Tasman Extension Project
Environmental Impact Statement

APPENDIX Q

PRIVATE DRIVEWAY/ GEORGE BOOTH DRIVE REVIEW

Resource Strategies

DONALDSON COAL
Part of Gloucester Coal

Donaldson Coal Pty Ltd

Tasman Extension Project

Safety Review of George Booth Drive Shoulder Widenings

April 2012

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1. Introduction

The Tasman Mine, owned and operated by Donaldson Coal Pty Ltd (Donaldson Coal), is situated to the west of the greater Newcastle urban area, near Mt Sugarloaf, approximately 2.5 km west of the village of Seahampton. The mine site is in the north western corner of Lake Macquarie, just east of its boundary with Cessnock City Council.

The mine produces run of mine coal which is hauled by road on George Booth Drive and John Renshaw Drive via Richmond Vale, Buchanan and Buttai to the Bloomfield Coal Handling and Preparation Plant near Beresfield, where it is processed and loaded on trains for transport to the Port of Newcastle.

Access to the Tasman Mine is via a major channelised t-intersection on George Booth Drive, to the west of the Mt Sugarloaf intersection. This was constructed in 2005 under a Works Authorisation Deed (WAD) with Roads and Maritime Services (RMS, formerly Roads and Traffic Authority) for private developer construction on the State Road Network.

Approval of the road haulage of coal to Donaldson Mine was conditional on a range of additional roadworks improvements being completed by Donaldson Coal on both George Booth Drive and John Renshaw Drive. These focussed on improved road safety at intersections and the provision of passing lanes on key sections and were constructed under the WAD process with RMS.

The mine has been producing coal and transporting by road between Seahampton and Beresfield for the just over 4 years since haulage commenced in late 2007. The company has closely monitored the haulage operations and driver adherence to a code of conduct as part of its approval conditions.

As a result of a major undertaking by Donaldson Coal to extend the life and increase production outputs of the Tasman Mine, it is planning to relocate mine operations and pit top facilities approximately 2.5 km to the north-west, to near the Orica Research Facility at Richmond Vale.

The proposed new mine infrastructure would be within the Cessnock City Council area and is currently the subject of development planning and approval applications to the NSW government. An Environmental Assessment for this relocation, proposed productivity increases and consequent increases in road haulage is currently in preparation.

The new access intersection is proposed to be located on George Booth Drive approximately 2.5 km west of the current access, opposite an existing intersection to a quarry operation owned by civil contracting and materials supply company Daracon. It is proposed the new intersection would operate as a roundabout to cater for turning movements from both access roads.

A key consideration in the development and future approval of the new mine facilities and the relocated access intersection is the status and function of George Booth Drive between the F3 Freeway and Buchanan. Traffic volumes on this section of are expected to drop significantly as most through movements transfer to the nearby Hunter Expressway which is currently under construction and is due for completion in late 2013.

1.2 George Booth Drive Shoulder Widening's

As part of the original approval for the Tasman Mine, Donaldson Coal undertook a series of shoulder widening's opposite residential and commercial driveways along George Booth Drive between Richmond Vale Road and John Renshaw Drive. With the proposed increase in truck movements along the George Booth Drive as part of the relocated mine operations and increased production, Donaldson Coal has commissioned GHD to undertake a safety review of these existing shoulder widenings.

This report explores the current road widening provisions, including general observations and possible improvements for each of the property accesses along George Booth Drive, between Richmond Vale Road and John Renshaw Drive. Each location is reported in detail in Sections 3.0 to 15.0 of this report following commentary on general observations in Section 2.0.

1.3 Project Extents

There are 13 existing shoulder widening's along George Booth Drive between Richmond Vale Road and John Renshaw Drive. The location of these widenings is shown in Figure 1.

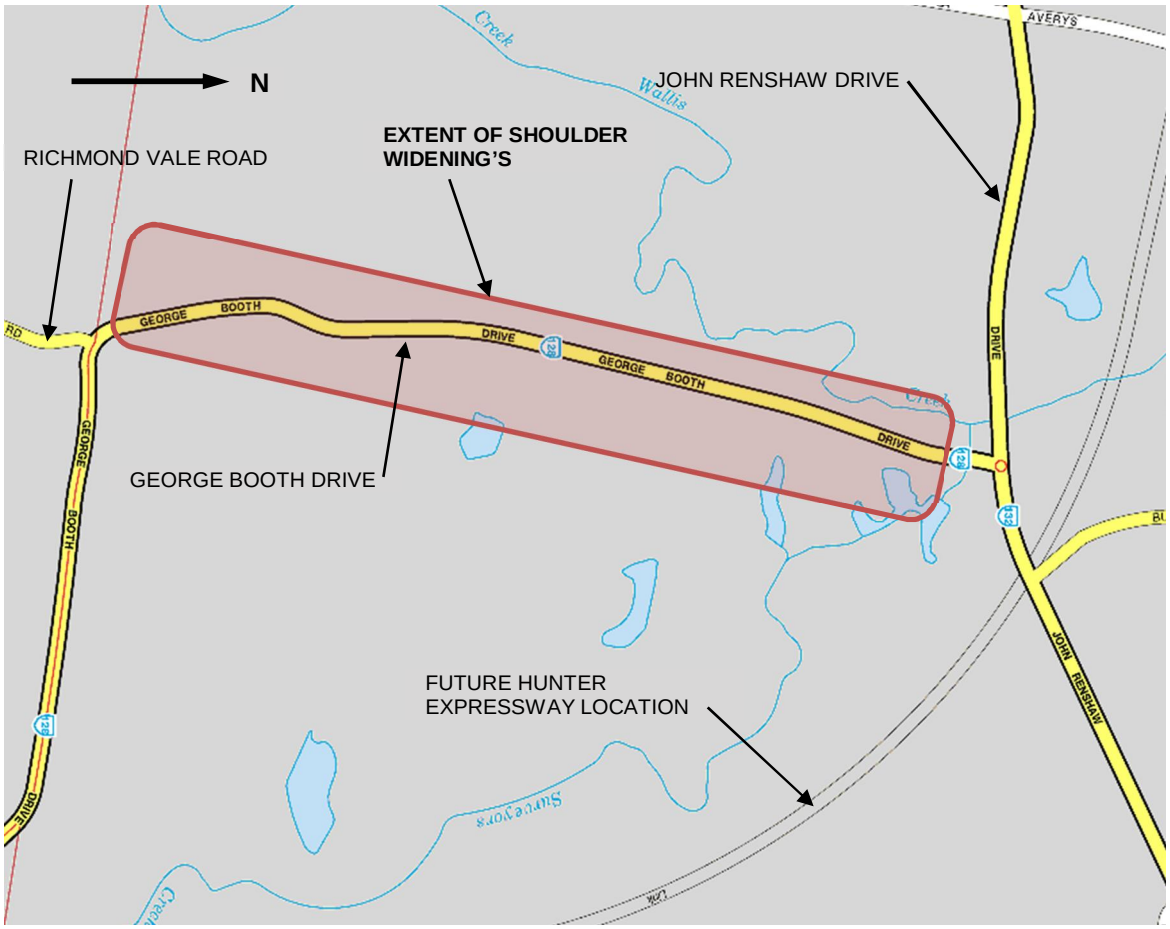


Figure 1 Extent of Shoulder Widenings

2. General Observations

GHD undertook a site inspection along George Booth Drive on Wednesday 29 February 2012, between the hours of 9:30am and 1:00pm in good weather conditions.

During the site visit and review of the existing widened shoulder facilities, several observations were made that related to the all the widened sections. These observations are documented in this section of the report.

2.1 Hunter Expressway

2.1.1 Future Traffic Volumes

The Hunter Expressway, which will provide a four-lane dual carriage expressway linking the F3 Freeway and New England Highway at Branxton, is scheduled to be opened to traffic at the end of the year 2013. Once the expressway has been opened, it is anticipated that the traffic volumes on George Booth Drive will reduce significantly. Any vehicle wishing to travel between the F3 Freeway and Buchanan will switch over to the Hunter Expressway, with only local vehicles using George Booth Drive along with the heavy vehicles accessing the different industrial and commercial sites along the road.

It is noted that Donaldson Coal has made a commitment not to increase the number of truck movements from the new Tasman Mine until after the Hunter Expressway has been completed.

2.1.2 Current Construction Traffic Volumes

There are a number of construction access gates located on George Booth Drive for the Hunter Expressway project. While the majority of heavy vehicle movements will occur along the Hunter Expressway corridor there are some heavy vehicles that use George Booth Drive to access the site. No Construction Traffic Impact Assessment could be located for the eastern section of the Hunter Expressway to confirm the number of construction heavy vehicles that are using George Booth Drive.

After the completion of the Hunter Expressway, construction heavy vehicles would cease to use George Booth Drive, lowering the number of heavy vehicles currently using the road as well as major reduction in light vehicles used by Hunter Expressway staff.

2.2 Existing Heavy Vehicle Volumes

During the onsite safety review of the existing widened shoulder facilities it was noted that the composition of traffic along George Booth Drive comprised a large proportion of heavy vehicles. These heavy vehicles were observed to be from the following sources:

- Tasman Mine – B-Double;
- Daracon Quarry – truck and dog combination;
- Hunter Expressway construction – truck and dog combination;
- “Henholme” Egg Farm – B-Double; and
- Other – single unit trucks, semi-trailer, truck and dog, B-Double and occasional over-size heavy vehicles (under escort).

The trucks associated with the Tasman mine were observed to go past at approximately 8 minute intervals. The amount of truck movements at the time of the site inspection would be best described as 'heavy', with constant presence of trucks in either direction.

2.3 Existing Private Driveway Use

It was noted whilst onsite during the inspection period the use of the private driveways was infrequent, with most driveways not being utilised at all. This may be due to people only exiting and entering the private driveways in mornings and afternoons as part of travelling to and from work. The exceptions to this general observation were the accesses to the Valley Fresh Flowers and Henholme where a number of vehicles were observed to enter and exit whilst carrying out the site visit. It is noted that both of these addresses are commercial operations.

2.4 Bus Services

There is no regular or scheduled bus route on George Booth Drive.

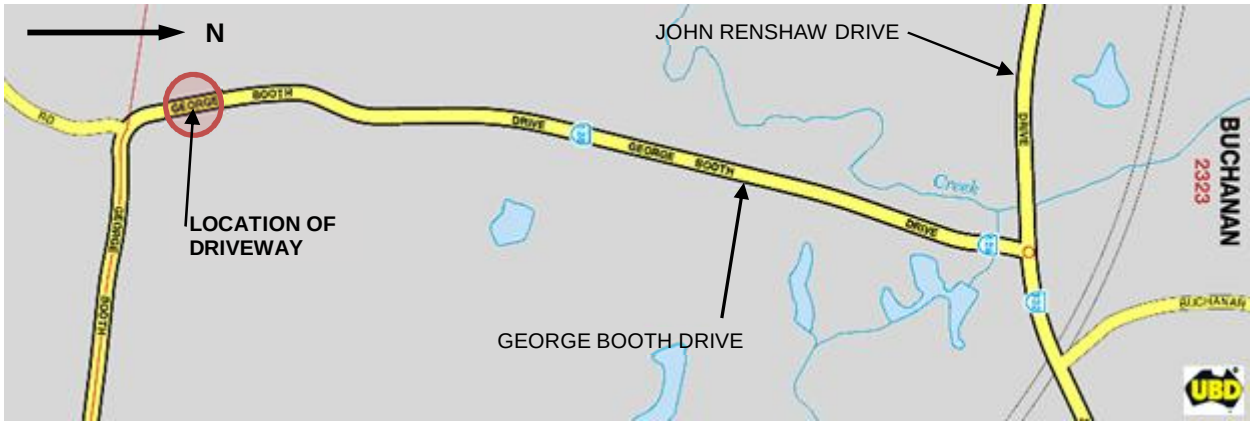
2.5 Mail Services

During the site inspection a light vehicle was observed doing a mail run along George Booth Drive. This vehicle was observed criss-crossing the road in order to deliver mail to both sides of the road whilst only traveling in the one direction.

2.6 Vehicles Stopped to Answer Phones

There have been anecdotal reports that the existing widened shoulder facilities at different locations have been used by motorists to park in order to talk on mobile phones. No vehicles were observed to do this during the site inspection. However, this is not an illegal manoeuvre by motorists as no signage is provided to prohibit such, and as it is outside the control of Donaldson Mine, no further comment has been made in this report.

3. No. 1332 George Booth Drive



3.1 Current Provisions

Driveway

Northbound Approach
Right Turn Shoulder

Southbound Approach
Left Turn Shoulder

Table 1 Existing Provisions at No. 1332 George Booth Drive

Northbound (right turn) shoulder width	2.3m to 2.9m	**Sight distance to propped right turn vehicle - NB**	115m
Southbound (left turn) shoulder width	0.8m	**Sight distance to approaching vehicles for right turn out of driveway**	>200m
Travel lane widths	3.5m	**Driveway Location (Side of Road)**	Eastern

3.2 Observations

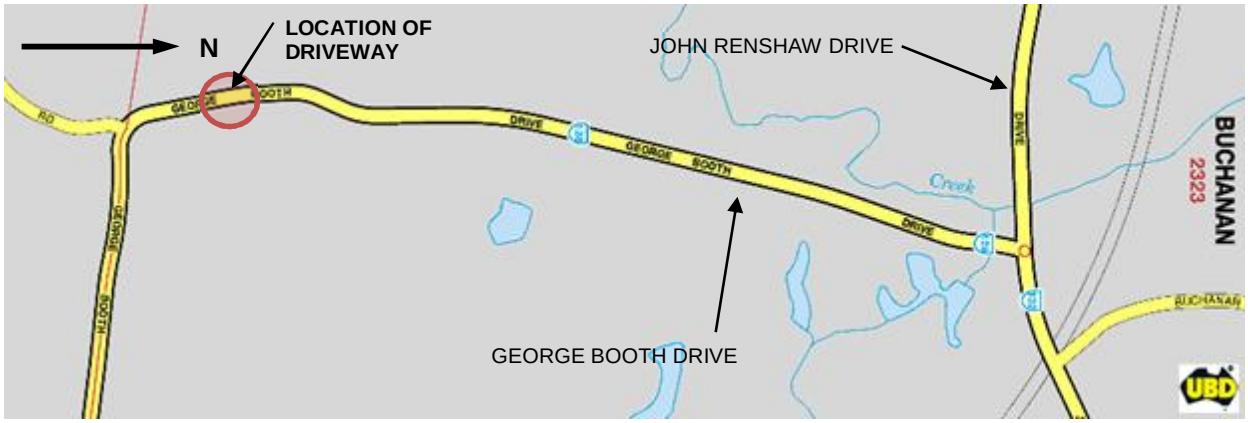
- There are well worn vehicle tracks evident on the southbound side of the road prior to the driveway, which suggests that the motorists entering the driveway are leaving the travel lane early in order to turn left into their property;
- A damaged Telstra pit was observed at the entrance to the property and it is likely that it is caused by vehicles leaving the road early to undertake a left turn into the property;

- Some minor erosion has occurred at the edge of the seal on both sides of the road, creating a small drop to the unsealed shoulder – Refer Appendix A, Photo 1 and Photo 2;
- Both sides of the road have wide unsealed areas that are clear of non-frangible hazards; and
- Sight distance to a vehicle propped to turn right into the driveway is reduced due to the sharp right hand curve to the south of the driveway. Vehicles travelling north on George Booth Drive will not see a propped vehicle until they have negotiated the curve. However, the speed of the through vehicle is reduced due to the tightness of this curve.

3.3 Preliminary Suggested Treatments

- Provide a short length of sealed shoulder widening for the left turn into the property, which would require repairs to the existing Telstra pit.

4. No. 1353 George Booth Drive



4.1 Current Provisions

Driveway

Southbound Approach
Right Turn Shoulder

Northbound Approach
Left Turn Shoulder

Table 2 Existing Provisions at No. 1353 George Booth Drive

Right turn shoulder width	2.5m to 3.0m	**Sight distance to propped right turn vehicle**	215m
Left turn shoulder width	0.8m	**Sight distance to approaching vehicles for right turn out of driveway**	>160m
Travel lane widths	3.5m	**Driveway Location (Side of Road)**	Western

4.2 Observations

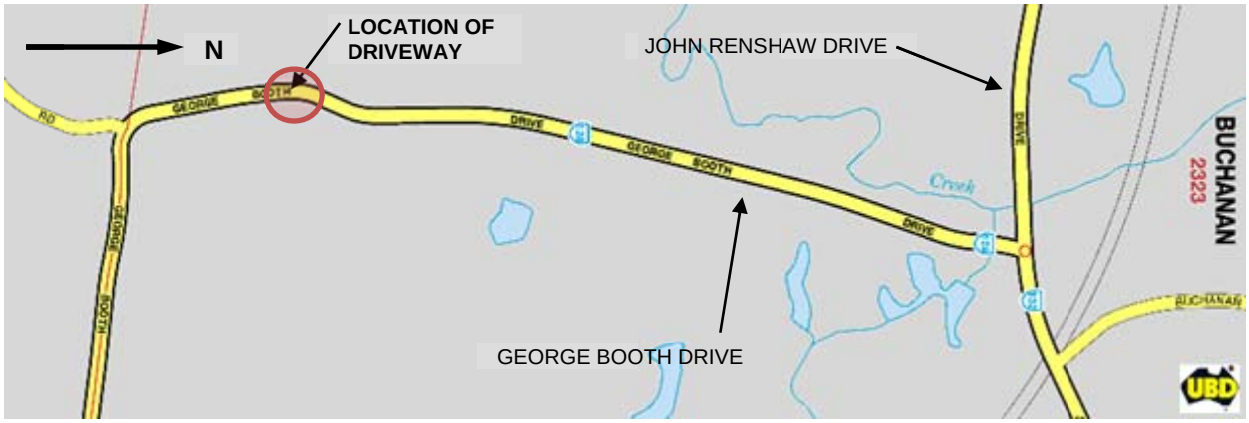
- Both sides of the road have wide unsealed areas that are clear of non-frangible hazards. A semi-trailer was observed to be parking in one of the widened unsealed verges;
- A large hole is present in the road verge on left turn approach to the driveway – Refer Appendix A, Photo 3;
- Some minor erosion has occurred at the edge of seal on both sides of the road, creating a small drop to the unsealed shoulder – Refer Appendix A, Photo 4;

- Tyre markings on the pavement immediately south of the property access indicate that vehicles perform U-turn manoeuvres at this location; and
- The driveway had sufficient sight distance in both directions.

4.3 Preliminary Suggested Treatments

Provide sealed shoulder widening for the left turn into the driveway.

5. No. 1373 George Booth Drive



The property number/ house number is not shown on the fence. However, it is believed to be the access to No. 1373.

5.1 Current Provisions

Driveway

Southbound Approach Right Turn Shoulder

Northbound Approach Left Turn Shoulder

Table 3 Existing Provisions at No. 1373 on George Booth Drive

Right turn shoulder width	2.8m to 3.0m	**Sight distance to propped right turn vehicle**	170m
Left turn shoulder width	2.4m to 2.6m	**Sight distance to approaching vehicles for right turn out of driveway**	>200m
Travel lane widths	3.75m	**Driveway Location (Side of Road)**	Western

5.2 Observations

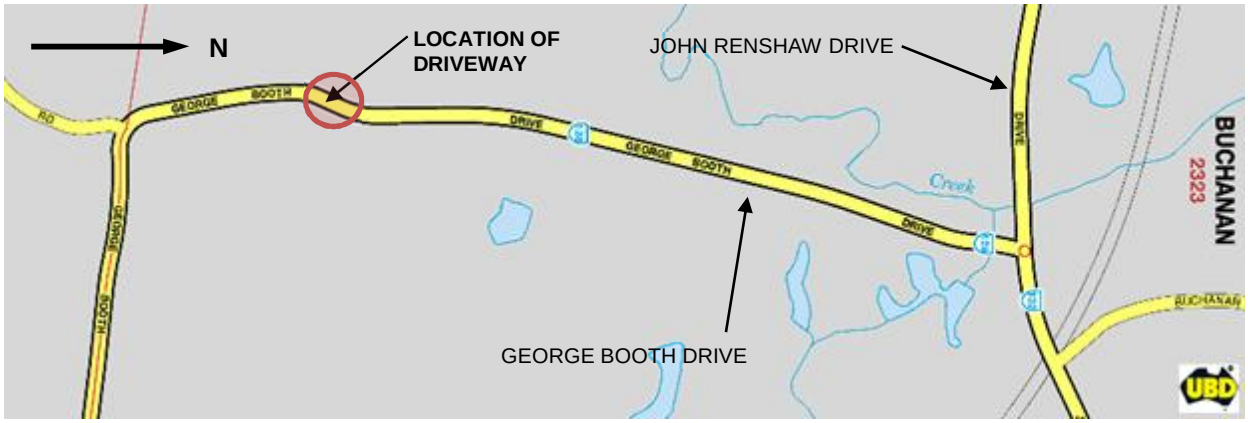
- This section of George Booth Drive has been constructed using asphalt rather than a bitumen seal as per the rest of the road;
- Vehicles turning right into the property were observed to take a diagonal movement across the northbound lane on George Booth Drive rather than a 90 degree turn into the property;

- The widened shoulder for the property access is much longer either side of the driveway entrance due to the curvature in road alignment; and
- Lane widening has been provided for the through lanes due to the horizontal curve at this location.

5.3 Preliminary Suggested Treatments

No improvements or modifications are proposed at this driveway.

6. No. 1395 George Booth Drive



6.1 Current Provisions

Driveway

Southbound Approach
Right Turn Shoulder

Northbound Approach
Left Turn Shoulder

Table 4 Existing Provisions at No. 1395 George Booth Drive

Right turn shoulder width	2.2m to 2.5m	**Sight distance to propped right turn vehicle**	110m
Left turn shoulder width	2.5m	**Sight distance to approaching vehicles for right turn out of driveway**	100m
Travel lane widths	3.5m (southbound) 3.8m (northbound)	**Driveway Location (Side of Road)**	Western

6.2 Observations

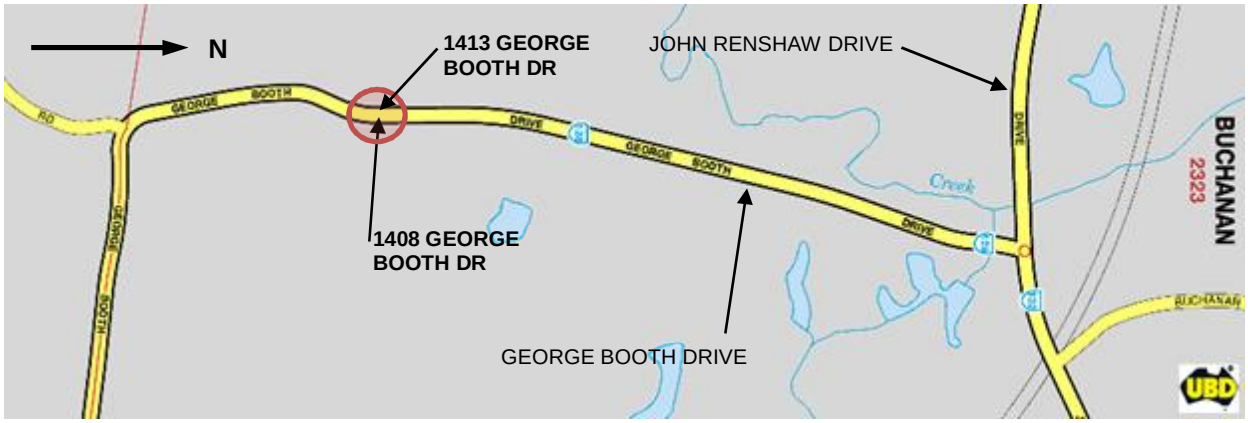
- While the sealed right turn shoulder widening does extend out to 2.5m (approximately), the actual available shoulder width is limited by the position of the guideposts at this location which are offset approximately 200mm from the edge of seal. It is noted that the guide posts have not been provided in the immediate vicinity of the driveway – Refer Appendix A, Photo 5; and

- Concrete culvert at the driveway entrance is missing a headwall and the end of the pipe had signs of damage with some of the reinforcement being observed.

6.3 Preliminary Suggested Treatments

- Provide additional width for the right turn shoulder widening; and
- Guide posts to be relocated to outside the sealed pavement area.

7. No. 1408 & 1413 George Booth Drive



The driveways/property entrances for property numbers 1413 and 1408 are on opposite sides of the roadway but slightly offset. For this reason the issues and dimensions regarding both of these accesses will be discussed below.

Property No. 1413 is for the Valley Fresh Flowers commercial property. This property includes a medium sized car park which suggests a higher number of vehicles would be turning into this property.

7.1 Current Provisions

Driveway (no. 1413)

Southbound Approach

Northbound Approach

Table 5 Existing Provisions at No. 1408 and 1413 George Booth Drive

Northbound shoulder width	2.8m to 3.0m	**Sight distance to propped right turn vehicle**	120m
Southbound shoulder width	2.85m	**Sight distance to approaching vehicles for right turn out of driveways**	>200m
Travel lane widths	3.5m		

7.2 Observations

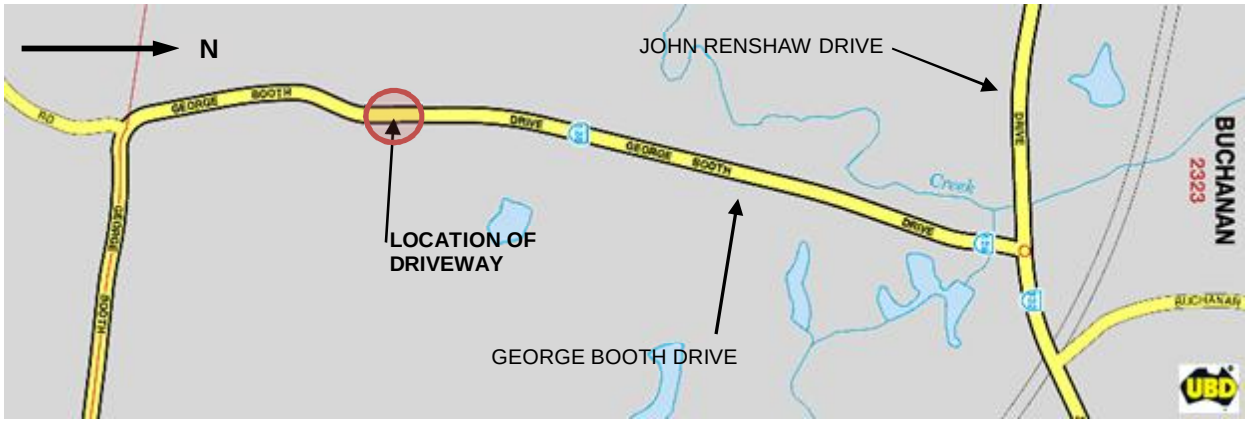
- The property access for No. 1408 is opposite the access for No. 1413. It is anticipated that this area would be the most likely position for traffic interaction due to multiple driveways entrances and possible higher traffic volumes associated with the business located at No. 1413;
- There are two power poles within the southbound clear zone for George Booth Drive at this location. These poles are located:
  - At the start of the widening taper (1.5m from edge line on road); and
  - At end of widened shoulder (2.75m from edge line on road).

  These poles will create a non-frangible hazard for an errant vehicle on George Booth Drive – Refer Appendix A, Photo 6 and Photo 7;
- Where driveways are opposite each other, widened shoulders have been provided on both sides of the road. There is a small likelihood of a collision should a vehicle be exiting one of the properties at the same time that a vehicle overtakes another vehicle propped to turn right into the opposite driveway;
- Small trees block the visibility and sight distance of motorists looking right from the driveway of property No. 1408 – Refer Appendix A, Photo 8.

7.3 Preliminary Suggested Treatments

- Consider the relocation of the power poles to outside of the clear zone for the road. These poles restrict the extents of the widened shoulders. It is also noted that should a vehicle overshoot the widened shoulder at this location it would travel straight into one of the poles; and
- Trim or remove vegetation on the southbound side of the road, north of the driveway into property No. 1408 to improve sightlines out of the driveway to approaching vehicles.

8. “Henholme” – George Booth Drive



8.1 Current Provisions

Driveway

Northbound Approach Right Turn Shoulder

Southbound Approach Left Turn Shoulder

Table 6 Existing Provisions at “Henholme” George Booth Drive

Right turn shoulder width	3.5m	**Sight distance to propped right turn vehicle**	150m
Left turn shoulder width	0.5m	**Sight distance to approaching vehicles for right turn out of driveway**	>200m
Travel lane widths	3.5m	**Driveway Location (Side of Road)**	Eastern

8.2 Observations

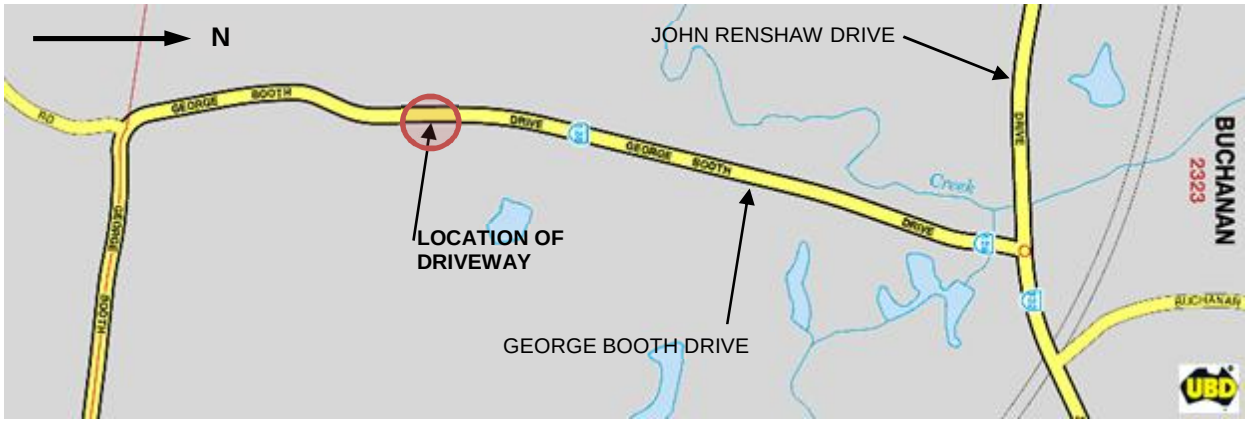
- The road widening for right turning vehicles extends for a large distance beyond the driveway – Refer Appendix A, Photo 9;

- The driveway pavement was observed to be damaged with signs of crocodile cracking and potholes. This is thought to be attributed to the number of heavy vehicles that enter and leave the property – Refer Appendix A, Photo 10;
- At the throat of the driveway deep tyre tracks were observed into the unsealed pavement to the south – Refer Appendix A, Photo 11;
- Tyre marks on the road indicate that there are large numbers of heavy vehicles that turn into and out of the property, and that these vehicles regularly use the road shoulders to be able to make the manoeuvre. During the time of the safety review a B-Double vehicle was observed to turn right out of the property, this vehicle used the entire northbound road shoulder for the movement and encroached into the unsealed shoulder for a section while exiting the property – Refer Appendix A, Photo 12 and Photo 13. It can be seen in Photo 13, how a light vehicle has pulled over in the unsealed verge to turn left.

8.3 Preliminary Suggested Treatments

It is considered that the issues associated with this driveway are due to the commercial nature of the property. However, some shoulder widening could be provided for the left turn into the driveway. Any existing damage to the existing driveway should be the responsibility of the property owner given that the driveway is used by heavy vehicles associated with these commercial premises.

9. No. 1424 George Booth Drive



9.1 Current Provisions

Driveway

Northbound Approach Right Turn Shoulder

Southbound Approach Left Turn Shoulder

Table 7 Existing Provisions at No. 1424 George Booth Drive

Right turn shoulder width	2.8m	**Sight distance to propped right turn vehicle**	>200m
Left turn shoulder width	1.4m	**Sight distance to approaching vehicles for right turn out of driveway**	>200m
Travel lane widths	3.5m	**Driveway Location (Side of Road)**	Eastern

9.2 Observations

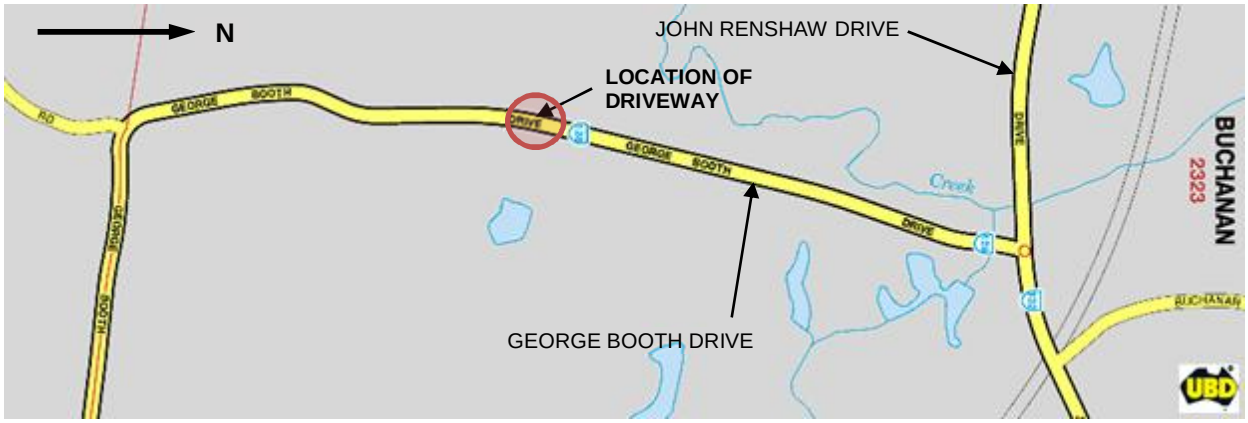
- The road widening on the northbound side of the road started to taper back to existing almost immediately after the driveway – Refer Appendix A, Photo 14;
- Wheel tracks in the existing southbound shoulder suggest that vehicles use the unsealed shoulder to enter the property of to pull up and stop at the property – Refer Appendix A, Photo 15;

- Large edge drop-offs are evident at the edge of the southbound seal on approach and departure to the driveway – Refer Appendix A, Photo 16; and
- On the southern side of the driveway, an informal track runs between the property fence and an existing road sign. This track could be used by the local mail route, indicated by the position of the letter box at this location – Refer Appendix A, Photo 17.

9.3 Preliminary Suggested Treatments

- Provide a sealed widened shoulder for the left turn into the property; and
- Extend the existing widened sealed shoulder to approximately 20m past the driveway prior to tapering back to the existing.

10. No. 1459 George Booth Drive – “County Downs”



10.1 Current Provisions

Driveway

Southbound Approach Right Turn Shoulder

Northbound Approach Left Turn Shoulder

Table 8 Existing Provisions at No. 1459 George Booth Drive

Right turn shoulder width	3.0m	**Sight distance to propped right turn vehicle**	>200m
Left turn shoulder width	0.5m	**Sight distance to approaching vehicles for right turn out of driveway**	140m
Travel lane widths	3.5m	**Driveway Location (Side of Road)**	Western

10.2 Observations

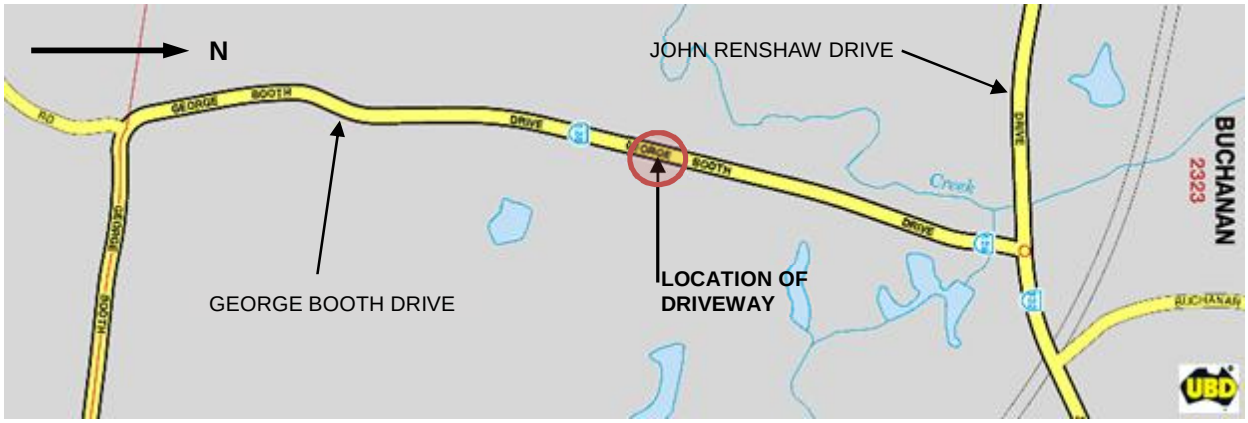
- The Property access is a more traditional driveway, which is characterised by no throat widening at the interface of the driveway and George Booth Drive, and minimal sealed shoulders on approach and departure from the driveway. This type of driveway requires vehicles turning left into the property to decelerate in the through lane of the road and, decreases the turning speed for the movement into the property and leaves the left turning vehicle exposed to through traffic for longer;

- The available sight distance for a car turning right out of the property is in fact greater than 140m because there is a large maintained verge on the inside of the curve to the south of the property. Should this verge become overgrown, it would limit the sight distance to 140m;
- There is a power pole that is within the clear zone for the road, directly opposite the driveway. The pole is located 4.5 metres from the lane edge line and adjacent to the shoulder widening and poses as a hazard should a vehicle be clipped or clip another when passing around a stationary vehicle – Refer Appendix A, Photo 18;
- Providing throat widening or shoulder widening for the left turn into the driveway may require the existing culvert under the driveway to be modified or even replaced; and
- An informal track runs off the road and into the road verge at the end of the southbound shoulder widening – Refer Appendix A, Photo 19.

10.3 Preliminary Suggested Treatments

- Provide a sealed widened shoulder for the left turn into the property; and
- Consider the relocation of the power pole to outside of the clear zone.

11. No. 1490 George Booth Drive



11.1 Current Provisions

Driveway

Northbound Approach Right Turn Shoulder

Southbound Approach Left Turn Shoulder

Table 9 Existing Provisions at No. 1490 George Booth Drive

Right turn shoulder width	2.4m to 2.8m	**Sight distance to propped right turn vehicle**	>200m
Left turn shoulder width	0.5m	**Sight distance to approaching vehicles for right turn out of driveway**	>200m
Travel lane widths	3.5m	**Driveway Location (Side of Road)**	Eastern

11.2 Observations

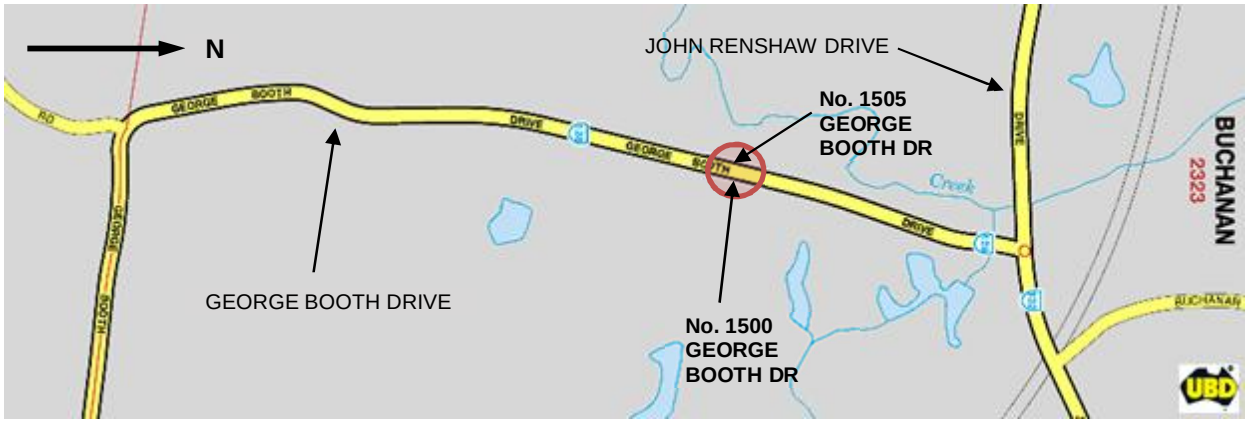
- The road widening for right turning vehicles is inconsistent in width and appears to be inadequate for vehicles to pass turning vehicles. At the critical area where overtaking/passing will occur the shoulder widening is 2.5m wide. There is no additional unsealed shoulder width for vehicles to use in order to pass a vehicle propped to turn right into the property. Wheel tracks were observed in the unsealed shoulder suggesting that it is used for the left turn into the property – Refer Appendix A, Photo 20;

- No sealed throat widening has been provided at the driveway, however there is a thin section of unsealed shoulder that could be used for the left turn into the property – Refer Appendix A, Photo 21;
- There are edge drop-offs along the southbound edge of sealed pavement on approach and departure to the driveway;
- Pavement rehabilitation works have been completed in the northbound lane at some point after the construction of the shoulder widening. This rehabilitation work has not been extended to the edge of the shoulder, creating a minor step in the northbound shoulder – Refer Appendix A, Photo 22.
- A Hunter Expressway construction sign, located opposite the property access, has 3 x 90 mm diameter posts spaced at 0.8 metres, with the first post located 3.1m from the edge line. These poles create a non-frangible hazard within the clear zone for the road – Refer Appendix A, Photo 22;
- There is a concrete culvert beneath George Booth Drive with headwalls on both sides of the road that are within the clear zone. The headwall on the northbound side of the road is approximately 3.7m from the road edge line and the headwall on the southbound side is 1.7m from the edge line – Refer Appendix A, Photo 23.

11.3 Preliminary Suggested Treatments

- Provide a sealed widened shoulder for the left turn into the property;
- Consider relocation of the Hunter Expressway sign to outside of the clear zone for the road. This should be requested / referred to the Hunter Expressway Alliance office; and
- Provide additional widening for the northbound shoulder and smooth off the drop in pavement due to the rehabilitation works.

12. No. 1500 & 1505 George Booth Drive



The property accesses for No. 1500 & 1505 are directly opposite each other with property No. 1500 being located on the eastern side of the road and property No. 1505 being located on the western side. Property No. 1500 has two entrances' separated by a small distance.

12.1 Current Provisions

Driveway (No. 1505)

Southbound Approach

Northbound Approach

Table 10 Existing Provisions at No. 1500 and No. 1505 George Booth Drive

Northbound shoulder width	2.8m	**Sight distance to propped right turn vehicle**	>200m
Southbound shoulder width	2.5m to 3.0m	**Sight distance to approaching vehicles for right turn out of driveway**	>200m
Travel lane widths	3.5m		

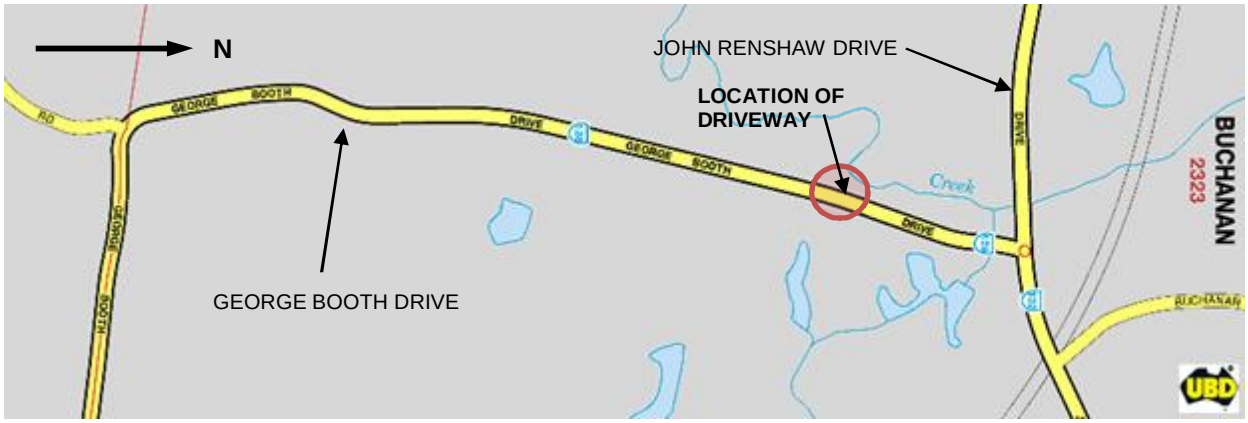
12.2 Observations

- There are two driveways into property No. 1500. It appeared that for heavy vehicles the northern driveway was an entrance and the southern driveway an exit. The northern driveway could be used as an entrance and exit for light vehicles; and
- Refer to Appendix A – Photo 24, Photo 25 and Photo 26 for some additional photos of the existing road at these driveways.

12.3 Preliminary Suggested Treatments

No improvements or modifications are proposed at these driveways.

13. No. 1523 George Booth Drive



13.1 Current Provisions

Driveway

Southbound Approach Right Turn Shoulder

Northbound Approach Left Turn Shoulder

Table 11 Existing Provisions at No. 1523 George Booth Drive

Right turn shoulder width	3.3m	**Sight distance to propped right turn vehicle**	>200m
Left turn shoulder width	0.6m	**Sight distance to approaching vehicles for right turn out of driveway**	>200m
Travel lane widths	3.5m	**Driveway Location (Side of Road)**	Western

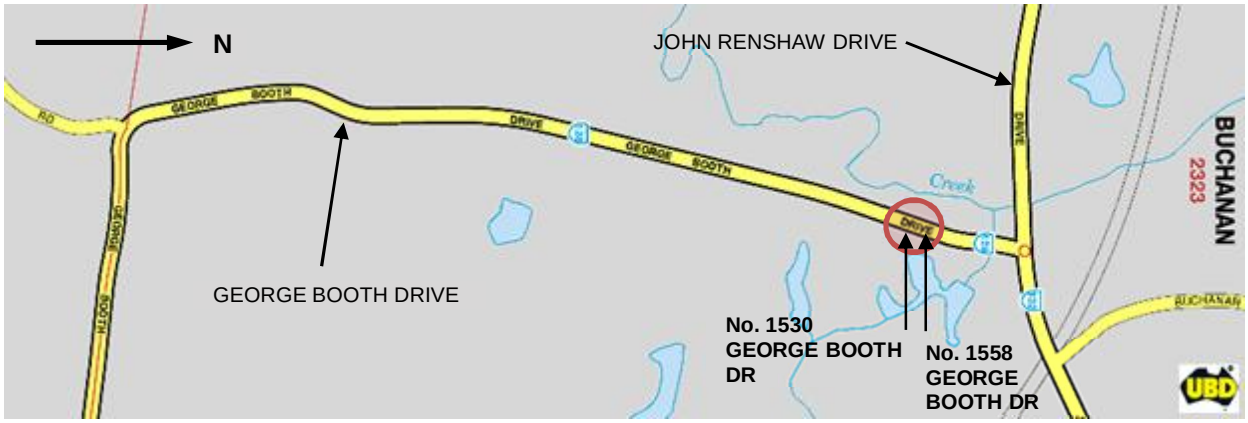
13.2 Observations

- An access gate is located opposite the driveway to property No. 1523, however it appears to be rarely used with no signs of wheel tracks; and
- There is a section of unsealed shoulder on the northbound side of the road that could be used for the left turn into the property.

13.3 Preliminary Suggested Treatments

- Provide a sealed widened shoulder for the left turn into the property.

14. No. 1530 & 1558 George Booth Drive



The properties No. 1530 and 1558 are neighbouring properties that share the same lane widening facilities.

14.1 Current Provisions

Driveway (No. 1530)

Northbound Approach Right Turn Shoulder

Southbound Approach Left Turn Shoulder

Table 12 Existing Provisions at No. 1530 and No. 1558 George Booth Drive

Right turn shoulder width	2.7m to 3.0m	**Sight distance to propped right turn vehicle**	>200m
Left turn shoulder width	1.1m	**Sight distance to approaching vehicles for right turn out of driveway**	>200m
Travel lane widths	3.5m		

14.2 Observations

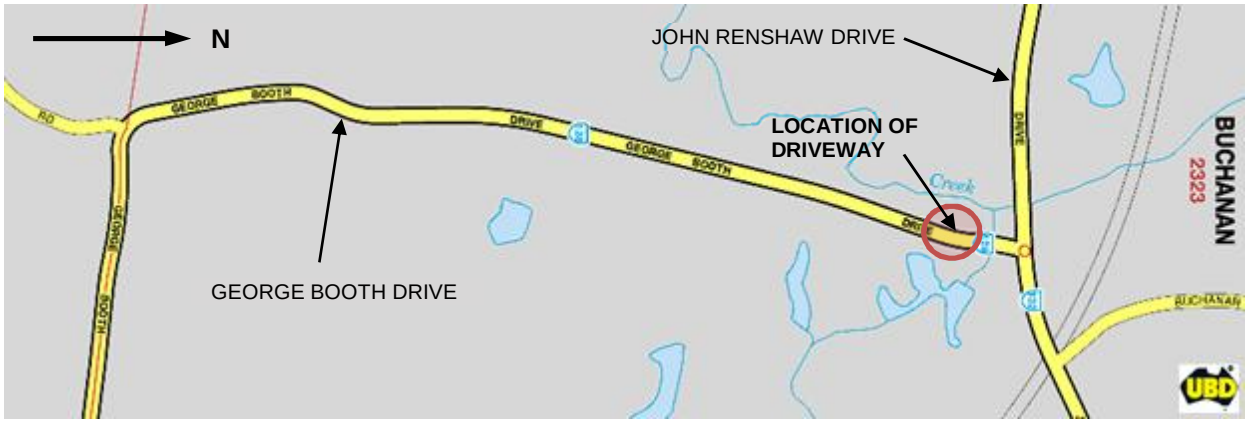
- The shoulder widening occurs opposite the driveway into property No. 1530 and does not achieve the full width until past the driveway – Refer Appendix A, Photo 27;

- Some minor erosion has occurred at the edge of the southbound sealed pavement – Refer Appendix A, Photo 28;
- There is a large unsealed shoulder for the left turns into the properties, with wheel tracks suggesting that they are used regularly – Refer Appendix A, Photo 28; and
- A power pole is located approximately 3.5 meters from the edge of the travel lane, at the end of the widened shoulder taper. This is within the designated clear zone for the road environment and poses as a hazard to errant vehicles – Refer Appendix A, Photo 29.

14.3 Preliminary Suggested Treatments

- Extend the northbound shoulder widening to the south of property No. 1530 so that it will allow the safe overtaking of a vehicle propped to turn right into the property. Consider the relocation of the power pole adjacent to the widening; and
- Provide sealed shoulder widening for the left turns into the driveways.

15. No. 1575 George Booth Drive



15.1 Current Provisions

Driveway

Southbound Approach
Right Turn Shoulder

Northbound Approach
Left Turn Shoulder

Table 13 Existing Provisions at No. 1575 George Booth Drive

Right turn shoulder width	3.0m	**Sight distance to propped right turn vehicle**	>200m
Left turn shoulder width	1.0m	**Sight distance to approaching vehicles for right turn out of driveway**	100m
Travel lane widths	3.5m	**Driveway Location (Side of Road)**	Western

15.3 Observations

- The sight distance to a right turning vehicle into the property access will be improved at the completion of the road works associated with the Hunter Expressway;
- Wheel tracks that appeared to be from a heavy vehicle heading south were observed to extend beyond the widened shoulder and into the table drain. The depressions in the grass extended for a length until they appeared to re-join the road where there is a small gravelled area.

15.4 Preliminary Suggested Treatments

It has been advised by Donaldson Coal that this property has been purchased by the RMS as part of the Hunter Expressway project. As such, no treatment is proposed to this driveway.

16. Summary of Suggested Treatments

Table 14 Summary of Suggested Treatments

Location	Suggested Treatment
No. 1332 George Booth Drive	Provide sealed shoulder widening for the left turn into the property; and Replace the Telstra pit with a trafficable pit and lid.
No. 1353 George Booth Drive	Provide sealed shoulder widening for the left turn into the property.
No. 1373 George Booth Drive	No improvements or modifications are proposed at this driveway.
No. 1395 George Booth Drive	Provide additional widening for the right turn shoulder; and Guide posts to be relocated to outside the sealed pavement.
No. 1408 & 1413 George Booth Drive	Consider the relocation of the power poles to outside of the clear zone for the road. These poles restrict the extents of the widened shoulders. It is also noted that should a vehicle overshoot the widened shoulder at this location they would travel straight into one of the poles; and Trim or remove vegetation on the southbound side of the road, north of the driveway into property No. 1408 to improve sightlines out of the driveway to approaching vehicles.
“Henholme” – George Booth Drive	It is considered that the issues associated with this driveway are due to the commercial nature of the property. Provide sealed shoulder widening for the left turn into the property.
No. 1424 George Booth Drive	Provide a sealed widened shoulder for the left turn into the property; and Extend the existing widened sealed shoulder to approximately 20m past the driveway prior to tapering back to the existing.
No. 1459 George Booth Drive – “County Downs”	Provide sealed shoulder widening for the left turn into the property. Consider the relocation of the power pole to outside of the clear zone.
No. 1490 George Booth Drive	Provide a sealed widened shoulder for the left turn into the property; Relocate Hunter Expressway sign to outside of the clear zone for the road; and

Location	Suggested Treatment
	Provide additional widening for the right turn shoulder.
No. 1500 & 1505 George Booth Drive	No improvements or modifications are proposed at these driveways.
No. 1523 George Booth Drive	Provide sealed shoulder widening for the left turn into the property.
No. 1530 & 1558 George Booth Drive	Extend the northbound shoulder widening to the south of property No. 1530 so that it will allow the safe overtaking of a vehicle propped to turn right into the property. Provide sealed shoulder widening for the left turn into the property.
No. 1575 George Booth Drive	No improvements or modifications are proposed at this driveway.

Appendix A

Photos

Photo 1 No. 1332 Southbound Pavement Edge Drop Off

Photo 2 No. 1332 Northbound Pavement Edge Drop Off

Photo 3 No. 1353 Hole in Northbound Verge (Beneath Semi Trailer Back Wheels)

Photo 4 No. 1353 Southbound Pavement Edge Drop Off

Photo 5 No. 1395 Guide Posts Restricting Available Shoulder Width

Photo 6 No. 1408 Power Pole in the Clear Zone

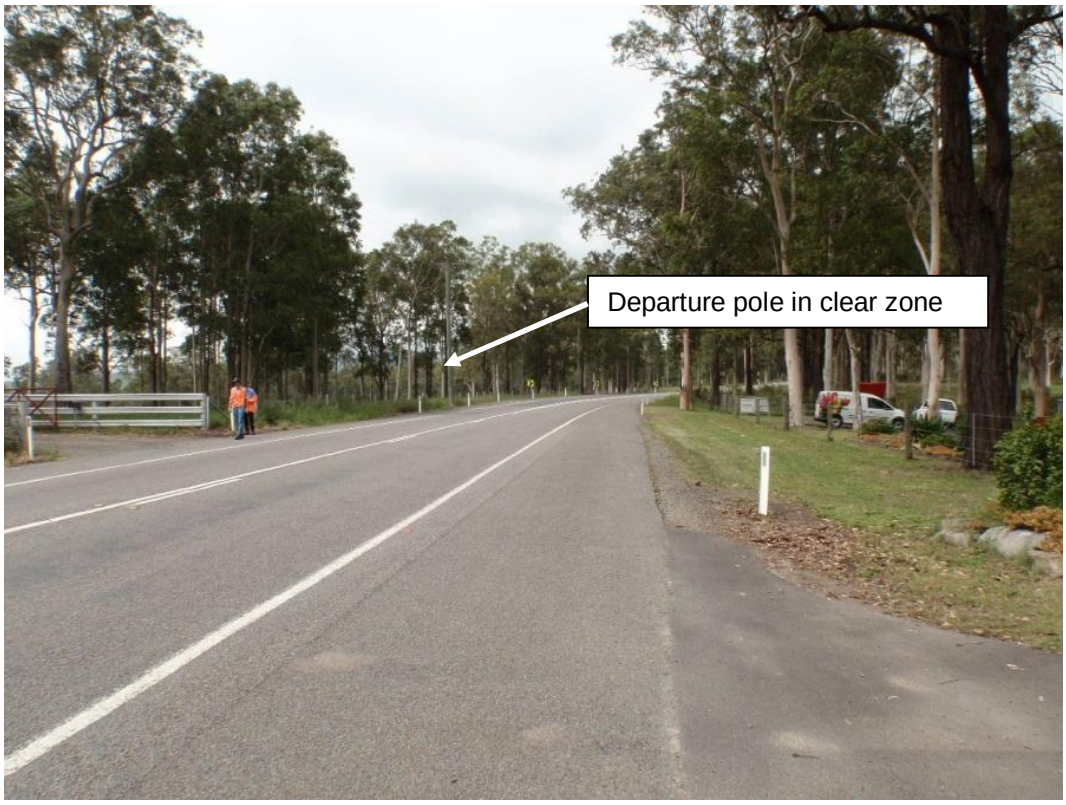


Photo 7 No. 1408 Power Pole in the Clear Zone

Photo 8 No. 1408 Vegetation Blocking Sightlines

Photo 9 “Henholme” Extended Widened Right Turn Shoulder

Photo 10 “Henholme” Damaged Driveway Pavement

Photo 11 “Henholme” Tracks in Unsealed Verge

Photo 12 “Henholme” Tyre Marks on Road

Photo 13 "Henholme" B Double Turning Out of Driveway

Photo 14 No. 1424 Right Turn Shoulder Widening Ends Immediately After Driveway

Photo 15 No. 1424 Wheel Paths in Left Turn Verge

Photo 16 No. 1424 Southbound Pavement Edge Drop Off

Photo 17 No. 1424 Informal Track Between Driveways

Photo 18 No. 1459 Power Pole in Southbound Clear Zone

Photo 19 Informal Track South of Driveway

Photo 20 Insufficient Right Turn Shoulder Widening

Photo 21 Edge Drop Off and Left Turn Tyre Tracks

Photo 22 Rehabilitation Works stop in Shoulder and Sign in Clear Zone

Photo 23 Culvert in the Southbound Clear Zone

Photo 24 Northbound Shoulder Looking North

Photo 25 Northbound Shoulder Looking South

Photo 26 Southbound Shoulder Looking North

Photo 27 Right Turn Shoulder Widening Doesn't Cover the First Driveway

Photo 28 Unsealed Left Turn Shoudler

Photo 29 Pole in the Northbound Clear Zone

This Safety Review of George Booth Drive Shoulder Widenings *("Report"):*

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2. *may only be used and relied on by Donaldson Coal Pty Ltd;*
3. *must not be copied to, used by, or relied on by any person other than Donaldson Coal Pty Ltd without the prior written consent of GHD;*
4. *may only be used for the purpose of reviewing the existing shoulder widening facilities on George Booth Drive in regards to the increased heavy vehicle movements from the Tasman Mine Relocation (and must not be used for any other purpose).*

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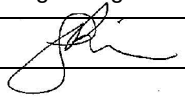
1	S Burns	G Robinson		B Hancock		27/04/12