



***LAURISTON PARK
MOUNTAIN TRAIL ACCESS
OFF BRIDPORT MAIN ROAD,
GEORGE TOWN***

**TRAFFIC IMPACT
ASSESSMENT**

Hubble Traffic

March 2021

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1. Introduction

Peter Rickards, Project Manager for the George Town Council, has engaged Hubble Traffic Consulting to prepare an independent Traffic Impact Assessment, to consider the traffic impacts of creating an access to the Lauriston Park Mountain Bike Trail, located off Bridport Main Road, Georgetown.

Lauriston Park will contain various mountain bike trails, access to an on-site car park will be necessary via an internal access road, which will extend off Bridport Main Road. This assessment has considered the amount of traffic that is expected to use this access and the likely traffic impacts to the surrounding road network.

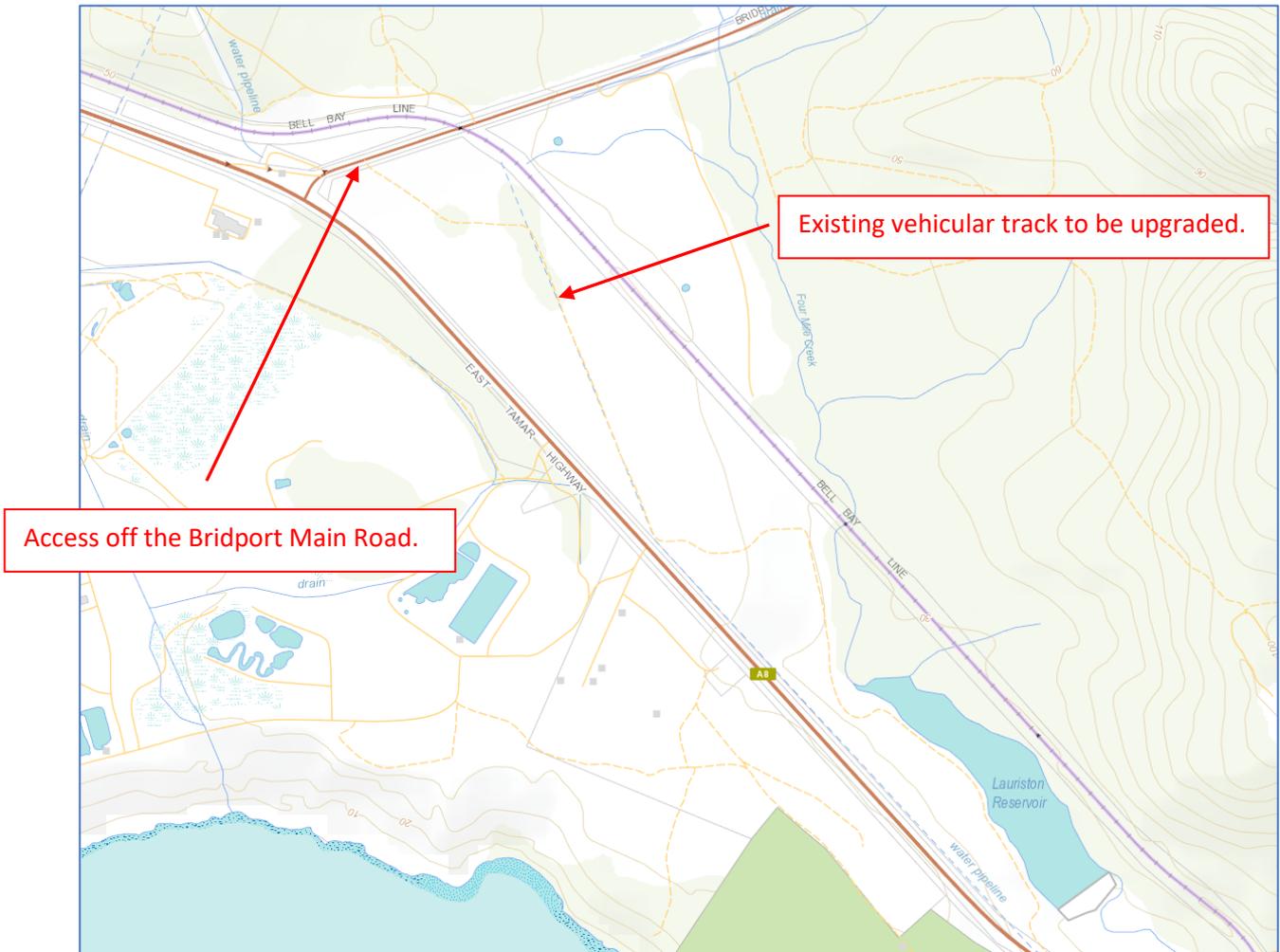
For the purpose of this assessment, the development site is the Lauriston Park Mountain Bike Trails, and the developer is the George Town Council.

This report has been prepared to satisfy the requirements of Austroads, Guide to Traffic Management Part 12: Traffic Impacts of Developments, 2019. This assessment has referred to the following information and resources:

- George Town Council Planning Scheme (planning scheme)
- Road Traffic Authority NSW (RTA) Guide to Traffic Generating Developments
- Australian Standards 2890
- Austroads series of Traffic Management and Road Design
 - Part 4: Intersection and crossings, General
 - Part 4a: Unsignalised and Signalised Intersections
 - Part 8: Local street management
 - Part 12: Traffic Impacts of Development
- Department of State Growth crash database
- Department of State Growth traffic database
- Autoturn on-line vehicle swept path software
- SIDRA 8 Intersection Modelling software
- Google Earth imagery

2. Site Description

The mountain bike trails are located within the hills of Lauriston Park, which is situated on the south east corner of the East Tamar Highway and Bridport Main Road. The most accessible access is using an existing public gravel vehicular track, that is accessed from the Bridport Main Road, immediately east of the East Tamar Highway.



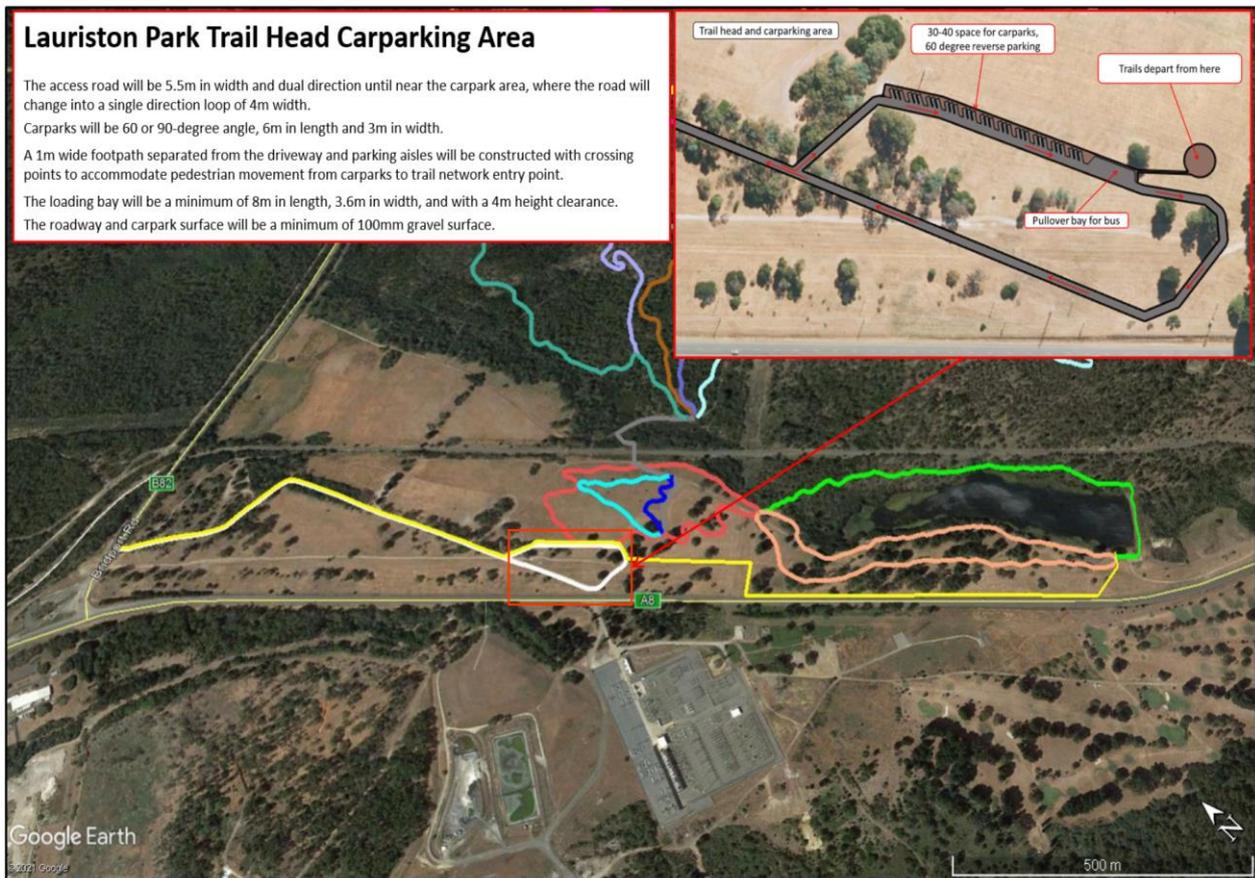
2.0 Map – Extract from Google

3. Development proposal

Development of mountain bike trails within the Lauriston Park reserve.

The proposed access road from the Bridport Main Road is approximately 1300 metres in length, the development will utilise an existing public access road, that will be upgraded. The first 800 metres of the road will provide for two-way traffic movements, and the road will be a minimum of 5.5 metres wide. This will be followed by a 400 metres one-way loop road at 4 metre wide to facilitate on-site parking spaces.

Diagram 3.0 – Layout of development site



4. Trip generation at the proposed access

A trip in this report is defined as a one way vehicular movement from one point to another, excluding the return journey. Therefore, a return trip to and from a land use is counted as two trips.

To determine the number of trips likely to be generated by this development, information has been sourced from the developer:

4.1. Expected trips generated by the mountain bike trails.

Section 3.8 of the RTA guide indicates that the daily vehicle trips for recreational facilities is largely dependent on, site location, type of use, and seasonal variations. It recommends analysis of proposed developments be based on survey data of similar developments.

A traffic survey was undertaken on Sunday 17 January 2021, at the Meehan Range Nature Reserve main trailhead carpark, located at Flagstaff Gully Road Mornington, Hobart to determine the number of vehicles the use generated.

The Mornington facility is located in close proximity to Hobart. When comparing the population of Hobart with George Town, it has been estimated the Mornington facility is likely to generate a higher usage, than the proposed Lauriston Park development.

Table 4.1 – Traffic demand at the Mornington site

Time	Vehicles in	Vehicles Out	Total trips	Number of Vehicles parked
Before 8am				6
8.00 to 8.15am	3	1	4	8
8.15 to 8.30am	5	4	9	9
8.30 to 8.45am	11	2	13	18
8.45 to 9.00am	9	3	7	24
9.00 to 9.15am	2	2	4	24
9.15 to 9.30am	7	2	9	29
9.30 to 9.45am	5	2	7	32
9.45 to 10.00am	10	4	14	38
Total	52	20	72	
Time	Vehicles in	Vehicles Out	Total trips	Number of Vehicles parked
Before 2.30pm				14
2.30 to 2.45pm	7	7	14	14
2.45 to 3.00pm	0	2	2	12
3.00 to 3.15pm	1	0	1	13
3.15 to 3.30pm	2	2	4	13
Total	10	11	21	

Having consideration that the proposed Lauriston Park use will represent 33 percent of the Meehan Range usage, the following trips and parking demand will be used for this assessment:

- Peak hour vehicle trips – 12 per hour (two-way traffic trips).
- Number of vehicles parked at any one time is 12.
- Total average daily trips of 100 (based on 8 hours of operation).

5. Existing traffic Conditions

All traffic accessing the development site will need to turn off from the Bridport Main Road. This section of the assessment will examine the current traffic flow and conditions.

5.1. Bridport Main Road

Bridport Main Road is part of the State Road Network managed by the Department of State Growth (the Department), and under the Tasmanian State Road Hierarchy is classified as Category 2 – Regional Freight Road.

Regional Freight Roads link major production catchments to the Trunk Road network, are designed to accommodate heavy inter-regional and sub-regional freight movements and provide safe and efficient access for passenger and tourist vehicles.

Bridport Main Road is a limited access road, and creation of a new access is not permitted unless the access is gazetted as a public road; for this reason, an existing access is being used for this development.

At the proposed access point, Bridport Main Road is a two-way rural road with 3.2 metre wide traffic lane in each direction, with sealed 1.0 metre wide shoulders. The road is line marked by a centreline and edge lines and there are guide posts located along the side of the roadway. The adjacent land-use in the vicinity of the proposed access is undeveloped land.

5.1 Photograph of the typical road standard



5.2. Speed limit and operating speed on Bridport Main Road

Bridport Main Road, between the East Tamar Highway and Bridport, operates under the general rural default speed limit of 100 km/h. However, due to the presence of the East Tamar Highway junction, vehicles approaching from the east (Bridport) are decelerating, in order to give way at this junction, so their operating speed is reduced.

A hand-held speed survey was conducted on vehicles passing the access point approaching from the east, only vehicles with a headway greater than five seconds were recorded, as these were considered free flowing vehicles. The vehicles speeds are provided in the following table, and 'heavy' denotes the speed from a heavy vehicle.

Table 5.1 – Operating speed for vehicles travelling westbound.

55	72 Heavy	80	84	67
73	60 Heavy	75	62	71
57	69	50 Heavy	63 Heavy	70 Heavy
68	71	64	76	50 Heavy
70	74	67	72	57
60 Heavy	59 Heavy	57 Heavy	84	69
72	94	63 Heavy	71	63
56	93	48 Heavy	61	41
70	75	49 Heavy	57 Heavy	52
66	70	71	71	88
84	66	72	68	82

- Mean operating speed calculated at 67 km/h.
- 85th percentile speed calculated at 76 km/h.
- Mean operating speed for heavy vehicles calculated at 58 km/h.

For the purpose of this assessment the calculated 85th percentile speed of 76 km/h will be used for vehicles approaching the access in a westerly direction.

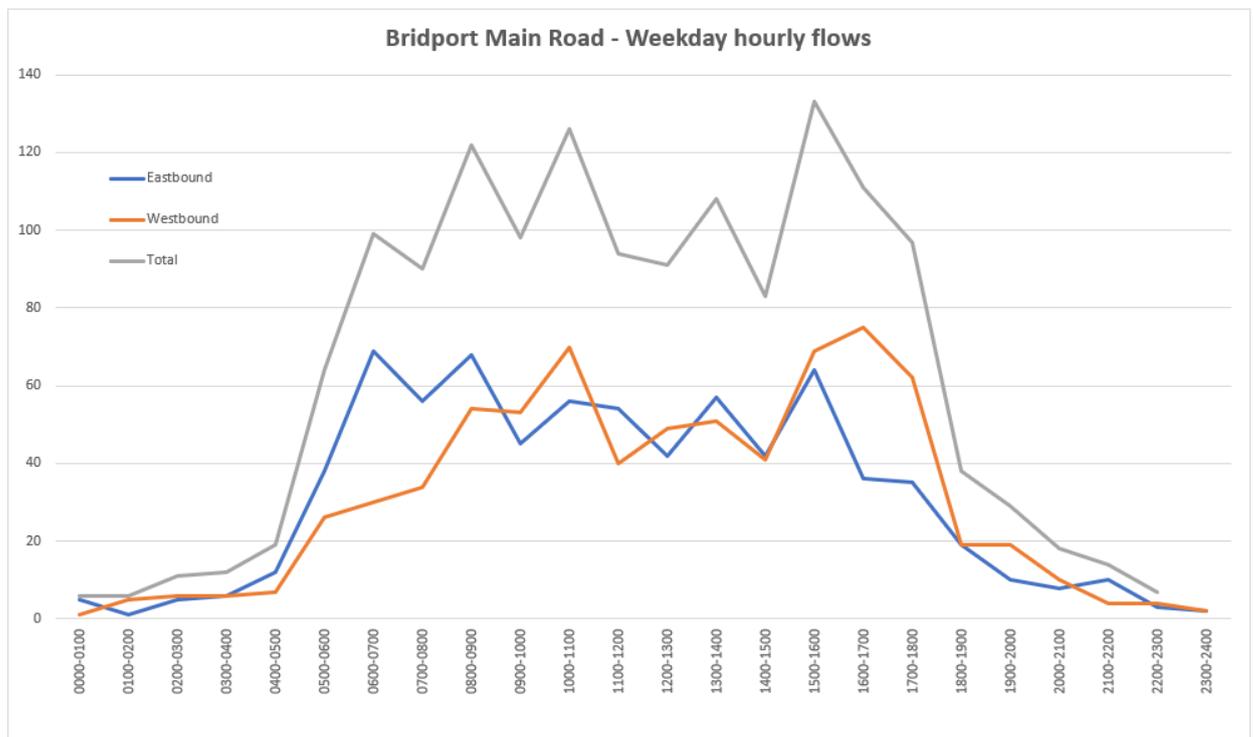
Traffic approaching the access point in an easterly direction from the East Tamar Highway must negotiate a right or left hand turn, which reduces their operating speed to an estimated 40 km/h and this speed will be used in this assessment.

5.3. Traffic activity along Bridport Main Road

The Department maintains a database of traffic flows for the State Road Network, and interrogation of the traffic data station located 316 metres east of the East Tamar Highway, provided the following traffic flows:

- Highest eastbound traffic flow is 70 vehicles per hour in the morning peak.
- Highest westbound traffic flow is 70 vehicles per hour in the afternoon peak.
- Average two-way traffic flow of 120 vehicles per hour.
- Average weekday two-way traffic flow of 1,500 vehicles per day
- Average weekend two-way traffic flows of 850 vehicles per day.

Graph 5.3 – Average weekday directional traffic flow for May 2019



With the Category 2 road status, the number of freight vehicles is expected to be a significant proportion of the traffic flow. The vehicle data collected at the traffic station classifies each vehicle based on wheel base and axle numbers. From this data, it can be determined the type of vehicles using the roadway, with this data represented in the following table.

Table 5.3 – Vehicle classification

Vehicle class	Number of vehicles	Classification	Type of vehicles	Total	%
1	25741	Short vehicles	Passenger vehicles	28099	76%
2	2358				
3	2309	Medium vehicles	Buses and two or three axle trucks	3300	9%
4	471				
5	520				
6	131	Long vehicles	Semi-trailers	3166	9%
7	463				
8	415				
9	2157				
10	2387	Medium combination	B-Double	2400	6%
11	13				
Total	36965			36965	

As expected, buses and heavy vehicles represents 24 percent of the traffic flow, with 15 percent of these being long vehicles, such as semi-trailers and B-Doubles.

5.4. Traffic safety at the access location

The Department maintains a database of reported road crashes. A check of this database found two reported crashes at the junction, with no crashes reported in the vicinity of the current access.

This low number of reported crashes indicates motorists are not encountering any difficulties while travelling through this road section.

5.5. Horizontal and vertical alignment

Generally, the horizontal alignment along Bridport Main Road is straight. There is a vertical crest located west of the proposed access point where the road overpasses a railway line, and this vertical crest reduces available sight distance.

6. Impact from traffic generated by this development.

As determined in section 4 of this assessment, this development has the potential to generate up to 100 daily traffic movements, when the development is operating. This would involve 12 traffic movements per hour, and during the morning period up to eight right turns off Bridport Main Road could be expected to occur within an hour.

6.1. Additional traffic movements operating on Bridport Main Road

Given the proposed development, trips generated from this development would be new trips.

The average hourly directional (eastbound) traffic flow operating along the Bridport Main Road is less than 70 vehicles per hour, and this represents a volume to capacity ratio, of five percent of the lane capacity.

The increase in traffic flow generated by this development, will have no adverse efficiency impact to the traffic flow along the Bridport Main Road.

6.2. New access location

The developer has identified an existing gravel access located approximately 95 metres east of the East Tamar Highway could be used, as this access is licensed under the limited access provisions of the Department.

A check of the sight lines from this access found the vertical crest over the railway bridge limits available sight distance to 160 metres, which is slightly short of the required Safe Intersection Sight Distance (SISD) of 180 metres, for the calculated 85th percentile approach speed, for westbound vehicles travelling at 76 km/h.

Relocating this existing access by 40 metres towards the East Tamar Highway improves the available sight distance to 200 metres and will comply with SISD.

The Department will allow a licensed access to be relocated, as long as the existing access is closed.

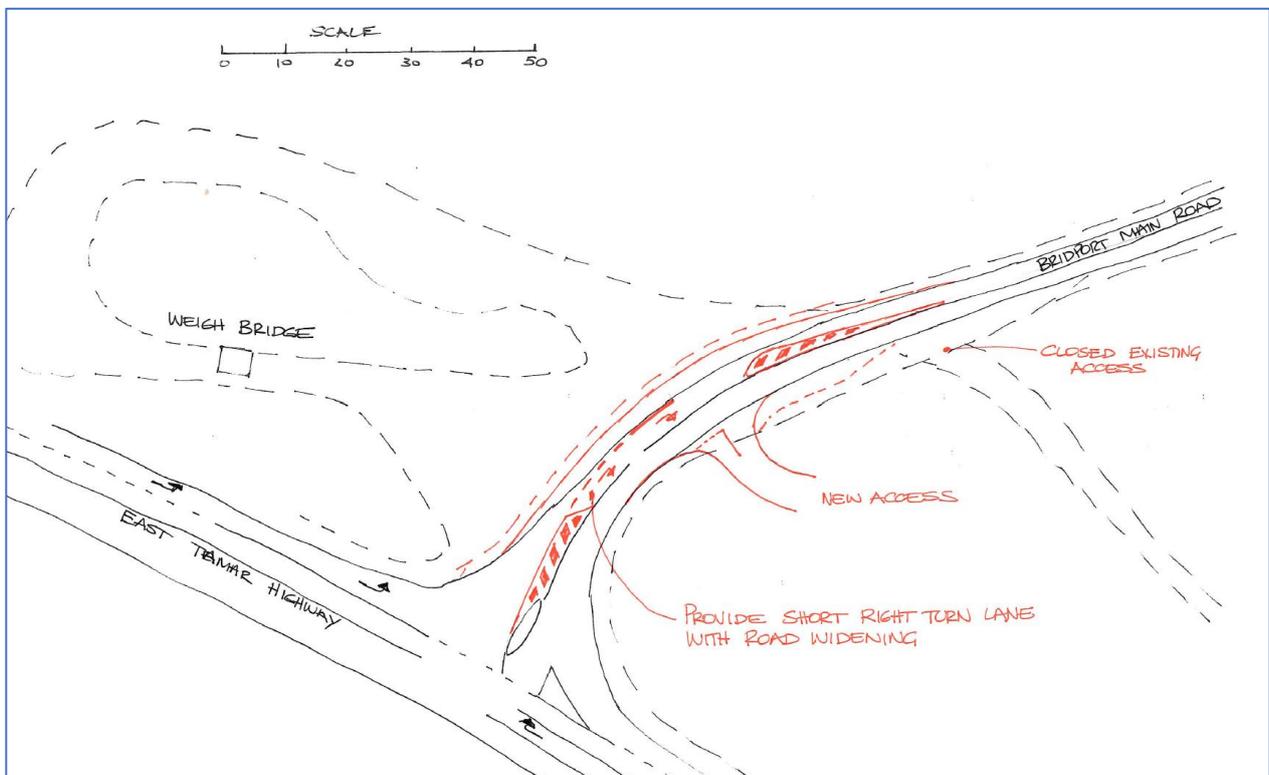
6.3. Configuration of the new development access

To effectively manage the safe right turn movements into the new access location, a short marked right turn lane of 20 metres should be provided to accommodate three standard length vehicles. No deceleration lane to the start of the right turn lane is necessary, as approaching traffic are turning off the East Tamar Highway.

With the right turn lane providing access for passenger type vehicles and operating speeds are low due to the presence of the junction, the width of the right turn lane could be 3.2 metres wide.

Implementing the right turn lane will require additional road pavement to be provided along the northern side to create a new highway through lane. Section of this shoulder area is already formed and caters for the swept path of heavy vehicles using the weigh bridge, so this should provide a reasonable road base for the new asphalt surface.

Diagram 6.3 - proposed access layout with a short right turn lane



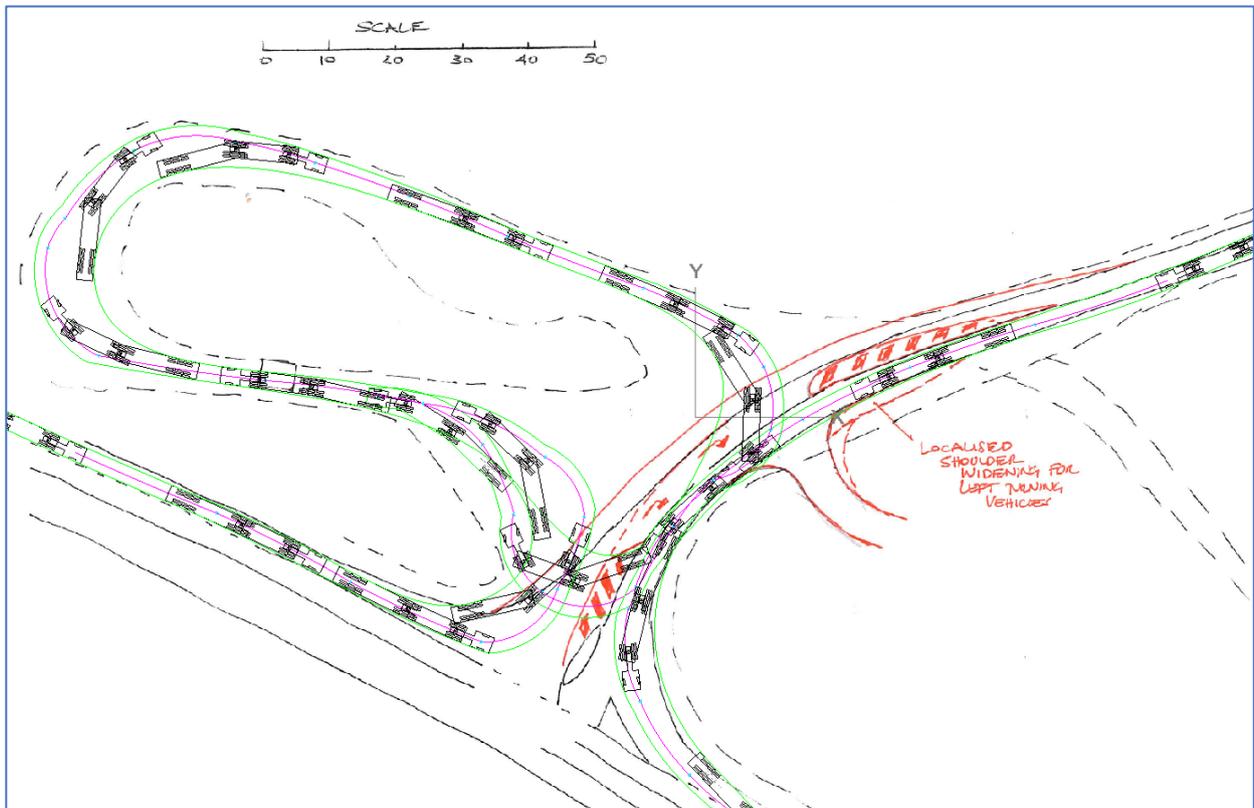
6.4. Weigh bridge operation

Directly opposite of the proposed new development access is a heavy vehicle weigh bridge station, where heavy vehicles operating in the area can be directed to be inspected by the Heavy Vehicle Regulator, including checking the weight of the loads.

The layout of the right turn lane and new development access has been designed having consideration to this weigh bridge operation, and the swept path of B-Double vehicles has been modelled to demonstrate there will be no adverse impact.

The right turn lane will be formed using road markings with no solid traffic islands used, which will ensure the turning facility will have no adverse impact to the swept path of heavy vehicles.

Diagram 6.4 – Swept path of B-Double vehicles



6.5. Safe Intersection Sight Distance

The new development access will be located approximately 55 metres east of the East Tamar Highway and available sight distance to the east of vehicles approaching from Bridport will be 200 metres.

The operating speed of westbound vehicles was measured on-site and the 85th percentile speed calculated at 76 km/h, and for this calculated operating speed, the corresponding Safe Intersection Sight Distance (SISD) is 180 metres.

Drivers leaving the new development access will have available sight distance that exceeds the planning scheme recommended SISD, this means vehicle can enter the Bridport Main Road safely and without disrupting current road users.

Photograph 6.5 – View for drivers leaving the new access looking east.



Drivers leaving the new development access will have good visibility of vehicles approaching from the East Tamar Highway, as these vehicles are turning off the highway, their operating speeds will be relatively low and cause no issue for drivers leaving the access.

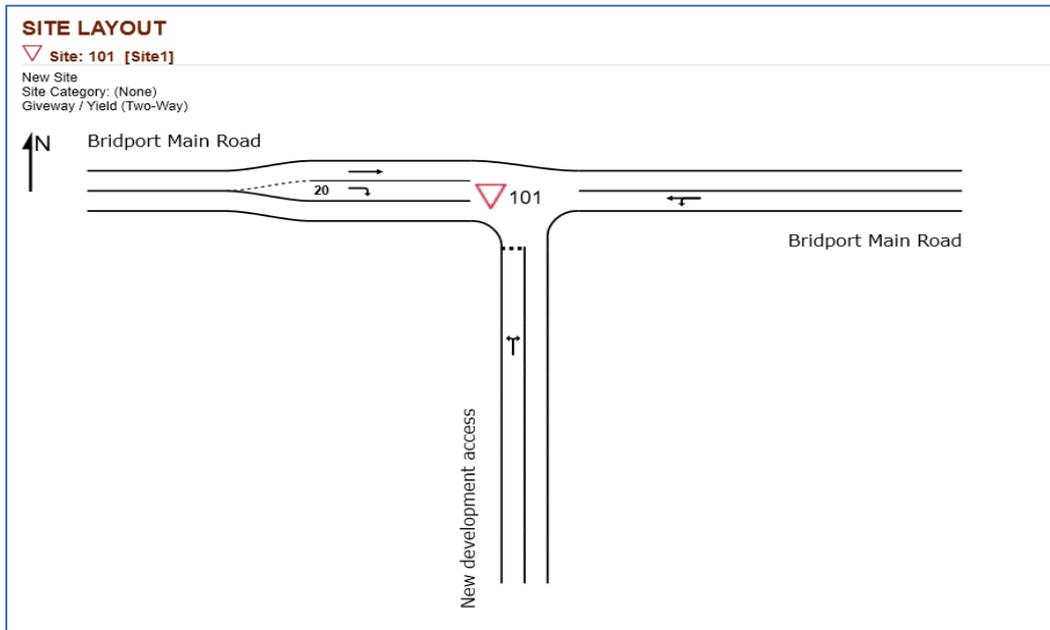
Photograph 6.5A – View for drivers leaving the new access looking west.



6.6. Risk of right turning vehicles queuing back onto the East Tamar Highway

It is important to ensure that right turning vehicles will not queue back to the East Tamar Highway, best method to evaluate this, is using SIDRA 8 Intersection modelling software. The modelling takes into consideration the traffic flow operating on the main road, the expected number of right turning vehicles, and uses gap acceptance methodology to calculate delay and queues.

Diagram 6.6 – Proposed access layout with a 20 metre long right turn lane



The traffic modelling indicates that with the current traffic flows and with the prediction of eight vehicles expected to turn right per hour, there will be no queuing, as the opposing traffic flow is so low, there are plenty of suitable gaps for turning vehicles.

Two further checks that queuing would not be a problem was undertaken:

- All traffic flows were tripled in volume, including the number of right turners, and
- Highway flow double with right turners increased to 40 per hour.

This analysis clearly demonstrates that right turning vehicles will not adversely impact the traffic operation of the East Tamar Highway.

Table 6.6 – Modelling results for the proposed right turn lane

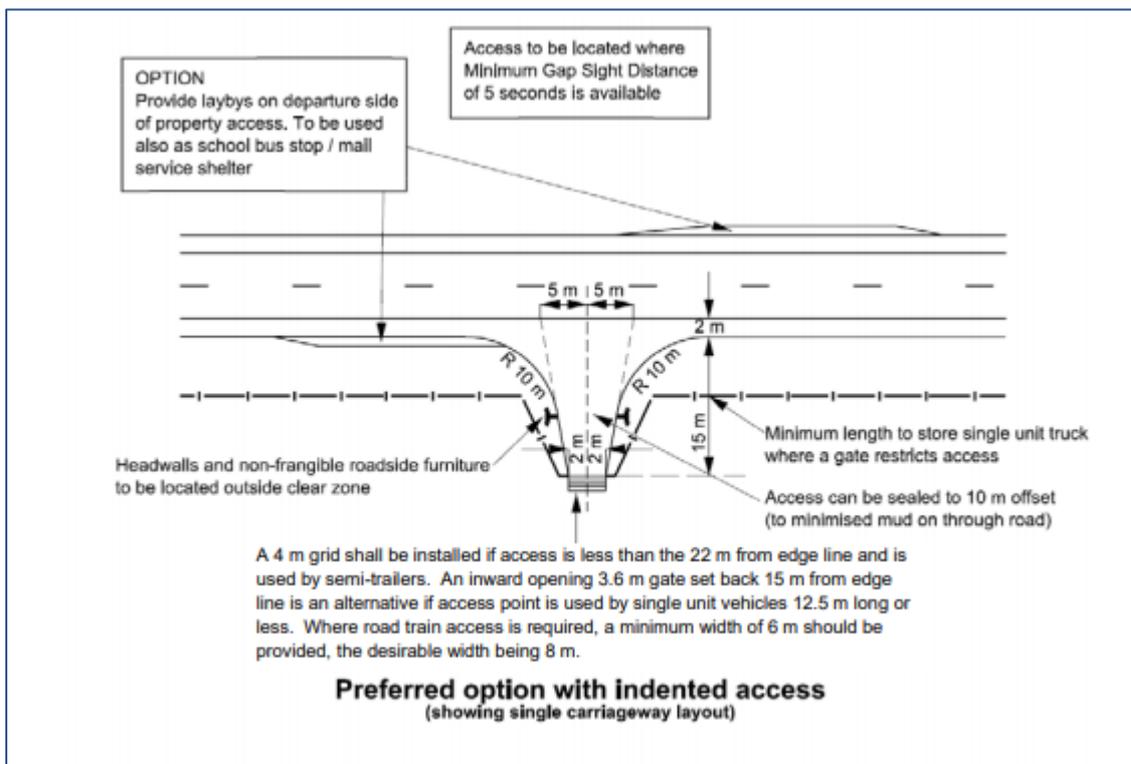
Scenario	Number of vehicles per hour	Average Delay	Level of Service	95 th queue length
Existing traffic flows with 8 right turning vehicles	192 vehicles/hour	5.7 seconds	A	No queue behind the turning vehicle
Triple traffic flows with 24 right turning vehicles	575 vehicles per hour	6.3 seconds	A	No queue behind the turning vehicle
Double highway flow with 40 right vehicles	411 vehicles per hour	6.2 seconds	A	No queue behind the turning vehicle

6.7. Formation of the new development access

The existing license access will be closed and relocated 40 metres in a westerly direction towards the East Tamar Highway. The new development access onto the Bridport Main Road will be provided to the Department's standard for a rural access, to accommodate the swept path of a 12.5 metre single vehicle unit (buses).

The minimum width of the access will be six metres wide to facilitate two-way traffic movements, the surface will be sealed from the roadway to the property boundary and driveable endwalls will be provided to the culvert underneath the access.

Diagram 6.9 – Austroads typical rural property access



7. Construction of internal access road

The development proposal includes the upgrade of the existing access track to a 5.5 metre wide road, suitable to accommodate two-way traffic movements. The pavement will be a hard wearing all weather gravel road surface with appropriate camber to manage surface water. The road will be designed to match the current grades, and culverts will be provided underneath the road surface to maintain any natural water courses.

8. Internal car park layout

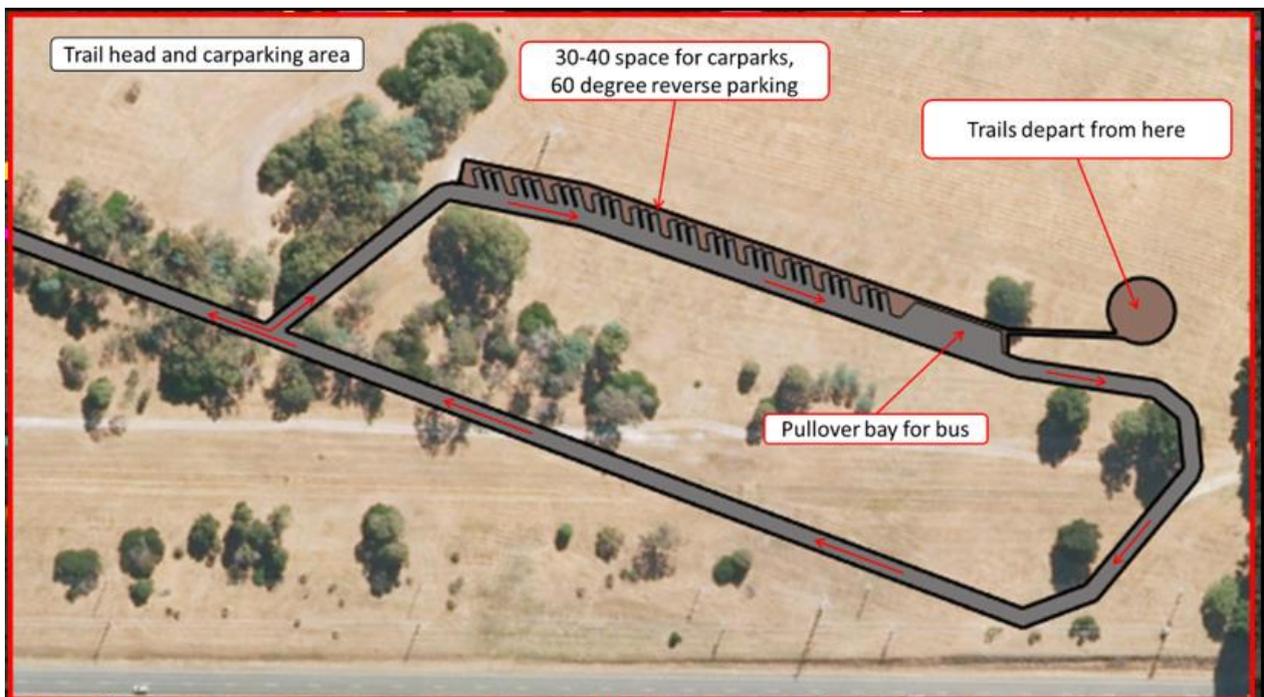
As determined in section 4 of this assessment, the average number of vehicles expected to be parked at any one time is 12. The development is expected to provide some 30 parking spaces located within a one-way traffic arrangement. The spaces will be angled at either 60 or 90 degrees, be a minimum of 6 metres long and 3 metre width. The aisle width of 5.5 metres wide will be provide for 60 degree spaces or 6.2 metres for 90 degree spaces. The parking spaces will be connected to the trail departing area by a one metre wide footpath.

The parking arrangement will incorporate a bus pullover bay in close proximity to the start of the trails.

The parking surface will be a hard wearing all weather gravel surface and grades of the parking spaces are expected to be less than five percent.

This proposed parking design is expected to meet the reasonable parking demand caused by this new use.

Diagram 8.0 – Proposed car park layout



9. Planning scheme

9.1. E4.6 Road and Railway Assets Code

E4.6.1 Existing road accesses and junction

This development will intensify traffic movements using an existing gravel access by more than 10 percent per day and therefore must be considered under the performance criteria P3, as the speed limit along Bridport Main Road is 100 km/h.

Performance criteria	Assessment
To ensure that the safety and efficiency of road and rail infrastructure is not reduced by the creation of new accesses and junctions or increased use of existing accesses and junctions.	
a) Access to a category 1 road or limited access road must only be via an existing access or junction or the use or development must provide a significant social and economic benefit to the State or region; and	The development will utilise an existing licensed access located 95 metres east of the East Tamar Highway. This licensed access will be relocated in a westerly direction to within 55 metres of the highway. Once the access is relocated the previous access will be closed and this will mean no new access will be created by this development.
b) Any increase in use of an existing access or junction or development of a new access or junction to a limited access road or a Category 1,2 or 3 road must be for the use that is dependent on the site for its unique resources, characteristics or locational attributes and an alternative site or access to a category 4 or 5 road is not practicable; and	The current access is infrequently used, and the new use is expected to generate a maximum of 100 trips per day when operating, and these trips will be passenger or recreational vehicles. The new access will connect to an existing access track and provide access to an internal car park, at the start of the mountain bike trails. This new access is considered the most practicable location to enable access to the new development and there is no alternative access point to a road lower in the road hierarchy. Use of this access is necessary to facilitate this new recreational and tourist use.
c) An access or junction which is increased in use or is a new access or junction must be designed and located to maintain an adequate level of safety and efficiency for all road users.	The access will be upgraded to meet the Department of State Growth standards for rural access, will be widened to accommodate two-way traffic movements, sealed from the roadway to the property boundary. A formal marked right turn lane will be provided on Bridport Main Road to provide an area where stationary right turn vehicles can shelter from highway through traffic. This turning lane treatment will significantly improve safety for all users using this access, and is expected not to create any adverse impact to transport efficiency to the surrounding road network. Traffic modelling has demonstrated there is no risk of right turning vehicles queueing back to the East Tamar Highway and the right turn lane is not expected to create any adverse impact to the current weigh bridge operations.

E4.7.4 Sight Distance at Accesses, Junction and Level Crossings

The existing licensed access will be moved 40 metres towards the East Tamar Highway to ensure the available sight distance for drivers, exceed the planning scheme required Safe Intersection Sight Distance, for the prevailing operating speed of approaching vehicles.

This means drivers using the new development access will have sufficient sight distance to enter and leave the Bridport Main Road in a safe manner, without causing any adverse traffic impact to existing road users.

The available sight distance will meet the acceptable solution under the planning scheme.

9.2. E6.0 Parking and Sustainable Transport Code

E6.6.1 Car parking numbers

The planning scheme specifies that any new use must provide parking spaces that meet the reasonable demand, to prevent overflow of parking on to the public road network. Table E6.1 provides parking requirements for various development use, unfortunately the table does not provide any information on mountain bike trails, and the closest use is Sports and Recreation, which is not considered relevant.

A parking demand survey was conducted on a mountain bike facility at the Meehan Range Nature Reserve in Mornington near Hobart. This Mornington facility is more accessible to a large population than the proposed development and is expected to generate a higher usage. For the purpose of this assessment, the new development is estimated at 33 percent of the Mornington facility, and from survey data, it is estimated the parking demand for the proposed development should be a minimum of 12 spaces.

The proposed new internal car park is expected to provide a minimum of 30 spaces, this is expected to meet the reasonable parking demand created by this new use and not expected to generate a parking overflow onto the public road network.

This number of parking spaces complies with the acceptable solution under the planning scheme for on-site car parking.

E6.6.2 Bicycle Parking Numbers

This type of development is not expected to generate a parking demand from cyclists.

E6.6.3 Taxi Drop-off and Pickup

This type of development is not expected to generate a taxi demand, although there will be a bus pullover bay.

E6.6.4 Motorbike parking provisions

This type of development is not expected to generate a parking demand from motorcyclists.

E6.7 Development standards

Development standards	Comment
6.7.1 Construction of car parking spaces and access strips.	The proposed car park layout is expected to conform with the Australian Standards 2890 part 1: Off-street parking. The one-way circulating flow and adequate parking and manoeuvring aisles will introduce efficient and safe traffic flow. The car park surface will be an all-weather hard wearing gravel surface with appropriate drainage.
6.7.2 Design and layout of car parking.	The parking spaces will be a minimum of class 3A for high turnover, ensuring easy manoeuvrability into and out of the spaces. The width of the aisles will be in accordance with the Australian Standard. The gradient of the parking area will be designed for five percent or less. The access road will be a minimum of 5.5 metres in width, to accommodate two-way traffic movements. The layout provides for a turning circle and ensures all vehicles move in a forward direction when entering and leaving.
6.7.3 Car parking access, safety, and security.	The development is for day use, with no night time activity expected. No vehicles are expected to park overnight and the need for security lighting is not considered necessary given the use and location.
6.7.4 Parking for persons with a disability.	This type of use is not expected to create a demand by disable persons.
6.7.5 No standard	
6.7.6 Loading and unloading of vehicles, drop-off and pickup.	This development will not create a demand for deliveries, and special loading and unloading facilities is considered unwarranted.

10. Conclusion

From a traffic engineering and road safety perspective, traffic generated by this development use is not expected to create any adverse safety, amenity, or transport efficiency problems, as:

- the amount of traffic generated is considered low, and there is sufficient capacity along the Bridport Main Road to absorb the extra traffic movements,
- the development will utilise an existing licensed access that will be relocated closer to the East Tamar Highway to maximise available sight lines,
- a short right turn lane will be provided on Bridport Main Road; traffic modelling has indicated the number of right turners is not expected to create any queueing issues, or adversely impact the East Tamar Highway traffic performance,
- the relocated development access and marked right turn lane is not expected to create any adverse impact to the operation of the current weigh bridge site,
- the new development access will be constructed to meet the Department of State Growth standard for a rural access,
- available sight distance at the new development access will exceed the required Safe Intersection Sight Distance, to enable vehicles to enter and leave the Bridport Main Road safely and without disrupting current users,
- there will be more than sufficient on-site parking spaces to meet the reasonable demand without causing any overflow to the public road network,
- the internal access road will be constructed to provide safe and efficient two-way traffic movements between the Bridport Main Road and the on-site car park.

This Traffic Impact Assessment found no reasons for this development not to proceed.