

Spring Farm Parkway Stage 1

Out of Hours Work Assessment – Phase 4

Reference: SFPS1-OOHW-PHASE4-004

Prepared Date: 20 October 2023

Revision 0

1. OOHW details

Description of works	<p>The following scope of works will be undertaken outside of standard construction hours:</p> <p>Menangle Road:</p> <ul style="list-style-type: none"> - Temporary barrier installation and removal using a mobile crane (i.e. franna) or hi-ab truck. - Utilities relocation works (i.e. electrical and communication) using excavators, rollers and compactor, and trucks. Trenching, placement of conduits and commissioning of services under the supervision of the utility service owner. - Installation and commissioning of new Variable Message Signs (VMS). The structure will be lifted into place and installed using craneage and hand tools. The VMS will be commissioned at the completion of the installation works. - Installation of the new kerb will require a slipform machine and concrete delivered by concrete trucks. - Asphalt pavement works using profiling, pavement machine, roller and trucks including asphalt delivered using trucks. - Line-marking will be applied using a vehicle. - Installation and commissioning of Traffic Signals for the operation of the Menangle Rd and Spring Farm Parkway Intersection. <p>Hume Motorway:</p> <ul style="list-style-type: none"> - Delivery and placement of import material to the western site entering and exiting from the Hume Motorway. - Temporary barrier installation and removal using a mobile crane (i.e. franna) or hi-ab truck to place the barriers into position. - Bridge Works including the installation of precast barriers, screens, guard railing, installation of form work, reinforcing steel and concrete utilizing concrete pumps and concrete trucks. - Installation of new stormwater line and pits will be done using an excavator to excavate a trench, materials delivered onsite and removed to designated stockpile locations using trucks and backfill material compacted using handheld compaction equipment. - Installation of new utilities (i.e. electrical and communication) using excavators, rollers, compactors, and trucks. Underboring, trenching, placement of conduits and commissioning of services under the supervision of the utility service owner. - Installation of new VMS including piling works using an excavator, piling rig, crane to install the pile cages and concrete delivered by concrete trucks. The structure will be lifted into place and installed using craneage and hand tools. The VMS will be commissioned at the completion of the installation works. - Installation of the new kerb will require a slipform machine and concrete delivered by concrete trucks. - Guardrail will be installed using an excavator to push the post into place and hand tools to secure the rails. - Installation of signage and road furniture using an excavator, mobile crane and concrete delivered by concrete trucks, together with hand tools to secure the signs. - Asphalt pavement works using profiling, pavement machine, roller and trucks including asphalt delivered using trucks. - Line-marking will be applied using a vehicle. <p>General operation of the ancillary site compound to support workers located adjacent to Menangle Road (opposite the Broughton Anglican College).</p>		
Location	Refer to Section 1.2, showing the location of works.		
Proposed start date	January 2024	Proposed finish date	June 2024

Number of shifts	<p>Works will be undertaken up to five shifts per week starting on Sunday evening 6PM to Friday morning 5AM.</p> <p>Subject to Customer Journey Planning and Customer Journey Management approvals. OOHW will always be undertaken up to five shifts per week with a minimum respite of two days.</p>
Working hours	<p>Period 1 – 6PM to 10PM</p> <p>Period 2 – 10PM to 5AM</p> <p>Hours will be subject to conditions detailed within the Road Occupancy License issued by Customer Journey Planning and Customer Journey Management.</p>

1.1 Contact details

Georgiou Superintendent		
Georgiou Project Manager		
Contractor's 24-hour Community Hotline		
Georgiou Environment Manager		
Contractor's Communications Officer		
Transport Project Manager		
Transport Senior Environment Officer		

1.2 Proposed scope of work and justification for out of hours work

<p>Proposed out of hours works (OOHW) include:</p> <p>Menangle Road:</p> <ul style="list-style-type: none"> - Temporary barrier installation and removal using a mobile crane (i.e. franna) or hi-ab truck. - Utilities relocation works (i.e. electrical and communication) using excavators, rollers and compactor, and trucks. Trenching, placement of conduits and commissioning of services under the supervision of the utility service owner. - Installation and commissioning of new Variable Message Signs (VMS). The structure will be lifted into place and installed using craneage and hand tools. The VMS will be commissioned at the completion of the installation works. - Installation of the new kerb will require a slipform machine and concrete delivered by concrete trucks. - Asphalt pavement works using profiling, pavement machine, roller and trucks including asphalt delivered using trucks. - Line-marking will be applied using a vehicle. - Installation and commissioning of Traffic Signals for the operation of the Menangle Rd and Spring Farm Parkway Intersection. <p>Hume Motorway:</p> <ul style="list-style-type: none"> - Delivery and placement of import material to the western and eastern site entering and exiting from the Hume Motorway.
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- Temporary barrier installation and removal using a mobile crane (i.e. franna) or hi-ab truck to place the barriers into position.
- Bridge Works including the installation of precast barriers, screens, guard railing, installation of form work, reinforcing steel and concrete utilizing concrete pumps and concrete trucks.
- Installation of new stormwater line and pits will be done using an excavator to excavate a trench, materials delivered onsite and removed to designated stockpile locations using trucks and backfill material compacted using handheld compaction equipment.
- Installation of new utilities (i.e. electrical and communication) using excavators, rollers, compactors, and trucks. Underboring, trenching, placement of conduits and commissioning of services under the supervision of the utility service owner.
- Installation of new VMS including piling works using an excavator, piling rig, crane to install the pile cages and concrete delivered by concrete trucks. The structure will be lifted into place and installed using craneage and hand tools. The VMS will be commissioned at the completion of the installation works.
- Installation of the new kerb will require a slipform machine and concrete delivered by concrete trucks.
- Guardrail will be installed using an excavator to push the post into place and hand tools to secure the rails.
- Installation of signage and road furniture using an excavator, mobile crane and concrete delivered by concrete trucks, together with hand tools to secure the signs.
- Asphalt pavement works using profiling, pavement machine, roller and trucks including asphalt delivered using trucks.
- Line-marking will be applied using a vehicle.

Figure 1-1 below shows the locations where the above proposed activities will be undertaken.

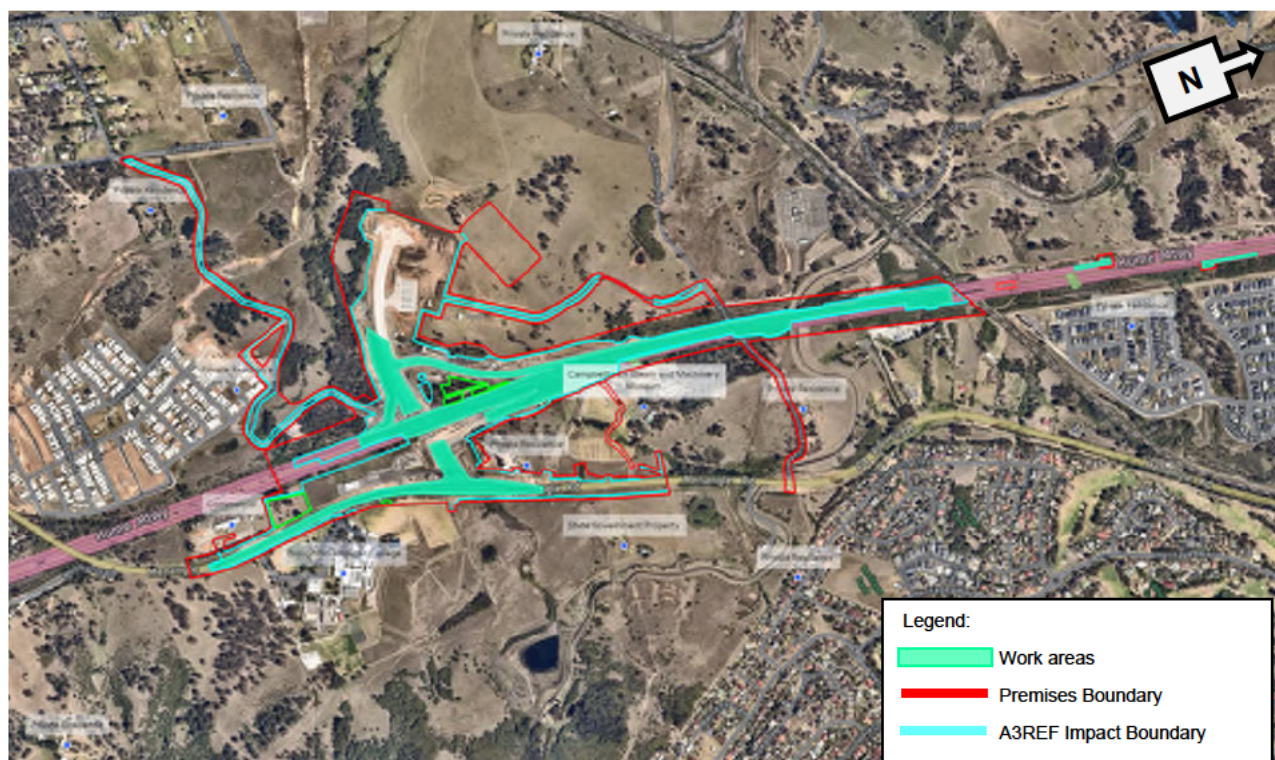


Figure 1-1 Location of works

Justification: To minimise disruption to traffic and potential safety risks to construction personnel and road users, it would be necessary to carry out the works outside of standard hours in accordance with the Road Occupancy Licence (ROL) issued by Customer Journey Planning (CJP) and Customer Journey Management (CJM).

The works on the Hume Motorway and Menangle Road can only be undertaken with a lane closure to implement primary safety mechanisms namely, traffic barriers, line-marking, signage, and speed reductions. These measures provide a

safe passage adjacent to the works for motorists and provide compliance with legislation around the safety of workers on construction sites and working in proximity to traffic.

1.3 Proposed activities/equipment

The proposed OOHW would require the following equipment to successfully complete the activities:

ID	Activities	Plant and Equipment	SWL (LAeq) (dBA)
1	Temporary barrier installation and removal (Menangle Road and Hume Highway)	Mobile crane	98
		Flatbed truck	103
		Day makers	98
2	Line-marking (Menangle Road and Hume Highway)	Line marking truck	108
		Day makers	98
3	Asphalt pavement (Menangle Road and Hume Highway)	Pavement machine	114
		Asphalt truck and sprayer	103
		Road saw	118
		Compactor roller	107
		Bobcat	104
		Day makers	98
4	Stormwater drainage (Menangle Road and Hume Highway)	Vacuum truck	109
		Excavator	112
		Truck	103
		Hand-tools	96
		Compactor roller	107
		Concrete saw	118
		Day makers	98
5	Kerbing (Menangle Road and Hume Highway)	Excavator	112

		Concrete truck	109
		Hand-tools	96
		Day makers	98
6	Guardrail, signs, and road furniture's (Hume Highway)	Excavator	105
		Truck	103
		Hand-tools	96
		Day makers	98
7	Delivery of import material (Hume Highway)	Excavator	105
		Compactor roller	107
		Dozer/Grader	116
		Day makers	98
8	Installation and commissioning of new variable message signs	Excavator	105
		Truck	103
		Piling rig	104
		Mobile crane	98
		Concrete truck	109
		Day makers	98
9	Utility installations (Menangle Road)	Excavator	105
		Truck	103
		Compactor roller	107
		Hand-tools	96
		Day makers	98
10	New bridge works (Over the Hume Motorway)	Mobile crane	98
		Concrete truck	109

		Concrete pump	102
		Hand-tools	96
		Day makers	98

1.4 Land use and sensitive receivers

The proposed works is located within a rural and suburban surrounding and works will be predominately adjacent to the Hume Highway and Menangle Road within the Campbelltown City Council local government area. Figure 1-2 and Figure 1-3 shows the distance from the noise source to the closest sensitive residential receivers.

Closest sensitive residential receivers to the works are approximately:

- 160 metres to the east, shielded by bushland. No line of sight to sensitive residential receivers.
- 832 metres to the west, shielded by bushland and hilly terrain. No line of sight to sensitive residential receiver.
- 700 metres to the south, shielded by bushland and hilly terrain. No line of sight to sensitive residential receivers.

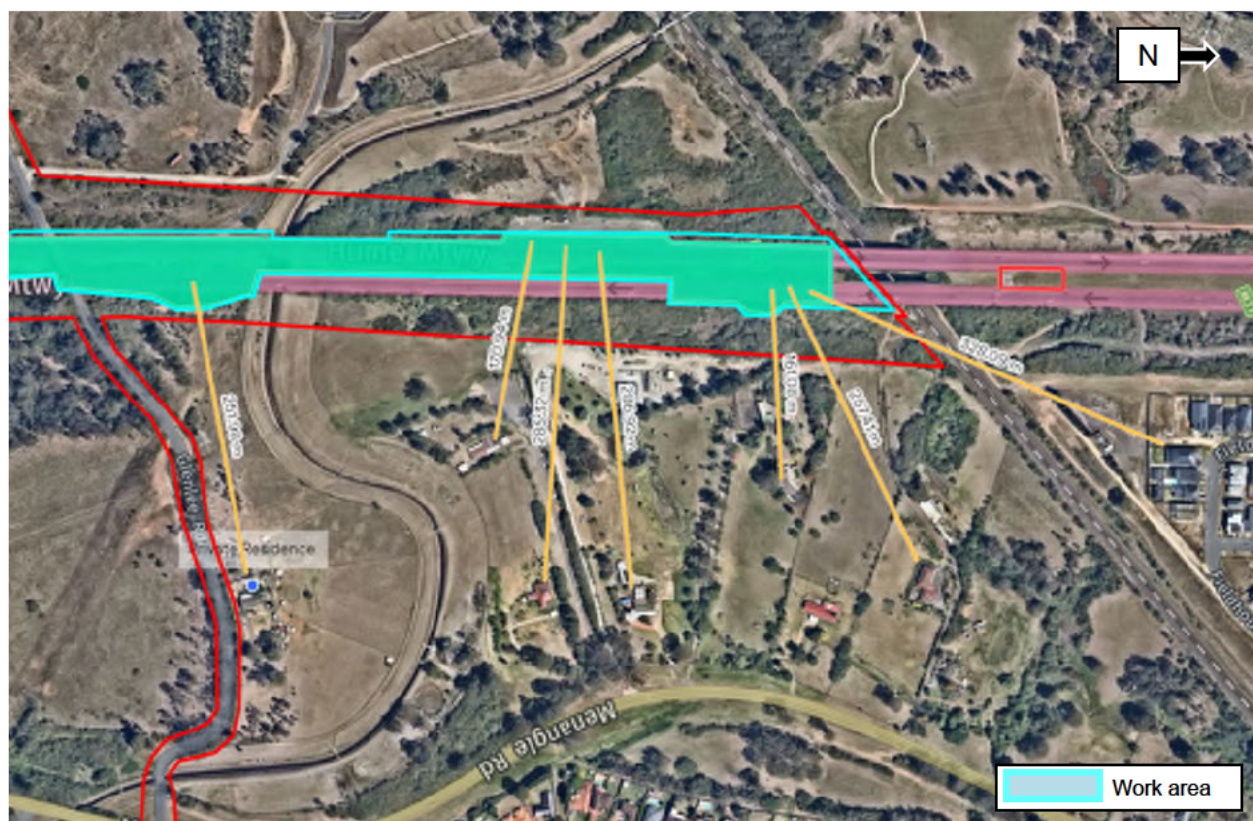


Figure 1-2 Hume Highway works – northern portion – distance from sensitive residential receivers

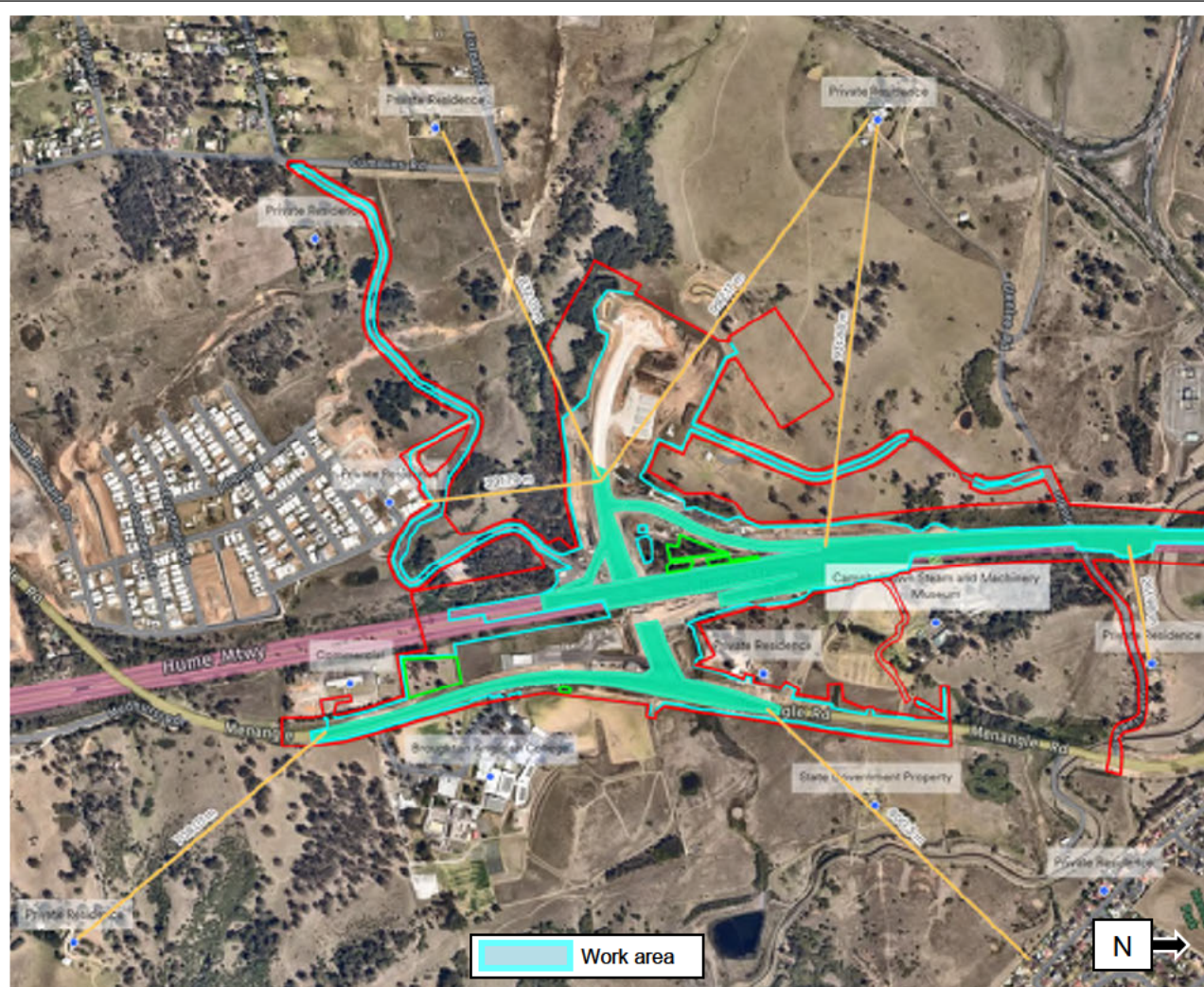


Figure 1-3 Hume Highway works – southern portion – distance from sensitive residential receivers

Property 116 Menangle Road, Menangle Park NSW 2563 is the closest sensitive residential receiver to the noise sources and is currently vacant.

2. Construction noise assessment

2.1 Input data

Noise area category

Measured rated background level (RBL) and noise management level (NML) obtained from the Spring Farm Parkway Stage 1 Review of Environmental Factors (REF) (February 2019) is shown below:

Table 2-1 REF (Feb 2019) Noise Management Level

NCA	Background noise level RBL dB(A)			Noise Management Level (NML) L _{Aeq} (15 minute) dB(A)			Sleep awakening criterion (external dB(A))
				Standard hours (RBL+10dB)	Out of Hours (OOH) (RBL+5dB)		
	Standard hours	OOH1	OOH2	Day	OOH1	OOH2	
1	35	42	38	45	48	42	63
2	43	44	39	53	49	44	64
3	42	45	37	52	49	42	62
4	41	42	42	51	47	47	67
5	37	39	38	47	44	43	63

Noise catchment 5 (NCA5) will be considered because BAC is located within the catchment area. OOHW2 period is used to assess the noise impact in the assessment. TfNSW Construction Noise and Vibration Guideline (2016) consider:

OOHW Period 1: Mon – Fri (6pm – 10pm), Sat (7am – 8am & 1pm – 10pm), Sun/Pub Hol (8am – 6pm).

OOHW Period 2: Mon – Fri (10pm – 7am), Sat (10pm – 8am), Sun/Pub Hol (6pm – 7am)

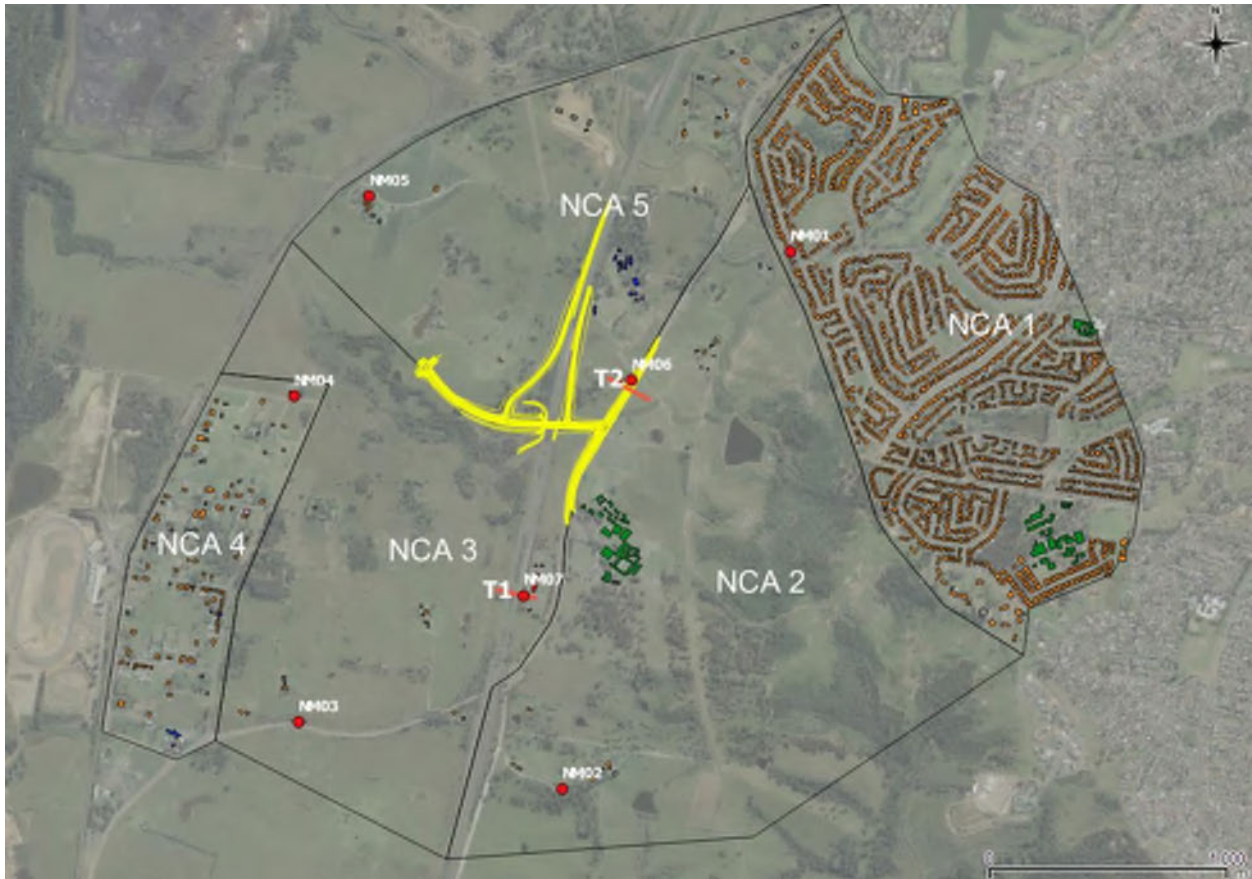


Figure 2-1 Noise Catchment Areas, sensitive receivers, and Noise monitoring locations – sourced from REF (Feb 2019)

Noise assessment type

The TfNSW Noise Estimator Tool was used to conduct the modelling and the recommended noise mitigation measures are aligned with recommendations in the TfNSW Construction Noise and Vibration Guideline (2016) and the Interim Construction Noise Guideline (DECC, 2009). Typical noise source levels (Sound Pressure Level – SWL LAeq 15min) for items of plant relevant to the proposed works were taken from the RMS environmental noise management manual and manufacturer specifications.

The Predicted Noise Levels do not account for terrain features and the acoustic absorption, barrier affect and reflective properties of separating ground, buildings, and other structures. Conservative consideration has been adopted for the noise attenuation of the first row of houses parallel to the Hume Motorway in the Glen Alpine suburb. Thus, the first row of houses will offer noise attenuation of 10dBA to the second row of houses. This is based on attenuation for similar structures detailed in the RTA Environmental Noise Management Manual (2001). The average house height is 4m with a 5m gap between neighbouring houses.

The R2 noise area category has been adopted from the TfNSW Noise Estimator Tool which has a NML of 40 dBA. This is lower than the Project NML detailed within Table 2-1 above, therefore provides a most conservative estimate of noise impact levels.

Noisiest plant and equipment distance base assessment has been used from the TfNSW Noise Estimator Tool to provide a representative of the works proposed on the Hume Motorway and Menangle Road during out of hour's works. Not all plant and equipment for each activity will be in operation concurrent and that is why the scenario distance base assessment was not used. Operation of the eastern ancillary facility was assessed using the scenario distance base assessment.

Noise validation completed during Phase 1 out of hour works noted construction noise were inaudible at the closest monitoring location, located at the front of the sensitive residential receiver. Significant percentage of dominated noise source over 15 minutes attended noise monitoring was from vehicles travelling on the Hume Motorway.

Seven distance-based construction noise assessments were completed.

1. Distance based (Noisiest Plant): Vibratory roller
2. Distance based (Noisiest Plant): Concrete saw
3. Distance based (Noisiest Plant): Excavator
4. Distance based (Noisiest Plant): Concrete truck
5. Distance based (Noisiest Plant): Bobcat
6. Distance based (Scenario): Compound operation
7. Distance based (Noisiest Plant): Asphalt profiler

Line marking truck and pilling rig have similar SWL to the concrete truck with a SWL of 109 dBA.

The assessments focus night-time period (Period 2, 10PM-7AM) within 'underdevelop green fields, rural areas within isolated dwelling' category. No line of sight to the sensitive residential receivers.

3. Summary of impacts


3.1 Predicted noise levels.

Assessment scenario 1 – Distance based (Noisiest Plant): Vibratory roller, R2 noise area category.

Results obtained from TfNSW Noise Estimator tool assessment is summarised below.

Full details of the noise assessment are provided within Appendix A.

Table 3-1 Construction noise impacts


		
Please pick from drop-down list in orange cells		
Noise area category		R2
RBL or LA90 Background level (dB(A))	Day	45
	Evening	40
	Night	35
LAeq(15minute) Noise Mangement Level (dB(A))	Day	55
	Day (OOHW)	50
	Evening	45
	Night	40
Noisiest plant		Vibratory Roller
Is there line of sight to receiver?		No (behind solid barrier)
		Affected distance (m)
Undeveloped green fields, rural areas with isolated dwellings	Day	75
	Day (OOHW)	120
	Evening	175
	Night	250
	Highly Affected	15

Assessment scenario 2 – Distance based (Noisiest Plant): Concrete saw, R2 noise area category.

Results obtained from TfNSW Noise Estimator tool assessment is summarised below.

Full details of the noise assessment are provided within Appendix A.

Table 3-2 Construction noise impacts


		
Please pick from drop-down list in orange cells		
Noise area category		R2
RBL or LA90 Background level (dB(A))	Day	45
	Evening	40
	Night	35
LAeq(15minute) Noise Mangement Level (dB(A))	Day	55
	Day (OOHW)	50
	Evening	45
	Night	40
Noisiest plant		Concrete Saw
Is there line of sight to receiver?		No (behind solid barrier)
		Affected distance (m)
Undeveloped green fields, rural areas with isolated dwellings	Day	140
	Day (OOHW)	200
	Evening	290
	Night	420
	Highly Affected	25

Assessment scenario 3 – Distance based (Noisiest Plant): Excavator, R2 noise area category.

Results obtained from TfNSW Noise Estimator tool assessment is summarised below.

Full details of the noise assessment are provided within Appendix A.

Table 3-3 Construction noise impacts


		
Please pick from drop-down list in orange cells		
Noise area category		R2
RBL or LA90 Background level (dB(A))	Day	45
	Evening	40
	Night	35
LAeq(15minute) Noise Mangement Level (dB(A))	Day	55
	Day (OOHW)	50
	Evening	45
	Night	40
Noisiest plant		13.5T Excavator
Is there line of sight to receiver?		No (behind solid barrier)
		Affected distance (m)
Undeveloped green fields, rural areas with isolated dwellings	Day	45
	Day (OOHW)	75
	Evening	120
	Night	175
	Highly Affected	10

Assessment scenario 4 – Distance based (Noisiest Plant): Concrete truck, R2 noise area category.

Results obtained from TfNSW Noise Estimator tool assessment is summarised below.

Full details of the noise assessment are provided within Appendix A.

Table 3-4 Construction noise impacts


		
Please pick from drop-down list in orange cells		
Noise area category		R2
RBL or LA90 Background level (dB(A))	Day	45
	Evening	40
	Night	35
LAeq(15minute) Noise Mangement Level (dB(A))	Day	55
	Day (OOHW)	50
	Evening	45
	Night	40
Noisiest plant		Concrete Truck
Is there line of sight to receiver?		No (behind solid barrier)
		Affected distance (m)
Undeveloped green fields, rural areas with isolated dwellings	Day	75
	Day (OOHW)	120
	Evening	175
	Night	250
	Highly Affected	15

Assessment scenario 5 – Distance based (Noisiest Plant): Bobcat, R2 noise area category.

Results obtained from TfNSW Noise Estimator tool assessment is summarised below.

Full details of the noise assessment are provided within Appendix A.

Table 3-5 Construction noise impacts


		
Please pick from drop-down list in orange cells		
Noise area category		R2
RBL or LA90 Background level (dB(A))	Day	45
	Evening	40
	Night	35
LAeq(15minute) Noise Mangement Level (dB(A))	Day	55
	Day (OOHW)	50
	Evening	45
	Night	40
Noisiest plant		Bobcat
Is there line of sight to receiver?		No (behind solid barrier)
		Affected distance (m)
Undeveloped green fields, rural areas with isolated dwellings	Day	45
	Day (OOHW)	75
	Evening	120
	Night	175
	Highly Affected	10

Assessment scenario 6 – Distance based (Scenario): Compound Operation, R2 noise area category.

Results obtained from TfNSW Noise Estimator tool assessment is summarised below.

Full details of the noise assessment are provided within Appendix A.

Table 3-6 Construction noise impacts

 Transport Roads & Maritime Services		
Please pick from drop-down list in orange cells		
Noise area category		R2
RBL or LA90 Background level (dB(A))	Day	45
	Evening	40
	Night	35
L Aeq(15minute) Noise Mangement Level (dB(A))	Day	55
	Day (OOHW)	50
	Evening	45
	Night	40
Scenario		Compound operation
Is there line of sight to receiver?		Yes
Residential receiver		
		Affected distance (m)
Undeveloped green fields, rural areas with isolated dwellings	Day	170
	Day (OOHW)	250
	Evening	360
	Night	525
	Highly Affected	20

Assessment scenario 7 – Distance based (Noisiest Plant): Asphalt Profiler, R2 noise area category.

Results obtained from TfNSW Noise Estimator tool assessment is summarised below.

Full details of the noise assessment are provided within Appendix A.

Table 3-7 Construction noise impacts


<div><div>Transport Roads & Maritime Services</div></div>		
Please pick from drop-down list in orange cells		
Noise area category		R2
RBL or LA90 Background level (dB(A))	Day	45
	Evening	40
	Night	35
LAeq(15minute) Noise Mangement Level (dB(A))	Day	55
	Day (OOHW)	50
	Evening	45
	Night	40
Noisiest plant		Asphalt Profiler
Is there line of sight to receiver?		No (behind solid barrier)
Residential receiver		
		Affected distance (m)
Undeveloped green fields, rural areas with isolated dwellings	Day	140
	Day (OOHW)	200
	Evening	290
	Night	420
	Highly Affected	25

Table 3-8 below shows the predicted noise levels calculated from the TfNSW noise tool for each scenario with the penalty +5dBA result in the same mitigation measures detailed in both EPA ICNG and TfNSW CNVG. Table 3-9 below details the mitigation measures that will be implemented accordingly and the predicted noise level with the penalty +5dBA will not have a significant impact.

Table 3-8 Predicted noise level and penalty +5dBA.

Scenario	Period (10PM-7AM)	Noticeable (dBA)		Clearly Audible (dBA)		Moderately Intrusive (dBA)		Highly Intrusive(dBA)	
		PNL	PNL+5dBA	PNL	PNL+5dBA	PNL	PNL+5dBA	PNL	PNL+5dBA
1	Night RBL 35dBA	40	45	45	50	55	60	65	70

Note: PNL – Predicted Noise Level

Table 3-9 Triggers for Additional Mitigation Measures - Airborne Noise

Predicted airborne $L_{Aeq(15min)}$ noise level at receiver			Additional mitigation measures	
Perception	dB(A) above RBL	dB(A) above NML	type ¹ :	Mitigation Levels ² :
OOHW Period 2: Mon – Fri (10pm – 7am), Sat (10pm – 8am), Sun/Pub Hol (6pm – 7am)				
Noticeable	5 to 10	< 5	N	NML
Clearly Audible	10 to 20	5 to 15	V, N, R2, DR	NML+5
Moderately intrusive	20 to 30	15 to 25	V, IB, N, PC, SN, R2, DR	NML+15
Highly intrusive	> 30	> 25	AA, V, IB, N, PC, SN, R2, DR	NML+25
Notes (refer to detailed descriptions):				
¹ AA = Alternative Accommodation V = Verification IB = Individual briefings N = Notification R2 = Respite Period 2 DR = Duration Respite R1 = Respite Period 1 PC = Phone calls SN = Specific notifications Perception = relates to level above RBL				

Source: TfNSW Construction Noise and Vibration Guideline – August 2016

Worst case scenario for proposed works long the Hume Motorway, sensitive residential receivers within 420 metres from the noise source will experience noticeable noise.

Worst case scenario for proposed works on Menangle Road, sensitive residential receivers within 250 metres from the noise source will experience noticeable noise.

Sensitive residential receivers within 525 metres from the compound will experience noticeable noise. The noise estimator tool has assessed the operation of the compound as a scenario base at worst case with each plant and equipment in operation concurrent. Not all plant and equipment will be in operation concurrent at the compound. Use of the compound is to support workers such as providing amenities, office, and parking. No construction activities will be undertaken at the compound.

Appendix B shows the noise impact maps for the noisiest plant for proposed works on the Hume Motorway and Menangle Road.

4. Mitigation and management measures

4.1 General

The mitigation measures recommended by the TfNSW Construction Noise Estimator are outlined below and assessed in terms of feasibility.

- **Letterbox drop (N = notification)** has been recommended for receivers within approximately 420m radius of the works.
- **Phone calls (PC)** detailing relevant information made to identified/affected stakeholders within 25 metres the noise source. No sensitive residential receivers identified within 25 metres.
- **Respite offer (RO)** should be considered where there are high noise generating activities near receivers. However, this is not applicable to the general operation of the compound because the only use is office personnel and amenities for worker. As such this mitigation offer is not recommended.

Proposed works are unable to comply with respite condition 2 (R2) which implies that works should be limited to two consecutive nights except for where there is a Duration Respite (DR). For night works these periods of work should be separated by not less than one week and 6 nights per month. Use of the compound and onsite works will be undertaken up to five nights in the week.

- **Duration Respite (DR)** is offered when works are unable to comply with R2. Where it can be strongly justified, it may be beneficial to increase the work duration (number of evenings or nights worked) so that the project can be completed within a shorter period. Use of the compound and onsite works will be undertaken up to five nights in the week, dependent of weather and ROL.
- **Alternate accommodation (AA)** no sensitive residential receivers identified to be within the highly intrusive range.

Other noise mitigation measures (additional to those recommended by the CNVG) include the following:

- A community notification will be delivered not less than 5 calendar days and not more than 14 calendar days prior to the out of hour's works commencing, unless otherwise agreed with the affected community and notified to the EPA.
- The project has established and will maintain a 24hr contact line for stakeholders to register enquiries, concerns, or issues with the works. In addition, a public email contact address is also provided in all notifications and consultation communications.
- High noise impact works (i.e., road sawing, rock hammering) will not be conducted after midnight.
- OOH works will be undertaken up to five (5) nights per week between Sunday evening and Friday morning.
- Orienting equipment away from noise-sensitive receivers where possible.
- No swearing or unnecessary shouting or loud stereos/radios on site, include no use of vehicle horn.
- Communication between workers and plant operators using UHF radios and hand signals.
- Vehicles will be fitted with non-tonal reversing alarms (quackers) and where possible minimise reversing.
- Where applicable, substitution of alternative low noise plant and equipment.
- Where appropriate, install acoustic screening around equipment and plant to assist with noise mitigation.
- No dropping of materials from height, avoid where possible metal to metal, throwing of metal items and slamming of doors.
- All vehicles to be switched off when not in use.
- Daymakers (lighting towers) to be set up in a manner and orientation to avoid light spill onto adjacent residences and motorist.
- Attended noise monitoring will be undertaken to validate high impact predicted noise levels and after receiving a community noise complaint.

All workers will be made aware of the above requirements during the site pre-start.

Noise Validation Monitoring

Noise validation at the nearest sensitive residential receivers will be undertaken only for noisy plant and equipment to validate the predicted noise level. Georgiou will request access into the property to conduct noise validation monitoring at the closed boundary. If access is not possible, noise validation monitoring will be completed at the front of the property, where public access is available on council / road reserve.

If validation monitoring shows that noise levels are higher than those predicted by the noise modelling, work practices must be modified immediately so that measured noise levels do not exceed predicted levels. Where it has been determined that works cannot be modified to achieve the predicted noise levels the environmental Site Representative will immediately notify the EPA. All noise validation monitoring will be recorded and provided to an EPA officer upon request.

Please note, noise validation from works undertaken during Phase 1 out of hour works shows levels below the predicted noise level. Observation noted construction activities along the Hume Motorway were inaudible. General traffic movement on the Hume Motorway and Menangle Road were audible at the noise monitoring location.

4.2 Consultation and notification strategy

All sensitive residential receivers engaged part of Phase 1 community agreement has been reduced as a result of the noise assessment detailed within Section 3.1 above. Same scope of works as Phase 3 will be undertaken for Phase 4 with the addition of VMB and bridge works. Same sensitive residential receivers identified within Phase 3 will experience minor noise impacts.

No sensitive residential receivers within the highly or moderately intrusive range.

Noting the Project have engaged and obtained agreement with those sensitive residential receivers within the Clearly Audible range part of Phase 2 and Phase 3 community agreement.

Sensitive residential receivers detailed within Table 4-1 were consulted during Phase 3 consultation process and has been advised where they can obtain further information or raise their concerns and seek whether they have any objection to the works.

Table 4-1 below shows the list of sensitive residential receivers that will be impacted by construction noise within the category of clearly audible and noticeable.

Table 4-1 Sensitive Residential Receiver – Noise Impact

No.	Residential Address	predicted noise impact level - see noise impact maps
1	4 Glen Lee Road, Menangle Park	Clearly Audible
2	18 Menangle Road, Glen Alpine	Noticeable
3	22 Menangle Road, Glen Alpine	Noticeable
4	26 Menangle Road, Glen Alpine	Noticeable
5	30 Menangle Road, Glen Alpine	Clearly Audible
6	34-38 Menangle Road, Glen Alpine	Clearly Audible
7	42 Menangle Road, Glen Alpine	Clearly Audible
8	46 Menangle Road, Glen Alpine	Noticeable
9	116 Menangle Road, Menangle Park	Clearly Audible
10	23 Fieldhouse Circuit, Campbelltown	Noticeable
11	21 Fieldhouse Circuit, Campbelltown	Noticeable
12	19 Fieldhouse Circuit, Campbelltown	Noticeable
13	19A Fieldhouse Circuit, Campbelltown	Noticeable
14	13 Fieldhouse Circuit, Campbelltown	Noticeable
15	11 Fieldhouse Circuit, Campbelltown	Noticeable
16	9 Fieldhouse Circuit, Campbelltown	Noticeable
17	37 Wakeful Avenue, Menangle Park	Noticeable

Appendix C is a copy of the Community Agreement to be communicated with those sensitive residential receivers detailed within Table 4-1.

Appendix A – TfNSW Noise Estimator tool assessment – Noise Impact

Assessment scenario 1 – Distance based (Noisiest Plant): Vibratory roller, R2 noise area category.

Residential receiver			LAeq(15minute) noise level above background (LA90)												LAeq(15minute) 75 dB(A) or greater (Highly affected)			Sleep disturbance LAmax 65 dB(A)
			5 to 10 dB(A)			10 to 20 dB(A)			20 to 30 dB(A)			> 30 dB(A)						
			Noticeable			Clearly audible			Moderately intrusive			Highly intrusive						
			Affected distance (m)		Measures	Within distance (m)	Mitigation level (dB(A))	Measures	Within distance (m)	Mitigation level (dB(A))	Measures	Within distance (m)	Mitigation level (dB(A))	Measures	Within distance (m)	Mitigation level (dB(A))	Affected distance (m)	
Undeveloped green fields, rural areas with isolated dwellings	Day	75							N	25	65	N, PC, RO	15	75	N, PC, RO	15	75	
	Day (OOHW)	120				N, R1, DR	75	55	N, R1, DR	25	65	N, R1, DR, PC, SN	15	75	N, PC, RO	15	75	
	Evening	175				N, R1, DR	120	50	N, R1, DR	45	60	N, R1, DR, PC, SN	20	70	N, PC, RO	15	75	
	Night	250	N	250	40	N, R2, DR	175	45	N, PC, SN, R2, DR	75	55	AA, N, PC, SN, R2, DR	25	65	N, PC, RO	15	75	55
	Highly Affected	15													N, PC, RO	15	75	

Assessment scenario 2 – Distance based (Noisiest Plant): Concrete saw, R2 noise area category.

Residential receiver			LAeq(15minute) noise level above background (LA90)												LAeq(15minute) 75 dB(A) or greater (Highly affected)			Sleep disturbance Lmax 65 dB(A)	
			5 to 10 dB(A)			10 to 20 dB(A)			20 to 30 dB(A)			> 30 dB(A)							
			Noticeable			Clearly audible			Moderately intrusive			Highly intrusive							
			Affected distance (m)		Measures	Within distance (m)	Mitigation level (dB(A))	Measures	Within distance (m)	Mitigation level (dB(A))	Measures	Within distance (m)	Mitigation level (dB(A))	Measures	Within distance (m)	Mitigation level (dB(A))	Affected distance (m)		
Undeveloped green fields, rural areas with isolated dwellings	Day	140							N	55	65	N, PC, RO	25	75	N, PC, RO	25	75		
	Day (OOHW)	200					N, R1, DR	140	55	N, R1, DR	55	65	N, R1, DR, PC, SN	25	75	N, PC, RO	25	75	
	Evening	290					N, R1, DR	200	50	N, R1, DR	95	60	N, R1, DR, PC, SN	30	70	N, PC, RO	25	75	
	Night	420	N	420	40	N, R2, DR	290	45	N, PC, SN, R2, DR	140	55	AA, N, PC, SN, R2, DR	55	65	N, PC, RO	25	75	110	
	Highly Affected	25													N, PC, RO	25	75		

Assessment scenario 3 – Distance based (Noisiest Plant): Excavator, R2 noise area category.

Residential receiver			LAeq(15minute) noise level above background (LA90)												LAeq(15minute) 75 dB(A) or greater (Highly affected)			Sleep disturbance LAmax 65 dB(A)	
			5 to 10 dB(A) Noticeable			10 to 20 dB(A) Clearly audible			20 to 30 dB(A) Moderately intrusive			> 30 dB(A) Highly intrusive							
Affected distance (m)		Measures	Within distance (m)	Mitigation level (dB(A))	Measures	Within distance (m)	Mitigation level (dB(A))	Measures	Within distance (m)	Mitigation level (dB(A))	Measures	Within distance (m)	Mitigation level (dB(A))	Measures	Within distance (m)	Mitigation level (dB(A))	Affected distance (m)		
Undeveloped green fields, rural areas with isolated dwellings	Day	45						N	20	65				N, PC, RO	10	75	N, PC, RO	10	75
	Day (OOHW)	75				N, R1, DR	45	55	N, R1, DR	20	65			N, R1, DR, PC, SN	10	75	N, PC, RO	10	75
	Evening	120				N, R1, DR	75	50	N, R1, DR	25	60			N, R1, DR, PC, SN	15	70	N, PC, RO	10	75
	Night	175	N	175	40	N, R2, DR	120	45	N, PC, SN, R2, DR	45	55	AA, N, PC, SN, R2, DR	20	65	N, PC, RO	10	75		45

Assessment scenario 4 – Distance based (Noisiest Plant): Concrete truck, R2 noise area category.

Residential receiver			L Aeq(15minute) noise level above background (L A90)												L Aeq(15minute) 75 dB(A) or greater (Highly affected)			Sleep disturbance L Amax 65 dB(A)
			5 to 10 dB(A)			10 to 20 dB(A)			20 to 30 dB(A)			> 30 dB(A)						
Affected distance (m)			Noticeable			Clearly audible			Moderately intrusive			Highly intrusive			Measures	Within distance (m)	Mitigation level (dB(A))	Affected distance (m)
			Measures	Within distance (m)	Mitigation level (dB(A))	Measures	Within distance (m)	Mitigation level (dB(A))	Measures	Within distance (m)	Mitigation level (dB(A))	Measures	Within distance (m)	Mitigation level (dB(A))				
Undeveloped green fields, rural areas with isolated dwellings	Day	75							N	25	65	N, PC, RO	15	75	N, PC, RO	15	75	55
	Day (OOHW)	120				N, R1, DR	75	55	N, R1, DR	25	65	N, R1, DR, PC, SN	15	75	N, PC, RO	15	75	
	Evening	175				N, R1, DR	120	50	N, R1, DR	45	60	N, R1, DR, PC, SN	20	70	N, PC, RO	15	75	
	Night	250	N	250	40	N, R2, DR	175	45	N, PC, SN, R2, DR	75	55	AA, N, PC, SN, R2, DR	25	65	N, PC, RO	15	75	
	Highly Affected	15													N, PC, RO	15	75	

Assessment scenario 5 – Distance based (Noisiest Plant): Bobcat, R2 noise area category.

Residential receiver		Affected distance (m)	LAeq(15minute) noise level above background (LA90)											LAeq(15minute) 75 dB(A) or greater (Highly affected)			Sleep disturbance LAmax 65 dB(A)	
			5 to 10 dB(A)			10 to 20 dB(A)			20 to 30 dB(A)			> 30 dB(A)						
			Noticeable			Clearly audible			Moderately intrusive			Highly intrusive						
			Measures	Within distance (m)	Mitigation level (dB(A))	Measures	Within distance (m)	Mitigation level (dB(A))	Measures	Within distance (m)	Mitigation level (dB(A))	Measures	Within distance (m)	Mitigation level (dB(A))	Measures	Within distance (m)	Mitigation level (dB(A))	Affected distance (m)
Undeveloped green fields, rural areas with isolated dwellings	Day	45							N	20	65	N, PC, RO	10	75	N, PC, RO	10	75	
	Day (OOHW)	75				N, R1, DR	45	55	N, R1, DR	20	65	N, R1, DR, PC, SN	10	75	N, PC, RO	10	75	
	Evening	120				N, R1, DR	75	50	N, R1, DR	25	60	N, R1, DR, PC, SN	15	70	N, PC, RO	10	75	
	Night	175	N	175	40	N, R2, DR	120	45	N, PC, SN, R2, DR	45	55	AA, N, PC, SN, R2, DR	20	65	N, PC, RO	10	75	25
	Highly Affected	10													N, PC, RO	10	75	

Assessment scenario 6 – Distance based (Scenario): Compound Operation, R2 noise area category.

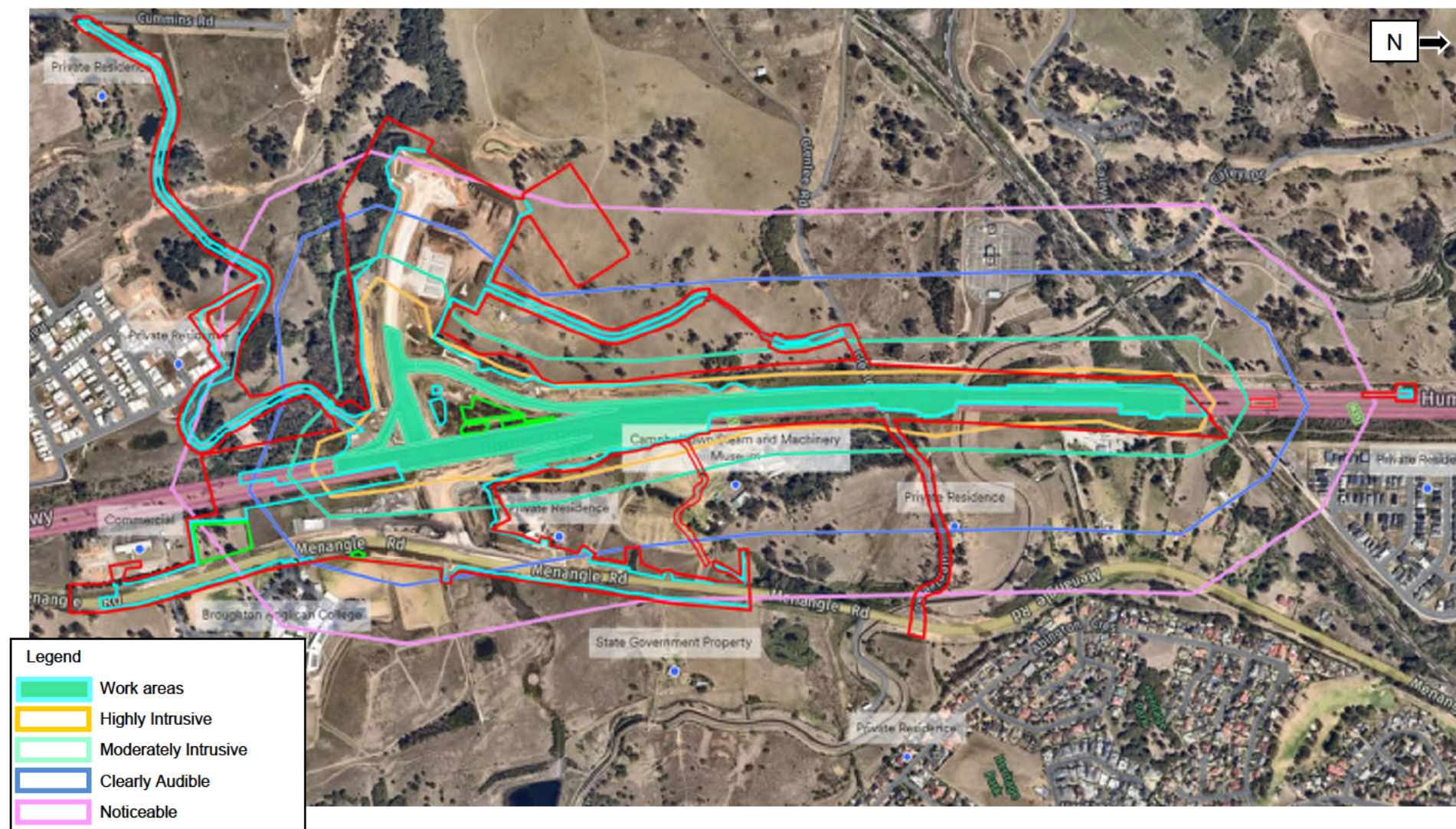
Residential receiver			LAeq(15minute) noise level above background (LA90)												LAeq(15minute) 75 dB(A) or greater (Highly affected)			Sleep disturbance LAmax 65 dB(A)
			5 to 10 dB(A)			10 to 20 dB(A)			20 to 30 dB(A)			> 30 dB(A)						
			Noticeable			Clearly audible			Moderately intrusive			Highly intrusive						
			Measures	Within distance (m)	Mitigation level (dB(A))	Measures	Within distance (m)	Mitigation level (dB(A))	Measures	Within distance (m)	Mitigation level (dB(A))	Measures	Within distance (m)	Mitigation level (dB(A))	Measures	Within distance (m)	Mitigation level (dB(A))	Affected distance (m)
Undeveloped green fields, rural areas with isolated dwellings	Day	170							N	65	65	N, PC, RO	20	75	N, PC, RO	20	75	
	Day (OOHW)	250				N, R1, DR	170	55	N, R1, DR	65	65	N, R1, DR, PC, SN	20	75	N, PC, RO	20	75	
	Evening	360				N, R1, DR	250	50	N, R1, DR	115	60	N, R1, DR, PC, SN	35	70	N, PC, RO	20	75	
	Night	525	N	525	40	N, R2, DR	360	45	N, PC, SN, R2, DR	170	55	AA, N, PC, SN, R2, DR	65	65	N, PC, RO	20	75	85
	Highly Affected	20													N, PC, RO	20	75	

Assessment scenario 7 – Distance based (Noisiest Plant): Asphalt Profiler, R2 noise area category.

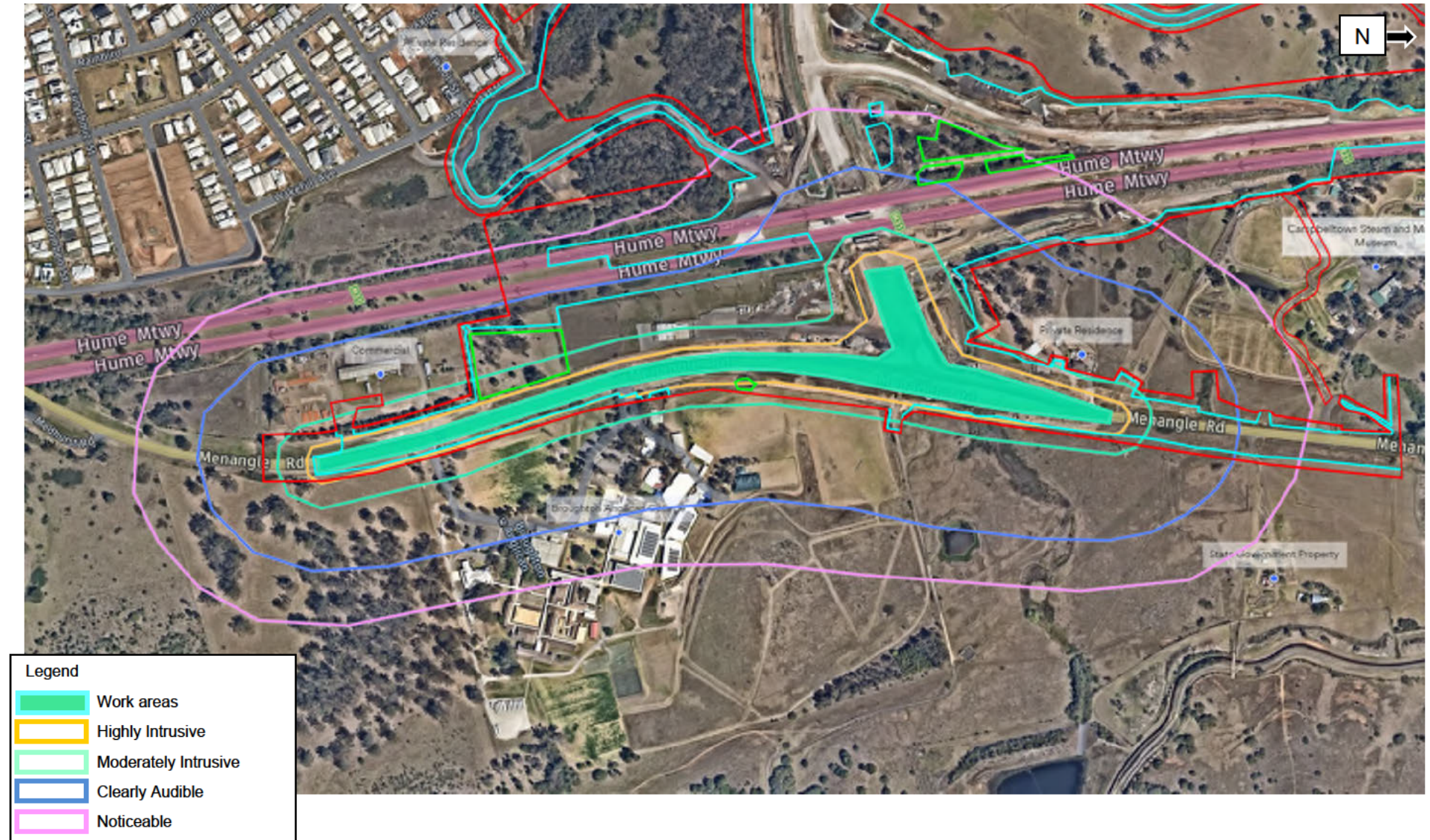
Residential receiver			LAeq(15minute) noise level above background (LA90)											LAeq(15minute) 75 dB(A) or greater (Highly affected)			Sleep disturbance LAmax 65 dB(A)	
			5 to 10 dB(A)			10 to 20 dB(A)			20 to 30 dB(A)			> 30 dB(A)						
Affected distance (m)			Noticeable			Clearly audible			Moderately intrusive			Highly intrusive			Measures	Within distance (m)	Mitigation level (dB(A))	Affected distance (m)
			Measures	Within distance (m)	Mitigation level (dB(A))	Measures	Within distance (m)	Mitigation level (dB(A))	Measures	Within distance (m)	Mitigation level (dB(A))	Measures	Within distance (m)	Mitigation level (dB(A))				
Undeveloped green fields, rural areas with isolated dwellings	Day	140							N	55	65	N, PC, RO	25	75	N, PC, RO	25	75	
	Day (OOHW)	200				N, R1, DR	140	55	N, R1, DR	55	65	N, R1, DR, PC, SN	25	75	N, PC, RO	25	75	
	Evening	290				N, R1, DR	200	50	N, R1, DR	95	60	N, R1, DR, PC, SN	30	70	N, PC, RO	25	75	
	Night	420	N	420	40	N, R2, DR	290	45	N, PC, SN, R2, DR	140	55	AA, N, PC, SN, R2, DR	55	65	N, PC, RO	25	75	110
	Highly Affected	25													N, PC, RO	25	75	

Appendix B – Noise Impact Maps

Hume Motorway Works – Noisiest Plant – Concrete Saw and Asphalt Profiler (not in operation concurrent)



Menangle Road Works – Noisiest Plant – Concrete Truck (similar SWL to Line Marking Trucks) and Asphalt Profiler (not in operation concurrent)



Appendix C – Copy Community Agreement Letter



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3 November 2023

Georgiou Group would like to discuss with you (the resident) the out of hour's work that will be required between January to June 2024 on the Hume Motorway and Menangle Road, for the Spring Farm Parkway Stage 1 Project for Transport for NSW. These works can only occur outside of standard hours under a Road Occupancy Licence (ROL). We are seeking an agreement to state, that you as a resident have no issues with these works to proceed and are willing to sign this agreement letter.

I, _____

As the resident of _____ agree to these out of hours works as explained to me below over the following 6 months.

It has been explained to me and I understand that:

- These works will be carried out between 6pm - 7am Sunday to Friday (this may change).
- Between January to June 2024.
- I will be notified of these works no less than 5 days prior to them commencing and ongoing throughout this period.
- High noise intrusive works will be completed before midnight wherever possible (for example road saw).

The out of hour works will consist of:

- Temporary barrier installation and removal on Menangle Road and Hume Motorway
- Utility relocation work on Menangle Road
- Asphalt pavement work, new kerbing, guardrail, line marking, stormwater drainage and pits on Hume Motorway and Menangle Road
- Delivery and placement of import material to the western site by entering and exiting from the Hume Motorway
- Installation and commissioning of new traffic signals for operation of the Menangle Road and Spring Farm Parkway intersection
- Installation and commissioning of new variable message signs (VMS) Hume motorway and Menangle Road
- Installation of landscaping by placing topsoil, planting and hydro-mulching
- Bridge works inclusive of installation of pre-cast barriers, screens, guard rail on Hume Motorway



The best people to work with

<u>Proposed OOHW</u>	<u>Location & Equipment</u>	<u>Anticipated Periods</u>	<u>Anticipated Duration</u>
Temporary concrete barrier relocation and removal	Hume Motorway and Menangle Road franna crane, semi-trailer	January - June 2024	10 nights
New asphalt pavement, temporary concrete barrier relocation and line marking	Hume Motorway and Menangle Road - road profiler, asphalt paver, rollers, trucks, linemarking machine	January - June 2024	60 nights
New roadside drainage, kerbing, guardrail and signage	Hume Motorway and Menangle Road - excavator, truck, post driver	January - June 2024	30 nights
VMS installation	Hume Motorway and Menangle Road - piling machine, crane, elevated working platforms, excavator, truck, compactors	January - June 2024	20 nights
Utility installation and cutovers	Hume Motorway and Menangle Road - boring machine, cranes, elevated working platforms, excavator, truck, compactors	January - June 2024	30 nights
Traffic Signal installation and commissioning	Hume Motorway and Menangle Road - cranes, elevated working platforms, excavator, truck, compactors	March - June 2024	10 nights
Delivery of import material	Hume Motorway - trucks, dozer / grader, compactor, excavator	January - June 2024	15 nights
Landscaping	Hume Motorway and Menangle Road - crane, excavator, truck	January - June 2024	20 nights

Locations of these works and predicted noise impact levels are on the attached map. As a resident you may be exposed to decibel levels between 5 - 15dBA above the background noise levels, depending on the distance you are from the proposed works (see attached map).

Works will not be undertaken on the following dates: -

Monday 1 January 2024

Friday 26 January 2024

Friday 29 March - Monday 1 April 2024

Thursday 25 April 2024

Monday 10 June 2024

As these proposed works will extend to longer than 28 calendar days would you like us to consult with you again regarding this agreement;

- ☐ Every 1 month ongoing for agreement
- ☐ Every 2 months ongoing for agreement
- ☐ Every 3 months ongoing for agreement
- ☐ Not required

I consent this signed consent can be provided to the EPA and I understand if I have any questions relating to the construction work I am able to contact the Georgiou Community Team on 1800 966 040 or email springfarmparkway.community@georgiou.com.au

Signature _____ Date _____

