



Figure 9-17 Trelawney Street compound access arrangement C7-1

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Figure 9-18 Trelawney Street compound access arrangement C7-2

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Northern interchange compound (C9)

The construction haulage routes for the northern interchange compound (C9) identified in the environmental impact statement included a left in from and a left out to the M1 Pacific Motorway. The outbound route to travel to a northern spoil disposal site involved a right turn at Phyllis Avenue, a u-turn at the Phyllis Avenue / Central Avenue round-a-bout followed by a left turn onto Pennant Hills Road.

The review of access arrangements has identified two potential alternatives for the northern interchange compound. Neither of these arrangements would require the use of local roads and, as such, there would be no restrictions on the use of these arrangements outside of standard construction hours. **Table 9-12** identifies the access arrangements. Each access arrangement is shown separately on **Figure 9-19** and **Figure 9-20**. Further details of each access arrangement are provided following the table.

Table 9-12 Northern interchange compound (C9) access arrangements

Access arrangement	Description	Use outside standard construction hours
C9-1	<p>Left in, left out onto the M1 Pacific Motorway (as detailed in the environmental impact statement) (refer to Figure 9-19).</p> <p>This access arrangement is feasible for haulage of spoil to a northern or a southern disposal site.</p>	Yes
C9-2	<p>Left in, right out onto the M1 Pacific Motorway at a new temporary signalised intersection (refer to Figure 9-20).</p> <p>This access arrangement is feasible for haulage of spoil to a northern or a southern disposal site.</p>	Yes

Access arrangement C9-1

Access arrangement C9-1 involves the same arrangement as identified in the environmental impact statement. This arrangement is reproduced here for completeness and avoidance of potential confusion. Heavy vehicles travelling to a southern / western spoil disposal site would continue along Pennant Hills Road to the Hills M2 Motorway. Heavy vehicles travelling to a northern spoil disposal site would be able to turn around at Beecroft Road (around Observatory Park) to travel north along Pennant Hills Road to the M1 Pacific Motorway. This access arrangement is shown on **Figure 9-19**.

Access arrangement C9-2

Access arrangement C9-2 involves a left in, left out, right out access to and from the M1 Pacific Motorway at a new temporary signalised intersection. This new signalised intersection would stop southbound traffic on the M1 Pacific Motorway to allow heavy vehicles to egress the site. Heavy vehicles travelling to a southern / western spoil disposal site would continue along Pennant Hills Road to the Hills M2 Motorway. Heavy vehicles travelling to a northern spoil disposal site would be able to turn right out of the site directly onto the M1 Pacific Motorway to travel north. This access arrangement is shown on **Figure 9-20**.

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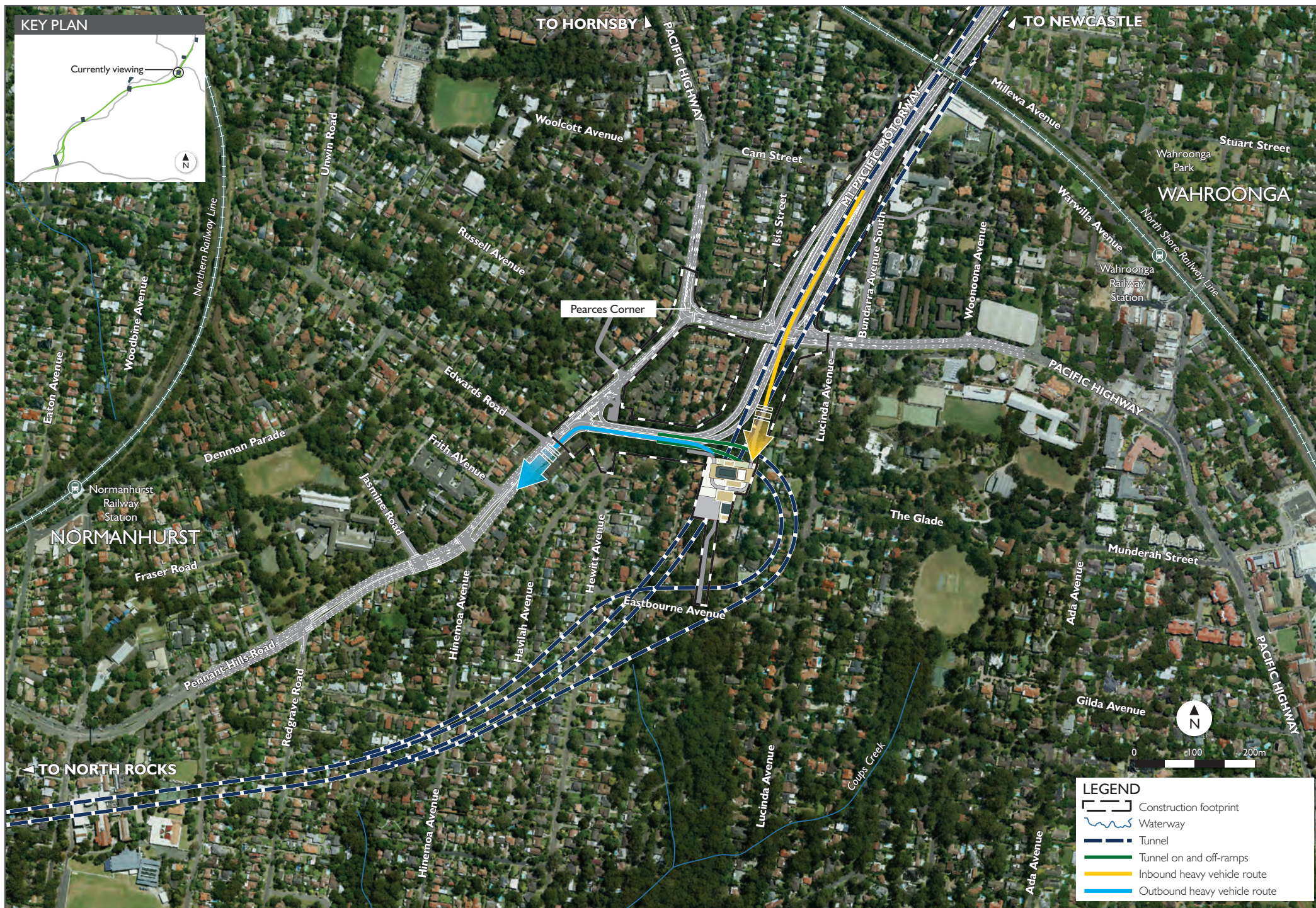


Figure 9-19 Northern interchange compound access arrangement C9-1

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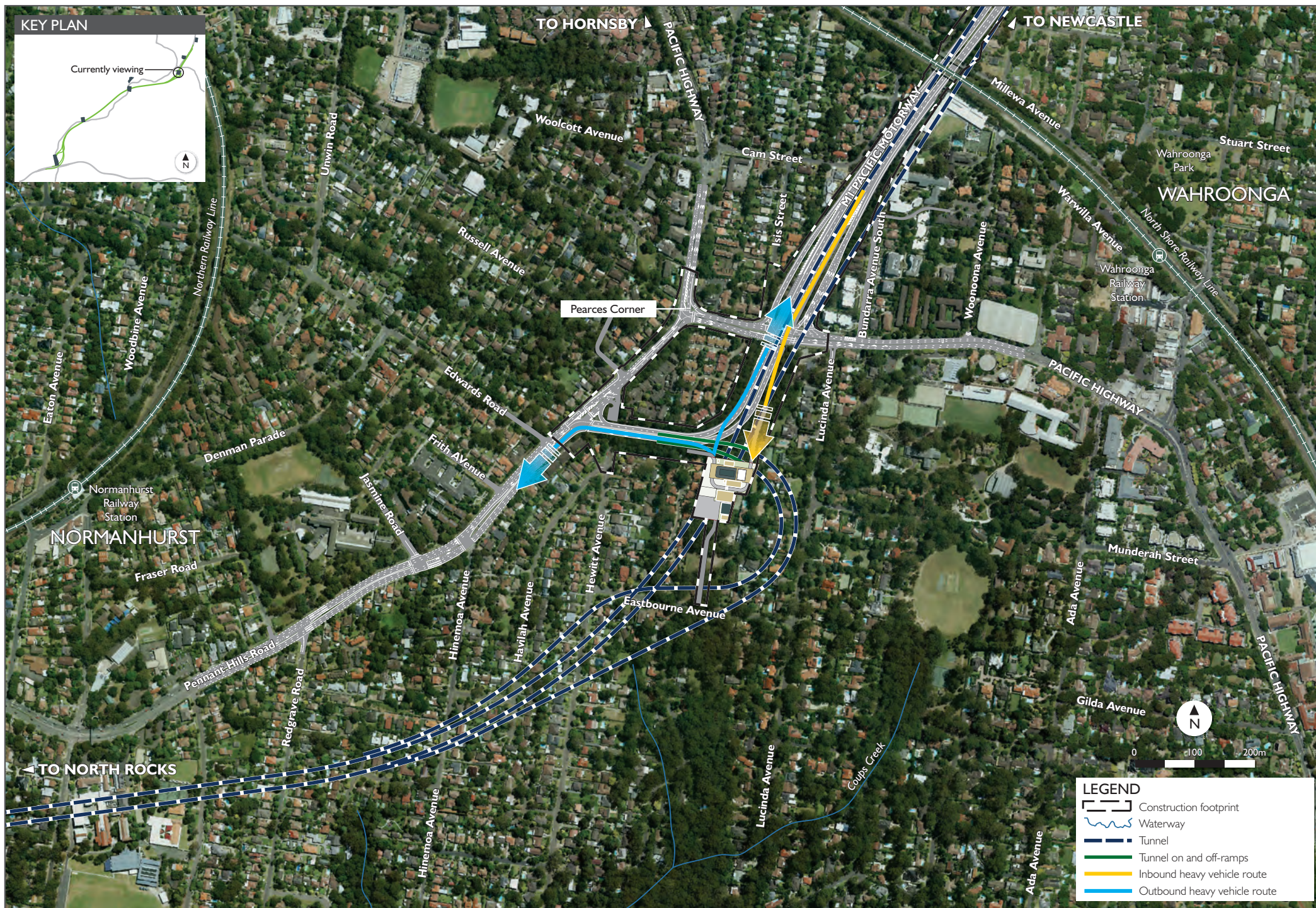


Figure 9-20 Northern interchange compound access arrangement C9-2

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9.4.2 Environmental overview of changes

Changes to the construction haulage routes for the southern interchange compound (C5), the Trelawney Street compound (C7) and the northern interchange compound (C9) from those included in the environmental impact statement have been reviewed to identify relevant potential environmental impacts for further, more detailed assessment. This review has identified the following issues:

- Changes in construction traffic movements which may affect the performance of the surrounding road network. Further assessment of construction traffic impacts has therefore been conducted, and is included in **Section 9.4.3**.
- Changes in construction traffic movements which may change construction traffic noise levels. Further assessment of construction traffic noise has therefore been conducted, and is included in **Section 9.4.4**.

The changed construction haulage routes would not affect other environmental and land use issues.

9.4.3 Construction traffic and transport

The proposed change in construction traffic movements may affect the performance of the surrounding road network. Consistent with the approach undertaken in the environmental impact statement, where the movements are possible, the revised access arrangements have been examined for two scenarios with all spoil being transported to a northern disposal site and all spoil being transported to a southern disposal site. This provides a worst-case assessment as it is feasible that spoil disposal locations in each direction may be utilised which would reduce these potential impacts.

Northern spoil disposal site

Not all of the proposed construction compound access routes are feasible to transport spoil to and from a northern disposal site. The following sections present the potential impacts as described in the environmental impact statement, and the potential impacts from the revised haulage routes for options which are feasible to transport spoil to and from the north. These routes are:

- Access arrangements C5-1 and C5-5 from the southern interchange compound.
- Access arrangements C7-1 and C7-2 from the Trelawney Street compound.
- Access arrangements C9-1 and C9-2 from the northern interchange compound.

Of these access arrangements, the following would not affect the construction traffic assessment presented in the environmental impact statement:

- Access arrangement C9-1 from the northern interchange compound would not alter the predicted intersection performance presented in Table 7-20 of the Technical Working Paper: Traffic and Transport for haulage to a southern spoil disposal site.

As described in the environmental impact statement, the Pennant Hills Road corridor 'without construction' would operate at or above capacity during the 2016 AM and PM peak periods. Background growth alone accounts for the majority of the deterioration in the performance and capacity of the road network. The additional construction traffic patterns contribute to deterioration of the corridor during the construction period.

The intersection performance results for the revised haulage routes are generally similar to those described in the environmental impact statement. This outcome has been achieved through traffic intersection modelling which include re-allocation of 'green time' for each movement at signalised intersections to produce the most efficient intersection and network performance overall. Further consultation would be conducted with the Transport Management Centre during detailed design about giving effect to this re-allocation of 'green time' as part of construction works.

There are some minor changes to performance at intersections which are not directly impacted by project-related construction traffic. This is as a result of the expected redistribution of background traffic volumes to avoid the influence of project construction traffic, particularly along Pennant Hills Road.

Outcomes of traffic modelling for the new access arrangements are presented in **Table 9-13** to **Table 9-15** for access arrangements involving spoil haulage to a northern disposal site, and described below.

Southern interchange access arrangement C5-1

The introduction of a new signalised construction access intersection on Pennant Hills Road around 200 metres to the south of Eaton Road would result in a slight improvement in the local road network. As the new intersection would cater for all movements, construction traffic would be able to remain on the prioritised Pennant Hills Road movement at the Copeland Road and Aitken Road intersections rather than use the surrounding residential road network (as was the case with the proposed route within the environmental impact statement). With less construction traffic turning on and off Pennant Hills Road, both Eaton Road and Aiken Road would improve from LoS E to LoS D and from LoS D to LoS C in the PM peak respectively.

The new signalised construction access intersection is predicted to operate with no worse than a LoS B in 2016. This is the result of upstream intersections operating over capacity. Once capacity is reached, upstream intersections would behave as bottlenecks, reducing traffic flow to downstream intersections. It is this throttling of traffic flows that would allow the new access intersection to operate with good performance and low delays.

However, it is predicted that queuing on the southern approach to the Eaton Road intersection and queuing on the northern approach to the Hills M2 Motorway interchange would likely reach this new construction access. This widespread queuing predicted along Pennant Hills Road in peak hours is likely to make access and egress into the compound difficult. Special linemarking and signage would be implemented to prevent traffic queuing from restricting construction vehicle movements. The predicted widespread queuing and congestion along Pennant Hills Road are principally the result of existing traffic volumes, with some limited contribution from project construction traffic.

Southern interchange access arrangement C5-5

The introduction of a new right turn southbound on Pennant Hills Road at the Eaton Road intersection would result in an overall deterioration in performance of the local road network in this area. The new right turn movement would require new traffic light phasing that would reduce available green time for the prioritised Pennant Hills Road northbound movement. As a result, the Eaton Road intersection performance would decrease from LoS E to LoS F in the PM peak.

The introduction of the right turn at Eaton Road would reduce the turning movement at the Aiken Road intersection from that described in the environmental impact statement. The Aiken Road intersection would improve under the new access arrangement and would operate at LoS B in both peaks.

Trelawney Street access arrangement C7-1

Compared to the construction traffic route described in the environmental impact statement, this option would remove the use of the Phyllis Avenue round-a-bout for construction vehicles travelling to a northern spoil disposal site. As a result, fewer vehicles would use the southbound right turn into Phyllis Avenue and instead use the right turn out from Loch Maree Avenue. This arrangement would include a reassignment of green time at the intersection of Pennant Hills Road / Loch Maree Avenue and would result in similar network performance when compared to the assessment presented in the environmental impact statement.

Trelawney Street access arrangement C7-2

The change to a left-in, left-out arrangement at the Trelawney Street compound would impact a portion of the Pennant Hills Road corridor. The positive gain of removing the use of the roundabout on Phyllis Avenue would be offset by the need for construction vehicles to travel south to u-turn at Beecroft Road (around Observatory Park). This arrangement would force additional construction traffic onto intersections along the Pennant Hills Road corridor south of the Trelawney Street compound. This would result in a slight deterioration in the performance of the intersections from Phyllis Avenue to Beecroft Road (south) when compared to the assessment presented in the environmental impact statement.

Northern interchange access arrangement C9-2

The introduction of a new signalised construction access on the M1 Pacific Motorway around 180 metres to the east of the Pennant Hills Road / M1 Pacific Motorway intersection would result in a slight improvement in the local road network. Under this proposed arrangement, construction vehicles egressing the compound that are travelling to a northern spoil site would no longer require the use of the Beecroft Road u-turn and would be removed from the Pennant Hills Road corridor. Hence, the intersections from the M1 Pacific Motorway to Beecroft Road (south) would improve slightly when compared to the assessment presented in environmental impact statement.

Due to relatively low construction traffic demands and subsequent short green time required, the new signalised intersection would operate with low delay at LoS A in both peaks. However, during the AM peak, queuing on the eastern approach of the downstream intersection of M1 Pacific Motorway / Pennant Hills Road is predicted to be on the threshold of impeding on this new construction access. This queuing combined with the curved nature of the approach emphasises the need for appropriate construction traffic management and control to be developed and implemented in consultation with the Transport Management Centre. This may include measures such as 'advanced signal warnings' and 'queuing ahead' signage along the M1 Pacific Motorway to safely cater for this construction access.

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Table 9-13 Southern interchange compound (C5) intersection performance – northern spoil disposal site

Intersection	Peak	2016 – environmental impact statement				2016 – amended haulage routes			
		Light vehicles	Heavy vehicles	Average delay (s)	Level of service	Light vehicles	Heavy vehicles	Average delay (s)	Level of service
Access arrangement C5-1									
Pennant Hills Road / North Rocks Road	AM peak	4,290	290	94.2	F	4,290	290	90.3	F
	PM peak	4,680	190	>100	F	4,680	190	>100	F
Hills M2 Motorway / Pennant Hills Road interchange	AM peak	5,610	620	44.7	D	5,610	620	49.1	D
	PM peak	5,930	490	>100	F	5,930	490	>100	F
Pennant Hills Road / Eaton Road	AM peak	5,530	620	>100	F	5,530	640	>100	F
	PM peak	5,870	510	58.8	E	5,870	530	55.1	D
Pennant Hills Road / Aiken Road	AM peak	5,180	620	23.7	B	5,180	640	24.3	B
	PM peak	6,220	530	42.6	D	6,220	550	37.5	C
Pennant Hills Road / new construction access (between the Hills M2 Motorway and Eaton Road)	AM peak	-	-	-	-	4,630	640	6.7	A
	PM peak	-	-	-	-	4,590	550	18.7	B
Access arrangement C5-5									
Pennant Hills Road / North Rocks Road	AM peak	4,290	290	94.2	F	4,290	290	87.3	F
	PM peak	4,680	190	>100	F	4,680	190	>100	F
Hills M2 Motorway / Pennant Hills Road interchange	AM peak	5,610	620	44.7	D	5,610	620	44.5	D
	PM peak	5,930	490	>100	F	5,930	490	>100	F
Pennant Hills Road / Eaton Road	AM peak	5,530	620	>100	F	5,530	640	>100	F
	PM peak	5,870	510	58.8	E	5,870	530	>100	F
Pennant Hills Road / Aiken Road	AM peak	5,180	620	23.7	B	5,180	640	25.0	B
	PM peak	6,220	530	42.6	D	6,220	550	21.6	B

Table 9-14 Trelawney Street compound (C7) intersection performance – northern spoil disposal site

Intersection	Peak	2016 – environmental impact statement				2016 – amended haulage routes			
		Light vehicles	Heavy vehicles	Average delay (s)	Level of service	Light vehicles	Heavy vehicles	Average delay (s)	Level of service
Access arrangement C7-1									
Pennant Hills Road / Comenarra Parkway	AM peak	4,720	760	92.0	F	4,720	760	90.1	F
	PM peak	5,210	610	>100	F	5,210	610	>100	F
Pennant Hills Road / Phyllis Avenue / Loch Maree Avenue	AM peak	4,030	830	>100	F	4,030	830	59.8	E
	PM peak	4,770	690	66.8	E	4,770	690	62.4	E
Access arrangement C7-2									
Pennant Hills Road / Beecroft Road (south)	AM peak	5,310	590	78.4	F	5,310	610	91.4	F
	PM peak	5,630	520	>100	F	5,630	540	>100	F
Pennant Hills Road / Beecroft Road (north)	AM peak	6,330	640	>100	F	6,330	660	>100	F
	PM peak	6,030	560	14.0	A	6,030	580	13.5	A
Pennant Hills Road / Boundary Road	AM peak	6,310	700	38.7	C	6,310	720	39.9	C
	PM peak	6,580	620	35.6	C	6,580	640	35.9	C
Pennant Hills Road / Yarrara Road	AM peak	5,690	700	49.0	D	5,690	720	55.9	D
	PM peak	6,000	620	59.5	E	6,000	640	65.5	E
Pennant Hills Road / Comenarra Parkway	AM peak	4,720	760	92.0	F	4,720	780	>100	F
	PM peak	5,210	610	>100	F	5,210	630	>100	F
Pennant Hills Road / Phyllis Avenue / Loch Maree Avenue	AM peak	4,030	830	>100	F	4,030	830	>100	F
	PM peak	4,770	690	66.8	E	4,770	690	68.6	E

Table 9-15 Northern interchange compound (C9) intersection performance – northern spoil disposal site

Intersection	Peak	2016 – environmental impact statement				2016 – amended haulage routes				
		Light vehicles	Heavy vehicles	Average delay (s)	Level of service	Light vehicles	Heavy vehicles	Average delay (s)	Level of service	
Access arrangement C9-2										
Pennant Hills Road / Beecroft Road (south)	AM peak	5,310	590	78.4	F	5,310	580	76.5	F	
	PM peak	5,630	520	>100	F	5,630	515	>100	F	
Pennant Hills Road / Beecroft Road (north)	AM peak	6,330	640	>100	F	6,330	630	>100	F	
	PM peak	6,030	560	14.0	A	6,030	555	14.0	A	
Pennant Hills Road / Boundary Road	AM peak	6,310	700	38.7	C	6,310	690	38.7	C	
	PM peak	6,580	620	35.6	C	6,580	615	35.6	C	
Pennant Hills Road / Yarrara Road	AM peak	5,690	700	49.0	D	5,690	690	47.0	D	
	PM peak	6,000	620	59.5	E	6,000	615	57.6	E	
Pennant Hills Road / Comenarra Parkway	AM peak	4,720	760	92.0	F	4,720	750	92.3	F	
	PM peak	5,210	610	>100	F	5,210	605	>100	F	
Pennant Hills Road / Phyllis Avenue / Loch Maree Avenue	AM peak	4,030	830	>100	F	4,030	820	92.5	F	
	PM peak	4,770	690	66.8	E	4,770	685	66.3	E	
Pennant Hills Road / Duffy Avenue	AM peak	3,620	770	>100	F	3,620	760	>100	F	
	PM peak	4,950	590	>100	F	4,950	585	96.8	F	
Pennant Hills Road / Dartford Road	AM peak	3,460	730	>100	F	3,460	720	>100	F	
	PM peak	4,670	560	66.5	E	4,670	555	64.0	E	
M1 Pacific Motorway / Pennant Hills Road	AM peak	4,180	700	33.1	C	4,180	690	34.8	C	
	PM peak	4,660	590	>100	F	4,660	585	>100	F	
Pennant Hills Road / Pacific Highway	AM peak	2,990	320	78.2	F	2,990	320	83.2	F	
	PM peak	3,420	250	47.1	D	3,420	250	45.1	D	
M1 Pacific Motorway / Pacific Highway	AM peak	4,530	390	72.3	F	4,530	390	79.8	F	
	PM peak	5,020	270	>100	F	5,020	270	>100	F	
M1 Pacific Motorway / Construction Access	AM peak	-	-	-	-	2,240	700	10.2	A	
	PM peak	-	-	-	-	2,580	590	3.6	A	

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Southern spoil disposal site

Not all of the proposed construction compound access routes are feasible to transport spoil to and from a southern disposal site. The following sections present the potential impacts as described in the environmental impact statement, and the potential impacts from the revised haulage routes for arrangements which are feasible to transport spoil to and from the south. These routes are:

- Access arrangements C5-1, C5-2, C5-3, C5-4 and C5-5 from the southern interchange compound.
- Access arrangements C7-1 and C7-2 from the Trelawney Street compound.
- Access arrangement C9-1 from the northern interchange compound.

Of these access arrangements, the following would not affect the construction traffic assessment presented in the environmental impact statement:

- Access arrangement C5-3 (left-in, left-out) from the southern interchange compound to and from Pennant Hills Road could be used with a u-turn being performed at Beecroft Road (around Observatory Park). Due to the likely constraints in performing this u-turn, this arrangement is considered appropriate for use during the night-time only. As this would occur outside the usual traffic peak periods, the impact of this movement is unlikely to significantly affect the operation of Pennant Hills Road.
- Access arrangements C5-4 and C5-5 from the southern interchange compound would not alter the predicted intersection performance presented in Table 7-20 of the Technical Working Paper: Traffic and Transport for haulage to a southern spoil disposal site.
- Access arrangement C9-1 from the northern interchange compound would not alter the predicted intersection performance presented in Table 7-20 of the Technical Working Paper: Traffic and Transport for haulage to a southern spoil disposal site.

As described in the environmental impact statement, the Pennant Hills Road corridor 'without construction' would operate at or above capacity during the 2016 AM and PM peak periods. Background growth alone accounts for the majority of the deterioration in the performance and capacity of the road network. The additional construction traffic patterns contribute to deterioration of the corridor during the construction period.

The intersection performance results for the revised haulage routes are generally similar to those described in the environmental impact statement. This outcome has been achieved through traffic intersection modelling which include re-allocation of 'green time' for each movement at signalised intersections to produce the most efficient intersection and network performance overall. Further consultation would be conducted with the Transport Management Centre during detailed design about giving effect to this re-allocation of 'green time' as part of construction works.

There are some minor changes to performance at intersections which are not directly impacted by project-related construction traffic. This is as a result of the expected redistribution of background traffic volumes to avoid the influence of project construction traffic, particularly along Pennant Hills Road.

Outcomes of the traffic modelling for the new access arrangements are presented in **Table 9-16** and **Table 9-17** (where access arrangements alter the assessment presented in the environmental impact statement) for access arrangements involving spoil haulage to a southern disposal site, and described below.

Southern interchange access arrangement C5-1

The introduction of a signalised construction access intersection on Pennant Hill Road around 200 metres to the south of Eaton Road would result in a slight improvement at the Aiken Road intersection. As the new intersection would cater for all movements, the reduced turning construction traffic at Aiken Road (from that described in the environmental impact statement) would improve the intersection operation from LoS C to LoS B in the PM peak and would maintain similar performance in the AM peak.

The new signalised construction access intersection is predicted to operate at a LoS A. This is the result of upstream intersections operating over capacity. Once capacity is reached, upstream intersections would behave as bottlenecks, reducing traffic flow to downstream intersections. It is this throttling of flows that would allow this new access to operate with good performance and low delay.

However, it is predicted that queuing on the southern approach to the Eaton Road intersection and queuing on the northern approach to the Hills M2 Motorway interchange would likely reach this new construction access. This widespread queueing predicted along Pennant Hills Road in peak hours is likely to make access and egress into the compound difficult. Special linemarking and signage would be implemented to prevent traffic queuing from restricting construction vehicle movements. The predicted widespread queueing and congestion along Pennant Hills Road are principally the result of existing traffic volumes, with some limited contribution from project construction traffic.

Southern interchange access arrangement C5-2

The new priority controlled construction access onto the Hills M2 Motorway eastbound off-ramp at Pennant Hills Road would operate at LoS C and LoS B during AM and PM peaks respectively. The assessment assumes that the egress location for site traffic from the compound would be directly east of the proposed single lane off-ramp, ie before the off-ramp diverges into its multiple lane configuration. Hence, egressing construction vehicles would only need to give way to a single lane off-ramp.

Although the traffic modelling indicates that this intersection would operate with an acceptable level of service, loaded vehicles egressing the site are likely to experience a high level of delay while waiting for a sufficient gap in off-ramp traffic to allow movement from a standing stop and acceleration to overcome the grade of the ramp and reach an acceptable speed to join the off-ramp traffic flow.

Considering the limited gaps in off-ramp traffic, the grade of the off-ramp and the loaded nature of the construction vehicles, suitable traffic control would need to be implemented to safely cater for this access arrangement. This would be developed through consultation between the construction contractor, Roads and Maritime and the Transport Management Centre.

Trelawney Street access arrangement C7-1

When compared to the assessment presented in the environmental impact statement this access arrangement would allow construction vehicles leaving the Trelawney Street compound to left turn from Loch Maree Avenue. This new left turn movement would be accommodated within the available green time for the Loch Maree Avenue approach. A reassignment of green time at the intersection of Pennant Hills Road / Loch Maree Avenue would result in similar network performance when compared to the environmental impact statement.

Trelawney Street access arrangement C7-2

During the AM and PM peak hours, a reassignment of green time to cater for left-in, left-out movements would result in similar intersection performance to that presented in the environmental impact statement. The additional green time that was required for the right turn into Phyllis Avenue as part of the routes described within the environmental impact statement would be able to be returned to the Pennant Hills Road movement.

During the night shift, this access arrangement would require construction vehicles to avoid the right turn access movement into Loch Maree Avenue. Consequently, the construction vehicles accessing the site from a southern spoil location would need to make use of the strategic road network (non-local roads) and a suitable u-turn facility to the north of the Trelawney Street compound. As this would occur outside the usual traffic peak periods, the impact of this movement would not impact the operation of the strategic road network.

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Table 9-16 Southern interchange compound (C5) intersection performance – southern spoil disposal site

Intersection	Peak	2016 – environmental impact statement				2016 – amended haulage routes			
		Light vehicles	Heavy vehicles	Average delay (s)	Level of service	Light vehicles	Heavy vehicles	Average delay (s)	Level of service
Arrangement C5-1									
Pennant Hills Road / North Rocks Road	AM peak	4,290	290	96.2	F	4,290	290	99.6	F
	PM peak	4,680	190	>100	F	4,680	190	>100	F
Hills M2 Motorway / Pennant Hills Road interchange	AM peak	5,610	780	49.5	D	5,610	780	49.0	D
	PM peak	5,930	650	>100	F	5,930	650	>100	F
Pennant Hills Road / Eaton Road	AM peak	5,530	750	>100	F	5,530	735	>100	F
	PM peak	5,870	640	63.4	E	5,870	625	57.5	E
Pennant Hills Road / Aiken Road	AM peak	5,180	720	29.3	C	5,180	720	30.1	C
	PM peak	6,220	630	31.0	C	6,220	630	25.7	B
Pennant Hills Road / New Construction Access	AM peak	-	-	-	-	4,630	720	6.8	A
	PM peak	-	-	-	-	4,590	720	11.1	A
Arrangement C5-2									
Pennant Hills Road / North Rocks Road	AM peak	4,290	290	96.2	F	4,290	290	97.9	F
	PM peak	4,680	190	>100	F	4,680	190	>100	F
Hills M2 Motorway / Pennant Hills Road interchange	AM peak	5,610	780	49.5	D	5,610	780	48.9	D
	PM peak	5,930	650	>100	F	5,930	650	>100	F
Pennant Hills Road / Eaton Road	AM peak	5,530	750	>100	F	5,530	735	>100	F
	PM peak	5,870	640	63.4	E	5,870	625	57.5	E
Pennant Hills Road / Aiken Road	AM peak	5,180	720	29.3	C	5,180	720	29.3	C
	PM peak	6,220	630	31.0	C	6,220	630	27.6	B
New construction access (Hills M2 Motorway off-ramp)	AM peak	-	-	-	-	1290	170	34.6	C
	PM peak	-	-	-	-	1190	150	14.7	B

Table 9-17 Trelawney compound (C7) intersection performance – southern spoil disposal site

Intersection	Peak	2016 – environmental impact statement				2016 – amended haulage routes			
		Light vehicles	Heavy vehicles	Average delay (s)	Level of service	Light vehicles	Heavy vehicles	Average delay (s)	Level of service
Arrangement C7-1									
Pennant Hills Road / Comenarra Parkway	AM peak	4,720	730	>100	F	4,720	730	>100	F
	PM peak	5,410	580	>100	F	5,410	580	>100	F
Pennant Hills Road / Phyllis Avenue / Loch Maree Avenue	AM peak	4,030	750	23.3	B	4,030	750	23.4	B
	PM peak	4,770	610	50.4	D	4,770	610	46.9	D
Arrangement C7-2									
Pennant Hills Road / Comenarra Parkway	AM peak	4,720	730	>100	F	4,720	730	>100	F
	PM peak	5,410	580	>100	F	5,410	580	>100	F
Pennant Hills Road / Phyllis Avenue / Loch Maree Avenue	AM peak	4,030	750	23.3	B	4,030	750	23.6	B
	PM peak	4,770	610	50.4	D	4,770	610	47.0	D

Conclusion

The alternative access arrangements identified and proposed for the southern interchange compound (C5), the Trelawney Street compound (C7) and the northern interchange compound (C9) will remove most of the potential impacts on the local residential road network around these compounds (as detailed in the environmental impact statement). This will result in a significant improvement in road capacity, efficiency and safety on these local residential roads, compared with the construction haulage routes assessed in the environmental impact statement. This change to the project has been proposed as a key response to issues raised in feedback and submissions about the use of residential streets during the construction period.

The potential impacts of the alternative access arrangements on intersection performance have been demonstrated through the preceding intersection analysis to be generally similar to those described in the environmental impact statement.

9.4.4 Construction traffic noise

The proposed change in construction traffic movements may result in changes to construction traffic noise levels. Consistent with the approach undertaken in the environmental impact statement, the revised access arrangements routes have been examined for two scenarios with all spoil being transported to a northern disposal site and all spoil being transported to a southern disposal site. This provides a worst-case assessment as it is feasible that spoil disposal locations in each direction may be utilised which would reduce these potential impacts.

The construction traffic noise assessment has been completed for the alternative access arrangements in the AM and PM peak periods, as well as the AM and PM off-peak periods in order to assess the potential impacts from night time spoil haulage.

As identified in the construction traffic assessment in **Section 9.4.3** of this report, not all of the proposed access arrangements are feasible for the haulage of spoil to disposal sites in each direction. Additionally, as the project has imposed a restriction on the access and egress arrangements during night time works, not all of the proposed routes are suitable for use at night. A summary of the feasible arrangements during each period and in each direction for the assessment of potential construction noise impacts is provided in **Table 9-18**.

Table 9-18 Summary of construction traffic noise assessment scenarios

Period	Spoil disposal location	Haulage arrangement								
		Southern interchange compound (C5)					Trelawney Street compound (C7)		Northern interchange compound (C9)*	
		C5-1	C5-2	C5-3	C5-4	C5-5	C7-1	C7-2	C9-1	C9-2
AM peak period	Northern	✓				✓	✓	✓	✓	✓
	Southern	✓	✓		✓	✓	✓	✓	✓	✓
PM peak period	Northern	✓				✓	✓	✓	✓	✓
	Southern	✓	✓		✓	✓	✓	✓	✓	✓
AM off-peak period	Northern	✓						✓	✓	✓
	Southern	✓	✓	✓				✓	✓	✓
PM off-peak period	Northern	✓						✓	✓	✓
	Southern	✓	✓	✓				✓	✓	✓

* Northern interchange access arrangement C9-1 is identical to the haulage route assessed as part of the environmental impact statement and has not been re-assessed. Table 47 to Table 54 of the Technical Working Paper: Noise and Vibration summarise the construction traffic noise impacts predicted for the northern interchange and Bareena Avenue compounds, which would remain unchanged for access arrangement C9-1.

Southern interchange compound (C5)

Daytime heavy vehicle movements

Table 9-19 and **Table 9-20** present the revised construction traffic noise assessment for the southern interchange compound during the AM and PM peak periods for a northern and southern spoil disposal site respectively. The tables identify that there is minimal change in construction traffic noise compared with the assessment presented in the environmental impact statement.

All access arrangements result in either no change or negligible change to construction traffic noise impacts along Pennant Hills Road. For all access arrangements, potential construction noise impacts are completely removed from Aiken Road. Similarly, construction traffic noise impacts are removed from Eaton Road for access arrangements C5-1 and C5-2. A slight reduction in construction traffic noise would be experienced on Eaton Road under access arrangement C5-4.

Access arrangement C5-5 shows a slight increase in traffic noise on Eaton Road. This is associated with the new right turn from Pennant Hills Road resulting in inbound heavy vehicles using a short section of Eaton Road. When considering this minor increase, it is also important to recognise that the previous inbound haulage route impacted around 88 houses on Eaton Road, whereas the new arrangement would only impact around 12 houses.

Table 9-19 Construction traffic noise in AM and PM peak periods – southern interchange compound with northern disposal site

Route and direction	Relative increase over existing noise levels (dB(A))		
	EIS	C5-1	C5-5
AM peak period			
Pennant Hills Road – north of Aiken Road	0.3	0.3	0.3
Pennant Hills Road – between Aiken Road and Eaton Road	0.1	0.2	0.2
Pennant Hills Road – between Eaton Road and the Hills M2 Motorway	0.0	0.0	0.0
Aiken Road	1.1	0.0	0.0
Eaton Road	1.6	0.0	2.4
Hills M2 Motorway	0.0	0.0	0.0
PM peak period			
Pennant Hills Road – north of Aiken Road	0.2	0.2	0.2
Pennant Hills Road – between Aiken Road and Eaton Road	0.1	0.2	0.2
Pennant Hills Road – between Eaton Road and the Hills M2 Motorway	0.0	0.0	0.0
Aiken Road	1.0	0.0	0.0
Eaton Road	2.5	0.0	4.1
Hills M2 Motorway	0.0	0.0	0.0

Table 9-20 Construction traffic noise in AM and PM peak periods – southern interchange compound with southern disposal site

Route and direction	Relative increase over existing noise levels (dB(A))				
	EIS	C5-1	C5-2	C5-4	C5-5
AM peak period					
Pennant Hills Road – north of Aiken Road	0.6	0.6	0.5	0.5	0.6
Pennant Hills Road – between Aiken Road and Eaton Road	0.5	0.5	0.5	0.5	0.5
Pennant Hills Road – between Eaton Road and the Hills M2 Motorway	0.6	0.6	0.4	0.5	0.6
Aiken Road	1.1	0.0	0.0	0.0	0.0
Eaton Road	1.4	0.0	0.0	1.1	2.4
Hills M2 Motorway	1.2	1.2	1.3	1.1	1.2
PM peak period					
Pennant Hills Road – north of Aiken Road	0.5	0.5	0.4	0.4	0.5
Pennant Hills Road – between Aiken Road and Eaton Road	0.5	0.5	0.5	0.5	0.5
Pennant Hills Road – between Eaton Road and the Hills M2 Motorway	0.8	0.8	0.5	0.8	0.8
Aiken Road	1.0	0.0	0.0	0.0	0.0
Eaton Road	2.6	0.0	0.0	1.8	4.1
Hills M2 Motorway	1.2	1.2	1.4	1.2	1.2

Out of hours heavy vehicle movements

Table 9-21 and **Table 9-22** present the revised construction traffic noise assessment for the southern interchange compound during the AM and PM off-peak periods for a northern and southern spoil disposal site respectively. The tables show a significant reduction in traffic noise levels on Aiken Road and Eaton Road due to the elimination of the inbound traffic route along these local roads.

For a northern disposal site scenario, all affected roads are expected to increase background noise levels by less than 2 dB(A). For a southern disposal site scenario, there are some areas along Pennant Hills Road and the Hills M2 Motorway where existing noise levels are expected to increase by up to around 3 dB(A) and around 5 dB(A), respectively. However, these predicted increases in noise levels are generally consistent with the assessment presented in the environmental impact statement.

Table 9-21 Construction traffic noise in AM and PM off-peak periods – southern interchange compound with northern disposal site

Route and direction	Relative increase over existing noise levels (dB(A))	
	EIS	C5-1
AM off-peak period		
Pennant Hills Road – north of Aiken Road	1.6	1.6
Pennant Hills Road – between Aiken Road and Eaton Road	0.9	1.5
Pennant Hills Road – between Eaton Road and the Hills M2 Motorway	0.1	0.1
Aiken Road	5.6	0.0
Eaton Road	9.4	0.0
Hills M2 Motorway	0.0	0.0
PM off-peak period		
Pennant Hills Road – north of Aiken Road	0.6	0.6
Pennant Hills Road – between Aiken Road and Copeland Rd	0.4	0.7
Pennant Hills Road – between Copeland Road and the Hills M2 Motorway	0.1	0.1
Aiken Road	2.2	0.0
Eaton Road	4.9	0.0
Hills M2 Motorway	0.0	0.0

Table 9-22 Construction traffic noise in AM and PM off-peak periods – southern interchange compound with southern disposal site

Route and direction	Relative increase over existing noise levels (dB(A))			
	EIS	C5-1	C5-2	C5-3
AM off-peak period				
Pennant Hills Road – north of Aiken Road	3.0	3.0	2.9	3.4
Pennant Hills Road – between Aiken Road and Eaton Road	3.1	2.9	2.8	3.2
Pennant Hills Road – between Eaton Road and the Hills M2 Motorway	3.3	3.3	2.8	3.2
Aiken Road	5.6	0.0	0.0	0.0
Eaton Road	9.4	0.0	0.0	0.0
Hills M2 Motorway	5.1	5.1	5.5	6.2
Pennant Hills Road – south of Beecroft Road West ¹	3.5	-	-	4.1
Pennant Hills Road – between Beecroft Road East and West ¹	2.9	-	-	3.3
Pennant Hills Road – between Beecroft Road East and Boundary Road ¹	2.6	-	-	2.6
Pennant Hills Road – north of Boundary Road ¹	2.5	-	-	2.5
Beecroft Road West ¹	5.5	-	-	7.6
Beecroft Road East ¹	4.4	-	-	6.2
PM off-peak period				
Pennant Hills Road – north of Aiken Road	1.3	1.3	1.2	1.4
Pennant Hills Road – between Aiken Road and Copeland Road	1.4	1.3	1.3	1.5
Pennant Hills Road – between Copeland Road and the Hills M2 Motorway	1.9	1.9	1.2	1.9
Aiken Road	2.3	0.0	0.0	0.0
Eaton Road	5.0	0.0	0.0	0.0
Hills M2 Motorway	3.1	3.1	3.4	3.9
Pennant Hills Road – south of Beecroft Road West ¹	1.6	-	-	2.0
Pennant Hills Road – between Beecroft Road East and West ¹	6.8	-	-	7.3
Pennant Hills Road – between Beecroft Road East and Boundary Road ¹	4.2	-	-	4.2
Pennant Hills Road – north of Boundary Road ¹	1.1	-	-	1.1
Beecroft Road West ¹	1.5	-	-	2.3
Beecroft Road East ¹	2.6	-	-	3.8

Note 1: these sections were reported in the environmental impact statement against the Wilson Road compound (C6). These sections are shown here due to potential cumulative traffic noise increases from the Wilson Road compound and the southern interchange access arrangement C5-3 associated with the proposed u-turn at Beecroft Road.

Trelawney Street compound (C7)

Daytime heavy vehicle movements

Table 9-23 and **Table 9-24** present the revised construction traffic noise assessment for the Trelawney Street compound during the AM and PM peak periods for a northern and southern spoil disposal site respectively. The tables identify that there is minimal change from the assessment presented in the environmental impact statement.

Access arrangement C7-1 would result in a potential increase in traffic noise (up to 7 dB(A)) along Loch Maree Avenue during the AM peak period associated with the proposed use of a short section of this road to egress the site. This should be considered against the significant reduction in noise from eliminating the use of this road during the night time period, and the reduction in noise along this section of road under arrangement C7-2.

With the exception of two areas along Pennant Hills Road, all other predicted noise increases are less than 2 dB(A).

Table 9-23 Construction traffic noise in AM and PM peak periods – Trelawney Street compound with northern disposal site

Route and direction	Relative increase over existing noise levels (dB(A))		
	EIS	C7-1	C7-2
AM peak period			
Pennant Hills Road – south of Comenarra Parkway	0.5	0.5	0.6
Pennant Hills Road – between Comenarra Parkway and Boundary Road	0.5	0.5	0.6
Pennant Hills Road – north of Boundary Road	0.7	0.7	0.5
Phyllis Avenue	2.8	0.0	0.0
Loch Maree Avenue	4.7	6.7	0.0
Pennant Hills Road – south of Beecroft Road West ¹	0.4	-	0.4
Pennant Hills Road – between Beecroft Road East and West ¹	0.4	-	0.4
Pennant Hills Road – between Beecroft Road East and Boundary Road ¹	0.4	-	0.6
Pennant Hills Road – north of Boundary Road ¹	0.4	-	0.6
Beecroft Road West ¹	0.8	-	1.5
Beecroft Road East ¹	0.4	-	0.9
PM peak period			
Pennant Hills Road – south of Comenarra Parkway	0.5	0.5	0.6
Pennant Hills Road – between Comenarra Parkway and Boundary Road	0.5	0.5	0.7
Pennant Hills Road – north of Boundary Road	0.7	0.7	0.6
Phyllis Avenue	2.1	0.0	0.0
Loch Maree Avenue	3.3	4.8	0.0
Pennant Hills Road – south of	0.3	-	0.3

Route and direction	Relative increase over existing noise levels (dB(A))		
	EIS	C7-1	C7-2
Beecroft Road West ¹			
Pennant Hills Road – between Beecroft Road East and West ¹	3.1	-	3.7
Pennant Hills Road – between Beecroft Road East and Boundary Road ¹	2.2	-	3.0
Pennant Hills Road – north of Boundary Road ¹	0.4	-	0.6
Beecroft Road West ¹	0.6	-	1.2
Beecroft Road East ¹	1.2	-	2.1

Note 1: these sections were reported in the environmental impact statement against the Wilson Road compound (C6). These sections are shown here due to potential cumulative traffic noise increases from Wilson Road compound and the Trelawney Street access arrangement C7-2 associated with the proposed u-turn at Beecroft Road.

Table 9-24 Construction traffic noise in AM and PM peak periods – Trelawney Street compound with southern disposal site

Route and direction	Relative increase over existing noise levels (dB(A))		
	EIS	C7-1	C7-2
AM peak period			
Pennant Hills Road – south of Comenarra Parkway	0.4	0.4	0.4
Pennant Hills Road – between Comenarra Parkway and Boundary Road	0.4	0.4	0.4
Pennant Hills Road – north of Boundary Road	0.3	0.3	0.4
Phyllis Avenue	0.9	0.1	0.0
Loch Maree Avenue	4.4	6.5	0.0
Pennant Hills Road – south of Beecroft Road West ¹	0.7	-	0.7
Pennant Hills Road – between Beecroft Road East and West ¹	0.5	-	0.6
Pennant Hills Road – between Beecroft Road East and Boundary Road ¹	0.4	-	0.5
Pennant Hills Road – north of Boundary Road ¹	0.4	-	0.5
Beecroft Road West ¹	0.8	-	0.9
Beecroft Road East ¹	0.4	-	0.6
PM peak period			
Pennant Hills Road – south of Comenarra Parkway	0.5	0.5	0.5
Pennant Hills Road – between Comenarra Parkway and Boundary Road	0.5	0.5	0.5
Pennant Hills Road – north of Boundary Road	0.5	0.5	0.5
Phyllis Avenue	0.8	0.0	0.0
Loch Maree Avenue	1.2	5.1	0.0
Pennant Hills Road – south of Beecroft Road West ¹	0.6	-	0.6

Route and direction	Relative increase over existing noise levels (dB(A))		
	EIS	C7-1	C7-2
Pennant Hills Road – between Beecroft Road East and West ¹	3.8	-	4.4
Pennant Hills Road – between Beecroft Road East and Boundary Road ¹	2.2	-	2.7
Pennant Hills Road – north of Boundary Road ¹	0.4	-	0.5
Beecroft Road West ¹	0.6	-	0.8
Beecroft Road East ¹	1.2	-	1.4

Note 1: these sections were reported in the environmental impact statement against the Wilson Road compound (C6). These sections are shown here due to potential cumulative traffic noise increases from Wilson Road and Trelawney Street access arrangement C7-2 associated with the proposed u-turn at Beecroft Road.

Out of hours heavy vehicle movements

Table 9-25 and **Table 9-26** present the revised construction traffic noise assessment for the Trelawney Street compound during the AM and PM off-peak periods for a northern and southern spoil disposal site respectively. The tables identify that there is a significant reduction in traffic on Loch Maree Avenue and Phyllis Avenue relative to the assessment presented in the environmental impact statement. This is associated with the removal of the use of these roads during the night time period.

There are some predicted noise increases along Pennant Hills Road and Beecroft Road due to the requirement to perform a u-turn at Beecroft Road.

Table 9-25 Construction traffic noise in AM and PM off-peak periods – Trelawney Street compound with northern disposal site

Route and direction	Relative increase over existing noise levels (dB(A))	
	EIS	C7-2
AM off-peak period		
Pennant Hills Road – south of Comenarra Parkway	2.5	3.3
Pennant Hills Road – between Comenarra Parkway and Boundary Road	2.5	3.3
Pennant Hills Road – north of Boundary Road	3.2	2.9
Phyllis Avenue	10.8	0.0
Loch Maree Avenue	17.2	0.0
Pennant Hills Road – south of Beecroft Road West ¹	1.8	1.8
Pennant Hills Road – between Beecroft Road East and West ¹	2.2	2.7
Pennant Hills Road – between Beecroft Road East and Boundary Road ¹	2.7	3.5
Pennant Hills Road – north of Boundary Road ¹	2.6	3.4
Beecroft Road West ¹	5.5	7.9
Beecroft Road East ¹	4.4	6.5
PM off-peak period		
Pennant Hills Road – south of	1.3	1.6

Route and direction	Relative increase over existing noise levels (dB(A))	
	EIS	C7-2
Comenarra Parkway		
Pennant Hills Road – between Comenarra Parkway and Boundary Road	1.4	1.7
Pennant Hills Road – north of Boundary Road	1.8	1.4
Phyllis Avenue	4.4	0.0
Loch Maree Avenue	6.4	0.0
Pennant Hills Road – south of Beecroft Road West ¹	0.8	0.8
Pennant Hills Road – between Beecroft Road East and West ¹	5.7	6.5
Pennant Hills Road – between Beecroft Road East and Boundary Road ¹	4.3	5.4
Pennant Hills Road – north of Boundary Road ¹	1.1	1.5
Beecroft Road West ¹	1.5	2.5
Beecroft Road East ¹	2.6	4.2

Note 1: these sections were reported in the environmental impact statement against the Wilson Road compound (C6). These sections are shown here due to potential cumulative traffic noise increases from Wilson Road compound and Trelawney Street access arrangement C7-2 associated with the proposed u-turn at Beecroft Road.

Table 9-26 Construction traffic noise in AM and PM off-peak periods – Trelawney Street compound with southern disposal site

Route and direction	Relative increase over existing noise levels (dB(A))	
	EIS	C7-2
AM off-peak period		
Pennant Hills Road – south of Comenarra Parkway	2.4	2.4
Pennant Hills Road – between Comenarra Parkway and Boundary Road	2.4	2.4
Pennant Hills Road – north of Boundary Road	1.8	2.4
Phyllis Avenue	5.3	0.0
Loch Maree Avenue	12.3	0.0
Pennant Hills Road – south of Beecroft Road West ¹	3.5	3.5
Pennant Hills Road – between Beecroft Road East and West ¹	2.9	3.4
Pennant Hills Road – between Beecroft Road East and Boundary Road ¹	2.6	3.1
Pennant Hills Road – north of Boundary Road ¹	2.5	3
Beecroft Road West ¹	5.5	6.1
Beecroft Road East ¹	4.4	4.9
PM off-peak period		
Pennant Hills Road – south of Comenarra Parkway	1.2	1.2
Pennant Hills Road – between	1.3	1.3

Route and direction	Relative increase over existing noise levels (dB(A))	
	EIS	C7-2
Comenarra Parkway and Boundary Road		
Pennant Hills Road – north of Boundary Road	1.2	1.3
Phyllis Avenue	1.7	0.0
Loch Maree Avenue	2.8	0.0
Pennant Hills Road – south of Beecroft Road West ¹	1.6	1.6
Pennant Hills Road – between Beecroft Road East and West ¹	6.8	7.6
Pennant Hills Road – between Beecroft Road East and Boundary Road ¹	4.2	5
Pennant Hills Road – north of Boundary Road ¹	1.1	1.4
Beecroft Road West ¹	1.5	1.7
Beecroft Road East ¹	2.6	3.0

Note 1: these sections were reported in the environmental impact statement against the Wilson Road compound (C6). These sections are shown here due to potential cumulative traffic noise increases from Wilson Road compound and Trelawney Street access arrangement C7-2 associated with the proposed u-turn at Beecroft Road.

Northern interchange compound (C9)

Daytime heavy vehicle movements

Table 9-27 and **Table 9-28** present the revised construction traffic noise assessment for the northern interchange compound during the AM and PM peak periods for a northern and southern spoil disposal site respectively. The tables identify that there is minimal change from the assessment presented in the environmental impact statement. All affected roads would experience noise increases of less than 2 dB(A).

Table 9-27 Construction traffic noise in AM and PM peak periods – northern interchange compound with northern disposal site

Route and direction	Relative increase over existing noise levels (dB(A))	
	EIS	C9-2
AM peak period		
Pennant Hills Road – north of Pacific Highway	0.3	0.3
Pennant Hills Road – between Pacific Highway and Aaron Place	1.1	1.1
Pennant Hills Road – between Aaron Place and the M1 Pacific Motorway	1.1	1.1
Pennant Hills Road – between M1 Motorway and Hinemoa Avenue	0.6	0.6
Pennant Hills Road – between Hinemoa Avenue and Jasmine Road	0.7	0.6
Pennant Hills Road – south of Jasmine Road	0.7	0.6
Pacific Highway – east of M1 Pacific Motorway	0.2	0.2
Pacific Highway – between the M1 Pacific Motorway and Pennant Hills Road	1.3	1.3
M1 Pacific Motorway – north of Pacific Highway Exit	0.7	0.7
M1 Pacific Motorway – south of M1 Pacific Motorway Portal	0.6	0.5
PM peak period		
Pennant Hills Road – north of Pacific Highway	0.3	0.3
Pennant Hills Road – between Pacific Highway and Aaron Place	1.2	1.2
Pennant Hills Road – between Aaron Place and the M1 Pacific Motorway	1.2	1.2
Pennant Hills Road – between M1 Motorway and Hinemoa Avenue	0.7	0.7
Pennant Hills Road – between Hinemoa Avenue and Jasmine Road	0.7	0.7
Pennant Hills Road – south of Jasmine Road	0.7	0.7
Pacific Highway – east of M1 Pacific Motorway	0.2	0.2
Pacific Highway – between the M1 Pacific Motorway and Pennant Hills Road	1.5	1.5
M1 Pacific Motorway – north of Pacific Highway Exit	0.7	0.7
M1 Pacific Motorway – south of M1 Pacific Motorway Portal	0.6	0.5

The noise increases are associated with heavy vehicles travelling past this site from a northern disposal site to the other sites.

Table 9-28 Construction traffic noise in AM and PM peak periods – northern interchange compound with southern disposal site

Route and direction	Relative increase over existing noise levels (dB(A))	
	EIS	C9-2
AM peak period		
Pennant Hills Road – north of Pacific Highway	0.3	0.3
Pennant Hills Road – between Pacific Highway and Aaron Place	0.7	0.7
Pennant Hills Road – between Aaron Place and the M1 Pacific Motorway	0.7	0.7
Pennant Hills Road – between M1 Motorway and Hinemoa Avenue	0.3	0.3
Pennant Hills Road – between Hinemoa Avenue and Jasmine Road	0.3	0.3
Pennant Hills Road – south of Jasmine Road	0.3	0.3
Pacific Highway – east of M1 Pacific Motorway	0.2	0.2
Pacific Highway – between the M1 Pacific Motorway and Pennant Hills Road	0.4	0.4
M1 Pacific Motorway – north of Pacific Highway Exit	0.0	0.1
M1 Pacific Motorway – south of M1 Pacific Motorway Portal	0.0	0.1
PM peak period		
Pennant Hills Road – north of Pacific Highway	0.3	0.3
Pennant Hills Road – between Pacific Highway and Aaron Place	0.8	0.8
Pennant Hills Road – between Aaron Place and the M1 Pacific Motorway	0.8	0.8
Pennant Hills Road – between M1 Motorway and Hinemoa Avenue	0.3	0.4
Pennant Hills Road – between Hinemoa Avenue and Jasmine Road	0.4	0.4
Pennant Hills Road – south of Jasmine Road	0.4	0.4
Pacific Highway – east of M1 Pacific Motorway	0.2	0.2
Pacific Highway – between the M1 Pacific Motorway and Pennant Hills Road	0.5	0.5
M1 Pacific Motorway – north of Pacific Highway	0.0	0.1
M1 Pacific Motorway – south of M1 Pacific Motorway Portal	0.0	0.1

Out of hours heavy vehicle movements

Table 9-29 and **Table 9-30** present the revised construction traffic noise assessment for the northern interchange compound during the AM and PM off-peak periods for a northern and southern spoil disposal site respectively. The tables identify that there is minimal change (no more than ± 0.1 dB(A)) in predicted noise levels increases from the assessment presented in the environmental impact statement.

Table 9-29 Construction traffic noise in AM and PM off-peak periods – northern interchange compound with northern disposal site

Route and direction	Relative increase over existing noise levels (dB(A))	
	EIS	C9-2
AM off-peak period		
Pennant Hills Road – north of Pacific Highway	2.2	2.2
Pennant Hills Road – between Pacific Highway and Aaron Place	5.5	5.5
Pennant Hills Road – between Aaron Place and the M1 Pacific Motorway	5.5	5.5
Pennant Hills Road – between M1 Motorway and Hinemoa Avenue	3.3	3.3
Pennant Hills Road – between Hinemoa Avenue and Jasmine Road	3.4	3.4
Pennant Hills Road – south of Jasmine Road	3.4	3.4
Pacific Highway – east of M1 Pacific Motorway	1.6	1.6
Pacific Highway – between the M1 Pacific Motorway and Pennant Hills Road	6.6	6.6
M1 Pacific Motorway – north of Pacific Highway	4.7	4.7
M1 Pacific Motorway – south of M1 Pacific Motorway Portal	3.0	2.9
PM off-peak period		
Pennant Hills Road – north of Pacific Highway	0.8	0.8
Pennant Hills Road – between Pacific Highway and Aaron Place	2.8	2.8
Pennant Hills Road – between Aaron Place and the M1 Pacific Motorway	2.8	2.8
Pennant Hills Road – between M1 Motorway and Hinemoa Avenue	1.7	1.7
Pennant Hills Road – between Hinemoa Avenue and Jasmine Road	1.7	1.7
Pennant Hills Road – south of Jasmine Road	1.7	1.7
Pacific Highway – east of M1 Pacific Motorway	0.6	0.6
Pacific Highway – between the M1 Pacific Motorway and Pennant Hills Road	3.2	3.2
M1 Pacific Motorway – north of Pacific Highway Exit	1.6	1.6
M1 Pacific Motorway – south of M1 Pacific Motorway Portal	1.5	1.4

Table 9-30 Construction traffic noise in AM and PM off-peak periods – northern interchange compound with southern disposal site

Route and direction	Relative increase over existing noise levels (dB(A))	
	EIS	C9-2
AM off-peak period		
Pennant Hills Road – north of Pacific Highway	2.1	2.1
Pennant Hills Road – between Pacific Highway and Aaron Place	4.0	4.0
Pennant Hills Road – between Aaron Place and the M1 Pacific Motorway	4.0	4.0
Pennant Hills Road – between M1 Motorway and Hinemoa Avenue	1.8	1.8
Pennant Hills Road – between Hinemoa Avenue and Jasmine Road	1.8	1.9
Pennant Hills Road – south of Jasmine Road	1.8	1.9
Pacific Highway – east of M1 Pacific Motorway	1.6	1.6
Pacific Highway – between the M1 Pacific Motorway and Pennant Hills Road	3.1	3.1
M1 Pacific Motorway – north of Pacific Highway Exit	0.3	0.5
M1 Pacific Motorway – south of M1 Pacific Motorway Portal	0.2	0.3
PM off-peak period		
Pennant Hills Road – north of Pacific Highway	0.8	0.8
Pennant Hills Road – between Pacific Highway and Aaron Place	1.9	1.9
Pennant Hills Road – between Aaron Place and the M1 Pacific Motorway	1.9	1.9
Pennant Hills Road – between M1 Motorway and Hinemoa Avenue	0.9	0.9
Pennant Hills Road – between Hinemoa Avenue and Jasmine Road	0.9	0.9
Pennant Hills Road – south of Jasmine Road	0.9	0.9
Pacific Highway – east of M1 Pacific Motorway	0.6	0.6
Pacific Highway – between the M1 Pacific Motorway and Pennant Hills Road	1.3	1.3
M1 Pacific Motorway – north of Pacific Highway Exit	0.1	0.1
M1 Pacific Motorway – south of M1 Pacific Motorway Portal	0.1	0.1

The noise increases are associated with heavy vehicles travelling past this site from a northern disposal site to the other sites.

Conclusion

The revised haulage routes result in a significant reduction in traffic noise levels along local roads from those presented in the environmental impact statement, particularly during the night-time periods. There would be some minor increases in traffic noise along certain sections of arterial roads, especially Pennant Hills Road.

9.4.5 Summary and justification

Changes to access arrangements around the southern interchange compound (C5), the Trelawney Street compound (C7) and the northern interchange compound (C9) have been made in response to significant feedback raised in public submissions about potential impacts on local residential streets. Submissions have raised concerns relating to heavy vehicle movements on local residential streets leading to reduced amenity (both traffic and noise), road safety, and the capacity and efficiency of residential streets.

The assessment of the revised heavy vehicle haulage routes for the southern interchange compound (C5), the Trelawney Street compound (C7) and the northern interchange compound (C9) has shown that, compared to the impacts described in the environmental impact statement, there would be:

- No material change in the potential construction traffic impacts to the surrounding road network.
- Some minor increases in road traffic noise along major arterial roads, especially Pennant Hills Road, and on some short sections of local roads during the daytime period only.
- A significant reduction in road traffic noise along local roads, particularly during the night-time period around the southern interchange compound (C5) and on Loch Maree Avenue near the Trelawney Street compound (C7).

Overall, the changes made to access arrangements at these construction compounds reduce the overall impacts of the project relative to the assessment presented in the environmental impact statement.

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9.5 Additional construction use at the Junction Road compound (C11)

9.5.1 Description of changes

In the environmental impact statement, the Junction Road compound (C11) was identified as a parking and site office facility. Ongoing design refinement and construction planning has identified a need for a construction materials storage and laydown area within this site compound. The overall footprint of the compound would be unchanged. A revised indicative construction site layout for the Junction Road compound is shown in **Figure 9-21**.

The provision of a storage and laydown area at the Junction Road compound would also change the number of heavy vehicles accessing the site per day. The environmental impact statement identified that there would be one heavy vehicle accessing the Junction Road compound per day. With the provision of construction materials storage and laydown, this would be increased to five heavy vehicles per day. There would be no change to the proposed access routes or the number of light vehicles accessing this compound.

9.5.2 Environmental overview of changes

Addition of construction materials storage and laydown at the Junction Road compound (C11) compared to site uses as presented in the environmental impact statement has been reviewed to identify relevant potential environmental impacts for further, more detailed assessed. This review has identified the following issues:

- Changes in construction traffic movements which may affect the performance of the surrounding road network. Further assessment of construction traffic impacts has therefore been conducted, and is included in **Section 9.5.3**.
- Changes in activities undertaken on the site may change construction noise levels. Further assessment of construction noise has therefore been conducted, and is included in **Section 9.5.4**.
- Changes in construction traffic movements which may change construction traffic noise levels. Further assessment of construction traffic noise has therefore been conducted, and is included in **Section 9.5.4**.

The addition of construction materials storage and laydown would not affect other environmental and land use issues.

9.5.3 Construction traffic and transport

The introduction of five heavy vehicles to and from the Junction Road compound (C11) would result in an average of around one heavy vehicle movement per hour across the day. This would not affect the performance of the local road network. As such, the potential change in traffic impacts associated with the increase from one heavy vehicle per day to five heavy vehicles per day is anticipated to be negligible.

9.5.4 Construction noise and vibration

The construction noise assessment for the Junction Road compound (C11) presented in the environmental impact statement was undertaken for site establishment and earthworks only. As the compound was proposed to be used as a car parking and office facility, a construction noise assessment for the ongoing use of this compound during construction was not necessary.

As a materials storage and laydown area is now proposed within this site compound, a construction noise assessment has been completed and is presented in **Table 9-31**. This activity would ordinarily occur during the standard daytime construction hours (7 am to 6 pm Monday to Friday; 8 am to 1 pm Saturday). As such, the assessment has been undertaken for the daytime construction period only.

This compound may be required from time to time to support other construction works outside of these hours. The use of the compound outside of standard construction hours would be subject the requirements described in Section 5.2.15 of the environmental impact statement.

This assessment shows that the use of the Junction Road compound for materials storage and laydown would comply with the noise management levels at all receivers.

Table 9-31 Junction Road compound storage and laydown (standard construction hours)

NCA	Noise management level (L_{Aeq} dB(A))	Predicted noise level (L_{Aeq} dB(A))	Number of receivers where NMLs are exceeded	Number of highly noise affected receivers
NCA01	66	61	0	0
NCA02	66	61	0	0

The increased frequency of heavy vehicles accessing and egressing the site associated with the material storage and laydown area has also been considered in relation to potential traffic noise impacts. As identified in the traffic assessment above, the introduction of five heavy vehicles to and from the Junction Road compound (C11) would result in an average of around one heavy vehicle movement per hour across the day. This would result in an increase in noise levels of less than 2 dB(A).

9.5.5 Summary and justification

The assessment of the additional construction use of the Junction Road compound (C11) has shown that there would be no material difference in impacts from those described in the environmental impact statement.



Figure 9-21 Indicative Junction Road construction compound revised layout C11

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9.6 Additional property acquisition at the Wilson Road compound (C6)

9.6.1 Description of changes

In the environmental impact statement, a total of 46 properties were identified as requiring full permanent acquisition. Ten of these properties were located within the footprint of the Wilson Road tunnel support facility. Ongoing design refinement and construction planning has identified a need to acquire an additional property at the Wilson Road tunnel support facility in order to provide safe access to the Wilson Road compound (C6) off Pennant Hills Road. The existing buildings located within this property would be retained.

The revised property acquisition list for the Wilson Road compound (C6) is provided in **Table 9-32**. The additional property acquisition is highlighted in grey.

The additional property is located adjacent to the operational footprint of the Wilson Road tunnel support facility. On completion of the works, Road and Maritime would consider the ongoing requirements for this property. This is likely to involve the sale of this property for use in line with the applicable zoning provisions.

Table 9-32 Revised property acquisition – Wilson Road tunnel support facility

Lot number	DP / SP number	Lane use	Full / partial
15	11685	Residential	Full
14	35528	Residential	Full
13	35528	Residential	Full
12	35528	Residential	Full
-	41944	Residential	Full
112	1001146	Residential	Full
111	1001146	Residential	Full
22	1010137	Residential	Full
21	1010137	Residential	Full
20	1010137	Residential	Full
131	862034	Residential	Full

Further design development across the project site may lead to additional refinement of the property acquisition requirements identified in Section 8.1 of the environmental impact statement. For the most part, additional property acquisitions identified in the future are likely to be required to provide safe access and egress arrangements and would not be expected to alter the impacts as described within the environmental impact statement.

9.6.2 Environmental overview of changes

The additional property acquisition at the Wilson Road compound (C6) compared to the environmental impact statement has been reviewed to identify if any relevant potential environmental impacts require further, more detailed assessed. The additional property acquisition at the Wilson Road compound (C6) would not affect environmental and land use impacts as described and assessed within the environmental impact statement.

9.7 Conclusion

This section has provided an assessment of the four proposed project changes and has shown:

- The increase in the frequency of bus movements at the Pioneer Avenue compound (C8) would not result in any material difference from the impacts as described in the environmental impact statement.
- The amended construction haulage routes would reduce the overall impacts of the project relative to the assessment presented in the environmental impact statement
- The additional construction use at the Junction Road compound (C11) would not result in any material difference from the impacts as described in the environmental impact statement.
- The additional property acquisition at the Wilson Road compound (C5) would provide a safer access arrangement and would not result in any material difference from the impacts as described in the environmental impact statement.