Appendix F

Air Quality IAQM methodology and impact assessment data

Construction Air Quality Impact Assessment Methodology

Potential impacts from dust generation during construction have been assessed using the UK Institute of Air Quality Management (IAQM), 2014 *Guidance on the assessment of dust from demolition and construction*. This document provides a qualitative risk assessment process for the potential unmitigated impact of dust generated from demolition, earthmoving and construction activities.

It must be noted that the IAQM methodology assesses the risk of impacts associated with demolition and construction without the application of any mitigation measures. The assessment provides a classification of the risk of dust impacts which then allows the identification of appropriate mitigation measures commensurate with the level of risk.

The IAQM guidance process is a four-step risk-based assessment of dust emissions associated with demolition, land clearing and earth moving, and construction activities. The IAQM assessment process is described in the following sections.

Step 1 – Screening assessment

An assessment would normally be required where there is:

- a 'human receptor' within:
  - 350 metres from the boundary of a site; or
  - 50 metres from the route used by construction vehicles on public roads up to 500 m from a site entrance.
- an 'ecological receptor' within:
  - 50 metres from the boundary of a site; or
  - 50 metres from the route used by construction vehicles on public roads up to 500 m from a site entrance.

Step 2 – Dust risk assessment

Step 2 in the IAQM methodology is a risk assessment tool designed to appraise the potential for dust impacts due to unmitigated dust emissions from construction. The key components of the risk assessment are defining the dust emission magnitudes (Step 2A) and the surrounding area sensitivity (Step 2B) which are combined in a risk matrix (Step 2C), to determine an overall unmitigated risk of dust impacts.

Step 2A – Dust emission magnitude

Dust emission magnitudes are estimated according to the scale of works being undertaken and are classified as either 'Small', 'Medium' or 'Large'. The IAQM guidance provides examples of demolition, earthworks, construction and track-out to aid classification, which have been reproduced in Table G-1 below.

Table G-1: Examples of Small, Medium and Large demolition and construction activities

Activity		Small	Medium	Large
Demolition	Total building volume (m^3)	<20,000	20,000–50,000	>50,000
Earthworks	Total site area (m^2)	<2,500	2,500–10,000	>10,000
	Number of heavy earth moving vehicles active at one time	<5	5-10	>10
	Total material moved (tonnes)	<20,000	20,000–100,000	>100,000
Construction	Total building volume (m^3)	<25,000	25,000–100,000	>100,000
Track-out	Number of heavy vehicle movements per day	<10	10-50	>50

Step 2B – Sensitivity of surrounding area

The 'sensitivity' component of the risk assessment is determined by defining the study area's sensitivity to dust soiling, human health effects and ecological impacts. This is described further below.

Sensitivity of the area to dust soiling and human health effects

The IAQM methodology classifies the sensitivity of an area to dust soiling and human health impacts due to particulate matter effects as high, medium, or low. The classification is determined by a matrix for both dust soiling and human health impacts (refer Table G-2 and Table G-3 respectively). Factors used in the matrix tables to determine the sensitivity of an area are as follows:

- Receptor sensitivity (for individual receptors in the study area):
  - High sensitivity: locations where members of the public are likely to be exposed for eight hours or more in a day. For example private residences, hospitals, schools, or aged care homes.
  - Medium sensitivity: places of work where exposure is likely to be eight hours or more in a day
  - low sensitivity: locations where exposure is transient, around one or two hours maximum. For example, parks, footpaths, shopping streets, playing fields.
- Number of receptors of each sensitivity type in the area (categorised as one to 10, 10 to 100 or greater than 100).
- Distance from source
- Ambient annual mean PM_{10} concentration (only applicable to the human health impact matrix).

Table G-2: Surrounding area sensitivity to dust soiling effects on people and property

Receptor Sensitivity	Number of Receptors	Distance from the source (m)			
		<20	<50	<100	<350
High	>100	**High**	**High**	**Medium**	**Low**
	10-100	**High**	**Medium**	**Low**	**Low**
	1-10	**Medium**	**Low**	**Low**	**Low**
Medium	>1	**Medium**	**Low**	**Low**	**Low**
Low	>1	**Low**	**Low**	**Low**	**Low**

The IAQM guidance provides human health sensitivities for a range of annual average PM_{10} concentrations (i.e. >32, 28-32, 24-28 and <24 $\mu g/m^3$). It is noted in the IAQM guidance that the human health sensitivities are tied to criteria from different jurisdictions (UK and Scotland). The annual average PM_{10} criteria for Australia differ from the UK and Scotland and as such concentrations corresponding to the risk categories need to be modified to match Australian conditions. The Environmental Protection Authority (EPA) annual average criterion for PM_{10} based is 25$\mu g/m^3$ and therefore the scaled criteria for NSW is:

- >25 $\mu g/m^3$
- 22-25 $\mu g/m^3$
- 19-22 $\mu g/m^3$
- <19 $\mu g/m^3$.

The Singleton air shed can be considered one of the most sensitive areas to air pollution, especially particulates within the Hunter Region given the high level of sources of air emissions within the air shed as discussed in Section 6.4.2. The NSW Department of Planning and Environment (DPE) operated monitoring stations in Singleton north west, Singleton and Singleton South; indicate background annual average PM_{10} concentrations range between 23 to 27$\mu g/m^3$ as discussed in Section 6.4.2 . Table G-3 provides the IAQM guidance sensitivity levels for human health impacts for the ranges outlined above for the annual average PM_{10} concentrations and highlights the relevant range for Singleton, NSW.

Table G-3: Surrounding area sensitivity to human health impacts for annual average PM_{10} concentrations

Receptor Sensitivity	Annual average PM_{10} Concentration	Number of Receptors	Distance from the source (m)				
			<20	<50	<100	<200	<350
High	>25 μg/m^3	>100	High	High	High	Medium	Low
		10-100	High	High	Medium	Low	Low
		1-10	High	Medium	Low	Low	Low
	22-25 μg/m^3	>100	High	High	Low	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	High	Medium	Low	Low	Low
	19-22 μg/m^3	>100	High	Medium	Low	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	Medium	Low	Low	Low	Low
	<19 μg/m^3	>100	Medium	Low	Low	Low	Low
		10-100	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
Medium	>25 μg/m^3	>10	High	Medium	Low	Low	Low
		1-10	Medium	Low	Low	Low	Low
	22-25 μg/m^3	>10	Medium	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
	19-22 μg/m^3	>10	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
	<19 μg/m^3	>10	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
Low	-	≥1	Low	Low	Low	Low	Low

Sensitivity of area to ecological impacts

Ecological impacts from construction activities may occur due to deposition of dust on ecological areas. The sensitivity of ecological receptors can be defined by the following:

- High sensitivity ecological receptors
  - locations with international or national designation[1] and the designation features may be affected by dust soiling
  - locations where there is a community of particularly dust sensitive species
- Medium sensitivity ecological receptors
  - locations where there is a particularly important plant species, where its dust sensitivity is uncertain or unknown
  - locations within a national designation where the features may be affected by dust deposition

[1] Sites of International and National designation may include conservation areas of international or national significance such as those listed under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) or RAMSAR wetlands.

- Low sensitivity ecological receptors
  - locations with a local designation where the features may be affected by dust deposition.

Activity	Surrounding Area Sensitivity	Dust Emission Magnitude		
		Large	Medium	Small
Demolition	High	High	Medium	Medium
	Medium	High	Medium	Low
	Low	Medium	Low	Negligible
Earthworks	High	High	Medium	Low
	Medium	Medium	Medium	Low
	Low	Low	Low	Negligible
Construction	High	High	Medium	Low
	Medium	Medium	Medium	Low
	Low	Low	Low	Negligible
Track-out	High	High	Medium	Low
	Medium	Medium	Low	Negligible
	Low	Low	Low	Negligible

The sensitivity of an ecological area to impacts is assessed using the criteria listed in Table G-4.

Table G-4: Surrounding area sensitivity to ecological impacts

Receptor sensitivity	Distance from source (m)	
	<20	20–50
High	High	Medium
Medium	Medium	Low
Low	Low	Low

It should be noted that this is not a quantitative ecological assessment and risks discussed in this context need to be understood in terms of the IAQM guidance. For a particular group of ecological receptors, a risk rating indicates the risk that an ecologically sensitive area may experience unmitigated dust concentrations, with the associated potential ecological impacts, as outlined above.

Step 2C – Unmitigated risks of impacts

The dust emission magnitudes determined in Step 2A are combined with the sensitivities determined in Step 2B to determine the risk of impacts with no mitigation applied. Table G-5, reproduced from the IAQM guidance, provides the risk of dust impacts from demolition, earth-works, construction and track-out for each scale of activity listed in Table G-1.

Table G-5: Risk of Dust Impacts

Activity	Surrounding Area Sensitivity	Dust Emission Magnitude		
		Large	Medium	Small
Demolition	High	High	Medium	Medium
	Medium	High	Medium	Low
	Low	Medium	Low	Negligible
Earthworks	High	High	Medium	Low

	Medium	Medium	Medium	Low
	Low	Low	Low	Negligible
Construction	High	High	Medium	Low
	Medium	Medium	Medium	Low
	Low	Low	Low	Negligible
Track-out	High	High	Medium	Low
	Medium	Medium	Low	Negligible
	Low	Low	Low	Negligible

Step 3 – Management strategies

The outcome of Step 2C is used to determine the level of management that is required to ensure that dust impacts on surrounding sensitive receptors are maintained at an acceptable level. A high or medium-level risk rating means that suitable management measures must be implemented during construction of the proposal.

Step 4 – Reassessment

The final step of the IAQM methodology is to determine whether there are significant residual impacts, post mitigation, arising from a proposed development. The guidance states:

For almost all construction activity, the aim should be to prevent significant effects on receptors through the use of effective mitigation. Experience shows that this is normally possible. Hence the residual effect will normally be "not significant".

Based on this expectation, as well as experience in Australia, it can be demonstrated that construction activities with targeted mitigation measures can achieve high degrees of dust mitigation which significantly minimises dust impacts to a negligible level

Air Quality Operational Impact Assessment - Traffic forecast inputs

Table G-6: Traffic forecast data

Road Section	Direction	Opening Year (2026)				10 Years After Opening (2036)				Grade (%)
		AADT	Traffic Mix (%)		Peak Hour Speed (km/h)	AADT	Traffic Mix (%)		Peak Hour Speed (km/h)	
			Light	Heavy			Light	Heavy		
Main Alignment 1	Northbound	14860	85	15	90.4	17,170	85	15	89.8	2.6
	Southbound		85	15	89.5		85	15	89.0	0.9
Additional Putty Road Ramps	Northbound Off Ramp	1750	71	29	56.1	2040	74	26	56.0	2.0
	Southbound On Ramp		71	29	52.8		74	26	52.4	2.0

Note: North and southbound traffic splits on main alignment 1 were assumed to be consistent with the Project REF. Traffic splits assumed for the northbound off ramp and southbound on ramp were assumed to be the same as main alignment 1. An average grade of 2 was assumed for the proposed additional Putty Road Connection ramps.

Air Quality Operational Impact Assessment – Pollutant Concentrations

Table G-7: Predicted CO 1-Hour Maximum Concertation (mg/m^3)

Distance from Road (m)	2026 Predicted Concentration (mg/m^3)			2036 Predicted Concentration (mg/m^3)			Criteria (mg/m^3)
	Incremental	Background	Cumulative	Incremental	Background	Cumulative	
Main Alignment 1							
10 m from kerb	0.6	0.7	1.3	1.1	0.7	1.8	30
20 m from kerb	0.4	0.7	1.1	0.8	0.7	1.5	30
30 m from kerb	0.4	0.7	1.1	0.6	0.7	1.3	30
40 m from kerb	0.3	0.7	1.0	0.5	0.7	1.2	30
50 m from kerb	0.3	0.7	1.0	0.5	0.7	1.2	30
Northbound Putty Road Off Ramp							
10 m from kerb	<0.1	0.7	0.7	<0.1	0.7	0.7	30
20 m from kerb	<0.1	0.7	0.7	<0.1	0.7	0.7	30
30 m from kerb	<0.1	0.7	0.7	<0.1	0.7	0.7	30
40 m from kerb	<0.1	0.7	0.7	<0.1	0.7	0.7	30
50 m from kerb	<0.1	0.7	0.7	<0.1	0.7	0.7	30
Southbound Putty Road On Ramp							
10 m from kerb	<0.1	0.7	0.7	<0.1	0.7	0.7	30
20 m from kerb	<0.1	0.7	0.7	<0.1	0.7	0.7	30
30 m from kerb	<0.1	0.7	0.7	<0.1	0.7	0.7	30
40 m from kerb	<0.1	0.7	0.7	<0.1	0.7	0.7	30
50 m from kerb	<0.1	0.7	0.7	<0.1	0.7	0.7	30

Table G-8: Predicted CO 8-Hour Maximum Concertation (mg/m^3)

Distance from Road (m)	2026 Predicted Concentration (mg/m^3)			2036 Predicted Concentration (mg/m^3)			Criteria (mg/m^3)
	Incremental	Background	Cumulative	Incremental	Background	Cumulative	
Main Alignment 1							
10 m from kerb	0.4	0.7	1.1	0.8	0.7	1.5	10
20 m from kerb	0.3	0.7	1.0	0.5	0.7	1.2	10
30 m from kerb	0.2	0.7	0.9	0.4	0.7	1.1	10
40 m from kerb	0.2	0.7	0.9	0.4	0.7	1.1	10
50 m from kerb	0.2	0.7	0.9	0.3	0.7	1.0	10
Northbound Putty Road Off Ramp							
10 m from kerb	<0.1	0.7	0.7	<0.1	0.7	0.7	10
20 m from kerb	<0.1	0.7	0.7	<0.1	0.7	0.7	10
30 m from kerb	<0.1	0.7	0.7	<0.1	0.7	0.7	10
40 m from kerb	<0.1	0.7	0.7	<0.1	0.7	0.7	10
50 m from kerb	<0.1	0.7	0.7	<0.1	0.7	0.7	10
Southbound Putty Road On Ramp							
10 m from kerb	<0.1	0.7	0.7	<0.1	0.7	0.7	10
20 m from kerb	<0.1	0.7	0.7	<0.1	0.7	0.7	10
30 m from kerb	<0.1	0.7	0.7	<0.1	0.7	0.7	10
40 m from kerb	<0.1	0.7	0.7	<0.1	0.7	0.7	10
50 m from kerb	<0.1	0.7	0.7	<0.1	0.7	0.7	10

Table G-9: Predicted NO_2 1-Hour Maximum Concertation (µg/m³)

Distance from Road (m)	2026 Predicted Concentration (µg/m³)			2036 Predicted Concentration (µg/m³)			Criteria (µg/m³)
	Incremental	Background	Cumulative	Incremental	Background	Cumulative	
Main Alignment 1							
10 m from kerb	8.4	34.9	43.3	8.6	34.9	43.5	164
20 m from kerb	7.7	34.9	42.6	8	34.9	42.9	164
30 m from kerb	6.3	34.9	41.2	6.5	34.9	41.4	164
40 m from kerb	5.4	34.9	40.3	5.6	34.9	40.5	164
50 m from kerb	4.8	34.9	39.7	5	34.9	39.9	164
Northbound Putty Road Off Ramp							
10 m from kerb	0.6	34.9	35.5	0.6	34.9	35.5	164
20 m from kerb	0.6	34.9	35.5	0.5	34.9	35.4	164
30 m from kerb	0.5	34.9	35.4	0.4	34.9	35.3	164
40 m from kerb	0.4	34.9	35.3	0.4	34.9	35.3	164
50 m from kerb	0.4	34.9	35.3	0.3	34.9	35.2	164
Southbound Putty Road On Ramp							
10 m from kerb	0.5	34.9	35.4	0.5	34.9	35.4	164
20 m from kerb	0.5	34.9	35.4	0.4	34.9	35.3	164
30 m from kerb	0.4	34.9	35.3	0.3	34.9	35.2	164
40 m from kerb	0.3	34.9	35.2	0.3	34.9	35.2	164
50 m from kerb	0.3	34.9	35.2	0.3	34.9	35.2	164

Table G-10: Predicted NO_2 Annual Average Concertation (µg/m^3)

Distance from Road (m)	2026 Predicted Concentration (µg/m^3)			2036 Predicted Concentration (µg/m^3)			Criteria (µg/m^3)
	Incremental	Background	Cumulative	Incremental	Background	Cumulative	
Main Alignment 1							
10 m from kerb	1.7	15.9	17.6	1.7	15.9	17.6	31
20 m from kerb	1.5	15.9	17.4	1.6	15.9	17.5	31
30 m from kerb	1.3	15.9	17.2	1.3	15.9	17.2	31
40 m from kerb	1.1	15.9	17.0	1.1	15.9	17.0	31
50 m from kerb	1.0	15.9	16.9	1	15.9	16.9	31
Northbound Putty Road Off Ramp							
10 m from kerb	0.1	15.9	16.0	0.1	15.9	16.0	31
20 m from kerb	0.1	15.9	16.0	0.1	15.9	16.0	31
30 m from kerb	0.1	15.9	16.0	0.1	15.9	16.0	31
40 m from kerb	0.1	15.9	16.0	0.1	15.9	16.0	31
50 m from kerb	0.1	15.9	16.0	0.1	15.9	16.0	31
Southbound Putty Road On Ramp							
10 m from kerb	0.1	15.9	16.0	0.1	15.9	16.0	31
20 m from kerb	0.1	15.9	16.0	0.1	15.9	16.0	31
30 m from kerb	0.1	15.9	16.0	0.1	15.9	16.0	31
40 m from kerb	0.1	15.9	16.0	0.1	15.9	16.0	31
50 m from kerb	0.1	15.9	16.0	0.1	15.9	16.0	31

Table G-11: Predicted PM_{10} 24-Hour Maximum Concertation ($\mu g/m^3$)

Distance from Road (m)	2026 Predicted Concentration ($\mu g/m^3$)			2036 Predicted Concentration ($\mu g/m^3$)			Criteria ($\mu g/m^3$)
	Incremental	Background	Cumulative	Incremental	Background	Cumulative	
Main Alignment 1							
10 m from kerb	3.3	46.3	49.6	4.1	46.3	**50.4**	50
20 m from kerb	2.3	46.3	48.6	2.9	46.3	49.2	50
30 m from kerb	1.9	46.3	48.2	2.3	46.3	48.6	50
40 m from kerb	1.6	46.3	47.9	2	46.3	48.3	50
50 m from kerb	1.4	46.3	47.7	1.8	46.3	48.1	50
Northbound Putty Road Off Ramp							
10 m from kerb	0.3	46.3	46.6	0.3	46.3	46.6	50
20 m from kerb	0.2	46.3	46.5	0.2	46.3	46.5	50
30 m from kerb	0.2	46.3	46.5	0.2	46.3	46.5	50
40 m from kerb	0.1	46.3	46.4	0.2	46.3	46.5	50
50 m from kerb	0.1	46.3	46.4	0.1	46.3	46.4	50
Southbound Putty Road On Ramp							
10 m from kerb	0.2	46.3	46.5	0.3	46.3	46.6	50
20 m from kerb	0.2	46.3	46.5	0.2	46.3	46.5	50
30 m from kerb	0.1	46.3	46.4	0.1	46.3	46.4	50
40 m from kerb	0.1	46.3	46.4	0.1	46.3	46.4	50
50 m from kerb	0.1	46.3	46.4	0.1	46.3	46.4	50

Table G-12: Predicted PM_{10} Annual Average Concertation ($\mu g/m^3$)

Distance from Road (m)	2026 Predicted Concentration ($\mu g/m^3$)			2036 Predicted Concentration ($\mu g/m^3$)			Criteria ($\mu g/m^3$)
	Incremental	Background	Cumulative	Incremental	Background	Cumulative	
Main Alignment 1							
10 m from kerb	1.3	**26.8**	**28.1**	1.6	**26.8**	**28.4**	25
20 m from kerb	0.9	**26.8**	**27.7**	1.1	**26.8**	**27.9**	25
30 m from kerb	0.7	**26.8**	**27.5**	0.9	**26.8**	**27.7**	25
40 m from kerb	0.6	**26.8**	**27.4**	0.8	**26.8**	**27.6**	25
50 m from kerb	0.6	**26.8**	**27.4**	0.7	**26.8**	**27.5**	25
Northbound Putty Road Off Ramp							
10 m from kerb	0.1	**26.8**	**26.9**	0.1	**26.8**	**26.9**	25
20 m from kerb	0.1	**26.8**	**26.9**	0.1	**26.8**	**26.9**	25
30 m from kerb	0.1	**26.8**	**26.9**	0.1	**26.8**	**26.9**	25
40 m from kerb	0.1	**26.8**	**26.9**	0.1	**26.8**	**26.9**	25
50 m from kerb	0.1	**26.8**	**26.9**	0.1	**26.8**	**26.9**	25
Southbound Putty Road On Ramp							
10 m from kerb	0.1	**26.8**	**26.9**	0.1	**26.8**	**26.9**	25
20 m from kerb	0.1	**26.8**	**26.9**	0.1	**26.8**	**26.9**	25
30 m from kerb	0.1	**26.8**	**26.9**	0.1	**26.8**	**26.9**	25
40 m from kerb	<0.1	**26.8**	**26.8**	0.1	**26.8**	**26.9**	25
50 m from kerb	<0.1	**26.8**	**26.8**	<0.1	**26.8**	**26.8**	25

Table G-13: Predicted $PM_{2.5}$ 24-Hour Maximum Concertation (µg/m³)

Distance from Road (m)	2026 Predicted Concentration (µg/m³)			2036 Predicted Concentration (µg/m³)			Criteria (µg/m³)
	Incremental	Background	Cumulative	Incremental	Background	Cumulative	
Main Alignment 1							
10 m from kerb	3.1	13.4	16.5	3.9	13.4	17.3	25
20 m from kerb	2.2	13.4	15.6	2.8	13.4	16.2	25
30 m from kerb	1.8	13.4	15.2	2.2	13.4	15.6	25
40 m from kerb	1.5	13.4	14.9	1.9	13.4	15.3	25
50 m from kerb	1.3	13.4	14.7	1.7	13.4	15.1	25
Northbound Putty Road Off Ramp							
10 m from kerb	0.3	13.4	13.7	0.3	13.4	13.7	25
20 m from kerb	0.2	13.4	13.6	0.2	13.4	13.6	25
30 m from kerb	0.2	13.4	13.6	0.2	13.4	13.6	25
40 m from kerb	0.1	13.4	13.5	0.2	13.4	13.6	25
50 m from kerb	0.1	13.4	13.5	0.1	13.4	13.5	25
Southbound Putty Road On Ramp							
10 m from kerb	0.2	13.4	13.6	0.3	13.4	13.7	25
20 m from kerb	0.2	13.4	13.6	0.2	13.4	13.6	25
30 m from kerb	0.1	13.4	13.5	0.1	13.4	13.5	25
40 m from kerb	0.1	13.4	13.5	0.1	13.4	13.5	25
50 m from kerb	0.1	13.4	13.5	0.1	13.4	13.5	25

Table G-14: Predicted $PM_{2.5}$ Annual Average Concertation (mg/m^3)

Distance from Road (m)	2026 Predicted Concentration ($\mu g/m^3$)			2036 Predicted Concentration ($\mu g/m^3$)			Criteria ($\mu g/m^3$)
	Incremental	Background	Cumulative	Incremental	Background	Cumulative	
Main Alignment 1							
10 m from kerb	1.2	**8.1**	**9.3**	1.5	**8.1**	**9.6**	25
20 m from kerb	0.9	**8.1**	**9.0**	1.0	**8.1**	**9.1**	25
30 m from kerb	0.7	**8.1**	**8.8**	0.9	**8.1**	**9.0**	25
40 m from kerb	0.6	**8.1**	**8.7**	0.8	**8.1**	**8.9**	25
50 m from kerb	0.6	**8.1**	**8.7**	0.7	**8.1**	**8.8**	25
Northbound Putty Road Off Ramp							
10 m from kerb	0.1	**8.1**	**8.2**	0.1	**8.1**	**8.2**	25
20 m from kerb	0.1	**8.1**	**8.2**	0.1	**8.1**	**8.2**	25
30 m from kerb	0.1	**8.1**	**8.2**	0.1	**8.1**	**8.2**	25
40 m from kerb	0.1	**8.1**	**8.2**	0.1	**8.1**	**8.2**	25
50 m from kerb	0.1	**8.1**	**8.2**	0.1	**8.1**	**8.2**	25
Southbound Putty Road On Ramp							
10 m from kerb	0.1	**8.1**	**8.2**	0.1	**8.1**	**8.2**	25
20 m from kerb	0.1	**8.1**	**8.2**	0.1	**8.1**	**8.2**	25
30 m from kerb	0.1	**8.1**	**8.2**	0.1	**8.1**	**8.2**	25
40 m from kerb	0.0	**8.1**	**8.1**	0.1	**8.1**	**8.2**	25
50 m from kerb	0.0	**8.1**	**8.1**	0.0	**8.1**	**8.1**	25