure year round operation. The drainage assessment considered provision of table/side drains, mitre drains, cross drains, floodways and any roadside dams. All of the lower class (D Class) unsealed roads being McBrides, Ropers, Gums and Rose Cottage Roads require drainage upgrades including building the road up where currently the road 'dips' into waterways that can become inundated during heavy rain events. Hydrology studies would be required to determine the catchment and therefore capacity requirements for upgrade to the cross drains to mitigate the risk of water inundation on the haulage route.

To access Smith Bay from central Kangaroo Island, the Cygnet River needs to be crossed (via a bridge) regardless of what option is selected. Of the three options being assessed, the crossing point is either on Stokes Bay Road over a bridge that is 8m wide at the bottom of a steep approach and subsequent rise or Ropers Road that is a single lane bridge that is 3.2m wide that would require replacement. Further the same section on Ropers Road that abuts the Cygnet River would need to be built up some 2m and widened with batter slopes for some 600m, with significant vegetation and amenity impact.

Roadside Native Vegetation

Roadside Native Vegetation assessments have also included any Water Affecting Activities (linked with Drainage & Bridges) and any known habitats. Roadside vegetation was assessed for any clearance requirements to provide 2m back behind white marker posts and 4m overhead clearance along with line of sight for corners and intersections.

Preliminary discussions have been held with Department of Environment, Water and Natural Resources (DEWNR) and Natural Resource Management (NRM) staff including a field trip driving the proposed routes.

Preliminary roadside vegetation clearance requirements were provided to relevant staff prior to site visits. A formal, independent roadside vegetation

² ARRB Unsealed Roads Manual, Guidelines to Good Practice P 4.7.

assessment will be commissioned when the preferred route is selected as part of the approval process. This will identify any protected and endangered plants along with SEB off set requirements.

There is a Glossy Black habitat at the intersection of Rose Cottage Road and North Coast Road that could impact any road works at that intersection. As identified in the previous section, Ropers Road has a section that abuts the Cygnet River that is both low and narrow with a single lane bridge. There is also another know Glossy Black habitat to the east of that same section on Ropers Road. Any road works in that area would require removal of multiple large trees to enable the road to be built up to provide all weather access.

Right of Way and Intersections

Right of way for the proposed freight routes were assessed as part safety to all road users and efficiency of the freight task. The majority of the routes assessed were only non-right of way when turning right onto a connecting road, with the exception of Ropers and Gap which both have 'give way' points along their length (Gum Creek and Springs Roads).

Intersections were assessed based on line of sight, swept path provisions (turning movement for long heavy vehicles) and vertical alignment. All intersections will require some form of upgrade, particularly vegetation removal and widening.

Site distances were based on Austroads Guide to Road Design, Part 4A: Unsignalised and Signalised Intersections. For the give way roads (minor) along the assessed routes Approach Sight Distance (ASD) was used and Safe Intersection Sight Distance (SISD) used for the intersections navigated along the assessed routes. As per ARRB Unsealed Road Manual (page 4.9) 'no longitudinal friction values for trucks on unsealed roads are known at this stage. As a rough guide stopping sight distances for trucks should be at least 30m greater than for cars'³.

The following site distances were used in the assessment⁴

	ASD	SISD⁵
80km/hr	185	220
100km/hr	230	307

³ ARRB Unsealed Roads Manual, Guidelines to Good Practice P 4.9.

⁴ ARRB Unsealed Roads Manual, Guidelines to Good Practice P 4.25

⁵ Department of Transport Infrastructure and Planning 'Route Assessment Guidelines for Restricted Access Vehicles; Appendix A.

Land Uses & Residential Impacts

It is acknowledged that the impacts of a freight route of the proposed volumes will impact road users and particularly residents along the route. Although the roads will be upgraded and maintained to a high standard which residents will enjoy the benefits of, the frequency of heavy vehicle movement will impact residents to some degree, particularly for those who reside close to the road.

Identifying the number and proximity of residences along the assessed routes has been included. Roads like McBrides, although currently in poor condition, have no residences along its length unlike Playford Highway or North Coast Road.

Traffic & Safety

This part of the assessment included traffic counts, school bus routes, traffic composition, crash history, speed environment and overtaking provisions.

Roads with a low traffic count (<10 vehicles per day) have been scored higher than those with high traffic counts (>150 vpd) as the risk of accident is reduced on road with low traffic counts. It is also acknowledged that generally when a road is upgraded, traffic counts increase.

Kangaroo Island has relatively low traffic counts which increase significantly during the peak summer tourist season. The impact of approximately 90 heavy vehicle return trip movements per day will have an impact on other road users in the short to mid-term. Safety and impact on other road users is integral in the route assessments including overtaking provisions. As forestry trucks will be travelling at 80km or slower where required, it is important that safe overtaking opportunities are provided for where appropriate.

Traffic composition including current school bus routes, Regionally Significant Tourist, Community Access and Freight Roads⁶ and locally significant freight routes have been included. Any conflict in traffic composition has been scored accordingly.

Crash history has also been reviewed (available on DPTI website). None of the crashes on the assessed roads resulted in personal injury, only property damage. With 2 exceptions of hitting wildlife, the other crashes were attributed to driver inattention. It must be noted that many crashes on Kangaroo Island are never reported, nor are the near misses. Incidents involving wildlife are numerous according to locals, with the majority having being involved at some time.

⁶ Southern & Hills Local Government Association 2020 Transport Plan

4.1 Option 2 – Playford Highway A, Stokes Bay Road, Bark Hut Road, McBrides Road, North Coast Road



4.1.1 Playford Highway A (30km assessed)

Playford Highway A for the purpose of this options assessment is from West Highway through to Stokes Bay Road. This assessed section of Playford Highway is under the care and control of Kangaroo Island Council.

Existing Road Conditions

Sealed road 7m wide from West Highway intersection through to Ahwans Road and 6.0m – 6.5m wide through to Stokes Bay Road and is in good condition.

There are some sections of the seal west of Mt

Taylor road where stripping and delamination of the seal is evident.

Based on the assessment, seal has been scored at 3 with pavement at 4. Playford Highway from Ahwans Road to Rowland Hill Highway is



Playford Highway A 1 – typical clearances

scheduled for re-seal in 2021/22 in Kangaroo Island Council's Transport Infrastructure Asset Management Plan⁷.

The shoulders are unsealed and range from 1.0 – 2.0m along the assessed length with clearance back at least 2m which has resulted in



Playford Highway A 1 - typical condition and clearances

a score of 5 in the assessment criteria.

Geometry of the assessed length has good cross fall at an average of 3 – 4% and is predominantly at grade with some gradual rises and falls. Geometry has been scored 5 overall in the assessment with predominantly flat and straight

sections of road with good cross fall and batter slopes.

Drainage & Bridges

The cross drains along the assessed length of Playford Highway are in good condition, 2m clear of the carriageway and suitable capacity to capture and distribute water run off. Drainage has been scored 5 overall in the assessment.

Roadside Native Vegetation

The Roadside vegetation is currently 2 – 3 m back from the carriageway along the majority of the assessed length of road. Pruning maintenance is required along sections of the assessed length to get the vegetation back 2m behind the white marker posts. Height clearance is good (3 – 4 m clearance) with vegetation being scored at 5 overall in the assessment criteria.

⁷ www.kangarooislandcouncil.sa.gov.au

Right of Way & Intersections

Along the assessed length, there is one (1) non right of way intersection being

- J Playford Highway A and Stokes Bay Road which is a right hand turn from Stokes Bay Road onto Playford Highway when heading away from Smith Bay.

The other intersections along the assessed length that are right of way to Playford Highway are

- J Gosse Ritchie Road & North Coast Road (110km speed zone) which provides adequate Safe Intersection Site Distance (SIDS).
- J Mt Taylor Road (110km speed zone) which provides adequate SIDS.
- J Coopers Road (110km speed zone) which provides adequate SIDS.
- J Harriet Road & Ahwans Road (110km speed zone) which provides adequate SIDS. Harriet Road services the Marron Farm which generates tourist traffic.
- J Turkey Lane (110km speed zone) which provides adequate SIDS.
- J McHughes Road (110km speed zone) which provides adequate SIDS.

Based on the assessment criteria, right of way has been scored as 5.



Playford Highway A 2 - Harriet Road intersection

The intersection that is non right of way will require widening to cater for heavy vehicle swept path and some vegetation removal, to enable the vehicle to turn without encroaching on the outgoing lane. It should be noted that SA Water main runs along the southern side of Playford

Highway (east of Turkey Lane) which will need to be considered when designing the intersection upgrade.

Based on the assessment criteria, intersections have been scored as 4.

Land Uses & Residential Access

Predominantly agricultural land with paddock accesses along with some residential driveways. There were no commercial driveways identified, however as previously stated the Marron Farm is on Harriet Road (intersects with Playford Highway) which generates tourist traffic and has been scored as 4 in the assessment criteria. Also noted is the Western Districts Sports Club that is west of Goss Ritchie Road that generates vehicle movements, predominantly on weekends and on Wednesdays (practice). Health Clinics and other community services are provided from the Sports Club.

Traffic & Safety

Playford Highway has a traffic count of 140 vpd⁸ and Regionally Significant Tourist and Access Routes in the S&HLGA 2020 Transport Plan. There are no reported crashes along the assessed length of Playford Highway. The speed environment is 110km for the assessed length of Playford Highway with overtaking provisions along the assessed length.

The assessed length of Playford Highway is a school bus route. Based on the assessment criteria, an average of 3.6 has been scored.



Playford Highway A 3 - Mt Taylor Road intersection (looking west)

⁸ Kangaroo Island Council Traffic Counts, Summer 2017

4.1.2 Stokes Bay Road (11.5km assessed)

Existing Road Conditions

Sealed road 6m wide between edge lines that is in very good condition. The carriageway width is just under 6m in some sections going down to 5.8, as such has been scored a 3.5 overall in the assessment criteria.

The shoulders are unsealed and range from 0.5 – 1.0 along the assessed length with clearance back at least 2m. There are several sections along the assessed length that have w-beam crash barriers installed that provides for a total width of 8m including unsealed shoulders which has resulted in a score of 4 overall in the assessment criteria.



Stokes Bay Road 1 - typical condition

The seal and pavement condition have both been scored at 5 overall in the assessment criteria.

Geometry of the assessed length has good cross fall at an average of 3 – 4% however there are sections of steep vertical grade, particularly over the bridge spanning the Cygnet River which also has a sharp transition from descent to incline. Geometry has been scored 2 overall in the

assessment, predominantly due to the steep section associated with the bridge over the Cygnet River.

Drainage & Bridges

The cross drains along the assessed length of Stokes Bay Road are in good condition, 2m clear of the carriage way and suitable capacity to capture and distribute water run of. The exception to this is the 300 dia cross drain at the intersection with Playford Highway which will need to be upgraded along with the intersection should this route be adopted.



Stokes Bay Road 2 - bridge over Cygnet River

The bridge crossing the Cygnet River (at chainage 5.5 off Playford Highway) has a carriageway width of 5.9m (edge line to edge line) with unsealed shoulders of 1m and w-beam crash barriers installed to Australian Standards. The bridge has been scored at 4 in the assessment criteria however it must be noted that structural testing of this bridge is required should this route be adopted.

Roadside Native Vegetation

The Roadside vegetation is currently 2 – 3 m back from the carriageway along the majority of the assessed length of road. Pruning maintenance is required along the majority of the assessed length (approximately 9.5km) to get the vegetation back 2m behind the white marker posts. Height clearance is good (3 – 4 m clearance) with vegetation being scored at 4 overall in the assessment criteria.



Stokes Bay Road 3- roadside vegetation

Right of Way & Intersections

Along the assessed length, there are two (2) non right of way intersections being

- J Stokes Bay Road & Bark Hut Road which is a right hand turn from Stokes Bay Road onto Bark Hut Road when heading towards Smith Bay.

- J Stokes Bay Road & Playford Highway which is a right hand turn from Stokes Bay Road onto Playford Highway when heading away from Smith Bay.

The other intersections along the assessed length that are right of way to Stokes Bay Road are



Stokes Bay Road 4 - intersection with Weatheralls & Morgans Roads

- J Weatheralls & Morgans Roads (staggered intersection) which provides adequate Safe Intersection Site Distance (SIDS).

- J Pioneer Bend Road which provides adequate SIDS.

Based on the assessment criteria, right of way has been scored as 5.

Both of the intersections that are non right of way will require widening to

cater for heavy vehicle swept path and some vegetation removal, particularly at the intersection of Playford Highway and Stokes Bay Road where a deceleration lane on Playford Highway to enable the vehicle to turn without encroaching on the outgoing lane. Note that there is a power pole on the western side of the intersection of Playford Highway which needs to be considered when designing an upgrade.



Stokes Bay Road 5 - intersection with Playford Highway



intersection with Bark Hut Road

Based on the assessment criteria, intersections have been scored as 4.

Land Uses & Residential Access

Predominantly agricultural land with paddock accesses along with some residential driveways. No commercial driveways were identified during the assessments however it is noted that the Stokes Bay Hall is on the intersection of Stokes Bay Road and Bark Hut Road and has been scored as 3.5 in the assessment criteria.

Traffic & Safety

Stokes Bay Road has a traffic count of 150 vpd⁹, particularly in the summer peak tourist season and is a Regionally Significant Tourist Route in the Southern & Hills LGA 2020 Transport Plan. There is some crash history along the assessed length with a motorbike rider leaving the road (rider inattention) which resulted in two (2) injuries¹⁰.

The speed environment is 100km/hr and there are overtaking provisions along the assessed length. However it should be noted that the descent and rise over the bridge at Cygnet River will require laden heavy vehicles to use low gear with no opportunity for overtaking for vehicles behind.

Currently Stokes Bay Road is a School Bus route and as previously noted is a tourist route. Based on the assessment criteria, an average of 2.2 has been scored.

⁹ Kangaroo Island Council Traffic Count Summer 2017

¹⁰ www.data.sa.gov.au/data/dataset/road-crash-data

4.1.3 Bark Hut Road (5.8km assessed)

Existing Road Conditions

Unsealed road 7m that is in very good condition. The shoulders are generally 0.5m along the assessed length with clearance back at least 2m up to 3m. There is one section along the assessed length that has w-



Bark Hut Road 1 - typical condition

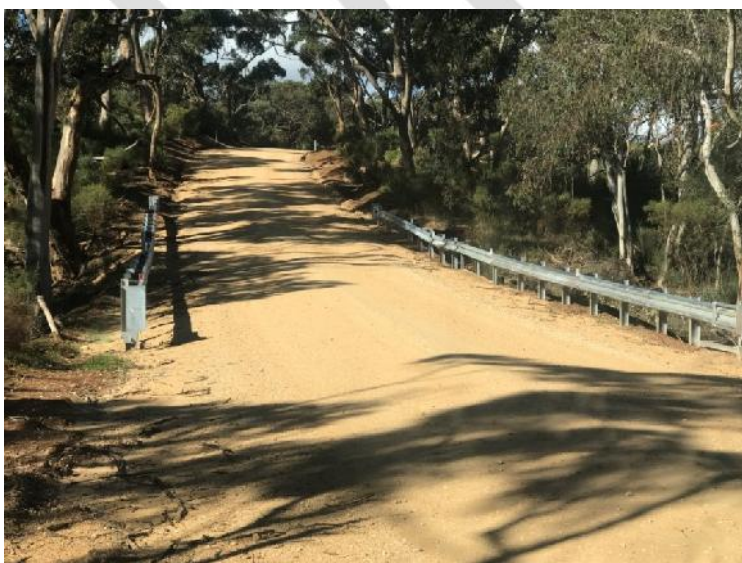
beam crash

barriers installed

on a bridge that provides for a total width of 8m including shoulders which has resulted in a score of 4 overall in the assessment criteria.

The surface and pavement condition have both been scored at 5 overall in the assessment criteria.

Geometry of the assessed length has good cross fall at 6% with gradual vertical grades however there are some sections where the batter slopes are steeper than 1 in 3 which has resulted in an overall score of 4 in the assessment criteria.



Bark Hut Road 2 - bridge crossing

Drainage & Bridges

The cross drains along the assessed length of Bark Hut Road are in good condition, 1m clear of the carriage way and suitable capacity to capture and distribute water run of. During assessments after periods of heavy rainfall, it was noted that there are a couple of sections that are holding water which could be corrected by clearing the

table drains of built up material.

Bark Hut Road has four (4) bridges with one (1) positioned on the assessed length. This bridge has an 8m width and new b-beam crash barriers. The bridge is relatively low lying (descent and rise) with a bend limiting line of sight on the eastern side of the road. The bridge has been scored 4 in the assessment criteria due to the low lying nature of the bridge which will require structural testing and hydrological capacity assessment should this route be adopted.

Roadside Native Vegetation

The Roadside vegetation is currently 2 – 3 m back from the carriageway along the majority of the assessed length of road. Some overhead clearance is required along with some tree removal near the bridge at the bend in the road on the rise leaving the bridge to improve line of sight. Vegetation has been scored at 3.5 overall in the assessment criteria.

Right of Way & Intersections

Along the assessed length, there are two (2) non right of way intersections being

- J Stokes Bay Road & Bark Hut Road which is a right hand turn from Stokes Bay Road onto Bark Hut Road when heading towards Smith Bay.
- J Bark Hut Road & McBrides Road which is a right hand turn when heading away from Smith Bay.



Bark Hut Road 3 - intersection with McBrides

The other intersections along the assessed length that are right of way to Bark Hut Road are

- J Pioneer Bend Road which provides adequate Safe Intersection Site Distance (SIDS).

Based on the assessment criteria, right of way has been scored as 5.

Both of the intersections that are non right of way will require widening to cater for heavy vehicle swept path and some vegetation removal, particularly at the intersection of Bark Hut Road and McBrides Road.

Based on the assessment criteria, intersections have been scored as 4.

Land Uses & Residential Access

Predominantly agricultural land with paddock accesses along with timber plantations along portion of the southern side of the assessed route. No commercial driveways were identified during the assessments and has been scored as 4 in the assessment criteria.

Traffic & Safety

Bark Hut Road has a traffic count of 55 vpd in 2013¹¹. As the road has recently been upgraded it is assumed that vehicle counts will increase. This road is also a local freight route that trucks use to access the north/western area of the island. There is some crash history along the assessed length however these did not result in injury and were attributed to driver inattention. One driver hit a fixed object after navigating a curve in the road with no injuries and another rolled the vehicle on a straight section of the road with no injuries. Both happened during daylight hours in dry weather¹².

The speed environment is 100km/hr with some overtaking provisions along the assessed length.

Currently that end of Bark Hut Road is not a School Bus route however as previously noted is a local freight route. Based on the assessment criteria, an average of 3 has been scored

¹¹ Kangaroo Island Council Traffic Counts, Winter 2013 (count was 59 vpd in Autumn 2012)

¹² ¹² www.data.sa.gov.au/data/dataset/road-crash-data

4.1.4 McBrides Road (7.17km assessed)

Existing Road Conditions

An unsealed, low classification road in poor condition. It is known that McBrides Road is often closed to non local traffic during winter due to hazardous conditions as it is not an all weather road. The carriageway width varies from 5.5m down to 3.6m and as such has been scored a



McBrides Road 1 - typical condition (poor)

1.5 overall in the assessment criteria.

The shoulders are predominantly non-existent along the assessed length with clearance only 0.5 – 2m resulting in a score of 1 overall in the assessment criteria.

The surface and pavement condition have both been scored at 1.5 overall in the assessment criteria.

Geometry of the assessed length has poor cross fall at an average of 1 – 2 with sections of steep vertical grade. Geometry has been scored 2 overall in the assessment, predominantly due to some steep sections.

Drainage & Bridges

The cross drains along the assessed length of McBrides Road are under capacity and in poor condition. There are multiple creek/water way crossings that would require the road to be raised/built up



McBrides Road 2 - insufficient drainage

and cross drain capacity increased. There are no bridges on McBrides Road.

Due to the multiple drainage issues, Drainage has been scored as 2 overall in the assessment criteria.

Roadside Native Vegetation

The Roadside vegetation currently abuts some of the narrow carriageway, with vegetation removal required if the road is upgraded. Based on the assessment, Vegetation has been scored as 2 in the assessment criteria.



McBrides Road 3 - roadside vegetation

Right of Way & Intersections

Along the assessed length, there are two (2) non right of way intersections being

-) McBrides and North Coast Road which is a right hand turn from McBrides Road onto North Coast Road when heading towards Smith Bay.
-) McBrides & Bark Hut Road which is a right hand turn from McBrides Road onto Bark Hut Road when heading away from Smith Bay.

There are no other intersections along the length of McBrides Road

Based on the assessment criteria, right of way has been scored as 5.

Both of the intersections that are non right of way will require widening to cater for heavy vehicle swept path and some vegetation removal, particularly at the intersection of Bark Hut Road and McBrides Road, a 55 degree turn, which will require widening of Bark Hut Road to allow for heavy vehicle swept path.

Based on the assessment criteria, intersections have been scored as 3.5.

Land Uses & Residential Access



McBrides Road 4 - timber plantation

All agricultural land with paddock accesses only, no residential driveways. There is also a timber plantation approximately 1.6km from Bark Hut Road with a score of 5 in in the assessment criteria.

Traffic & Safety

McBrides road has a traffic count of less than 10 vpd with no crash history reported. The speed environment is 100km/hr

however it is noted that due to the current condition of the road that speed at which vehicles actually travel is around 80km/hr. Due to the narrow carriageway and encroaching roadside vegetation, currently it is considered that there are no safe overtaking provisions.

McBrides Road is not a School Bus route and as previously noted has only paddock/farmland access (no residences). Based on the assessment criteria, an average of 4 has been scored

4.1.5 North Coast Road (15.9km assessed)

Existing Road Conditions

An unsealed road 8m wide that is in good condition with minor maintenance required along some sections and has been scored 5 overall in the assessment criteria.

The shoulders around 0.5 along the assessed length with clearance back 1 - 2m. Vegetation pruning/maintenance will improve the clearance to achieve 2m behind the white posts. As such a score of 4 has been assigned in the assessment criteria.

The surface and pavement condition have both been scored at a combined

average of 4.5, reflecting minor maintenance requirements to some sections of the wearing surface.

Geometry of the assessed length has good cross fall at an average of – 4% with some sections of steep vertical grade past Rose Cottage Road heading towards Smith Bay. The assessed length of North Coast Road has several winding sections where vegetation would need to be cut back/removed to improve line of site. Geometry has been scored 3.5 overall in the assessment, predominantly due to the steep section associated with the bridge heading towards Smith Bay and some of the winding sections.

Drainage& Bridges

The cross drains along the assessed length of North Coast Road are in good condition, 1 - 2m clear of the carriage way and suitable capacity to capture and distribute water run of.



North Coast Road 1 - typical condition



North Coast Road 2 – approaching bridge

There is a bridge crossing (at chainage 14.8 off McBrides Road, east of the intersection with Rose Cottage Road) has a carriageway width of 7.1m which is considered narrow and w-beam crash barriers installed to Australian Standards. Due to the narrow carriageway, the bridge has been scored at 3 in the assessment criteria and it must be noted

that structural testing of this bridge is required should this route be adopted. Options for widening to allow for heavy vehicle to safely pass each other on the bridge should also be investigated.

Roadside Native Vegetation

The Roadside vegetation is currently 1 – 2 m back from the carriageway along the majority of the assessed length of road. Pruning maintenance is required along approximately 65% of the assessed length to get the vegetation back 2m behind the white marker posts. Height clearance is good (3 – 4 m clearance) with vegetation being scored at 3.5 overall in the assessment criteria due to the potential requirement for cutting back/removal around corners and removal at the intersection with Smith Bay access road to facilitate upgrade of that intersection.

Right of Way & Intersections

Along the assessed length, there are two (2) non right of way intersections being

-) McBrides Road and North Coast Road which is a right hand turn from McBrides Road onto North Coast Road when heading towards Smith Bay.
-) Smith Bay access road & North Coast Road which is a right hand turn when heading away from Smith Bay.

The other intersections along the assessed length that are right of way to North Coast Road are

- J Springs Road which is just under adequate Safe Intersection Site Distance (SIDS) due to the rise in the road heading towards Smith Bay. Advance warning signage is installed.
- J Hummoky Road which provides adequate SIDS.
- J Cassini Road which provides adequate SIDS.
- J Rose Cottage Road which provides adequate SIDS.

Based on the assessment criteria, right of way has been scored as 4.5.

Both of the intersections that are non right of way will require widening to cater for heavy vehicle swept path and some vegetation removal, particularly at the



intersection of North Coast Road

North Coast Road 3 - approach to Smith Bay access (vegetation removal required for intersection upgrade)

and Smith Bay access road where a deceleration lane on North Coast Road to enable the vehicle to turn without encroaching on the outgoing lane will be required. .

Based on the assessment criteria, intersections have been scored as 3.5.

Land Uses & Residential Access

Predominantly agricultural land with paddock accesses along with multiple residential driveways along the length of the assessed length. No commercial driveways were identified during the assessments and has been scored as 3 in the assessment criteria.

Traffic & Safety

North Coast Road has a traffic count of 160 vpd¹³, particularly in the summer peak tourist season and is a Regionally Significant Tourist Route in the Southern & Hills LGA 2020 Transport Plan. There is some crash history along the assessed length however these did not result in injury and were attributed to wildlife and driver inattention.

The speed environment is 100km/hr and there are some overtaking provisions along the assessed length. However it should be noted that due to the winding nature of some sections of the assessed road length, that overtaking cannot be undertaken safely along these sections.

Currently the assessed section of North Coast Road is not a School Bus route however as previously noted is a tourist route. Based on the assessment criteria, an average of 3.3 has been scored.

¹³ Kangaroo Island Council Traffic Counts, Summer 2017

4.2 Option 5 – Playford Highway, Ropers Road, Gap Road and North Coast Road



4.2.1 Playford Highway (25.2km assessed)

Playford Highway is under Department of Planning, Transport & Infrastructure (DPTI) from the intersection with Birchmore Road through to Parndana and under Kangaroo Island Council's care and control west of Parndana.

Existing Road Conditions



Playford Highway 2 – Council controlled section (west of Parndana)

Sealed road 6m wide from Stokes Bay Road intersection through to Parndana and 6.5m wide from Parndana through to Ropers Road and is in good condition. The carriageway does have some variation from the descent towards Bark Hut Road (travelling east) through to Ropers Road, going down to 6m east of the intersection with Bark Hut Road and as such has been scored a 4 overall in the assessment criteria.

The shoulders are unsealed and range from 1.0 – 2.0m along the assessed length with clearance back at least 2m. East of Parndana the shoulders are sealed 0.5 for the first 10km east of Parndana which then reduces to no edge lines with edge breaks evident along sections of the assessed length which has resulted in a score of 4 in the assessment criteria.



Playford Highway 3 – DPTI controlled section (east of Parndana)

The seal and pavement condition have both been scored at 4 overall in the assessment criteria. There is some evidence of sections of the pavement beginning to fail where developing wheel ruts on the sealed road are holding water, delamination and edgebreaks.

Geometry of the assessed length has good cross fall at an average of 3 – 4% however there is a steep descent (Kohinoor Hill) with a bend in the road that intersects with Bark Hut Road. Geometry has been scored 3 overall in the assessment, predominantly due to the steep section known as Kohinoor Hill.



Playford Highway 4 - evidence of seal delaminating

Drainage & Bridges

The cross drains along the assessed length of Playford Highway are in good condition, 2m clear of the carriage way and suitable capacity to capture and distribute water run of. The only area of concern is the length of road east of Bark Hut Road that can become inundated in very heavy, prolonged rain events. Based on that scenario, Drainage has been scored 4 overall in the assessment.



Playford Highway 5 – section east of Bark Hut Road intersection subject to inundation during prolonged, heavy rain events.

Roadside Native Vegetation

The Roadside vegetation is currently 2 – 3 m back from the carriageway along the majority of the assessed length of road. Pruning maintenance is required along the majority of the assessed length to get the vegetation back 2m behind the white marker posts. Height clearance is good (3 – 4 m clearance) with vegetation being scored at 4 overall in the assessment criteria.

Right of Way & Intersections

Along the assessed length, there is one (1) non right of way intersection being

-) Ropers Road & Playford Highway which is a right hand turn from Ropers Road onto Playford Highway when heading away from Smith Bay.

The other intersections along the assessed length that are right of way to Playford Highway are

- J Rowland Hill Highway (110km speed zone) which provides adequate Safe Intersection Site Distance (SIDS).
- J Smith & Jones Streets, Parndana (80km speed zone) which provides adequate SIDS.
- J Wedgewood Road (80km speed zone) which provides adequate SIDS.
- J Timber Creek Road provides adequate SIDS.
- J Bark Hut Road does not provide adequate SIDS when travelling east due to steep descent and intersection being of the edge of a bend in the road. Advance warning signs have been installed as an additional measure.
- J Branch Creek Road does not provide adequate SIDS when travelling east due to the vegetation and intersection alignment (65 degree turn off Playford when travelling east). Advance warning signs have been installed as an additional measure.
- J Margaries Road provides adequate SIDS.

Based on the assessment criteria, right of way has been scored as 4.

The intersection that is non right of way will require widening to cater for heavy vehicle swept path and some vegetation removal, to enable the vehicle to turn without encroaching on the outgoing lane. It should be noted that SA Water main runs along the southern side of Playford Highway which will need to be considered when designing the intersection upgrade.

Based on the assessment criteria, intersections have been scored as 4.



Playford Highway 6 - typical condition

Land Uses & Residential Access

Predominantly agricultural land with paddock accesses along with some residential driveways. There was one commercial driveway identified and has been scored as 3.5 in the assessment criteria.

The length of road assessed abuts the township of Parndana (speed limit reduced to 80km for that section). There are SA Ambulance and CFS despatches from that location servicing the central and western end of Kangaroo Island.

The commercial driveway identified services the Parndana Wildlife Park which is a popular attraction generating tourist and local traffic.

The balance of the assessed length contains a mix of agricultural land with paddock access and residential driveways. Due to the Highway abutting the township of Parndana, the commercial driveway and number of residential driveways (20 counted with rural road numbers along assessed length) Land Uses and Residential Access has been scored 2 overall.

Traffic & Safety

Playford Highway has a traffic count of over 200 vpd and is a Gazetted B-Double Route (23m) from east of Parndana (DPTI Major Freight Road), Regionally Significant Tourist and Access Routes in the S&HLGA 2020 Transport Plan . There is some crash history along the assessed length with one reported crash resulting in a casualty and serious injury. That accident occurred near Ropers Road intersection where a vehicle failed to keep left resulting in a head on crash. Another crash occurred at the Parndana township where a vehicle leaving Smith Street failed to give way (no injuries). Another occurred at a T-Junction (Mellville Track) where two vehicles were following too closely when one hit an animal which resulted in five (5) casualties¹⁴.

The speed environment is 100km down to 80km through Parndana then up to 110km west of Parndana with overtaking provisions along the assessed length.

Currently Playford Highway has two (2) School Bus routes and as previously noted is DPTI Major Freight Road and Regionally Significant Tourist and Access Routes. Based on the assessment criteria, an average of 2.3 has been scored.

¹⁴ ¹⁴ www.data.sa.gov.au/data/dataset/road-crash-data

4.2.2 Ropers Road (4.47km assessed)

Existing Road Conditions

An unsealed road in fair to poor condition. The carriageway width varies from 5.5m down to 3.3m and as such has been scored a 2 overall in the assessment criteria.



Ropers Road 1 – typical standard (200m off Playford Highway)

The shoulders are 0.5 along the majority of the road with the exception of the

600m through the Cygnet River floodway up to the single lane bridge that is narrow, low lying (floods) with no shoulders resulting in a score of 2.5 overall in the assessment criteria.

The surface and pavement condition have both been scored at 2.5 overall in the assessment criteria.

Geometry of the assessed length has cross fall at an average of 2 – 3 with sections of moderate vertical grade. Geometry has been scored 3 overall in the assessment, predominantly due to the section through the Cygnet River floodway.



Ropers Road 2 - approaching floodway section that would require to be built up with substantial tree removal

Drainage & Bridges

The cross drains along the assessed length of Ropers Road are under capacity and in fair to poor condition. The major issue identified is the length of road abutting the Cygnet River that is prone to annual flooding along that would need to be built up some 1.5 – 2m,

batters would be 2 – 3 m for a 9m wide carriageway resulting in a 15m + working envelope vegetation clearance. This is deemed a significant Water Affecting Activity that will require NRM Board approval. There are other sections crossing minor creek/water ways that would require the road to be raised/built up and cross drain capacity increased. There are also several roadside dams identified that cause potential flooding issues.



Ropers Road 3 - single lane bridge spanning Cygnet River

There is a single lane bridge (3.2m wide) with the original crash barriers that are not to current Australian Standards. There are old timber bridge pylons situated to the east of the current bridge. The existing bridge would either have to be widened, or a new double lane bridge constructed.

Due to the multiple drainage issues and single lane bridge constraint, Drainage & Bridges has been scored as 1 overall in the assessment criteria.

Roadside Native Vegetation

The Roadside vegetation currently abuts some of the narrow carriageway, with vegetation removal (large gum trees) required if the road is upgraded.

Based on the assessment, Vegetation has been scored as 1.5 in the assessment criteria.



Ropers Road 4 - narrow section that would require significant tree removal

Right of Way & Intersections

Along the assessed length, there are two (2) non right of way intersections being

-) Ropers Road intersection with Gum Creek Road, Duck Lagoon Road and Gap Road (5 way intersection).
-) Ropers Road intersection with Playford Highway which is a right hand turn from Ropers Road onto Playford Highway when heading away from Smith Bay.

Based on the assessment criteria, right of way has been scored as 5.

Both of the intersections that are non right of way will require upgrade



works. The 5 way intersection with Gum Creek Road will require re-alignment as Duck Lagoon Road is blind to vehicles travelling along Ropers Road. The intersection with Playford Highway is likely to require a deceleration lane to enable the vehicle to turn without encroaching on the outgoing lane.

Ropers Road 5 - 5 way intersection that would require reconfiguration and upgrade

Based on the assessment criteria, intersections have been scored as 2.5.

Land Uses & Residential Access

Predominantly agricultural land with paddock accesses along with several residential driveways along the length of the assessed length. No commercial driveways were identified during the assessments and has been scored as 3 in the assessment criteria.

Traffic & Safety

Ropers Road has a traffic count of 33 vpd¹⁵ with no crash history reported. The speed environment is 100km/hr however it is noted that through the narrow section of the road vehicles actually travel at around 80km/hr. Through the narrow section there are no safe overtaking provisions, however there along the strait, flat sections at either end.

Ropers Road is not a School Bus route and there are no reported crashes. Based on the assessment criteria, an average of 4 has been scored.

DRAFT

¹⁵ Kangaroo Island Council Traffic Count, Spring 2012

4.2.3 Gap Road (6.9km assessed)

Existing Road Conditions

An unsealed, low class road in fair condition. The carriageway width varies from 6.5m down to 4.8m and as such has been scored a 3 overall in the assessment criteria.

The shoulders are 0.0 – 0.5 along the assessed length with clearance only 1 – 2m resulting in a score of 3.5 overall in the assessment criteria.

The surface and pavement condition have both been scored at 2 and 2.5 respectively in the assessment criteria. It is noted that Council have recent patched sections between Gum Creek and Springs Roads and that re-sheeting of that same section is programmed for 2017/18 Financial Year.

Geometry of the assessed length has poor cross fall at an average of 1 – 2 % with several sections that dip where waterways/creeks cross (see Drainage for further details).

Generally the rises and falls of the grades are gradual resulting in an overall score of 3.



Gap Road 1 - typical condition

Drainage & Bridges

The cross drains along the assessed length of Gap Road are generally under capacity and require maintenance, including extension. There are several creek/water way crossings that would require the road to be raised/built up and cross drain capacity increased. These drains range from 1200mm with several 600mm demonstrating the catchments and drainage requirements in the area. There is a 4 x 600dia creek crossing that is just under the classification of a bridge (7m or greater span) that would require upgrade subject to hydrological assessment.

Due to the multiple drainage issues, Drainage has been scored as 2 overall in the assessment criteria.



Roadside Native Vegetation

The Roadside vegetation currently abuts some of the narrow carriageway, with vegetation removal required if the road is upgraded. Councils current Roadside Vegetation Management Plan has Gap Road identified with Category A vegetation (to be confirmed) and as such Vegetation has been scored as 2 in the assessment criteria.

Right of Way & Intersections

Along the assessed length, there are two (2) non right of way intersections being

- J Gap Road and Springs Road which is Give Way to Springs Road for travel in both directions (towards and away from Smith Bay).
- J Gap Road & North Coast Road which is a right hand turn from North Coast Road onto Gap Road when heading away from Smith Bay.

The intersection with Gum Creek, Ropers and Duck Lagoon Road was noted and scored accordingly against Ropers Road assessment.

Based on the assessment criteria, right of way has been scored as 4.

The intersection of Gap with North Coast Road will require widening to cater for heavy vehicle swept path and some vegetation removal. The intersection with Springs Road will require to be built up (Gap Road dips at the intersection) along with vegetation removal. The line of

sight on Gap Road looking east on Springs Road heading towards Smith Bay is obscured by a bend in the road and vertical grade with vegetation requiring removal.

Based on the assessment criteria, intersections have been scored as 3.

Land Uses & Residential Access

Predominantly agricultural land with paddock accesses along with several, residential driveways along the length of the assessed length. No commercial driveways were identified during the assessments and has been scored as 3 in the assessment criteria.



Gap Road 2 - typical standard between Springs Road and North Coast Road

Traffic & Safety

Ropers Road has a traffic count of 46 vpd¹⁶ with no crash history reported. The speed environment is 100km/hr however it is noted that through the narrow section of the road vehicles actually travel at around 80km/hr. Through the narrow section there are no safe overtaking provisions, however there along the strait, flat sections at either end.

Ropers Road is not a School Bus route however there is a reported crash (no injuries, driver inattention). Based on the assessment criteria, an average of 3.6 has been scored

¹⁶ Kangaroo Island Council Traffic Count Spring 2015

4.2.4 North Coast Road (6.8km assessed)

Existing Road Conditions

An unsealed road 7m wide that is in good condition and has been scored 5 overall in the assessment criteria.

The shoulders around 0.5 along the assessed length with clearance back 2 - 3m. Vegetation pruning/maintenance will improve the line of sight for curves and bends in the road. As such a score of 5 has been assigned in the assessment criteria.



North Coast Road 4 - typical condition

The surface and pavement condition have both been scored at a combined average of 4.5, reflecting minor maintenance requirements to some sections of the wearing surface.

Geometry of the assessed length has good cross fall at an average of 5% with gradual vertical. The assessed length of North Coast Road has several winding sections where vegetation would need to be cut back/removed to

improve line of site. Geometry has been scored 4 overall in the assessment, predominantly due to the winding sections.

Drainage & Bridges

The cross drains along the assessed length of North Coast Road are in good condition, 1 - 2m clear of the carriage way and suitable capacity to capture and distribute water run of.

There are no bridges along this section of North Coast Road, FORDS or roadside dams and as such Drainage & Bridges has been scored 5.

Roadside Native Vegetation

The Roadside vegetation is currently 1 – 2 m back from the carriageway along the majority of the assessed length of road. Pruning maintenance is required for corners and bends to improve line of sight.

Height clearance is good (3 – 4 m clearance) with vegetation being scored at 4 overall in the assessment criteria.

Right of Way & Intersections

Along the assessed length, there are two (2) non right of way intersections being

-) North Coast Road and Smith Bay access road which is a right hand turn from North Coast Road onto the Smith Bay access road when heading towards Smith Bay.
-) North Coast Road & Gap Road which is a right hand turn when heading away from Smith Bay.

The no other intersections along the assessed length of North Coast Road. Based on the assessment criteria, intersections have been scored as 4.



North Coast Road 5 - intersection with Gap Road

Land Uses & Residential Access

Predominantly agricultural land with paddock accesses along with multiple residential driveways along the length of the assessed length. Two (2) commercial driveways were identified during the assessments (Willsons Quarry and Abalone Farm) and has been scored as 3 in the assessment criteria.

Traffic & Safety

North Coast Road has a traffic count of 160 vpd¹⁷, particularly in the summer peak tourist season and is a Regionally Significant Tourist Route in the Southern & Hills LGA 2020 Transport Plan. There is some crash

¹⁷ Kangaroo Island Council Traffic Count Summer 2017

history along the assessed length however these did not result in injury and were attributed to driver inattention.

The speed environment is 100km/hr and there are some overtaking provisions along the assessed length. However it should be noted that due to the winding nature of some sections of the assessed road length, that overtaking cannot be undertaken safely along these sections.

Part of the assessed section of North Coast Road is a School Bus route and as previously noted is a Regionally Significant Tourist route. Based on the assessment criteria, an average of 2 has been scored.

DRAFT

4.3 Option 6 – Playford Highway A, Stokes Bay Road, Bark Hut Road, McBrides Road, North Coast Road, Springs Road, North Coast Road & North Coast Road.



As Option 6 is a variation of Option 2 with the inclusion of Springs Road and Rose Cottage Road as a 'bypass' to North Coast Road, the following assessment is for Springs and Rose Cottage Roads only with the summary reflecting the entire route (based on the assessment of Option 2).

4.3.1 Springs Road (9.5km assessed)

Existing Road Conditions

Unsealed road 7m that is in very good condition. The shoulders are generally 0.5m along the assessed length with clearance back at least 2m up to 3m which has resulted in a score of 5 overall in the assessment criteria.



Springs Road 1 – at Woodlana looking east

The surface and pavement condition have both been scored at 5 overall in the assessment criteria.

Geometry of the assessed length has good cross fall at 6% with gradual vertical

grades however there is one section near the Millers Road intersection which is steep and winding which has resulted in an overall score of 3.5 in the assessment criteria.

Drainage & Bridges

The cross drains along the assessed length of Springs Road are in good condition, 1m clear of the carriage way and suitable capacity to capture and distribute water run-off. There are no bridges along Springs Road which has resulted in a score of 5 in the assessment criteria.

Roadside Native Vegetation

The Roadside vegetation is currently 2 – 3 m back from the carriageway along the majority of the assessed length of road. Some overhead clearance is required along with some tree removal around some corners to improve line of sight. Vegetation has been scored at 3.5 overall in the assessment criteria.



Spring Road 2 – vegetation that needs to be cut back

Right of Way & Intersections

Along the assessed length, there are two (2) non right of way intersections being:-

- J North Coast Road and Springs Road which is a right hand turn from North Coast Road onto Springs Road when heading towards Smith Bay.
- J Rose Cottage Road and Springs Road which is a right hand turn when heading away from Smith Bay.

The other intersections along the assessed length that are right of way to Springs Road are:-

- J Millers Road which is marginally short of adequate Safe Intersection Site Distance (SIDS). When heading towards Smith Bay, the approach to the Millers Road intersection is a relatively steep descent that has a couple of curves, limiting line of sight and the ability to pull up a heavy vehicle impacted.



Springs Road 4 – intersection with Rose Cottage Road

Based on the assessment criteria, right of way has been scored as 4.

Both of the intersections that are non right of way will require widening to cater for heavy vehicle swept path and some vegetation removal, particularly at the intersection of Springs and Rose Cottage Road.

Based on the assessment criteria, intersections have been scored as 4.

Land Uses & Residential Access

Predominantly agricultural land with paddock accesses along with multiple residential accesses. No commercial driveways were identified during the assessments however it should be noted that Springs Road dissects Woodlana Station where livestock is often moved along and across the road. Land Uses has been scored as 3 in the assessment criteria.

Traffic & Safety

Springs Road has a traffic count of 129¹⁸ vpd. As the road has recently been upgraded it is assumed that vehicle counts have increased. There is no crash history along the assessed length however is a School Bus route.

The speed environment is 100km/hr with some overtaking provisions along the assessed length. Based on the assessment criteria, an average of 3.6 has been scored

¹⁸ Kangaroo Island Council Traffic Count Spring 2016

4.3.2 Rose Cottage Road (5.5 km assessed)

Existing Road Conditions

An unsealed, class road in fair to poor condition. The carriageway width varies from 6m down to 4.2m and as such has been scored a 2 overall in the assessment criteria.

The shoulders are predominantly non-existent along the assessed



Rose Cottage Road 1 – typical condition

length with clearance only 0.5 – 1m resulting in a score of 1 overall in the assessment criteria.

The surface and pavement condition have both been scored at 2 overall in the assessment criteria.

Geometry of the assessed length has poor cross fall at an average of 1 – 2 with sections of steep vertical grade towards

the North Coast Road end. Geometry has been

scored 3 overall in the assessment, predominantly the terrain at the North Coast Road end.

Drainage & Bridges

The cross drains along the assessed length of Rose Cottage Road are under capacity and in relatively poor condition. There are multiple creek/water way crossings that would require the road to be raised/built up and cross drain capacity increased. There are no bridges on Rose Cottage Road.



Rose Cottage Road 2 – existing FORD that would need to be upgraded

Due to the multiple drainage issues, Drainage has been scored as 2 overall in the assessment criteria.

Roadside Native Vegetation

The Roadside vegetation currently abuts some of the narrow carriageway, with vegetation removal required if the road is upgraded.

The intersection with North Coast Road is a Glossy Black habitat (endangered species) as identified by DEWNR. Vegetation removal for road and intersection upgrades is not recommended.

Based on the assessment, Vegetation has been scored as 1 in the assessment criteria.

Right of Way & Intersections

Along the assessed length, there are two (2) non right of way intersections being

-) Rose Cottage and North Coast Road which is a right hand turn from Rose Cottage Road onto North Coast Road when heading towards Smith Bay.
-) Rose Cottage Road and Springs Road which is a right hand turn from Rose Cottage Road onto Springs Road when heading away from Smith Bay.



Rose Cottage Road 3 – approach to intersection with North Coast Road

There are no other intersections along the length of Rose Cottage Road

Based on the assessment criteria, right of way has been scored as 5.

Both of the intersections that are non-right of way will require widening to cater for heavy vehicle swept path and

some vegetation removal. The

intersection with North Coast Road is steep on the approach and

meets with North Coast Road on a dip of a bend with insufficient line of sight. The intersection would need to be raised considerably but would still have limited line of sight onto North Coast Road. There is a creek crossing (FORD) 80 back from the intersection that would have to be raised and upgraded to enable laden heavy vehicles to pull up and stop safely at the intersection. The extent of works required for an intersection upgrade would impact on Glossy Black habitat and is not recommended.

Based on the assessment criteria, intersections have been scored as 1.

Land Uses & Residential Access

All agricultural land with paddock access with several residential driveways. No commercial activity was identified during the assessment and as such has a score of 4 in in the assessment criteria.

Traffic & Safety

Rose Cottage Road has a traffic count of less than 10 vpd with no crash history reported. The speed environment is 100km/hr however it is noted that due to the current condition of the road that speed at which vehicles actually travel is around 80km/hr. Due to the narrow carriageway and encroaching roadside vegetation, currently it is considered that there are no safe overtaking provisions.

Rose Cottage Road is not a School Bus route and as previously noted has several FORD crossings that reduce the speed vehicles generally travel. Based on the assessment criteria, an average of 3.6 has been scored

5.0 Summary of Assessments

5.1 Evaluation Framework (Assessment Criteria)

The assessed routes using the evaluation framework have resulted in the following outcome (in order)

Route Option	Average Weighted Score
Option 2 Playford Highway A, Stokes Bay Road, Bark Hut Road, McBrides Road and North Coast Road	75.80
Option 5 Playford Highway A & B, Ropers Road, Gap Road & North Coast Road	68.63
Option 6 Playford Highway A, Stokes Bay Road, Bark Hut Road, McBrides Road, North Coast Road, Springs Road & Rose Cottage Road	71.81

Please refer to **Appendix B** for further details on the assessment criteria results.

A summary of the advantages and disadvantages identified during the assessments is as follows:-

Route Option	Advantages	Disadvantages
Option 2	<ul style="list-style-type: none"> - Existing, year round / all-weather access over the Cygnet River - There are four (4) plantations on Bark Hut Road and one (1) on McBrides Road. - No residential access on McBrides Road - Least amount of upgrade requirements (\$). 	<ul style="list-style-type: none"> - High volumes of tourist traffic on Stokes Bay and North Coast Roads (Regionally Significant Tourist Routes). - Steep terrain over Cygnet River on Stokes Bay Road. - School bus route on Stokes Bay Road
Option 6	<p>As per above, plus</p> <ul style="list-style-type: none"> - Minimises travel distance on North Coast Road (Regionally Significant Tourist Route) 	<p>As above, plus</p> <ul style="list-style-type: none"> - School bus route on Springs Road - Rose Cottage Road intersection with North Coast Road considered hazardous for heavy vehicles. - Rose Cottage Road at North Coast Road is a Glossy Black habitat.
Option 5	<ul style="list-style-type: none"> - Used DPTI's Heavy Vehicle route on Playford Highway - Shortest journey time - North Coast Road requires minimal upgrades with good geometry. 	<ul style="list-style-type: none"> - 600m segment on Ropers Road would need to be raised 2m with 14m wide vegetation (large trees) to be removed. - Bridge over Cygnet River would need to be upgraded. - Glossy Black habitat near Cygnet River section. - Give way protocols along Ropers and Gap may need to be reviewed.

5.2 Upgrade and Annual Maintenance Preliminary Estimates

What also needs to be considered when selecting a preferred option is distance, journey time, upgrade and maintenance costs.

The cost estimates below are preliminary estimates based on square meter rates (Rawlinsons and local knowledge). **Note that these preliminary estimates are indicative only and have been compiled to aid the options assessment.**

Upgrade costs include vegetation clearance, excavation, drainage, bridge upgrades, pavement construction, resheeting and shoulder sealing. Intersection upgrades have also been included which accounts for a deceleration lane on North Coast Road at the intersection with Smith Bay access road, Playford Highway and Stokes Bay Road and Playford Highway and Ropers Road.

Maintenance costs include grading, patching, drain maintenance, crack sealing, potholes, line marking and roadside vegetation. Maintenance costs exclude operating expenses such as administration, depreciation and finance costs.

Please refer to **Appendix C** for further details on the estimated unit rates used in determining preliminary estimates.

Route Option	Distance (km)	Journey Time	Upgrade indicative preliminary estimate	Maintenance indicative preliminary estimate pa	Upgrade /km
Option 2	70.37	103 mins	\$2,985,000	\$ 233,000	\$42,000
Option 5	73.37	107 mins	\$5,135,000	\$ 216,000	\$70,000
Option 6	73.37	109 mins	\$4,625,000	\$ 246,000	\$63,000

The distance for both Option 6 and 5 is the same, however the journey time for Option 6 is marginally more than Option 5 due to the additional intersections navigated. It is noted that once the roads are upgraded along the preferred route, journey time will be reduced as heavy vehicles will be able to maintain 80km/hr along the majority of the distance.

Upgrade estimates reflect the length of road requiring upgrade where Option 2 is predominantly for McBrides Road (7.17km) and shoulder sealing on Playford Highway (30km) and Stokes Bay Road (11.5km) as compared to Option 6 which requires McBrides (7.17km) and Rose Cottage (5.5km) along with shoulder sealing on Playford Highway and Stokes Bay Road or Option 5 which requires Ropers (4.47km) and Gap Road (6.9km) along with shoulder sealing along Playford Highway (52.5km). The number of intersections along

the route has also impacted the upgrade estimates where Option 2 and Option 5 both have five (5) intersections that require upgrade unlike Option 6 which has eight (8) intersections that require upgrade.

Maintenance estimates exclude administration, depreciation and finance costs. Option 5 has the longest length of sealed road (Playford Highway) which has a lower annual maintenance preliminary estimate as compared to unsealed maintenance.

5.3 Assessment Outcomes

To compare the three options against the assessment criteria outcomes, distance, journey time, upgrade estimates and annual maintenance estimates the table below reflects the combined comparisons by denoting the preferred option against each of the assessment areas:-

Route Option	Evaluation Framework Outcomes	Distance	Journey Time	Upgrade Estimates	Maintenance Estimates
Option 2	★	★	★	★	
Option 5					★
Option 6					

Based on the assessment outcomes, it is recommended that **Option 2** be considered for Road Safety Audit, engineering upgrade requirements and Native Vegetation assessments.

6.0 Funding Options

As per Council's Road Network Extension Policy¹⁹ "Council will not develop and construct new road nor upgrade an existing road unless the associated construction or upgrade costs are fully borne by the Applicant/s – or – the construction or upgrade is undertaken with the assistance of a significant financial co-contribution provided by the Applicant/s, they having proven the construction or upgrade is warranted within the Kangaroo Island Strategic Management Plan and subsequently, having any related costs included in the current budget."

The policy also states "Council's funding for applications (external and internal) to extend or upgrade the road network is dependant upon;

2.2.1 additional funds are gained via the Roads to Recovery scheme, whether they be from State and/or Federal funding streams,

2.2.2 evidentiary need being established. That being that a case for priority development be made based upon community socio-economic need.

The Kangaroo Island Strategic Management Plan 2014 – 2018 have the following 'actions' that align with the proposed road upgrades based on the Smith Bay proposal by KIPT being:-

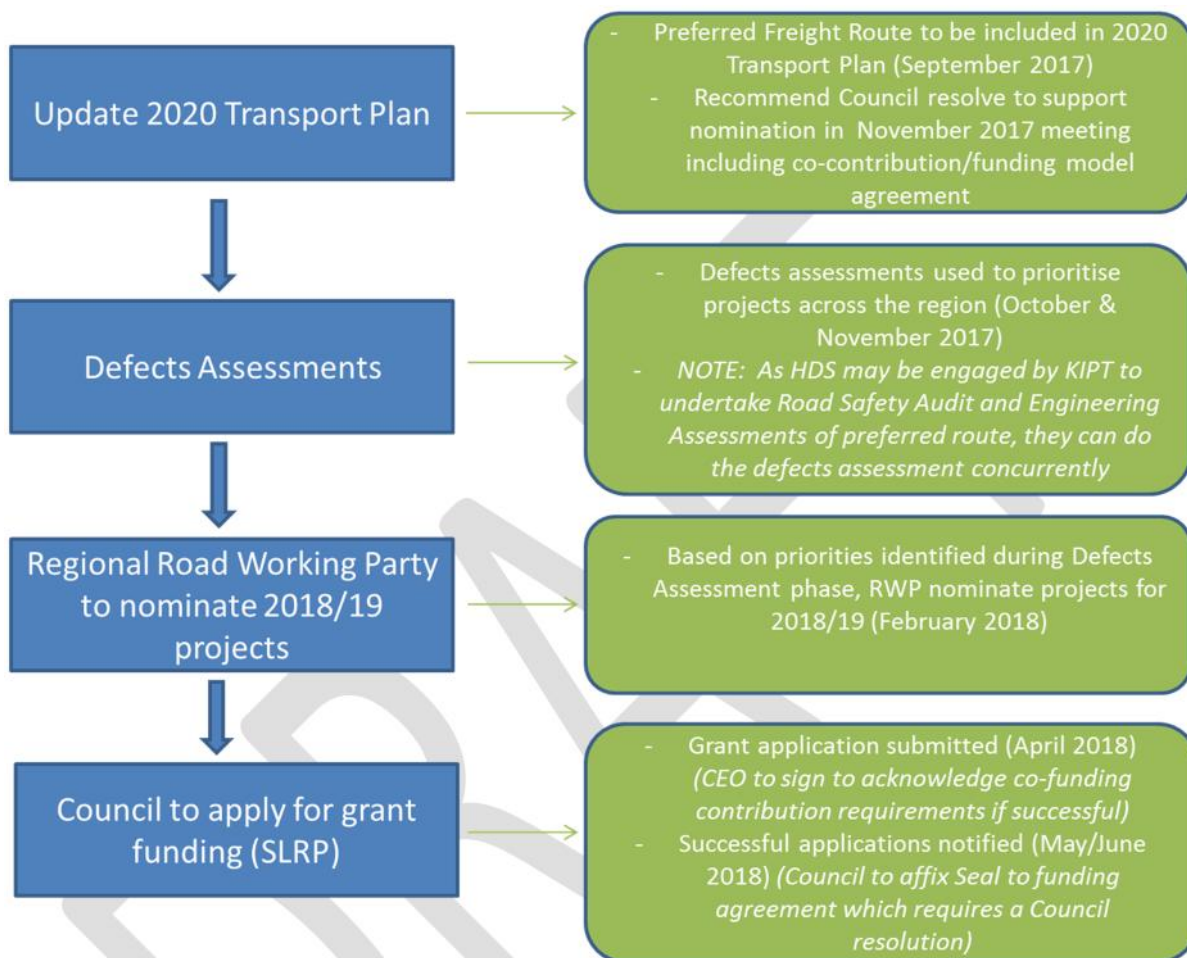
- Action 7.1 Advocate for affordable access to Island by both sea and air, for freight and people.
- Action 11.2 Optimise opportunities for Private Works.
- Action 12.1 Review underutilised reserve/non-useable assets and explore potential to lease, sell or co-develop for commercial or community return.
- Action 13.1 E tags for non-residential road users
- Action 14.2 Package infrastructure service opportunities with other Community investment propositions to increase attractiveness for Public Private Partnership (PPP) potential.
- Action 17.1 Encourage investment opportunities.

The Southern & Hills Local Government Association 2020 Transport Plan is the strategic transport plan document for the Southern & Hills Region that is aligned to South Australia's Strategic Plan.

¹⁹ Kangaroo Island Council Road Network Extension Policy March 2014

It is proposed that based on the preferred freight route option be supported by Council and included in the 2020 Transport plan with a view to secure Special Local Roads Programme (SLRP) funding through the Roads Working Party.

An overview of the process is depicted below:-



Following is an overview of SLRP funding and how it is allocated along with other potential funding programmes that could be accessed.

Special Local Roads Program (SLRP)

SLRP is funded with 15% of the Local Roads Grants allocated to the State as part of the Financial Assistance Grants (FAGs) and 15% of the State allocation of Roads to Recovery.

In 2016/17 the Local Road Funding for SA was \$38.7m of which \$5.8m went to SLRP along with \$9.8m from Road to Recovery. Southern & Hills LGA (Kangaroo Island is a member) allocation was \$1.7m in 2016/17 with the successful projects being funded 1/3 Council and the balance (2/3) SLRP. It would be unlikely for the Region's full allocation to go to just one (1) Council.

Local Government Transport Advisory Panel (LGTAP) make recommendations to the LGA Board based on the submissions from the various regional and metropolitan local government associations. LGTAP give preference to those projects that have been developed through Regional Transport Plans (ie Southern & Hills LGA 2020 Transport Plan) and transparent planning processes.

The nominations for 2017/18 have been submitted. The next round of nominations will be put forward by the S&HLGA Road Working Party generally around February based on the defects assessments of the revised Regional Freight, Tourist and Community Access routes which will be done October – November 2017.

National Heavy Vehicle Safety and Productivity Program (NHVSPP)

The Australian Government has extended the Heavy Vehicle Safety and Productivity Programme and will provide \$40 million per year from 2021-22 onwards, building on the current \$328 million investment from 2013-14 to 2020-21. The HVSP is an Australian Government initiative to fund infrastructure projects that improve productivity and safety outcomes of heavy vehicle operations across Australia.

Applications are assessed through a competitive, merit basis process with applicants funding ½ of the project. Round 5 successful projects were announced in September 2016. Applications for Round 6 are currently closed with no advice on when it will open.

Black Spot Funding

For individual sites such as intersections, mid-block or short road sections, there should be a history of at least three casualty crashes over a five-year period. For lengths of road, there should be an average of 0.2 casualty crashes per kilometer per annum over the length in question over five years.

The requirement of a history of crashes ensures that those sites that have a recurrent problem are targeted first for treatment.

The Black Spot Programme also recognises that there are road locations which could be considered as 'accidents waiting to happen'. Therefore, some programme funds may be used to treat sites where road traffic engineers have completed a Road Safety Audit and found that remedial work is necessary. This allows an opportunity for proactive safety works to be undertaken before casualties occur.

In line with national road safety objectives, approximately 50% of each State's allowance is allocated to rural areas, acknowledging the high rate and

consequences of crashes in rural areas (60% of fatalities are in rural areas and a significant proportion of serious injuries outside the metropolitan area).

Federal Black Spot Funding is 100% funded by the Department of Infrastructure and Regional Development. State Black Spot Funding is 50/50 funded by DPTI and Council.

Bridges Renewal Program

The Australian Government will provide \$360 million from 2015-16 to 2019-20, with an on-going commitment of \$60 million each year following to upgrade and repair bridges to enhance access for local communities and facilitate higher productivity vehicle access.

Round 3 closed in May 2017 with a co-funding requirement of 50%.

Regional Growth Fund

The Australian Government will provide \$472.2 million over four years from 2017-18 to establish a Regional Growth Fund.

The Regional Growth Fund includes \$272.2 million to provide grants of \$10.0 million or more for major transformational projects which support long-term economic growth and create jobs in regions undergoing structural adjustment.

Also in the Regional Growth Fund is a further \$200 million for the Building Better Regions Fund (BBRF) for four years from 2017-18. This builds on the commitment to the BBRF at the 2016 election, bringing the BBRF to nearly \$500 million.

Please monitor this website for any announcements regarding funding under the Regional Growth Fund.

Building Better Regions Fund

The Building Better Regions Fund (BBRF) will create jobs, drive economic growth and support strong regional communities across Australia by funding infrastructure and community investment projects.

The BBRF invests in eligible projects in regional and remote Australia, outside the major capital cities of Sydney, Melbourne, Brisbane, Perth, Adelaide, and Canberra.

Grant funding is available through two funding streams:

The Infrastructure Projects Stream supports projects that involve construction of new infrastructure, or the upgrade or extension of existing infrastructure.

The Community Investments Stream funds community development activities including, but not limited to, new or expanded local events, strategic regional plans, leadership and capability building activities.

Nearly \$500 million is available through this program, including \$200 million provided from the Regional Growth Fund allocated in the 2017-18 Budget.

Infrastructure Project Grants are from a minimum \$20,000 up to \$10,000,000 with a 50% contribution required from the applicant (Local Gov or Not for Profit Organisation). There is an Exceptional Circumstances clause that can be applied for to waive the co-contribution (ie limited capacity for Local Government to fund the co-contribution).

Funding Options Summary Table

Program Name	Road/ intersection/ bridge	Grant Funding (per \$1m)	Council Contribution (per \$1m)	Commentary
Special Local Roads Program (SLRP)	Road Intersection	\$700,000	\$300,000	Next round 2018/19
National Heavy Vehicle Safety and Productivity Program (NHVSPP)	Road intersection Bridge	\$500,000	\$500,000	Next round to be advised, assumed 2018/19. Requires separate Heavy Vehicle Access Audit.
Black Spot	Road Intersection	\$1,000,000		Very competitive, BCR for proactive projects difficult. Requires separate Road Safety Audit
Bridges Renewal Program	Bridge	\$500,000	\$500,000	Round 4 does not open until 2018, funding 2019/20
Building Better Regions Fund	Road Intersections	\$500,000	\$500,000	Option to apply for extraordinary circumstances to waive contribution.
Regional Growth Fund	Road Intersection	\$500,000	\$500,000	Funding round to be announced.

Council Contribution Funding Options

Please note that the following options are to enable discussion between Council and KIPT and are only the opinion of the author of this route assessment report. The following commentary is not intended to reflect Council's position on funding options and is provided to inform of possible options. The information provided is publically available.

DPTI \$2m Funding

An option to be considered would be to direct some of the Department of Transport and Planning (DPTI) \$2m Unsealed Roads Upgrade funding towards the agreed projects.

However it must be noted that this funding is not a grant and as such not recorded as income in the financial statements. Rather DPTI take over 'care and control' of the nominated road under the Highways Act for a 12 month period while the contracted upgrade works are undertaken. The asset is then re-assigned back to Council and received as an asset free of charge. Council act as Project Managers on DPTI's behalf which is claimed by Council as operational income which is then capitalised against the project in accordance with Australian Accounting Standards.

It is likely that model of funding would not suit the co-contribution requirements of the funding programmes identified earlier in this report. It clearly disclaimed during the nomination and application process for SLRP that the whole length of road is being nominated for funding however the 1/3 contribution from Council will be done separately by the DPTI contractor may be accepted, but may not be supported by the other Council's in the region (they do not get that option) or LGTAP.

Council could discuss the funding arrangement with DPTI with a view to receive a portion of the funding as income (cash) equivalent to the level of grant funding co-contribution levels. However as this grant funding is essential to Council's asset sustainability position, any changes to the funding arrangement may not be supported.

Borrowing additional funds

Based on the Economic Impact Study being undertaken by EconSearch, there may be an option for Council to borrow additional funds. This would be additional to the current level of capital expenditure which is \$1.5m (net) as per the adopted Long Term Financial Plan.

Repayment of the borrowings could be funded by way of operational income received under a Freight Road Toll or Road Management Agreement between KIPT and Council. The toll would need to include a proportion of interest and principle payments along with increased depreciation.

Any agreement would also need to address costs and responsibility for increased maintenance requirements for timber freight roads including grading, patching and likely pavement stabilisation needs (dust, stormwater and corrugation mitigation).

Primary beneficiary of the upgrades and the portion of costs based on benefit would need to be considered in detail, including the impacts of other commodity being shipped off island via the Smith Bay Wharf in the future (ie KI Pure Grain) who would gain benefit from using the upgraded freight network.

Upfront Capital Contribution

KIPT may consider an upfront capital contribution to Council. As this will have an impact on Financial Statements and therefore FAGs grant allocation, may not be supported by Council. However a payment to part fund co-contribution requirements for grant funding options supplemented by a Road Management Agreement would warrant further assessment and discussion.

As per the Road Maintenance Agreement, should other commodities enjoy the benefit of the upgraded freight roads and/or new port facility the contribution and ongoing costs would need to be reapportioned. It is considered that the current level of general freight that will enjoy the benefit of the upgraded roads is accounted for by way of the grant contribution and they should not be required to contribute unless freight movements for any one commodity increase to Regional levels (ie 20 Semi movements per day/10 B-Double movements per day/50,000 tonne of freight per annum).

Summary of Council Funding Options

	Benefits/Positives	Constraints/Negatives
DPTI \$2m roads funding	<ul style="list-style-type: none">) Funding already provided 	<ul style="list-style-type: none">) Not received as Income, rather Asset Received Free of Charge.
Road Management Agreement (off set additional Council borrowing)	<ul style="list-style-type: none">) Additional income stream to reduce maintenance costs for Council (Strategic Plan & Road Network Extension Policy)) Enables Levels of Service to be negotiated and agreed to (KIPT has some control over road condition = managing fleet operational costs) 	<ul style="list-style-type: none">) Apportioning costs between Council and KIPT allowing for any future beneficiaries
Upfront Capital Contribution (off set additional Council borrowing)	<ul style="list-style-type: none">) Additional income stream to reduce maintenance costs for Council (Strategic Plan & Road Network Extension Policy)) Reduces Council's need for additional borrowing with minimal impacts on FAGs 	<ul style="list-style-type: none">) Impacts on financial statements and FAGs allocation) Ongoing maintenance controlled by Council which could increase KIPT fleet operational costs (roads not maintained to appropriate standard).
Road Management Agreement & Capital Contribution combination	<ul style="list-style-type: none">) Reduces Council's level of additional borrowing with minimal impacts on FAGs) Additional income stream to reduce maintenance costs for Council (Strategic Plan & Road Network Extension Policy)) Enables Levels of Service to be negotiated and agreed to (KIPT has some control over road condition = managing fleet operational costs) 	<ul style="list-style-type: none">) Apportioning costs between Council and KIPT allowing for any future beneficiaries

Appendix A

Evaluation Framework

	Excellent	Good	Fair	Poor	Very poor	Weighting
	5	4	3	2	1	
Road Surface Material						
Road Surface width (carriageway)	>7m	6 - 7m	5 - 6m	4 - 5m	<4m	30%
Shoulders/carriageway clearances	>2	1 - 2m	1 - 0.5m	0.5 - 0.25m	<0.25m	
Road Surface Condition	As per Councils IAMP					
Road Pavement Condition	As per Councils IAMP					
Geometry	Good cross fall good vertical grades (predominantly flat)	Gradual vertical grades	Multiple corners with poor elevation	Steep vertical grades	Cross fall <6% Steep batter slopes (<1in5)	
Bridges	No bridges	>7m wide crash barriers as per Aust Standards	1 low-lying bridge (flood prone) cash barriers not to Aust Standards	<2 low lying bridges (flood prone) bridge(s)<7m wide	Single lane bridge	20%
Drainage	Good cross drainage (0.5m+ clear from road edge) No roadside dams No FORDS or	Cross drains to be extended no roadside dams	Cross drains to be extended/widen ed 1 - 2 roadside dams	Multiple FORDS/floodways (Water Affecting Activity) little to no cross drains	Abuts major waterway (Significant Water Affecting Activity)	
Roadside Native Vegetation	Vegetation clear 2m behind white	Vegetation clear 1m behind white	Overhead vegetation	Single Chain Road	Category A Vegetation	
Right of Way	1 - 2 non right of way intersections	3 - 4 non right of way intersections	5 - 6 non right of way intersections	6 - 7 non right of way intersections	7 - 8 non right of way intersections	10%
Intersections	Adequate swept path Excellent line of sight Good vertical	Intersection to be widened Veg pruning for line of sight	Intersection to be raised Veg/tree removal required for line of sight	Intersection to be re-aligned	Intersection turn greater than 45deg Poor vertical alignment	
Land Uses/residential access	No rural residential access no non complying land use	<2 rural residential access within 2km length	Commercial (<10vpd) business access 2 - 4 rural residential access within 2km length	<2 Commercial business access within 2km length 5 - 7 rural residential access within 2km length	<8 rural residential access within 2km length	15%
Other						10%
- traffic count	>10 vpd	20 - 50 vpd	50 - 100 vpd	100 - 200 vpd	<200 vpd	
- school bus route	No				Yes	
- traffic composition (2020 Transport Plan & MetroCount traffic data)	Gazetted DPTI Freight Road			Locally significant Tourist or Community Access Route	Regionally Significant Tourist or Access Route	
- crash history	No				Yes	
- overtaking	Good provision/ opportunity		Some provision/opport unity		no Provision/ opportunity	
- speed environment	<100km/hr				80km/hr	

Appendix B

Assessment Criteria Results

	Weighting	Option 2						Option 5						Option 6													
		Playford Highway A		Stokes Bay Road		Bark Hut Road		McBrides Road		North Coast Road A		Playford Highway A		Playford Highway B		Ropers Road		Gap Road		North Coast Road B		Springs Road		Rose Cottage Road		North Coast Road	
Road Surface Material		Sealed		Sealed		Limestone		Ironstone		Limestone		Sealed		Sealed		Ironstone		Ironstone		Limestone		Limestone		Ironstone		Limestone	
Road Surface width (carriageway)	30%	4		3.5		5		1.5		5		4		4		2		3		5		5		1.5		5	
Shoulders/carriageway clearances		5		4		3		1		4		5		4		2.5		3.5		5		4		1		5	
Road Surface Condition		3	27.30	5	27.95	5	28.60	2	9.75	4.5	28.60	3	27.30	4	24.70	2.5	16.25	2	18.20	4.5	30.55	5	29.25	2	11.7	4.5	27.95
Road Pavement Condition		4		5		5		1		5		4		4		2.5		2.5		5		5		2		5	
Geometry		5		4		4		2		3.5		5		3		3		3		4		3.5		2.5		2	
Bridges	20%	5	11.40	4	10.80	4	10.20	5	8.40	3	8.40	5	11.40	5	10.80	1	2.40	2.5	5.40	5	12.00	5	9.60	3	6.00	3	9.60
Drainage		5		5		4.5		2		4		5		4		1		2		5		3		2		5	
Roadside Native Vegetation	15%	5	5.75	4	4.60	3.5	4.03	2	2.30	3.5	4.03	5	5.75	4	4.60	1.5	1.73	1	1.15	4	4.60	3	3.45	1	1.15	3.5	4.03
Right of Way	10%	5	9.90	5	9.90	5	9.90	5	9.35	4.5	8.80	5	9.90	5	9.90	4	7.15	4	7.70	5	9.90	4	8.80	5	6.6	4.5	8.80
Intersections		4		4		4		3.5		3.5		4		4		2.5		3		4		4		1		3.5	
Land Uses/residential access	15%	4	4.60	3.5	4.03	4	4.60	5	5.75	3	3.45	4	4.60	2	2.30	3	3.45	3	3.45	3	3.45	3	3.45	4	4.6	4	4.60
Other	10%	0										0															
- traffic count		2		4		3		5		1		2		1		4		4		1		3		5		1	
- school bus route		1		1		5		5		5		1		1		5		5		1		1		5		5	
- traffic composition (2020 Transport Plan & MetroCount traffic data)		4	24.20	1	17.60	2	26.40	5	27.50	1	20.90	4	24.20	3	15.40	4	26.40	4	24.20	1	14.30	4	19.80	4	23.1	1	15.40
- crash history		5		2		4		5		2		5		1		5		2		2		2		5		2	
- overtaking		5		3		5		1		5		5		5		3		3		3		3		1		3	
- speed environment		5		5		5		4		5		5		3		3		4		5		5		1		2	
		71	83	63	74.88	71	83.73	55	63.05	62.5	74.18	70.50	83.15	57	67.70	49.5	57.38	51.5	60.10	62.5	74.80	62.5	74.35	46	53.15	59	70.38
	Total	64.40												58.20						61.00							
	Weighted	75.80												68.63						71.811							

Appendix C
Upgrade & Maintenance
Preliminary Estimates

Forestry Freight Roads - Preliminary Maintenance and Operations Estimates											
Road Name	Surface Type	Length	Maintenance Activity						Total	Per KM	
			Grading	Patching	Cross Drains	Crack sealing + edge breaks	White Marker Posts & Signs	Vegetation Management			
Option 2											
Playford Highway A	Sealed	30			\$ 18,750	\$ 32,250	\$ 6,000	\$ 15,000	\$ 72,000	\$ 2,400	
Stokes Bay Road	Sealed	11.5			\$ 7,188	\$ 12,363	\$ 2,300	\$ 5,750	\$ 27,600	\$ 2,400	
Bark Hutt Road	Unsealed	5.8	\$ 9,744	\$ 9,280	\$ 3,625		\$ 1,160	\$ 2,900	\$ 26,709	\$ 4,605	
McBrides Road	Unsealed	7.17	\$ 12,046	\$ 11,472	\$ 4,481		\$ 1,434	\$ 3,585	\$ 33,018	\$ 4,605	
North Coast Road	Unsealed	15.9	\$ 26,712	\$ 25,440	\$ 9,938		\$ 3,180	\$ 7,950	\$ 73,220	\$ 4,605	
		70.37	\$ 48,502	\$ 46,192	\$ 43,981	\$ 44,613	\$ 14,074	\$ 35,185	\$ 232,546		
									\$ 232,546	607,500	\$ 0.38
									Total	Average annual tonne	per tonne
Option 5											
Playford Highway A	Sealed	30			\$ 18,750	\$ 32,250	\$ 6,000	\$ 15,000	\$ 72,000	\$ 2,400	
Playford Highway B	Sealed	25.2			\$ 15,750	\$ 27,090	\$ 5,040	\$ 12,600	\$ 60,480	\$ 2,400	
Ropers Road	Unsealed	4.47	\$ 7,510	\$ 7,152	\$ 2,794		\$ 894	\$ 2,235	\$ 20,584	\$ 4,605	
Gap Road	Unsealed	6.9	\$ 11,592	\$ 11,040	\$ 4,313		\$ 1,380	\$ 3,450	\$ 31,775	\$ 4,605	
North Coast Road	Unsealed	6.8	\$ 11,424	\$ 10,880	\$ 4,250		\$ 1,360	\$ 3,400	\$ 31,314	\$ 4,605	
		73.37	\$ 30,526	\$ 29,072	\$ 45,856	\$ 59,340	\$ 14,674	\$ 36,685	\$ 216,153		
									\$ 216,153	607,500	\$ 0.36
									Total	Average annual tonne	per tonne
Option 6											
Playford Highway A	Sealed	30			\$ 18,750	\$ 32,250	\$ 6,000	\$ 15,000	\$ 72,000	\$ 2,400	
Stokes Bay Road	Sealed	11.5			\$ 7,188	\$ 12,363	\$ 2,300	\$ 5,750	\$ 27,600	\$ 2,400	
Bark Hutt Road	Unsealed	5.8	\$ 9,744	\$ 9,280	\$ 3,625		\$ 1,160	\$ 2,900	\$ 26,709	\$ 4,605	
McBrides Road	Unsealed	7.17	\$ 12,046	\$ 11,472	\$ 4,481		\$ 1,434	\$ 3,585	\$ 33,018	\$ 4,605	
North Coast Road	Unsealed	2.7	\$ 4,536	\$ 4,320	\$ 1,688		\$ 540	\$ 1,350	\$ 12,434	\$ 4,605	
Springs Road	Unsealed	9.5	\$ 15,960	\$ 15,200	\$ 5,938		\$ 1,900	\$ 4,750	\$ 43,748	\$ 4,605	
Rose Cottage Road	Unsealed	5.5	\$ 9,240	\$ 8,800	\$ 3,438		\$ 1,100	\$ 2,750	\$ 25,328	\$ 4,605	
North Coast Road	Unsealed	1.2	\$ 2,016	\$ 1,920	\$ 750		\$ 240	\$ 600	\$ 5,526	\$ 4,605	
		73.37	\$ 53,542	\$ 50,992	\$ 45,856	\$ 44,613	\$ 14,674	\$ 36,685	\$ 246,361		
									\$ 246,361	607,500	\$ 0.41
									Total	Average annual tonne	per tonne
	Grading	Assumed at 6 grades pa, 2 hours per km @ \$140/hr (plant + operator)									
	Patching	Assumed that 500m per 10km will require patching (particularly intersections and rises) @ \$16,000/500m									
	Cross Drains	Assumed at 1 per 400m @ \$250 each to flush and excavate inlets/outlets									
	Crack Sealing + edge breaks	Assumed at \$1,075/km									
	White marker posts	Assumed at \$200/km									
	Veg Management	Assumed at annual grooming (tractor and groomer) + overhead lopping (chainsaw & mulcher) \$500/km (both sides)									
	NOTE:	<i>the maintenance costs exclude administration, depreciation and any finance costs</i>									

Indicative Road Upgrade Costs

		Surface Type	Total KM	Road Reserve Width	Roadway							Intersections						TOTAL					
					Vegetation Clearance	Excavation Earthworks	Drainage	Bridge Upgrade	Pavement Construction	Resheeting	Seal Shoulders	Sub Total	Vegetation Clearance	Excavation Earthworks	Drainage	Pavement Construction	Resheeting		Seal	Sub Total			
Option 2	Playford Highway A	Sealed	30	60	\$ 45,000								\$ 600,000	\$ 645,000	\$ 5,000	\$ 32,000	\$ 9,000	\$ 38,000	\$ 45,000	\$ 25,000	\$ 154,000	\$ 799,000	
	Stokes Bay Road	Sealed	11.5	20	\$ 14,250								\$ 230,000	\$ 244,250	\$ 2,500	\$ 32,000	\$ 13,500	\$ 38,000	\$ 45,000	\$ 20,000	\$ 151,000	\$ 395,250	
	Bark Hut Road	Unsealed	5.8	60	\$ 2,200									\$ 2,200	\$ 2,500	\$ 16,000	\$ 9,000	\$ 19,000	\$ 22,500	\$ 10,000	\$ 79,000	\$ 81,200	
	McBrides Road	Unsealed	7.17	25	\$ 13,000	\$ 229,440	\$ 54,000		\$ 544,920	\$ 645,300				\$ 1,486,660	\$ 1,500	\$ 16,000	\$ 9,000	\$ 19,000	\$ 22,500	\$ 10,000	\$ 78,000	\$ 1,564,660	
	North Coast Road	Unsealed	15.9	25	\$ 21,100									\$ 21,100	\$ 5,000	\$ 16,000	\$ 9,000	\$ 38,000	\$ 45,000	\$ 10,000	\$ 123,000	\$ 144,100	
			70.37											\$ 2,399,210							\$ 585,000	\$ 2,984,210	
Option 5	Playford Highway A	Sealed	30	60	\$ 45,000								\$ 600,000	\$ 645,000	\$ 5,000	\$ 32,000	\$ 9,000	\$ 38,000	\$ 45,000	\$ 25,000	\$ 154,000	\$ 799,000	
	Playford Highway B	Sealed	25.2	60	\$ 37,800								\$ 504,000	\$ 541,800	\$ 5,000	\$ 32,000	\$ 9,000	\$ 38,000	\$ 45,000	\$ 10,000	\$ 139,000	\$ 680,800	
	Ropers Road	Unsealed	4.47	25	\$ 35,000	\$ 143,040		\$ 350,000	\$ 679,440	\$ 603,450				\$ 1,810,930	\$ 2,500	\$ 16,000	\$ 22,500	\$ 19,000	\$ 22,500	\$ 30,000	\$ 112,500	\$ 1,923,430	
	Gap Road	Unsealed	6.9	25	\$ 19,500	\$ 220,800	\$ 49,500		\$ 524,400	\$ 621,000				\$ 1,435,200	\$ 5,000	\$ 32,000	\$ 13,500	\$ 38,000	\$ 45,000	\$ 20,000	\$ 153,500	\$ 1,588,700	
	North Coast Road	Unsealed	6.8	25	\$ 4,200									\$ 4,200	\$ 5,000	\$ 32,000	\$ 9,000	\$ 38,000	\$ 45,000	\$ 10,000	\$ 139,000	\$ 143,200	
			73.37											\$ 4,437,130							\$ 698,000	\$ 5,135,130	
Option 6	Playford Highway A	Sealed	30	60	\$ 45,000								\$ 600,000	\$ 645,000	\$ 5,000	\$ 32,000	\$ 9,000	\$ 38,000	\$ 45,000	\$ 25,000	\$ 154,000	\$ 799,000	
	Stokes Bay Road	Sealed	11.5	20	\$ 14,250								\$ 230,000	\$ 244,250	\$ 2,500	\$ 32,000	\$ 13,500	\$ 38,000	\$ 45,000	\$ 20,000	\$ 151,000	\$ 395,250	
	Bark Hut Road	Unsealed	5.8	60	\$ 2,200									\$ 2,200	\$ 2,500	\$ 16,000	\$ 9,000	\$ 19,000	\$ 22,500	\$ 10,000	\$ 79,000	\$ 81,200	
	McBrides Road	Unsealed	7.17	25	\$ 13,000	\$ 229,440	\$ 54,000		\$ 544,920	\$ 645,300				\$ 1,486,660	\$ 1,500	\$ 16,000	\$ 9,000	\$ 19,000	\$ 22,500	\$ 10,000	\$ 78,000	\$ 1,564,660	
	North Coast Road	Unsealed	2.7	25	\$ 3,000									\$ 3,000	\$ 1,500	\$ 1,600	\$ 9,000	\$ 19,000	\$ 22,500	\$ 10,000	\$ 63,600	\$ 66,600	
	Springs Road	Unsealed	9.5	25	\$ 7,300		\$ 13,500							\$ 20,800	\$ 2,500	\$ 16,000	\$ 9,000	\$ 19,000	\$ 22,500	\$ 10,000	\$ 79,000	\$ 99,800	
	Rose Cottage Road	Unsealed	5.5	25	\$ 27,500	\$ 352,000	\$ 40,500		\$ 418,000	\$ 495,000				\$ 1,333,000	\$ 5,000	\$ 16,000	\$ 29,000	\$ 76,000	\$ 22,500	\$ 10,000	\$ 158,500	\$ 1,491,500	
	North Coast Road	Unsealed	1.2	25	\$ 3,500									\$ 3,500	\$ 5,000	\$ 16,000	\$ 9,000	\$ 38,000	\$ 45,000	\$ 10,000	\$ 123,000	\$ 126,500	
			73.37											\$ 3,738,410							\$ 886,100	\$ 4,624,510	
Roadway	Vegetation Clearance	Assumed at \$2,500/km for 2m wide clearance and \$1,500/km for pruning										Intersections	Vegetation Clearance	Assumed at \$2,500/km for 2m wide clearance and \$1,500 for pruning									
	Excavation Earthworks	Assumed at \$32,000/km for excavation (inc dumping of spoils)											Excavation Earthworks	Assumed at \$32,000/km for excavation (inc dumping of spoils)									
	Drainage	Assumed at \$4,500 per 450 dia cross drain (adjusted incrementally where applicable)											Drainage	Assumed at \$4,500 per 450 dia cross drain (adjusted incrementally where applicable)									
	Bridge Upgrade	Assumed at \$350,000 for bridge upgrade											Pavement Construction	Assumed at \$38,000 per km for 8m wide carriageway with 1m shoulders with batters at 3:1									
	Pavement Construction	Assumed at \$38,000 per km for 8m wide carriageway with 1m shoulders with batters at 3:1											Resheeting	Assumed at \$45,000 per km for 8m wide carriageway at 300mm deep									
	Resheeting	Assumed at \$45,000 per km for 8m wide carriageway at 300mm deep											Seal	Assumed at \$10,000 per km for full width sealing back 100m and full width inc deceleration lanes where required (adjusted accordingly)									
	Seal Shoulders	Assumed at \$10,000 per km for box out, preparation and seal for each side																					